

Bank Financial Analysis

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My Website Contains Useful Information

- <http://www.westga.edu/~rbest/GSB.html>
- Information that will help you complete the home study problem
 - Information about accessing your bank's UBPR
 - Spreadsheet template

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Overview

- Financial Statements and Ratios
- Decomposition of ROE
- Bank Risk
- Putting it all Together
- Review

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Financial Intermediation

- A bank's primary purpose is financial intermediation
 - Accept deposits
 - Usually short-term in nature
 - Relatively quick interest rate adjustments possible
 - Make loans
 - Variety of maturities
 - Fixed and variable rates
 - Make money through an interest rate spread and by charging for services provided

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The Goal of Bank Management

- What is the goal of bank management?
 - Maximize the value of the bank
- Asset Value/Price
 - Present value of expected future cash flows
 - Bank management must determine the "appropriate" balance between risk and return
 - Higher expected profitability often goes hand-in-hand with additional risk
 - Higher **profit** does not always translate into higher **value**

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Purpose of Financial Analysis

- Measure past performance
- Determine starting point for planning
- Estimate future performance (What-ifs?)
- Set values
 - Predict cashflows
 - Determine risk

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Why use ratios?

- Standardize numbers; facilitate comparisons
- The most common comparison norms are:
 - Past performance
 - Other banks (peer or “target” banks; industry (or peer group) average/median)
- Look at trends over time (trend analysis) for clues to whether a bank’s financial condition is likely to improve or to deteriorate

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Warning!

- Be careful not to infer too much from a ratio
 - Changes often affect multiple ratios differently
- Accounting discretion makes a difference
 - Approaches to loan loss expenses & write-offs
- Calculating ratios is mechanical and their relationships are often mechanical, but interpreting underlying causes is not
- **Ratios help you ask the right questions, but by themselves, they rarely give you all the answers**

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CAMELS

- Capital Adequacy
- Asset Quality
- Management Quality
- Earnings
- Liquidity
- Sensitivity

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Readily Available Data

- Uniform Bank Performance Report (UBPR) - Federal Financial Institutions Examination Council (FFIEC)
- Created for bank supervisory, examination, and management purposes
- Bank’s performance and balance-sheet composition
 - earnings, liquidity, capital, asset and liability management, and growth management

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Bank Data

- FFIEC: UBPR
 - <https://cdr.ffiec.gov/public/ManageFacsimiles.aspx>
- FDIC – Statistics on Depository Institutions
 - <http://www2.fdic.gov/sdi/index.asp>

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Financial Statements

- Balance Sheet
 - $Assets = Liabilities + Equity$
 - Balance sheet figures are calculated at a particular point in time
- Income Statement
 - $Net\ Income = Revenues - Expenses$
 - Indicates results over a period of time

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Balance Sheet	
<ul style="list-style-type: none"> • Cash & DFB • Investment Securities • Loans • Other Assets 	<ul style="list-style-type: none"> • Deposits <ul style="list-style-type: none"> • Non-interest Bearing • Interest Bearing • Purchased Liabilities <ul style="list-style-type: none"> • Fed Funds • Repos • Other S-T Liab • LT Sub. Debt • Equity Accounts

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Bank Assets
<ul style="list-style-type: none"> • Cash and due from banks <ul style="list-style-type: none"> – Vault cash, deposits held at the Fed and other financial institutions, and cash items in the process of collection • Investment Securities <ul style="list-style-type: none"> – Bonds, notes, and other securities held to generate return and help meet liquidity needs • Loans <ul style="list-style-type: none"> – Commercial, consumer, RE, agricultural, etc. – Generate most of interest income; highest default risk • Other assets <ul style="list-style-type: none"> – Bank premises and equipment, interest receivable, prepaid expenses, other real estate owned

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Bank Investments
<ul style="list-style-type: none"> • Held-to-maturity securities – recorded on the balance sheet at amortized cost • Trading account securities – actively bought and sold – marked to market on balance sheet and gains and losses reported on income statement • Available-for-sale – recorded at market value on balance sheet with a corresponding change to stockholders' equity as value changes; no income statement impact

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Transaction Accounts
<ul style="list-style-type: none"> • Non-interest bearing demand deposits <ul style="list-style-type: none"> – Regular checking accounts that pay no interest • Interest bearing <ul style="list-style-type: none"> – Negotiable orders of withdrawal (NOWs) and automatic transfers from savings (ATS) <ul style="list-style-type: none"> • Pay interest rate set by bank – Money market deposit accounts (MMDAs) <ul style="list-style-type: none"> • Pay market rates, but customer is allowed a limited number of checks or automatic transfers each month

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Savings and Time Deposits
<ul style="list-style-type: none"> • Savings and time deposits often represent the bulk of interest-bearing liabilities • Two general time deposits categories exist: <ul style="list-style-type: none"> – Jumbo (negotiable) certificates of deposit (CDs) <ul style="list-style-type: none"> • Time deposits in excess of \$100,000 • Generally follow highest rate – Small retail CDs <ul style="list-style-type: none"> • Under \$100,000 • Considered core deposits which tend to be stable deposits that are typically not withdrawn over short periods of time.

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Other Borrowings
<ul style="list-style-type: none"> • Purchased liabilities (rate-sensitive): <ul style="list-style-type: none"> – Federal Funds Purchased – Repurchase agreements – Other borrowings less than one year • Subordinated notes and debentures: <ul style="list-style-type: none"> – Notes and bonds with maturities over one year • Generally, from least to most expensive <ul style="list-style-type: none"> – Demand deposits – Savings deposits – Time deposits – Purchased liabilities

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Stockholders equity

- Ownership interest in the bank
 - Common and preferred stock listed at par
 - Surplus account represents the amount of proceeds received by the bank in excess of par when it issued the stock
 - Retained earnings equals accumulated net income not paid out as cash dividends

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Bank Balance Sheets by Asset Size - 2010

	< \$100M	\$100M - \$1B	\$1B - \$10B	> \$10B
Cash and Due	13,256,267	79,440,913	87,912,852	742,489,011
Securities	29,949,725	213,817,470	223,629,694	1,884,243,297
FF Sold	4,402,033	16,065,850	7,386,095	426,501,368
Net Loans	77,176,882	680,336,280	679,566,993	4,940,678,681
LL Allow	1,389,083	13,921,325	17,036,426	184,979,558
Trading Acct	11,591	157,266	1,952,625	719,167,669
Bank Premises	2,307,348	20,184,662	15,945,198	72,233,013
Other Assets	4,841,455	48,624,471	73,997,841	1,001,326,459
Total Assets	131,945,301	1,058,626,912	1,090,391,298	9,786,639,498
Total Dep	112,038,834	884,022,292	841,932,762	6,676,292,164
FF Purch	712,936	17,811,129	49,734,897	460,130,931
Trading Liab	246	15,482	306,929	287,730,266
Other Borrow	4,117,643	50,383,231	74,718,167	1,241,473,095
Total Liab	116,869,659	952,232,134	966,692,755	8,665,626,456
Preferred	53,361	703,068	1,839,106	3,923,131
Total CE	15,022,281	105,691,710	121,859,437	1,117,089,911
Total L & E	131,945,301	1,058,626,912	1,090,391,298	9,786,639,498

Income Statement

Interest Income
- Interest Expense
 Net Interest Income
 - Provision for Loan Losses
 + Noninterest Income
 - Noninterest Expense
+ Gains/Losses on Secs
 Pretax Earnings
- Taxes
 Net income

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Income Statement Items

- Net interest income is interest income minus interest expense
 - Interest income: interest income and fees earned on loans and leases, deposits held at other institutions, securities, fed funds sold
 - Interest Expense: interest paid on deposits, fed funds purchased, Repos, other borrowings, and sub. notes and debentures
- Provision for Loan Losses
 - Noncash expense representing funds put aside to prepare for bad loans

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Noninterest income

- Fiduciary activities
 - Managing and protecting a customer's property
 - Recordkeeping for security transactions
 - Managing pension and retirement plans
- Service charges
 - Fees for maintenance, overdraft, stop payments
- Other
 - Investment banking
 - Venture capital revenue
 - Insurance commission fees

