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## IB Interview Guide, Module 4: M&A Deals and Merger Models

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## Overview & Key Rules of Thumb

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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?

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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.



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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)**.



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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.



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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 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.		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...		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.		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.		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?		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.”





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



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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

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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 A Diluted Shares (Millions):	100.000
Company A Current Equity Value:	\$ 700.0

Company B Current Share Price:	\$ 5.00
Company B Diluted Shares:	100.000
Company B Current Equity Value:	\$ 500.0

Company A Pre-Tax Income:	\$ 100.0
Company A Tax Rate:	40.0%
Company A Net Income:	\$ 60.0

Company B Pre-Tax Income:	\$ 50.0
Company B Tax Rate:	40.0%
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):	\$ -
<b>Company B - Purchase Equity Value:</b>	<b><math>= +\text{Seller\_Share\_Price} * \text{Seller\_Shares} * (1 + \text{Premium\_Paid})</math></b>		

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

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.



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- 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:





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Premium Paid for Company B:	20.0%	Pre-Tax Synergies (Cost-savings opportunities):	
<b>Company B - Purchase Equity Value:</b>	<b>\$ 600.0</b>		
% 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		

	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 Cash 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:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q				
18	Company B - Purchase Equity Value:			\$	600.0																
19																					
20																					
21	% Cash:				33.3%				Amount:		Pre-Tax Cost:		After-Tax Cost:								
22	% Debt:				33.3%				\$	200.0	3.0%		1.8%								
23	% Stock:				33.3%					200.0	6.0%		3.6%								
24														28.571		8.6%					
25	Company A's P / E:				11.7 x								5.0%								
26	Company B's P / E @ 20.0% Premium:				20.0 x																
27													Weighted "Cost" for Company A:			=+Pct_Cash*M21+Pct_Debt*M22+Pct_Stock*M23					
												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%.



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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%
<b>The Deal Will Be:</b>			<b>Accretive</b>

	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%
<b>The Deal Will Be:</b>			<b>Dilutive</b>

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.

	Amount:	Pre-Tax Cost:	After-Tax Cost:
% 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		
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%
<b>The Deal Will Be:</b>			<b>Dilutive</b>

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.



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	Amount:	Pre-Tax Cost:	After-Tax Cost:
% Cash:	0.0%	3.0%	1.8%
% Debt:	0.0%	6.0%	3.6%
% Stock:	100.0%		
Company A's P / E:	23.3 x		
Company B's P / E @ 20.0% Premium:	20.0 x		
Cash Used:	\$ -		
Debt Issued:	-		
Company A Shares Issued (Millions):	85.714		4.3%
Company B Yield @ 20.0% Premium:			5.0%
Weighted "Cost" for Company A:			4.3%
<b>The Deal Will Be:</b>			<b>Accretive</b>

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.



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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:

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
<b>Company B - Purchase Equity Value:</b>	<b>\$ M</b>	<b>500.0</b>	<b>550.0</b>	<b>600.0</b>	<b>650.0</b>	<b>700.0</b>
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%
<b>The Deal is Predicted to Be:</b>	<i>Text</i>	<b>Accretive</b>	<b>Accretive</b>	<b>Accretive</b>	<b>Dilutive</b>	<b>Dilutive</b>

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:



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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
<b>Company B - Purchase Equity Value:</b>	\$ M	<b>500.0</b>	<b>550.0</b>	<b>600.0</b>	<b>650.0</b>	<b>700.0</b>
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	-	-	-	-	-
<b>Combined Pre-Tax Income:</b>	\$ M	<b>135.0</b>	<b>133.5</b>	<b>132.0</b>	<b>130.5</b>	<b>129.0</b>

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  $(\text{Purchase Equity Value} * \% \text{ Stock}) / \text{Company A Share Price}$ .

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:



	A	B	C	D	E	F	G	H	I	J	K	L	M
49													
50			(+) Company A Pre-Tax Income:	\$ M			100.0	100.0	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	50.0	50.0
52			(-) Foregone Interest on Cash:	\$ M			(5.0)	(5.5)	(6.0)	(6.5)	(7.0)	(7.0)	(7.0)
53			(-) Interest Paid on New Debt Issued:	\$ M			(10.0)	(11.0)	(12.0)	(13.0)	(14.0)	(14.0)	(14.0)
54			(+) Synergies:	\$ M			-	-	-	-	-	-	-
55			<b>Combined Pre-Tax Income:</b>	\$ M			<b>135.0</b>	<b>133.5</b>	<b>132.0</b>	<b>130.5</b>	<b>129.0</b>	<b>129.0</b>	<b>129.0</b>
56													
57			(-) Combined Income Tax Provision:	\$ M			=-155*Buyer_Tax_Rate		(52.8)	(52.2)	(51.6)	(51.6)	(51.6)
58													
59			<b>Combined Net Income:</b>	\$ M			\$ 81.0	\$ 80.1	\$ 79.2	\$ 78.3	\$ 77.4	\$ 77.4	\$ 77.4
60													
61			(+) Company A - Diluted Shares:	M Shares			100.000	100.000	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	33.333	33.333
63			<b>Total Diluted Shares:</b>	M Shares			<b>123.810</b>	<b>126.190</b>	<b>128.571</b>	<b>130.952</b>	<b>133.333</b>	<b>133.333</b>	<b>133.333</b>
64													
65			<b>Combined Earnings Per Share (EPS):</b>	\$/ Share			\$ 0.65	\$ 0.63	\$ 0.62	\$ 0.60	\$ 0.58	\$ 0.58	\$ 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:

	A	B	C	D	E	F	G	H	I	J	K	L	M
58													
59			<b>Combined Net Income:</b>		\$ 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			<b>Total Diluted Shares:</b>	M Shares					123.810	126.190	128.571	130.952	133.333
64													
65			<b>Combined Earnings Per Share (EPS):</b>	\$ / Share					=+159/163	\$ 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			<b>Was Our Prediction Correct?</b>						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:

- 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.
- 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."
- 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%
<b>The Deal is Predicted to Be:</b>	<i>Text</i>	<b>Accretive</b>	<b>Accretive</b>	<b>Accretive</b>	<b>Dilutive</b>	<b>Dilutive</b>
(+) 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
<b>Combined Pre-Tax Income:</b>	<b>\$ M</b>	<b>145.0</b>	<b>143.5</b>	<b>142.0</b>	<b>140.5</b>	<b>139.0</b>
(-) Combined Income Tax Provision:	\$ M	(58.0)	(57.4)	(56.8)	(56.2)	(55.6)
<b>Combined Net Income:</b>	<b>\$ M</b>	<b>\$ 87.0</b>	<b>\$ 86.1</b>	<b>\$ 85.2</b>	<b>\$ 84.3</b>	<b>\$ 83.4</b>
(+) 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
<b>Total Diluted Shares:</b>	<b>M Shares</b>	<b>123.810</b>	<b>126.190</b>	<b>128.571</b>	<b>130.952</b>	<b>133.333</b>
<b>Combined Earnings Per Share (EPS):</b>	<b>\$ / Share</b>	<b>\$ 0.70</b>	<b>\$ 0.68</b>	<b>\$ 0.66</b>	<b>\$ 0.64</b>	<b>\$ 0.63</b>
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%
<b>Was Our Prediction Correct?</b>		<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>	<b>No</b>

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



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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 Cost 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?



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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.



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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.



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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**



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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**





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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.



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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:	
<b>Current Equity Value (Market Cap):</b>	<b>\$ 80.0</b>	<b>Current Equity Value (Market Cap):</b>	<b>\$ 40.0</b>
(-) 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:	-
<b>Current Enterprise Value:</b>	<b>\$ 100.0</b>	<b>Current Enterprise Value:</b>	<b>\$ 40.0</b>
Operating Income (EBIT):	8.0	Operating Income (EBIT):	7.0
(+) Depreciation & Amortization:	2.0	(+) Depreciation & Amortization:	1.0
<b>EBITDA:</b>	<b>\$ 10.0</b>	<b>EBITDA:</b>	<b>\$ 8.0</b>
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%
<b>Net Income:</b>	<b>\$ 4.0</b>	<b>Net Income:</b>	<b>\$ 4.0</b>
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.



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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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## Key Rule #5: How Does a Full Merger Model Work?

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In the previous sections, we covered an example of a **simplified merger model** where we estimated the purchase price and the Cash / Debt / Stock mix and then used the Weighted Cost of Acquisition and the Seller's Yield to predict whether the deal would be accretive or dilutive.

You still use the same process for **real deals**, but there are a few additional steps and complexities. We divide the process for real companies into **7 steps**:

- 1) **Project the Financial Statements of the Buyer and Seller** – In a real merger model, you go beyond simple Income Statement projections because you must estimate how much Debt the Combined Company can repay each year.
- 2) **Estimate the Purchase Price and Form of Payment** – You assume a share-price premium for a public Seller and confirm the price with the valuation methodologies; the Cash / Debt / Stock mix is based on the minimum Cash balance and the maximum amount of Debt the Buyer can raise.
- 3) **Create a Sources & Uses Schedule and Purchase Price Allocation Schedule** – These schedules let you get *more specific* about how much the Buyer and Seller are contributing and the other acquisition effects, such as the Amortization of Other Intangible Assets.
- 4) **Combine the Balance Sheets of the Buyer and Seller** – You always want to create a *Combined* Balance Sheet because it helps you assess the Combined Company's capital structure and whether or not it has reasonable levels of Debt, Equity, and Cash.
- 5) **Combine the Income Statements of the Buyer and Seller** – This part is very similar to the simplified model: You add together the Pre-Tax Incomes of the Buyer and Seller and make adjustments for new items, such as synergies and D&A on Asset write-ups.
- 6) **Calculate Cash Flow, Debt Repayment, and Key Metrics and Ratios** – To make the model more accurate, you project the Combined Company's cash flow and use that to determine how much Debt it can repay each year (or how much Cash it generates). Calculating metrics like Debt / EBITDA and EBITDA / Interest for the Combined Company also helps you assess the viability of the deal.



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- 7) **Calculate EPS Accretion / Dilution and Create Sensitivity Tables** – Once you've linked everything and tracked the changing Debt and Cash balances, you can calculate the Combined EPS and the accretion / dilution figures. You almost always create sensitivity tables that assess the deal under different assumptions, such as higher and lower purchase prices, as well.

And now, with screenshots and more detail:

### 1) Project the Financial Statements of the Buyer and Seller

This step varies by industry and company, but at the minimum, **you need the same level of detail as in a DCF analysis.**

You *don't* need full 3-statement projections; you just need estimates for each company's projected cash flow.

That means you need to forecast the following items:

- **Revenue** – Ideally based on units sold and average selling price or market size and share.
- **COGS and Operating Expenses** – Based on percentages of revenue, employee counts, or fixed vs. variable costs.
- **Net Interest Expense** – You must project each company's Interest Income and Interest Expense because they might change in the deal.
- **Taxes and Net Income** – You don't need these for the Seller, but you do need a sense of the Buyer's tax rate since you will apply it to the Combined Company.
- **Major Cash Flow Items** – You must project Depreciation & Amortization, the Change in Working Capital, and other items like recurring Dividends and Deferred Taxes that impact a company's cash flow.

Here are the Income Statement drivers we used for Men's Wearhouse:



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Acquirer - Key Drivers:		Historical			Projected				
		FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18
<b>Income Statement Drivers:</b>									
<b>Retail Stores - Beginning of Period:</b>	<i># Stores</i>	<b>1,192</b>	<b>1,166</b>	<b>1,143</b>	<b>1,124</b>	<b>1,146</b>	<b>1,171</b>	<b>1,181</b>	<b>1,196</b>
(+) Opened:	<i># Stores</i>	25	37	25	37	40	35	35	35
(-) Closed:	<i># Stores</i>	(51)	(60)	(44)	(15)	(15)	(25)	(20)	(20)
<b>Open at End of Period:</b>	<i># Stores</i>	<b>1,166</b>	<b>1,143</b>	<b>1,124</b>	<b>1,146</b>	<b>1,171</b>	<b>1,181</b>	<b>1,196</b>	<b>1,211</b>
Sales per Store:	<i>\$ M / Store</i>	\$ 2.02	\$ 2.16	\$ 2.18	\$ 2.25	\$ 2.27	\$ 2.28	\$ 2.28	\$ 2.30
COGS % Revenue:	<i>%</i>	56.0%	55.5%	56.0%	55.8%	55.8%	55.8%	55.8%	55.8%
Minimum Lease Payments:	<i>\$ M</i>				177.1	162.4	138.3	107.8	82.1
Operating Lease Expense:	<i>\$ M</i>	165.1	169.4	175.9	177.1	179.6	188.2	190.2	198.6
Lease Expense per Store:	<i>\$ M / Store</i>	0.140	0.147	0.155	0.155	0.155	0.160	0.160	0.165
SG&A Expense:	<i>\$ M</i>	696.4	739.7	771.8	737.8	753.0	764.4	772.5	782.3
SG&A Expense per Store:	<i>\$ M / Store</i>	0.59	0.64	0.68	0.650	0.650	0.650	0.650	0.650

Men's Wearhouse is a retail company, so we projected revenue based on the # of stores and sales per store; we could have also used the total # of square feet and sales per square foot.

Retailers make money by ordering inventory, marking up the items, and selling them at higher prices, so Cost of Goods Sold (COGS) should be linked to the sales of these individual items.

We made it a simple percentage of revenue, but we could have also used the gross margins on different items.

We projected Selling, General & Administrative (SG&A) expenses and the rental expense separately, but they're both linked to **individual stores**.

The Cash Flow Statement drivers are all standard.

We projected D&A as a percentage of revenue, the Change in Working Capital as a percentage of the change in revenue, and other items either as percentages of revenue or on a per-store basis:

Acquirer - Key Drivers:	Units:	Historical			Projected				
		FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18
<b>Cash Flow Statement Drivers:</b>									
Depreciation & Amortization:	\$ M	76.0	85.0	88.7	86.8	89.3	91.1	92.1	94.0
D&A % Revenue:	%	3.2%	3.4%	3.6%	3.4%	3.4%	3.4%	3.4%	3.4%
Tuxedo Rental Amortization:	\$ M	28.9	28.3	32.3	31.1	32.0	32.7	33.0	33.7
Tuxedo Rental Amort. % Revenue:	%	1.2%	1.1%	1.3%	1.2%	1.2%	1.2%	1.2%	1.2%
Loss on Disposition of Assets:	\$ M	2.8	2.0	0.2	-	-	-	-	-
Goodwill Impairment Charge:	\$ M	-	-	9.5	-	-	-	-	-
Asset Impairment Charge:	\$ M	2.0	0.5	2.2	-	-	-	-	-
Deferred Taxes & Rent:	\$ M	30.5	6.2	5.2	5.1	5.3	5.4	5.4	5.5
Deferred Taxes & Rent % Revenue:	%	1.3%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Change in Working Capital:	\$ M	(109.7)	(41.8)	(48.3)	(32.2)	(30.4)	(20.6)	(11.4)	(23.3)
% Change in Revenue:	%	(39.2%)	(39.6%)	321.1%	(40.0%)	(40.0%)	(40.0%)	(40.0%)	(40.0%)
Capital Expenditures:	\$ M	91.8	121.4	108.2	85.1	92.7	100.0	107.0	114.3
CapEx per Store:	\$ M / Store	\$ 0.08	\$ 0.11	\$ 0.10	\$ 0.08	\$ 0.08	\$ 0.09	\$ 0.09	\$ 0.10
Dividends:	\$ M	25.1	37.1	35.5	42.7	45.9	46.4	46.9	48.5
Dividends % Net Income:	%	20.8%	28.2%	42.4%	30.5%	30.5%	30.5%	30.5%	30.5%
Debt Principal Repayments:	\$ M	-	-	2.5	10.9	16.4	16.4	26.9	26.9

We haven't created Cash Flow Statement projections for the Buyer; we'll simply link to these items on the Combined Cash Flow Statement later on.

Here's the Income Statement for the Buyer, along with a few notes for items such as Interest Income, Interest Expense, and the Share Count:

Acquirer - Income Statement:	Units:	Historical			Projected				
		FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18
Revenue:	\$ M	2,382.7	2,488.3	2,473.2	2,553.8	2,629.8	2,681.3	2,709.8	2,768.1
Cost of Goods Sold:	\$ M	1,333.8	1,380.1	1,384.2	1,425.1	1,467.5	1,496.2	1,512.2	1,544.7
<b>Gross Profit:</b>	\$ M	<b>1,048.9</b>	<b>1,108.1</b>	<b>1,089.0</b>	<b>1,128.7</b>	<b>1,162.3</b>	<b>1,185.0</b>	<b>1,197.6</b>	<b>1,223.4</b>
(+) Selling, General & Administrative:	\$ M	696.4	739.7	771.8	737.8	753.0	764.4	772.5	782.3
(+) Rental Expense:	\$ M	165.1	169.4	175.9	177.1	179.6	188.2	190.2	198.6
(+) Goodwill Impairment Charge:	\$ M	-	-	9.5	-	-	-	-	-
(+) Asset Impairment Charges:	\$ M	2.0	0.5	2.2	-	-	-	-	-
<b>Total Operating Expenses:</b>	\$ M	<b>863.5</b>	<b>909.6</b>	<b>959.4</b>	<b>914.8</b>	<b>932.6</b>	<b>952.6</b>	<b>962.7</b>	<b>980.9</b>
<b>Operating Income:</b>	\$ M	<b>185.4</b>	<b>198.6</b>	<b>129.6</b>	<b>213.8</b>	<b>229.7</b>	<b>232.5</b>	<b>234.9</b>	<b>242.5</b>
(+) Interest Income:	\$ M	0.4	0.6	0.4	0.5	0.5	0.5	0.5	0.5
(-) Interest Expense:	\$ M	(1.4)	(1.5)	(3.2)	(2.0)	(2.0)	(2.0)	(2.0)	(2.0)
<b>Net Interest Income / (Expense):</b>	\$ M	<b>(1.0)</b>	<b>(0.9)</b>	<b>(2.8)</b>	<b>(1.5)</b>	<b>(1.5)</b>	<b>(1.5)</b>	<b>(1.5)</b>	<b>(1.5)</b>
<b>Pre-Tax Income:</b>	\$ M	<b>184.4</b>	<b>197.7</b>	<b>126.8</b>	<b>212.3</b>	<b>228.2</b>	<b>231.0</b>	<b>233.4</b>	<b>241.0</b>
(-) Income Tax Provision:	\$ M	(63.9)	(65.6)	(42.6)	(72.2)	(77.6)	(78.5)	(79.4)	(81.9)
<b>Net Income:</b>	\$ M	<b>120.5</b>	<b>132.1</b>	<b>84.2</b>	<b>140.1</b>	<b>150.6</b>	<b>152.4</b>	<b>154.1</b>	<b>159.1</b>
Net (Income) / Loss Attrib. to NCI:	\$ M	0.1	(0.3)	(0.4)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
<b>Net Income to Common:</b>	\$ M	<b>120.6</b>	<b>131.7</b>	<b>83.8</b>	<b>139.9</b>	<b>150.4</b>	<b>152.2</b>	<b>153.9</b>	<b>158.9</b>
<b>Earnings Per Share (EPS):</b>	\$ / Share	<b>2.33</b>	<b>2.58</b>	<b>1.70</b>	<b>2.88</b>	<b>3.10</b>	<b>3.14</b>	<b>3.17</b>	<b>3.28</b>
Average Diluted Shares:	M Shares	51.692	51.026	49.162	48.504	48.504	48.504	48.504	48.504

We didn't put much thought into either of these because they're so low; Interest Expense comes from the company's schedule for it, and Interest Income is a simple average.

Taxes are based on the average effective tax rate over the past 3 years; the rate should almost always be between 30% and 40% for U.S. companies.

In merger models, you do **NOT** want a changing share count for the Buyer. Zero out SBC, stock issuances, and stock repurchases!



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Just like you **ignore** Stock-Based Compensation, stock issuances, and stock repurchases in a DCF, you should also **ignore** them in a merger model: These items will distort the accretion/dilution calculations, and it's tough to estimate their impact on the share count.

So we recommend setting them to 0 in the projections for the Buyer, Seller and the Combined Company – effectively, you assume that SBC is a normal cash expense, just as in the DCF.

If the Interest Income and Interest Expense were bigger, we might have put more effort into projecting them.

But since they're so small, we used a simple approach and followed the company's estimates for Interest Expense and used a simple historical average for Interest Income.

Once you've made these projections for the Buyer, you do the same thing for the Seller.

The Seller here – JoS. A. Bank – is *almost the same* as the Buyer since they're both retailers, so we're not going to paste in everything all over again.

You go through the same process and use historical data, the market's views of the company, and management's expectations to project the key line items.

## **2) Estimate the Purchase Price and Form of Payment**

This step doesn't differ too much for real companies.

If the Seller is **public**, you'll link the purchase price to an Offer Price per Share, which is higher than the company's current share price.

You base the premium-to-current-share-price on the premiums that similar companies in the market have sold for recently; if the range is 15% – 30%, you might start at 20% or 25%.

You'll then check this Offer Price per Share and make sure it's in-line with the company's Implied Share Price as determined by Public Comps, Precedent Transactions, and the DCF.

For private companies, the purchase price is based on a simple EV / EBITDA, EV / EBIT, or P / E multiple, which you pick based on peer companies and the valuation methodologies.

**Transaction Assumptions:**

Target - "Undisturbed" Share Price:	\$ 41.66
Premium Paid to Target's Share Price:	56.0%
Offer Price per Share:	\$ 65.00
Purchase Equity Value:	\$ 1,827.3
Purchase Enterprise Value:	1,463.8
LTM Purchase EV / EBITDA Multiple:	11.0 x
LTM Purchase EV / Revenue Multiple:	1.4 x

Offer Price per Share:	\$ 65.00
Tax Rate:	38.1%
Basic Shares Outstanding (Millions):	27.998
Diluted Shares Outstanding (Millions):	28.113
<b>Purchase Equity Value:</b>	<b>\$ 1,827.3</b>
(-) Cash & Cash-Equivalents:	(445.5)
(-) Equity Investments:	-
(-) Other Non-Core Assets, Net:	-
(-) Net Operating Losses:	-
(+) Total Debt:	-
(+) Preferred Stock:	-
(+) Noncontrolling Interests:	-
(+) Unfunded Pension Obligations:	82.0
(+) Capital Leases:	-
(+) Restructuring & Other Liabilities:	-
<b>Purchase Enterprise Value:</b>	<b>\$ 1,463.8</b>

You'd check everything here against the valuation methodologies to make sure that a \$65.00 Offer Price per Share and these LTM multiples are reasonable.

The mix of Cash, Debt, and Stock might be based on what happened in **real life** (if the deal is a real one), or you might assume that the Buyer uses all its available Cash, then raises Debt up to the Debt / EBITDA ratio of peer companies, and issues Stock for anything past that.

