



# Financial Tools Analysis



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Maryland Banking School  
Financial Tools Analysis  
Course Outline

- I. Introduction - The Tools for Analysis - Definitions
- II. Ratio Analysis - its importance in performing analysis
- III. Sources and Types of Financial Information
- IV. The Basic Financial Statements
- V. Financial Performance Analysis

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- I. Introduction - The Tools for Analysis - Definitions
  - A. Performance Analysis -  
to identify strengths and weaknesses for past, current, and  
future  
financial positions.
  - B. Cash Flow Analysis -  
to measure funds inflows and outflows for the bank as the  
prime  
ingredients of predicting future financial performance.
  - C. Liquidity Analysis -  
to measure the needs for funds to meet customer withdrawals  
and  
lending demands and satisfy other future obligations.
  - D. Interest Margin Analysis -  
to understand how interest margin can be controlled, including  
interest rate, mix, and volume impacts.
  - E. Financial Forecasting & Modeling -  
to create a forecast of the future as a means for evaluating  
alternatives through simulation.

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- I. Introduction - The Tools for Analysis - Definitions (con't)
- F. Economic Analysis -  
to estimate alternative interest rate scenarios and the general direction of local and national economic activity.
- G. Market Analysis -  
to describe the competitive environment and the characteristics of the bank's customers and potential markets.
- H. Responsibility Budgeting System -  
to link planning and control of revenues and expenses to specific managers.
- I. Cost Analysis -  
to perform productivity measurements, incremental costing, and pricing.
- J. Product Pricing Analysis –  
to evaluate product revenues, costs, and earnings contributions

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II. Ratio Analysis – its importance in performing analysis

A. Why Ratio Analysis?

1. help set goals and targets in planning.
2. evaluate the impacts of alternative possible sets of actions and economic scenarios.
3. **compare our performance to others in the industry.**
4. identify trends, interrelationships, weaknesses, and potential trouble spots.
5. evaluate other financial institutions.
6. meet regulatory and accounting reporting and disclosure requirements.
7. **help understand the basic financial interrelationships that exist between the balance sheet and income statement.**

B. Some Caveats

1. there are not always consistently valid "rules of thumb".
2. each ratio should add something to the analysis.
3. **no one ratio can tell the story; nor is there a perfect set.**
4. industry averages are just that, and who wants to be average.
5. care must be taken to define ratios uniformly and consistently, if comparisons are to be made.
6. Off-balance sheet factors may be more important than the on balance sheet numbers.
7. validate financial data inputs.
8. key ratios reports should be tested over time and updated.
9. **use care in defining peer groups: size, type, and performance characteristics.**
10. adopt definitions, ratios, and relationships that make sense and that can give management a financial diagnosis of the health of the bank.

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III. The Sources and Types of Financial Information

A. Internal Sources

1. General Ledger
2. Investment, loan, and deposit application systems
3. Other databases (spreadsheets)
4. Line managers
5. MCIF systems

B. External Sources

1. Economists
2. Investment brokers/dealers
3. Regulators (UBPR, etc.)
4. Competitors

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III. The Sources and Types of Financial Information (con't)

C. Types of Data

Balance Sheet & Income Statement Data

1. Ending Balances
2. Average Balances
3. Market Values
4. Income/Expenses

Cash Flow Data

1. Scheduled Maturities (Bullet/Amortizing)
2. Repricing Amounts
3. Prepayment Assumptions
4. Interest Accruals

Interest Rate Data

1. Treasury Yield Curve
2. Markets Rates (Prime, etc.)
3. Product Pricing Rates/Spreads
4. Repricing Indexes
5. Caps/Floors (Lifetime & Anniversary)

Miscellaneous Data

1. Tax Equivalent Adjustments/Tax Rates
2. Risk Based Capital Weightings
3. Accrual Techniques (for interest rate computations)
4. Memorandum items (# of employees, Common Shares, etc.)
5. Economic Indicators (GDP, Inflation, Employment, etc.)

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IV. The Basic Financial Statements

A. The Balance Sheet (**ALM Packet – pg. 4-10**)

The primary purpose of the balance sheet is to reflect a company's solvency. Solvency is the ability to pay debts as they come due. It displays a company's financial condition **as of a specific moment in time**.