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Noninterest Expense

- Personnel expense
 - Salaries and benefits paid to bank employees
- Occupancy expense
 - Rent and depreciation on equipment and premises, and
- Other operating expenses
 - Utilities
 - Deposit insurance premiums
- Note: Burden =
Non-interest expense minus non-interest income

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Bank Income Statements by Asset Size - 2010				
	< \$100M	\$100M - \$1B	\$1B - \$10B	> \$10B
Int Inc	6,151,468	50,008,667	48,579,075	376,775,949
- Int Exp	1,485,199	12,844,480	11,663,894	63,354,759
Net Int Inc	4,666,269	37,164,187	36,915,181	313,421,190
- PLL	702,524	9,092,458	13,802,500	122,374,086
+ Non Int Inc	1,553,177	9,488,222	14,236,852	192,469,437
- Non Int Exp	5,001,167	33,363,038	33,017,009	287,331,790
+ Sec G/L	61,265	640,238	475,924	7,115,710
Inc Bef Ext	577,020	4,837,151	4,808,448	103,300,461
+ Ext Inc	-384	34,478	-2,948	-597,387
- Taxes	110,812	1,310,146	2,776,820	28,956,516
Net Inc	465,824	3,561,483	2,028,680	73,746,558

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Common Size Financial Statements

- Initial comparison ratios
- Balance sheets and income statements that display all items relative to a common base figure (such as total assets)
- Allows quick identification of differences
 - Over Time
 - Across Banks
 - Across Groups

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Common Size Bank Balance Sheets by Asset Size - 2010				
	< \$100M	\$100M - \$1B	\$1B - \$10B	> \$10B
Cash and Due	10.05%	7.50%	8.06%	7.59%
Securities	22.70%	20.20%	20.51%	19.25%
FF Sold	3.34%	1.52%	0.68%	4.36%
Net Loans	58.49%	64.27%	62.32%	50.48%
LL Allow	1.05%	1.32%	1.56%	1.89%
Trading Acct	0.01%	0.01%	0.18%	7.35%
Bank Premises	1.75%	1.91%	1.46%	0.74%
Other Assets	3.66%	4.59%	6.79%	10.24%
Total Assets	100.00%	100.00%	100.00%	100.00%
Total Dep	84.91%	83.51%	77.21%	68.22%
FF Purch	0.54%	1.68%	4.56%	4.70%
Trading Liab	0.00%	0.00%	0.03%	2.94%
Other Borrow	3.13%	4.76%	6.86%	12.69%
Total Liab	88.58%	89.95%	88.66%	88.55%
Preferred	0.04%	0.07%	0.17%	0.04%
Total CE	11.38%	9.98%	11.17%	11.41%
Total L & E	100.00%	100.00%	100.00%	100.00%

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Income Statements (% TA) by Asset Size - 2010				
	< \$100M	\$100M - \$1B	\$1B - \$10B	> \$10B
Int Inc	4.73%	4.77%	4.47%	3.88%
- Int Exp	1.14%	1.22%	1.07%	0.65%
Net Int Inc	3.59%	3.54%	3.40%	3.23%
- PLL	0.54%	0.87%	1.27%	1.26%
+ Non Int Inc	1.19%	0.90%	1.31%	1.98%
- Non Int Exp	3.84%	3.18%	3.04%	2.96%
+ Sec G/L	0.05%	0.06%	0.04%	0.07%
Inc Bef Ext	0.45%	0.45%	0.44%	1.06%
+ Ext Inc	0.00%	0.00%	0.00%	-0.01%
- Taxes	0.09%	0.12%	0.26%	0.30%
Net Inc	0.36%	0.33%	0.18%	0.75%

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Income Statement and Balance Sheet

- The income statement represents the results over a period of time such as one year
- The balance sheet represents a point in time
- **Use average balance sheet values from corresponding dates of the income statement**
- For example:

$$\text{Average Equity} = \frac{\text{Equity}_t + \text{Equity}_{t-1}}{2}$$

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How Do We Measure Return?

$$\text{ROE} = \frac{\text{Net Income}}{\text{Equity}}$$

- Return on Equity
 - Amount of net income generated by each book value dollar of shareholder equity

$$\text{ROA} = \frac{\text{Net Income}}{\text{Assets}}$$

- Return on Assets
 - Amount of net income generated by each book value dollar of assets

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ROE Example

	<u>2010</u>	<u>2009</u>
Equity	3154	3371
Net Income	503	521

$$ROA = \frac{503}{\left(\frac{(3,154 + 3,371)}{2}\right)} = 0.1541 = 15.41\%$$

What would happen to ROE if year-end equity were used?

Note: The UBPR uses quarterly values to determine average values for many items.

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Ratio Basics

$$ROE = \frac{\text{Net Income}}{\text{Equity}}$$

- ROE increases:
 - If NI increases faster than Equity increases
 - If Equity decreases faster than NI decreases
- ROE decreases:
 - If NI decreases faster than Equity decreases
 - If Equity increases faster than NI increases

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Return on Equity

- ROE and ROA are related through degree of financial leverage (EM = Equity multiplier)

$$EM = \frac{\text{Assets}}{\text{Equity}} = \frac{1}{\text{Equity ratio}}$$

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Strategic Relationship

Equity Ratio	Equity Mult.			
Eq/TA	→ TA/Eq	x	ROA	= ROE
5.00%	→ 20.0	x	1.50%	= 30.0%
6.00%	→ 16.7	x	1.50%	= 25.0%
7.00%	→ 14.3	x	1.50%	= 21.4%
8.00%	→ 12.5	x	1.50%	= 18.8%

Higher financial leverage (lower equity) increases ROE

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Camel Trail “C” (and “L”)

- Bankers recognize that using less capital magnifies earnings
- Regulators prefer more capital to ensure safety and soundness when unfavorable events occur
- Need for “Capital Adequacy”
 - Increasing EM (decreasing capital) magnifies return but:
 - Increases failure risk
 - Increases cost (availability) of uninsured funds
 - » Increases interest expense

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Capital Ratios

- Equity Ratio = equity/total assets
- Risk-based capital requirements

$$\frac{\text{Tier 1 (Core Capital)}}{\text{Risk - Adjusted Assets}} \geq 4 \text{ percent}$$
- Texas Ratio
 - value of the lender's non-performing assets (Non performing loans + Real Estate Owned) divided by the sum of its tangible common equity capital and loan loss reserves

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ROE Breakdown Over Time			
Variable	2010	2009	2008
ROE	8.02%	7.69%	7.52%
EM	7.71	7.18	6.71
ROA	1.04%	1.07%	1.12%

Analysis:

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“What-If” Analysis *****
<ul style="list-style-type: none"> Ratios can be used to calculate “what-ifs” All else equal, calculate the bank’s ROE if it had kept the same EM in 2010 as in 2009?
<ul style="list-style-type: none"> ROE = ROA X EM ROE (act) = 1.04% X 7.71 = 8.02% ROE (est) = 1.04% X 7.18 = 7.47%
<ul style="list-style-type: none"> What “cost” was borne to produce the higher ROE? Was it desirable?

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ROE Breakdown Over Time			
Variable	2010	2009	2008
ROE	7.52%	7.69%	8.02%
EM	6.71	7.18	7.71
ROA	1.12%	1.07%	1.04%

Analysis:

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ROE Breakdown Versus Peer Group			
Bank	2010	2009	2008
ROE	8.02%	7.69%	7.52%
EM	7.71	7.18	6.71
ROA	1.04%	1.07%	1.12%

Peer Group	2010	2009	2008
ROE	8.02%	7.69%	7.52%
EM	9.214	8.352	7.601
ROA	0.87%	0.92%	0.99%

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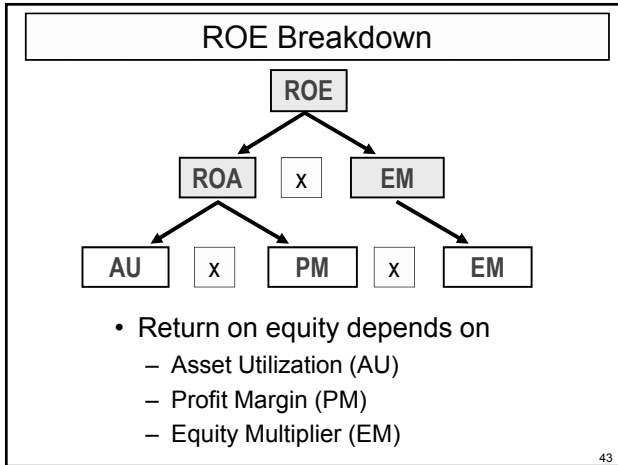
ROE Breakdown Versus Peer Group			
Bank	2010	2009	2008
ROE	8.02%	7.69%	7.52%
EM	7.71	7.18	6.71
ROA	1.04%	1.07%	1.12%

