Bank & Financial Institution Questions & Answers

We created this section of the interview guide because we kept getting questions on what to expect when interviewing with **specific industry groups**.

This chapter addresses banks and financial institutions and the associated FIG (Financial Institution Groups) at investment banks.

There are also sections on **insurance companies** – be aware that they are less common in interviews, and considerably more complex technically (especially Life Insurance).

A couple points:

1. This is **advanced material**. You should not expect to receive these questions in entry-level interviews unless you have worked with banks and insurance firms before, and you're interviewing with a Financial Institutions Group.
2. You will **still get normal accounting, valuation, and modeling questions** even if you interview with specific industry groups – so don't forget about those.
3. I've divided this into **"High-Level Questions"** (more likely in entry-level interviews) and then **advanced questions** on specific topics like accounting, valuation, modeling, and so on.

Finally, keep in mind that this guide is only questions and answers – if you want to learn everything *behind* the questions in-depth, you should check out the Bank & Financial Institutions Modeling Program at a special, members-only discounted rate right here:

http://breakingintowallstreet.com/biws/bank-modeling-members-discount/

You must be logged into the site to view that page.

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High-Level Questions & Answers

These are the most important questions to know for **entry-level interviews** with financial institutions groups.

Even if you know more than the questions and answers here, you should downplay your knowledge in interviews and set expectations lower – otherwise you open yourself up to obscure technical questions.

1. Can you explain how a commercial bank makes money?

First, the bank gets money (deposits) from customers, because customers need a place to keep their money and potentially earn a small amount of interest on it. Then, the bank collects all these funds and loans it out in larger quantities, at higher interest rates, to businesses (and other organizations) that need to borrow money.

Banks make money on the **interest rate spread**: they might pay out 1% interest, on average, on deposits, but they might earn 3-4% interest on loans that they issue.

Additionally, many large commercial banks have non-interest sources of revenue such as credit card fees, asset management fees, investment banking, and sales & trading.

2. How does an insurance firm make money?

Insurance firms collect **Premiums** upfront from customers who pay to be protected in case of an accident (car, house, business, health…) or death (Life Insurance).

Then, they pay out **Claims** to customers if and when the accident actually takes place.

In the meantime, they collect a lot of money upfront very cheaply (similar to commercial banks), and they use this money (called "the float") to make investments and earn interest and capital gains on those. This is how Warren Buffett made his fortune.

Many insurance companies are unprofitable or marginally profitable based on their **Underwriting** activities, and only become profitable due to their **Investing** activities.

3. How are commercial banks different from normal companies?

You could write a book on this one, but the 5 key differences:

1. **Balance Sheet-Centric:** Unlike normal companies that sell products to customers, banks are Balance Sheet-driven and everything else flows from the **deposits** they take in from customers and the **loans** they make with them.
2. **Operations = Finance?:** For normal companies it's easy to categorize activities as operating, investing, or financing, but for banks it's much tougher because debt is used as a raw material to create their "products" – loans.
3. **Equity Value:** Enterprise Value and Enterprise Value-related multiples have no meaning for banks, because you can't define what debt means and you can't separate operations from financing. So you use Equity Value and Equity Value-based multiples instead.
4. **Cash Flow Can't Be Defined:** Metrics like Cash Flow from Operations and Free Cash Flow have no meaning for banks because CapEx is minimal and swings in Working Capital can be massive – so you need to use Dividends or Residual Income as a proxy for cash flow in valuations.
5. **Regulation:** Finally, banks operate under a set of regulatory requirements that limit the loans they can issue and their leverage; they must also maintain certain capital levels at all times (see below).

4. What about asset management and investment banking firms? Are they different as well?

The points above only apply to **commercial banks** – e.g. institutions that accept deposits from customers and then issue loans to other customers, effectively making money based on the interest rate spread.

Asset management firms and pure investment banks do **not** do this, so they are closer to normal companies and you can still look at metrics like EBITDA and revenue growth.

5. How are insurance companies different from normal companies?

The 5 key differences above between banks and normal companies also apply here: they're Balance Sheet-centric, Operational and Financing activities are difficult to separate, they're Equity Value-based, "Free Cash Flow" doesn't mean much, and regulatory capital is extremely important.

In addition, there are a few more differences to note:

- **Premiums** rather than Loans / Deposits drive everything for insurance.
- **Non-Interest Revenue** is more significant and tends to be higher as a percentage than it is for banks, because insurance firms earn so much from Premiums.
- They use **Statutory Accounting**, a different system from IFRS / GAAP that is closer to cash accounting in some ways.
- **Valuation** is similar to commercial bank valuation, but **Embedded Value** is an extremely important methodology for Life Insurance (see the Valuation section).

6. How are the 3 financial statements different for a commercial bank?

- **Balance Sheet:** Loans on the Assets side and Deposits on the Liabilities side are the key drivers; you also see new items like Allowance for Loan Losses (a contra-asset) and more categories for Investments and Securities; common working capital items like Inventory may not be present.

- **Income Statement:** Revenue is divided into Net Interest Income and Non-Interest Income; COGS does not exist; Provision for Credit Losses is a major new expense; operating expenses are labeled Non-Interest Expenses.
- **Cash Flow Statement:** It's similar but the classifications are murkier; all Balance Sheet items must still be reflected here and Net Income still flows in as the first item at the top, but you also see new items like Provision for Credit Losses, a non-cash expense that must be added back.

7. How are the 3 statements different for an insurance firm?

- **Balance Sheet:** Assets are split into **Investment Assets** and **Non-Investment Assets** (Cash, Premiums Receivable, Reinsurance Recoverables, Ceded Unearned Premiums, Deferred Acquisition Costs, and then normal items). The other side is similar but there are a number of **Reserves** for Claim Expenses and Unearned Premiums (similar to Deferred Revenue).
- **Income Statement:** Revenue is divided into Premiums, Net Investment and Interest Income, Gains / (Losses), and Other; COGS does not exist; Claims are the major expense, as well as G&A, Commissions, and Interest.
- **Cash Flow Statement:** It's similar, but you also need to reflect changes in the new Balance Sheet items such as Deferred Acquisition Costs.

8. How would you value a commercial bank?

You still use public comps and precedent transactions, but:

- You screen based on Total Assets or Deposits rather than the usual Revenue and EBITDA criteria; your criteria should also be much narrower because few banks are directly comparable.
- You look at metrics like ROE, ROA, Book Value, and Tangible Book Value instead of Revenue and EBITDA.
- You use multiples such as P / E, P / BV, and P / TBV instead.

Rather than a traditional DCF, you use 2 different methodologies for **intrinsic valuation**:

- In a **Dividend Discount Model (DDM)** you sum up the present value of a bank's Dividends in future years and then add it to the present value of the bank's terminal value, which is based on a P / BV or P / TBV multiple.
- In a **Residual Income Model** (also known as an Excess Returns Model), you take the bank's current Book Value and add the present value of the Excess Returns to that Book Value to value it. The "Excess Return" each year is (ROE * Book Value) – (Cost of Equity * Book Value). Basically, it's how much the returns exceed your expectations by.

You use these methodologies and multiples because **interest** is a critical component of a bank's revenue and because debt is a "raw material" rather than just a financing source.

9. What are common metrics and valuation multiples when analyzing banks?

- **Book Value (BV):** Shareholders' Equity
- **Tangible Book Value (TBV):** Shareholders' Equity – Preferred Stock – Goodwill – (Certain) Intangible Assets
- **EPS:** Net Income to Common / Shares Outstanding
- **Return on Equity (ROE):** Net Income / Shareholders' Equity
- **Return on Assets (ROA):** Net Income / Total Assets
- **P / E:** Market Price Per Share / Earnings Per Share
- **P / BV:** Market Price Per Share / Book Value Per Share
- **P / TBV:** Market Price Per Share / Tangible Book Value Per Share

There are more variations – for example, you could look at the Common Book Value, the Return on Common Equity, the Return on Tangible Common Equity, and so on.

The "Return On" metrics tell you how much in after-tax income a bank generates with the capital it has raised or the Assets it has on-hand; the P / BV and P / TBV multiples tell you how the market is valuing a bank relative to its Balance Sheet.

10. How would you value an insurance firm?

Mostly the same way as you would value a commercial bank: with P / E, P / BV, and P / TBV multiples for public comps and precedent transactions, and with a Dividend Discount Model (DDM) instead of the normal DCF analysis.

There are also a few new methodologies: you can create a **Net Asset Value (NAV)** model where you adjust the Assets and Liabilities to their true market values and subtract to estimate the value – that's not as relevant for commercial banks because their Balance Sheets are marked to market.

And for Life Insurance, there's **Embedded Value**, which adds a firm's adjusted Book Value (see above) to the **present value of its future profits from its insurance policies** and measures its value based on that.

11. What are common metrics and multiples you look at for insurance firms?

Many of the metrics and multiples are similar to bank metrics: BV, TBV, EPS, ROE, ROA, P / E, P / BV, and P / TBV.

A few additional metrics that matter: the **Loss & Loss Adjustment Expense (LAE) Ratio** (the Claims or Loss Expense divided by Net Earned Premiums), the **Expense Ratio** (Commission + Underwriting Expenses divided by Net Written premiums) and then the **Combined Ratio**, which sum both of these ratios and gives an overall picture of profitability.

You can also calculate **Net Asset Value** (Adjusted Assets – Adjusted Liabilities – Capital Deficiency) for insurance firms and make a multiple out of that (P / NAV).

Finally, **Embedded Value** is very important on the Life Insurance side – it adds the firm's Adjusted Book Value to the present value of their future profits from insurance policies. You can also make metrics and multiples out of it (Embedded Value Profit, Return on Embedded Value, P / EV…).

12. What is Tier 1 Capital and why do banks need to maintain a certain level?

Tier 1 Capital serves as a "buffer" against *unexpected losses* and the banks losing deposits or other funding sources when borrowers default on their loans. The exact calculation varies between different banks, but the basic formula is:

Tier 1 Capital = Shareholders' Equity – Goodwill – (Certain) Intangibles + (Certain) Hybrid Securities and Noncontrolling Interests

Think about what happens if the bank's Loans on the Assets side of the Balance Sheet drop by $10 billion: something on the other side of the Balance Sheet needs to fall as well.

Customers would be quite angry if they suddenly lost $10 billion on their Deposits, and Debt investors would be even angrier – so instead, that $10 billion would be deducted from one of the items in Tier 1 Capital, most likely Shareholders' Equity.

That's why it's a "buffer" – it protects banks from defaulting on their (owed) Debt or Customer Deposits.

