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Commercial Bank Risk Management and Financial Performance Case Study

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Abstract

The case is ideal for an upper-level finance course with an emphasis on financial institution risk management and financial performance. It is unique in that it sources data from the Federal Financial Institutions Examination Council (FFIEC) website through a series of reports called the Uniform Bank Performance Report (UBPR). The UBPR is a report set created for bank supervisory, examination, and management purposes. It presents data and ratios for each bank in a concise and consistent format. This allows the course instructor to assign multiple banks confident that the data is available and consistently presented. The case can be used to supplement course curriculum or as a stand-alone assignment. It can be offered as an individual or as a team-based assignment.

Case Description

This case connects the myriad of risk factors to which commercial banks are exposed. These include interest rate risk, market risk, credit risk, off-balance sheet risk, foreign exchange risk, and liquidity risk. In addition, the case incorporates other critical elements important to commercial banks, such as capital adequacy and asset securitization. The case also includes a thorough bank financial performance analysis and the opportunity for students to present the analysis findings.

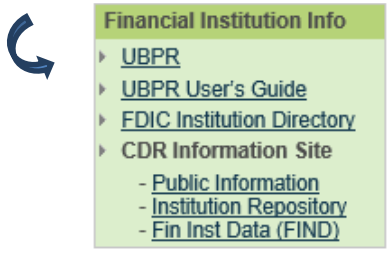
Case Guidelines

- The case includes the following three parts:
  - Part 1 – Risk computations and analysis
  - Part 2 – Financial performance analysis
  - Part 3 – Presentation

Case Data / Information

Locate data for your assigned bank through the Federal Financial Institutions Examination Council (FFIEC) web site, as follows:

1. Go to the FFIEC website at http://www.ffiec.gov
2. On the right, click the link for "UBPR" in the Financial Institution Info section.

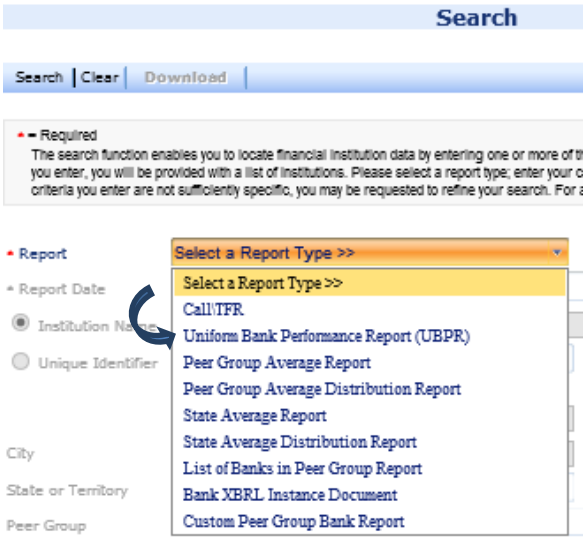


3. On the next page (in the middle of the page), locate and click the link for "UBPR Reports":

   To obtain a UBPR for a bank or to view any of the other UBPR statistical reports simply select: UBPR Reports

4. On the Search page next to "Report," select Uniform Bank Performance Report (UBPR)

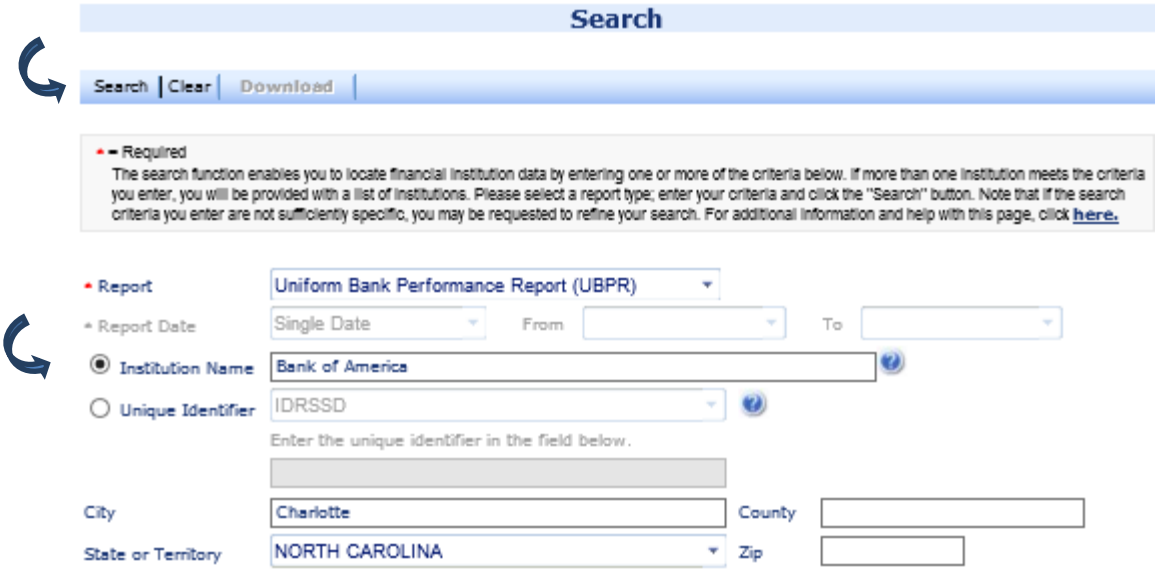
from the drop-down options.