Here, we used the **100% Debt** mix that the Buyer used in real life:

Purchase Equity Value:	\$ 1,827.3			
% Cash:	0.0%			
% Debt:	100.0%			
% Stock:	0.0%			
		<b>Amount:</b>	<b>Pre-Tax Cost:</b>	<b>After-Tax Cost:</b>
		Cash Used: \$ -	0.4%	0.2%
		Debt Issued: 1,827.3	5.4%	3.6%
		New Shares Issued (Millions): 0.000		5.3%
		Weighted Average Acquisition Cost:		3.6%
		Target's "Yield":		3.5%

These costs are based on Interest Income / Average Cash Balance for the Cash; For the Debt, it's either Interest Expense / Average Debt Balance or the interest rate the company will have to pay on this NEW Debt (for deals in real life).



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We calculated the Weighted Average Cost of Acquisition and the Seller's Yield at this point, but we choose **not** to predict whether the deal will be accretive or dilutive.

So many new items go into the accretion/dilution analysis in a real deal that a simple comparison of those percentages no longer works so well.

### **3) Create a Sources & Uses Schedule and Purchase Price Allocation Schedule**

We mentioned earlier how **the real amount** that a Buyer pays is not exactly equal to the Purchase Equity Value *or* the Purchase Enterprise Value of the Seller.

The actual amount paid depends on the treatment of Debt and Cash as well as any fees associated with the deal.

To track this *real amount*, you create a "**Sources & Uses**" schedule.

A **Source of Funds** is anything that the Buyer uses to pay for the company: Cash, Debt, and Stock are the main Sources.

A **Use of Funds** is anything that *increases* the real amount that a Buyer must pay for the Seller.

The biggest Use of Funds is the Purchase Equity Value of the Seller: What it costs to buy all its shares.

Debt repayment and transaction fees are also Uses of Funds because the Buyer must pay for these items as well.

If the Buyer **assumes** the Seller's Debt or "refinances it" by *replacing* it with new Debt, the existing Debt shows up under *both* Sources and Uses.







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In more complex transactions, this process gets even more confusing, which is why you need to build a Sources & Uses schedule for any real deal.

### **The Purchase Price Allocation (PPA) Schedule**

Once you've created the Sources & Uses schedule, you move onto the **Purchase Price Allocation (PPA) schedule**.

You need to set up this schedule because in almost all M&A deals, the Buyer pays a *premium* over the Seller's Book Value (i.e., its Common Shareholders' Equity).

For example, the Buyer might pay \$1,000 for the Purchase Equity Value, but the Seller's Common Shareholders' Equity is worth only \$700.

**This premium is NOT the premium to current share price:** That one is based on the *market value* of the company's shares, while this one is based on the book value.

You should know from the Accounting guides that this premium will result in **the Balance Sheet not balancing**, which is a big problem.

To fix this problem, you create 2 new Assets:

- 1) Other Intangible Assets, to represent the value of *identifiable* items that have some value, such as trademarks, patents, and customer relationships; and
- 2) Goodwill, to represent everything else.

We've covered the rationale for these items in the Accounting lessons, so we're not going to re-hash them here.

### **But that's not all!**

The Buyer must also re-evaluate all the Seller's Assets and Liabilities when the deal closes and write them up or down to their "fair market values."

For example, perhaps the Seller purchased a building for \$1,000 five years ago. This building will be listed on the Seller's Balance Sheet at \$1,000 minus Accumulated Depreciation.

If the Accumulated Depreciation is \$100, the building will be shown at a net value of **\$900**.

When the Buyer reviews this building and does some research on the local market, it concludes that the building is worth **\$1,100**.

Therefore, the Buyer will record a "write-up" of \$200 to reflect the fair market value of the building.



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There might also be write-ups for Inventory and other items, but PP&E write-ups are the most common ones because the value of real estate often increases over time.

In addition to these Asset write-ups, you also **write down a Seller's existing Deferred Tax Assets (DTAs) and Deferred Tax Liabilities (DTLs)** in most M&A deals (**Advanced Note:** Basically, any deal structured as a Stock Purchase – see the Advanced section).

These items were created due to *temporary* differences in cash taxes and book taxes that will reverse eventually.

But in an M&A deal, accounting rules state that items set to reverse eventually **must reverse immediately upon acquisition close.**

So all the differences are removed and reconciled, the existing DTAs and DTLs are wiped out, and a new DTL may be created.

**A new Deferred Tax Liability gets created if there's a write-up of PP&E or if Other Intangible Assets are created.**

Depreciation & Amortization on these items is **not** deductible for cash-tax purposes, but the company still records the D&A on its book financial statements.

So the cash taxes the company pays to the government will be **higher** than the taxes it records on its Income Statement.

A Deferred Tax Liability means that the company expects to pay **higher cash taxes than book taxes in the future**, which corresponds to this scenario.

Over time, the DTL will decrease as the company pays those higher cash taxes, and eventually it will reach \$0 once the write-ups have been fully depreciated or amortized.

Here's a diagram to illustrate the concept:

These items almost always get created or written up in M&A deals.

This DTL is based on (Intangible + PP&E Write-Ups) \* Tax Rate.

Intangibles Created:	\$ 85.0	Amortization Period:	5
PP&E Write-Up:	24.0	Depreciation Period:	8
Tax Rate:	40.0%	Initial Deferred Tax Liability:	44

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Book Operating Income:	\$ 100	\$ 110	\$ 120	\$ 130	\$ 140	\$ 150	\$ 160	\$ 170	\$ 180	\$ 190	
(-) Amortization of Intangibles:		(17)	(17)	(17)	(17)	(17)	-	-	-	-	-
(-) Depreciation of PP&E Write-Up:		(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	-	-
<b>Book Taxable Income:</b>		<b>80</b>	<b>90</b>	<b>100</b>	<b>110</b>	<b>120</b>	<b>147</b>	<b>157</b>	<b>167</b>	<b>180</b>	<b>190</b>
Book Taxes:		32	36	40	44	48	59	63	67	72	76
Tax Operating Income:	100	110	120	130	140	150	160	170	180	190	
(-) Amortization of Intangibles:		-	-	-	-	-	-	-	-	-	-
(-) Depreciation of PP&E Write-Up:		-	-	-	-	-	-	-	-	-	-
<b>Cash Taxable Income:</b>		<b>100</b>	<b>110</b>	<b>120</b>	<b>130</b>	<b>140</b>	<b>150</b>	<b>160</b>	<b>170</b>	<b>180</b>	<b>190</b>
Cash Taxes:		40	44	48	52	56	60	64	68	72	76
Deferred Tax Liability:	\$ 44	\$ 36	\$ 28	\$ 20	\$ 12	\$ 4	\$ 2	\$ 1	\$ 0	\$ 0	\$ 0

After an M&A deal takes place, the company's Cash Taxes will be higher than its Book Taxes because D&A from write-ups are not deductible for Cash-Tax purposes. As a result, the DTL will decrease each year until it reaches \$0 when the write-ups are fully amortized or depreciated.

**Advanced Note:** The treatment for these items differs in Asset Purchases and 338(h)(10) deals – please see the section on More Advanced Merger Model Features.

In these other deal structures, you write up Assets for *both* book and tax purposes and deduct D&A for *both* book and cash-tax purposes, so no new DTL is created.

Also, you may not write down the Seller's entire DTA balance, exactly – the exact amount to write down depends on the deal type and how much of the DTA the Buyer might be able to use after the deal closes.

There are many other differences as well, so please see that section/guide for more.

Here's the Purchase Price Allocation schedule for the Men's Wearhouse / Jos. A. Bank deal we're analyzing:

Standard items; you always write off the Seller's Common Shareholders' Equity and create Goodwill and Other Intangible Assets to "plug the gap."

**Purchase Price Allocation:**

**Goodwill Calculation:**

Equity Purchase Price:	\$ 1,827.3
(-) Seller Book Value:	(732.1)
(+) Write-Off of Existing Goodwill:	-
<b>Total Allocable Purchase Premium:</b>	<b>1,095.2</b>
(-) Write-Up of PP&E:	(14.9)
(-) Write-Up of Intangibles:	(554.8)
(-) Write-Down of Deferred Tax Liabilities:	(13.0)
(-) Write-Down of Deferred Rent:	(41.3)
(+) New Deferred Tax Liability:	193.7
<b>Total Goodwill Created:</b>	<b>\$ 665.0</b>

**Fixed Asset Write-Up:**

PP&E Write-Up %:	10.0%
PP&E Write-Up Amount:	\$ 14.9
Depreciation Period (Years):	8

**Intangible Asset Write-Up:**

Purchase Price to Allocate:	\$ 1,095.2
% Allocated to Indefinite-Lived Intangibles:	45.7%
Indefinite-Lived Intangibles:	500.0
% Allocated to Definite-Lived Intangibles:	5.0%
Definite-Lived Intangibles Write-Up Amount:	54.8
Amortization Period (Years):	5
New Deferred Tax Liability:	\$ 193.7

You write off existing DTLs or DTAs in "Stock Purchase" deals because temporary tax differences that will reverse *eventually* must be reversed and reconciled **immediately** in an M&A deal.

The write-down of Deferred Rent is not a standard item, but the company did it because it's another "timing difference" item.

The new DTL is based on the **TOTAL** amount of write-ups times the Buyer's Tax Rate. You include even the Indefinite-Lived Intangibles because they will *eventually* be written down, and that write-down won't be deductible for cash-tax purposes.

Asset write-ups **reduce** Goodwill Created because they increase the Assets side of the Balance Sheet; Liability write-downs also **reduce** Goodwill Created because they make the L&E side of the Balance Sheet smaller.

Liability write-ups and new Liabilities, such as the new DTL, **increase** Goodwill Created because they do the opposite. Asset write-downs, similarly, **increase** Goodwill Created.

#### 4) Combine the Balance Sheets of the Buyer and Seller

The Balance Sheet combination is simple *if* you've set up the Sources & Uses and Purchase Price Allocation schedules correctly.

You add together the Balance Sheets of the Buyer and Seller from the deal close date, and you reflect the Cash, Debt, and Stock used in the deal, show the write-ups and new Assets and Liabilities, and write down the Seller's Common Shareholders' Equity.

Here are the adjustments on the Assets side:

Balance Sheet Combination:	Units	Buyer	Seller	Pro-Forma Adjustments:		
		FY13	FY13	Debit	Credit	FY13
<b>ASSETS:</b>						
<b>Current Assets:</b>						
Cash & Cash Equivalents:	\$ M	\$ 59.3	\$ 445.5	\$ -	\$ (302.3)	\$ 202.4
Accounts Receivable:	\$ M	63.2	13.6	-	-	76.7
Inventory:	\$ M	599.5	304.3	-	-	903.8
Other Current Assets:	\$ M	93.2	23.1	-	-	116.3
<b>Total Current Assets:</b>	\$ M	<b>815.1</b>	<b>786.5</b>			<b>1,299.3</b>
<b>Long-Term Assets:</b>						
Plants, Property & Equipment:	\$ M	408.2	149.0	14.9	-	572.0
Tuxedo Rental Product, Net:	\$ M	142.8	-	-	-	142.8
Goodwill:	\$ M	126.0	-	665.0	-	791.0
Other Intangible Assets:	\$ M	58.0	-	554.8	-	612.8
Other Assets:	\$ M	5.1	0.3	-	-	5.4
<b>Total Long-Term Assets:</b>	\$ M	<b>740.1</b>	<b>149.3</b>			<b>2,124.0</b>
<b>TOTAL ASSETS:</b>	\$ M	<b>\$ 1,555.2</b>	<b>\$ 935.7</b>			<b>\$ 3,423.3</b>

In Current Assets, you reflect the Cash used in the deal; you might also adjust the value of Inventory and adjust for Inter-Company Receivables.

In Long-Term Assets, you write up PP&E and reflect the new Goodwill and Other Intangible Assets created in the deal. Note that as of 2016, **you no longer capitalize the financing fees**, under both U.S. GAAP and IFRS.

And then on the Liabilities & Equity side:

Balance Sheet Combination:	Units	Buyer	Seller	Pro-Forma Adjustments:		
		FY13	FY13	Debit	Credit	FY13
<b>LIABILITIES &amp; EQUITY:</b>						
<b>Current Liabilities, Excluding Debt:</b>						
Accounts Payable:	\$ M	\$ 148.8	\$ 32.9	-	-	181.7
Accrued Expenses & Other Liab.:	\$ M	175.8	115.0	-	-	290.8
Income Taxes Payable:	\$ M	0.7	-	-	-	0.7
Deferred Tax Liability - Current:	\$ M	-	1.8	(1.8)	-	-
<b>Total Current Liabilities, Excl. Debt:</b>	\$ M	<b>325.3</b>	<b>149.8</b>			<b>473.3</b>
<b>Long-Term Liabilities, Including All Debt:</b>						
Existing Debt:	\$ M	97.5	-	(97.5)	-	-
New Transaction Debt:	\$ M	-	-	(54.8)	1,827.3	1,772.5
Deferred Tax Liability - Noncurrent:	\$ M	109.3	11.2	(11.2)	193.7	303.0
Deferred Rent:	\$ M	-	41.3	(41.3)	-	-
Other Noncurrent Liabilities:	\$ M	-	1.4	-	-	1.4
<b>Total Liabilities, Including All Debt:</b>	\$ M	<b>206.8</b>	<b>53.9</b>			<b>2,076.9</b>
<b>Total Liabilities:</b>	\$ M	<b>\$ 532.1</b>	<b>\$ 203.7</b>			<b>\$ 2,550.1</b>
<b>Shareholders' Equity:</b>						
Noncontrolling Interests:	\$ M	14.0	-	-	-	14.0
<b>Total Equity:</b>	\$ M	<b>\$ 1,023.1</b>	<b>\$ 732.1</b>	(882.1)	-	<b>859.1</b>
<b>TOTAL LIABILITIES &amp; EQUITY:</b>	\$ M	<b>\$ 1,555.2</b>	<b>\$ 935.7</b>			<b>\$ 3,423.3</b>
Balance Sheet Check:		OK!	OK!			OK!

There are few adjustments in this section; you might write down DTLs, adjust for Inter-Company Payables, and perhaps reflect new Debt.

You reflect any Debt Repaid, changes in DTLs, and New Debt here. Note that as of 2016, you also **deduct financing fees** from the Debt issued to fund the deal.

You write off the Seller's Common Shareholders' Equity, reflect the value of new Stock issued, and also deduct one-time transaction fees here.





If the post-transaction Balance Sheet does **not** balance, then you've done something wrong and must review your work to find the mistake.

The best way to check your work is to go back to the Sources & Uses and Purchase Price Allocation schedules and make sure **you've reflected all the items in those in your Balance Sheet adjustments.**

If you've missed or double-counted something, the Combined Balance Sheet will be wrong.

### 5) Combine the Income Statements of the Buyer and Seller

This step is also straightforward **if you've set up everything properly** in the previous steps.

If the Buyer and Seller expect to realize **synergies** – opportunities to boost Combined Revenue or reduce Combined Expenses – then you'll create a schedule for those synergies first.

The CFOs of both companies will discuss synergies and provide their estimates to bankers.

They have to figure out if there are opportunities to consolidate locations or departments, or ways to negotiate better agreements with suppliers.

Even if there are substantial synergies, it will take **time** to realize them.

So you normally assume that it takes at least a few years to realize all the synergies and that there are **integration costs** associated with the deal and these synergies.

In this case, we used management's estimates from the deal announcement:

#### Management Estimates - Long-Term Synergies:

(+) Cost of Goods Sold:	\$ 30.0	<b>Implied # of Stores Closed:</b>	
(+) General & Administrative:	46.0	Average SG&A Expense per Store:	0.60
(+) Stores:	14.0	Implied # of Stores Closed:	23.3
(+) E-Commerce:	8.0	% Total Stores as of Deal Close:	1.3%
(+) Advertising Media:	6.0	COGS Synergies % Combined COGS:	1.4%
<b>Total Long-Term Synergies:</b>	<b>\$ 104.0</b>	OpEx Synergies % Combined OpEx:	5.8%

We calculated these percentages to check how reasonable the **synergy estimates** are - much higher percentages would be suspect.

Estimated Annual Synergies:	Units	Projected				
		FY14	FY15	FY16	FY17	FY18
% Synergies Realized:	%	16.0%	50.0%	85.0%	100.0%	100.0%
(+) COGS Synergies:	\$ M	\$ 4.8	\$ 15.0	\$ 25.5	\$ 30.0	\$ 30.0
(+) OpEx Synergies:	\$ M	11.8	37.0	62.9	74.0	74.0
<b>Total Annual Synergies:</b>	<b>\$ M</b>	<b>16.6</b>	<b>52.0</b>	<b>88.4</b>	<b>104.0</b>	<b>104.0</b>
Integration Costs:	\$ M	33.3	66.7	-	-	-

Even if these synergies are real, it will take **time and money** to realize them - there's no such thing as a free lunch!



The **Integration Costs** may show up on the Income Statement, but they could also be Cash Flow Statement line items depending on what they consist of.

If they're more related to **capital assets**, such as stores, factories, equipment, or physical locations, they'll more than likely be CFS line items.

Once you have these items, you can start combining the Income Statements:

Combined Income Statement:	Units:	Projected				
		FY14	FY15	FY16	FY17	FY18
(+) Acquirer - Revenue:	\$ M	\$ 2,553.8	\$ 2,629.8	\$ 2,681.3	\$ 2,709.8	\$ 2,768.1
(+) Target - Revenue:	\$ M	1,061.8	1,110.5	1,166.5	1,200.7	1,252.9
(+) Revenue Synergies:	\$ M	-	-	-	-	-
<b>Total Revenue:</b>	\$ M	<b>3,615.5</b>	<b>3,740.2</b>	<b>3,847.8</b>	<b>3,910.5</b>	<b>4,021.0</b>
(+) Acquirer - Cost of Goods Sold:	\$ M	1,425.1	1,467.5	1,496.2	1,512.2	1,544.7
(+) Target - Cost of Goods Sold:	\$ M	451.3	471.9	501.6	516.3	545.0
(+) COGS on Revenue Synergies:	\$ M	-	-	-	-	-
(-) COGS Synergies:	\$ M	(4.8)	(15.0)	(25.5)	(30.0)	(30.0)
<b>Total COGS:</b>	\$ M	<b>1,871.5</b>	<b>1,924.5</b>	<b>1,972.3</b>	<b>1,998.5</b>	<b>2,059.7</b>
<b>Gross Profit:</b>	\$ M	<b>1,744.0</b>	<b>1,815.8</b>	<b>1,875.4</b>	<b>1,912.0</b>	<b>1,961.3</b>

If there are no revenue synergies, you literally add the Buyer and Seller's Revenue.

In the next section, you add the Buyer and Seller's COGS and also reflect COGS associated with the revenue synergies and any cost savings associated with COGS.

The next section is also straightforward because you add together the Operating Expenses from the Buyer and Seller and make adjustments for synergies and new D&A created in the deal:

Combined Income Statement:	Units:	Projected				
		FY14	FY15	FY16	FY17	FY18
<b>Gross Profit:</b>	\$ M	<b>1,744.0</b>	<b>1,815.8</b>	<b>1,875.4</b>	<b>1,912.0</b>	<b>1,961.3</b>
(+) Acquirer - SG&A Expense:	\$ M	737.8	753.0	764.4	772.5	782.3
(+) Target - SG&A Expense:	\$ M	428.2	447.9	469.3	483.1	500.4
(+) Acquirer - Rental Expense:	\$ M	177.1	179.6	188.2	190.2	198.6
(+) Target - Rental Expense:	\$ M	78.6	82.1	87.3	89.9	92.1
(+) Goodwill Impairment Charge:	\$ M	-	-	-	-	-
(+) Asset Impairment Charges:	\$ M	-	-	-	-	-
(-) OpEx Synergies:	\$ M	(11.8)	(37.0)	(62.9)	(74.0)	(74.0)
(+) Amortization of New Intangibles:	\$ M	11.0	11.0	11.0	11.0	11.0
(+) Depreciation of PP&E Write-Up:	\$ M	1.9	1.9	1.9	1.9	1.9
<b>Operating Expenses:</b>	\$ M	<b>1,422.6</b>	<b>1,438.4</b>	<b>1,459.1</b>	<b>1,474.5</b>	<b>1,512.2</b>
<b>Operating Income:</b>	\$ M	<b>321.4</b>	<b>377.4</b>	<b>416.3</b>	<b>437.6</b>	<b>449.1</b>

In this next section, you literally add together the Operating Expenses of the Buyer and Seller. Then, you reflect any synergies (negatives here since they reduce expenses) as well as the new D&A from Assets written up in the deal.

If there are substantial synergies, the Combined Operating Income could easily be greater than Buyer Operating Income + Seller Operating Income.

But if there are few-to-no synergies, the Combined Operating Income will almost certainly be less because of the new Depreciation & Amortization.

Next, you calculate the Combined Pre-Tax Income by factoring in the Net Interest Income from the Buyer and Seller, the Foregone Interest on Cash, and the Interest on New Debt:

Combined Income Statement:	Units:	Projected				
		FY14	FY15	FY16	FY17	FY18
<b>Operating Income:</b>	\$ M	321.4	377.4	416.3	437.6	449.1
(+) Acquirer - Net Interest Income:	\$ M	(1.5)	(1.5)	(1.5)	(1.5)	(1.5)
(+) Target - Net Interest Income:	\$ M	0.5	0.5	0.5	0.5	0.5
(-) Foregone Interest on Cash:	\$ M	(1.1)	(1.1)	(1.1)	(1.1)	(1.1)
(-) Interest Paid on New Debt Issued:	\$ M	(95.4)	(91.6)	(88.3)	(80.1)	(70.3)
(+) Interest Saved on Refinanced Debt:	\$ M	2.0	2.0	2.0	2.0	2.0
<b>Net Interest Income / (Expense):</b>	\$ M	<b>(95.5)</b>	<b>(91.7)</b>	<b>(88.4)</b>	<b>(80.2)</b>	<b>(70.4)</b>
<b>Pre-Tax Income:</b>	\$ M	<b>225.9</b>	<b>285.7</b>	<b>328.0</b>	<b>357.4</b>	<b>378.7</b>

Cash Used \* Foregone Interest Rate on Cash.

This one changes each year as the company repays Debt (see the next step)!

If the Buyer or Seller repaid or changed the terms of existing Debt, we have to factor that in as well.

The “Interest Saved on Refinanced Debt” line is a bit unusual; it’s in the model because the Buyer repaid its existing Debt in this deal.

Finally, you calculate the Combined Net Income by applying the Buyer’s Tax Rate to the Combined Pre-Tax Income.