13. Why are banks so heavily regulated? What are the main requirements?

Banks are heavily regulated because they're central to the economy and all other businesses, and because one large bank failure could result in apocalypse, as we saw with the financial crisis.

The exact requirements get tricky because there are the numbers **now** – before Basel III comes into full effect in 2018 – and what the numbers will be **then**.

Let's start with the main requirements **now** (before 2013):

- The **Tier 1 Ratio** must be greater than or equal to **4%** at all times;
- The **Tier 1 Common Ratio** must be greater than or equal to **2%** at all times;
- The **Total Capital Ratio** must be greater than or equal to **8%** at all times;
- **Tier 2 Capital** cannot exceed **Tier 1 Capital**;

- The **Leverage Ratio** must be greater than or equal to **3%** at all times (US Only).

The denominator for these ratios is **Risk-Weighted Assets (RWA)**, basically each of the bank's Assets multiplied by how "risky" it is. We'll get into the exact definitions for Tier 2, Total Capital, and RWA in the section on Regulatory Capital.

Now, the numbers when Basel III comes into full effect in 2018-2019 (it will be phased in gradually from 2013 to 2018-2019):

- The **Tier 1 Ratio** must be greater than or equal to **6%** at all times;
- The **Tier 1 Common Ratio** must be greater than or equal to **4.5%** at all times;
- The **Total Capital Ratio** must be greater than or equal to **8%** at all times;
- There is a new **Conservation Buffer** of **2.5%** that gets added to all these;
- There is a new **Countercyclical Buffer** of **2.5%** that also gets added to all these if the economy is in a period of high credit growth;
- **Tier 2 Capital** cannot exceed **Tier 1 Capital**;
- The **Leverage Ratio** must be greater than or equal to **3%** at all times.

Additionally, there's a new **Liquidity Coverage Ratio** (a bank must hold enough liquid assets to cover net cash outflows over 30 days) and a **Net Stable Funding Ratio** (stable funding must exceed what's required over a one-year extended stress period).

Basically, Basel III is much tougher on banks and requires them to be more conservative with their borrowing and lending practices.

It is extremely unlikely that you'll be asked about specific numbers here – just say that banks must maintain certain capital and leverage ratios.

14. What are the regulatory capital requirements for insurance firms?

Insurance companies are governed by **Solvency Requirements**, which are similar. One of the key metrics is the **Solvency Ratio**, defined as the Statutory Cap & Surplus (a variant on Shareholders' Equity) divided by Net Written Premiums – there is usually a minimum percentage required to prevent companies from taking undue risk.

You can also calculate the **Reserves Ratio** (Net Technical Reserves on Balance Sheet divided by Net Written Premiums), and that also must meet minimum requirements.

The basic idea: "Do we have enough capital and/or reserves on hand to cover ourselves in case of extraordinary *unexpected* losses from our insurance policies?"

Commercial Bank Accounting Questions & Answers

These questions are all more advanced than anything in the "High-Level" section.

It is unlikely that you will get any of these questions in entry-level interviews unless you have worked in FIG before or claim to have knowledge of the industry.

Most of the questions here involve accounting for Loan Losses and the Provision for Credit Losses – they're not difficult, but they can be counterintuitive.

1. Explain the Allowance for Loan Losses and Provision for Credit Losses, where they show up on the 3 statements, and why we need them.

You need both of these items because **banks expect a certain number of borrowers to default on their loans**.

The Allowance for Loan Losses shows up as a contra-asset on the Balance Sheet, and is deducted from the Gross Loans number to get to Net Loans; it represents how much of the current Gross Loans balance the bank *expects* to lose (i.e. borrowers default).

The Provision for Credit Losses number is an expense on the Income Statement; it represents how much the bank expects to lose on loans over the next year (or quarter, or month, depending on the period) *above and beyond* the Allowance for Loan Losses.

Increasing the Provision for Credit Losses increases the Allowance for Loan Losses (technically it **decreases** it because it's a contra-asset) and vice versa (see example below).

2. Let's say we record a Provision for Credit Losses of $10 on the Income Statement. What happens on the other statements?

Income Statement: Pre-Tax Income would go down by $10 and Net Income would fall by $6 if you assume a 40% tax rate.

Cash Flow Statement: Net Income is down by $6 but the Provision for Credit Losses is a non-cash expense, so we add it back, and overall Cash is up by $4.

Balance Sheet: Cash is up by $4 on the Assets side, but the Allowance for Loan Losses has now **decreased** by $10 (remember, it's a contra-asset: if it was negative $5 previously, it would be negative $15 now), so overall the Assets side is down by $6.

On the Liabilities & Equity side, Shareholders' Equity is also down by $6 because Net Income was down by $6 and it flows in directly, so both sides balance.

3. Our beginning Allowance for Loan Losses is $50. We record Gross Charge-Offs of $10, Recoveries of $5, and then add $10 to the Allowance for Loan Losses to account for anticipated losses in the future. What's the ending Allowance for Loan Losses?

The math is simple, but the concepts can get confusing: to determine the ending balance, you take the beginning balance, subtract Gross Charge-Offs (those are the *actual* loans that borrowers defaulted on), add Recoveries (those are previously written off loans that you can partially recover due to collateral), and then add any additional provisions.

So in this case, $50 – $10 + $5 + $10 = $55.

Remember that this is a **contra-asset, so it would appear as negative $55 on the Assets side of the Balance Sheet.**

4. Let's continue with this scenario. Walk me through what happens on the 3 statements when you have Gross Charge-Offs of $10, Recoveries of $5, and an addition of $10 to the Allowance for Loan Losses.

First, realize that this "addition of $10 to the Allowance for Loan Losses" really just means "$10 of Provision for Credit Losses." The interviewer is using tricky wording here to disguise what's going on.

Income Statement: Only the Provision for Credit Losses shows up. So Pre-Tax Income falls by $10, and Net Income falls by $6 if you assume a 40% tax rate.

Cash Flow Statement: Net Income is down by $6, and we add back the $10 Provision for Credit Losses so Cash is up by $4 at the bottom. **Gross Charge-Offs and Recoveries do not show up on the Cash Flow Statement**.

Balance Sheet: Cash is up by $4, the Gross Loans balance is down by $5 because there was $10 in Gross Charge-Offs plus Recoveries of $5, and the Allowance for Loan Losses is now negative $55 rather than negative $50. Overall, the Assets side is down by $6.

On the other side, Shareholders' Equity is down by $6 because Net Income decreased by $6, so both sides balance.

Why does the Net Charge-Offs number (Gross Charge-Offs – Recoveries) not show up on the Cash Flow Statement?

Because **it cancels itself out**: it reduces the Gross Loans number, but it *increases* the Allowance for Loan Losses, so the Net Loans and Total Assets numbers stay the same.

5. Let's say we have Gross Charge-Offs of $10 billion. Walk me through what happens on the 3 statements.

Trick question – **there are no *net* changes**. For banks, only the Provision for Credit Losses actually impacts the financial statements.

What they have *actually* written off does not change anything – only what they *expect* to write off does.

There would be no changes on the Income Statement or Cash Flow Statement for this scenario.

On the Balance Sheet, Gross Loans would decrease by $10 billion and the Allowance for Loan Losses would increase by $10 billion, so the two cancel each other out and the Net Loans number stays the same, as do both sides of the Balance Sheet.

6. Wait a minute. You're telling me that if a bank writes off $10 billion worth of loans, nothing is affected? How is that possible?

Nothing in the *current* period is affected. If a bank had write-offs this large, they would need to increase their Provision for Credit Losses in future years.

So the next year, you might see a Provision for Credit Losses of closer to $10 billion, which would impact the financial statements.

A bank must disclose all these numbers in its filings, so if it did **not** increase its Provision for Credit Losses appropriately, investors would start running for the hills.

7. What ratios can you use to analyze a bank's charge-offs?

There are dozens of ratios involving charge-offs, but the 4 most important ones are:

- **NCO Ratio:** Net Charge-Offs / Average Gross Loan Balance
- **Net Charge-Offs / Reserves:** Net Charge-Offs / Allowance for Loan Losses
- **Reserve Ratio:** Allowance for Loan Losses / Gross Loans
- **NCO / Prior Year Provision:** Net Charge-Offs / Last Year's Provision for Credit Losses

The meaning for each of these is fairly intuitive – the percentage of loans you've charged off, what you've charged off relative to what you expected, what percent

of loans you expect to lose, and how accurate your predictions from the year before were.

Other metrics include NPLs (Non-Performing Loans) – those currently in default or in violation of covenants – and NPAs (Non-Performing Assets), which is just NPL + certain foreclosed real estate properties (the official name is OREO – not the cookie, but Other Real Estate Owned Assets).

From these you could create the **NPL Coverage Ratio** – Allowance for Loan Losses / NPL – and the **NPA Ratio** – NPA / NPL.

Commercial Bank 3-Statement Modeling Questions & Answers

Once again, these questions are more advanced than anything in the first section and you're not likely to see this level of detail in interviews unless you've had previous FIG experience.

Creating a "generic" 3-statement model for a bank is tricky because each bank is different – JP Morgan's statements are different from Deutsche Bank's statements, and both of those are different from the statements of smaller, regional banks.

That said, there are some common approaches to 3-statement modeling for a bank – we cover possible questions based on those here.

1. How do you project the 3 financial statements for a commercial bank?

You would start by projecting its Loan Portfolio, Net Charge-Offs, and Provisions for Credit Losses over the next 5-10 years. Those, in turn, flow into the Balance Sheet and give you the Gross Loans and Net Loans numbers.

Most of the other items on the Balance Sheet are percentages of Gross Loans, but some, such as Trading Assets, may be based on percentage growth rates as well.

You then use the Interest-Earning Assets and Interest-Bearing Liabilities of a bank and the interest rate spread to determine its Net Interest Income on the Income Statement.

Other Income Statement items such as Asset Management Fees, Investment Banking Revenue, and Non-Interest Expenses may be simple percentages.

The Cash Flow Statement is similar to what you see for normal companies: use it to reflect all the changes in Balance Sheet items, Debt Raised and Paid Off, Stock Issued, Dividends, and so on.

2. Explain how you can use the Balance Sheet of a bank to create its Income Statement.

Determine which Assets actually earn interest – the **Interest-Earning Assets** – and which Liabilities bear an interest expense – **Interest-Bearing Liabilities**. You can find this information in the filings or annual reports of a bank.

Then, you could assign individual interest rates to everything, sum up the Interest Income and subtract the Interest Expense to get to the Net Interest Income, or you could just assign a single interest rate to all the Interest-Earning Assets and one to all the Interest-Bearing Liabilities to simplify the calculation.