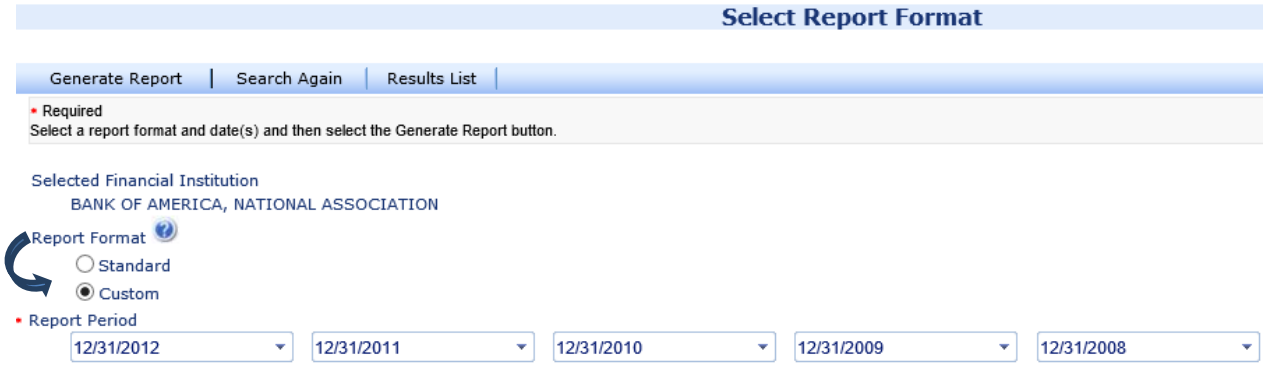
Note: The other, available report types include:

- Peer Group Average Report – Average data for all U.S. banks in same PG
- Peer Group Average Distribution Report – Percentile data of above
- State Average Report – Average data for banks headquartered in same state
- State Average Distribution Report – Percentile data of above
- List of Banks in Peer Group

5. While on the Search page and using the bank assigned to your group, enter your bank's name ("Institution Name") and the City and State where the bank is headquartered or the RSSD ID number ("Unique Identifier"). Click on "Search." Note: The FDIC number also may be entered as the Unique Identifier.



6. On the Select Report Format page, choose "Custom" for "Report Format" and change the "Report Period" to the fiscal year-end for the last five years (typically December 31st, but confirm the date from the company's web site). Click "Generate Report." Note: You might have to disable a popup blocker.



7. A new window will open as follows:

a) The initial view includes summary information about your bank.
b) On the left, click the box for "Table of Contents," which will prefill a check mark in the boxes for all available reports if you want all available reports. Or, check only the reports highlighted below which are suggested for this report.
c) Click "Print." A file will open in a new window. This takes a moment to load. Change the orientation to landscape, and print the documents. **Students should include a copy of the formatted UPBR (prior to make any changes) with the final report highlighting each piece of data used in the work**.
d) Optional - Close the window and you will return to the previous page. This time, click "Download." The site will download the data in a .txt file in Word. Copy the entire file and paste the data in a New Blank Workbook in Excel. The file will contain about 1,500 rows of data. Modify the column widths to accommodate the data. Save the file. You may use this file to manipulate the data.