Then, Combined EPS equals the Combined Net Income divided by the Total Shares Outstanding – the Buyer’s existing shares plus the new ones issued in the deal:

Combined Income Statement:	Units:	Projected				
		FY14	FY15	FY16	FY17	FY18
<b>Pre-Tax Income:</b>	\$ M	225.9	285.7	328.0	357.4	378.7
(-) Income Tax Provision:	\$ M	(76.8)	(97.1)	(111.5)	(121.5)	(128.8)
<b>Net Income:</b>	\$ M	<b>149.1</b>	<b>188.5</b>	<b>216.5</b>	<b>235.9</b>	<b>249.9</b>
Net (Income) / Loss Attrib. to NCI:	\$ M	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
<b>Net Income to Common:</b>	\$ M	<b>\$ 148.9</b>	<b>\$ 188.3</b>	<b>\$ 216.2</b>	<b>\$ 235.7</b>	<b>\$ 249.7</b>
(+) Acquirer - Diluted Shares:	M Shares	48.504	48.504	48.504	48.504	48.504
(+) Shares Issued in Transaction:	M Shares	0.000	0.000	0.000	0.000	0.000
<b>Total Diluted Shares:</b>	M Shares	<b>48.504</b>	<b>48.504</b>	<b>48.504</b>	<b>48.504</b>	<b>48.504</b>
Acquirer - Standalone EPS:	\$ / Share	\$ 2.88	\$ 3.10	\$ 3.14	\$ 3.17	\$ 3.28
<b>Earnings Per Share (EPS):</b>	\$ / Share	<b>\$ 3.07</b>	<b>\$ 3.88</b>	<b>\$ 4.46</b>	<b>\$ 4.86</b>	<b>\$ 5.15</b>
Accretion / (Dilution) - \$:	\$ / Share	\$ 0.18	\$ 0.78	\$ 1.32	\$ 1.69	\$ 1.87
Accretion / (Dilution) - %:	%	6.4%	25.2%	42.1%	53.2%	57.2%

Always based on the Buyer's Tax Rate.

Shares Issued is based on the Buyer's assumed share price at the time of the deal, which is one flaw of this analysis.



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We're **not** quite done because we still have to forecast how the Combined Company's Cash and Debt balances change over time.

We might be able to ignore those changes for a 100% Cash or 100% Stock deal, but they're quite important for any deal that involves substantial Debt.

And this deal is 100% Debt!

### **6) Calculate Cash Flow, Debt Repayment, and Key Metrics and Ratios**

You do **not** need full Cash Flow Statement projections for both companies, but you do need to project the major, recurring line items on the Cash Flow Statement: D&A, the Change in Working Capital, CapEx, and so on.

Here, we projected the *key drivers* for the Buyer and Seller but built a real Cash Flow Statement only for the Combined Company.

**We did this to track how the Combined Company's Cash and Debt balances change.**

If the company has enough cash flow to repay Debt, for example, then the Interest Expense on New Debt will be different in future years, which will affect accretion/dilution.

And if the company generates enough cash flow to boost its Cash balance over time, its Net Interest Income will increase.

It's *most* important to create these cash flow projections in deals with a significant amount of Debt where the Combined Company also *repays* substantial Debt each year.

They're less important for 100% Cash and 100% Stock (or *mostly* Cash/Stock) deals because with those, only the Cash balance will change – and interest rates on Cash are very low.

Here's our Combined Cash Flow Statement:

		Projected					
Cash Flow and Debt Repayment:		Units:	FY14	FY15	FY16	FY17	FY18
<b>Net Income:</b>	\$ M		\$ 149.1	\$ 188.5	\$ 216.5	\$ 235.9	\$ 249.9
Combined Company Non-Cash Adjustments:							
(+) Depreciation & Amortization:	\$ M		115.9	119.9	123.2	125.1	128.5
(+) Amortization of New Intangibles:	\$ M		11.0	11.0	11.0	11.0	11.0
(+) Depreciation of PP&E Write-Up:	\$ M		1.9	1.9	1.9	1.9	1.9
(+) Tuxedo Rental Amortization:	\$ M		31.1	32.0	32.7	33.0	33.7
(-) Loss on Disposition of Assets:	\$ M		-	-	-	-	-
(+) Goodwill Impairment Charge:	\$ M		-	-	-	-	-
(+) Asset Impairment Charge:	\$ M		-	-	-	-	-
(+) Deferred Taxes & Rent:	\$ M		4.8	5.0	5.1	5.1	5.2
Change in Working Capital:	\$ M		(44.1)	(49.9)	(43.0)	(25.1)	(44.2)
<b>Cash Flow from Operations:</b>	\$ M		<b>269.7</b>	<b>308.3</b>	<b>347.2</b>	<b>386.8</b>	<b>386.0</b>
(-) Capital Expenditures:	\$ M		(123.7)	(133.1)	(148.9)	(157.3)	(173.3)
(-) Dividends:	\$ M		(42.7)	(45.9)	(46.4)	(46.9)	(48.5)
(-) Integration Costs:	\$ M		(33.3)	(66.7)	-	-	-
(-) Existing Debt Principal Repayments:	\$ M		-	-	-	-	-
<b>Cash Flow for Debt Repayment:</b>	\$ M		<b>70.0</b>	<b>62.7</b>	<b>151.9</b>	<b>182.6</b>	<b>164.3</b>
Beginning Transaction Debt Balance:	\$ M		1,772.5	1,702.5	1,639.8	1,487.9	1,305.4
Additional Borrowing / (Repayments):	\$ M		(70.0)	=MIN(K132,K134)	-	(182.6)	(164.3)
<b>Ending Transaction Debt Balance:</b>	\$ M		<b>1,702.5</b>	<b>1,639.8</b>	<b>1,487.9</b>	<b>1,305.4</b>	<b>1,141.1</b>
Beginning Existing Debt Balance:	\$ M		-	-	-	-	-
Additional Borrowing / (Repayments):	\$ M		-	-	-	-	-
<b>Ending Existing Debt Balance:</b>	\$ M		<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Total Debt Balance:</b>	\$ M		<b>1,702.5</b>	<b>1,639.8</b>	<b>1,487.9</b>	<b>1,305.4</b>	<b>1,141.1</b>
<b>Total Cash Balance:</b>	\$ M		<b>202.4</b>	<b>202.4</b>	<b>202.4</b>	<b>202.4</b>	<b>202.4</b>

This whole first part is a very standard Cash Flow from Operations section; the main differences are that we eliminated SBC and included the new D&A from the acquisition effects.

There are no existing Debt principal repayments since the Acquirer repays its existing Debt in the deal.

Integration Costs are new, and we assume that the Acquirer will continue to issue Dividends since shareholders have come to expect them.

We repay the lesser of the Cash Flow Available or the Beginning Debt Balance each year; notice how the starting number reflects the deduction for Financing Fees.

The fact that the Transaction Debt decreases from ~\$1.8 billion to ~\$1.1 billion is significant because it means that the Interest Expense on this Debt also decreases substantially:

		Projected					
Combined Income Statement:		Units:	FY14	FY15	FY16	FY17	FY18
<b>Operating Income:</b>	\$ M		<b>321.4</b>	<b>377.4</b>	<b>416.3</b>	<b>437.6</b>	<b>449.1</b>
(+) Acquirer - Net Interest Income:	\$ M		(1.5)	(1.5)	(1.5)	(1.5)	(1.5)
(+) Target - Net Interest Income:	\$ M		0.5	0.5	0.5	0.5	0.5
(-) Foregone Interest on Cash:	\$ M		(1.1)	(1.1)	(1.1)	(1.1)	(1.1)
(-) Interest Paid on New Debt Issued:	\$ M		(95.4)	(91.6)	(88.3)	(80.1)	(70.3)
(+) Interest Saved on Refinanced Debt:	\$ M		2.0	2.0	2.0	2.0	2.0
<b>Net Interest Income / (Expense):</b>	\$ M		<b>(95.5)</b>	<b>(91.7)</b>	<b>(88.4)</b>	<b>(80.2)</b>	<b>(70.4)</b>
<b>Pre-Tax Income:</b>	\$ M		<b>225.9</b>	<b>285.7</b>	<b>328.0</b>	<b>357.4</b>	<b>378.7</b>

If the Acquirer built up a much higher Cash balance, these items would change.

The real significance of the Debt repayment.

Once you've set up this schedule and linked everything properly, you can calculate the **Key Metrics and Ratios** for the deal.

These aren't "required," but they do help you draw conclusions about the deal, such as:

- Does the Combined Company have too much **Debt**? Or could it use *more* Debt to fund the deal?
- Is the Combined Company **growing** more quickly or more slowly than the standalone Buyer and Seller?
- How much of an impact do **synergies** make on the Combined Company's margins?

For retailers, airlines, and other companies that use a mix of operating leases and capital leases, it's helpful to look at EBITDAR and related metrics like (Total Debt + Capitalized Leases) / EBITDAR.

Here are the metrics we analyzed for this deal:

Combined Co. - Key Metrics and Ratios:	Units:	Projected				
		FY14	FY15	FY16	FY17	FY18
Operating Lease Capitalization Multiple:	7.0 x					
Capitalized Operating Leases:	\$ M	1,789.6	1,831.7	1,928.3	1,960.2	2,034.9
Total Debt + Capitalized Leases:	\$ M	3,492.1	3,471.5	3,416.2	3,265.6	3,176.0
Revenue Growth:	%	3.1%	3.4%	2.9%	1.6%	2.8%
Gross Margin:	%	48.2%	48.5%	48.7%	48.9%	48.8%
Operating Margin:	%	8.9%	10.1%	10.8%	11.2%	11.2%
EBITDA Margin:	%	13.3%	14.5%	15.2%	15.6%	15.5%
Net Margin:	%	4.1%	5.0%	5.6%	6.0%	6.2%
Effective Tax Rate:	%	34.0%	34.0%	34.0%	34.0%	34.0%
D&A % Revenue:	%	3.2%	3.2%	3.2%	3.2%	3.2%
CapEx % Revenue:	%	3.4%	3.6%	3.9%	4.0%	4.3%
Total Debt / EBITDA:	x	3.5 x	3.0 x	2.5 x	2.1 x	1.8 x
Total Debt + Cap. Leases / EBITDAR:	x	4.7 x	4.3 x	4.0 x	3.7 x	3.5 x
Net Debt / EBITDA:	x	3.1 x	2.7 x	2.2 x	1.8 x	1.5 x
Net Debt + Cap. Leases / EBITDAR:	x	4.5 x	4.1 x	3.7 x	3.4 x	3.3 x
EBITDA / Net Interest Expense:	x	5.0 x	5.9 x	6.6 x	7.6 x	8.9 x
Total Debt / Equity:	x	1.8 x	1.5 x	1.2 x	0.9 x	0.7 x
Total Debt / Capital:	%	63.8%	59.7%	53.8%	47.1%	40.6%
Net Debt / Equity:	x	1.6 x	1.3 x	1.0 x	0.8 x	0.6 x
Net Debt / Net Capital:	%	60.8%	56.5%	50.1%	42.9%	36.0%

Doing this to support EBITDAR-based metrics and for comparisons with peer companies.

Nothing too surprising; growth rates and margins are in between those of the Acquirer and Target, with synergies making a modest impact.

This section implies that the Acquirer might be able to use **more Debt** to fund this deal because the post-deal Debt / EBITDA ratio isn't *that* high (other companies in the sector have higher ratios) and because it de-levers fairly quickly.

So we might conclude that the Acquirer **can afford to pay more** – especially since the deal is EPS-accretive even in Year 1 – and that it can use additional Debt to do so.

### 7) Calculate Accretion / Dilution and Create Sensitivity Tables

With the entire model in place, you now go back to the EPS accretion/dilution calculations and make sure they reflect the changes in Debt and Cash.



You might also calculate variations of normal EPS, such as “Pro-Forma EPS,” that add back non-cash charges like the new D&A created in the deal:

			Projected				
Combined Income Statement:	Units:	FY14	FY15	FY16	FY17	FY18	
Net Income:	\$ M	149.1	188.5	216.5	235.9	249.9	
Net (Income) / Loss Attrib. to NCI:	\$ M	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	
Net Income to Common:	\$ M	\$ 148.9	\$ 188.3	\$ 216.2	\$ 235.7	\$ 249.7	
(+) Acquirer - Diluted Shares:	M Shares	48.504	48.504	48.504	48.504	48.504	
(+) Shares Issued in Transaction:	M Shares	0.000	0.000	0.000	0.000	0.000	
Total Diluted Shares:	M Shares	48.504	48.504	48.504	48.504	48.504	
Acquirer - Standalone EPS:	\$ / Share	\$ 2.88	\$ 3.10	\$ 3.14	\$ 3.17	\$ 3.28	
Earnings Per Share (EPS):	\$ / Share	\$ 3.07	\$ 3.88	\$ 4.46	\$ 4.86	\$ 5.15	
Accretion / (Dilution) - \$:	\$ / Share	\$ 0.18	\$ 0.78	\$ 1.32	\$ 1.69	\$ 1.87	
Accretion / (Dilution) - %:	%	6.4%	25.2%	42.1%	53.2%	57.2%	
Pro-Forma Earnings Per Share (EPS):	\$ / Share	= ((+J90+J78+J77)*(1-Buyer_Tax_Rate)+J95)/J100					\$ 5.32
Pro-Forma Accretion / (Dilution) - \$:	\$ / Share	\$ 0.36	\$ 0.96	\$ 1.49	\$ 1.86	\$ 2.05	
Pro-Forma Accretion / (Dilution) - %:	%	12.4%	30.9%	47.6%	58.7%	62.5%	

The Pro-Forma EPS figure adds back the new D&A created by the Asset write-ups in this deal.

We are not huge fans of these metrics, but many companies use them.

We don't like these “Pro-Forma” metrics because they **understate the true cost of an acquisition**.

If a Buyer has paid a huge premium for a Seller, you'd never know it from the Pro-Forma figures because they exclude items like the Amortization of Intangibles.

Another problem is that no one agrees on the exact definition of “Pro-Forma EPS”: Some people add back all non-cash acquisition effects, others also add back Stock-Based Compensation, and others add back *all* non-cash expenses.

Still, many companies use these figures and report them in press releases, so you should be familiar with them.

You can also analyze the deal under different purchase prices, different mixes of Cash, Debt, and Stock, different interest rates, and different synergy levels using **sensitivity tables**.

Here are a few examples for this deal:



Sensitivity - Year 1 Pro-Forma EPS Accretion / (Dilution) - Purchase Price per Share vs. % Debt Used (Remainder Funded with Stock):

		% Debt Used:									
		60.0%	65.0%	70.0%	75.0%	80.0%	85.0%	90.0%	95.0%	100.0%	
Premium Paid and Per Share Purchase Price:	\$ 56.24	35.0%	\$ 0.24	\$ 0.27	\$ 0.30	\$ 0.33	\$ 0.37	\$ 0.41	\$ 0.45	\$ 0.49	\$ 0.53
	58.32	40.0%	0.20	0.23	0.26	0.29	0.33	0.37	0.41	0.45	0.49
	60.41	45.0%	0.15	0.18	0.22	0.25	0.29	0.32	0.36	0.41	0.45
	62.49	50.0%	0.11	0.14	0.17	0.21	0.24	0.28	0.32	0.36	0.41
	65.00	56.0%	0.06	0.09	0.13	0.16	0.19	0.23	0.27	0.31	0.36
	66.66	60.0%	0.03	0.06	0.09	0.13	0.16	0.20	0.24	0.28	0.33
	68.74	65.0%	(0.01)	0.02	0.05	0.09	0.12	0.16	0.20	0.24	0.28
	70.82	70.0%	(0.05)	(0.02)	0.01	0.05	0.08	0.12	0.15	0.20	0.24
72.91	75.0%	(0.08)	(0.06)	(0.03)	0.01	0.04	0.08	0.11	0.16	0.20	

With 100% Debt, the deal is still accretive in Year 1 even at much higher purchase prices. More of an issue at lower Debt levels.

Sensitivity - Year 1 Pro-Forma EPS Accretion / (Dilution) - Purchase Price per Share vs. Revenue Synergies:

		Revenue Synergies as a % of Combined Company Year 1 Revenue:									
		Year 1 Rev. Synergies: \$	-	7.2	14.5	21.7	28.9	36.2	43.4	50.6	57.8
			-	0.2%	0.4%	0.6%	0.8%	1.0%	1.2%	1.4%	1.6%
Premium Paid and Per Share Purchase Price:	\$ 56.24	35.0%	\$ 0.53	\$ 0.58	\$ 0.63	\$ 0.68	\$ 0.72	\$ 0.77	\$ 0.82	\$ 0.87	\$ 0.91
	58.32	40.0%	0.49	0.54	0.59	0.63	0.68	0.73	0.78	0.82	0.87
	60.41	45.0%	0.45	0.50	0.55	0.59	0.64	0.69	0.73	0.78	0.83
	62.49	50.0%	0.41	0.46	0.50	0.55	0.60	0.65	0.69	0.74	0.79
	65.00	56.0%	0.36	0.41	0.45	0.50	0.55	0.60	0.64	0.69	0.74
	66.66	60.0%	0.33	0.37	0.42	0.47	0.51	0.56	0.61	0.66	0.70
	68.74	65.0%	0.28	0.33	0.38	0.43	0.47	0.52	0.57	0.61	0.66
	70.82	70.0%	0.24	0.29	0.34	0.38	0.43	0.48	0.53	0.57	0.62
72.91	75.0%	0.20	0.25	0.29	0.34	0.39	0.44	0.48	0.53	0.58	

With a modest amount of revenue synergies, the deal is still accretive even at much higher purchase prices.

Sensitivity - Year 1 Pro-Forma EPS Accretion / (Dilution) - Purchase Price per Share vs. Interest Rate on Debt (100% Debt Deal):

		Weighted Average Debt Interest Rate:									
		3.0%	3.5%	4.0%	4.5%	5.0%	5.4%	6.0%	6.5%	7.0%	
Premium Paid and Per Share Purchase Price:	\$ 56.24	35.0%	\$ 1.03	\$ 0.93	\$ 0.82	\$ 0.72	\$ 0.61	\$ 0.53	\$ 0.40	\$ 0.30	\$ 0.20
	58.32	40.0%	1.01	0.90	0.79	0.68	0.57	0.49	0.36	0.25	0.14
	60.41	45.0%	0.98	0.87	0.76	0.65	0.54	0.45	0.31	0.20	0.09
	62.49	50.0%	0.96	0.85	0.73	0.61	0.50	0.41	0.27	0.15	0.03
	65.00	56.0%	0.93	0.81	0.69	0.57	0.45	0.36	0.21	0.09	(0.03)
	66.66	60.0%	0.91	0.79	0.67	0.54	0.42	0.33	0.17	0.05	(0.07)
	68.74	65.0%	0.89	0.76	0.64	0.51	0.38	0.28	0.13	(0.00)	(0.13)
	70.82	70.0%	0.87	0.74	0.61	0.47	0.34	0.24	0.08	(0.05)	(0.18)
72.91	75.0%	0.84	0.71	0.57	0.44	0.30	0.20	0.03	(0.10)	(0.24)	

The interest rates would have to increase significantly for the deal to turn dilutive, even at higher purchase prices.

These tables reinforce the conclusions we already drew: It seems like the Acquirer could pay a higher price, use Debt to fund that higher price, and still end up with an accretive deal.

In real life, you might use this analysis to **screen** for potential Sellers or as part of the negotiation process in the deal.

**Just because an M&A deal is accretive doesn't mean it's a good idea.**

Accretion/dilution analysis, like valuation and DCF modeling, is a way to screen for companies and check whether or not a deal makes some financial sense.

But no one in the history of human civilization has ever said, "Aha! This deal is accretive. Therefore, let's stop everything and acquire this company right away!"

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## Key Rule #6: Other Ways to Evaluate Mergers and Acquisitions

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There are many ways to evaluate a merger or acquisition, and you don't necessarily use an accretion/dilution analysis in all scenarios.

Accretion/dilution makes the most sense when the Buyer and Seller are fairly close in size, profitable, and cash flow-positive, and when the deal is motivated by **financial reasons** rather than "fuzzy" reasons.

But in many M&A deals, one or more of those conditions is false.

Another problem is that **not all Buyers care about EPS**.

All companies *record* figures for Earnings per Share because all companies record something for Net Income, and all companies – even private ones – have shares outstanding.

But if the Buyer is private or its EPS is extremely negative (e.g., Tesla), then it won't care about the results of an EPS accretion/dilution analysis.

So here are some alternative methods for evaluating M&A deals:

### Qualitative / "Strategic" Analysis

This method comes up in many acquisitions of small tech and biotech startups (e.g., Facebook acquiring WhatsApp or Pfizer acquiring NextCure).

These small companies have no profits, no cash flow, and no revenue or almost no revenue, so acquisitions are not based on financial criteria such as EPS accretion/dilution.

Instead, the rationale comes down to:

- 1) **Potential for Extremely High Growth** – For example, if NextCure ends up discovering a universal cure for cancer, then Pfizer might become the biggest and most valuable company in the world.
- 2) **Defensive Acquisition / Fear of Competition** – Facebook knew that the high user growth and engagement of both Instagram and WhatsApp were threats to its core business, so it paid huge prices for both companies. If there's a threat, devour it!

There isn't much in-depth financial analysis in these deals, but you might justify them with back-of-the-envelope math. For example:

- WhatsApp had 430 million monthly active users at the time of the deal.



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- Facebook believed this user base would increase to 700 million over time.
- Each user was worth \$1.00 per year at the time.
- But Facebook believed it could increase the revenue per user figure to \$10.00.
- Also, Facebook might have lost ~200 million of its own users if it had *not* acquired WhatsApp. The average Facebook user was worth \$5.00 per year.

*Potentially*, the WhatsApp users were worth  $\$10.00 * 430 \text{ million} = \$4.3 \text{ billion}$  per year, and more like \$7.0 billion per year in the long term.

Not only would Facebook lose out on \$4.3 – \$7.0 billion in annual revenue if it did not do the deal, but it might *also* lose  $200 \text{ million} * \$5.00 = \$1 \text{ billion}$  per year of its existing revenue.

You don't need to open Excel to see that a \$19 billion purchase price is easily worth it if it means billions in extra revenue and the *prevention* of a \$1 billion loss in revenue.

The main problem is that this analysis is highly speculative: Could Facebook *really* boost WhatsApp's average revenue per user (ARPU) from \$1.00 to \$10.00? How long would it take, and how much would it cost?

No one knows the answers, but CEOs and Boards still need to justify such acquisitions to shareholders. So you'll often see this type of speculative analysis in presentations and meetings.

### **IRR vs. Discount Rate (WACC)**

Rather than setting up an accretion/dilution analysis, you could do something much simpler to evaluate an acquisition: Estimate the internal rate of return (IRR) of the deal and compare it to the Acquirer's Discount Rate (usually WACC).

For this analysis to make sense, the Buyer must plan to *sell* the Seller in the future. It's almost impossible to realize a positive IRR otherwise because the Seller's annual cash flow is a tiny percentage of the purchase price.

Alternatively, the Seller must grow so big and generate so much in cash flow that its cash flow alone could generate a positive IRR.

That scenario is unlikely unless you're acquiring startups or you're in an emerging or frontier market that is in hyper-growth mode.

So if the Buyer acquires the Seller and plans to sell it in the future, the logic we used much earlier for "Virgin Galactic" applies here as well:

Virgin - Assumptions and WACC by Division:		WACC:	
Virgin - Entire Company:		10.0%	
Virgin Galactic:		15.0%	
Virgin Asia:		8.0%	
Initial Investment Required for Jupiter Fleet:	£ 1,000		
Annual Cash Flows Earned from Trips to Jupiter:	100		
Resale / Long-Term Value of Fleet Beyond Year 5:	1,200		

Cash Flows from Jupiter Fleet:	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Cash Flows from Jupiter Trips:	£ -	£ 100	£ 100	£ 100	£ 100	£ 100
Fleet (Purchase) / Sale:	(1,000)	-	-	-	-	1,200
<b>Net Cash Flows:</b>	<b>-£ 1,000</b>	<b>£ 100</b>	<b>£ 100</b>	<b>£ 100</b>	<b>£ 100</b>	<b>£ 1,300</b>

<b>Internal Rate of Return (IRR):</b>	<b>13.1%</b>
---------------------------------------	--------------

Represents the acquisition price.