That gives you the Net Interest Income on the Income Statement – the Non-Interest items are either simple percentage growth projections (e.g. Investment Banking Revenue) or are percentages of other Balance Sheet items (e.g. Credit Card Fees would be a percentage of Credit Card Loans).

3. How do you project the interest rates in a 3-statement model for a bank?

No one can project interest rates 5 years into the future, so this exercise is always a shot-in-the-dark.

That said, generally you start with the **interest rate on Interest-Bearing Liabilities**, and then add the **interest rate spread** to that to calculate the **interest rate on Interest-Earning Assets**.

A bank has more control over its funding costs than it does over what it earns on loans, so it's best to start with the Liabilities; while the exact interest rate is hard to predict, the interest rate spread may follow historical trends more closely than the rate itself.

4. What are Mortgage Servicing Rights (MSRs) and why do you see them listed in a separate line on a bank's Balance Sheet?

Mortgage Servicing Rights (MSRs) are Intangible Assets that represent a bank's right to collect principal repayments, interest payments, taxes, insurance, and so on, from mortgages.

3rd party mortgage lenders create mortgages and then sell these rights to banks, offering them a cut of the profits in exchange for helping out with the collection process.

Although MSRs are technically Intangible Assets, they are usually allowed to count toward Tier 1 Capital and Tangible Common Equity because they represent **future cash flow**.

The MSR item on the Balance Sheet **increases** by the MSR Originations each year and **decreases** by how much a bank actually collects in mortgage fees, which shows up on the Income Statement.

5. How do you balance a bank's Balance Sheet and how is it different from the process for normal companies?

With normal companies, Cash and Shareholders' Equity are the plugs: Cash flows in from the bottom of the Cash Flow Statement to reflect all changes there, and on the other side of the Balance Sheet, Shareholders' Equity includes the remainder of the balancing changes.

Technically you could do this for banks as well, but it's more common to see **Federal Funds Sold** (on the Assets side) and **Federal Funds Purchased** (on the Liabilities side) used as balancers.

The idea is that a bank needs to maintain a certain amount of reserves in the central bank of the country – so if the Assets side falls below the other side, the bank could sell back some of its Federal Funds to other banks in need, and vice versa on the Liabilities & Shareholders' Equity side for Federal Funds Purchased.

6. Imagine that you're the CEO of a large bank and you're looking at your Income Statement. Would you prefer to see more Non-Interest Income or Interest Income?

You can't control interest rates, so Net Interest Income can fluctuate a lot with the economic environment… so it is sometimes viewed as "better" to have more Non-Interest Income.

While the economy also affects Credit Card Fees, Investment Banking Revenue, and so on, those sources tend to be under your control more than interest rates.

7. How do you calculate Dividends for a bank?

First, you assume a payout ratio based on the bank's Net Income or EPS and use that to calculate Dividends or Dividends Per Share.

Then, you must check what the bank's Tier 1 Capital would be if you actually issued those Dividends. If the Tier 1 Ratio falls below your target level, you have to reduce the amount of Dividends you're issuing.

For example, let's say that Tier 1 Capital is $100 currently and you need to maintain $90 at all times. Your payout ratio has you issuing $15 of Dividends.

That is not allowed since those Dividends would reduce Tier 1 Capital to $85 – instead, you would just issue $10 in Dividends to keep Tier 1 Capital at the required level.

Insurance Accounting Questions & Answers

Insurance accounting, believe it or not, is even more complicated than commercial bank accounting because of **reinsurance** and the fact that revenue and expense recognition gets tricky for multi-year policies.

We are not going to delve into these nuances in extreme depth here because they're not likely to come up in interviews.

Instead, we are going to focus on the most important accounting differences here and walk through a few common scenarios that might come up in interviews.

1. We write 1-year Premiums of $100 and collect the $100 from customers midway through the year (June 30th). Walk me through how the 3 statements change – assume NO associated expenses yet.

Income Statement: You record $50 in Net Earned Premiums (NEP) because you can only recognize 50% of these 1-year Premiums in this current year. So Revenue is up by $50, as is Pre-Tax Income, and Net Income is up by $30 at a 40% tax rate.

Cash Flow Statement: Net Income is up by $30. However, our **Unearned Premium Reserve (UEPR)** – similar to Deferred Revenue – has also increased by $50 because of the $50 of Premiums we're set to recognize in the next year. Since that's a Liability, cash overall is up by $80.

Balance Sheet: Cash is up by $80, so the Assets side is up by $80. On the other side, the Unearned Premium Reserve is up by $50 and Shareholders' Equity is up by $30 due to the Net Income change, so both sides balance.

Intuition: It's very similar to Deferred Revenue – we've collected cash for a policy but have not recognized part of it as revenue yet.

2. We directly write $100 in Premiums ourselves. We also *reinsure* $50 in Premiums from other insurance companies. Then, we also *cede* 30% of our own

directly written Premiums to other insurance companies for reinsurance. What's our Net Written Premiums (NWP) number for the year?

Net Written Premiums = Direct Written Premiums + Assumed Premiums – Ceded Premiums, so $100 + $50 – 30% * $100 = $120 in this case.

Note that **this number does *not* appear on the Income Statement at all because these Premiums do *not* represent *earned* Premiums**. Only the Net Earned Premiums number appears on the Income Statement and counts toward revenue.

3. Let's take the same scenario and say that, on average, 50% of all Premiums are *earned* in a given year, i.e. that these are all 1-year policies and the average written date is June 30th each year. What appears on the Income Statement as revenue?

If it's a simple 50%, you can just multiply $120 by 50%, giving you $60 as the Net Earned Premiums (NEP) number that appears on the Income Statement as revenue.

If there were different percentages for each category of Premiums, you would have to multiply each number above by the relevant percentage and add them up.

4. Let's talk about different reinsurance methods – what's the difference between Quota Share (QS) and Excess of Loss (XOL)?

A **Quota Share** agreement is based on a simple percentage for both Premiums and Claims: for example, another company agrees to cede 30% of its Premiums to you, and they agree to pay 70% of the Claims with you paying 30% of the Claims.

With **Excess of Loss**, by contrast, the Premium and Claim sharing is not proportional. For example, the other company might cede 5% of its Premiums to you…

But then the other company might pay for up to $1 million in Claims, and then you would cover anything between $1 million and $5 million. And then they pay for claims beyond $5 million.

These policies affect your models because you may have to make very different expense assumptions depending on the type of reinsurance in place.

5. Why do insurance companies bother having all these complex reinsurance policies in place? Why do they cede their own Premiums and assume Premiums from other companies?

It's all about **risk management** and **diversification:** if 100% of a company's policies were from one region and a hurricane suddenly passed through the area, that would be **bad news** for the company because now they'll hemorrhage cash as they pay out enormous Claims to customers.

But if they distribute some of the risk among other insurance companies, and also assume policies from different companies, their potential for catastrophic disaster is much lower.

6. We've been over the Unearned Premium Reserve. Can you explain the purpose of the Loss & Loss Adjustment Expense (LAE) Reserve, otherwise known as the Claim and Claim Adjustment Expense Reserve?

It's similar to Accrued Expenses or Accounts Payable for normal companies: it reflects the fact that you record **expenses** to match the Premiums earned due to the matching principal of accounting, but that you may not have paid out those expenses in cash yet.

For example, let's say that you have $120 in Net Written Premiums and $60 in Net Earned Premiums, with a 60% Loss & LAE Ratio, so you assume that there's $36 in expenses associated with those Premiums earned in the first year.

The problem is that the **cash payout** of those policies may occur over many years as customers get into accidents and file claims.

So if you only pay out $18 in cash in Year 1, the Loss & LAE Reserve increases by $18. And then when if you pay out $9 in Year 2 and Year 3, the Reserve decreases by $9 each year until everything is paid out.

7. Following up on that, what is meant by the "Loss Triangle" for insurance companies?

This refers to how an insurance company incurs Loss & LAE Expenses each year, following its Net Earned Premiums, and then pays them out in cash over many years, changing their Reserves accordingly (see screenshot to the right for an example).

Insurance Company - Loss and Expense Example 2					
	Year 1	Year 2	Year 3	Year 4	Year 5
Net Written Premiums (NWP):	$ 10,000	$ 10,000	$ -	$ -	$ -
Net Earned Premiums (NEP):	5,000	10,000	5,000	-	-
Change in Unearned Premium Reserve:	5,000	-	(5,000)	-	-
Unearned Premium Reserve (UEPR):	5,000	5,000	-	-	-
Year 1 Losses & LAE Incurred:	3,750	-	-	-	-
Year 1 Losses & LAE Paid:	2,250	1,125	375	-	-
Year 1 Loss & LAE Reserve:	1,500	375	-	-	-
Year 2 Losses & LAE Incurred:	-	7,500	-	-	-
Year 2 Losses & LAE Paid:	-	4,500	2,250	750	-
Year 2 Loss & LAE Reserve:	-	3,000	750	-	-
Year 3 Losses & LAE Incurred:	-	-	3,750	-	-
Year 3 Losses & LAE Paid:	-	-	2,250	1,125	375
Year 3 Loss & LAE Reserve:	-	-	1,500	375	-

Notice how there's a "triangle" on the bottom right of the spreadsheet as the cash payouts go from Year 1 to Year 5.

8. On the Assets side of an insurance company's Balance Sheet, you see line items for Ceded Unearned Premiums and Reinsurance Recoverables. What are they, and how are they related to the Reserves we just went over?

Ceded Unearned Premiums is like the Unearned Premium Reserve, but **for reinsurers** instead. So when our company *cedes* Premiums to other companies, Unearned Premiums for the portions of the policies it cedes will increase this item until they're earned.

Reinsurance Recoverables is like the Loss & LAE Reserve, but **for reinsurers** instead. So when there's a difference between Losses Incurred and Losses Paid for *ceded* Premiums, this Reserve changes.

9. Can you explain what the Deferred Acquisition Costs (DAC) Asset is?

When an insurance company sells a new policy, it must pay a commission to the broker on the **entire** policy value, even if it only recognizes part of that value as revenue in a given year.

On the Income Statement, however, due to the matching principal of accounting, the insurance company only records as an expense the proportion of the commission payment that matches the Net Earned Premiums for the year.

On the Balance Sheet, the DAC Asset exists to record this difference between what has been paid out in cash and what has been recognized as an expense. It's very similar to Prepaid Expenses for normal companies.

10. Walk me through what happens on the 3 statements in Year 1 when we have $100 in Net Written Premiums, $50 in Net Earned Premiums, and a commission rate of 10%. Ignore Claims for now and assume that the only expense is commissions.