UBPR Table of Contents

√ Summary Ratios - Page 1
√ Income Statement $ - Page 2
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√ Derivative Analysis - Page 5B
√ Balance Sheet Percentage Composition - Page 6
√ Analysis of Credit Allowance and Loan Mix - Page 7
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√ Liquidity & Funding - Page 10
√ Liquidity & Investment Portfolio - Page 10A
√ Capital Analysis - Page 11
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√ Fiduciary & Related Services - Page 14
√ Fiduciary & Related Services - Page 14A

UBPR Data - There are five principal types of financial data:

- Dollar data (Column Header: BANK) appears on most pages. All dollar data is displayed in thousands. Income and expense data that appears in the UBPR is generally year-to-date. Balance sheet data is usually a spot or end-of-period value. Note: Since we are using year-end data, the income statement will reflect a full year. Composition reports are based on the percent of average earning assets.
- Ratio data appears on many pages. Some ratios are quite complex and involve several levels of computation. Ratios are displayed in percent format to two decimals of precision.
- Peer Group (Column Header: PG) average data is computed for many ratios. An average of a given ratio for all banks within the peer group is presented as a benchmark to measure individual bank performance. There are seven major PGs; the lower the PG the higher the assets (PG 1 - $3B+; PG 2 - $1B-$3B; PG 3 - $300M-$1B; PG 4 - $100M-$300M (MSA); PG 5 - $100M-$300M (not MSA); PG 6 - $100M-$300M (MSA, < 3 offices); PG 7 - $100M-$300M (not MSA, < 3 offices).
- Percentile rankings (Column Header: PCT) are computed for most ratios. It is a value from 0 to 99 and reflects the percentile or percentage position of a given bank relative to other peer banks for a specific ratio.
- Some structural or demographic information is displayed, including identifying information such as RSSDID number, Certificate Number, street address and holding company information.

Sample Case Bank Assignments

The following banks were selected for the case. They are all large banks and are organized in Peer Group (PG) 1 in the FFIEC system.

Bank Name	CITY	STATE	RSSD ID	Assets (000s)
JPMorgan Chase Bank, National Association	New York	New York	852218	$1,948,150,000
Bank of America, National Association	Charlotte	North Carolina	480228	$1,458,091,000
Citibank, National Association	New York	New York	476810	$1,306,258,000
Wells Fargo Bank, National Association	San Francisco	California	451965	$1,271,620,000
U.S. Bank National Association	Minneapolis	Minnesota	504713	$345,786,969
PNC Bank, National Association	Pittsburgh	Pennsylvania	817824	$290,107,628
The Bank of New York Mellon	New York	New York	541101	$277,308,000
State Street Bank and Trust Company	Boston	Massachusetts	35301	$214,099,182
Branch Banking and Trust Company	Winston Salem	North Carolina	852320	$176,106,904
SunTrust Bank	Atlanta	Georgia	675332	$167,730,169

Case Instructions

The case includes three parts. Part 1 tests your mastery of the risks faced by commercial banks through performing calculations and analyzing the results based on data sourced from the UBPR for your assigned bank. Part 2 calls for you to analyze the financial performance of your assigned bank. Part 3 is a presentation of your findings to the class.

Unless indicated otherwise, perform the analysis using data for the most recent fiscal year-end. Remember that any dollar-based data is expressed in 000's.

PART 1 – Answer the Following Questions

1. **Interest Rate Risk – Repricing GAP Calculation** – From Page 4 of your UBPR, locate the most recent year-end amount of your bank's "Total Earning Assets" (not "Total Assets") and "Total Liabilities (Incl Mortg)." Then, assume and apply the following distributions for risk-sensitive assets and liabilities to use the Repricing Model. Create the matrix for the model using the chart below. (Note: These distributions will be used for all teams, regardless of the actual bank assigned, so will be inconsistent with some of the data in the UBPR report, including Page 9.)