Major sections of the statement:

Assets

Liabilities

Stockholder's Equity

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IV. The Basic Financial Statements

B. The Income Statement (**ALM Packet – pg. 11-13**)

The primary objective of the income statement is to provide a measure of profit for a **stated period of time**, so that users can predict the amount, timing and uncertainty of future cash flows.

Major sections of the statement:

Interest Income

Interest Expense

Net Interest Income

Provision for Loan Losses

Non-Interest Income

Non-Interest Expenses

Income Taxes (state & federal)

Net Income

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V. Financial Performance Analysis

A. Measurement Perspectives

1. Historical (trend)
2. Judgmental (standards)
3. External (peer)

B. Categories for evaluation

**Risk**

1. Asset Quality
2. Liquidity
3. Interest Rate Sensitivity

**Return**

1. Earnings
2. Growth

**Capital Adequacy**

1. Shareholder Equity
2. Regulatory Capital

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V. Financial Performance Analysis - The Questions

**Financial Returns**

1. Earnings (**ALM Packet - pg. 1,2,11-13**)  
  
Is interest margin stable and growing?  
  
Are earnings adequate to generate equity growth consistent with the banks growth?  
  
Are overhead levels acceptable, given the banks overall philosophy towards customer service and product delivery?
2. Growth (**ALM Packet – pg 1**)  
  
Is growth adequate given conditions in the bank's customer base and targeted markets?  
  
Are the bank's growth patterns balanced or at least within planned patterns?

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V. Financial Performance Analysis - The Questions

**Financial Risks**

1. Asset Quality (**ALM Packet - pg. 2**)

What risks exist in the investment and loan portfolios that the book values will not be recovered?

What is the risk of loan losses?

What is the risk of investment losses?

What portion of assets earn money for us?

2. Liquidity (**ALM Packet - pg. 2**)

What liquid assets must be available or accessible to meet demands for funds from expected and unexpected sources?

What is our asset liquidity position?

What is our funding liquidity position?

What is our off-balance sheet or contingency position?

3. Interest Rate Sensitivity (**ALM Packet - pg. 3, 14**)

If interest rates change, what will be the impact on interest margin?

What assets and liabilities can be repriced over what time frame if rates change?

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V. Financial Performance Analysis - The Questions

**Capital Adequacy**

1. Shareholder Equity (**ALM Packet - pg. 1,5**)

How little capital needs to be maintained to allow shareholders to enjoy maximum returns on their investment?

2. Regulatory Capital (**ALM Packet - pg. 1,15-17**)

How much capital is necessary to protect customers and shareholders against expected and unexpected losses?

Is the mix of assets and capital level sufficient to allow the bank to maintain a "well capitalized" position in the eyes of the regulators?

## Financial Ratio Definitions

### Earnings Performance

1. Return on Assets
2. Return on Equity
3. Yield on Earning Assets
4. Cost of Interest Bearing Liabilities
5. Interest Margin
6. Efficiency Ratio
7. Non-Interest Income to Total Assets
8. Net Income Per Employee

### Growth

1. Growth Rate - Assets
2. Growth Rate - Equity
3. Growth Rate - Loans
4. Growth Rate - Deposits

### Capital Adequacy

1. Equity to Assets
2. Total Risk Based Capital %

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Financial Ratio Definitions

Asset Quality Risk

1. Allowance for Loan Losses to Total Loans
2. Loan Loss Provision to Net Charge-Offs
3. Net Charge-Offs to Total Loans
4. Non-Performing Assets to Total Loans
5. Fair Value Securities to Amortized Cost of Securities
6. Allowance for Loan Losses to Non-Performing Assets

Liquidity Risk

1. S-T Investments to Total Assets
2. Pledged Securities to Total Securities
3. Net S-T Liabilities to Total Assets
4. Loans to Deposits
5. Brokered Deposits to Total Deposits
6. Net Noncore Funding Dependence
7. Reliance on Wholesale Fund

Interest Rate Sensitivity

1. Asset Deprec of Tier 1 Capital
2. LT Assets to Total Assets
3. Non-maturity Deposits to LT Assets
  
4. Net Interest Earnings at Risk
5. Equity Value at Risk as a % of MVPE (Present Value Analysis)
6. GAP Analysis

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Earnings Performance (ALM Packet - pg. 1-2)

