VBA SCHOOL OF BANK MANAGEMENT

Financial Management II/ALCO Professor: Brad E. Schwartz

Home Study Problem Due date: October 1, 2020

This is an individual assignment. You are to work on the assignment alone and not discuss the questions, or potential answers, with colleagues in the program. Any evidence of shared work will be considered an honor violation (i.e., cheating) and will result in a zero and VBA notification. You can reach me by email with any questions prior to October 1st at Brad.Schwartz@Townebank.net.

Using the attached sample ALCO package report on Sample Bank, answer the following questions as if you are preparing to submit your answers to the ALCO committee. Your submission should be a minimum of two pages and a <u>maximum</u> of four pages, double-spaced, prefer a 12 point font. Concise and direct with supporting details is great.
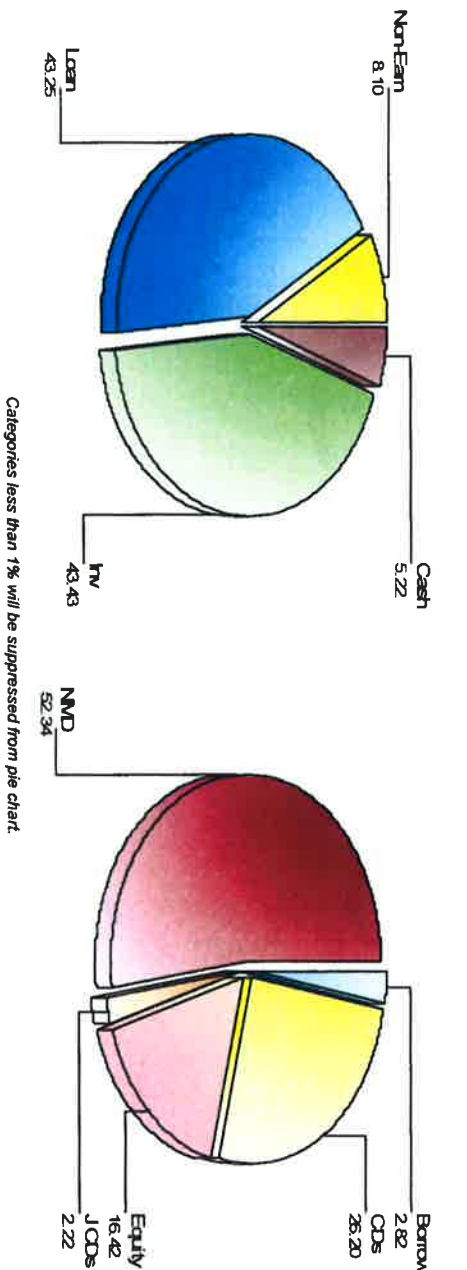
Questions

1. Utilizing the traditional measures of effective GAP and Repricing GAP, is sample bank meeting all their ALCO benchmarks? If not where are they out of policy compliance? What actions/recommendations would you give the committee to return sample bank to policy compliance (20 points)

2. Based on the earnings simulation, if rates rise **300** basis points immediately what happens to the forecasted return on assets and return on equity? Why does this happen? (10 points) **NOTE: If you have already completed the paper at 300 basis points, submit that. If you haven't, please write it at 400 basis points.**

3. What change in forecasted interest rates, up or down or no change, improves earnings the most on a 12 month horizon? (10 points)

4. What change in forecasted interest rates, up or down or no change, improves earnings the most on a 24 month horizon? Why is the 13-24 month earnings forecast lower than the first 12 month forecast, could it have something to do with having longer term assets than liabilities? Explain. (20 points)

5. You have been hired as the new CFO of Sample Bank to improve their financial condition and to prepare them for an expected rise in interest rates.   Based on the limited information you have in your report detail at least <u>four</u> actions you would take to improve the balance sheet and rate sensitivity of our new bank with limited negative or hopefully a positive impact on the current profitability and the happiness of your shareholders. (40 points)

Summary ALCO - Asset/Liability Mix
Sample Bank - Anywhere, OK

Balances ($000's)	Book Value	% of Book TA	Total is % of Segment Fixed	Var.	Non Int.	**Rate Sensitive < 1 Year	*Book Yield/ Rate	*Reinv./ Indx. Rate / Full Rate	*12 Mo. Proj. Yield/Rate	Avg. Life	Effective Duration	Effective Convexity
Cash & Due	$5,178	5.20	100.00				0.00			0.00	0.00	0.00
Investments (Includes MTM)	$43,072	43.25	97.40	1.47	1.13	13.62	2.82 ①	1.86 / 0.11	2.46	4.66	3.11	(0.86)
Funds Sold												
Loans	$42,891	43.07	90.88	9.79	(0.66)	37.57	5.39	5.06 / 4.99	5.24	2.54	1.46	(0.38)
Other Earning	$399	0.40			100.00	100.00	1.95	1.95 / 0.00	1.95	12.63	0.00	0.00
Non-Earning	$8,037	8.07			100.00							
Total Assets	**$99,577**	**100.00**	**81.68**	**4.85**	**13.47**	**22.07**	**4.10**	**3.47 / 4.35**	**3.85**	**3.15**	**1.97**	**(0.53)**
Non-Maturing Deposits	$52,033	52.25	24.83	75.17		23.39	0.21	0.21 / 0.21	0.21	5.02	1.97	(0.81)
Certificates of Deposit	$26,051	26.16	99.97	0.03		71.87	0.99	0.84 / 0.00	0.90	1.10	0.77	(0.16)
Jumbo CDs	$2,212	2.22	100.00			100.00	0.36	0.68 / 0.00	0.68	0.34	0.21	(0.08)
Borrowed Funds	$2,800	2.81	100.00			100.00	4.53	0.45 / 0.00	4.53	2.21	1.18	(0.58)
Other Paying												
Non-Paying	$156	0.16			100.00	100.00						
Total Liabilities	**$83,252**	**83.61**	**37.30**	**46.98**	**15.71**	**39.76**	**0.68**	**0.47 / 0.21**	**0.65**	**3.57**	**1.52**	**(0.58)**
Total Equity Capital	**$16,325**	**16.39**									0.70	(0.04)
Total Liab & Capital	**$99,577**	**100.00**										