Peer Group	2010	2009	2008
ROE	7.09%	7.14%	7.46%
EM	6.881	6.732	6.662
ROA	1.03%	1.06%	1.12%

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Return on Assets
<ul style="list-style-type: none"> ROA is determined by the Profit Margin (PM) and Asset Utilization (AU)
<pre> graph TD ROA["ROA Net Income / Assets"] AU["AU Revenue / Assets"] PM["PM Net Income / Revenue"] X["X"] ROA --- AU ROA --- PM AU --- X X --- PM </pre>
<ul style="list-style-type: none"> AU – mix and yield on asset portfolio; generation of revenue given assets PM – effectiveness of expense management

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ROE Breakdown Over Time

Variable	2010	2009	2008
ROE	8.02%	7.69%	7.52%
EM	7.71	7.18	6.71
ROA	1.04%	1.07%	1.12%
AU	7.31%	7.33%	7.37%
PM	14.23%	14.60%	15.20%

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ROE Breakdown Over Time

Variable	2010	2009	2008
ROE	8.02%	7.69%	7.52%
EM	7.71	7.18	6.71
ROA	1.04%	1.07%	1.12%
AU	6.85%	7.00%	7.37%
PM	15.18%	15.29%	15.20%

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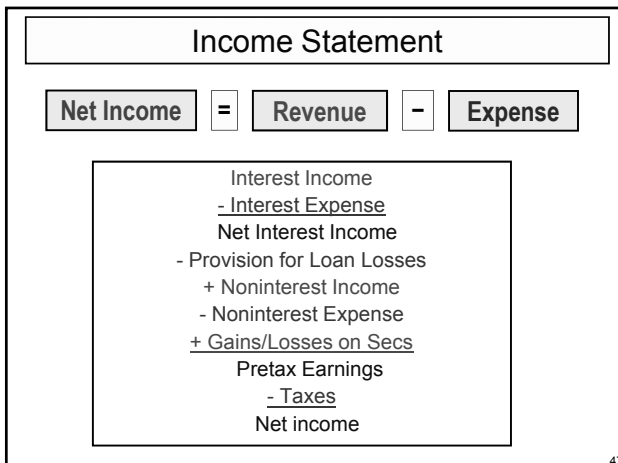
ROA Breakdown Versus Peer Group

Case 1	Bank	PG
ROA	1.04%	0.87%
AU	7.31%	5.73%
PM	14.23%	15.18%

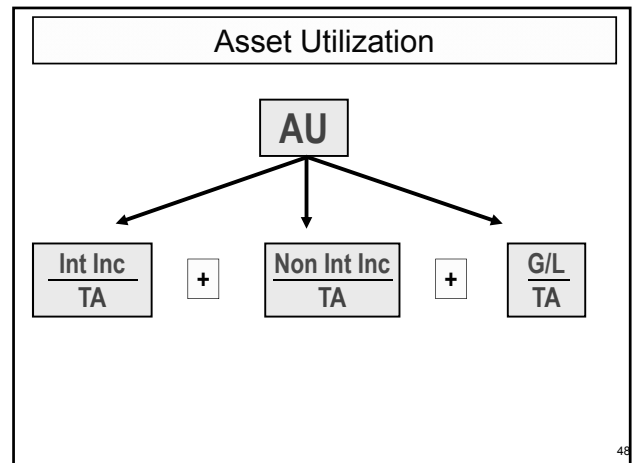
What are different implications?

Case 2	Bank	PG
ROA	1.04%	0.87%
AU	7.31%	7.55%
PM	14.23%	11.52%

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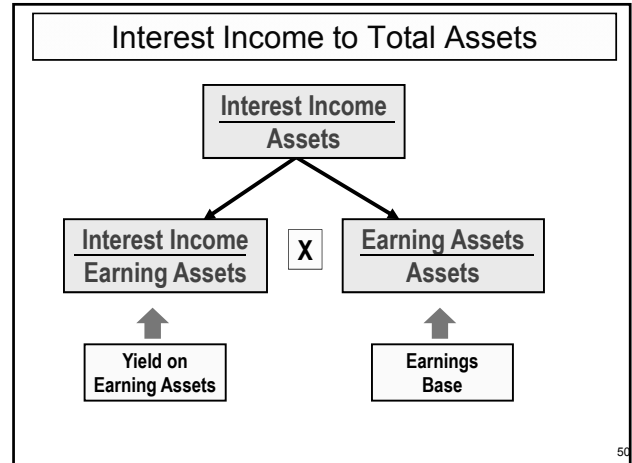


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AU Breakdown Over Time		
Variable	2010	2009
AU	7.31%	7.33%
II/TA	5.79%	6.06%
Non II/TA	1.52%	1.27%
GL/TA	0.00%	0.00%

Real World:
Why are banks worried about loss of fee income?

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AU Breakdown Over Time		
Variable	2010	2009
II/TA	5.79%	6.06%
EA/TA	90.14%	88.72%
II/EA	6.42%	6.83%

More earning assets ---- more income

What impacts yield on EA?

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Yield on Earning Assets

$$\text{Yield on EA} = \frac{\text{Int Inc}}{\text{EA}} = \frac{\sum_{i=1}^n y_i A_i}{\text{EA}}$$

where: y_i = yield on asset i
 A_i = dollar amount of asset i

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Interest Income				
Asset	\$	i%	=	Inc
Non earning	50	x	0	= 0
Securities	100	x	3	= 3
Bus Loans	200	x	5	= 10
Cons Loans	200	x	6	= 12
Int Inc				25
Int Inc/EA				5.0%
EA/TA				90.91%
Int Inc/TA				4.55%

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Composition Analysis: Rate Change					
Asset	\$	i%	Inc	i+	Inc+
Non earning	50	0	0	0	0
Securities	100	3	3	4	4
Bus Loans	200	5	10	6	12
Cons Loans	200	6	12	8	16
Int Inc			25		\$32
Int Inc/EA			5.0%		6.4%
Int Inc/TA			4.55%		5.82%

Is the rate change "good"?

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Assets: Composition Change					
Asset	\$	i%	Inc	New	Inc
Non earning	50	0	0	50	0
Securities	100	3	3	100	3
Bus Loans	200	5	10	300	15
Cons Loans	200	6	12	100	6
Int Inc			\$25	\$24	
Int Inc/EA			5.0%	4.8%	
Int Inc/TA			4.55%	4.36%	

Which is "better"?

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Assets: Rate and Composition Change							
Asset	\$	i%	New		Change due to:		
			i%	amt	Rate	Comp	Both
Non earn	50	0	0	50	0	0	0
Sec	100	3	4	100	+1	0	0
B Loans	200	5	6	300	+2	+5	+1
C Loans	200	6	8	100	+4	-6	-2
Int Inc		\$25	\$30	+7		-1	-1
Int Inc/EA		5.0%	6.0%				
Int Inc/TA		4.55%	5.45%				

Notice the interaction effect

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- ### Changing Interest Income to Total Assets
- Volume of Earning Assets
 - Earnings base = EA / TA
 - Yield on Earning Assets
 - Composition of assets (mix)
 - Size of holdings across and within major categories
 - Individual asset yields (average rate earned)
 - Maturity/Repricing
 - Timing
 - Default risk
 - Pricing "expertise"

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- ### Camel Trail "A"
- How can a bank increase rates across all categories of loans?
 - Accept more risk loans
 - What is the impact?
 - How can overall asset yield be increased without changing credit risk accepted for each type of asset?
 - Increase amount of riskier assets
 - What is the impact?