Here, we need to pay out $10 in cash commissions (10% * $100) but we'll only recognize part of the commission expense on the Income Statement.

Income Statement: Revenue is up by $50, and we record $5 in Commission Expenses (10% * $50), so Pre-Tax Income is up by $45. At a 40% tax rate, Net Income is up by $27.

Cash Flow Statement: Net Income is up by $27. But the Unearned Premium Reserve is up by $50, which increases cash flow by $50. At the same time, the Deferred Acquisition Costs Asset increases by $5 and therefore reduces cash flow by $5. So cash at the bottom is up by $72.

Balance Sheet: Cash is up by $72 on the Assets Side, and the DAC Asset is up by $5, so the Assets side is up by $77 total. On the other side, the Unearned Premium Reserve is up by $50 and Shareholders' Equity is up by $27 due to the increased Net Income, so both sides are up by $77 and balance.

11. Now walk me through what happens in Year 2, when the remaining $50 in Net Earned Premiums gets recognized. Assume there are no expenses other than commissions, for now. Also assume that no *new* Premiums are written or earned.

Here, we're simply recognizing the remainder of the revenue and expenses.

Income Statement: Revenue is up by $50, and we record $5 in Commission Expenses (10% * $50), so Pre-Tax Income is up by $45. At a 40% tax rate, Net Income is up by $27.

Cash Flow Statement: Net Income is up by $27, but now the Unearned Premium Reserve falls by $50 because we've recognized the remaining Premiums. That decline reduces cash flow by $50. The DAC Asset also declines by $5 because we've now recognized the remaining $5 in commission expenses on the Income Statement, and that boosts cash flow by $5. Altogether, Cash at the bottom is down by $18.

Balance Sheet: Cash on the Assets side is down by $18, and the DAC Asset is down by $5, so the Assets side is down by $23 altogether. On the other side, the Unearned Premium Reserve is down by $50, but Shareholders' Equity is up by $27 due to the increased Net Income, so that side is down by $23 and the Balance Sheet balances.

12. Why do you link the Loss & LAE Ratio to Net Earned Premiums rather than Net Written Premiums?

This ratio is defined as the Loss and Loss Adjustment Expenses (LAE), otherwise known as Claims and Claim Adjustment Expenses, on the Income Statement divided by the Net Earned Premiums for the year.

You do that because the Loss / Claim expenses follow the **Earned** Premiums more closely than the *Written* Premiums.

Let's say that a customer take out a 2-year auto insurance policy. Even if you write that 2-year policy upfront, the customer cannot possibly file a claim for a car accident in Month 18 when it's only Month 3 of the policy. They can only file claims based on the periods that have been *delivered* in your policies thus far.

13. How do you calculate the Expense Ratio and what does it mean?

This is defined as (Net Commission Expense + Underwriting Expense) / Net *Written* Premiums – so you ignore Loss & LAE Expenses altogether.

You divide by Net Written Premiums because all commissions are based on the Premiums you actually write in a given year, and so are most associated operating expenses (paying for employees to do the underwriting and so on).

This ratio tells you how profitable the *underwriting* side of an insurance firm's business is.

14. The Combined Ratio is defined as the Expense Ratio + the Loss & LAE Ratio. But how is that possible? These 2 ratios use different denominators!

Mathematically, this doesn't make sense, but conceptually it's more accurate because Losses / Claims closely match Net Earned Premiums, whereas most other expenses most closely match Net Earned Premiums.

There is no real, official reason other than that – it is just a quirk of the insurance industry and it has been calculated that way for years (decades?).

Oddly enough, it still gives you a very good indication of whether or not the company is profitable.

15. What are typical ranges for all these ratios? And what do they tell you about the insurance firm in question?

All these ratios measure the firm's profitability and operational efficiency.

Typically, the Combined Ratio is in the 90% – 105% range; the Expense Ratio might be in the 20 – 25% range, and the Loss & LAE Ratio might be anywhere from 60 – 80%.

Those numbers **vary** quite a bit based on the type of insurance, geography, and so on.

But a Combined Ratio of *under* 90% is extremely odd and means that the insurance firm is unusually profitable. It goes back to a point we made in the beginning: many insurance firms are not particularly profitable from *just* their underwriting activities. They need to invest using their "float" to deliver higher profits.

16. What's the difference between Statutory Accounting and GAAP / IFRS Accounting?

The basic difference is that Statutory Accounting is closer to **Cash Accounting** than GAAP / IFRS, which are both based on accrual accounting.

One of the biggest differences is that the entire cash commission expense shows up on a company's Income Statement under Statutory Accounting, whereas you only see the *earned* portion under GAAP / IFRS.

There are also many differences in Asset values, and Statutory Accounting is often more conservative (e.g. many Assets are recorded only at cost; DTAs are more limited; Goodwill may still be amortized).

Additionally, Statutory Balance Sheets are "netted up" and so Reinsurance Recoverables and Ceded Unearned Premiums do not show up as Assets, but are instead deducted directly from the corresponding Reserves on the Liabilities & Equity side.

17. It seems like Statutory Accounting is more conservative than GAAP / IFRS. Could Statutory Net Income ever be higher than GAAP / IFRS Net Income?

It's possibly, but unlikely. If the commission expenses were very low and there were almost no difference between cash commissions and recognized commissions, and other adjustments were much more significant, you might see this. But it's highly unusual.

Insurance 3-Statement Modeling Questions & Answers

This section will be brief because the most common interview topics have already been covered in the section above on Insurance Accounting.

You are not likely to be asked to project the 3 statements for an insurance firm in an interview, but you *could* be asked about the key drivers and how to think about different items – so that's what we'll focus on here.

1. How do you project the 3 statements for an insurance company?

Here are the 5 steps:

1. Project the company's **Direct Written Premiums** – how much they're selling themselves – and then how much in Premiums they assume from others and how much they cede to others, along with what percentage is **earned** each year.
2. Then, project the **Claim and Claim Adjustment Expense Ratio** (AKA Loss and LAE Expense Ratio), the commission rate, and the percentage of underwriting expenses associated with the Premiums written each year.
3. You list the company's **Net Earned Premiums** as well as its Interest and Investment Income for revenue on the Income Statement; expenses consist of Claims, Commissions, Underwriting Expenses and Interest, and you get to Pre-Tax Income and Net Income the normal way.
4. The **Balance Sheet** flows directly from the company's revenue / expense recognition (the Reserves and corresponding items on the Assets side) and Cash and Shareholders' Equity flow in as they normally would.
5. The **Cash Flow Statement** works the same way as well: start with Net Income, adjust for non-cash items and Operating Assets and Liabilities, and get to the net change in cash at the bottom by projecting Cash Flow from Investing and Cash Flow from Financing.

2. How do you project Gross Written Premiums?

Normally you split this into the growth in **volume** and then **rate increases**. For example, you might assume that the company writes 10% more Premiums each year and raises the average rates by 3%, which results in approximately 13% overall growth.

Both of those components are based on historical trends, the economy, what other insurance companies are doing, and the company's market position.

Remember that Gross Written Premiums = Direct Written Premiums + Assumed Premiums.

Direct Written Premiums are a little easier to project – the assumed ones can be random and may not follow that pattern of volume growth and price increases, but you may be able to use management guidance or historical trends there.

3. How do you project the Loss & LAE Ratio (AKA Claim and Claim Adjustment Ratio) going forward?

You normally take into account two components: the **growth in Premium rates** (the same as what you used for question #2 above) and the **Loss Cost Trend**, which tells you, on average, how much overall Loss expenses are rising. Usually it is linked to inflation.

Next Year Loss & LAE Ratio = Ratio This Year * (1 + Premium Growth Rate) / (1 + Loss Cost Trend)

So if the Loss & LAE Ratio is 75% one year, and the Premium rates grow at 3% with 2% greater costs, the Loss & LAE Ratio the next year would be 75% * (1.03) / (1.02), or 74%.

You're trying to see whether your **revenue** or **expenses** are increasing more rapidly, and then basing the new ratio on that.

4. How do you project other key numbers in the model, such as commission and underwriting expenses?

You would base those on historical trends and take an average over a few years. Both should be based off of Net Written Premiums.

Standard numbers are 10-20% for the Commission Rate and 5-10% for the Underwriting Expense Rate.

5. How do you project the key Balance Sheet items for an insurance company?

Let's go through the main items and the most important, insurance-specific items:

- **Cash:** Flows in from the bottom of the Cash Flow Statement.
- **Investments:** You may project these, by segment, based on historical spending trends and how much cash is available to invest.
- **Ceded Unearned Premiums:** This balance increases by the difference between Ceded Written Premiums and Ceded Earned Premiums each year.
- **Reinsurance Recoverables:** This increases by the difference between Ceded Losses & LAE Incurred and Ceded Losses & LAE Paid in Cash each year.
- **Deferred Acquisition Costs:** Increases by the difference between the *cash* Commission Expense and the Commission Expense *recognized* on the Income Statement each year.

And then on the other side (Debt, Equity, and so on are all similar):

- **Unearned Premium Reserve:** Increases by the difference between Gross Written Premiums and Gross Earned Premiums each year.
- **Loss & LAE Reserve:** Increases by the difference between Losses & LAE Incurred and Losses & LAE Paid in Cash each year.

6. Another important component of the insurance business is investing activity – how would you project Interest and Investment Income and Gains / (Losses) in a model?

This tends to be more important on the Life Insurance side, since Life Insurance companies' business models are much closer to commercial banks' business models.

If you wanted to project them in more detail, you would separate the Investments into different classes and assume a certain amount of spending and an effective interest rate for each one, based on historical trends.

You would also have to check that the company has enough cash on-hand before assuming a certain spending level on these Investments.

7. How do Cash Flow Statement projections differ for an insurance firm?

You still start with Net Income, adjust for non-cash charges and operational Balance Sheet items, and you still have Cash Flow from Investing and Cash Flow from Financing after that.

Capital Expenditures (CapEx) may not show up as a separate line item because it's much less important for financial institutions.

Regulatory Capital Questions & Answers

Some of these questions border on downright obscure – you're unlikely to get these in interviews unless you've worked with financial institutions previously.

Regulatory capital is extremely important in bank and insurance modeling, but most of the time interviewers just want to see if you know the key points rather than all the details.

The first set of questions here deal with **bank** regulatory capital, and then we move into **insurance** regulatory capital after that.

1. What is the Risk-Weighted Assets (RWA) number and how do we use it?

Risk-Weighted Assets were defined by the Basel Accords (international banking regulation). The idea is to assign a "risk weight" to each of a bank's on-Balance Sheet and off-Balance Sheet Assets and then sum up everything.