Asset Mix

Non-Earn 8.10
Cash 5.22
Inv 43.43
Loan 43.25

Liability Mix

Borrow 2.82
CDs 26.20
NMD 52.34
Equity 16.42
JCDs 2.22

Liquidity Ratios

	Constant	ALCO Benchmark
Investments / Deposits	53.64	< 70.00%
Loans / Deposits	53.42	< 80.00%
Loans / Assets	43.07	< 90.00%
Loans / Capital	262.73	< 800.00%
Net Borrowed Funds / Capital	17.15	< 200.00%
Reliance on Wholesale Funding	3.37	< 15.00%
Dependency Ratio	(1.06)	< 20.00%
Liquid Assets / TA	11.09	> 8.00%
Jumbo CDs / TA	2.22	< 15.00%
Available Line of Credit	$10,000	

✓ Ratio is outside benchmark.

Note: Values are rounded before printing, but full precision values are used in all calculations.

Categories less than 1% will be suppressed from pie chart.
① Investments using Accounting yield.
** Rate Sensitive percentages are based on maturities.
* Yields/Rates are reported on EA & PL.

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Summary ALCO - Gap Measures
Sample Bank - Anywhere, OK

Effective Gap

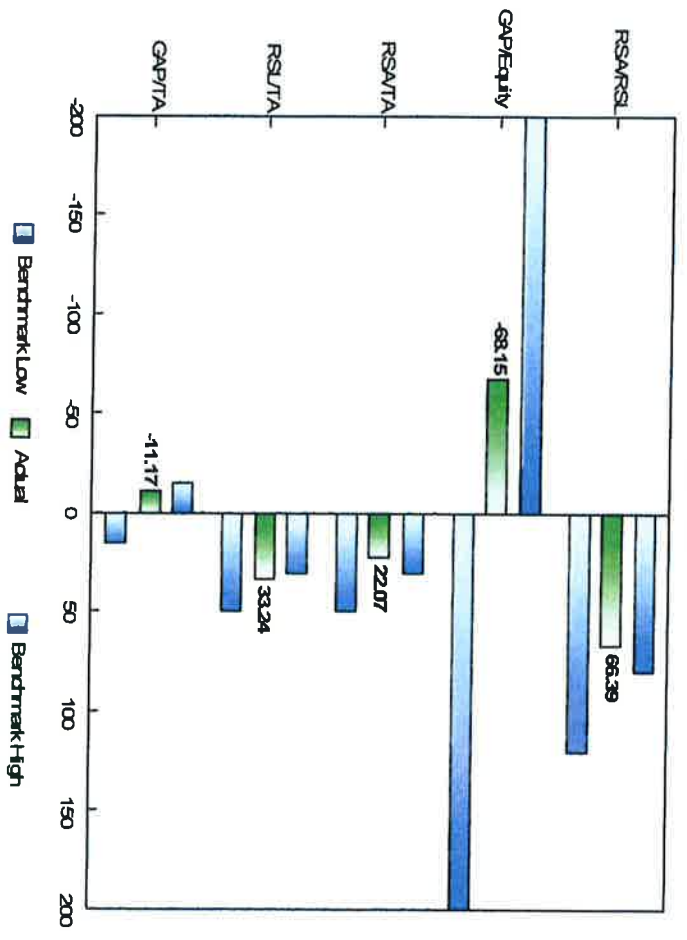| Effective Gap ($000's)	12 Month Cumulative	12 Month ALCO Benchmark	24 Month* Cumulative
RS Assets/RS Liabilities	66.39 ✓	80 to 120%	83.33
GAP	(11,125)		(7,217)
GAP/Equity	(68.15)	+/- 200%	(44.21)
RS Assets/Total Assets	22.07	30 to 50%	36.22
RS Liabs./Total Assets	33.24	30 to 50%	43.47
GAP/Total Assets	(11.17)	+/- 15%	(7.25)

Effective Gap considers effective maturities of core deposits, it reports non-maturing demand accounts according to the preferred maturity distribution table.

✓ Ratio is outside benchmark.

Cumulative Effective Gap Measures
12 Month Horizon

Repricing Gap Position

Repricing Gap Position ($000's)	12 Month Cumulative	12 Month ALCO Benchmark	24 Month* Cumulative
RS Assets/RS Liabilities	36.60 ✓	70 to 130%	55.56
GAP	(38,072)		(28,847)
GAP/Equity	(233.21) ✓	+/- 200%	(176.70)
RS Assets/Total Assets	22.07 ✓	40 to 60%	36.22
RS Liabs./Total Assets	60.31	60 to 80%	65.19
GAP/Total Assets	(38.23) ✓	+/- 15%	(28.97)

Repricing Gap does not consider effective maturities of core deposits, it reports non-maturing demand accounts according to repricing opportunity.

✓ Ratio is outside benchmark.