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Non-Interest Income

$$\frac{\text{Non II}}{\text{TA}} = \frac{\text{Fid Fees}}{\text{TA}} + \frac{\text{Dep Svc}}{\text{TA}} + \frac{\text{Other}}{\text{TA}}$$

- Fee income measured relative to asset categories or number of employees
 - Deposit service charges to Deposits
- Breakdown of categories to reveal results of "focus areas"

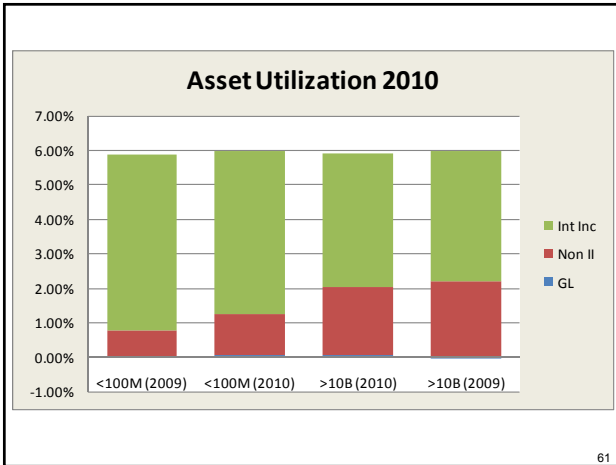
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Gains/Losses on Securities

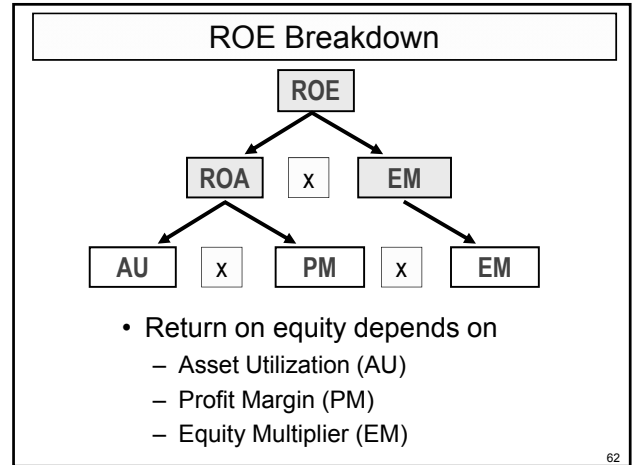
$$\frac{\text{G/L}}{\text{TA}} = \frac{\text{G/L}}{\text{SEC}} \times \frac{\text{SEC}}{\text{TA}}$$

- Gains/Losses relative to level of securities and securities as percentage of assets
- Further breakdowns by category
 - Importance of potential gains/losses?

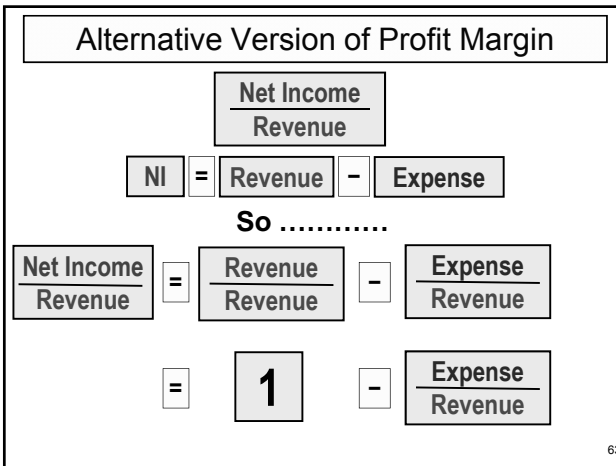
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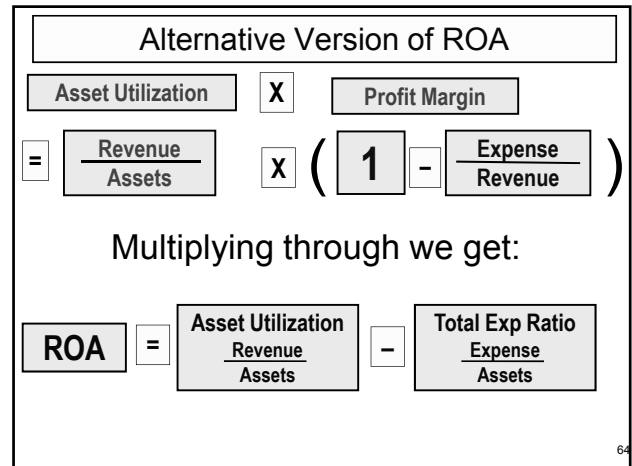
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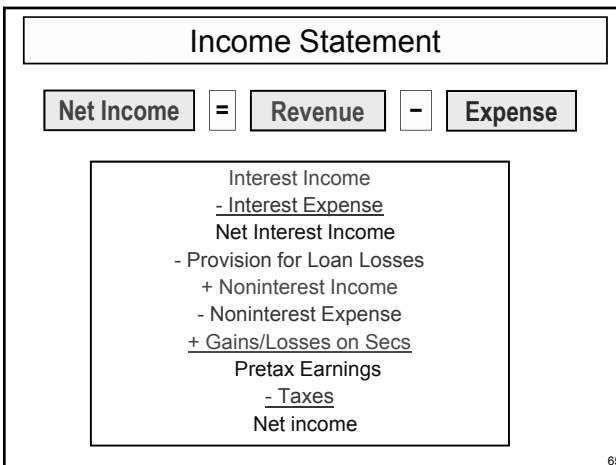
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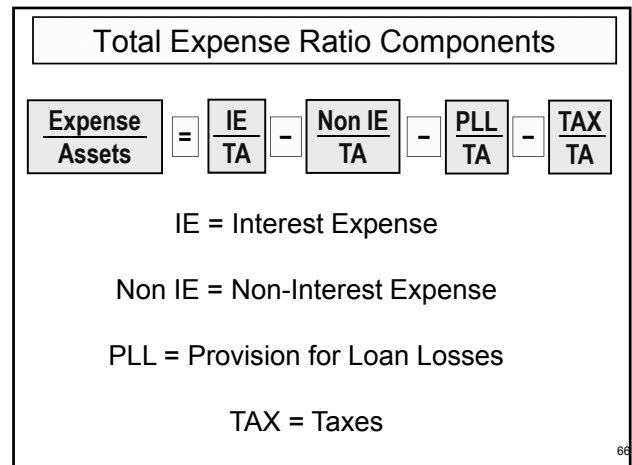
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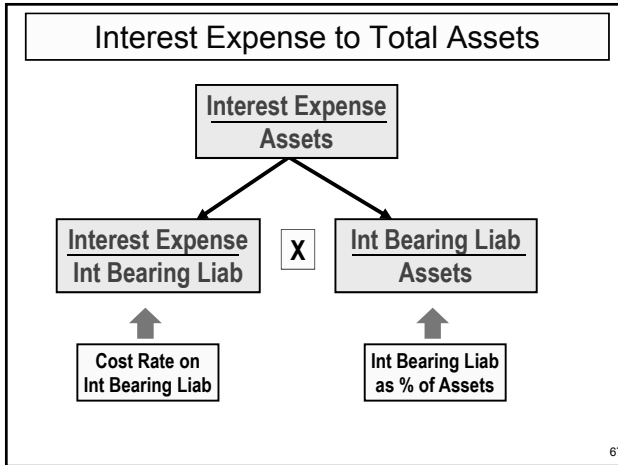
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Interest Expense to Assets

$$\text{Cost Rate on IBL} = \frac{\text{Int Exp}}{\text{IBL}} = \frac{\sum_{i=1}^m c_i L_i}{\text{IBL}}$$

where: c_i = cost rate on asset i
 L_i = dollar amount of asset i

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Liabilities: Rate Change

Liab	\$	i%	Exp	New i%	New Exp
DDAs	100	0	0	0	0
NOWs	200	1	2	2	2
MMDs	100	2	2	3	3
CDs	100	3	3	5	5
Int Exp			\$7		\$12
Int Exp/IBL			1.75%		3.0%
Int Exp/TA			1.27%		2.18%

Equity = 50

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Liabilities: Composition Change

Liab	\$	i%	Exp	New amt	New Exp
DDAs	100	0	0	100	0
NOWs	200	1	2	100	2
MMDs	100	2	2	150	3
CDs	100	3	3	150	4.5
Int Exp			\$7		\$8.5
Int Exp/IBL			1.74%		2.125%
Int Exp/TA			1.27%		1.55%

Equity = 50

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Liabilities: Rate and Composition Change

Liab	\$	i%	New		Change due to:		
			i%	amt	Rate	Comp	Both
DDAs	100	0	0	100	0	0	0
NOWs	200	1	2	100	+2	-1	-1
MMDs	100	2	3	150	+1	+1	+0.5
CDs	100	3	5	150	+2	+1.5	+1
Int Exp	\$7			\$14	+5	+1.5	+0.5
Int Exp/IBL			1.75%	3.5%			
Int Exp/TA			1.27%	2.55%			

Equity = 50

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- Interest Expense to Assets**
- Volume of interest bearing liabilities
 - Cost rate on interest bearing liabilities
 - Composition of liabilities
 - Size of holdings across and within various types of liabilities
 - Cost per liability (average rate paid)
 - Differences in risk premiums
 - Timing of borrowing
 - Maturity of borrowing
 - Pricing “expertise”
- 72

Camel Trails “L” and “S”

- How does current level of borrowing impact liquidity?
- How does type of borrowing impact liquidity?
- How do both impact sensitivity to market?
- Asset quality and capital?