Since the projected IRR is below WACC for Virgin Galactic, if this were an acquisition, it would **not** make sense.

Represents cash flows generated by this acquired company.

Represents proceeds from selling the acquired company in the future.

This analysis works well when the Acquirer is more concerned about the **long-term consequences of a deal** than the short-term impact.

It also works well when the Seller has fairly predictable cash flows and when valuation in the industry doesn't change tremendously over time – because you'll have to assume an exit multiple for the *re-sale* of this acquired company.

Even though this analysis makes sense from the perspective of finance theory, it's not that common in real life for a few reasons:

- 1) **Negative Signaling** – Most Buyers don't like to *admit* that they might re-sell acquired companies in the future, even though it happens all the time. It's sort of like admitting, as a parent, that one of your children is a failure.
- 2) **Short-Term Focus** – The stock market as a whole, and institutional investors, in particular, focus heavily on short-term results, such as EPS changes in the next quarter. So it's hard to get the market to buy into arguments for "longer-term value creation."
- 3) **Tricky Setup** – It's simple to project the next year or two of an acquired company's Net Income, as you do in an accretion/dilution model, but it's much harder to estimate its long-term cash flows and resale value in 5-10 years.

This analysis makes the most sense when the Seller is *substantial* but still *far smaller* than the Buyer. For example, you might use it to analyze a potential acquisition of a regional commercial bank by JP Morgan or Wells Fargo.

Bankers might not show the analysis publicly, but they might reference it in internal presentations.



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### “Value Creation” Analysis (Valuation Before and After a Deal)

You can also evaluate an M&A deal by seeing if it **increases the Acquirer’s Implied Value**.

In a previous section of this guide, we stated these two rules:

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.

These principles are helpful for answering case study questions and doing quick math in interviews, but like many simple rules, **they don’t always hold up in real life**.

*Immediately after* an acquisition is announced, there’s a good chance that the Combined Equity Value and Combined Enterprise Value will change as described above.

But after that, almost anything could happen.

For example:

- What if the Combined Company’s **FCF Growth Rate** slows down after the acquisition closes? Its value will likely decrease.
- What if the Combined Company’s **margins increase** because it realizes higher-than-expected synergies after the deal closes? Its value will likely increase.

To account for these possibilities, you could **value the Combined Company** and see how it compares with the Implied Value of the Buyer as a standalone entity.

To complete this process, you would set up a DCF analysis for the Combined Company, select and use Public Comps and Precedent Transactions, and make sure that you’ve **reflected the Cash, Debt, and Stock used in the deal**.

So if the Buyer funded the acquisition with Debt, you'd have to subtract out that new Debt at the end of the DCF when you move from Implied Enterprise Value to Implied Equity Value and the Implied Share Price.

The Combined Company will have higher revenue, EBITDA, and other financial metrics after the deal, but the acquisition effects make the analysis more complex than that.

For example, if the Acquirer had \$100 million in revenue before the deal and traded at an EV / Revenue multiple of 2x, its Enterprise Value was \$200 million.



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It had \$20 million of Cash and \$10 million of Debt, so its Equity Value was \$210 million. And it had 100 million shares outstanding and, therefore, a share price of \$2.10.

If the Acquirer purchases a Target for \$30 million and gets an additional \$10 million in revenue from that company, you might *think* that its Enterprise Value would increase to  $2x * \$110 \text{ million} = \$220 \text{ million}$ .

But that might not happen.

For example, if the company's size changes significantly, you might have to apply a **different multiple** because the peer companies might change, and the new peer companies might trade at different multiples.

So that 2x multiple could easily become 1.5x or 2.5x depending on the industry.

The other issue is that you have to look at the valuation on a *per-share basis* to reflect the full impact of the Cash, Debt, and Stock used in the deal.

If we assume that the Acquirer's Enterprise Value increases to \$220 million and that it uses \$30 million of additional Debt to do the deal:

- **Implied Equity Value** = \$220 million Enterprise Value + \$20 million Cash – \$40 million Debt = \$200 million.
- **Implied Share Price** = \$200 million / 100 million shares = \$2.00.

The Acquirer's implied per-share value has *decreased* as a result of this deal.

You would go through a similar process for the other multiples and methodologies and also create a "Combined DCF Analysis" to assess the full impact.

Like the IRR vs. Discount Rate approach, this method is theoretically correct, but not terribly common for several reasons:

1. **It Takes A LOT of Extra Work** – You need not only separate projections for the Combined Company, but also separate sets of Public Comps and Precedent Transactions.
2. **It May Not Tell You Anything New** – For this analysis to be meaningful, you have to incorporate something unexpected, such as margins or growth rates higher or lower than what the market expects. But if you already had that information, shouldn't your merger model already reflect it?



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3. **It's Even More Speculative** – In addition to projecting two companies' future earnings, now you have to project the Discount Rate for the Combined Company, its FCF and FCF growth, and its likely trading multiples.

### Contribution Analysis

One final way to assess mergers and acquisitions that's **common in real life**, unlike the others above, is the **Contribution Analysis**.

The idea is simple: **If the Acquirer contributes 80% of the Combined Company's Revenue, EBITDA, and other financial metrics, will it own 80% of the Combined Company afterward?**

If it owns *less than* 80%, then perhaps it is paying *too much* for the Target; if it owns *more than* 80%, then perhaps it is paying *too little* for the Target.

With this analysis, you sum up the financials from the Acquirer and Target across a range of metrics and calculate the percentages that each one contributes.

So if the Acquirer contributes an average of 75% and the Target contributes 25%, then the Acquirer might be justified in owning 75% of the Combined Company.

Based on that, you might suggest a purchase price that results in the Acquirer owning 75% and the Target owning 25% of the Combined Company.

The Contribution Analysis is **most** relevant for:

- **100% Stock Deals** – In these deals, all changes to the purchase price **directly affect ownership** since the Buyer is issuing shares to the Seller.
- **"Mergers of Equals" (MOE) Deals** – These transactions almost always use 100% Stock because the Buyer and Seller are close in size.
- **Private Company M&A Deals** – Private Buyers don't care about EPS as much as public Buyers, so the Contribution Analysis is the most relevant methodology for them in 100% Stock deals.
- **Majority-Stock Deals** – If the Buyer uses at least 50% Stock, the Contribution Analysis could still be meaningful because the ownership of the Combined Company will change substantially when the purchase price changes.

This analysis isn't relevant for 100% Cash or 100% Debt deals because the Combined Company's ownership won't change: The Acquirer will still own everything.



Even for majority-Cash or majority-Debt deals, this analysis is less meaningful because the ownership won't change by *that much*.

You start this analysis by summing up all the metrics for the Acquirer and Seller:

	Acquirer		Seller	
	Amount:	%:	Amount:	%:
<b>Revenue:</b>				
FY14	₩ 532,135	61.1%	₩ 339,495	38.9%
FY15	577,188	53.8%	496,519	46.2%
<b>EBITDA:</b>				
FY14	89,312	33.5%	177,104	66.5%
FY15	68,223	21.0%	256,229	79.0%
<b>Operating Income (EBIT):</b>				
FY14	49,089	22.7%	167,271	77.3%
FY15	24,862	9.3%	241,333	90.7%
<b>Net Income:</b>				
FY14	33,371	20.5%	129,299	79.5%
FY15	16,075	8.2%	180,514	91.8%
<b>Monthly Active Users (MAUs):</b>				
FY14	26.150	22.7%	88.875	77.3%
FY15	25.550	20.9%	96.412	79.1%

Then, you calculate the Combined Pro-Forma Enterprise Value and Equity Value for each metric based on the Seller's **purchase values** and the Buyer's **current values**.

So if the Seller's Purchase Enterprise Value is \$3 billion and it contributes 40% of the revenue in the deal, then the Combined Pro-Forma Enterprise Value is \$3 billion / 40%, or \$7.5 billion:

Seller - Equity Value and Enterprise Value:				Acquirer - Equity Value and Enterprise Value:			
<b>Purchase Equity Value:</b>	₩ 3,148,418			<b>Equity Value:</b>	₩ 992,784		
(-) Cash & Cash-Equivalents:	(162,205)			(-) Cash & Cash-Equivalents:	(125,628)		
(-) Equity Investments:	-			(-) Short-Term Investments:	(153,126)		
(-) Other Non-Core Assets, Net:	-			(+) Total Debt:	2,368		
(-) Net Operating Losses:	-			(+) Noncontrolling Interests:	14,482		
(+) Total Debt:	30,199			<b>Enterprise Value:</b>	₩ 730,880		
(+) Noncontrolling Interests:	-						
<b>Purchase Enterprise Value:</b>	₩ 3,016,412						

	Acquirer		Seller		Combined Pro-Forma Value	
	Amount:	%:	Amount:	%:	Enterprise Value:	Equity Value:
<b>Revenue:</b>						
FY14	₩ 532,135	61.1%	₩ 339,495	38.9%	=+\$F\$16/I22	₩ 8,138,340
FY15	577,188	53.8%	496,519	46.2%	6,522,899	6,916,809

Then, all the usual adjustments apply when you move from Combined Pro-Forma Enterprise Value to Equity Value.

Divide the Seller's Purchase Enterprise Value by its contribution % to get this.





Once you have that, you subtract the Buyer's Current Enterprise Value to calculate the Seller's Implied Enterprise Value for each metric:

Acquirer - Equity Value and Enterprise Value:		
<b>Equity Value:</b>	¥	992,784
(-) Cash & Cash-Equivalents:		(125,628)
(-) Short-Term Investments:		(153,126)
(+) Total Debt:		2,368
(+) Noncontrolling Interests:		14,482
<b>Enterprise Value:</b>	¥	730,880

The Seller's Implied Enterprise Value equals the Combined Pro-Forma EV minus the Acquirer's Current EV.

Then, you back into its Implied Equity Value by making the normal set of adjustments.

Seller		Combined Pro-Forma Value		Implied Seller Value	
Amount:	%:	Enterprise Value:	Equity Value:	Enterprise Value:	Equity Value:
¥ 339,495	38.9%	¥ 7,744,430	¥ 8,138,340	=+K22-\$K\$14	¥ 7,145,556
496,519	46.2%	6,522,899	6,916,809	5,792,019	5,924,025

Then, you calculate the Pro-Forma ownership that each metric *implies* – if one company contributes 40% for one metric, it should own roughly 40% based on that metric:

Combined Pro-Forma Value		Implied Seller Value		Implied Pro-Forma Ownership	
Enterprise Value:	Equity Value:	Enterprise Value:	Equity Value:	Acquirer:	Seller:
¥ 7,744,430	¥ 8,138,340	¥ 7,013,550	¥ 7,145,556	12.2%	=+O22/L22
6,522,899	6,916,809	5,792,019	5,924,025	14.4%	85.6%

1 - the Seller's Implied Ownership %.

Based on the Seller's Equity Value relative to the total.

This rule doesn't hold up well here because there's a big difference between the Buyer's Enterprise Value and Equity Value.

As the final step, you calculate the Seller's Implied Share Price and how much of a discount or premium it represents vs. the Buyer's offer price:

	Acquirer		Implied Share Price (₩ as Stated):	Premium / (Discount) to Offer Price:	Implied Exchange Ratio:
	Amount:	%:			
<b>Revenue:</b>					
FY14	₩ 532,135	61.1%	₩ 106,786	127.0%	0.6854802
FY15	577,188	53.8%	88,531	88.2%	0.8268259
<b>EBITDA:</b>					
FY14	89,312	33.5%	58,861	25.1%	1.2435977
FY15	68,223	21.0%	48,131	2.3%	1.5208363

Buyer Share Price / Implied Seller Share Price. All-stock M&A deals are almost always priced with this Exchange Ratio.

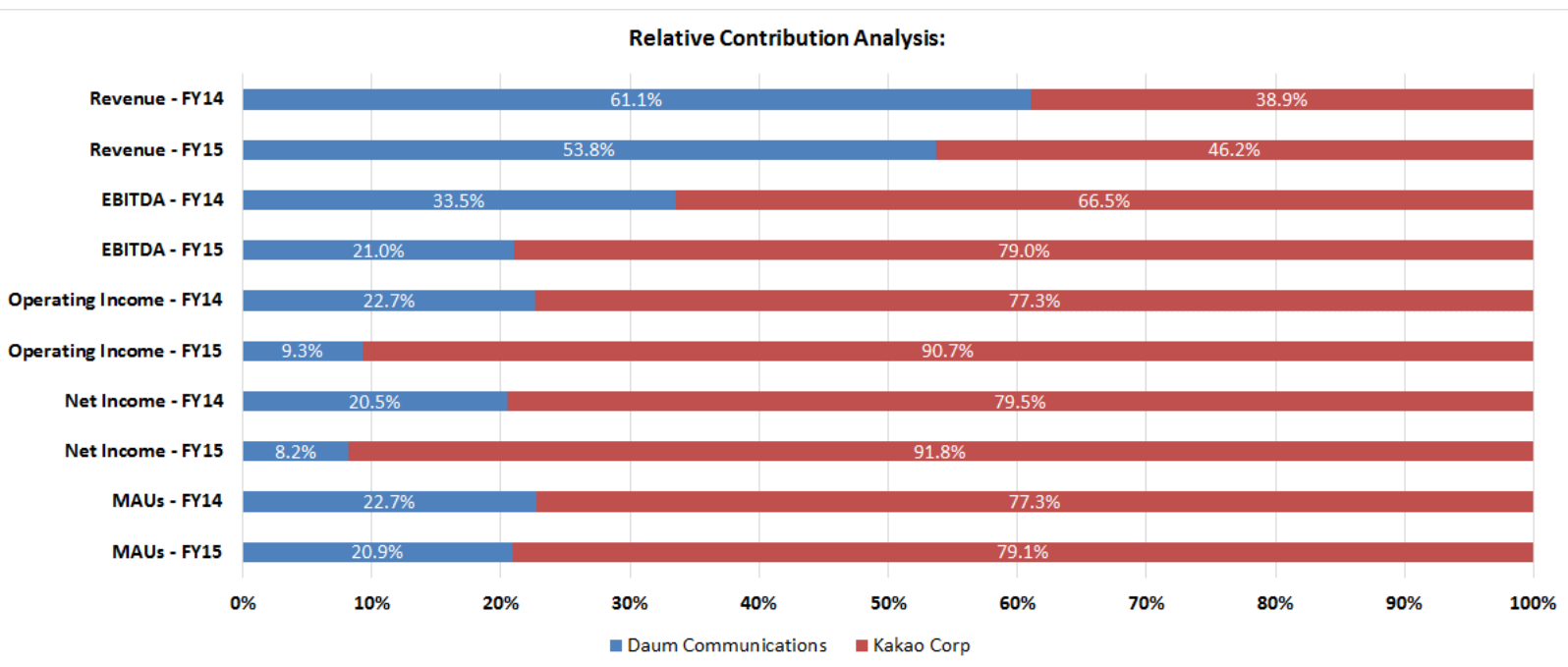
Implied Seller Equity Value / Seller Share Count.

Use this to argue for a lower or higher price.

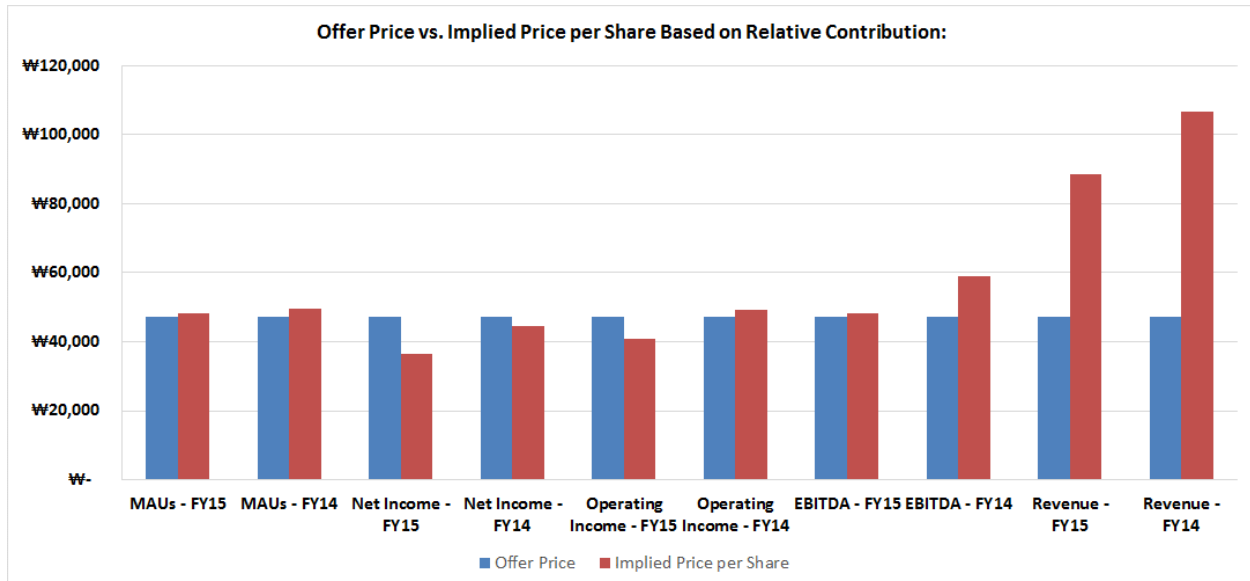
The numbers in this analysis are strange because they're from a **reverse merger** between Daum and Kakao (Internet/mobile gaming companies in South Korea).

The Buyer is normally bigger than the Seller, and metrics such as the Combined Pro-Forma Enterprise Value are based on the *Buyer's* Enterprise Value and its contribution percentages.

You can now create graphs to illustrate the contribution percentages of the Buyer and Seller:



The most useful graph is the one that compares the **Buyer's Offer Price** to the **Seller's Implied Share Price** from the Contribution Analysis:



From this graph, **you can tell that the Buyer's Offer Price was reasonable.**

It's always close to the Seller's Implied Share Price, except for the implied share prices produced by the revenue-based metrics.

But no one takes revenue-based metrics seriously in this type of M&A deal, so you would focus on the others.

If we got a *different* result here, such as an Offer Price that was well below the Seller's Implied Share Price across all these metrics, then we might go to the Buyer and use the analysis as part of our argument for a higher Offer Price.

The **Contribution Analysis** is very common because:

1. It is more grounded in reality than the other methods in this section;
2. It doesn't take much additional time or effort to set up; and
3. It is sometimes the *only* way to analyze a deal in a meaningful way.

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## Key Rule #7: Bankers Gone Wild: Failed M&A Deals

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In investment banking interviews, career changers such as consultants, lawyers, and accountants often say something like the following to explain their motivation:

*“I want to influence major deals and take an active role in closing transactions instead of sitting on the sidelines or reviewing the paperwork after everything is closed.”*

This response is OK in an interview, but **it’s incredibly ironic** for several reasons:

1. Most M&A deals **die** before closing.
2. Of the M&A deals that *do* close, many end up **killing the Acquirer**.
3. *Any* deal is a good one to bankers because they get paid via “success fees” when the deal closes.

So even though merger models and “deal analysis” purport to determine whether or not a transaction makes sense, **in investment banking, you use them mostly to pitch clients and potential clients on deals**.

You take a more critical view of deals in buy-side roles such as private equity and corporate development, but there’s still a lot of irrational hype mixed in with the logic.

Even though you’ll be pitching many deals and always attempting to buy and sell companies as a banker, most of these processes will **fail**.

It’s like how most **relationships in real life fail**: You might date dozens of people, but you’ll only get married to one... or two... or three... or some number less than “dozens.”

And even when you get married, there’s a 50-60% chance your marriage will **end in divorce** – at least in many developed countries.

The same factors that cause relationships to fail also cause deals to fail:

### 1) Time Kills Deals

Similar to how men never want to commit to relationships, Buyers and Sellers often spend too much time “window shopping” and looking for potentially better deals.

Or they take forever to conduct due diligence and keep requesting more and more information.

After enough time passes, momentum and motivation are lost.

### 2) Price Kill Deals



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Your company might currently trade at \$25 / share, so an offer for \$30 / share might look decent to you.

But if the company has traded at \$35 / share *in the last year*, or its historical average was in that range, \$30 / share might be a travesty.

Even outside of this scenario, Buyers and Sellers often can't agree on a price at all, even after extended negotiations.

I won't make a real-world analogy here, but if I did, it would involve plastic surgery.

### 3) Deal Terms Kill Deals

And now we arrive at the deal equivalent of the **prenuptial agreement**.

The Buyer might want key management to stick around for 3-5 years, but the team might want to leave after 1-2 years, or the Buyer might forbid them from going to a competitor.

Buyers and Sellers might also fail to agree on the **Reps and Warranties**, which are "promises" each party makes to the other.

### 4) Ego Kills Deals

Many deals are motivated not by financial or "strategic" reasons, but by **ego and office politics**.

For example, the VP of Business Development might be making a run for the CEO role, so he wants to push through a deal just to say he "accomplished something" and deserves the job.

But then another faction within the company hates this VP, so they conspire to make the deal fail, so he doesn't get promoted.

### 5) "Material Adverse Changes" Kill Deals

You're about to close a deal – but then multiple banks suddenly fail, a financial crisis begins, and the country enters a recession. Oops!

Many deal agreements have clauses related to "Material Adverse Changes" or "Material Adverse Effects" that let the Buyer escape if something catastrophic happens.

Those are a few reasons why a deal might fail before it ever closes, but even if a deal *does* close, there are plenty of reasons why it might end up **failing**.

There are a few ways to define "failure":

- **Massive write-down** after the fact, as the Buyer acknowledges that the Seller wasn't so valuable after all (e.g., Yahoo / Tumblr and eBay / Skype).



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- **Mass exodus of talent** from the Seller (e.g., Credit Suisse / Donaldson, Lufkin & Jenrette).
- **Buyer divests the Seller** as it realizes that the entire deal was a mistake (e.g., Wendy's / Arby's). The equivalent of getting a divorce after your drunken marriage in Vegas.
- **The Buyer goes bankrupt**, consumed by the stupidity of the deal (e.g., New York Central / Pennsylvania Railroad).

Deals fail after closing for the same reasons that most marriages end in divorce:

### **Cultural Mismatch**

Two people start off with very similar mindsets, but over time one person becomes more family-oriented, and the other does not. Communication goes downhill as a result.

It's the same with companies – the Buyer is a media company at first, but after a few years, it has turned into a technology company, and the Seller no longer fits in.

### **Romance != Successful Marriage**

You might be madly in love with someone, but it doesn't mean you should *marry* the person. For example, he or she might be a drug addict or a serial killer.

Similarly, two companies might work well in a sales or distribution *partnership*, but not as part of a combined entity.