For example, if you had $10 worth of Cash, $10 worth of Business Loans, and $10 worth of Subprime Mortgages, the Cash might get a risk weight of 0%, the Business Loans might be 50%, and the Subprime Mortgages might be 100%, giving you RWA of $15.

Risk-Weighted Assets are the denominator in capital ratios such as the Tier 1 Ratio, Tier 2 Ratio, and Total Capital Ratio – you're saying, "Relative to the capital this bank has, how much risk are they taking with their Assets?"

You never calculate RWA in the real world because banks don't disclose the exact risk weighting for every Asset – you just use the numbers in their filings and assume that RWAs are tied to Interest-Earning Assets (IEA).

2. What's the difference between Tier 1 Capital and Tier 2 Capital?

Tier 1 Capital = Shareholders' Equity – Goodwill – (Certain) Intangibles + (Certain) Hybrid Securities and Noncontrolling Interests.

Tier 2 Capital = Subordinated Debt + Hybrid Securities and Noncontrolling Interest That Did Not Qualify for Tier 1 Capital + A Portion of Allowance for Loan Losses

Total Capital = Tier 1 Capital + Tier 2 Capital

3. Can you give an example of how capital ratios and regulation actually affect a 3-statement model for a bank?

See question #8 in the bank 3-statement model section. When you issue Dividends or do anything else that reduces Shareholders' Equity, such as repurchasing Stock, you need to check to make sure that the minimum amount of Tier 1 Capital (and other capital metrics and ratios) is maintained.

4. What's the Tier 1 Leverage Ratio and why might we look at that in addition to the Tier 1, Tier 2, and Total Capital Ratios?

Tier 1 Leverage Ratio = Tier 1 Capital / Total Tangible Assets

This ratio is more common in the US than it is in the EU and other regions; some analysts prefer it because Risk-Weighted Assets can disguise the risk a company is taking through "clever" classification of its Loans (e.g. by listing Subprime Mortgages and Prime Mortgages together and labeling them "Mortgages").

With the Tier 1 Leverage Ratio, by contrast, there's less room for manipulation and "risk by Excel" because you're using numbers straight from the Balance Sheet.

5. What's the difference between Tier 1 Common Capital (Core Tier 1) and Tangible Common Equity?

First, note that Tier 1 Common Capital is just like Tier 1 Capital but it excludes Preferred Stock and Noncontrolling Interests – it corresponds to Common Shareholders' Equity.

In many cases, Tangible Common Equity and Tier 1 Common Capital are the same because you're taking Common Shareholders' Equity and subtracting Goodwill and Non-MSR Intangibles in each one.

Sometimes they're slightly different because a bank may exclude certain Intangible Assets from Tier 1 Common but still include them in Tangible Common Equity. It may also make adjustments to AOCI (Accumulated Other Comprehensive Income) that show up only in Tier 1 Common.

6. How do you decide whether to include Preferred Stock, Convertible Bonds and Noncontrolling Interests in the Tier 1 Capital calculation?

For Preferred Stock, *usually* only Non-Cumulative Preferred Stock (e.g. Dividends do **not** accumulate if they are unpaid) is included in the Tier 1 calculation. For the others, there's little rhyme or reason – you should check a bank's filings and follow them.

7. How has Basel III changed the regulatory capital requirements for banks?

See question #13 in the "High-Level" questions above for the specific numbers. The required capital ratios have all increased, there's a new Conservation Buffer and Countercyclical Buffer, all banks have a minimum Leverage Ratio of 3% now, and there's a Liquidity Coverage Ratio and a Net Stable Funding Ratio.

Some of the specifics around Tier 1 Capital and Tier 2 Capital are also different, but the definitions we laid out above still generally apply. The definition for Tier 1 Capital is supposed to be stricter and should include mostly Common Stock & APIC and Retained Earnings, but it's not yet clear how that will be enforced or who will play along.

Overall, Basel III is much tougher and requires banks to be more conservative… with *some* of their practices.

8. What are some of the flaws with Basel III?

First off, it's still based on the idea of **risk-weighting** – which is inherently flawed because banks can always manipulate the risk weights and say whatever they want.

Also, while it addresses liquidity and funding issues, it does little to prevent **systemic risk** (e.g. Lehman Brothers and its giant derivatives book).

Basel III is probably an improvement over Basel I and II, but it still suffers from "risk by Excel" – yes, it's more conservative, but it's still subject to manipulation… and to causing the next financial crisis.

9. What is Risk-Based Capital and why does it matter for insurance?

"Risk-Based Capital" refers to everything we went over above for banks… and a lot of it applies to insurance firms as well, just in different ways.

You don't normally see Tier 1 Capital, Tier 2 Capital, and so on for insurance but there are a couple new metrics and ratios to be aware of:

- **Statutory Capital (Cap) & Surplus**: A variant on Shareholders' Equity, but based on *Statutory* Net Income instead.
- **Net Technical Reserves:** Unearned Premium Reserve + Loss & LAE Reserve – Ceded Unearned Premiums – Reinsurance Recoverables
- **Reserves Ratio:** Net Technical Reserves / Net Written Premiums
- **Solvency Ratio:** Statutory Cap & Surplus / Net Written Premiums
- **NWP / Statutory Cap & Surplus:** The reciprocal of the Solvency Ratio.

You can use these metrics to get an idea of how much risk an insurance company is taking, and how well it can cover its *unexpected* losses (e.g. when 3 unannounced hurricanes come sweeping through an area in the same weekend).

10. What's the role of the Statutory Cap & Surplus?

It's just like Tier 1 Capital for banks – the "buffer" against unexpected losses, and what an insurance firm can fall back on if Losses / Claims are higher than expected or something catastrophic happens.

11. Wait a minute, if the Statutory Cap & Surplus is similar to Shareholders' Equity, why can't we just use Shareholders' Equity for the "buffer"?

The problem is that insurance companies can have significant **Unrealized Gains** in their Accumulated Other Comprehensive Income (AOCI), which props up Shareholders' Equity… and that's an unreliable "buffer" because if the security prices suddenly fall, so does this buffer.

With commercial banks that is less of an issue because more of their investments are in the form of Trading Securities, and you report all Gains and Losses, whether Realized or Unrealized, for Trading Securities on the Income Statement.

12. Could Shareholders' Equity and the Statutory Cap & Surplus move in opposite directions?

It's unlikely, but yes, it is possible because Statutory Net Income and GAAP / IFRS Net Income are different. So if cash commission costs are very high and Statutory Net Income turns negative, for example, you might see that.

13. What range is the Reserve Ratio typically in?

Usually it's around 150%, or at least well above 100%, meaning that Net Written Premiums are significantly below the Net Technical Reserves. If it's much lower than that, you could be in trouble because you may not have enough in the Reserves to meet future Claims expenses.

If it's much higher, that might be a positive sign but it could also mean the insurance firm is operating too conservatively.

14. The Solvency Ratio is declining – what does that mean?

It means that the firm is taking more risks, because its Statutory Cap & Surplus is a lower percentage of its Net Written Premiums. In other words, it has less capital on hand to back up potential future losses from the policies it's writing.

Most insurance firms have Solvency Ratios around 70%, but this varies greatly by region and sub-industry; in some countries there's also a minimum of 10-20% to prevent extreme risk-taking.

Commercial Bank Valuation Questions & Answers

These questions could come up in entry-level interviews. In particular, you may get asked about the Dividend Discount Model and how that's different from a DCF.

Some of the other questions on the differences between closely related metrics and multiples are more advanced, so you shouldn't worry about those quite as much.

1. How are public comps and precedent transactions different for a bank?

See question #8 in the High-Level section – the mechanics are the same, but the screening criteria (Total Assets or Deposits) and metrics and multiples (ROE, ROA, P / E, P / BV…) are different.

One other difference is that you must be **very strict** with your selection criteria – for example, you should not include *all* bulge bracket banks in a set of public comps because Deutsche Bank, Credit Suisse, and UBS are European and because GS and MS are less diversified than JPM, Citi, Wells Fargo, and BoA.

2. You mentioned Return on Equity as an important metric. What's the difference between Return on Equity, Return on Common Equity, and Return on Tangible Common Equity, and which one should we use?

- Return on Equity = Net Income to All / Total Shareholders' Equity
- Return on Common Equity = Net Income to Common / Common Shareholders' Equity
- Return on Tangible Common Equity = Net Income to Common / Tangible Common Equity

None of these is "better" than the others – they're just measuring different things. Many analysts prefer the latter 2 because Preferred Stock and Noncontrolling Interests aren't part of a bank's core business operations.

3. With normal companies, a revenue or EBITDA multiple might be closely linked to the company's revenue growth, EBITDA growth, or its margins. Which metrics and multiples are closely correlated for banks?

For banks, Return on Equity and P / BV are closely linked and banks with higher ROEs tend to have higher P / BV multiples as well.

If a bank is returning an extra high amount on its Shareholders' Equity, you'd expect that the market would value it at a premium to that Equity. Higher ROE = Better returns for shareholders = higher stock price and market cap for the bank.

You can even come up with a formula that links the two (see question #20).

EPS Growth and P / E are sometimes correlated as well, though it is generally a weaker correlation than ROE and P / BV.

4. What's the normal range for P / E, P / BV, and P / TBV multiples for banks?

The correct answer here is, "It depends on the bank, the region, the business model, the size, and so on."

For large, US-based commercial banks, P / E multiples in the 5-15x range are common; P / BV multiples are usually around 1x, and P / TBV multiples are closer to 2x depending on the Goodwill and Intangible Assets of the bank.

These are very market-dependent so hedge your answer as much as possible – but at the same time, realize that having a P / E multiple of 100x or a P / BV multiple of 50x would be **extremely** weird no matter what bank or region you're looking at.

Also note that by definition, P / TBV must be greater than or equal to P / BV because Tangible Book Value is always less than or equal to Book Value.

5. Do we care more about Book Value-based multiples or Earnings-based multiples when analyzing banks?

Book Value-based multiples are more reliable because of the one-time charges that show up in EPS; also, ROE and P / BV are highly correlated whereas P / E doesn't correlate as strongly with EPS growth.

6. What's the flaw with both Earnings multiples and Book Value-based multiples for commercial banks?

The flaw with both of these multiples is that management has a lot of discretion with the Provision for Credit Losses (affects EPS) and the Allowance for Loan Losses (affects Book Value).

For example, they could report an artificially higher or lower Provision for Credit Losses to lower or boost earnings, which would in turn increase or decrease the P / E multiple.