Cumulative Repricing Gap Measures
12 Month Horizon

Interest Rate Risk Monitor
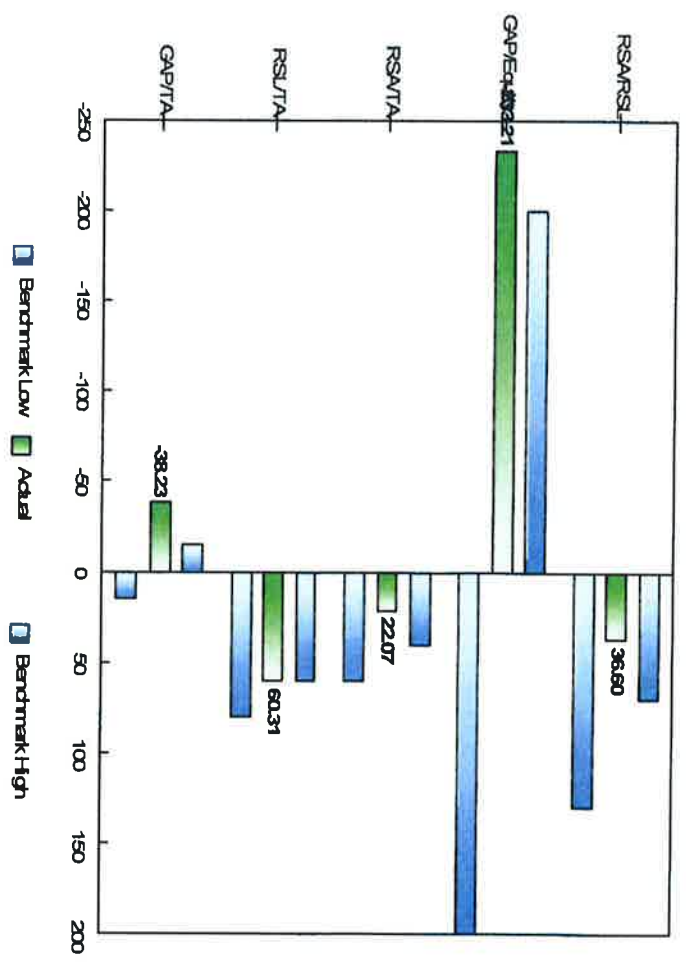
* The 24 month period could be extended if the 24th month is in the middle of a bucket period.

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Earning Power	YTD Annualized	Constant Balance Sheet *
Interest Income:	$3,622	$3,536
Tax Adjusted Interest Income: ①	$3,622	$3,536
Interest Expense:	$529	$476
Net Interest Income before Provision:	$3,093	$3,060
Provisions for Loan Loss:	$210	$0
Net Interest Income:	$3,303	$3,060
Non Interest Income:	$601	$557
Non Interest Expense:	$2,453	$2,440
Operating Income before G/L, Tax & Extra Items:	$1,451	$1,177
Realized Gain/Loss + Extra Items: ②	$154	$85
Taxes:	$(1)	$(2)
Net Income(Loss):	**$1,604**	**$1,260**

	YTD Annualized	Constant Balance Sheet	ALCO Benchmark
Efficiency Ratio	65.78	67.46	< 70.00%
Earning Assets/Paying Liab.	122.79	122.79	> 115.00%
Yield on Earning Assets (EA)	4.10	4.10	
Rate on Paying Liabilities (PL)	0.68	0.68	
Earning Interest Spread (difference)	3.42	3.42	> 3.40%
Cost of Funds	0.53	0.48	
Net Interest Margin	3.42 ✓	3.55 ✓	> 3.60%
To break even the bank needs a margin of	2.05	2.19	
To achieve a target of 1.00 ROA, the bank needs a Margin of	2.92	3.34	
To achieve a target of 12.00 ROE, the bank needs a Margin of ③	3.97	4.45	

Available Line of Credit:	$10,000
Risk Weighted Assets:	$56,175
Avg. Earning Assets:	$90,493
Avg. Total Assets:	$100,438
Equity/Total Assets:	16.39
Desired After Tax ROA:	1.00
Desired After Tax ROE:	12.00
Effective Tax Rate:	0.14%
Marginal Tax Rate:	0.00%
Taxable this year?	Yes
OREO:	$895

Net Interest Margin per Rate Shift
12 Month Horizon

Net Interest Margin • Benchmark ■ Base

Legend (x-axis): +400/+400 0 Mo., +400/+100 12 Mo., -100/-100 12 Mo. Unchanged, +100/+100 12 Mo., +200/+200 12 Mo., +300/+300 12 Mo.