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Non-Interest Expense

$$\frac{\text{Personnel}}{\text{TA}} = \frac{\text{Personnel}}{\# \text{ Employees}} \times \frac{\# \text{ Employees}}{\text{TA}}$$

- If Personnel / TA is high, then:
 - Personnel / # employees is high, and/or
 - # Employees / TA is high

$$\frac{\text{Occupancy}}{\text{TA}} = \frac{\text{Occupancy}}{\# \text{ Branches}} \times \frac{\# \text{ Branches}}{\text{TA}}$$

- If Occupancy / TA is high, then:
 - Occupancy / # Branches is high, and/or
 - # Branches / TA is high
- Composition effects may exist
 - More deposits – then more overhead

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Non Interest Expense

Variable	2010	2009	PG
Non IE / TA	3.33%	3.22%	3.29%
Pers / TA	1.79%	1.75%	1.65%
Occup / TA	0.36%	0.39%	0.46%
Other / TA	1.18%	1.08%	1.15%

What goes in the “other” category?

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Provision for Loan Losses

$$\frac{\text{PLL}}{\text{TA}} = \frac{\text{PLL}}{\text{Loans}} \times \frac{\text{Loans}}{\text{TA}}$$

- Provision for Loan Losses
 - Funds put aside to prepare for bad loans
- Large PLL / Loans may indicate
 - New risky loans
 - Overall risk of loan portfolio (catch-up)
 - Safety conscious management

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Provision for Loan Losses

Variable	2010	2009	PG
PLL / TA	1.19%	0.37%	0.89%
PLL / Loans	1.71%	0.52%	1.28%
Loans / TA	69.64%	71.17%	69.62%

Analysis:

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Camel Trail “A”

- Loss experience
 - Gross losses, net losses, and recoveries to average total loans and leases
 - Recovery percentages and losses by loan type
- Future expected/possible losses
 - Non-current, total past due, and restructured loans to total loans
 - Examination by loan type
 - Market
- Bank preparation
 - Provision for loan loss to average assets and loans
 - Allowance for loan losses to net losses and total loans
 - Earnings coverage of net loss

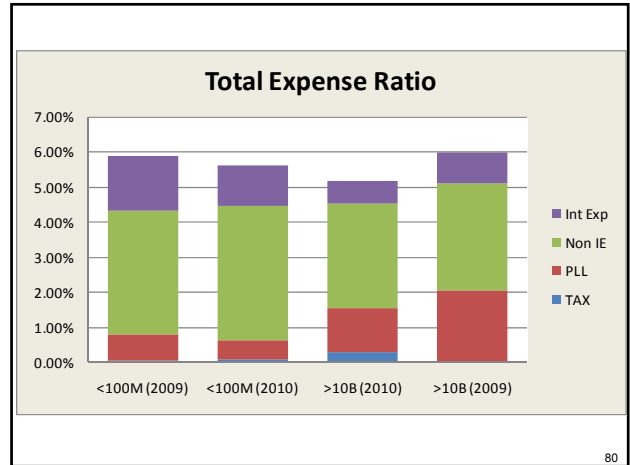
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Taxes

$$\frac{\text{TAX}}{\text{TA}} = \frac{\text{TAX}}{\text{Taxable Inc}} \times \frac{\text{Taxable Inc}}{\text{REV}} \times \frac{\text{REV}}{\text{TA}}$$

- If Taxes/ TA is high, then:
 - The tax rate may be high
 - Increase over time could indicate tax rate changes or different tax rate environments
 - Revenue may be high
 - Good by itself
 - Taxable income may be high
 - Less use of "tax advantaged" assets

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Components of ROA

$$\text{ROA} = \frac{\text{Asset Utilization Revenue}}{\text{Assets}} - \frac{\text{Total Exp Ratio Expense}}{\text{Assets}}$$

$$\text{AU} = \frac{\text{Int Inc}}{\text{TA}} + \frac{\text{Non Int Inc}}{\text{TA}} + \frac{\text{G/L}}{\text{TA}}$$

$$\text{EXP} = \frac{\text{Int Exp}}{\text{TA}} + \frac{\text{Non Int Exp}}{\text{TA}} + \frac{\text{PLL}}{\text{TA}} + \frac{\text{TAX}}{\text{TA}}$$

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Alternative Breakdown of ROA

Net Interest Income = NII = Int Inc – Int Exp

Burden = Non IE – Non II
(some analysts include G/L in Non-interest income)

$$\text{ROA} = \frac{\text{NII}}{\text{TA}} - \frac{\text{Burden}}{\text{TA}} - \frac{\text{PLL}}{\text{TA}} + \frac{\text{G/L}}{\text{TA}} - \frac{\text{TAX}}{\text{TA}}$$

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Decomposition of ROE

$$\text{ROE} = \text{ROA} \times \text{EM}$$

$$\text{ROA} = \text{AU} \times \text{PM}$$

$$\text{PM} = \frac{\text{AU}}{\text{Tot Exp}}$$

$$\text{Tot Exp} = \frac{\text{NII}}{\text{TA}} - \frac{\text{Burden}}{\text{TA}} - \frac{\text{PLL}}{\text{TA}} + \frac{\text{G/L}}{\text{TA}} - \frac{\text{TAX}}{\text{TA}}$$

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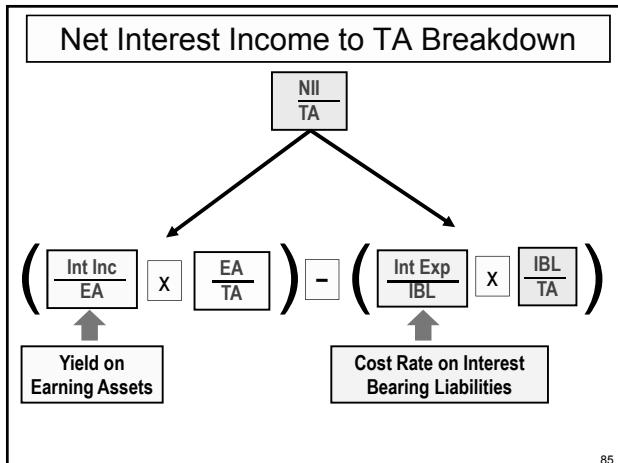
Net Interest Income to TA Breakdown

$$\frac{\text{NII}}{\text{TA}} = \frac{\text{NII}}{\text{Earning Assets}} \times \frac{\text{EA}}{\text{TA}}$$

Net Int Income = Interest Income – Interest Expense

$$\text{"Net Interest Margin"} = \frac{\text{Int Inc}}{\text{EA}} - \frac{\text{Int Exp}}{\text{EA}}$$

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Net Interest Margin and Spread

$$\text{"Net Interest Margin"} = \frac{Int\ Inc}{EA} - \frac{Int\ Exp}{EA}$$

$$\text{Spread} = \frac{Int\ Inc}{EA} - \frac{Int\ Exp}{IBL}$$

- Spread and NIM are important in evaluating a bank's ability to manage interest rate risk
 - As rates change, interest income and expense change
 - Variation in NIM and Spread indicate whether a bank positioned itself to handle rate changes
 - Expected changes in NIM and Spread are examined to assess a bank's exposure to interest rate risk
 - GAP and Earnings Sensitivity Analysis