	Assets	Liabilities
> 1 Day - 3 Months	0.4%	0.0%
> 3 Months - 1 Year	1.7%	39.5%
> 1 Year - 2 Years	8.9%	0.0%
> 2 Years - 5 Years	33.3%	60.5%
> 5 Years	55.7%	0.0%
Total	**100.0%**	**100.0%**

	Assets	Liabilities	Gap	Cumulative Gap
> 1 Day - 3 Months				
> 3 Months - 1 Year				
> 1 Year - 2 Years				
> 2 Years - 5 Years				
> 5 Years				
Total				

2. **Interest Rate Risk – Repricing GAP Analysis** – Using the information from Question 1 and assuming your bank is planning for the 1-year or less maturity window(s), what is the cumulative Repricing gap? Explain interest rate risk. Is your bank short-funded or long-funded? Explain why. To what type of type of interest rate risk is the bank exposed (reinvestment or refinance) in the 1-year or less maturity window(s)? Explain why using the chart below.

Row	CGAP	Δ in Rates	Δ in NII	Δ in Int Rev		Δ in Int Exp
1	Positive	↑	↑	↑	>	↑
2	Positive	↓	↓	↓	>	↓
3	Negative	↑	↓	↑	<	↑
4	Negative	↓	↑	↓	<	↓

3. **Interest Rate Risk – CGAP Ratio Calculation** – Using the information from Question 1 and "Total Assets" from Page 4 of your UPBR, what is the CGAP Ratio for the 1-year or less maturity window(s)? Interpret the result.

   CGAP Ratio: CGAP ÷ Total Assets

4. **Interest Rate Risk – Impact On NII Calculation – Equal Rate Change** – Using the information from Question 1, if interest rates increase by 67 bps (.67% or .0067) equally for RSAs and RSLs, what would be the impact on net interest income (NII) for the 1-year or less maturity window(s)?

   $\Delta NII_i = (RSA_i - RSL_i)(\Delta r_i) = (GAP_i)(\Delta r_i)$

5. **Interest Rate Risk – Impact On NII Calculation – Unequal Rate Change** - Recalculate the impact on NII for the 1-year or less maturity window(s) from Question 4 if interest rates on RSAs increase 54 bps and RSL increase 85 bps.

   $\Delta NII = (RSA \times \Delta R_{RSA}) - (RSL \times \Delta R_{RSL})$

6. **Interest Rate Risk – Duration Calculation and Analysis** – From Page 4 of your UBPR, locate the amount for "U.S. Treasury and Agency Securities." Use this amount and assume these investments are recorded at face value. Now, assume the following characteristics and calculate the duration of these investments. Explain the meaning of your duration calculation.
   - 3.50% Coupon Rate
   - Coupons Paid Semi-Annually
   - 5 years to maturity
   - For YTM, from Page 3 of your UBPR in the "Yield on or Cost of" section, use "U.S. Treas & Agency (Excl MBS)"

7. **Interest Rate Risk – Impact on Net Worth Calculation** – On Page 4 of your UBPR, locate the data for the balance sheet. You will use this data to calculate k (leverage) using "Total Assets" (not "Total Earning Assets"). Assume the weighted-average duration of the assets is 7.43 years and the weighted-average duration of the liabilities is 1.12 years. (All students will assume these same duration assumptions.) Now, on Page 1 of your UBPR in the "Margin Analysis" section, calculate R (present margin) based on the difference between the

yield on "Interest Income (TE) to Average Earning Assets" and "Interest Expense to Average Earning Assets." This is also the same as the next line, "Net Interest Income (TE) to Average Earning Assets," but note the separate rates. Calculate the bank's exposure from the 67 bps expected increase in interest rates. Explain the result, and how the bank is exposed and why.

$$\Delta E = -[D_A - D_L k]\,[A]\,[\Delta R/(1+R)]$$

8. **Market Risk – DEAR and VAR Calculation and Analysis** – On Page 4 of your UBPR in the "Memoranda" section, locate the amount for "Available-for-Sale Securities". Calculate the market risk of these securities assuming they are held as part of the trading portfolio (and are already marked-to-market value) by calculating DEAR, then the 10-day VAR. Explain market risk and interpret the result. Assume the following:
   - Historic Mean Change in Daily Yields – 0%
   - Standard Deviation – 15 bps
   - Risk Tolerance - ≤ 5% chance outside maximum
   - MD = D / (1+R)
     - Use 4.98 years for D
     - For R, on Page 3 of your UBPR in the "Yield on or Cost of" section, use the yield on "Total Investment Securities (TE)"
   - VAR = DEAR x $[N]^{½}$