Values shown: 2.86, 3.28, 3.28, 3.35, 3.x, 3.x, 3.39

Summary ALCO - Earnings Simulation - 12 Month Horizon
Sample Bank - Anywhere, OK

Interest Rate Risk ($'s)	Shift Horizon	YTD Annualized	Constant Balance Sheet**	Immediate +400/+400 bp 0 Mo.	Non-Parallel +400/+100 bp 12 Mo.	Parallel -100/-100 bp 12 Mo.	Unchanged Rate Scenario	Parallel +100/+100 bp 12 Mo.	Parallel +200/+200 bp 12 Mo.	Parallel +300/+300 bp 12 Mo.
12 Month Horizon in $'s										
Change in Interest Income *		$3,622	$3,536	348,907	49,507	(312,614)	(181,785)	(40,352)	22,839	66,239
Change in Interest Expense		$529	$476	945,582	279,718	(74,952)	(8,399)	63,795	135,992	208,187
Net Interest Change										
Projected Impact in $000's				(596,675)	(230,211)	(237,662)	(173,386)	(104,147)	(113,153)	(141,948)
Net Interest Income *		$3,093	$3,060	2,463	2,830	2,823	2,887	2,956	2,947	2,918
Net Interest Margin *		3.42	3.55	2.86 ✓	3.28 ✓	3.28 ✓	3.35 ✓	3.43 ✓	3.42 ✓	3.39 ✓
ALCO Benchmark > 3.60%										
NIC as a % of NII				(19.50)	(7.52)	(7.77)	(5.67)	(3.40)	(3.70)	(4.64)
ALCO Risk Limits				> -20.00%	> -20.00%	> -12.50%	> -10.00%	> -12.50%	> -15.00%	> -20.00%
Net Income (Loss)		$1,604	$1,260	665	1,031	1,023	1,087	1,156	1,147	1,119
Return on Assets		1.60	1.27	0.67 ✓	1.03	1.03	1.09	1.16	1.15	1.12
ALCO Benchmark > 0.80%										
Return on Equity		9.83	7.72	4.07 ✓	6.31 ✓	6.27 ✓	6.66 ✓	7.08 ✓	7.03 ✓	6.85 ✓
ALCO Benchmark > 10.00%										
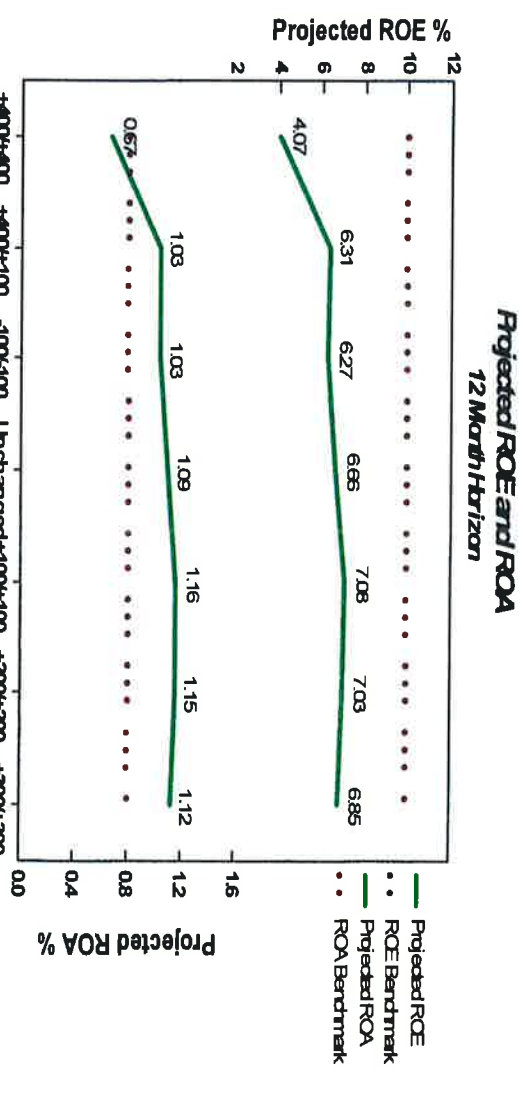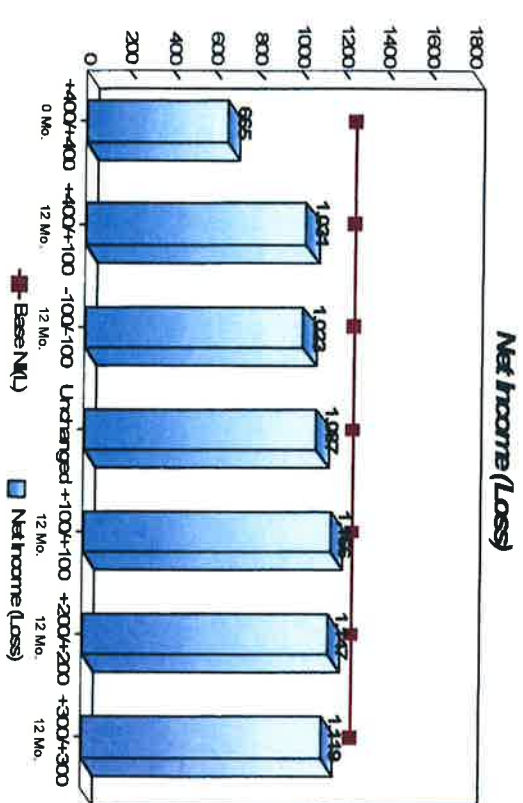
Net Income (Loss)

Net Income (Loss) chart values (12 Mo.): 665, 1,031, 1,023, 1,087, 1,156, 1,147, 1,119
Base NI(L) — Net Income (Loss)

Projected ROE and ROA — 12 Month Horizon

Projected ROE %: 0.67, 6.31, 6.27, 6.66, 7.08, 7.03, 6.85
Projected ROA %: 1.03, 1.03, 1.09, 1.16, 1.15, 1.12

Legend: Projected ROE — ROE Benchmark — Projected ROA — ROA Benchmark

* Income is tax adjusted and calculated before Provisions.
** Indicates which column is used for calculating base case.