Efficiency Ratio

$$\text{Efficiency Ratio} = \frac{Non\ Int\ Exp}{NII + Non\ Int\ Inc}$$

- Measures ability to control Non-Int Exp
- Indicates how much non-interest expense a bank has per dollar of operating income
- The smaller the efficiency ratio, the more profitable the bank, all other factors equal
- Many analysts consider below 55% as "good" on average

Putting It All Together

- Ratios help you identify differences, examine their origin, and ask the right questions to determine if there is a problem
- Analysis: Move from general to specific ...
 - ROE is low – Why?
 - Profit Margin is low – Why?
 - Interest Expense/TA is high – Why?
 - » Is this a problem that needs to be corrected?
- Can go in opposite direction for forecasts

Peer and Trend Comparisons

- Compare your ratios to those of your peers
 - Make sure you choose your peers carefully to get a meaningful comparison
 - Be aware of differences in strategies that result in differences between you and your peers
- Compare your ratios this period to those for previous periods
 - How and why did ratios change?
 - Be aware of changes in strategy over time

Avoiding Problems

- Make decisions with goals in mind
- Budgeting and planning built around model
 - Short- and long-term objectives
 - Short- and long-term strategies
 - Respond to changes to create flexible strategies
- Quantify goals and examine results
 - Ratios can help give a quick summary of expected performance
 - Are you headed in the direction you want?

Actual vs. Forecast/Budget

- Compare actual ratios to forecasted figures
 - Are we doing what we thought we would?
 - Why are there deviations?
 - Are changes necessary?
- Provides a control mechanism (and reality check) that increases accountability
- Do not look at any ratio in isolation
 - Change may solve one problem, but create another or not be consistent with overall strategy
 - Consider interrelationships

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Relationships

- Suppose IE/TA is high
 - Heavier focus on acquiring demand and savings deposits may help lower IE
 - However, additional processing costs and demands on employees may increase non-interest expense
 - Which approach is less expensive?

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Financial Statement Shortcomings

- Off-balance sheet activities
 - Derivative contracts may have massive notional values that are not reflected in traditional measures
- Window dressing
 - Timing of asset/liability adjustments may impact reported numbers
- Accounting Differences
 - Leeway in accounting reporting rules often make comparisons difficult

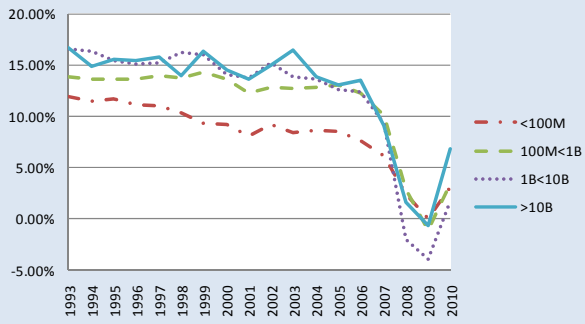
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Risk Considerations

- Do not forget risk!
- Many times it is not difficult to increase “expected return.”
- However, the additional return may come at the cost of added risk.
- Is the risk-return tradeoff reasonable?

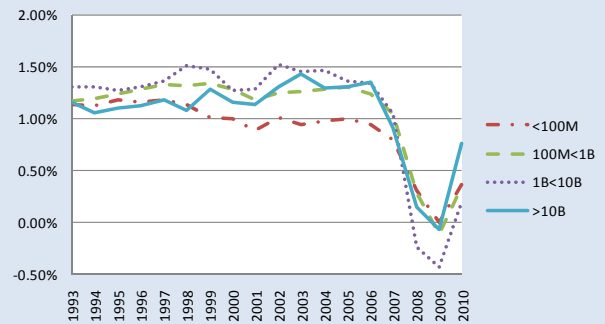
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Return on Equity

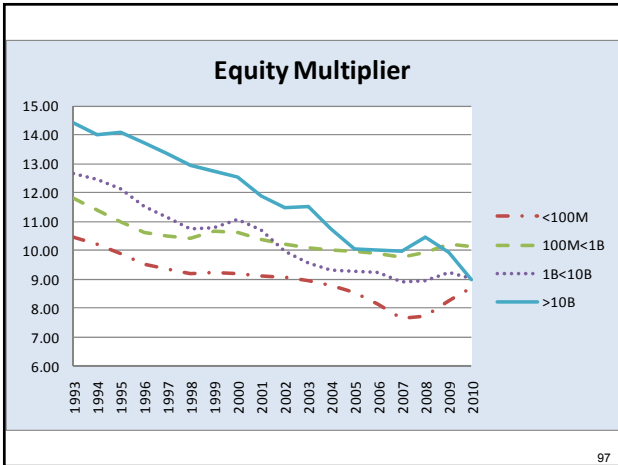


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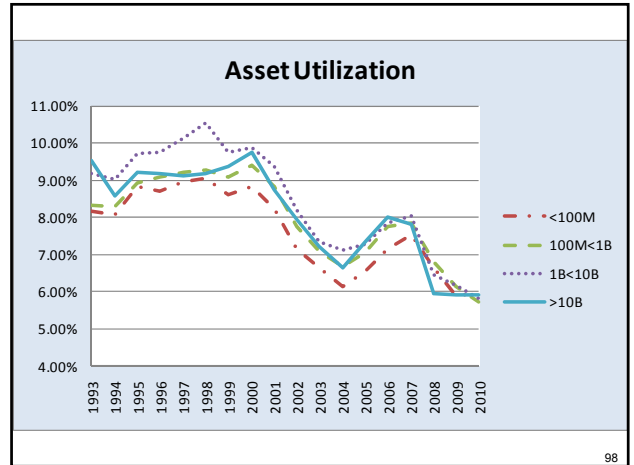
Return on Assets



