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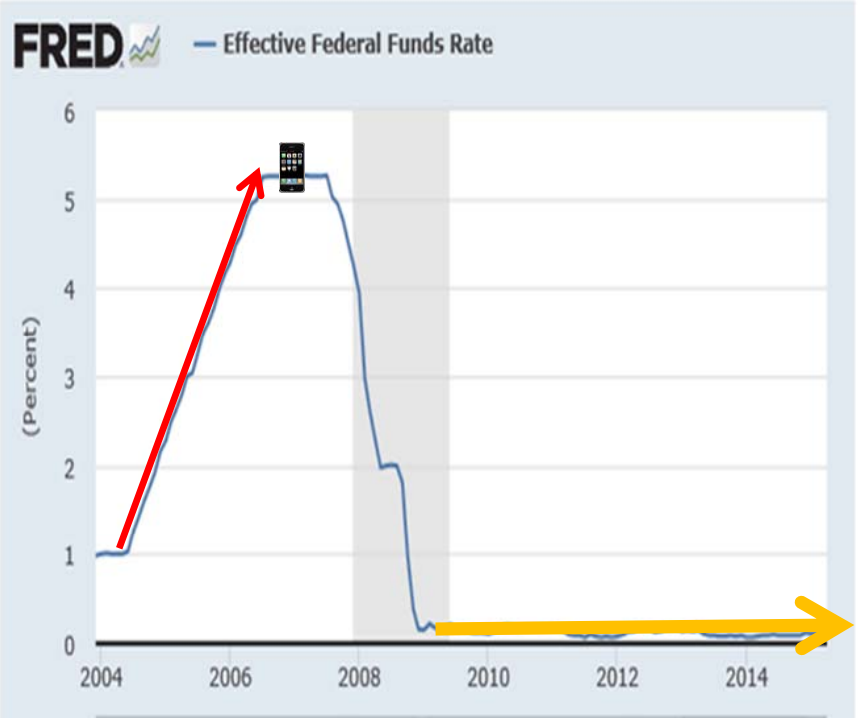
Federal Home Loan Bank
NEW YORK

◆ *Risk Management Strategy & Solutions* ◆

Now What? Navigating Fearlessly Through a Turbulent Environment

February 2, 2016

Frank L. Farone, Managing Director
ffarone@darlingconsulting.com



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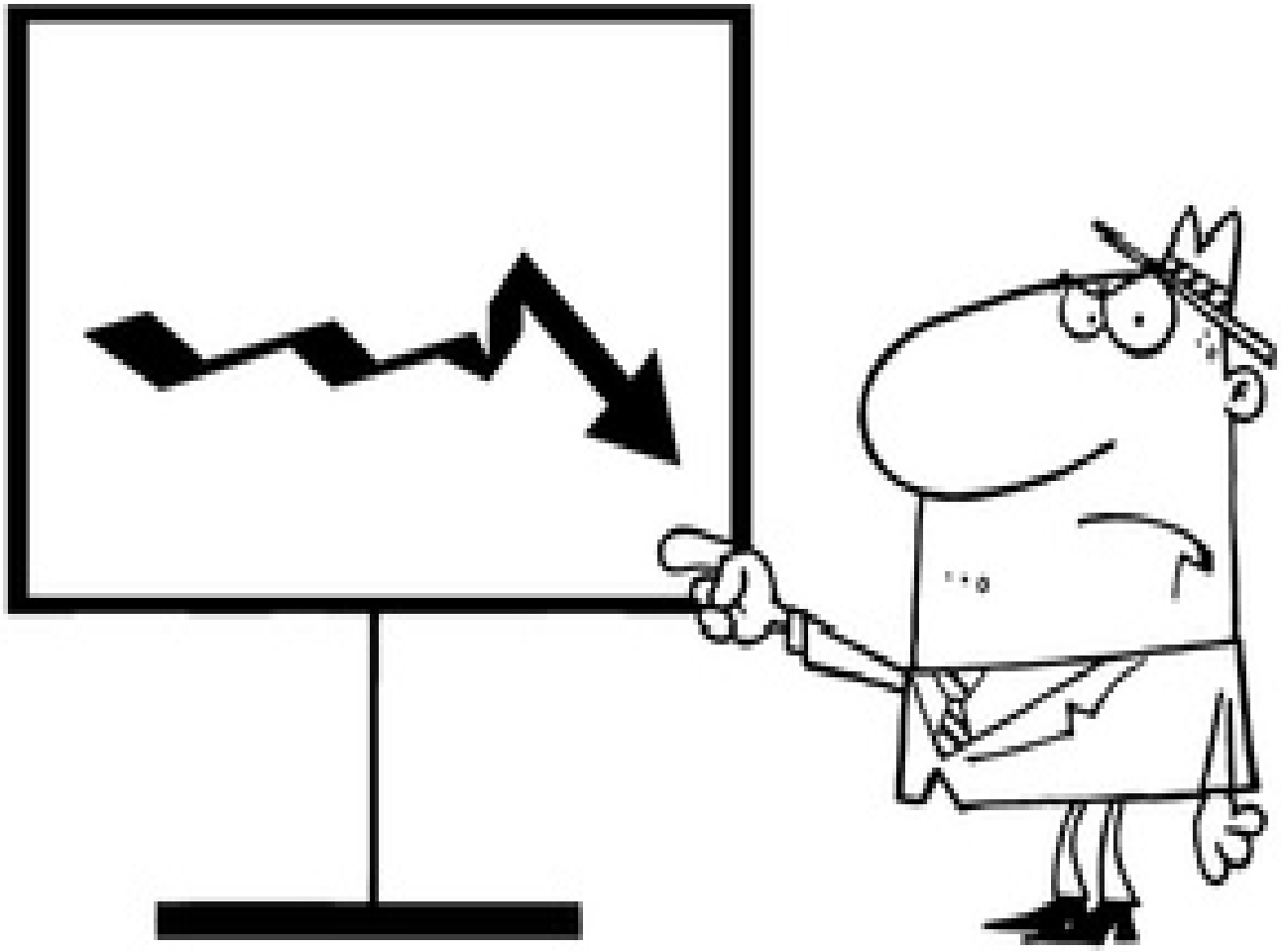
Low Rate Impact: Margins Under Siege and getting WORSE