### **What You Didn't Know**

You didn't get to know the person well enough, so you didn't notice that he/she has gone to jail 5 times – or that you can't live in the same house together.

No matter how much due diligence the Buyer conducts, there will *always* be surprises, whether they're legal problems, customer issues, employee conflicts, or anything else.

### **Financial Failings**

Right after you get married, the other person loses his/her job, becomes bored at home all day while you go to work, and then steals your money and your dog and flees halfway across the world. True story; it happened to a friend.

And with deals, there are dozens, if not hundreds, of cases where the Buyer and Seller failed to perform financially and reported numbers far below expectations.



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### **Your Reasons Were Stupid**

For example, maybe you got married due to familial pressure or because of the other person's killer body. Or maybe you just made a drunken mistake one night.

One real-life example of this one is the **AOL / Time Warner** deal. Google it and read all about the dumbest M&A transaction of all time.

### **It's Easy to Get Divorced**

In many countries, it's relatively easy to get a divorce; sometimes there isn't even much social stigma. So why bother to work things out if you can hit the "reset" button and walk away?

Similarly, an Acquirer can hire a banker to sell the acquired company if things don't work out. Or it could just shut down the company and end things there.

In short, many M&A deals fail **because of the human element**.

An acquisition can't be reduced to an Excel spreadsheet; the spreadsheet might tell you *something* about the deal, but it can't tell you *everything*.

And even if you "worked on a deal," or "closed a deal," you haven't necessarily done anything useful for the world.

You might have just helped to kill a company and destroy thousands of jobs. Congrats!

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### **Key Rule #8: More Advanced Merger Model Features [OPTIONAL]**

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This last section of this guide is **optional** because these topics are **unlikely** to come up in interviews or case studies.

You sometimes use these more advanced features when you're on the job, but you use surprisingly simple models in many cases because of time pressure.

So if you have limited time or you haven't had full-time work experience, you should **skip** this part of the guide.

### **Different Deal and Offer Structures: Tender Offers and Stock vs. Asset vs. 338(h)(10) Deals**





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So far, we've been acting like all M&A deals work the same way: The Buyer makes an offer to acquire the Seller, and then it uses Cash, Debt, and Stock to make the acquisition.

All the Seller's shares go away, and the Buyer gets all the Seller's Assets and Liabilities, plus all its off-Balance Sheet items.

But in real life, there are many different deal structures and ways to negotiate a deal.

Two of the main ways to execute a deal are through a **merger** and a **tender offer**.

In a **merger**, the Board of Directors of the Buyer and the Board of the Seller agree on a price, negotiate the deal agreement, and announce the deal, and then shareholders vote to approve or reject the deal.

In a **tender offer**, the Buyer proposes an offer price directly to the Seller's shareholders, and each shareholder can decide whether or not to sell their shares for that price.

Decades ago, Buyers used tender offers mostly in **hostile takeovers**, but in modern times they use them mostly for **speed**.

It's faster for a Buyer to execute a tender offer because it doesn't need to negotiate a long agreement with the Seller, but the control premium also tends to be higher because the Buyer must convince *individual* shareholders to sell.

The Buyer is not obligated to pay for the shares until a set number has been tendered, which reduces the risk of paying for some shares but not being able to complete the deal.

Mergers are more common when the Seller initiates the M&A process and when the Buyer would rather negotiate a lower price, even if it means a more time-consuming deal.

### **Stock vs. Asset vs. 338(h)(10) Deals**

Just like there are multiple ways to negotiate a deal, there are also multiple ways to **structure** a deal.

The main two methods are known as **Stock Purchases** and **Asset Purchases**.

"Stock Purchase" does **NOT** refer to the *form of consideration*, i.e. "Stock Purchase" does **NOT** mean that the Buyer issued Stock to make the acquisition.

100% Cash deals, 100% Debt deals, and 100% Stock deals could all be structured as *either* Stock Purchases or Asset Purchases.

In a **Stock Purchase**, the Buyer purchases all the Seller's shares outstanding and gets all its Assets, Liabilities, and off-Balance Sheet items.



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In an **Asset Purchase**, the Buyer purchases only *selected* Assets of the Seller and assumes only *selected* Liabilities. And it gets only the off-Balance Sheet items listed in the agreement.

These two methods exist **worldwide** and work similarly under both U.S. GAAP and IFRS, though the specifics differ from country to country.

**Asset Purchases** are far more common for divestitures, spin-offs, and acquisitions of smaller private companies; Buyers can rarely acquire only “certain” Assets and Liabilities of large, public companies.

**Buyers** tend to favor **Asset Purchases** because:

- 1) They let Buyers pick and choose exactly what they get in deals, which reduces risk; and
- 2) Assets are written up for *both* Book and Tax purposes, meaning that Buyers can deduct D&A on Asset write-ups for tax purposes and that no DTL is created.

There are other differences as well: For example, Goodwill and Other Intangible Assets both amortize for tax purposes and are deductible for cash-tax purposes in Asset Purchases.

But in Stock Purchases, Goodwill doesn’t amortize at all, and the Amortization of Other Intangible Assets is not deductible for cash-tax purposes.

Net Operating Losses (NOLs) are also treated differently, but we’ll get to that in the section on NOLs below.

**Sellers** tend to prefer **Stock Purchases** because:

- 1) Sellers must pay taxes on the entire Purchase Price *plus* Gains on Assets in Asset Purchases rather than just the Purchase Price in Stock Purchases; and
- 2) There’s more post-transaction risk in Asset Purchases because Sellers will keep some of their Assets, Liabilities, and off-BS items.

Stock Purchases also tend to be much faster to execute than Asset Purchases because the Buyer and Seller don’t need to specify the treatment of every single Asset and Liability.

To compromise, Buyers and Sellers can use a **338(h)(10) Election** to treat a Stock Purchase like an Asset Purchase.

**The 338(h)(10) Election is specific to the U.S. tax code, so you don’t need to know about it if you’re in another country; however, similar structures sometimes exist in other countries.**

In a 338(h)(10) deal, the Buyer purchases all the Seller’s shares and gets all its Assets, Liabilities, and off-Balance Sheet items, but taxes work the same as they do in an Asset deal.

So D&A on Asset write-ups is deductible for cash-tax purposes, no DTL gets created, and Goodwill, Other Intangible Assets, and NOLs follow the same treatment as in Asset Purchases.

338(h)(10) deals have certain requirements as well: For example, the Buyer must be a C corporation, the Seller must be domestic, and only certain types of Sellers qualify (S corporations, subsidiaries in consolidated groups, etc.).

So the Buyer and Seller **cannot** use this structure in *any* deal.

Here’s a summary of the main differences:

Structure:	Stock Purchase	Asset Purchase	338(h)(10) Election
Buyer Acquires:	All Assets and Liabilities + Off-Balance Sheet Items	Only <i>Certain</i> Assets and Liabilities of the Seller	All Assets and Liabilities + Off-Balance Sheet Items
Seller Pays Taxes On:	Purchase Price	Purchase Price PLUS (Total Value Assigned to All Assets – Book Value of All Assets)	Purchase Price PLUS (Total Value Assigned to All Assets – Book Value of All Assets)
Assets Written Up on Tax Balance Sheet?	No	Yes	Yes
Can Buyer Deduct New D&A on Asset Write-Ups for Cash-Tax Purposes?	No	Yes	Yes
Creates New DTL?	Yes	No	No
Goodwill & Other Intangibles:	Not amortized for tax purposes and not tax-deductible	Amortization is tax-deductible; amortized over 15 years for tax purposes	Amortization is tax-deductible; amortized over 15 years for tax purposes
Most Common Sellers:	Public companies and large private companies	Private companies, divestitures, distressed public companies	Private companies, divestitures, distressed public companies
Favored By:	Sellers	Buyers	Both



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The exact structure rarely makes a big impact on the output of a merger model unless the deal is very unusual (e.g., the Seller has a massive amount of NOLs or the Seller's Assets are written up by a huge percentage).

But it's still good to be familiar with these transaction structures because they could come up in more advanced interviews and on the job.

### **Earn-Outs, Exchange Ratios, Collars, and Other Purchase Price Variations**

We've also been acting as if there's only one "Purchase Price," and that the Buyer instantly decides on the exact percentages of Cash, Debt, and Stock to use.

But the reality is not so simple: For example, the Purchase Price might consist of an upfront payment and then a deferred payment if the Seller meets certain conditions.

And while it's straightforward to state the Purchase Price for Cash and Debt deals, Stock deals are often priced with an **exchange ratio** rather than a specific amount of Stock.

For example, if the Seller has 10 million shares, the Buyer might agree to a **2:1 exchange ratio** where it issues 2 shares to the Seller for each of the Seller's shares. This structure means the Seller will receive 20 million shares.

So if the Buyer has 100 million shares before the deal takes place, the Combined Company will have 120 million shares after, and the Seller will own 20 / 120, or 16.7%, of the entity.

### **Earn-Outs and Deferred Consideration**

A simple example of a Purchase Price that includes an Earn-Out might be the following:

*"We'll pay you \$100 million for your company now, and if you achieve EBITDA of \$20 million in 2 years, we'll pay you an additional \$50 million then."*

A Purchase Price with an Earn-Out for a biotech startup might be:

*"We'll pay you \$100 million for your company now, and if your drug makes it to Phase 3 clinical trials within 2 years, we'll pay you an additional \$50 million."*

The Buyer pays some amount upfront and an additional amount later on **based on whether or not the Seller achieved certain goals**.

Earn-Outs are very common in acquisitions of private companies and tech, biotech, and pharmaceutical startups where the Buyer and Seller might disagree strongly on the Seller's value and future performance.



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If the Buyer believes the Seller is worth \$100 million, and the Seller believe it is worth \$200 million, they could use a structure like the one above to **compromise**: “We’ll pay you the \$100 million upfront, and if you perform well 2 years, we’ll pay you closer to what you want.”

In most cases, Buyers cannot use Earn-Outs in acquisitions of public Sellers because shareholders tend to demand upfront compensation.

Earn-Out structures can get very complex, and real-life deals often include multiple performance tiers with different deferred compensation in each tier.

On the financial statements, the Buyer records an Earn-Out as a “Contingent Consideration” Liability, and it adjusts the value of this Liability on the Income Statement over time.

If the probability of paying an Earn-Out *decreases*, the Buyer records the change as a *positive* on the Income Statement – the Buyer is more likely to *save money* in the future!

The opposite happens if the probability *increases*: The Change in Value is a negative on the IS.

These adjustments are all **non-cash**, so the Buyer reverses them in the non-cash adjustments section of the Cash Flow Statement.

If the Buyer finally pays the Earn-Out to the Seller, it will record a cash outflow in the Cash Flow from Financing section and reduce the Liability to \$0.

If the Earn-Out period expires and the Buyer doesn’t pay anything to the Seller, it will write down this Contingent Consideration Liability to \$0, with the non-cash write-down shown as a positive on the Income Statement.

Here’s a summary:

**Purchase Price Allocation:**

**Goodwill Calculation:**

Equity Purchase Price:	\$	825.0
(-) Seller Book Value:		(613.0)
(+) Write-Off of Existing Goodwill:		-
<b>Total Allocable Purchase Premium:</b>		<b>212.0</b>
(-) Write-Up of PP&E:		(11.1)
(-) Write-Up of Intangibles:		(101.0)
(-) Write-Down of Deferred Tax Liabilities:		(15.0)
(+) Contingent Consideration Liability:		50.0
(+) New Deferred Tax Liability:		33.6
<b>Total Goodwill Created:</b>		<b>168.5</b>

**END RESULT:** Goodwill increases as a direct result of this Contingent Consideration from the earn-out.

If it’s worth more, Goodwill increases by even more; if it’s worth less, Goodwill does not increase by as much.

← This is what corresponds to the earn-out. Represents the “best guess” for its value as of the transaction closing date.

Earn-Outs affect Goodwill Created but not the Sources & Uses schedule because they don’t change the upfront cash price of an acquisition.

As the payout probability of the Earn-Out changes, the Buyer records changes in the value of the Contingent Consideration Liability here.

Changes in the value of the Contingent Consideration Liability are non-cash adjustments.

If and when the Earn-Out is finally paid out to the Seller, it will be shown in the CFF section; the Liability also goes to 0 at that point.

Combined Income Statement:	Units	Projected				
		FY14	FY15	FY16	FY17	FY18
<b>Gross Profit:</b>	\$M	1,168.3	1,217.0	1,260.3	1,299.0	1,339.5
(+) Acquirer - SG&A Expense:	\$M	428.2	447.9	469.3	483.1	500.4
(+) Target - SG&A Expense:	\$M	422.8	437.2	453.6	466.8	479.8
(+) Acquirer - Rental Expense:	\$M	78.6	82.1	87.3	89.9	92.1
(+) Target - Rental Expense:	\$M	89.1	92.1	94.8	101.1	103.9
(-) OpEx Synergies:	\$M	-	(25.0)	(25.0)	(25.0)	(25.0)
(-) Change in Contingent Consid. Value:	\$M	-	-	-	-	-
<b>Operating Expenses:</b>	\$M	1,018.7	1,034.3	1,080.0	1,115.9	1,151.2
<b>Operating Income:</b>	\$M	149.5	182.7	180.3	183.1	188.3

Mini-Cash Flow Statement:	Units	Projected				
		FY14	FY15	FY16	FY17	FY18
<b>Cash Flow from Operations:</b>						
<b>Net Income:</b>	\$M	\$ 67.9	\$ 89.8	\$ 87.9	\$ 90.8	\$ 95.7
Combined Non-Cash Adjustments:						
Depreciation & Amortization:	\$M	49.1	51.1	53.3	54.9	57.0
Change in Contingent Consid. Value:	\$M	-	-	-	-	-
Loss on Disposition of Assets:	\$M	-	-	-	-	-
Other Items:	\$M	-	-	-	-	-
Asset Impairment Charge:	\$M	-	-	-	-	-
Deferred Taxes:	\$M	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)
Changes in Operating Assets & Liab.:	\$M	(18.8)	(32.9)	(33.5)	(26.2)	(31.9)
<b>Total Cash Flow from Operations:</b>	\$M	97.9	107.7	107.4	119.3	120.4
<b>Cash Flow from Investing:</b>						
Capital Expenditures:	\$M	(65.8)	(68.6)	(78.0)	(80.3)	(89.8)
<b>Total Cash Flow from Investing:</b>	\$M	(65.8)	(68.6)	(78.0)	(80.3)	(89.8)
<b>Cash Flow from Financing:</b>						
Contingent Consideration Payment:	\$M	-	(50.0)	-	-	-
<b>Total Cash Flow from Financing:</b>	\$M	-	(50.0)	-	-	-

### Exchange Ratios and Collars

One problem with any M&A deal funded by Stock is the **risk** that both parties assume because of possible changes to the Buyer's share price.

So rather than pricing deals with the % Stock Used, most Buyers offer a **fixed number of shares** or a **fixed price**.

The **fixed share option** is called a **Fixed Exchange Ratio**, and it corresponds to the example given above: In a deal with a 2:1 Exchange Ratio where the Seller has 10 million shares, it will always receive 20 million shares from the Buyer.



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So if the Buyer's share price increases from \$10.00 to \$12.00, the Seller will get an effective purchase price of \$240 million rather than \$200 million.

**However, the Seller's ownership won't change:** It will still own ~16.7% of the Combined Company regardless of the Buyer's share price.

With a **Floating Exchange Ratio**, the opposite happens: The Seller always receives the same *price* but a different number of shares depending on the Buyer's share price.

For example, both parties might agree on a price of \$220 million. The Buyer's share price is initially \$11.00, so it has to issue 20 million shares to the Seller.

But if the Buyer's share price increases to \$12.00, now it will issue ~18.3 million shares; and if the share price decreases to \$10.00, the Buyer will issue 22 million shares.

So the Seller's ownership in the Combined Company will change from ~16.7% to ~15.5% or ~18.0%.

The Buyer tends to favor a **Fixed Exchange Ratio** if it wants to limit dilution and prefers certainty over the number of new shares issued, even at the expense of paying the Seller a lower price (if the Buyer's share price falls, for example).

Sometimes the market interprets a Fixed Exchange Ratio as a sign that the Buyer is not confident in the value of its shares, so there may be a negative signaling effect.

The Seller tends to favor a **Floating Exchange Ratio** if it believes the Buyer's Stock Price will fall: It still gets the same price, but it will own a higher percentage.

To compromise, the Buyer and Seller can use a **collar** to establish a Fixed Exchange Ratio within certain share price ranges and a Floating Exchange Ratio within others.

For example, a typical collar might be structured like this:

- **Buyer's Share Price Between \$50.00 and \$60.00:** The Seller always gets 10 million of the Buyer's shares, so its ownership percentage is fixed, but its effective purchase price ranges from \$500 million to \$600 million.
- **Buyer's Share Price Above \$60.00:** The Seller gets a maximum price of \$600 million, so it will receive fewer shares if the Buyer's stock price increases (e.g., 7.5 million shares at a Buyer Share Price of \$80.00).

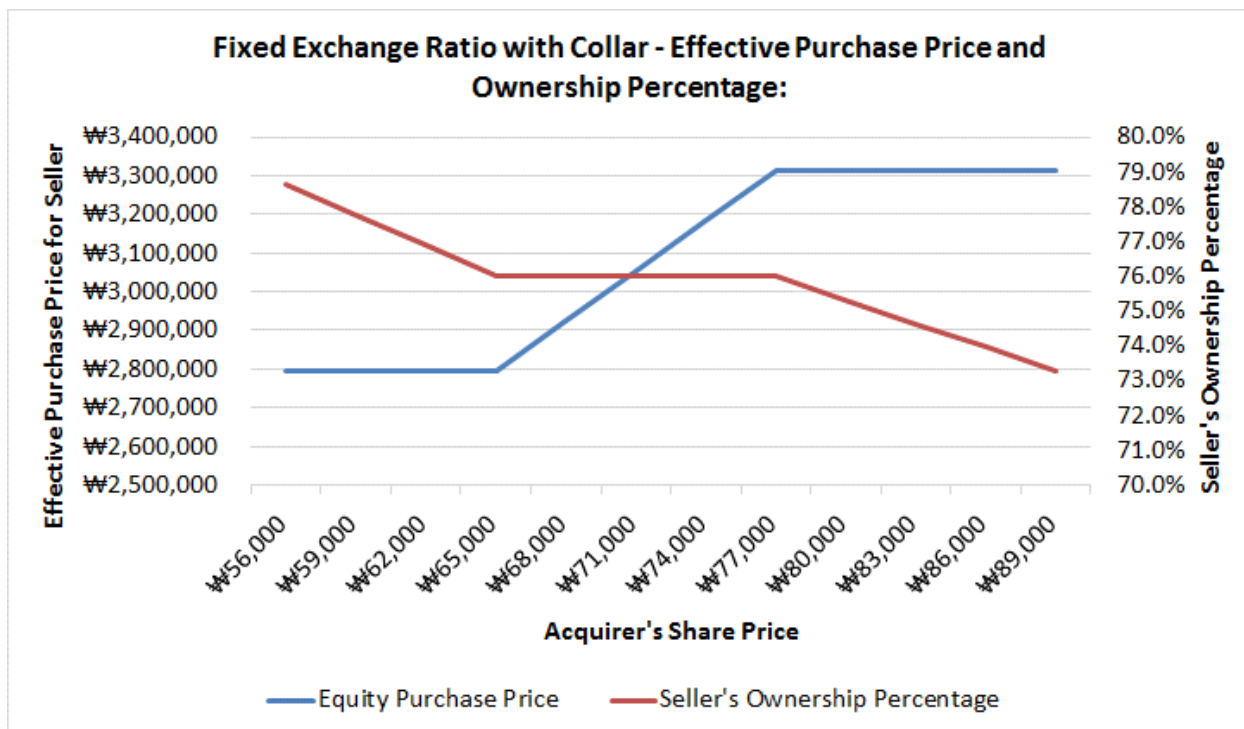


- **Buyer's Share Price Below \$50.00:** The Seller gets a minimum price of \$500 million, so it will receive more shares if the Buyer's stock price falls (e.g., 12.5 million shares at a Buyer Share Price of \$40.00).

They could also do the opposite and set up the collar such that the region in the middle has a Floating Exchange Ratio and the ones outside it have Fixed Exchange Ratios.

These structures let the Buyer and Seller hedge the risk of 100% Stock and mostly Stock deals.

For example, with a Fixed Exchange Ratio Collar, the Seller's purchase price risk is reduced because it will always be within a certain range:



A collar is *most useful* when:

- The Seller is **moderately sized** relative to the Buyer – maybe ~10-20% its size. So it's not a Merger of Equals, but it's also not a tiny acquisition.
- The parties want the **risk protection** of a Cash deal and the **tax benefits** of a Stock deal.
- The deal is **cross-border** and different currencies are involved (collars can reduce FX risk).



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- The Buyer's share price has been **volatile**, or the Buyer and Seller strongly disagree about the value of the Buyer's share price.
- The deal is a **competitive auction**, and one Buyer wants to stand out by offering an attractive deal term.
- The deal will take a **long time to close**. A 100% Stock deal that takes 12 months to close is much riskier than one that takes only 2-3 months to close.

### Net Operating Losses (NOLs)

The basic idea behind Net Operating Losses in M&A deals with U.S.-based Buyers is simple:

**In Asset Purchases and 338(h)(10) deals, the Seller's NOLs are written down 100% and cannot be used at all post-transaction; in Stock Purchases, the Buyer can use a *limited amount* of the Seller's NOLs each year, but it may have to write down a portion of the total balance.**

Let's say the Seller has \$100 million in off-Balance Sheet NOLs, which are represented as \$40 million within its Deferred Tax Asset since it has a 40% tax rate.

The Buyer pays an Equity Purchase Price of \$1 billion for the Seller.

In an Asset Purchase or 338(h)(10) deal, the Buyer writes down this \$40 million of NOLs within the DTA, the \$100 million off-BS number goes to \$0, and the Buyer cannot utilize *any* of the Seller's NOLs in the future.

But in a Stock Purchase, this full write-down does **not** happen, and the Buyer can use a limited amount of NOLs annually.

For U.S.-based Buyers, the following rule applies:

- **Allowable Annual NOL Usage** = Equity Purchase Price \* [Highest of Past 3 Months' Adjusted Long-Term Rates](#)

**Note that the rules vary WIDELY in different countries – we don't have the time or space to explain the rules in 190+ countries, so please do a Google search and look for Big 4 firms' coverage of this topic.**

These "Adjusted Long-Term Rates" are linked to prevailing interest rates on government bonds.

So if the past 3 months had "Adjusted Long-Term Rates" of 2.0%, 1.7%, and 1.8%, the Buyer could use a maximum of \$1 billion \* 2% = \$20 million in NOLs each year.



In this case, therefore, the Buyer could use the Seller's \$100 million NOL balance over 5 years and utilize the entire balance to reduce its cash taxes.

**No write-down is required because the Buyer can use the entire NOL balance before it expires.**

As the Buyer uses these NOLs, the off-Balance Sheet figure will decline by \$20 million per year, and the portion within the DTA will decline by \$20 million \* 40% = \$8 million per year.