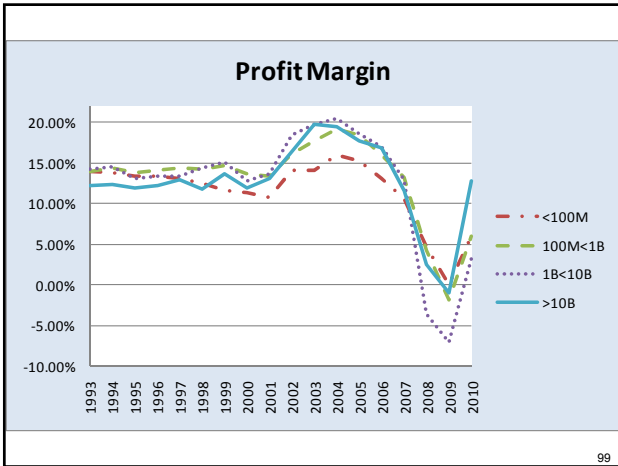
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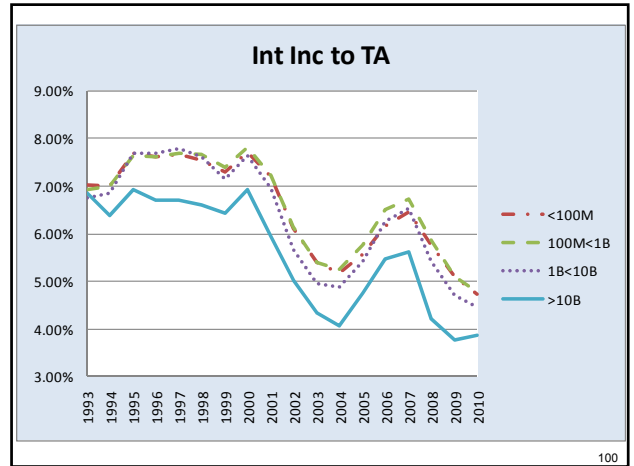
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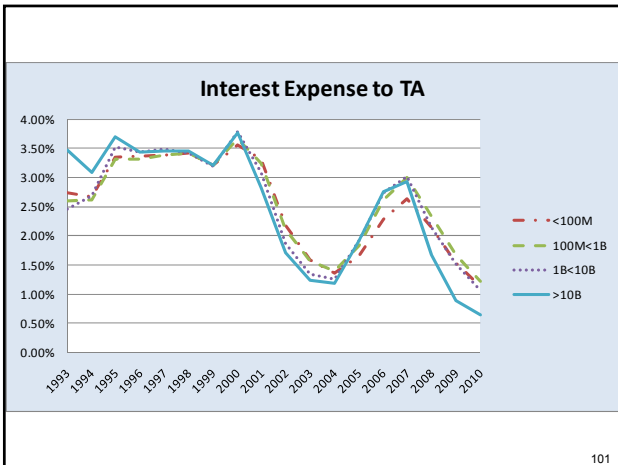
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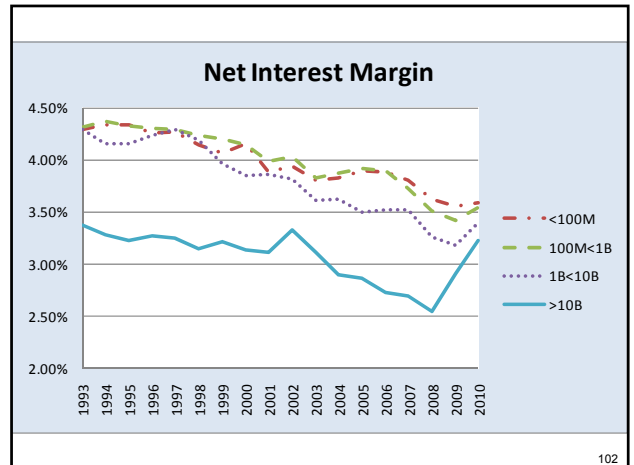
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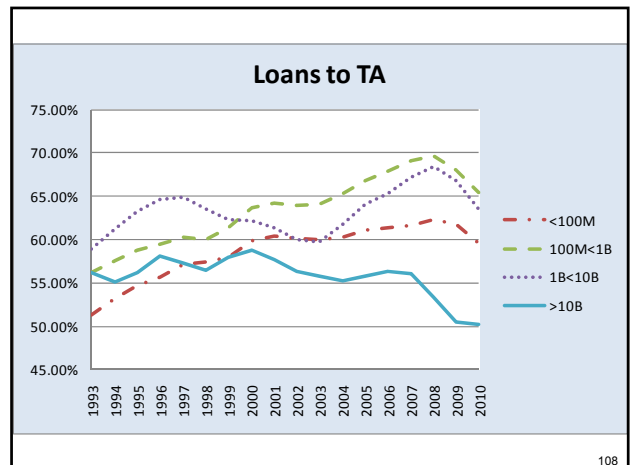
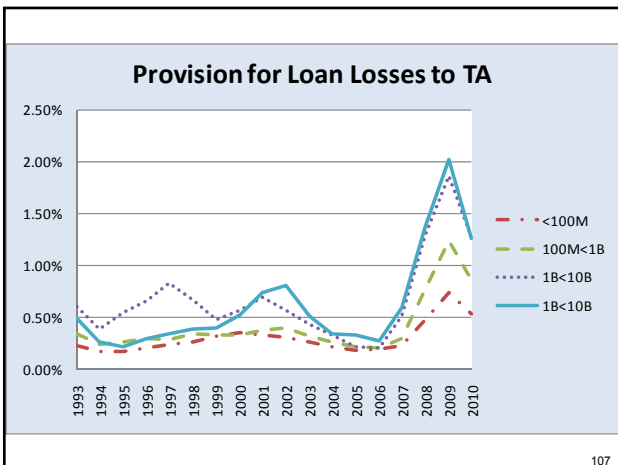
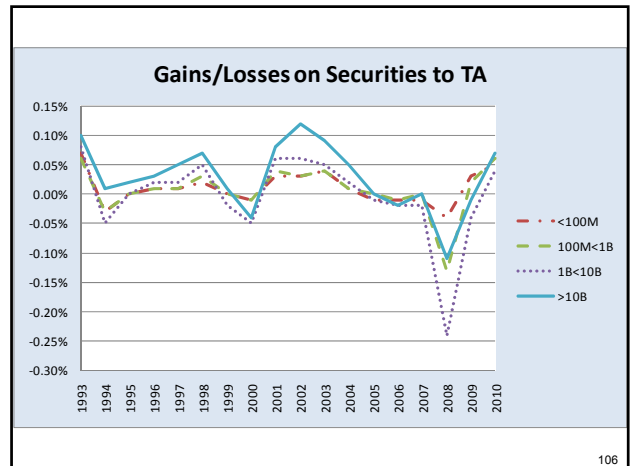
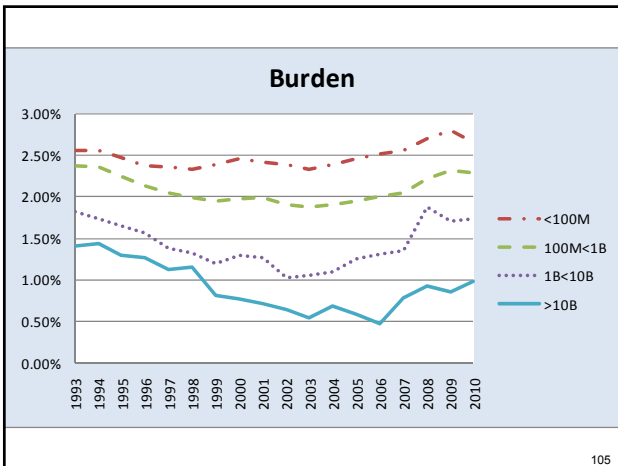
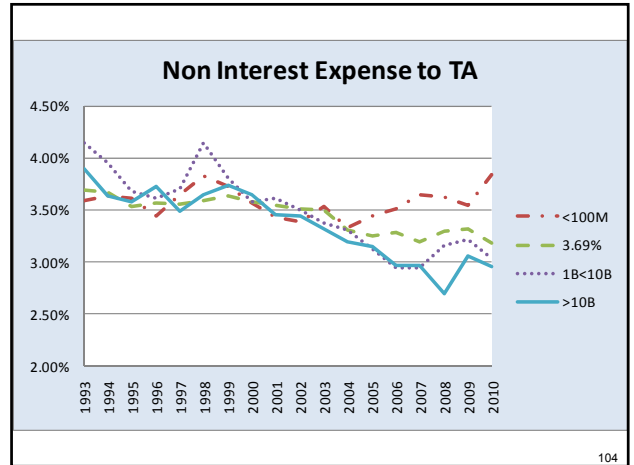
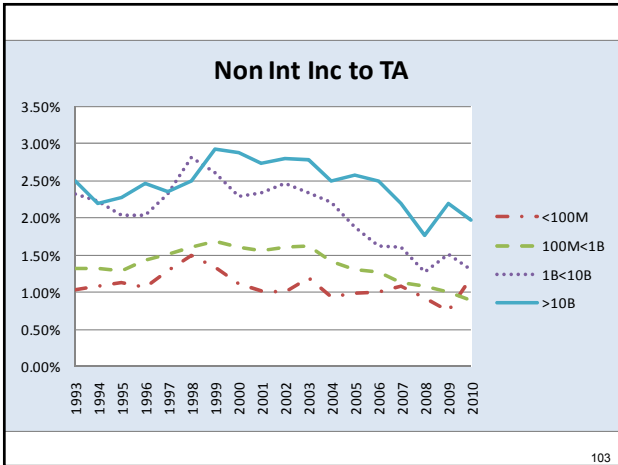
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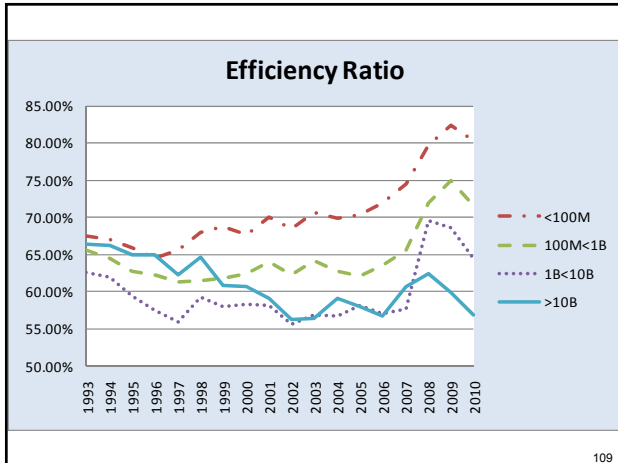


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Review Questions

A bank's primary purpose is:

- financial intermediation
- investment banking
- insurance sales
- derivative trading

Review Questions

Which of the following are found on a typical bank's balance sheet?