7. Why can we not use a DCF – even a Levered DCF – to value a bank?

A normal Unlevered DCF would never work because it excludes Net Interest Income, which can be 50%+ of a bank's revenue.

But even a Levered DCF would not work well because Changes in Working Capital can be massive for a bank, and CapEx is tiny and does *not* represent re-investment in its business.

For a normal company, CapEx represents reinvestment in its business, but for a bank "reinvestment in business" means hiring more people – so you would need to find training and hiring expenses and then capitalize and amortize them based on the "useful lives" of employees.

Good luck finding that information in bank filings.

8. Walk me through a Dividend Discount Model.

In a Dividend Discount Model, you start by making assumptions for ROA or ROE, the target Tier 1 or Tier 1 Common Ratio, and the Risk-Weighted Asset growth each year.

Then, you project the bank's Net Income based on its Shareholders' Equity and the ROE assumption, or its Total Assets and the ROA number; you project RWA based on your initial set of assumptions.

You then check to see **what the Tier 1 or Tier 1 Common would be WITH the Net Income from the period you're looking at added in**.

Next, you issue Dividends such that Tier 1 Capital + Net Income – Dividends is equal to the minimum Tier 1 or Tier 1 Common required (e.g. if Tier 1 or Tier 1 Common is currently $100, Net Income is $10, and you need at least $105 of Tier 1 or Tier 1 Common in this period, you could issue $5 worth of Dividends).

Then, you discount all these Dividends based on Cost of Equity and add them up, calculate and discount the Terminal Value based on P / E or P / BV, and add it to the present value of the Dividends.

9. How do you calculate the discount rate differently in a DDM compared to a normal DCF?

First, you use Cost of Equity rather than WACC because you're calculating Equity Value rather than Enterprise Value.

Also, in the Cost of Equity calculation you do not un-lever and re-lever Beta because similar banks have similar capital structures and because banks cannot exist on an "un-levered" basis.

10. How is a Dividend Discount Model for a normal company different from a DDM for a bank?

For a normal company, you don't need to start with ROE or ROA and RWA and work backwards to calculate Dividends based on the required regulatory capital.

Instead, you can simply project Revenue down to Net Income as you normally would in a DCF, assume a simple payout ratio, discount and add up the Dividends, and then calculate Terminal Value based on P / E.

11. Should we use Return on Assets or Return on Equity to drive a DDM?

Either one works, but ROE is more common. Warren Buffett has argued that ROA is the better measure of value for banks because its Total Assets – not its Shareholders' Equity – drive Net Income, but many analysts prefer ROE because it's closely linked to P / BV multiples.

12. What are the flaws with using a DDM to value a bank?

Just like a normal DCF, it's hyper-sensitive to assumptions and how you calculate the Terminal Value; often you don't have enough information to make accurate predictions for Dividends issued in future years.

A DDM may not work well if the bank does not issue Dividends; also, other returns of capital such as Stock Repurchases or Stock-Based Compensation are not captured by the DDM, which is a problem for many banks that have extensive stock repurchase or share/option compensation programs in place.

13. What makes the biggest difference in a DDM: the Payout Ratio, the Discount Rate, the Net Income growth rate, or the Terminal Value?

Just like a normal DCF, the Terminal Value typically makes the biggest difference because it usually represents over 50% of the total value. After that, the Discount Rate, followed by the other 2 criteria has the biggest impact.

As always, hedge your answer by saying, "It depends on the specific bank, but usually…"

14. How do you calculate the Terminal Value in a DDM?

The same way you calculate the Terminal Value in a normal DCF: the multiples method or the Gordon Growth method.

The only difference is that you use P / E, P / BV, or P / TBV for the multiples method, and for the Gordon Growth method you use Final Year Dividends * (1 + Terminal Net Income Growth) / (Cost of Equity – Terminal Net Income Growth).

15. Could you use a Dividend Discount Model to value a bank that does not pay Dividends?

Yes, but you have to assume that it *starts* paying Dividends at some point in the future or else the value would be $0.

16. How is a Residual Income Model different from a Dividend Discount Model?

The setup is very similar and you still "work backwards" to calculate Dividends based on the target Tier 1 or Tier 1 Common Ratio.

The difference is that instead of summing the present value of the Dividends, you sum the present value of the **Residual Income** (also known as Excess Returns) instead.

Residual Income is simply ROE * Shareholders' Equity – Cost of Equity * Shareholders' Equity – basically, **how much actual Net Income exceeds your Net Income** *expectation*.

Then, you add the present value of these Excess Returns to the current **Book Value** of the bank and that's the Equity Value.

The intuition: "Since this is a bank, let's assume that its current Book Value *is* its Equity Value. But if it generates higher returns than we expect in the future, let's discount those returns and add them to the Equity Value as well – because a bank that generates higher-than-expected returns should be worth *more* than its Book Value."

17. What are the advantages and disadvantages of a Residual Income Model compared to a DDM?

The advantage is that the Residual Income Model is grounded in the bank's **current Balance Sheet** rather than assumptions 5-10 years into the future; the disadvantage is that often it doesn't tell you much beyond the obvious – that Book Value and Equity Value are close for banks.

18. Explain why you often do not see a Terminal Value calculation in the Residual Income Model.

Remember the formula for Residual Income: ROE * Shareholders' Equity – Cost of Equity * Shareholders' Equity.

Often, you assume that ROE = Cost of Equity in the long-term in Residual Income Models, so there is no Terminal Value.

If you did not make that assumption, you would calculate Terminal Value with Residual Income in Year After Final Year / (Cost of Equity – Terminal Net Income Growth), discount it by the Cost of Equity, and add it to the present value of the Residual Income each year and the current Book Value of the bank.

19. Which Return metric – Equity, Common Equity, Assets, Tangible Common Equity, and so on – should you use to drive a Residual Income Model?

You should use Return on Common Equity because that corresponds to the Common Equity Value you're calculating.

Return on Equity includes Preferred Stock, which you don't want, and Return on Tangible Common Equity will give you numbers that are much different from Common Equity because it excludes Intangibles.

20. Can you use a formula to link ROE and P / BV?

The most common formula is: P / BV = (ROE – Net Income Growth) / (Cost of Equity – Net Income Growth).

That assumes that the **Payout Ratio** for Dividends and the **Net Income Growth** are both constant numbers; if that's not true, you would need to separate the formula into multiple stages.

Insurance Valuation Questions & Answers

There is not much to say here because insurance valuation is very similar to **bank valuation** – the same metrics and multiples apply because both businesses are Balance Sheet-centric.

So we're not going to repeat all those questions and answers – instead, we're just going to focus on what's **different**.

1. How do you pick public comps and precedent transactions for an insurance company?

Similarly to the way you pick banks: you screen based on criteria such as Assets and Premiums rather than Revenue or EBITDA.

It's also very important to separate out Life Insurance and P&C Insurance companies because they are quite different; geography is also very important for insurance because different regions enforce different types of regulation.

2. What other multiples might we use for insurance in addition to P / E, P / BV, and P / TBV?

You could also use P / NAV (Price Per Share / Net Asset Value Per Share) and P / GWP (Price Per Share / Gross Written Premiums Per Share) and P / NWP (Price Per Share / Net Written Premiums Per Share).

The latter two are similar to **revenue multiples** for normal companies, and are linked to Premiums growth.

On the Life Insurance side, there's also Embedded Value and Embedded Value-based multiples such as P / EV (see the Embedded Value questions below).

3. Why might the P / E and P / BV multiples be misleading for insurance firms?

Similar to how the Allowance for Loan Losses and Provision for Credit Losses can distort these multiples for banks, there are also a few potential problems for insurance firms:

- One-time items and temporarily high or low investment returns, as well as a lower or higher Combined Ratio, can distort P / E.
- On the Balance Sheet, Reserves Accounting and other items like DTAs/DTLs, Goodwill, and Reinsurance Recoverables can distort P / BV; for example, if a company is very conservative with its Reserves and keeps a high balance, effectively that pushes down Shareholders' Equity, boosting P / BV.

4. What's the typical range for P / BV multiples for insurance firms?

Just like banks, *normally* insurance firms trade around 1x P / BV: they're worth about as much as their Balance Sheets are worth.

Sometimes P&C Insurance firms may trade at higher multiples, not necessarily because they're "more valuable," but rather because they're closer to normal companies, and P / BV isn't as relevant for normal product/service-based businesses.

5. How would a Dividend Discount Model (DDM) work differently for an insurance company?

The basic setup is similar to what you see for banks: instead of just assuming a certain revenue growth percentage and making Dividends a percentage of Net Income, you have to tie everything to regulatory capital.

For insurance firms, you start by assuming a growth rate in Net Written Premiums, and then making Net Income a function of Return on Equity. Then you would issue Dividends such that the Statutory Cap & Surplus always meets the minimum Solvency Ratio required in the region you're working in.

6. What drives the DDM for an insurance firm?

The key drivers are Premiums Growth, Investment Returns, Return on Equity, and the required or targeted Solvency Ratio. The firm's profitability (i.e. Combined Ratio) also makes an impact, because more profitable firms generally have a higher ROE.

7. Walk me through a Net Asset Value (NAV) Model for an insurance firm.

The point of a NAV Model for insurance is that the Balance Sheet may be *less* accurate than it is for banks due to different requirements and business models.

In Step 1, you adjust everything up or down on the Assets side based on its fair market value – Goodwill & Other Intangibles usually go to $0, and Reinsurance Recoverables are often discounted because of the risk of a reinsurer not paying out Claims; investments such as real estate may also be marked to market.

In Step 2, you adjust the Liabilities side and you may discount some of the reserves depending on what the future Premium and Claims trends are.

In Step 3, you subtract the Adjusted Liabilities from the Adjusted Assets to calculate Net Asset Value.

In Step 4, you may adjust that again if there's a **capital deficiency** or **capital surplus** – if the targeted Solvency Ratio is 60%, for example, and the company is only at 50%, you assume that additional capital is required and reduce the Net Asset Value as a result.

Then in Step 5, you divide the NAV by the Shares Outstanding to get NAV Per Share, which you can then compare to the company's current share price.

8. Walk me through an Embedded Value model for a Life Insurance firm.

In an Embedded Value model, a firm's value equals its **Adjusted Book Value** (similar to the NAV above) plus the **Present Value of Future Profits** from its existing policies.

You do **not** assume infinite growth into the future as you do in a DCF – instead, you assume that the firm's policies "run out" at some point and that the new policies written **this year** are all that you have into the future.

In Step 1, you calculate the current Adjusted Book Value, following the steps above for NAV.