(Short End = 1yr, Long End = 10yr)

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Summary ALCO - Earnings Simulation - 24 Month Horizon

Sample Bank - Anywhere, OK

Interest Rate Risk ($'s) / Shift Horizon	YTD Annualized	Constant Balance Sheet **	Immediate +400/+400 bp 0 Mo.	Non-Parallel +400/+100 bp 12 Mo.	Parallel -100/-100 bp 12 Mo.	Unchanged Rate Scenario	Parallel +100/+100 bp 12 Mo.	Parallel +200/+200 bp 12 Mo.	Parallel +300/+300 bp 12 Mo.
24 Month Horizon in $'s									
Change in Interest Income *	$3,622	$3,536	1,169,366	477,035	(845,144)	(450,523)	(31,901)	213,452	428,494
Change in Interest Expense	$529	$476	2,250,616	1,370,484	(303,954)	(48,036)	308,272	664,547	1,020,835
Cumulative 24 Mo. NIC									
13-24 Mo. NIC			(1,081,250)	(893,449)	(541,190)	(402,487)	(340,173)	(451,095)	(592,341)
			(484,575)	(663,238)	(303,528)	(229,101)	(236,026)	(337,942)	(450,393)
13-24 Mo. Projected Impact in ($000's)									
Net Interest Income *	$3,093	$3,060	2,576	2,397	2,757	2,831	2,824	2,722	2,610
Net Interest Margin *	3.42	3.55	2.99 ✓	2.78 ✓	3.20 ✓	3.29 ✓	3.28 ✓	3.16 ✓	3.03 ✓
ALCO Benchmark	> 3.50%								
NIC as a % of NII			(15.83)	(21.67) ✓	(9.92)	(7.49)	(7.71)	(11.04)	(14.72)
ALCO Risk Limits		> -20.00%	> -20.00%	> -20.00%	> -12.50%	> -10.00%	> -12.50%	> -15.00%	> -20.00%
Net Income (Loss)	$1,604	$1,260	777	598	957	1,032	1,025	923	811
Return on Assets	1.60	1.27	0.78 ✓	0.60 ✓	0.96 ✓	1.04	1.03	0.93 ✓	0.81 ✓
ALCO Benchmark	> 0.80%								
Return on Equity	9.83	7.72	4.76 ✓	3.66 ✓	5.86 ✓	6.32 ✓	6.28 ✓	5.65 ✓	4.97 ✓
ALCO Benchmark	> 10.00%								
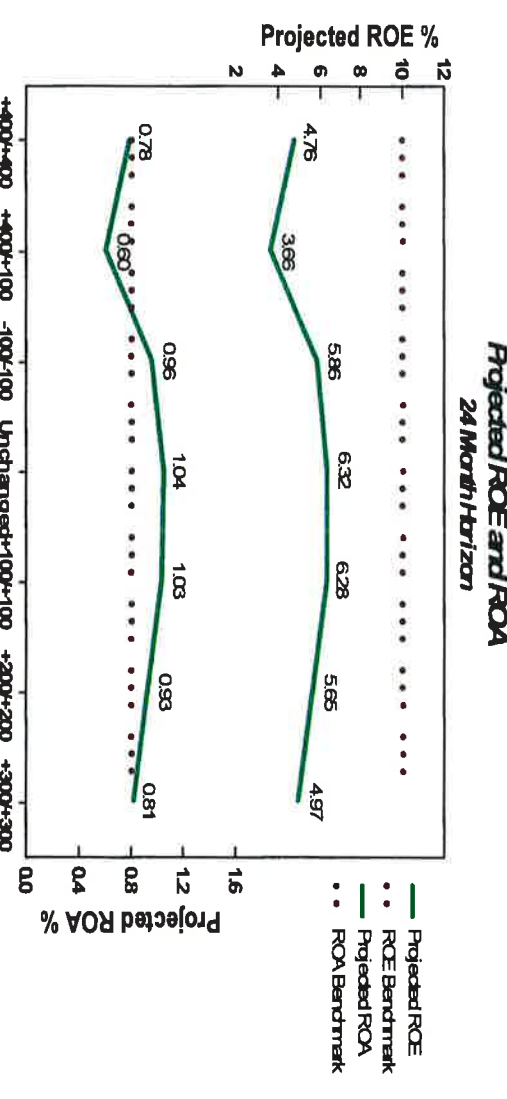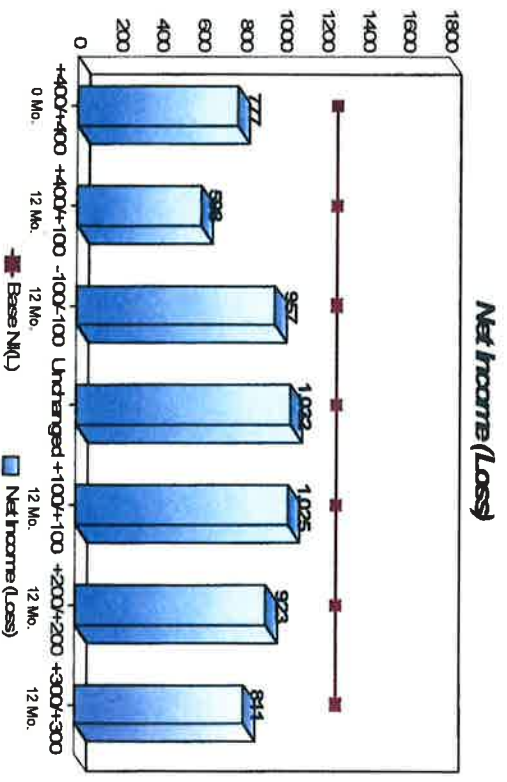
Net Income (Loss)

Legend: ▪ Base NI(L) · □ Net Income (Loss)

Projected ROE and ROA
24 Month Horizon

Legend: — Projected ROE · · · ROE Benchmark · — Projected ROA · · · ROA Benchmark