9. **Credit Risk – ROA Calculation and Analysis** – On Page 3 of your UBPR, locate the yield on "Commercial and Industrial" loans in the "Yield on or Cost of" section. Assume the yield (ROA) is based solely on the stated rate. Project the new ROA if your bank begins charging a 45 bps annual commitment fee and begins requiring 10% in compensating balances. The bank will be required to hold 10% of the balances in reserves with The Fed. Next, calculate the true cost to the borrower under the new arrangement. Explain why the cost to the borrower is different from the projected ROA.

$$k = 1 + \frac{of + (BR + m)}{1 - [b(1 - RR)]} - 1$$

10. **Credit Risk – RAROC Calculation and Analysis** – Calculate RAROC on the Commercial Loans. If the RAROC benchmark is the cost of funds plus 275 bps, calculate the benchmark and determine if the return on the commercial loans is acceptable. Explain RAROC. Use the following information:
    - Amount: Locate the amount of "Commercial Loans" from Page 4 of UBPR
    - Market Interest Rate: Use the same yield on "Commercial and Industrial" loans from the last question
    - Commitment Fee: 45 bps
    - Term: 6.5 years
    - Duration: 5.984 years
    - Cost of Funds: Use "All Interest-Bearing Funds" in the "Yield on or Cost of" section on Page 3 of UBPR
    - Max. Adverse Change in Risk Premium: 2.98%

$$RAROC = \frac{\text{One Year Net Income On Loan}}{\textit{Loan}\ (\text{Asset})\ \textit{Risk}\ \text{or Capital at Risk}}$$

$$\Delta LN = -D_{LN} \times LN \times \Delta R/(1+R)$$

11. **Off Balance Sheet Risk – Calculating Contingent Value** - Locate the "Notional Amount ($000)" of "Interest Rate Contracts" from Page 5A of your UBPR. Then, assume this represents put options your bank bought and the delta is calculated at -.35. Calculate the contingent asset value of this option.

$$d = \frac{\text{Change in Option's Price}}{\text{Change in Price of Underlying Security}}$$

12. **Foreign Exchange Risk – Calculating Loan Exposure and Analysis** – Again locate the amount of "Commercial Loans" from Page 4 of your UBPR. Now, assume the loans are denominated in Euros and the amount presented on the balance sheet is the U.S.$ equivalent of U.S.$1.38/€. What would be the market value of the loans, expressed in U.S.$, if the dollar now appreciates relative to the Euro to U.S.$1.25/€? Did the foreign exchange risk from the change in exchange rates benefit or harm the bank? Why?

13. **Liquidity Risk – Liquidy Management Techniques And Brokered Deposit Dependency** – Assume 5% of your bank's total deposits are unexpectedly withdrawn. Thoroughly describe several techniques available to you to manage this deposit drain. What are the risks of the options you suggested? Now, locate information on Page 10 of your UBPR about brokered deposits (% of Total Deposits and $). Discuss liquidity risk and your bank's reliance on brokered deposits and any additional risks.

14. **Capital Adequacy – Calculating Capital Ratios And Analysis** – Locate the capital ratios on Page 11 of your UBPR. Determine which Capital Zone your bank is in. Now, on Page 11A, locate the section related to "Risk-Weighted Assets." There is data for both "On-Balance Sheet" and "Off-Balance Sheet" Risk-Weighted Assets, plus information for the total of the two categories after some adjustments ("Adjustments to Risk-Weighted Assets"). Note that this amount already considers the risk weights. Use this amount. The "Tier One Capital" and "Tier Two Capital" information is also on Page 11A. Now, assume your bank liquidates all of Category One (0%) On-Balance Sheet assets to grow On-Balance Sheet Category Four (100%) loans. Recalculate all three capital ratios. Explain the impact on each ratio and the Zone as a result of your bank's new strategy.

15. **Securitization – MBS Calculations and Analysis** – Locate the amount of "1-4 Family Residential Loans" in "Securitization Activities" on Page 13 of your UBPR. Assume this is the amount ($) of mortgages your bank originated during the year, which it subsequently securitized. Remember the data is presented in thousands of dollars. Now, assume the mortgages were 30-year, fully amortizing loans with monthly payments which averaged $175,000 each. The mortgages were pooled and structured as a Mortgage Backed Security (MBS) and sold in the capital markets. Assume the rate on the MBS is 4.25%, which includes 50 bps of fees for timing insurance and servicing. (Note: IF your bank does not have data in the UBPR, select and assume an amount and make a note of it in your report). Describe securitization and the benefits to the bank.