In Step 2, you calculate the after-tax cash flows each year, taking into account Premiums, Investment Income, and expenses such as the Loss & LAE Expense, Reserve Additions, Commissions, and other items.

In Step 3, you assume a Discount Rate (usually Cost of Equity), discount all these future cash flows, add them up, and then add them to the Net Asset Value in order to calculate Embedded Value.

9. Why is Embedded Value only applicable to Life Insurance?

Life Insurance companies have extremely long-term policies (20-30 years or more), so you can reasonably predict cash flows from those policies based on new customer signup numbers and the **lapse rate** (how many cancel or surrender policies).

It wouldn't work for P&C because you could not reasonably project cash flows from 1 or 2-year policies so far into the future.

10. How do you calculate Embedded Value Profit (an alternate metric to Net Income)?

Embedded Value Profit = Value of New Business + Unwind of Discount Rate

Value of New Business: Let's say that we write an initial set of policies, and that the Present Value of Future Profits from them is $500 when we **initially** write them.

In the *next year* after that initial year, the Value of New Business would be $500 because that's the "new business" that we just wrote.

Unwind of the Discount Rate: This is the Discount Rate * the PV of Future Profits from that initial year. So if the Discount Rate is 10%, it would be 10% * $500, or $50, here.

The Embedded Value *Profit* would therefore be $550. This is an alternate way of viewing the firm's profitability, and unlike Net Income it is based on **expected future cash flows** instead.

Here's what the Cash Profit vs. Embedded Value Profit might look like for a *single* policy written one year, over a 20-year policy timeframe:
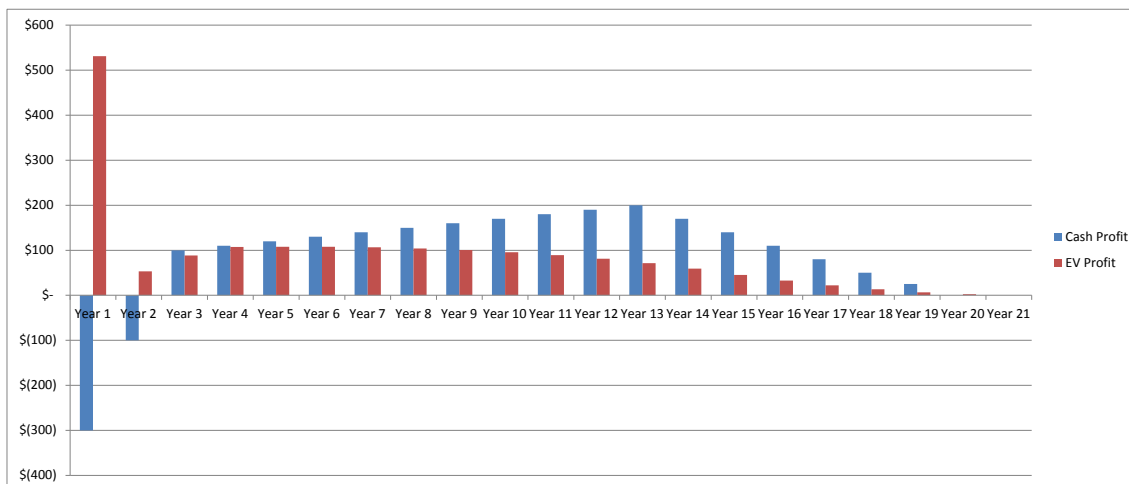
11. If a Life Insurance firm keeps growing and writing new policies each year, how does the Embedded Value Profit change over time?

All else being equal, Embedded Value Profit will keep increasing over time because the Value of New Business keeps going up if the company is growing each year.

In the graph above, Embedded Value Profit **decreases** because we're only looking at one policy and not assuming anything for new policies.

12. When, if ever, would the Embedded Value and the Shareholders' Equity (or NAV) of a Life Insurance firm converge on the same value?

They converge only if the firm **stops** writing policies, or, alternatively, if you're only looking at a *single* policy (as in the example above).

They would converge in the exact year that the policy's **cash profit** goes to $0. Here's a graph of what it might look like if that happens in Year 20 (once again, assuming that the firm only writes new policies once in the beginning):
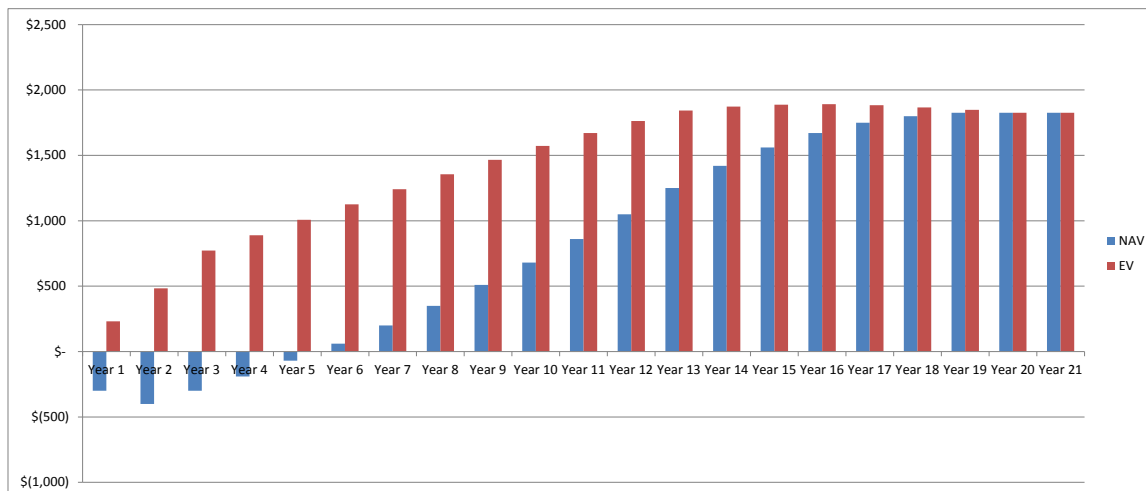
13. Are Embedded Value and EV Profit more conservative or more aggressive than traditional metrics like Shareholder's Equity and Net Income?

Most people would say they're far more **aggressive** because they are based on the present value of **expected future profits** – not the profits that the firm has earned historically and/or in the current period.

In fact, there is a lot of controversy over Embedded Value because some people believe it is overly optimistic and produces overly optimistic valuations.

The total profits over the lifespan of a policy are the same, but under Embedded Value they are recognized earlier on.

14. How do Market Consistent Embedded Value (MCEV) and European Embedded Value (EEV) differ from normal Embedded Value?

With EEV, you also take into account Net Unrealized Gains when calculating the Adjusted Book Value of a company. And rather than just discounting and summing up future profits, you also take into account the Cost of Capital and the Value of Options and Guarantees (by subtracting both of them).

Then with MCEV, you may discount cash flows at different rates depending on the "riskiness" involved, and you also recognize investment returns in excess of the risk-free rate as they're earned, rather than entirely upfront.

All of this gets very technical and it's unlikely to come up in an interview – just be aware that there are other **variations** on Embedded Value, and that some of the key adjustments are the ones described above.

P&C vs. Life Insurance Questions & Answers

There are not too many questions here, but it's still important to understand the differences between Property & Casualty (P&C) Insurance and Life Insurance.

Many of these points could be considered "High-Level" Questions and Answers and may therefore come up, even in entry-level interviews.

So if you're interviewing with FIG, you should at least have a rough idea of how these two sub-industries differ.

1. How are P&C and Life Insurance similar and different at a high-level?

Both types of companies collect Premiums upfront, pay out Claims, and make money from both Underwriting and Investing – but beyond that, they're quite different:

- **Policy Length:** Life insurance is much longer – 20-30+ years vs. 1-3 years for P&C.
- **Business Model:** P&C is more of a **flow** business, dependent on winning and servicing new customers and underwriting profits, whereas Life is more of a **spread** business, more dependent on investments and interest rates.
- **Financial Statements:** There are additional items to be aware of on the Life Insurance side (see below).
- **Valuation:** For Life Insurance you also have Embedded Value and P / EV, ROEV, and so on in addition to the standard metrics and multiples.

2. What differences are there on the financial statements?

- Items on the statements are similar, but the **proportions** may be very different (e.g. Life Insurance companies often have far more in Interest and Investment Income than P&C companies).
- Life Insurance firms have **Separate Accounts** line items on their Balance Sheets to distinguish between money that they have and manage directly

vs. what policyholders have and manage; they also tend to have many more investment categories.

3. Do you think a P&C or Life business would have a bigger "loss triangle" in its supporting schedules?

The Life Insurance firm would almost always have a bigger "loss triangle" because Claims are paid out in cash over a far longer time period.

When you take out a 2-year auto policy, you could easily get in a car accident and file a claim 6-12 months in. But you're not likely to die in the next 6-12 months if you have a 20 or 30-year Life Insurance policy.

4. How do you value P&C and Life businesses differently?

You can still use multiples such as P / E, P / BV, and P / TBV for both, along with the Dividend Discount Model.

The difference is that for Life Insurance, Embedded Value (see the Valuation section), a measure of a firm's Adjusted Book Value + the Present Value of its Future Profits, is very important, as are metrics and multiples based on Embedded Value, such as Return on Embedded Value (ROEV) and P / EV.

5. Would you rather be an investor in a P&C or Life Insurance business?

There's no "right" answer to this question because it depends on what you're looking for and your investment goals.

If you want something that acts more like a commercial bank, Life Insurance is better; if you want more of a traditional business, P&C is better.

P&C businesses are certainly easier to understand from a technical perspective, so that may make it easier to invest in them.

On the other hand, you could argue that Life businesses may deliver better long-term returns because they can think far ahead into the future and base their investment strategies on long-term trends.

6. How do a P&C firm's growth and profitability change over the industry lifecycle?

Generally as Premiums growth increases, Underwriting margins decline, and vice versa.

Here's a graph that summarizes what a lifecycle might look like:
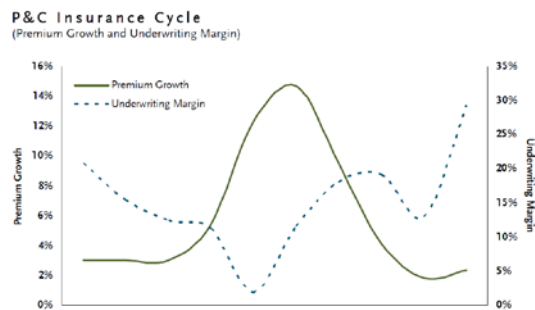
Bank Merger Model and LBO Model Questions & Answers

Interview questions on merger models and LBO models for banks are extremely unlikely. Merger models get very complicated and go way beyond the usual knowledge tested in entry-level interviews, and traditional LBO models simply don't work.