Return on Assets (Average Balance - Assets)

$\frac{\text{Net Income}}{\text{Total Assets}}$  (ALM Packet - pg. 11)  
(ALM Packet - pg. 3)

Return on Equity (Average Balance - Equity)

$\frac{\text{Net Income}}{\text{Total Equity}}$  (ALM Packet - pg. 11)  
(ALM Packet - pg. 3)

Yield on Earning Assets (Average Balance - Earning Assets) (ALM Packet - pg. 2)

$\frac{\text{Tax-Equiv Interest Income}}{\text{Total Earning Assets}}$  (ALM Packet - pg. 3)

Cost of Funds (Average Balance - Int Bearing Liabilities) (ALM Packet - pg. 2)

$\frac{\text{Interest Expense}}{\text{Int Bearing Liabilities}}$  (ALM Packet - pg. 11)  
(ALM Packet - pg. 4)

Net Interest Margin (Average Balance - Earning Assets) (ALM Packet - pg. 1)

$\frac{\text{Tax-Equiv Interest Income} - \text{Interest Expense}}{\text{Total Earning Assets}}$  (ALM Packet - pg. 3)

Efficiency Ratio (ALM Packet - pg. 1)

$\frac{\text{Non-Interest Expense}}{\text{Int Income} - \text{Int Expense} + \text{Non-Int Income}}$  (ALM Packet - pg. 12)  
(ALM Packet - pg. 11,12)

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<u>Growth (ALM Packet - pg 1)</u>	
Growth Rate - Assets $\frac{\text{Total Assets(Curr Yr.)} - \text{Total Assets(Prior Yr.)}}{\text{Total Assets(Prior Yr.)}}$	
Growth Rate – Equity Capital $\frac{\text{Total Equity(Curr Yr.)} - \text{Total Equity(Prior Yr.)}}{\text{Total Equity(Prior Yr.)}}$	
Growth Rate - Loans $\frac{\text{Total Loans(Curr Yr.)} - \text{Total Loans(Prior Yr.)}}{\text{Total Loans(Prior Yr.)}}$	
Growth Rate - Deposits $\frac{\text{Total Deposits(Curr Yr.)} - \text{Total Deposits(Prior Yr.)}}{\text{Total Deposits(Curr Yr.)}}$	
<u>Capital Adequacy (ALM Packet - pg. 1)</u>	
Equity to Assets (End of Period Balances) $\frac{\text{Total Equity (ALM Packet - pg. 1)}}{\text{Total Assets (ALM Packet - pg. 1)}}$	
Total Risk Based Capital % (End of Period Balances) $\frac{\text{Tier 1 + Tier 2 Capital (ALM Packet - pg. 15)}}{\text{Total Risk Weighted Assets (ALM Packet - pg. 15)}}$	
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<u>Asset Quality Risk (ALM Packet pg 2)</u>	
Allowance for Loan Loss (Reserves) to Total Loans (End of Period Balance) $\frac{\text{Allowances for Loan Loss (ALM Packet - pg. 4)}}{\text{Total Loans (ALM Packet - pg. 4)}}$	
Net Charge-Offs to Total Loans (Average Balance - Total Loans) $\frac{\text{(Charge-Offs - Recoveries)}}{\text{Total Loans}}$	
Non-Performing Assets to Total Loans (End of Period Balances) $\frac{\text{Non-Performing Assets}}{\text{Total Loans (ALM Packet - pg. 4)}}$	
<u>Liquidity Risk (ALM Packet - pg. 14 – Canary Report)</u>	
Net S-T Liabilities to Total Assets (End of Period Balances) $\frac{\text{STL-STA}}{\text{Total Assets (ALM Packet - pg. 4)}}$	
Reliance on Wholesale Fund (End of Period Balances) $\frac{\text{Noncore Liab (NCL) – Jumbo CDs}}{\text{Total Assets (ALM Packet - pg. 4)}}$	
Loans to Deposits (Typically Average Balances but can be Ending as well) $\frac{\text{Total Loans (ALM Packet - pg. 4)}}{\text{Total Deposits (ALM Packet - pg. 4)}}$	
Net Noncore Funding Dependence $\frac{\text{Noncore Liab (NCL) – ST Investments}}{\text{LTI Assets}}$	
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Interest Rate Sensitivity (ALM Packet - pg. 3, 14 – Canary Report)

Asset Deprec of Tier 1 Capital

Depreciation of Investment portfolio + Est. Depreciation of 1<sup>st</sup> lien  
Resid. Mtgs.