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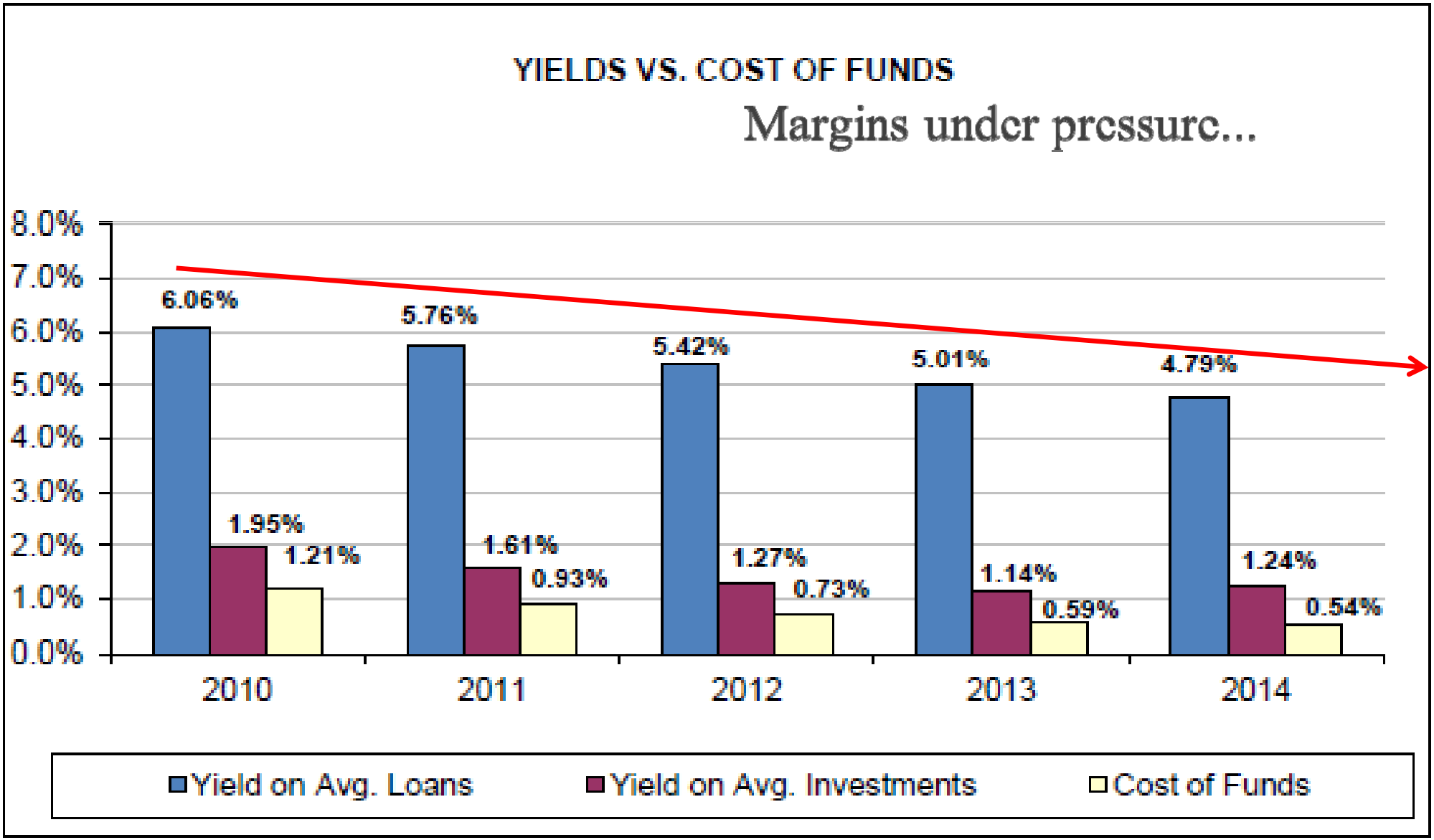
Low Rates = Credit Union Industry Headwinds