Still, there are a few points that you may want to keep in mind if you have super-advanced interviews.

1. How is a merger model different for commercial banks?

A merger model is a merger model, so the basic mechanics are the same: pick your purchase method, combine financial statements, and calculate accretion / dilution.

There are **5 key differences:**

1. Usually you do not use Debt or (much) Cash to finance the purchase because banks are already levered to the max and "Cash" is not like cash for normal companies; **Stock** is the most common financing method.
2. The buyer may need to **divest** some of the seller's Deposits upon acquisition – for example, in the US a bank cannot possess more than 10% of Total Nationwide Deposits.
3. There's a new Intangible Asset called **Core Deposit Intangibles** that gets created in the acquisition of another bank.
4. You may have to factor in **Cost Savings** and **Restructuring** charges differently depending on how the post-merger integration works.
5. In addition to EPS accretion/dilution, you also have to pay close attention to how **Dividends** and **Tier 1 Capital** (and other capital) are affected by the acquisition.

2. How can we tell whether or not Deposits must be divested in an M&A deal between 2 banks?

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It depends on the country the acquisition takes place in – to check, you would look up the Total Deposits in the country, add up the Deposits from the two banks, and see what percent that total represents.

For example, if the country has $1000 worth of Total Deposits currently, Bank A has $100 of Deposits, Bank B has $50 worth of Deposits, and a single bank can only possess 13% of the Deposits in the country, Bank B would need to divest $20 worth of Deposits or the acquisition could not go through.

3. How can you estimate the impact of a Deposit Divestiture in a bank merger model?

This is trickier than it sounds because when you divest Deposits, you **also** need to divest something on the Assets side of the Balance Sheet… which in turn will affect other parts of the model. You can describe it via this 5-step process:

1. Calculate the **Required Divestiture** using the explanation in question #2 above.
2. Estimate the **Premium** you receive for the Deposit, what percentage of the Deposit Divestiture corresponds to Loans vs. Securities vs. Other Assets, what percentage of the Deposit Divestiture corresponds to Risk-Weighted Assets, and then the **Return on Assets (ROA)** for the Assets you're divesting.
3. On the **Balance Sheet**, Cash and Retained Earnings go up by the after-tax profits from the Divestiture Premium (e.g. Deposit Divestiture Amount * Premium Percentage * (1 – Buyer Tax Rate)); Deposits goes down on the Liabilities side and Loans and possibly other Assets go down on the other side.
4. On the **Income Statement**, you've lost some Net Income (ROA * Deposit Divestiture Amount) but you've also *gained* some Net Income from any Deposit Divestiture Premium you received (Deposit Divestiture Amount * Premium Percentage * (1 – Buyer Tax Rate) * Funding Cost) – because you no longer need as many Interest-Bearing Liabilities to fund operations.

5. Finally, your **Capital Ratios** will also be impacted because Retained Earnings goes up as a result of this, but Risk-Weighted Assets also *go down* because you've divested some RWAs along with the Deposits.

4. When you're estimating the Deposit Divestiture impact, do you think most of the divested *Assets* would be in the form of Loans, Securities, or something else?

Technically it could be anything, but *most of the time* the majority of divested Assets are shorter-term in nature – Securities, Trading Assets, and so on. It is very difficult to sell off huge amounts of Loans to other parties on short notice, so you normally assume that shorter-term Assets comprise a majority of the divested Assets.

5. How are Cost Synergies and Restructuring Charges linked in a bank merger model?

Normally you assume that the combined company can reduce its "Core Non-Interest Expenses" by a certain percentage (e.g. by consolidating retail branches), and that it takes several years to realize that savings.

Then, you make the Restructuring Charges a percentage of these fully realized Cost Synergies because there's no such thing as a free lunch… it costs *something* to realize all those cost savings.

Typically you assume that Restructuring Charges are divided into cash vs. non-cash expenses each year.

You may also create a Restructuring Reserve Liability on the Balance Sheet to account for this required spending in the future.

6. How do Synergies and Restructuring Charges affect the combined Income Statement?

Synergies are straightforward: take the Core Non-Interest Expenses each year, multiply by the savings percentage, and then multiply by the Realization Rate each year to calculate the total Cost Savings. You can then multiply by (1 – Buyer Tax Rate) to determine the impact on Net Income.

For the Restructuring Charges, you assume that **additional funding is required** to pay for these cash expenses – so you track the total cash expenditure over time, multiply by the Funding Rate each year, and then multiply by (1 – Buyer Tax Rate) to determine the impact on Net Income.

7. How do you calculate Core Deposit Intangibles (CDI) in a bank-to-bank M&A deal?

Core Deposit Intangibles represent the present value of future earnings on **Core Deposits** (usually all non-foreign and non-brokered Deposits) acquired; normally you assume a simple percentage under 5% and multiply it by the Core Deposits of the bank you're acquiring.

Just like normal Goodwill & Other Intangible Assets represent the premium paid over a company's Book Value in an M&A deal, Core Deposit Intangibles represent the premium paid for a bank's **Core Deposits**.

8. Wait a minute, why would a bank ever pay a Premium to acquire the Deposits of another bank? Deposits are a Liability!

Yes, according to the rules of accounting, Deposits are a Liability… but think about what a bank can *do* with those Deposits: they can take the funding and then use it to issue more Loans, invest in Securities, and potentially earn more Net Interest Income.

Sometimes banks can also get "good deals" on Deposits, or may value a certain type of Deposits highly (for example, if they need to acquire a more "stable" funding source). So there are many reasons why a bank might pay a Premium to acquire Deposits.

9. How do Purchase Price Allocation and combining the Balance Sheets differ in bank merger models?

Purchase Price Allocation is similar – the differences to note:

- You generally only write off non-MSR Intangible Assets.
- You need to factor in the new Core Deposit Intangibles that get created.
- There will also be a DTL associated with those Core Deposit Intangibles.
- You may need to factor in the Restructuring Reserve as well.
- PP&E and Fixed Asset write-ups are not as common for banks.

Differences when combining the Balance Sheets:

- You may have to make a **mark-to-market adjustment** on everything and write up or write down the values of key Assets and Liabilities.
- You need to factor in **Core Deposit Intangibles**.
- You need to factor in **Deposit Divestitures** and any Premium or Discount received for them (impacts Cash and Retained Earnings).
- You may have to add in the **Restructuring Reserve** on the Liabilities side.

10. What types of metrics could you use to analyze a bank merger model?

EPS Accretion / Dilution is still applicable, but there are a quite a few other metrics you could look at as well:

- Accretion / Dilution for Dividends Per Share, Book Value Per Share, Tangible Book Value Per Share, Tier 1 Capital Per Share, Tier 1 Common Per Share, etc.
- You could run a **Contribution Analysis** based on metrics like Gross Loans, Total Assets, Tangible Common Equity, and more.
- You may calculate the buyer's **Internal Rate of Return (IRR)** on the purchase, under the assumption that it sells the acquired bank in the future.

And the list goes on – see the Bank & Financial Institution Modeling course for more.

11. Explain why a traditional LBO model would not work for a bank.

Most banks are already levered to the maximum possible level, so you cannot put additional Debt on a bank's Balance Sheet.

Also, traditional LBO metrics like the Leverage Ratio (Total Debt / EBITDA) don't apply to banks because EBITDA has no meaning.

Banks also generate very little "Free Cash Flow" because excess cash flow is either used for Dividends or to add to its Tier 1 Capital.

12. Although buyouts of banks are very rare, they do happen. If traditional LBO models don't work, how do private equity firms acquire banks and earn high returns?

Rather than relying on "financial engineering" (i.e. loading the company with debt), PE firms instead use cash to acquire the bank or to make a minority investment in the bank.

Then, the PE firm would focus on consolidation, operational efficiencies, higher ROE, or multiple expansion rather than waiting for the bank to pay off Debt and selling it.

Buyouts of banks require more skill and specialized knowledge than traditional leveraged buyouts and so they're far less common; they also tend to be smaller than LBOs of normal companies because no PE firm could afford to buy a large commercial bank with 100% equity.

There's also a host of regulatory problems because if a PE firm acquires too much of a bank (percentages vary by country), it may be classified as a "bank holding company" itself – so acquisition structures are very tricky to get right.

13. I don't believe you. How can the math possibly work if you don't use leverage?

The math works because banks are bought and sold based on **P / BV** or **P / TBV** multiples, and Return on Equity has a **compounding effect** on the Book Value of a company.

Compare it to a normal LBO for a second: if EBITDA increases by 20% over a 5-year period and the Exit Multiple is the same as the Purchase Multiple, basically the company is just worth 20% more – not a great result over a 5-year period.

But with ROE, remember that **Net Income adds directly to Book Value every year**… so even if you assume absolutely no ROE improvement at all, the company's Book Value still increases substantially **simply by operating and earning after-tax profits.**

So you could potentially buy a bank, make no improvements, have a similar or lower Exit Multiple, and still get a solid return because Book Value always increases over time if Net Income is positive.

14. What else could you do to boost returns in a bank buyout scenario?

Here are the variables you can tweak or make changes to in order to boost returns:

- **Gross Loan Growth** – Faster growth generally means higher returns.
- **Regulatory Capital** – If the firm doesn't need to keep as much capital on hand, it could potentially be more aggressive with lending and also earn higher returns.
- **Return on Equity** – A higher ROE, or more of an ROE improvement, will also boost returns because it increases Net Income and therefore Book Value.
- **Dividends** – You can tweak the amount of Dividends issued or the target Payout Ratio to change the returns.

You could also make other changes to the bank's operations, such as investing in riskier Assets (not recommended if you want to avoid financial crises…), changing the funding sources (i.e. the mix of Liabilities on the Balance Sheet), and even acquiring smaller banks to boost returns.

15. Would the PE firm benefit more from forcing the bank to issue Dividends to itself over time, or from allowing the bank to issue no Dividends and to save up its capital?

Generally, the IRR will be higher if Dividends are cut to $0 and the Book Value in the final year is significantly higher as a result.

Yes, money today is worth more than money tomorrow, but Dividends are tiny next to the entire Book Value of a bank. And in a bank buyout, you're always trying to maximize the Book Value upon **exit**.

If it's the rare scenario where ROE is decreasing substantially and the Final Year Book Value ends up being a **lower** number than the initial Book Value, then the IRR would increase if the bank issues the Dividends each year prior to exit.