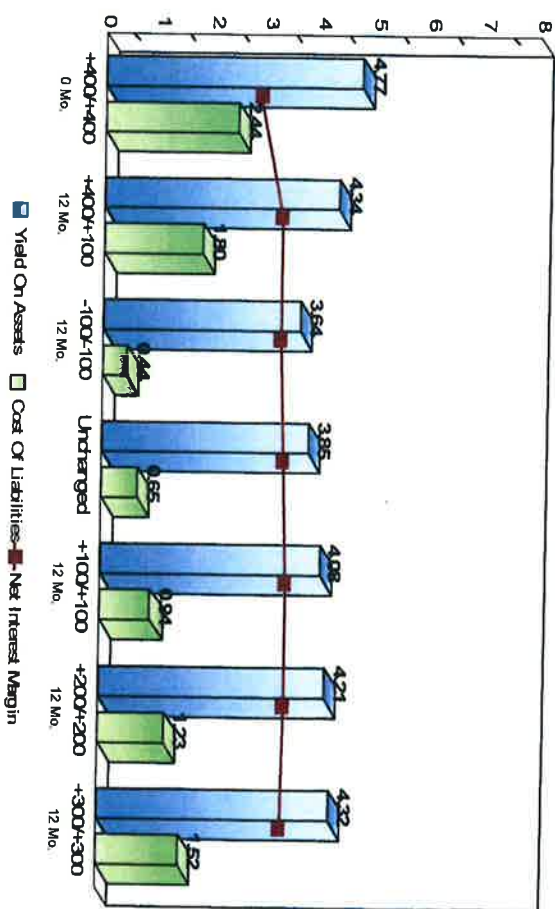## Interest Rate Risk Monitor

* Income is tax adjusted and calculated before Provisions.

** Indicates which column is used for calculating base case.
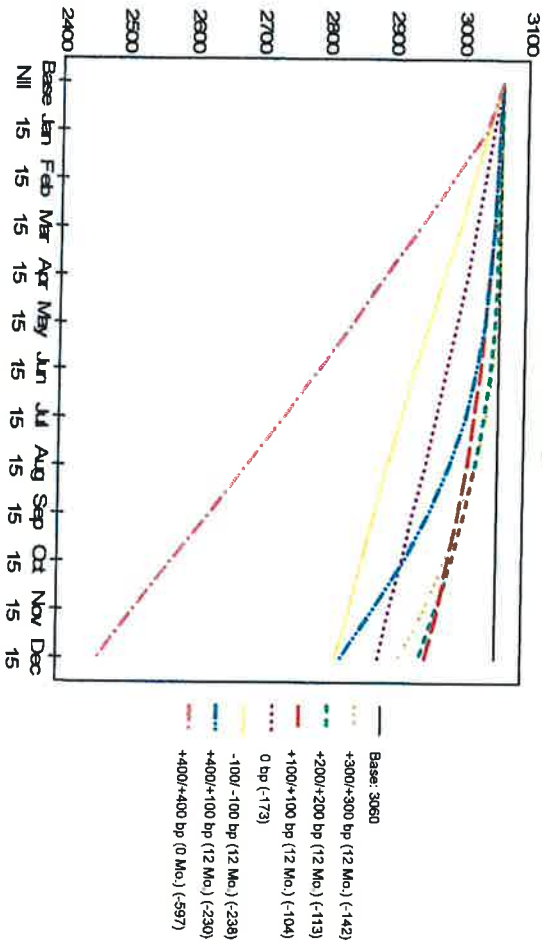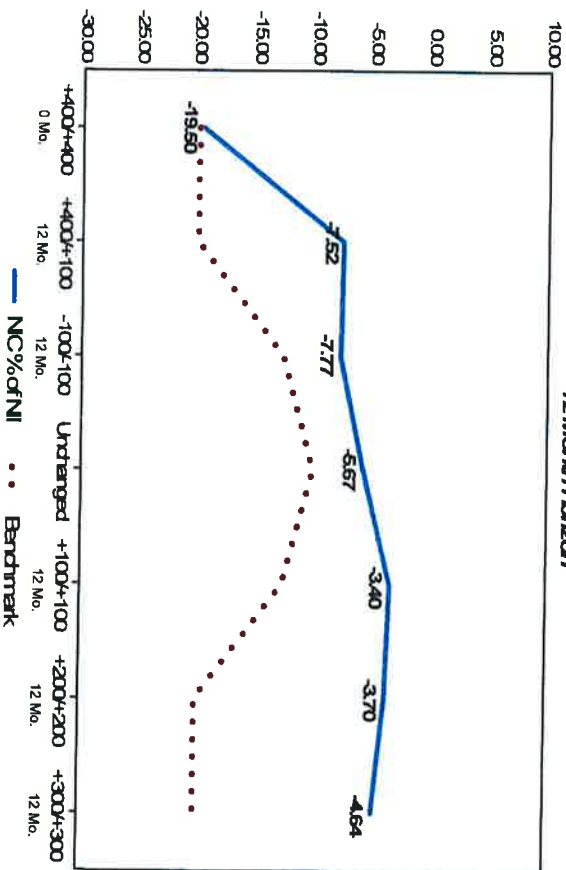
(Short End = 1yr, Long End = 10yr)

Summary ALCO - Income Analysis
Sample Bank - Anywhere, OK

Income Projection - 12 month Horizon

Legend:
- 12 Mo. Net Interest Income
- 12 Mo. Base = 3,060
- 12 Mo. Net Income (Loss)