On the other hand, if these NOLs were set to expire in **3 years**, the Buyer could **not** use the entire balance.

In that case, the Buyer could use only \$60 million of the NOLs, which corresponds to \$24 million of the DTA balance.

So the Buyer, **in the initial transaction**, would have to write down \$40 million of the off-BS NOL balance and \$16 million of the DTA balance.

After that initial write-down, the NOL and DTA balances change the same way in the first 3 years: The off-Balance Sheet NOLs will decline by \$20 million per year, and the DTAs will decline by \$8 million per year.

Here's how everything, including the D&A on Asset write-ups, differs in a Stock Purchase vs. an Asset or 338(h)(10) deal:

**Stock Purchase – Book vs. Cash Taxes**

	GAAP		
	Year 1	Year 2	Year 3
<b>Book Taxable Income:</b>	<b>\$ 29,316</b>	<b>\$ 32,248</b>	<b>\$ 34,588</b>
Book Income Tax Expense:	8,795	9,674	10,376
<b>Cash Tax Calculation:</b>			
(+) Book Amortization of Intangibles Write-Up:	1,491	1,491	1,491
(+) Book Amortization of Goodwill:	-	-	-
(+) Book Depreciation of Asset Write-Up:	23	23	23
(-) Tax Amortization of Intangibles Write-Up:	-	-	-
(-) Tax Amortization of Goodwill:	-	-	-
(-) Tax Depreciation of Asset Write-Up:	-	-	-
<b>Pre-NOL Taxable Income:</b>	<b>30,830</b>	<b>33,762</b>	<b>36,102</b>
Potential NOL Usage:	1,162	-	-
Allowed NOL Usage:	1,162	-	-
<b>NOL-Adjusted Pre-Tax Income:</b>	<b>29,668</b>	<b>33,762</b>	<b>36,102</b>
Remaining NOLs:	-	-	-
<b>Cash Taxes Payable:</b>	<b>\$ 8,900</b>	<b>\$ 10,129</b>	<b>\$ 10,831</b>

**Asset / 338(h)(10) Purchase – Book vs. Cash Taxes**

	GAAP		
	Year 1	Year 2	Year 3
<b>Book Taxable Income:</b>	<b>\$ 29,316</b>	<b>\$ 32,248</b>	<b>\$ 34,588</b>
Book Income Tax Expense:	8,795	9,674	10,376
<b>Cash Tax Calculation:</b>			
(+) Book Amortization of Intangibles Write-Up:	1,491	1,491	1,491
(+) Book Amortization of Goodwill:	-	-	-
(+) Book Depreciation of Asset Write-Up:	23	23	23
(-) Tax Amortization of Intangibles Write-Up:	497	497	497
(-) Tax Amortization of Goodwill:	1,982	1,982	1,982
(-) Tax Depreciation of Asset Write-Up:	30	30	30
<b>Pre-NOL Taxable Income:</b>	<b>28,321</b>	<b>31,252</b>	<b>33,593</b>
Potential NOL Usage:	-	-	-
Allowed NOL Usage:	-	-	-
<b>NOL-Adjusted Pre-Tax Income:</b>	<b>28,321</b>	<b>31,252</b>	<b>33,593</b>
Remaining NOLs:	-	-	-
<b>Cash Taxes Payable:</b>	<b>\$ 8,496</b>	<b>\$ 9,376</b>	<b>\$ 10,078</b>



The NOLs are written down and cannot be used at all in the Asset or 338(h)(10) deal, while they *can* be used, in limited quantities, in the Stock Purchase (in this case, the entire NOL balance is used up in a year).

But the Asset and 338(h)(10) structures offer a big advantage: The D&A on Asset Write-Ups *and* the Amortization of Goodwill are both deductible for cash-tax purposes.

**If the Seller has a huge NOL balance, both parties might prefer a Stock Purchase, but if its balance is smaller or non-existent, an Asset Purchase or 338(h)(10) Election might offer more benefits for the Buyer.**

Here's a summary:

Structure:	Stock Purchase	Asset Purchase	338(h)(10) Election
Allowable Annual NOL Usage	Equity Purchase Price * Maximum of Past 3 Months' Adjusted Long-Term Rates	None	None
Off-Balance Sheet NOL Write-Down	MAX(0, NOL Balance – Allowable Annual Usage * # Years Until Expiration)	100%	100%
Write-Down of NOL Portion of DTA	MAX(0, NOL Portion – Allowable Annual Usage * Buyer's Tax Rate * # Years Until Expiration)	100%	100%

### Acquisitions for Less Than 100% of Companies

A Buyer doesn't "have" to acquire 100% of a Seller: It could acquire 10%, 40%, 70%, or any other percentage as well.

Most interview questions and case studies deal with 100% acquisitions, so that's what we have focused on.

Acquisitions for *less than* 100% of other companies are treated differently depending on whether the percentage acquired is over 50% or under 50%.



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If the Buyer acquires **less than 50%** of another company, the stake is treated as an “Equity Investment” or “Associate Company,” and the financial statements are **not** consolidated at all.

In other words, very little from the Seller shows up on the Buyer’s statements; they remain almost the same as the Buyer’s standalone statements.

The Buyer does **not** complete the Purchase Price Allocation process, it creates **no** Goodwill, and it does **not** write up the Seller’s Assets.

On the Balance Sheet, it makes the following adjustments:

- **Cash, Debt, and Stock:** These will decrease (Cash) or increase (Debt and Stock) to reflect the purchase method the Buyer uses in the deal.
- **Equity Investments:** The Buyer creates a new Asset to reflect the price it pays for the minority stake it acquires.

So if the Buyer pays \$1,000 in Cash for a 10% stake in the Seller, the Buyer’s Cash balance falls by \$1,000 and the “Equity Investments” Asset increases by \$1,000 to balance the change.

After the transaction closes, the Buyer will record 10% \* Seller’s Net Income at the bottom of its Income Statement and will add that figure to its own Net Income to get the total.

On the Cash Flow Statement, it will subtract 10% \* Seller’s Net Income because it doesn’t have control of the Seller, but it will add 10% \* Seller’s Dividends because it *does* receive a portion of the Seller’s Dividends.

On the Balance Sheet, the Equity Investments line item increases by 10% \* Seller’s Net Income and decreases by 10% \* Seller’s Dividends, so it acts as a “mini-Shareholders’ Equity.”

Acquisitions of more than 50% but less than 100% of other companies work differently because the companies **consolidate their financial statements** and create a “Noncontrolling Interest.”

In other words, the Buyer and Seller’s financial statements are added together and look significantly different from the Buyer’s standalone statements.

The Buyer **does** complete the Purchase Price Allocation process, it creates **Goodwill**, it writes up the Seller’s Assets, and it creates a Deferred Tax Liability (if necessary).

And the Goodwill is based on the *Equity Purchase Price for 100% of the Seller*, not the actual percentage the Buyer acquired.

Let’s assume that a Buyer currently owns 30% of a Seller and decides to purchase an additional 40% for \$480 million using 1/3 Cash, 1/3 Debt, and 1/3 Stock:



**Transaction Assumptions:**

Existing Stake in Target:	30.0%	Price Paid per Target Share Acquired:	\$ 40.00
Additional Stake Acquired in Target in Deal:	40.0%	Target's Shares Outstanding:	30.00
Purchase Equity Value of 100% of Target:	\$ 1,200.0	Debt Issuance Fee %:	3.0%
(+) Equity Value of Existing 30.0% Stake in Target:	360.0	Acquirer's Tax Rate:	40.0%
(+) Purchase Equity Value of Additional 40.0%:	480.0		
<b>Equity Value of Total 70.0% Stake in Target:</b>	<b>\$ 840.0</b>		

Purchase Consideration:	%:	Amount:
Cash:	33.3%	\$ 160.0
Debt:	33.3%	160.0
Stock:	33.3%	160.0

The Sources & Uses schedule reflects this \$480 million price plus the \$4.8 million in financing fees. \$160 million of Cash, Debt, and Stock pay for that, and some excess cash covers the financing fees.

Then, you allocate the purchase price as if the Buyer *had acquired 100% of the Seller*:

**Purchase Price Allocation:**

Goodwill Calculation:	
Purchase Equity Value of 100% of Target:	\$ 1,200.0
(-) Seller Book Value:	(777.0)
(+) Write-Off of Existing Goodwill:	1.8
<b>Total Allocable Purchase Premium:</b>	<b>424.8</b>
(-) Write-Up of PP&E:	(14.9)
(-) Write-Up of Intangibles:	(63.7)
(-) Write-Down of Deferred Tax Liabilities:	(11.2)
(+) New Deferred Tax Liability:	31.4
<b>Total Goodwill Created:</b>	<b>366.5</b>

Fixed Asset Write-Up:	
PP&E Write-Up %:	10.0%
PP&E Write-Up Amount:	\$ 14.9
Intangible Asset Write-Up:	
Purchase Price to Allocate:	\$ 424.8
% Allocated to Other Intangibles Assets:	15.0%
Intangibles Write-Up Amount:	\$ 63.7
New Deferred Tax Liability:	\$ 31.4

The Purchase Equity Value is **always** based on 100% of the Seller, even if the Buyer acquired a percentage between 50% and 100%.

On the Balance Sheet, you make all the normal adjustments for Cash, Debt, Stock, Goodwill, and Asset write-ups. There are 3 items to note:

- 1) **Equity Investments** – If the Buyer went from a minority stake to a majority stake, as it did here, then you must write this item down to \$0 because this minority stake no longer exists.

- 2) **Shareholders' Equity** – You *still* write down the Seller's Common Shareholders' Equity even though the Buyer did **not** acquire 100% of the Seller. You also deduct one-time transaction fees here, or *effectively* here if you show them on the Income Statement in the year after the deal closes.
- 3) **Noncontrolling Interests** – You must also create a line item for the portion of the Seller the Buyer did *not* acquire.

In this case, the Buyer does **not** own 30% of the Seller. That remaining 30% is worth \$1,200 \* 30%, or \$360, so we create a Noncontrolling Interest within the Equity section for that amount.

Here are the adjustments on the Assets side:

Balance Sheet Combination:	Units	Buyer		Seller		Pro-Forma Adjustments:			
						Debit	Credit	Post-Deal	
<b>ASSETS:</b>									
<b>Current Assets:</b>									
Cash & Cash Equivalents:	\$M	\$	59.3	\$	445.5	\$	-	\$ (164.8)	\$ 340.0
Accounts Receivable:	\$M		63.2		13.6		-		76.7
Inventory:	\$M		599.5		304.3		-		903.8
Other Current Assets:	\$M		93.2		23.1		-		116.3
<b>Total Current Assets:</b>	<b>\$M</b>		<b>815.1</b>		<b>786.5</b>				<b>1,436.8</b>
<b>Long-Term Assets:</b>									
Plants, Property & Equipment:	\$M		408.2		149.0		14.9	-	572.0
Goodwill:	\$M		126.0		1.8		366.5	(1.8)	492.5
Other Intangible Assets:	\$M		58.0		-		63.7	-	121.7
Equity Investments:	\$M		360.0		-		-	(360.0)	-
Other Assets:	\$M		5.1		0.3		-	-	5.4
<b>Total Long-Term Assets:</b>	<b>\$M</b>		<b>957.3</b>		<b>151.1</b>				<b>1,191.7</b>
<b>TOTAL ASSETS:</b>	<b>\$M</b>	<b>\$</b>	<b>1,772.4</b>	<b>\$</b>	<b>937.6</b>				<b>\$ 2,628.4</b>

Must eliminate the Equity Investment line item if the Buyer now owns over 50% of the Seller.

And then here's the Liabilities & Equity side:



Balance Sheet Combination:	Units	Buyer		Seller		Pro-Forma Adjustments:		
						Debit	Credit	Post-Deal
<b>LIABILITIES &amp; EQUITY:</b>								
<b>Current Liabilities:</b>								
Accounts Payable:	\$M	\$	148.8	\$	32.9	-	-	181.7
Accrued Expenses & Other Liabilities:	\$M		175.8		115.0	-	-	290.8
Income Taxes Payable:	\$M		0.7		-	-	-	0.7
<b>Total Current Liabilities:</b>	\$M		<b>325.3</b>		<b>148.0</b>			<b>473.3</b>
<b>Long-Term Liabilities:</b>								
Long-Term Debt:	\$M		97.5		-	-	-	97.5
New Transaction Debt:	\$M		-		-	(4.8)	160.0	155.2
Deferred Tax Liability:	\$M		109.3		11.2	(11.2)	31.4	140.7
Other Noncurrent Liabilities:	\$M		-		1.4	-	-	1.4
<b>Total Long-Term Liabilities:</b>	\$M		<b>206.8</b>		<b>12.6</b>			<b>394.9</b>
<b>Total Liabilities:</b>	\$M	\$	<b>532.1</b>	\$	<b>160.5</b>			<b>\$ 868.1</b>
<b>Shareholders' Equity:</b>								
Noncontrolling Interests:	\$M	\$	1,240.3	\$	777.0	(777.0)	160.0	1,400.3
<b>Total Equity:</b>	\$M	\$	<b>1,240.3</b>	\$	<b>777.0</b>		360.0	<b>\$ 1,760.3</b>
<b>TOTAL LIABILITIES &amp; EQUITY:</b>	\$M	\$	<b>1,772.4</b>	\$	<b>937.6</b>			<b>\$ 2,628.4</b>
<i>Balance Sheet Check:</i>			<i>OK!</i>		<i>OK!</i>			<i>OK!</i>

Reflect the new Debt and deduct the financing fees.

Write down the Seller's Shareholders' Equity and reflect Stock issued.

New NCI to represent the 30% the Buyer does NOT own.

After the deal takes place, the Buyer and Seller's financial statements are consolidated 100%, and the Buyer will subtract Portion of Seller It Does Not Own \* Seller's Net Income at the bottom of its Income Statement.

So if this Seller earns \$100 in Net Income each year, the Buyer subtracts 30% \* \$100 = \$30 at the bottom of its Income Statement each year.

It then adds back this amount on the Cash Flow Statement since the Buyer has control of the Seller and therefore receives these earnings in cash.

You rarely focus on EPS accretion/dilution in < 100% acquisitions.

Instead, you focus on the Seller's valuation and determine whether or not the price the Buyer pays for its stake is reasonable.

### Private Companies

The *mechanics* of merger models do not differ for private companies – regardless of whether the Buyer or Seller is private (or even if both are private).



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You still allocate the Purchase Price, create a Sources & Uses schedule, make the same Balance Sheet adjustments, combine the Income Statements, create a Combined Cash Flow Statement, and so on.

The main differences relate to the **setup**, **assumptions**, and the **focus** of the analysis:

- **Purchase Price:** It's based on a multiple of EBITDA, revenue, or some other financial metric rather than a share-price premium.
- **Form of Consideration:** If the Buyer is private, it probably can't use Stock to do the deal. Exceptions apply for certain private-to-private deals and large and well-known private Buyers (e.g., Ikea or Cargill).

Also, Earn-Outs are common in acquisitions of private Sellers, while they're rare for public Sellers.

Sometimes the Seller must maintain a targeted level of Working Capital as well, and the Buyer may end up paying more or less based on actual vs. targeted Working Capital.

- **Deal Structure:** The Buyer is more likely to use an Asset Purchase or 338(h)(10) Election for a private Seller because there's more risk related to the company's Assets, Liabilities, and off-Balance Sheet items; public companies undergo more scrutiny.
- **Meaningful Analysis:** EPS accretion/dilution is the same if the deal involves a public Buyer and private Seller, but it's less meaningful *if the Buyer is private*.

It's **not** that private companies "don't have EPS" – all companies earn Net Income and have shares outstanding, so all companies have EPS.

It's just that private companies *care less* about EPS than public companies do.

You'll focus more on the valuation of the Seller and other analytical methods, such as the Contribution Analysis or IRR vs. WACC.

- **Accounting Adjustments:** Before you can value a private Seller or build a merger model for it, you may have to adjust its financial statements and make sure they conform to the standards of U.S. GAAP or IFRS.



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But this step depends heavily on the *type* of Seller: If it has \$1 billion in revenue and thousands of employees, its financial statements should already be in good shape.

But if it's a barber shop with 4 employees, you'll need to sharpen your pencil.

### Calendarization and Stub Periods

We've been assuming that M&A deals always close at the end of Buyers' fiscal years and that Buyers and Sellers have the *same* fiscal years (e.g., ones that end on December 31<sup>st</sup>).

In real life, both assumptions are often false:

- The Buyer's fiscal year might end on June 30<sup>th</sup> but the Seller's fiscal year might end on December 31<sup>st</sup>.
- The deal might close on September 30<sup>th</sup> or August 14<sup>th</sup> or another random date in between those two.

The first problem is easier to deal with: **You always use the Buyer's fiscal year in merger models.**

So if the Buyer's fiscal year ends on June 30<sup>th</sup> but the Seller's ends on December 31<sup>st</sup>, you'd take the results from the last 6 months of the Seller's fiscal year and add them to the ones from the first 6 months of its next year.

And then you combine those results with those of the Buyer since they cover the same period (January 1<sup>st</sup> – December 31<sup>st</sup>) if you do that.

You build many merger models on a **quarterly basis**, so in practice, this may not be too difficult: You just add the quarters such that the calendar periods match up.

The second problem is more annoying to deal with.

If the deal closes in between fiscal years or in between quarters, then you have to create a **combined stub period** in the model.

For example, if the deal closes on August 14<sup>th</sup>, and we're building a quarterly model, we'd have to create a stub period with the Buyer and Seller's results from August 14<sup>th</sup> to September 30<sup>th</sup>.

It will be almost impossible to get results for that *exact period* because you normally only project entire quarters, so you might just divide the projected results for the July 1<sup>st</sup> – September 30<sup>th</sup> quarter by 2.

Then, the first "full" combined quarter will run from October 1<sup>st</sup> to December 31<sup>st</sup>.



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Combining stub Income Statements and Cash Flow Statements isn't too bad, but it's annoying to project Balance Sheets for these types of irregular dates.

You can't just divide items by 2 because the Balance Sheet is a **snapshot** in time.

So you'll have to take the Balance Sheet from June 30<sup>th</sup>, "roll it forward" based on the IS and CFS results between July 1<sup>st</sup> and August 14<sup>th</sup>, and link the Balance Sheet items to that.

This process isn't exactly brain surgery, but it is time-consuming and doesn't add much value.

Even if stub periods exist because the acquisition closed on an irregular date, the Buyer, Seller, and investors tend to focus on the **first full year** of combined results.

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## Interview Questions

Merger models and M&A deals can get complex, but most interview questions on these topics are **simple** and relate to the rationale for deals and the basic calculations.

Interviewers are *far* less likely to ask about the more advanced topics, such as the treatment of NOLs in M&A deals, and are *far* more likely to ask tricky questions about simpler subjects, such as how Enterprise Value and valuation multiples change.

So the interview questions in this guide reflect that reality: You need to know the fundamentals **very well** because the “difficult questions” relate to in-depth understanding of the core topics rather than the more advanced points.

### M&A Concepts and Overview

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Questions on accretion/dilution and calculations in M&A deals could come up, but you’re also likely to get questions on **the concepts** and companies’ motivations for acquiring other companies.

#### **So don’t put the cart before the horse.**

If you don’t understand these questions, your interviewers will never even get to the more advanced topics.

#### **1. Why would one company want to buy another company?**

One company will want to buy another company if it believes it will be better off after the acquisition takes place. For example:

- The Seller’s **asking price** is less than its **Implied Value**, i.e. the Present Value of its future cash flows.
- The Buyer’s expected **IRR** from the acquisition exceeds its **WACC**.

Buyers often acquire Sellers to save money via consolidation and economies of scale, to grow geographically or gain market share, to acquire new customers or distribution channels, and to expand their products.

Deals are also motivated by competition, office politics, and ego.



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## **2. How can you analyze an M&A deal and determine whether or not it makes sense?**

The qualitative analysis depends on the factors above: Could the deal help the company expand geographies, products, or customer bases, give it more intellectual property, or improve its team?

The quantitative analysis might include a **valuation** of the Seller to see if it's undervalued, as well as a comparison of the expected IRR to the Buyer's WACC.

Finally, EPS accretion/dilution is very important in most deals because few Buyers want to execute dilutive deals; investors focus tremendously on near-term EPS, so dilutive deals tend to make companies' stock prices decline.

## **3. Walk me through a merger model (accretion/dilution analysis).**

In a merger model, you start by projecting the financial statements of the Buyer and Seller. Then, you estimate the Purchase Price and the mix of Cash, Debt, and Stock used to fund the deal. You create a Sources & Uses schedule and Purchase Price Allocation schedule to estimate the true cost of the acquisition and its effects.

Then, you combine the Balance Sheets of the Buyer and Seller, reflecting the Cash, Debt, and Stock used, new Goodwill created, and any write-ups. You then combine the Income Statements, reflecting the Foregone Interest on Cash, Interest on Debt, and synergies. If Debt or Cash changes over time, your Interest figures should also change.

The Combined Net Income equals the Combined Pre-Tax Income times  $(1 - \text{Buyer's Tax Rate})$ , and to get the Combined EPS, you divide that by the Buyer's Existing Share Count + New Shares Issued in the Deal.

You calculate the accretion/dilution by taking the Combined EPS, dividing it by the Buyer's standalone EPS, and subtracting 1.

## **4. Why might an M&A deal be accretive or dilutive?**

A deal is accretive if the extra Pre-Tax Income from a Seller exceeds the cost of the acquisition in the form of Foregone Interest on Cash, Interest Paid on New Debt, and New Shares Issued.



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For example, if the Seller contributes \$100 in Pre-Tax Income, but the deal costs the Buyer only \$70 in Interest Expense, and it doesn't issue any new shares, the deal will be accretive because the Buyer's Earnings per Share (EPS) will increase.

A deal will be dilutive if the opposite happens. For example, if the Seller contributes \$100 in Pre-Tax Income but the deal costs the Buyer \$130 in Interest Expense, and its share count remains the same, its EPS will decrease.

### 5. How can you tell whether an M&A deal will be accretive or dilutive?

You compare the Weighted Cost of Acquisition to the Seller's Yield at its purchase price.

- **Cost of Cash** = Foregone Interest Rate on Cash \* (1 – Buyer's Tax Rate)
- **Cost of Debt** = Interest Rate on New Debt \* (1 – Buyer's Tax Rate)
- **Cost of Stock** = Reciprocal of the Buyer's P / E multiple, i.e. Net Income / Equity Value.
- **Seller's Yield** = Reciprocal of the Seller's P / E multiple, calculated using the Purchase Equity Value.

**Weighted Cost of Acquisition** = % Cash Used \* Cost of Cash + % Debt Used \* Cost of Debt + % Stock Used \* Cost of Stock.

If the Weighted Cost is **less** than the Seller's Yield, the deal will be **accretive**, if the Weighted Cost is **greater** than the Seller's Yield, the deal will be **dilutive**.

### 6. Why do you focus so much on EPS in M&A deals?

Because it's the only easy-to-calculate metric that also captures the **FULL** impact of the deal – the Foregone Interest on Cash, Interest on New Debt, and New Shares Issued.