What is the amount of the mortgage pool for your bank (from the UBPR)?
What is the monthly payment, per mortgage, paid by each mortgagor?
What is the initial total monthly payment for the pool passed-through to investors?

Part 2 – Bank Performance Analysis – Using your bank's UBPR data and your work from Part 1, together with data you obtain from other sources (e.g.: Annual Report, the bank's web site, and the news), analyze your bank's performance. Connect your analysis to the information from Part 1. The following questions should help in narrowing your focus and provides a suggested sequence for your work for UBPR data. They are simply suggested areas to cover, and the items you should cover are the ones relevant and interesting for your bank. On all pages of the UBPR, identify trends and deviations from the rest of the PG.

- Page 6 – Balance Sheet Percentage Composition (common-sized)
  a. Rank your bank's largest asset categories. Evaluate the trend. Compare the mix and composition to the PG.
  b. Using the most recent data and based on your bank's asset composition, form an expectation about the impact on earnings. For example, if investments were sold to fund growth in the loan portfolio, you should expect net interest income to be higher.
  c. How has your bank's loan portfolio changed over time? How does it compare to its PG? How should this affect earnings?
  d. Consider how your bank is being funded and the cost of funds based on the liability composition.
  e. How leveraged is your bank? How does it compare to the PG?
- Page 7A – Analysis of Credit Allowance and Loan Mix
  a. Rank the mix of your bank's loan portfolio. How has the mix of loan types changed and how does it compare to the PG?
  b. How does the mix inform expected earnings?
  c. How does the mix inform expected risk?
- Page 10A – Liquidity & Investment Portfolio
  a. Rank the mix of your bank's investments. How has the composition changed and how does it compare to the PG?
  b. How does the trend affect risk and expected returns?
- Page 4 – Balance Sheet $
  a. Evaluate scale based on the dollar-based balance sheet.
- Page 5 – Off Balance Sheet Items
  a. Consider the potential impact on both the balance sheet and potential incremental risk and return from OBS items.
- Page 5A & 5B – Derivative Instruments
  a. Discuss how the back is hedging its balance sheet to protect expected earnings based on derivative products, and the type it has selected.
- Pages 7, 8 & 8A – Analysis of Credit Allowance and Loan Mix / Analysis of Past Due, Nonaccrual, and Restructured
  a. Use these report to dig deeper into the quality of the loan portfolio.
  b. Consider the adequacy of reserves based on past due and non-accrual status.

- Page 1 – Summary Ratios
    a. Evaluate ratios and compare to previously formed expectations. How profitable is your bank compared to the PG?
    b. Discuss and compare your bank's ROA and ROE.
    c. Discuss the performance of your bank based on the asset utilization ratio.
    d. What is your bank's loan/deposit ratio? What does this tell you?
- Page 3 – Noninterest Income, Expenses, and Yields
    a. Evaluate trend data and compare PG data for non-interest expense.
    b. Evaluate trend data and compare PG data for returns (yields) and cost of funds. What is your bank's least expensive funding source? Most expensive?
    c. Compare findings to previously formed expectations.
- Page 2 – Income Statement $
    a. Evaluate scale based on the dollar-based income statement.
- Page 9 – Interest Rate Risk Analysis As A Percent of Assets
    a. Use this report to ascertain additional risk factors, primarily those sourced from Interest Rate Risk.
- Page 10 – Liquidity and Funding
    a. Determine your banks liquidity risks based on its funding sources, particularly the concentration of and dependency on brokered deposits.
- Pages 11 & 11A – Capital Analysis
    a. Evaluate the capital composition (type) and the capital adequacy ratio trends and compare to the PG.
    b. Determine how a change in the asset mix affects risk-based capital.
    c. Calculate/consider the loss and growth capacity in your bank's capital structure.

Part 3 – Presentation – Based on your work from Parts 1 and 2 prepare a 20-minute presentation for delivery to the class detailing the financial condition and risk exposure for your bank. Draw definitive conclusions and offer specific recommendations on how bank management can enhance financial performance and effectively manage risk.

Author

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