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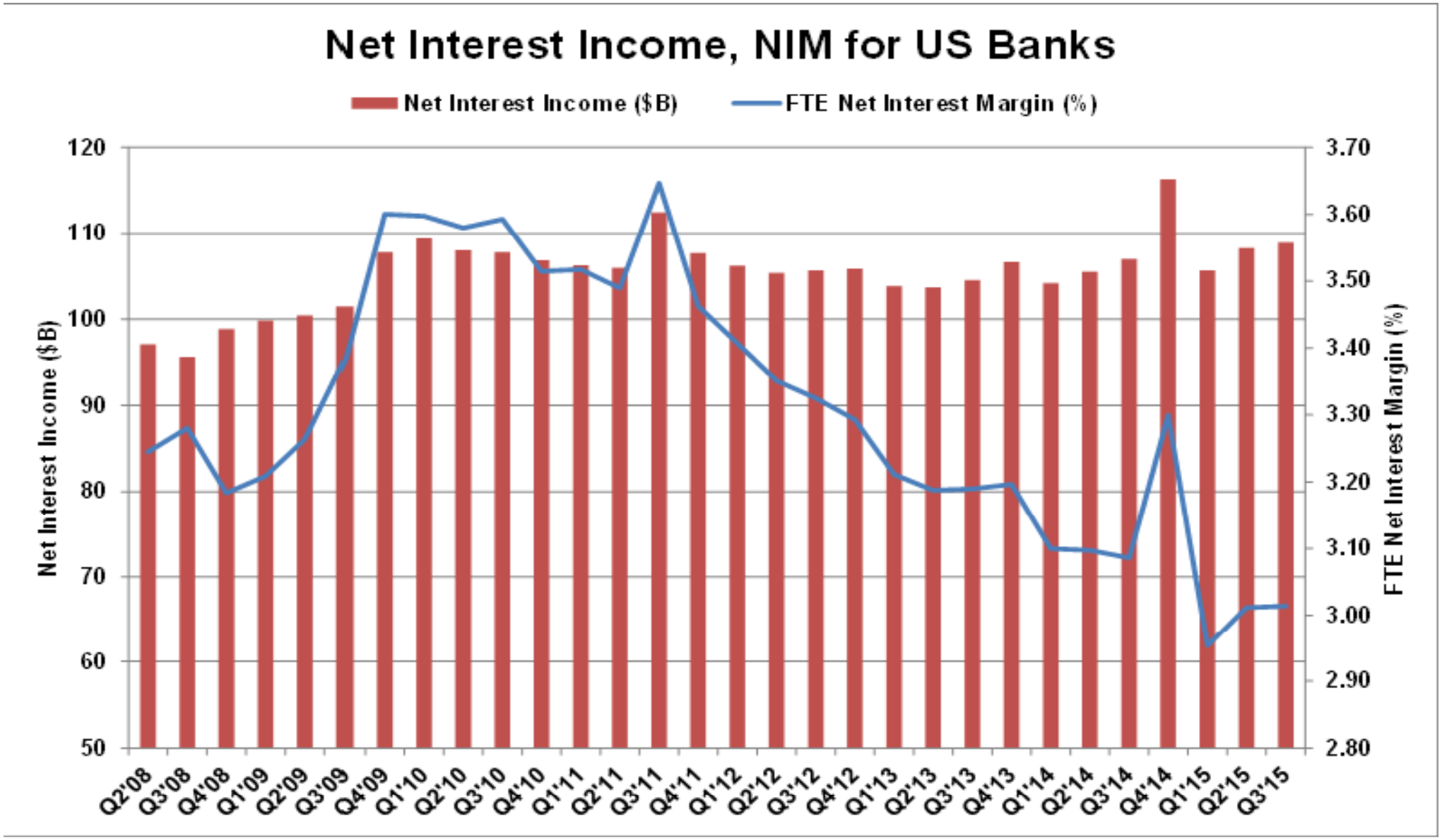
CUs not alone, Bankers feeling same pain! Volume game!