Tier 1 Regulatory Capital

L-T Assets to Total Assets

Loans & Inv > 5yr maturity  
Total Assets

Non-maturity Deposits to LT Assets

Non Mat. Deposits  
Loans & Inv > 5yr maturity

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Loan Loss Reserve to Loans

**Year 1**

<u>Loan Loss Reserve</u>	\$ 125	=	1.25%
Total Loans	\$ 10,000		

**Year 2**

Beg Balance + Provision - Net Charge-offs = End Balance

125	+	10	-	5	=	130
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<u>Loan Loss Reserve</u>	\$ 130	=	1.30%
Total Loans	\$ 10,000		

**Year 3**

Beg Balance + Provision - Net Charge-offs = End Balance

130	+	10	-	25	=	115
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<u>Loan Loss Reserve</u>	\$ 115	=	1.15%
Total Loans	\$ 10,000		

Net Charge-offs is loans charged off net of loans recovered

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Net Interest Margin/Spread Comparison

Example #1

	<u>\$ Amount</u>	@	<u>Interest Rate</u>		<u>Interest</u>
Loans	\$ 1,000		6.00%		\$ 60.00
Deposits	\$ 1,000		<u>2.00%</u>		<u>\$ 20.00</u>
<b>Spread</b> (difference between rates)			<b>4.00%</b>		

**Net Interest Margin** =  $\frac{\text{Net Interest Income}}{\text{Earning Assets}} = \frac{\$ 40.00}{\$ 1,000} = \mathbf{4.00\%}$

**Spread and Net Interest Margin are EQUAL**

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Net Interest Margin/Spread Comparison

Example #2

	<u>\$ Amount</u>	@	<u>Interest Rate</u>		<u>Interest</u>
Loans	\$ 1,000		6.00%		\$ 60.00
Non-Int Deposits	\$ 200		0.00%		\$ -
Int Deposits	<u>\$ 800</u>		<u>2.00%</u>		<u>\$ 16.00</u>
Total Deposits	\$ 1,000		2.00%		\$ 16.00
<b>Spread</b> (difference between rates)			<b>4.00%</b>		

**Net Interest Margin** =  $\frac{\text{Net Interest Income}}{\text{Earning Assets}} = \frac{\$ 44.00}{\$ 1,000} = \mathbf{4.40\%}$

**Spread and Net Interest Margin are NOT EQUAL**

**WHY?**

**Answer: The effect of funding \$200 of earning assets with non-int bearing deposits**

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**Efficiency Ratio Calculation**

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Example #1

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Total Expenses		\$ 500
Net Interest Income	\$ 750	
+ Non-Interest Income	<u>\$ 250</u>	
Total Revenue		<u>\$ 1,000</u>

  
$$\text{Efficiency \%} = \frac{\text{Total Expenses}}{\text{Total Revenue}} = \frac{\$ 500}{\$ 1,000} = \mathbf{50.00\%}$$

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**Efficiency Ratio Calculation**

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Example #2

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Total Expenses		\$ 700
Net Interest Income	\$ 750	
+ Non-Interest Income	<u>\$ 250</u>	
Total Revenue		<u>\$ 1,000</u>

  
$$\text{Efficiency \%} = \frac{\text{Total Expenses}}{\text{Total Revenue}} = \frac{\$ 700}{\$ 1,000} = \mathbf{70.00\%}$$

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### Efficiency Ratio Calculation

#### Example #3

Total Expenses **\$ 700**

Net Interest Income **\$ 1,000**

+ Non-Interest Income **\$ 450**

Total Revenue **\$ 1,450**

$$\text{Efficiency \%} = \frac{\text{Total Expenses}}{\text{Total Revenue}} = \frac{\$ 700}{\$ 1,450} = 48.28\%$$