Values: +400/+400 0 Mo.: 2,463 / 666; +400/+100: 2,830 / 1,031; -100/-100: 2,822 / 1,025; Unchanged: 2,831 / 1,087; +100/+100: 1,166; +200/+200: 1,147; +300/+300: 2,818 / 1,119
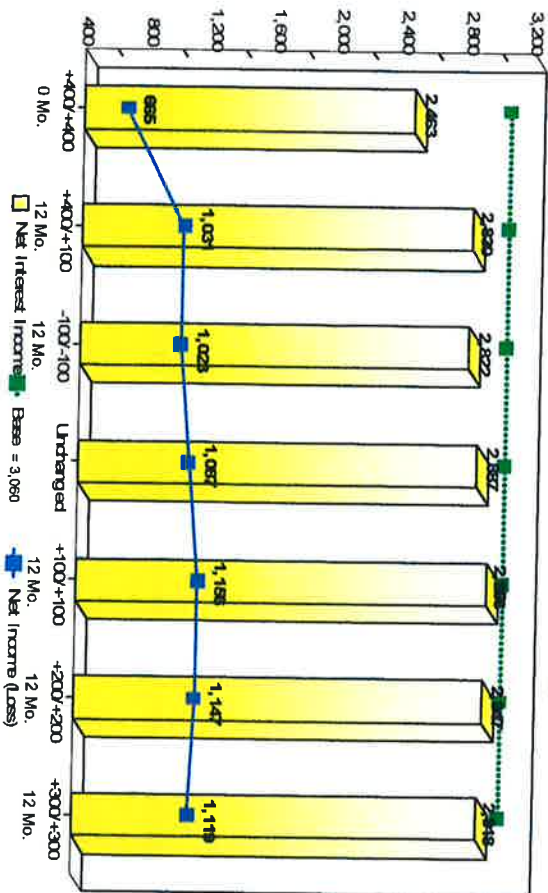
Projected Yields/Rates - 12 Month Horizon

Legend:
- Yield On Assets
- Cost Of Liabilities
- Net Interest Margin

Values: +400/+400 0 Mo.: 4.77 / 2.44; +400/+100: 4.34 / 1.80; -100/-100: 3.64 / 0.44; Unchanged: 3.86 / 0.65; +100/+100: 4.08 / 0.94; +200/+200: 4.21 / 1.23; +300/+300: 4.32 / 1.52

Net Interest Change ($000's) per Time Bucket
Cumulative 12 Month

Legend:
- Base: 3060
- +300/+300 bp (12 Mo.) (-142)
- +200/+200 bp (12 Mo.) (-113)
- +100/+100 bp (12 Mo.) (-104)
- 0 bp (-173)
- -100/-100 bp (12 Mo.)
- +400/+100 bp (12 Mo.) (-238)
- +400/+100 bp (12 Mo.) (-230)
- +400/+400 bp (0 Mo.) (-597)

	NII	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Base	15	15	15	15	15	15	15	15	15	15	15	15	15

Net Interest Change as a % of Net Interest Income
12 Month Horizon

Legend:
- NC% of NII
- Benchmark

Values: +400/+400 0 Mo.: -19.60; +400/+100 12 Mo.: -7.52; -100/-100 12 Mo.: -7.77; Unchanged 12 Mo.: -5.67; +100/+100 12 Mo.: -3.40; +200/+200 12 Mo.: -3.70; +300/+300 12 Mo.: -4.64

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Economic Value of Equity (EVE)
Sample Bank - Anywhere, OK

Book Value

Book Value	Assets	Risk Weighted Assets	Liabilities	Total Equity Capital	Tier 1 Capital	Tier 2 Capital	Total RBC
Total	99,577 *	56,175	83,252	16,325	15,839	402	16,241
as a % of TA		56.41	83.61	16.39	15.91		
as a % of RWA				29.06	28.20		28.91
Unadjusted BV	99,091						

Adjusted Book Value includes MTM adjustment of 486

Fair Value

Fair Value Rate Shock	Fair Value of Assets	Appreciation / (Depreciation) $	%	Fair Value of Liab.	(Appreciation) / Depreciation $	%	Fair Value of Equity
+300/+300 bp	91,356	(7,735)	(7.81)	76,699	(6,553)	(7.87)	14,657
+200/+200 bp	94,110	(4,981)	(5.03)	78,457	(4,795)	(5.76)	15,653
+100/+100 bp	96,974	(2,117)	(2.14)	80,399	(2,853)	(3.43)	16,575
Unchanged	99,664	573	0.58	82,557	(695)	(0.83)	17,107
-100/-100 bp	101,615	2,524	2.55	83,985	733	0.88	17,630
+400/+100 bp	93,459	(5,632)	(5.68)	76,511	(6,741)	(8.10)	16,948
+400/+400 bp	87,975	(11,116)	(11.22)	75,549	(7,703)	(9.25)	12,426

Fair Value of Equity Ratios

Fair Value of Equity Ratios Rate Shock	FV of Equity / FV of TA	FV of Equity / FV of RWA		Change in FV of Equity	
			Change $	%	ALCO Benchmark %
+300/+300 bp	16.04	28.44	(2,450)	(14.32)	> -40.00 %
+200/+200 bp	16.63	29.48	(1,454)	(8.50)	> -30.00 %
+100/+100 bp	17.09	30.30	(532)	(3.11)	> -20.00 %
Unchanged	17.16	30.43			
-100/-100 bp	17.35	30.75	523	3.06	> -20.00 %
+400/+100 bp	18.13	32.14	(159)	(0.93)	> -40.00 %
+400/+400 bp	14.12	25.04	(4,681)	(27.36)	> -40.00 %