Although metrics such as EBITDA and Unlevered FCF are better in some ways, they don't reflect the deal's full impact because they exclude Interest and the effects of new shares.

### 7. How do you determine the Purchase Price in an M&A deal?

If the Seller is public, you assume a **premium** over the Seller's current share price based on average premiums for similar deals in the market (usually between 10% and 30%). You can then use the DCF, Public Comps, and other valuation methodologies to sanity-check this figure.





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The Purchase Price for private Sellers is based on the standard valuation methodologies, and you usually link it to a multiple of EBITDA or EBIT since private companies don't have publicly traded shares.

If the Buyer expects significant synergies, it is often willing to pay a higher premium or multiple for the Seller, though the impact isn't necessarily 1:1.

### **8. What are the advantages and disadvantages of each purchase method (Cash, Debt, and Stock) in M&A deals?**

Cash tends to be the cheapest option; most companies earn little Interest Income on it, so they don't lose much by using it to fund deals. It's also fastest and easiest to close Cash-based deals.

The downside is that using Cash limits the Buyer's flexibility in case it needs the funds for something else in the near future.

Debt is normally cheaper than Stock but more expensive than Cash, and deals involving Debt take more time to close because of the need to find investors.

Debt also limits the Buyer's flexibility because additional Debt makes *future* Debt issuances more difficult and expensive.

Finally, Stock tends to be the most expensive option, though it can sometimes be the cheapest, on paper, if the Buyer trades at very high multiples.

It dilutes the Buyer's existing investors, but it also prevents the Buyer from paying any additional *cash* expense for the deal.

In some cases, the Buyer can also issue Stock more quickly than it can issue Debt.

### **9. How does an Acquirer determine the mix of Cash, Debt, and Stock to use in a deal?**

Since Cash is cheapest for most Acquirers, they'll use all the Cash they can before moving to the other funding sources. So you might assume that the Cash Available equals the Acquirer's current Cash balance minus its Minimum Cash balance.

After that, Debt tends to be the next cheapest option. An Acquirer might be able to raise Debt up to the level where its Debt / EBITDA and EBITDA / Interest ratios stay in-line with those of peer companies.



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So if it's levered at 2x EBITDA now and similar companies have up to 4-5x Debt / EBITDA, it might be able to raise Debt up to that level.

Finally, there's no strict limit on the Stock an Acquirer might issue, but very few companies would issue enough to give up control of the company, and some Acquirers will issue Stock only up to the point at which the deal turns dilutive.

### **10. Which purchase method does a Seller prefer in an M&A deal?**

The Seller has to balance **taxes** with the **certainty of payment** and **potential future upside**.

To a Seller, Debt and Cash are similar because they mean immediate payment, but also immediate capital gains taxes and no potential upside if the Buyer's share price increases. But there's also no risk if the Buyer's share price decreases.

Stock is more of a gamble because the Seller could end up with a higher price if the Buyer's share price increases, but it could also get a lower price the share price drops. The Seller also avoids immediate taxes with Stock since it pays taxes only when the shares are sold.

So the preferred method depends on the Seller's confidence in the Buyer: Cash and Debt are better when there's uncertainty, while Stock may be better with large, stable Buyers.

### **11. What's the impact of each purchase method in an M&A deal, and how do you estimate the Cost of each method?**

The Cost of Cash is represented by the Foregone Interest on Cash: The Acquirer loses future projected Interest Income by using Cash to fund a deal. The Cost of Debt is represented by the Interest Expense on New Debt.

For both of these, you take the interest rate and multiply by  $(1 - \text{Acquirer's Tax Rate})$  to estimate the after-tax costs.

The Cost of Stock is represented by the additional shares that get created in a deal and how those shares reduce the Combined Company's EPS. It's equal to the reciprocal of the Buyer's P / E Multiple, i.e.  $1 / (\text{Buyer's P / E multiple})$ .

### **12. Isn't the Foregone Interest on Cash just an "opportunity cost"? Why do you include it?**



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No, it's **not** just an "opportunity cost" because the Acquirer's *projected* Pre-Tax Income already includes the Interest Income that the company *expects* to earn on its Cash balance.

So if an Acquirer expects \$90 in Operating Income and \$10 in Interest Income for a total of \$100 in Pre-Tax Income, its projected Pre-Tax Income will **fall** if it uses Cash to fund the deal.

**13. Isn't it a contradiction to calculate the Cost of Stock by using the reciprocal of the Acquirer's P / E multiple? What about the Risk-Free Rate, Beta, and the Equity Risk Premium?**

It's not a contradiction; it's just a different way of measuring the Cost of Equity.

The "Reciprocal of the P / E Multiple" method measures Cost of Equity in terms of EPS impact, whereas the CAPM method measures it based on the stock's expected annual returns.

Neither method is "the correct one": You just use them in different contexts.

In most cases, regardless of the method you use, Equity will be the most expensive funding source for a company.

**14. Why might an Acquirer choose to use Stock or Debt even if it could pay for the Seller in Cash?**

The Acquirer might not necessarily be able to draw on its entire Cash balance if, for example, much of the Cash is in overseas subsidiaries or otherwise locked up.

Also, the Buyer might be preserving its Cash for a future expansion plan or Debt maturity.

Finally, if the Acquirer is trading at very high multiples – e.g., a 100x P / E multiple – then it might be cheaper to use Stock to fund the deal.

**15. Are there cases where EPS accretion/dilution is NOT important? What else could you look at?**

Yes, there are many cases where EPS accretion/dilution doesn't matter.

For example, if the Buyer is private or it has negative EPS, it won't care about whether the deal is accretive or dilutive.

It also makes little difference if the Buyer is far bigger than the Seller (e.g., 10x – 100x its size).



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Besides EPS accretion/dilution, you can also analyze the qualitative merits of the deal, compare the IRR to the Discount Rate, and value the Buyer before and after the deal.

Finally, you can create a Contribution Analysis where you look at how much the Buyer and Seller "contribute" to each financial metric and then base the ownership of the Combined Company (and, therefore, the purchase price) on that.

### **16. How does a Merger differ from an Acquisition?**

There's no mechanical difference in a merger model or the other analyses because **there's always a Buyer and Seller** in any M&A deal.

The difference is that in a Merger, the companies will be closer in size, while Buyer is significantly larger than the Seller in an acquisition.

100% Stock or majority-Stock deals are also more common in Mergers because similarly sized companies can rarely use Cash or Debt to acquire each other.

You'll also place more weight on methods such as the Contribution Analysis because 100% Stock deals are so common.

### **17. What are the main PROBLEMS with merger models?**

First, EPS is not always a meaningful metric. Second, Net Income and cash flow are very different, so EPS-accretive deals might be horrible from a cash-flow perspective.

Third, merger models don't capture the risk inherent in M&A deals. 100% Cash deals almost always look accretive, even though the integration process might go wrong, legal issues might arise, and customers or shareholders might revolt.

Finally, merger models don't capture the qualitative factors of a deal such as cultural fit or management's ability to work together.

### **18. Why do most M&A deals fail?**

Most deals fail because of the **human element** – there might be a cultural mismatch, the Buyer might not have uncovered something important in due diligence, or the Buyer might have had stupid reasons for doing the deal in the first place.



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Also, the Buyer or Seller might underperform financially, which could turn an apparently attractive deal into a money-losing one.

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## Accretion/Dilution Calculations

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Questions on accretion/dilution math can be surprisingly tricky.

They're also far more **common** than questions on advanced topics because all bankers are familiar with accretion/dilution, but not as many know the specifics of 338(h)(10) deals.

### **1. Company A, with a P / E of 25x, acquires Company B for a purchase P / E multiple of 15x. Will the deal be accretive?**

You can't tell unless you know that it's a 100% Stock deal.

If it *is* a 100% Stock deal, then it will be accretive because the Buyer's P / E is higher than the Seller's, indicating that the Buyer's Cost of Acquisition (1 / 25, or 4%) is less than the Seller's Yield (1 / 15, or 6.7%).

### **2. Walk me through the full math for the deal now.**

**Assume that Company A has 10 shares outstanding at a share price of \$25.00, and its Net Income is \$10.**

**It acquires Company B for a Purchase Equity Value of \$150. Company B has a Net Income of \$10 as well. Assume the same tax rates for both companies. How accretive is this deal?**

Company A's EPS is  $\$10 / 10 = \$1.00$ .

To do the deal, Company A must issue 6 new shares since  $\$150 / \$25.00 = 6$ , so the Combined Share Count is  $10 + 6 = 16$ .

Since no Cash or Debt were used and the tax rates are the same, the Combined Net Income = Company A Net Income + Company B Net Income =  $\$10 + \$10 = \$20$ .

The Combined EPS, therefore, is  $\$20 / 16 = \$1.25$ , so there's 25% accretion.



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**3. Company A now uses Debt with an Interest Rate of 10% to acquire Company B. Is the deal still accretive? At what interest rate does it change from accretive to dilutive?**

The Weighted Cost of Acquisition would be  $10\% * (1 - 40\%)$ , or 6%, so the deal would still be accretive because that Cost is less than the Seller's Yield of 6.7%.

For the deal to turn dilutive, the After-Tax Cost of Debt would have to exceed 6.7%. Since  $6.7\% / (1 - 40\%) = 11.1\%$ , the deal would turn dilutive at an interest rate above 11.1%.

**4. What are the Combined Equity Value and Enterprise Value in this deal?**

**Assume the original 100% Stock structure, and that Equity Value = Enterprise Value for both the Buyer and Seller.**

Combined Equity Value = Buyer's Equity Value + Value of Stock Issued in the Deal =  $\$250 + \$150 = \$400$ .

Combined Enterprise Value = Buyer's Enterprise Value + Purchase Enterprise Value of Seller =  $\$250 + \$150 = \$400$ .

**5. How do the Combined EV / EBITDA and P / E multiples change if the purchase method changes?**

The Combined EV / EBITDA stays the same regardless of the purchase method, but the Combined P / E multiple will change based on the Stock issued and the Cash and Debt used since those affect the Combined Net Income.

**6. Without doing any math, what range would you expect for the Combined P / E multiple?**

The Combined P / E multiple should be in between the Buyer's P / E multiple and the Seller's Purchase P / E multiple, so between 25x and 15x here.

If Company A is much larger than Company B, the Combined P / E multiple will be closer to the 25x of Company A. But if they're closer in size, the Combined P / E multiple will be in the middle of this range.

You *cannot* average the P / E multiples of both companies because they may be different sizes; a weighted average also won't work because the purchase method affects the combined multiple.



**7. Now assume that Company A is twice as big financially, so its Equity Value is \$500 and its Net Income is \$20. Will a 100% Stock deal be more or less accretive?**

The deal will be *less accretive*. The intuition is that the company that is **not** making the deal dilutive – the Buyer – now has a higher weighting in all the calculations.

Since Company A's P / E is the same, but Company A is significantly bigger, its lower Yield “drags down” the Combined EPS for the entire company.

The Combined P / E multiple will still be between 15x and 25x, but it will be closer to 25x because Company A is weighted more heavily.

**8. Now do the math. What is the accretion/dilution in a 100% Stock deal?**

The Buyer previously represented \$250 / \$400, or 63%, of the total company, but now it represents \$500 / \$650, or 77%, of the total company, so we'd expect the accretion to fall by around 10-15%.

Company A's share price is now \$50.00, it still has 10 shares outstanding, and its Equity Value is \$500. Its EPS is  $\$20 / 10 = \$2.00$ .

To acquire Company B, Company A must issue 3 additional shares since  $\$150 / \$50.00 = 3$ .

Since both companies have the same tax rate and no Cash or Debt was used, you can add together the Net Income figures: Combined Net Income =  $\$20 + \$10 = \$30$ .

The new share count is  $10 + 3 = 13$ , and  $\$30 / 13 = \$2.31$ . This is about 15% higher than the Buyer's standalone EPS ( $\$0.15$  is 15% of  $\$1.00$ , and  $\$0.30$  is 15% of  $\$2.00$ ).

So it's about 10% lower than the 25% accretion when Company A was smaller.

**9. Company A has a P / E of 10x, a Debt Interest Rate of 10%, a Cash Interest Rate of 5%, and a tax rate of 40%.**

**It wants to acquire Company B at a purchase P / E multiple of 16x using 1/3 Stock, 1/3 Debt, and 1/3 Cash. Will the deal be accretive?**

Company A's After-Tax Cost of Stock is 1/10, or 10%, its After-Tax Cost of Debt is  $10\% * (1 - 40\%) = 6\%$ , and its After-Tax Cost of Cash is  $5\% * (1 - 40\%) = 3\%$ .





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Company B's Yield is  $1 / 16$ , or 6.25%.

The Weighted Cost of Acquisition is  $10\% * 1/3 + 6\% * 1/3 + 3\% * 1/3 = 3.33\% + 2\% + 1\% = 6.33\%$ .

Since the Weighted Cost is slightly **above** Company B's Yield, the deal will be **dilutive**.

**10. Company A buys Company B using 100% Debt. Company B has a purchase P / E multiple of 10x and Company A has a P / E multiple of 15x.**

**What Debt interest rate is required to make the deal dilutive?**

Company B's Yield is  $1 / 10$ , or 10%, so the After-Tax Cost of Debt must be *above* that for the deal to be dilutive.

Assuming the company has a tax rate of 40%,  $10\% / (1 - 40\%) = 16.667\%$ , which you can round to "Nearly 17%."

That is an exceptionally high interest rate, so a 100% Debt deal would almost certainly be accretive.

**11. Company A has an Equity Value of \$1,000 and Net Income of \$100. Company B has a Purchase Equity Value of \$2,000 and Net Income of \$50.**

**For a 100% Stock deal to be accretive, how much in synergies must be realized?**

Company A's P / E is  $\$1,000 / \$100 = 10x$ , so its Cost of Stock is 10%. Company B's P / E is  $\$2,000 / \$50 = 40x$ , so its Yield is  $1 / 40$ , or 2.5%.

Without synergies, this deal would be highly dilutive.

For the deal to turn accretive, Company B's Yield must exceed 10%. That means that its Purchase P / E multiple must be *below* 10x, which means its Net Income must be above \$200 rather than \$50.

So there must be **\$150 in after-tax synergies** for this deal to be accretive. At a 40% tax rate, there must be \$250 in pre-tax synergies.



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**12. An Acquirer has an Equity Value of \$1 billion, Cash of \$50 million, EBITDA of \$100 million, Net Income of \$50 million, and a Debt / EBITDA ratio of 2x. Peer companies have a median Debt / EBITDA ratio of 4x.**

**It wants to acquire another company for a Purchase Equity Value of \$500 million. The Seller has a Net Income of \$30 million, EBITDA of \$50 million, and no Debt.**

**What's the best way to fund this deal?**

The Acquirer would prefer to use its Cash balance to do this deal, but \$50 million is likely close to the minimum balance for a company of this size. So this company is unlikely to use Cash.

The Acquirer's P / E multiple is 20x, so its Cost of Stock is 1 / 20, or 5%.

That's a fairly low Cost of Stock, so there's a chance that the company's After-Tax Cost of Debt *might* be higher (e.g., if the Interest Rate on Debt were above 8.33%).

However, there's no information on the Cost of Debt, so our best guess is that Debt is still cheaper than Stock.

The company could afford to boost its Debt / EBITDA from 2x to 4x since peer companies have leverage in that range.

The Combined Company has \$150 million in EBITDA, and  $4 * \$150 \text{ million} = \$600 \text{ million}$ .

The Acquirer has \$200 million in Debt before the deal takes place, so it could afford to issue \$400 million in additional Debt.

The remaining \$100 million would be issued in Stock. If this company could use part of its Cash balance as well, the \$100 million Stock portion would be reduced.

**13. An Acquirer has an Equity Value of \$500 million, Cash of \$100 million, EBITDA of \$50 million, Net Income of \$25 million, and a Debt / EBITDA ratio of 3x.**

**Similar companies in the market have Debt / EBITDA ratios of 5x.**

**What's the BIGGEST acquisition this company might be able to complete?**

You can't answer this question precisely without knowing the Target's Net Income and EBITDA, but you can make a rough estimate.

The Acquirer couldn't use its *entire* Cash balance to fund a deal, but it might be able to use a substantial portion of it, such as \$50 million or \$80 million.



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It could afford to use leverage up to 5x EBITDA, which means that it could use \$100 million in additional Debt to fund a deal. That number might change based on the Seller's Debt and EBITDA as well.

There's no limit on how much Stock the company could issue, but it would be unlikely to give up control just to make an acquisition, so \$500 million in Stock is likely the maximum.

In reality, it probably wouldn't issue anything close to that amount of Stock.

A more realistic level might be about half its Current Equity Value (\$250 million), or whatever amount turns the deal dilutive.

So the best answer is: "In theory, the Acquirer might be able to fund a deal for up to \$650 to \$700 million. But in reality, unless it wants to issue a massive amount of Stock, the maximum level would be closer to \$400 to \$650 million."

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## **Equity Value, Enterprise Value, and Multiples in M&A Deals**

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Questions about Equity Value and Enterprise Value in M&A deals are less common than ones on accretion/dilution, but they're still important because they often act as "add-on" questions.

So if you get the accretion/dilution question correct, the interviewer might follow up and ask you to describe what happens to Equity Value, Enterprise Value, and the key multiples.

**1. An Acquirer with an Equity Value of \$500 million and Enterprise Value of \$600 million buys another company for a Purchase Equity Value of \$100 million and Purchase Enterprise Value of \$150 million.**

### **What are the Combined Equity Value and Enterprise Value?**

The Combined Enterprise Value equals the Enterprise Value of the Buyer plus the Purchase Enterprise Value of the Seller, so it's \$600 million + \$150 million = \$750 million.

You can't determine the Combined Equity Value because it depends on the purchase method:  
Combined Equity Value = Acquirer's Equity Value + Value of Stock Issued in Deal.

If it's a 100% Stock deal, the Combined Equity Value will be \$500 million + \$100 million = \$600 million, but if it's 100% Cash or Debt, the Combined Equity Value = \$500 million.



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And if the % Stock Used is above 0% but less than 100%, the Combined Equity Value will be between \$500 and \$600 million.

## **2. How do the Combined Equity Value and Enterprise Value relate to the purchase method?**

The Combined Enterprise Value is not affected by the purchase method: Regardless of the % Cash, Debt, and Stock used, it's always equal to the Buyer's Enterprise Value plus the Purchase Enterprise Value of the Seller.

The Combined Equity Value is equal to the Buyer's Equity Value plus the Value of Stock Issued in the Deal, which could range from \$0 up to the Purchase Equity Value of Seller.

So if it's a 100% Stock deal, the Combined Equity Value = Buyer's Equity Value + Purchase Equity Value of Seller.

## **3. So you're saying that in a 100% Cash or Debt deal, the Seller's Equity Value just "disappears"? How is that possible?**

The Seller's Equity Value doesn't "disappear" – it's just *transformed* into the Cash or Debt used by the Acquirer in the deal.

The Combined Enterprise Value calculation demonstrates this point: *Both* companies' Enterprise Values still exist after the deal, so no value is "lost" along the way.

## **4. Let's say this same Acquirer (Equity Value of \$500 million and Enterprise Value of \$600 million) has Net Income of \$50 million and EBITDA of \$100 million.**

**The Target (Purchase Equity Value of \$100 million and Purchase Enterprise Value of \$150 million) has Net Income of \$10 million and EBITDA of \$15 million.**

**What are the Combined P / E and EV / EBITDA multiples in a 100% Stock deal? Assume the same tax rates for the Acquirer and Target.**

The Combined Equity Value in a 100% Stock deal is \$500 million + \$100 million = \$600 million, and the Combined Enterprise Value is \$600 million + \$150 million = \$750 million.

The Combined EBITDA is \$115 million, and the Combined Net Income, assuming the same tax rates, is \$50 million + \$10 million = \$60 million.



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Therefore, the Combined P / E multiple is \$600 million / \$60 million = 10x, and the Combined EV / EBITDA multiple is \$750 million / \$115 million = ~6.5x.

### **5. How would those Combined Multiples change in a 100% Cash or Debt deal?**

The Combined EV / EBITDA multiple would stay the same because neither the Combined Enterprise Value nor the Combined EBITDA is affected by the purchase method.

The Combined P / E multiple would change because the Combined Equity Value would be lower, at \$500 million, in a 100% Cash or Debt deal.

The Combined Net Income would also change because of the Foregone Interest on Cash and Interest on Debt.

In *most* cases, the Combined P / E multiple will be lower in a 100% Cash deal because the Combined Equity Value will decline by a greater percentage than the Combined Net Income.

It will also tend to be lower in a 100% Debt deal, but you'd have to run the numbers to see for sure – if the Interest Rate on Debt is relatively high and the Seller's P / E multiple is low, the Combined P / E multiple might increase.

### **6. How do the Combined Multiples change based on the purchase method?**

Enterprise Value-based multiples do not change based on the % Cash, Debt, and Stock used because the Combined Enterprise Value is not affected by the purchase method, and EV-based metrics such as Revenue, EBITDA, and EBIT are also not affected by it.

Equity Value-based multiples *will* change based on the purchase method because the Combined Equity Value depends on the % Stock Used, and Equity Value-based metrics such as Net Income and Free Cash Flow are impacted by the Foregone Interest and Interest on New Debt.

### **7. What are the possible ranges for the Combined Multiples after a deal takes place?**

The Combined Multiples should always be between the Buyer's multiples and the Seller's purchase multiples.

However, you can't just average the multiples to determine the Combined Multiples because the companies could be different sizes.



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And it's **not** as simple as using the weighted average because the *proportion* of Enterprise Value and EBITDA from each company might be different.

The Combined Multiples will be closer to the Buyer's multiples if the Buyer is much bigger, but they'll be in the middle of the range if the Buyer and Seller are closer in size.

#### 8. Consider this M&A scenario:

- **Company A: Enterprise Value of \$100, Equity Value of \$80, EBITDA of \$10, Net Income of \$4, and Tax Rate of 50%.**
- **Company B: Enterprise Value of \$40, Equity Value of \$40, EBITDA of \$8, Net Income of \$2, and Tax Rate of 50%.**

**Calculate the EV / EBITDA and P / E multiples for each company.**

Company A EV / EBITDA =  $\$100 / \$10 = 10x$ ; P / E =  $\$80 / \$4 = 20x$ .

Company B EV / EBITDA =  $\$40 / \$8 = 5x$ ; P / E =  $\$40 / \$2 = 20x$ .

#### 9. Company A acquires Company B using 100% Cash and pays no premium to do so. Assume a 5% Foregone Interest Rate on Cash.

**What are the Combined EBITDA and P / E multiples?**

Combined EV / EBITDA = Combined Enterprise Value / Combined EBITDA =  $\$140 / \$18 = \sim 7.8x$ .

Combined P / E = Combined Equity Value / Combined Net Income.

The Combined Equity Value is just the Acquirer's Equity Value of \$80 since no Stock was used.

We can add together both companies' Net Incomes since they have the same tax rate, so the Combined Net Income is \$6. But we have to adjust for the Foregone Interest on Cash as well.

The Acquirer used \$40 in Cash, and  $5\% * \$40 = \$2$ . After the 50% tax rate, that's a \$1 loss.