- net interest income
- net non-interest income
- provision for loan losses
- investment securities

Review Questions

Which of the following are not found on a typical bank's balance sheet?

- cash and due from banks
- fed funds sold or purchased
- non-interest expense
- deposits

Review Questions

Which of the following is the best description of a bank's balance sheet?

- Cash & DFB + Securities + Loans + Other Assets = Deposits + Purchased Liabilities + LT Debt + Equity
- Cash & DFB + Loans = Deposits + Equity
- Cash & DFB + Securities + Loans + Deposits + Other Assets = Purchased Liabilities + LT Debt + Equity
- Cash & DFB + LT Debt + Securities + Loans + Other Assets = Deposits + Purchased Liabilities + Equity

Review Questions

Which of the following are found on a typical bank's income statement?

- cash and due from banks
- fed funds
- provision for loan losses
- deposits

Review Questions

Which of the following are found on a typical bank's income statement?

- a. interest income
- b. non-interest expense
- c. provision for loan losses
- d. all of the above

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Review Questions

Which of the following is the best description of a bank's net income from its income statement?

- a. interest income + non-interest income – provision for loan losses + gains/losses on securities – taxes
- b. interest income – non-interest expense – provision for loan losses + gains/losses on securities – taxes
- c. interest income + burden – provision for loan losses + gains/losses on securities – taxes
- d. net interest income – burden – provision for loan losses + gains/losses on securities – taxes

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Review Questions

Net interest income is calculated as:

- a. noninterest income minus noninterest expense
- b. interest income minus interest expense minus provision for loan losses
- c. interest income minus interest expense minus taxes
- d. none of the above

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Review Questions

The provision for loan losses:

- a. is the account on the balance sheet indicating the total funds available to cover bad loans
- b. is the noncash expense on the income statement representing funds put aside during the period to prepare for bad loans
- c. is the entry on the income statement that indicates the realized gains and losses on securities
- d. is the account on the balance sheet that indicates the change in equity due to unrealized gains and losses on securities

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Review Questions

What is the purpose of financial analysis?

- a. measure past performance
- b. determine the starting point for planning and estimate future performance
- c. set values
- d. all of the above

119

Review Questions

Why do we use financial ratios to analyze bank performance?

- a. because financial ratios always tell the whole story of performance
- b. because financial statement data can never be trusted
- c. to standardize numbers and facilitate comparison
- d. because financial ratios can be individually analyzed without considering their relationship to other ratios

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Review Questions

The most common comparison norms for financial ratios include:

- a. past performance of the bank
- b. other peer banks
- c. both a and b
- d. none of the above

121

Review Questions

A bank's return on equity may be calculated using its return on assets if we also know the bank's:

- a. profit margin
- b. asset utilization
- c. equity multiplier or equity ratio
- d. total expense ratio

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Review Questions

A bank's equity multiplier reflects:

- a. management's effectiveness in generating revenue
- b. management's effectiveness in controlling expenses
- c. the bank's degree of financial leverage
- d. none of the above

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Review Questions

	2010	2009	2008
ROE	8.02%	7.69%	7.52%
EM	7.71	7.18	6.71
ROA	1.04%	1.07%	1.12%

The primary reason the bank's return on equity increased was that:

- a. the bank increased its income per dollar of assets
- b. the bank decrease its income per dollar of assets
- c. the bank increased its level of equity as a percentage of total assets
- d. the bank decreased its level of equity as a percentage of total assets

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Review Questions

A bank's asset-utilization ratio primarily reflects:

- a. the mix and yield on the bank's portfolio of assets
- b. the mix and cost of the bank's source of liabilities
- c. the degree of operating risk the bank assumes
- d. the mix of debt and equity (equity multiplier) the bank chooses

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Review Questions

A bank's profit margin primarily reflects:

- a. management's effectiveness in generating revenue
- b. management's effectiveness in controlling expenses
- c. the bank's degree of financial leverage
- d. none of the above

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Review Questions

Other things constant, if the bank increases its level of liabilities, its equity multiplier will:

- a. increase
- b. decrease
- c. remain constant
- d. cannot be determined with given information

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Review Questions

Other things constant, if the bank increases its level of liabilities, its ROE will:

- a. increase
- b. decrease
- c. remain constant
- d. cannot be determined with given information

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Review Questions

Fill in the missing ROEs.

Assets divided by Equity	Return on Assets		
	0.5%	1.0%	1.5%
	Return on Equity		
10:1	5.0%	10.0%	15.0%
15:1	_____	_____	_____
20:1	_____	_____	_____

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Review Questions

Suppose Net Income increases by 10% and Average Equity increases by 15%. Will ROE:

- a. increase
- b. decrease
- c. remain unchanged
- d. cannot be determined with the given information

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Review Questions

Suppose that from last year to this year, Net Income for your bank increases by 20% and Average Equity increases by 15%. How will ROE change?

- a. ROE will increase
- b. ROE will decrease
- c. ROE will not change
- d. You cannot determine how ROE will change based on this information

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Review Questions

Bank A has a Profit Margin of 15% and Asset Utilization of 10%. Bank B has a Profit Margin of 12% and Asset Utilization of 12%. Which bank has the higher ROA?

- a. Bank A
- b. Bank B
- c. The ROAs for the two banks are identical
- d. You cannot determine ROA based on the given information

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Review Questions

Which of the following would be explanations for why the bank's ROE declined from 2007 to 2008?

	2008	2007
ROE	18.101%	18.333%
ROA	1.756%	1.601%
EM	10.308	11.453
AU	0.0960	0.0931
PM	18.292%	17.200%

- a. the bank's management generated less revenue per dollar of assets
- b. the bank's management did a poorer job of controlling expenses
- c. the bank's management used less financial leverage
- d. all of the above are at least partial explanations of the decline in ROE

133

Review Questions

Which of the following would help explain why the bank's ROA increased from 2007 to 2008?

	2008	2007
ROE	18.101%	18.333%
ROA	1.756%	1.601%
EM	10.308	11.453
AU	0.0960	0.0931
PM	18.292%	17.200%

- a. management generated more revenue per dollar of assets
- b. management did a better job of controlling expenses
- c. management used less financial leverage
- d. a and b, but not c, help explain the increase in ROA

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Review Questions

Holding all else constant, if a firm changes its mix of demand deposit accounts and NOW Accounts, this action will affect the:

- a. yield on earning assets
- b. earnings base
- c. cost rate on interest bearing liabilities
- d. equity multiplier

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Review Questions

If a bank's yield on earning assets falls, one can conclude that it pays too much for deposits.

- True
- False

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Review Questions

If we know that a bank's yield on earning assets has increased, we also know its net interest margin has increased.

- True
- False

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Review Questions

Calculate the bank's ROA.

NII/TA	4.982%
Burden/TA	2.014%
PLL/TA	0.121%
GL/TA	0.030%
TAX/TA	0.442%

- a. 2.678%
- b. 2.436%
- c. 2.376%
- d. 3.561%

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Review Questions

Suppose that a bank that has more stored liquidity (cash and marketable securities) than its peers, but that it is basically identical to its peers in all other ways. This bank would likely find that relative to its peers:

- a. yield on earning assets is low.
- b. cost rate on interest bearing liabilities is low.
- c. yield on earning assets is high.
- d. cost rate on interest bearing liabilities is high.

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Review Questions

A bank's yield on earnings assets may be impacted by:

- a. changes in asset yields
- b. changes in the relative mix of assets
- c. both a and b
- d. neither a nor b

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Review Questions

A bank's cost rate on interest bearing liabilities is directly impacted by:

- a. changes in asset yields
- b. changes in the relative mix of assets
- c. both a and b
- d. neither a nor b

141

Review Questions

Burden measures:

- a. the difference between interest income and interest expense
- b. the difference between non-interest expense and non-interest income
- c. gains/losses on securities
- d. taxes paid by the bank

142

Review Questions

A possible explanation for why a bank's burden ratio may be higher than its peers is:

- a. the ratio of its personnel expense to total assets is higher than its peers
- b. the ratio of its occupancy expense to total asset is lower than its peers
- c. both a and b are possible explanations
- d. neither a nor b are possible explanations

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Review Questions

Financial ratios may not "tell the whole story" about performance because of:

- a. off-balance sheet activities
- b. window dressing
- c. accounting differences
- d. all of the above

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