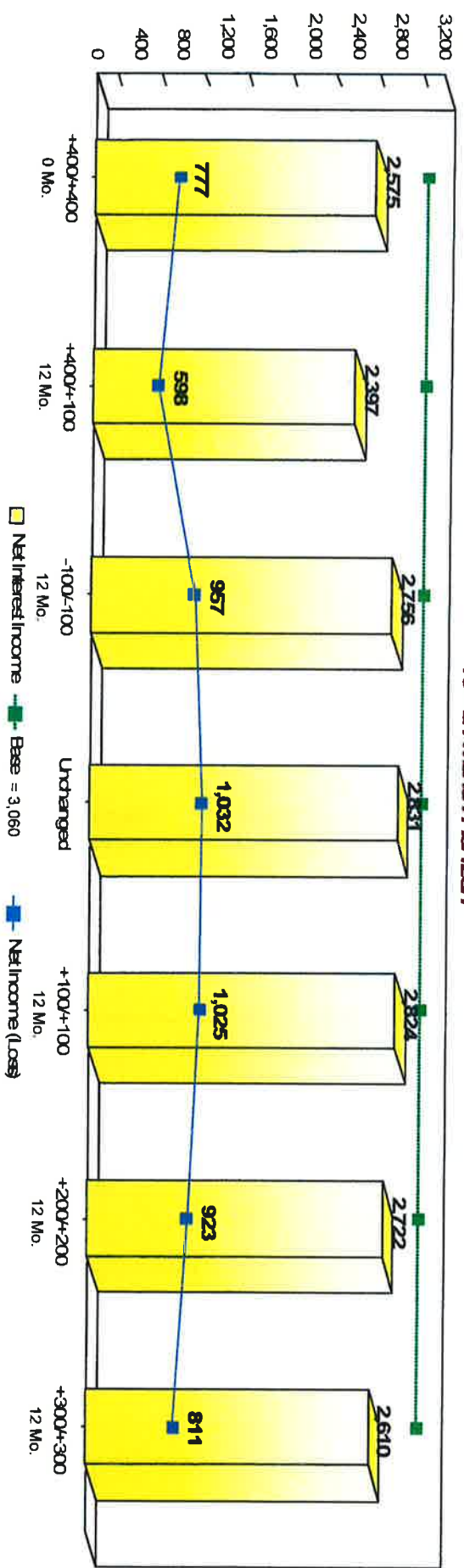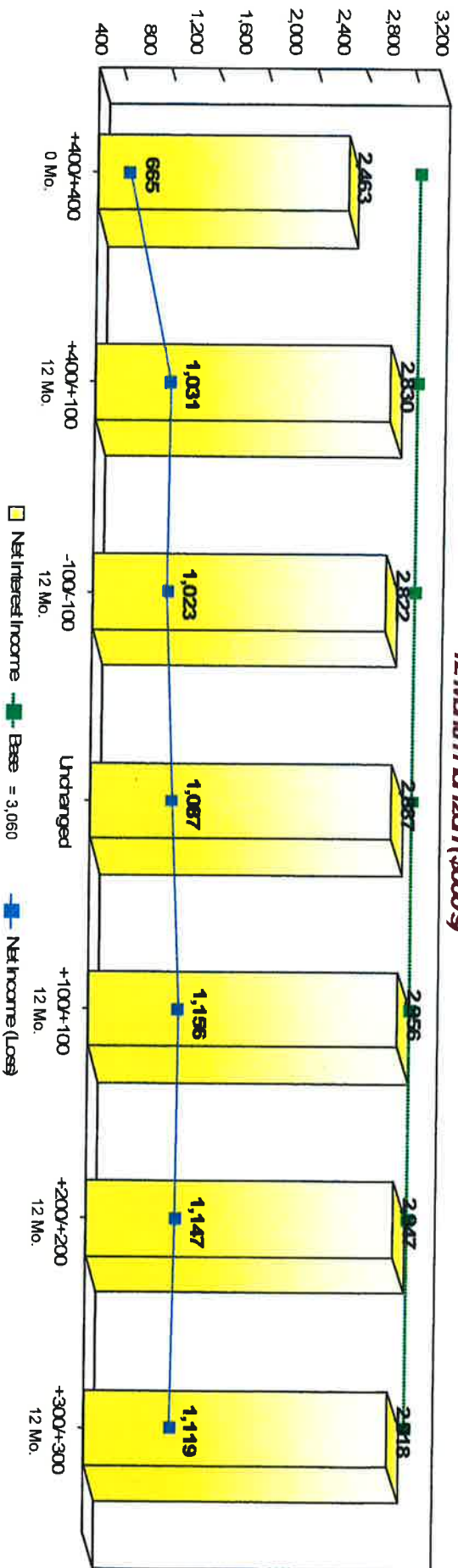*Note: Values are rounded before printing, but full precision values are used in all calculations.*

(Short End = 1yr; Long End = 10yr)

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Income Projections
Sample Bank - Anywhere, OK

12 Month Horizon ($000's)

Bar chart values:
- +400/+400 0 Mo.: 2,463
- +400/+100 12 Mo.: 2,830
- -100/-100 12 Mo.: 2,822
- Unchanged 12 Mo.: 2,867
- +100/+100 12 Mo.: 2,956
- +200/+200 12 Mo.: 2,947
- +300/+300 12 Mo.: 2,918

Net Income (Loss) line values: 665, 1,031, 1,023, 1,087, 1,156, 1,147, 1,119

Legend: Net Interest Income ■ Base = 3,060 ■ Net Income (Loss)

13 - 24 Month Horizon

Bar chart values:
- +400/+400 0 Mo.: 2,575
- +400/+100 12 Mo.: 2,397
- -100/-100 12 Mo.: 2,756
- Unchanged 12 Mo.: 2,831
- +100/+100 12 Mo.: 2,824
- +200/+200 12 Mo.: 2,722
- +300/+300 12 Mo.: 2,610

Net Income (Loss) line values: 777, 598, 957, 1,032, 1,025, 923, 811

Legend: Net Interest Income ■ Base = 3,060 ■ Net Income (Loss)

Interest Rate Risk Monitor

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