So the Combined Net Income is \$5, which makes the Combined P / E =  $\$80 / \$5 = 16x$ .

#### 10. Now let's say that Company A instead uses 100% Debt with a 10% interest rate to acquire Company B.



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**Again, Company A pays no premium for Company B. What are the combined multiples?**

The Combined EV / EBITDA multiple remains the same at ~7.8x because it is not affected by the purchase method.

The Combined Equity Value is still just the Acquirer's Equity Value of \$80.

The Combined Net Income before adjustments is \$6, but now we must adjust for the Interest on Debt.

If Company A uses \$40 of Debt to acquire Company B, it will pay  $\$40 * 10\% * (1 - 50\%)$ , or \$2, in After-Tax Interest.

So the Combined Net Income is \$4, which makes the Combined P / E =  $\$80 / \$4 = 20x$ .

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### **Full Merger Model Mechanics**

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Ironically, questions on a "full merger model" tend to be easier than the questions above on accretion/dilution and multiple calculations.

That's because the **process** of building a complete merger model is straightforward, and the numbers get so complicated that you can't do mental math anymore.

So as with the first section of this guide, these questions tend to be more **conceptual**.

**1. Why is the Purchase Price in an M&A deal NOT equal to the Seller's Purchase Equity Value or Purchase Enterprise Value exactly?**

The real price depends on the treatment of the Seller's Cash and Debt in the deal.

If the Buyer repays the Seller's entire Debt balance with transaction funding and uses the Seller's entire Cash balance to fund the deal, the real price will be close to the Purchase Enterprise Value, but that hardly ever happens.

In most cases, the Buyer will "replace" the Seller's existing Debt with new Debt, which doesn't affect the cash price. And the Buyer hardly ever uses the Seller's entire Cash balance to fund the deal – at most, it might use a portion of it.

So the real price the Buyer pays is usually between the Purchase Equity Value and Purchase Enterprise Value of the Seller.





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Many other issues, such as the transaction fees and the treatment of Preferred Stock, Capital Leases, and Unfunded Pensions, also explain this difference.

## **2. What information do you need from the Buyer and Seller to create a full merger model?**

At the minimum, you need Income Statement projections for both companies over the next 1-2 years. But ideally, you will also create cash-flow projections that show how both companies' Cash and Debt balances change over time.

You do **not** need full 3-statement projections for both companies – similar to a DCF analysis, cash flow estimates without full Balance Sheet projections are fine.

## **3. Why is a Sources & Uses schedule important in a full merger model?**

The Sources & Uses schedule is important because it tells you **how much the Buyer really pays for the Seller**.

The Purchase Equity Value and Purchase Enterprise Value can be deceptive for the reasons outlined above.

But with the S&U schedule, you add up the total cost of acquiring the company – its shares, any refinanced Debt, and any transaction fees – and then show the amount of Cash, Debt, and Stock that will be used to pay for it.

The S&U schedule is also helpful for reflecting more unusual scenarios, such as a Seller using some of its Cash in the deal or a Buyer repaying its own Debt.

## **4. What's the purpose of a Purchase Price Allocation schedule in a merger model?**

The main purpose is to estimate the **Goodwill** that will be created in a deal.

Goodwill exists because Buyers often pay far more for companies than their Balance Sheets suggest they are worth; in other words, the Purchase Equity Value exceeds the acquired company's Common Shareholders' Equity (CSE).

When this happens, the Combined Balance Sheet will go out of balance because the Seller's CSE is written down, but the total amount of Cash, Debt, and Stock used in the deal exceeds the CSE that was written down.



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So you estimate the new Goodwill with this schedule, factor in write-ups of Assets such as PP&E and Intangibles, and also include other acquisition effects such as the creation of Deferred Tax Liabilities and changes to existing Deferred Tax items.

### **5. Why do Deferred Tax Liabilities get created in many M&A deals?**

A Deferred Tax Liability, or DTL, represents the *expectation* that cash taxes will exceed book taxes in the future.

It gets created because Depreciation & Amortization on Asset Write-Ups is not deductible for cash-tax purposes in a Stock Purchase (i.e., an M&A deal structured such that the Buyer purchases all the Seller's shares and acquires *everything* it has).

As a result, the Buyer will pay more in cash taxes than book taxes until the Write-Ups are fully depreciated. Each time the Buyer pays more in cash taxes than book taxes, the DTL decreases until it eventually reaches 0.

**6. An Acquirer purchases a company for a \$1 billion Equity Purchase Price, and this Target has \$600 million in Common Shareholders' Equity and no Goodwill.**

**The Acquirer plans to write up the Target's PP&E and Other Intangible Assets by \$100 million.**

**Walk me through the Purchase Price Allocation process, assuming a 40% tax rate.**

The "Allocable Purchase Premium" equals the Equity Purchase Price minus the Common Shareholders' Equity, so \$1 billion – \$600 million = \$400 million.

The PP&E and Other Intangible Assets increase by \$100 million, so you *subtract* this figure because it means you won't need as much Goodwill. So the Purchase Premium is down to \$300 million.

Then, you must create a Deferred Tax Liability that corresponds to these write-ups. It's equal to \$100 million \* 40%, or \$40 million, and you *add it* because an increase in the Liabilities side means that more Goodwill will be needed.

So \$340 million of Goodwill gets created, along with Asset write-ups of \$100 million and a new Deferred Tax Liability of \$40 million.



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**7. What happens if the Acquirer purchases another company for a \$1 billion Equity Purchase Price, but the Target's Common Shareholders' Equity is \$1.5 billion?**

**Assume there are no write-ups or other adjustments.**

"Negative Goodwill" cannot exist per the rules of IFRS and U.S. GAAP.

So in this situation, you record this \$500 million difference as a Gain on the Income Statement.

The Balance Sheet combination still works the same way, but you don't record any Goodwill; you just add all the acquired Assets and Liabilities.

The Balance Sheet still balances because Net Income increases as a result of this Gain. But this Gain is non-cash, so the company's Cash balance declines and Shareholders' Equity on the L&E side increases.

**8. I don't believe you. Walk me through what happens if an Acquirer purchases a Target for an Equity Purchase Price \$80, in 100% Cash, and the Target has \$200 in Assets, \$100 in Liabilities, and \$100 in Common Shareholders' Equity.**

**You write down the Seller's CSE completely, add the \$200 in Assets and \$100 in Liabilities to the Acquirer's Balance Sheet, and then reduce the Cash balance by \$80.**

So far, the Assets side is up by \$120 but the Liabilities side is up by only \$100, so the Balance Sheet is out of balance.

But then you record a Gain of \$20 on the Income Statement to reflect this "bargain purchase," which boosts Pre-Tax Income by \$20 and Net Income by \$12 at a 40% tax rate.

On the CFS, Net Income is up by \$12, but you subtract the \$20 Gain because it was non-cash, so Cash at the bottom is down by \$8 (the intuition is that the company pays taxes on something it didn't receive in cash).

On the BS, Cash is down by \$8 on the Assets side, so the Assets side is now up by \$112, and on the L&E side, Shareholders' Equity is up by \$12 because of the increased Net Income, so both sides are now up by \$112 and balance.

**9. What are the main adjustments you make when combining the Balance Sheets in an M&A deal?**



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You reflect the Cash, Debt, and Stock used in the deal, create new Goodwill, write up Assets such as PP&E and Other Intangibles, and reflect refinanced Debt. You also show new Deferred Tax Liabilities and the write-offs of existing DTLs and DTAs.

You must also write down the Seller's Common Shareholders' Equity and reflect transaction and financing fees (transaction fees affect Equity and financing fees are deducted from the new Debt balance).

There are many other adjustments; for example, you might reduce Accounts Receivable or Accounts Payable to reflect intercompany receivables or payables, and you might write down the Deferred Revenue balance after the transaction closes because accounting rules state that companies can recognize only the *profit portion* of Deferred Revenue after a deal.

#### **10. Give me an example of how you might estimate revenue and expense synergies in an M&A deal.**

With revenue synergies, you might assume that the Seller can sell its products to some of the Buyer's customer base. So if the Buyer has 100,000 customers, 1,000 of them might buy widgets from the Seller. Each widget costs \$10.00, so that is \$10,000 in extra revenue.

There will also be COGS and possibly Operating Expenses associated with these extra sales, so you must factor those in as well. For example, if the cost of each widget is \$5.00, then the Combined Company will earn only \$5,000 in extra Pre-Tax Income.

With expense synergies, you might assume that the Combined Company can close a certain number of offices or lay off redundant employees, particularly in functions such as IT, accounting, and administrative support.

So if both companies, combined, have 10 offices, and management feels that only 8 offices will be needed after the merger, the combined rental expense will decline.

If each office costs \$100,000 per year to rent, there will be  $2 * \$100,000 = \$200,000$  in expense synergies, which will boost the Combined Pre-Tax Income by \$200,000.

#### **11. Why do many merger models tend to overstate the impact of synergies?**

First, many merger models do **not** include the costs associated with revenue synergies. Even if the Buyer or Seller can sell more products or services after the deal takes place, those extra sales **cost something**. So you must also include the extra COGS and OpEx.



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Second, realizing synergies **takes time**. Even if a company expects \$10 million in “long-term synergies,” it won’t realize all of them in Year 1; it might take years, and the percentage realized will increase gradually each year.

Finally, realizing synergies **costs money**. There will always be “integration costs” associated with a deal, and certain types of synergies, such as building consolidation and headcount reduction, will cost even more due to severance costs.

## **12. Why do many merger models misstate the Foregone Interest on Cash and Interest on Debt?**

Many merger models do **not** track the Combined Company’s Cash and Debt balances over time.

If the model shows only 1-2 years, the numbers won’t necessarily be too far off, but if you’re building 5-year projections, you should project the combined cash flows as well.

If you don’t track the changing Cash and Debt balances, Interest Income will be understated since the Cash balance tends to grow over time, while the Foregone Interest on Debt will be overstated since the Combined Company can repay Debt with its cash flow.

## **13. How do you calculate the Combined Company’s Debt repayment capacity in a merger model?**

You do this by creating a “mini” Cash Flow Statement for the combined company.

You eliminate most of the Financing and Investing sections (except for CapEx and sometimes Dividends), but you keep much, but not all, of the CFO section.

It’s similar to what you do in a DCF to project Unlevered Free Cash Flow, but you’re estimating the company’s *Free Cash Flow* – **which includes Net Interest Expense** – here.

You have to include the Net Interest Expense because it directly impacts a company’s ability to repay Debt and to generate Cash; the purpose is different from that of a DCF since you’re not valuing a company but instead tracking its Cash and Debt balances.

## **14. How should you treat Stock-Based Compensation in a merger model?**

The easiest approach is to ignore it and count it as a real cash expense. Just as in a DCF, SBC is problematic because it increases the company’s share count and, therefore, reduces its value to



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existing investors, but it's difficult to estimate the precise impact since you have to project the company's share price to do that.

**So it's better NOT to add it back as a non-cash expense on the Combined CFS and to keep the Buyer's share count the same in all years.**

That way, you still reflect how SBC reduces a company's value to existing investors and makes the deal more dilutive, but you don't have to estimate the number of shares it creates.

### **15. Why might you calculate metrics such as Debt / EBITDA and EBITDA / Interest for the Combined Company in an M&A deal?**

These metrics tell you whether the Combined Company could afford to use more Debt to fund a deal or if it's using *too much* Debt to fund a deal.

Sometimes it's deceptive to look at a number like Debt / EBITA immediately *after* a deal closes because the Combined Company can de-lever rapidly by paying off Debt.

So even if its Debt / EBITDA temporarily jumps up to a high level, such as 5x or 6x, if it can repay Debt quickly and bring it down to 2x or 3x in 1-2 years, it might be able to use more Debt to fund the initial deal.

### **16. How do Pro-Forma EPS and Pro-Forma accretion/dilution from the standard, or IFRS/GAAP-compliant, figures?**

This one gets *very* confusing because there's no "standard" definition for Pro-Forma EPS. But most people calculate it by adding back non-cash expenses created in an M&A deal, primarily the Amortization of Intangibles and the Depreciation of PP&E Write-Ups, and calculating Combined Net Income based on this "Pro-Forma" Pre-Tax Income.

Some people also add back Stock-Based Compensation and other non-cash charges, effectively making Pro-Forma EPS into "Cash EPS."

Many companies report Pro-Forma EPS and calculate accretion/dilution based on these figures, but you should be skeptical because these numbers understate the true costs of acquisitions where Buyers pay high premiums.

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## More Advanced Features of Merger Models

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This entire set of questions is **OPTIONAL**.

Interviews have shifted away from these topics and toward trickier questions on the fundamentals.

So these more advanced features are good to know if you've had full-time work experience in finance and worked on M&A deals before, but they're **not important** if you're interviewing for entry-level roles.

### 1. Why do Buyers tend to prefer Asset Purchases and Sellers tend to prefer Stock Purchases?

In Asset Purchases, Buyers can pick and choose exactly which Assets they want to acquire and which Liabilities they want to assume, which reduces transaction risk.

Also, Buyers can deduct D&A on Asset write-ups for cash-tax purposes in an Asset Purchase, which reduces their tax burden after the deal closes.

Sellers tend to prefer Stock Purchases because Asset Purchases leave them with more risk after deals close and because they must pay taxes on the entire purchase price PLUS the Gains recorded on Assets in an Asset Purchase.

### 2. What's the advantage of a 338(h)(10) Election for a U.S.-based Buyer?

In a 338(h)(10) Election, the Buyer and Seller choose to treat a Stock Purchase as if it were an Asset Purchase for tax purposes.

So the Buyer still acquires all the Assets, Liabilities, and off-Balance Sheet items of the Seller, but it can also deduct D&A on Asset Write-Ups for cash-tax purposes.

338(h)(10) deals can help Buyers and Sellers compromise and reach an agreement more quickly since they combine elements favored by Buyers and Sellers in Asset and Stock Purchases.

### 3. If a Seller has a massive NOL balance, should the Buyer use a Stock Purchase, Asset Purchase, or 338(h)(10) Election to acquire it?

The Buyer should use a Stock Purchase because NOLs are written down in Asset Purchases and 338(h)(10) deals, and the Buyer cannot use any of the Seller's NOLs in those.





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**4. Walk me through what happens in a Stock Purchase deal where the Buyer pays an Equity Purchase Price of \$2 billion for the Seller, and the Seller has an off-Balance Sheet NOL balance of \$500 million. The NOLs expire in 5 years.**

**Assume that the Long-Term Adjusted Rates for the past 3 months were 2%, 3%, and 4%, and that the Buyer's Tax Rate is 40%.**

If the off-BS NOL balance is \$500 million, the portion within the DTA should be approximately \$200 million at a 40% tax rate.

The Buyer is allowed to use  $4\% * \$2 \text{ billion}$ , or \$80 million, per year.

The NOLs expire in 5 years, which means the Buyer can use only  $5 * \$80 \text{ million} = \$400 \text{ million}$  total.

Therefore, the Buyer will write down \$100 million of the off-BS NOLs and \$40 million of the NOLs represented within the DTA when the transaction first occurs.

After that, the Buyer will use \$80 million of the NOLs each year to reduce its cash-taxable income, so the off-BS balance will decline by \$80 million per year, and the portion within the DTA will decline by \$32 million per year until they both reach \$0 in Year 5.

#### **5. How do these numbers change in an Asset Purchase?**

In an Asset Purchase, the Net Operating Losses – both the off-Balance Sheet and on-Balance Sheet versions – are written down to \$0, and the Buyer can't use any of the Seller's NOLs.

#### **6. Why would a Buyer and Seller agree to an Earn-Out in an M&A deal?**

They might agree to an Earn-Out if they disagree about the Seller's future financial performance and, therefore, can't agree on a price.

For example, the Buyer might think the Seller will grow at only 5% per year, but the Seller believes it will grow at 15% per year.

As a compromise, the Buyer might offer the Seller upfront cash, along with additional compensation if it achieves financial goals, such as reaching \$100 million in revenue or \$20 million in EBITDA in 2 years (for example).



**7. A Buyer acquires a Seller for an Equity Purchase Price of \$1 billion. It also promises \$200 million in 2 years if the Seller earns \$100 million in EBITDA by then.**

**The Seller's Common Shareholders' Equity is \$600 million, and the Buyer plans to write up Assets for \$100 million total. Assume a 40% tax rate and a Stock Purchase structure, and walk me through the Purchase Price Allocation in this deal.**

First, you subtract the Seller's CSE from the Equity Purchase Price, which results in an Allocable Purchase Premium of \$400 million.

The Buyer writes up Assets for \$100 million, which reduces that Premium because less Goodwill is needed. So it's down to \$300 million.

A Deferred Tax Liability will also be created because of these write-ups, which we can estimate at  $\$100 \text{ million} * 40\% = \$40 \text{ million}$ . This DTL will increase the Premium because more Goodwill must balance this DTL on the other side. So we're up to \$340 million.

Next, we have to record the \$200 million Earn-Out as "Contingent Consideration" on the L&E side, and this will also boost the Premium because it means more Goodwill will be required.

So we end up with a total of \$540 million in Goodwill from this deal.

**8. In Year 1, the Buyer believes the Seller is far less likely to earn \$100 million in EBITDA, so it reduces the value of the Contingent Consideration Liability by 30%.**

**Walk me through the 3 statements.**

$\$200 \text{ million} * 30\% = \$60 \text{ million}$ , so the Contingent Consideration will decline by \$60 million. However, this change will be recorded as a **POSITIVE** on the Income Statement because it's a write-down of a Liability.

So Pre-Tax Income on the Income Statement will be up by \$60 million, and Net Income will be up by \$36 million at a 40% tax rate.

On the CFS, its Net Income is up by \$36 million, but this Change in Contingent Consideration was non-cash, so you subtract \$60 million, and Cash is down by \$24 million at the bottom.

On the BS, Cash is down by \$24 million, so the Assets side is down by \$24 million, and on the other side, the Contingent Consideration is down by \$60 million but Retained Earnings is up by



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\$36 million because of the increased Net Income, so the L&E side is also down by \$24 million, and both sides balance.

**9. In Year 2, the Buyer realizes it was wrong and reverses this change. Then, at the end of Year 2, the Seller achieves its goals and reaches \$100 million in EBITDA.**

**Walk me through the financial statements when the Earn-Out is paid out to the Seller.**

When the Earn-Out is paid to the Seller, there are no changes to the Income Statement. The \$200 million cash outflow is recorded within Cash Flow from Financing on the CFS.

On the Balance Sheet, Cash is down by \$200 million, so the Assets side is down by \$200 million, and the Contingent Consideration also declines by \$200 million, so the L&E side is also down by \$200 million, and the Balance Sheet balances.

**10. What's the difference between Fixed and Floating Exchange Ratios, and which one do Buyers prefer?**

With a Fixed Exchange Ratio, the Seller receives a constant number of shares. For example, the Buyer might agree to issue 2 new shares for each of the Seller's shares. The Seller's ownership will stay the same, but its purchase price will change based on the Buyer's share price.

With a Floating Exchange Ratio, the Seller receives a fixed purchase price, but a variable number of shares. For example, the Buyer might agree to pay \$200 million to the Seller, but that means 10 million shares if the Buyer's share price is \$20.00 and 40 million shares if the Buyer's share price is \$5.00.

Buyers care the most about **avoiding dilution** in M&A deals, so a Buyer tends to favor the Fixed Exchange Ratio if it's not confident of its future share price movement. But if the Buyer is reasonably confident that its share price will rise, it might favor a Floating Exchange Ratio so that it issues fewer shares.

**11. Why might a Buyer and Seller agree to a collar in a 100% Stock deal?**

100% Stock deals present risk for both Buyers and Sellers: The Buyer could end up diluting itself by a huge amount if its share price falls, while the Seller could end up receiving fewer shares than it expects if the Buyer's share price rises.



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A **collar** is a way to compromise and reduce risk on both sides by establishing a Fixed Exchange Ratio within a certain range of Buyer share price, with Floating Exchange Ratios outside that region. You could also set it up the opposite way.

Sellers can be assured of receiving a fixed purchase price or a fixed number of shares, within a reasonable range of share prices for the Buyer, while Buyers can limit their dilution.

## 12. What are example terms you might see for a Fixed Exchange Ratio Collar in an M&A deal?

With a Fixed Exchange Ratio Collar, the Seller gets a fixed number of shares within a certain share price range for the Buyer, so the purchase price will vary within that range.

Above or below that range, the purchase price is fixed but the number of shares the Seller receives varies.

For example:

- **Buyer's Share Price Between \$50.00 and \$60.00:** The Seller always gets 10 million of the Buyer's shares.
- **Buyer's Share Price Above \$60.00:** The Seller gets a maximum price of \$600 million, and the shares issued vary based on the Buyer's share price.
- **Buyer's Share Price Below \$50.00:** The Seller gets a minimum price of \$500 million, and the shares issued vary based on the Buyer's share price.

## 13. Walk me through what happens on the financial statements immediately after a Buyer acquires a 20% stake in a Seller worth \$500 million using 50% Cash and 50% Debt.

Since this is a minority stake, Equity Investment accounting applies. There will be no Purchase Price Allocation or financial statement consolidation.

Instead, the Buyer will create an "Equity Investment" line item for  $20\% * \$500 \text{ million} = \$100 \text{ million}$  on the Assets side.

Its Cash balance will decrease by \$50 million, so the Assets side is up by \$50 million, and its Debt balance on the L&E side will increase by \$50 million, so both sides are up by \$50 million and balance.



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**14. Walk me through the same scenario, but assume that the Buyer acquires a 70% stake in the Seller instead.**

In this case, you apply purchase accounting and must consolidate the financial statements and create Goodwill because the Buyer acquires more than 50% of the Seller.

You start by creating Goodwill based on the Seller's Equity Purchase Price of \$500 million minus its Common Shareholders' Equity and any Asset write-ups (and other adjustments).

Then, you add together the Buyer and Seller's Balance Sheets and other financial statements 100%, but you write down the Seller's Common Shareholders' Equity.

Then, you record a Noncontrolling Interest for the portion of the Seller that the Buyer does *not* own, which is  $30\% * \$500 \text{ million} = \$150 \text{ million}$  here.

Since it's a 50 / 50 Cash / Debt deal, the Cash balance on the Assets side declines by \$75 million and the Debt on the L&E side increases by \$75 million.

The Balance Sheet *appears* to be out of balance, but that's because we haven't yet factored in Goodwill since we didn't have enough information to calculate it. Once we do that, the Assets side will equal the L&E side.

**15. What would change in a merger model if the deal closed on an irregular date, such as August 15<sup>th</sup>?**

You would have to "roll forward" the most recent Balance Sheets for both companies to August 15<sup>th</sup> and combine them on that date, ensuring that the Purchase Price Allocation and Sources & Uses schedules are also based on that date.

You would also create a "stub period" for the combined Income Statement and Cash Flow Statement and show what happens between August 15<sup>th</sup> and the end of the companies' first quarter (or first year) as a combined company.

Even when this type of stub period exists, you tend to focus on the **first full-year results** in a merger model – EPS accretion/dilution means more over an entire year than it does over a stub period or a quarter.

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