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Interest Rates…A Top of Mind Issue

- Focus = Rising Rates

(When? How Much? How Fast?)

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Fed "Dot Plot" December 16, 2015

Current Median

12/14 (median)

6/15 (median)

9/15 (median)

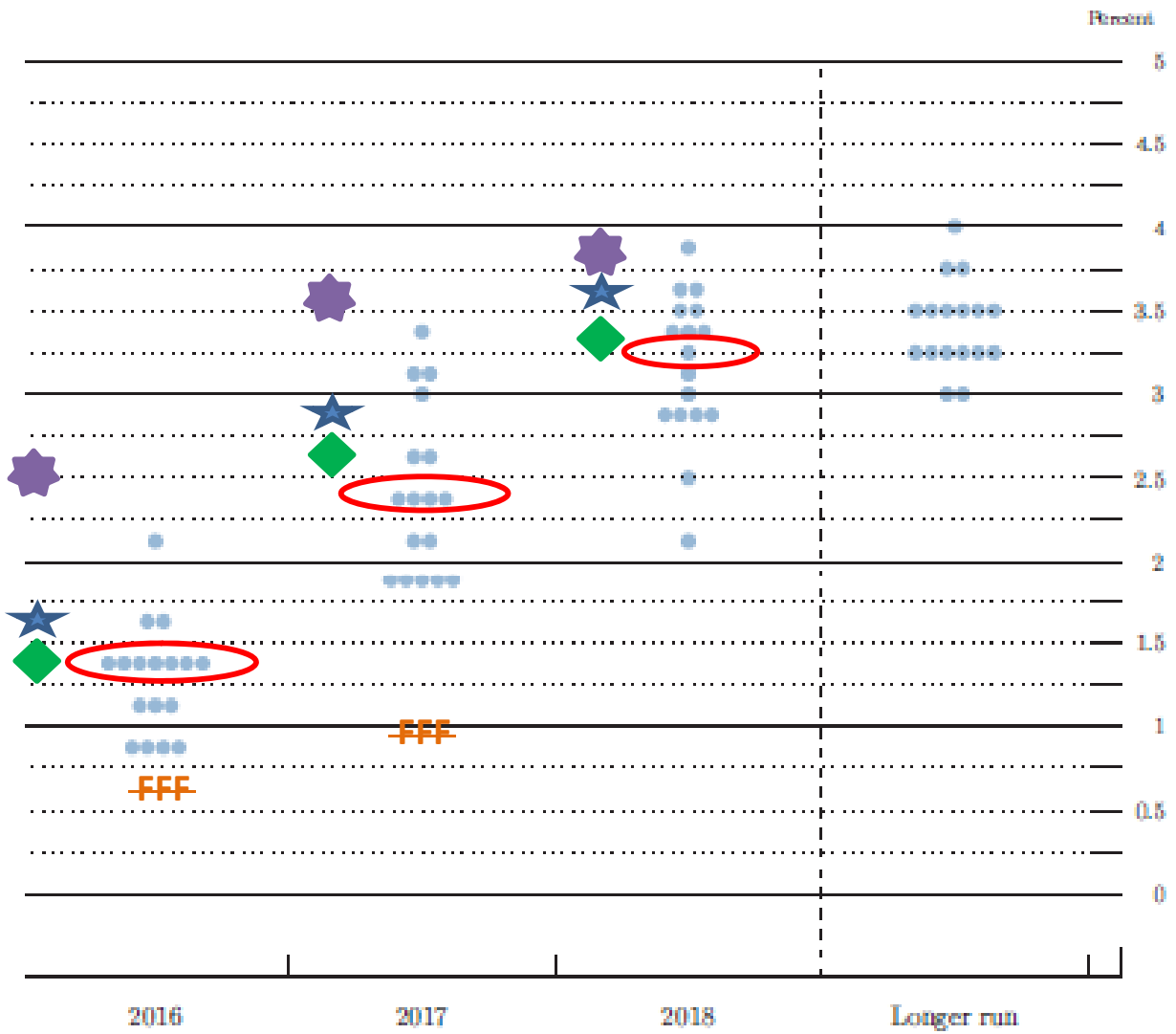
FFF

Fed Funds Futures (1/15/16)

Spot = 35bp

12/16 = 0.64%

12/17 = 0.96%



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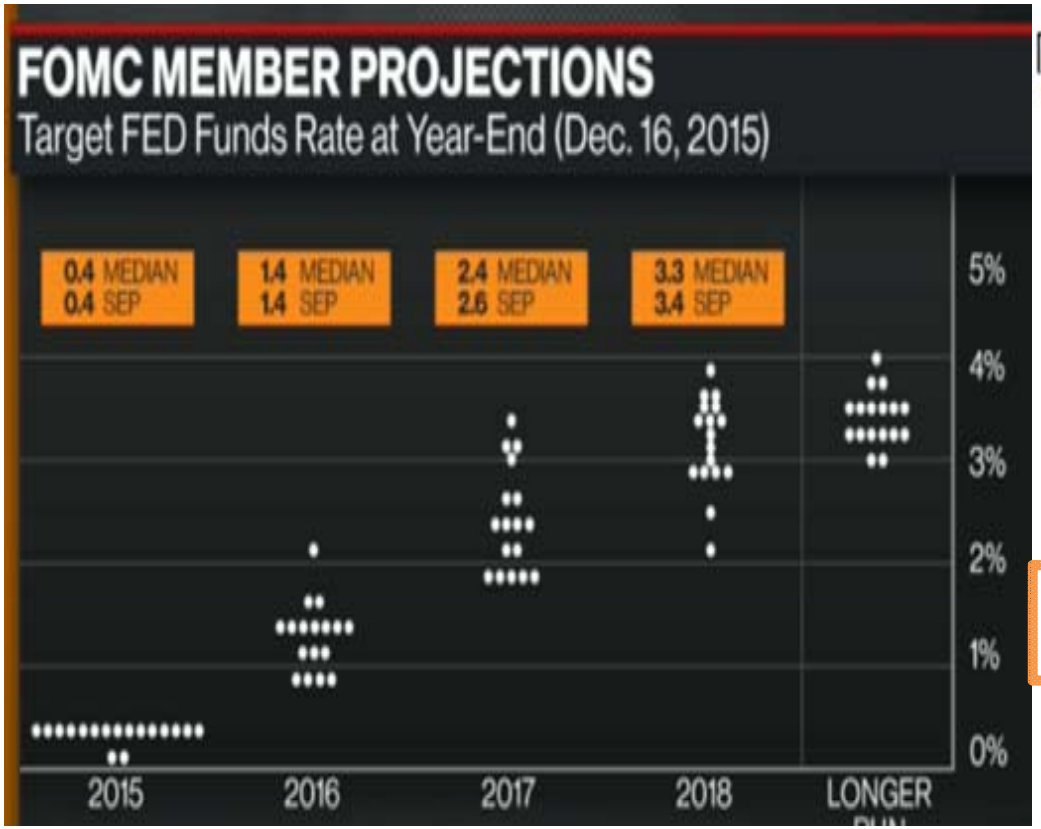
December FOMC "Dot Plot": 1.00% Increase in 2016
FF Futures Market (1/12/16): 0.50%-0.75%



FFF6 COMB Comdty | 1) Actions | 2) Settings

FED FUND 30DAY — As of 01/12/16 — Session COMB

CBT | CEM » — Contracts 36 — Aggr Vol 60,409 — Aggr Open Int 741,328

4 Futures | 5 Spreads | 6 Strategies

Display: Quoted Val | Rate | Color Legend

	Ticker		Last	Chg Last	Time	Bid	Ask	Open Int	Volume	Yest Last
21)	FFF6	Jan16		--	11:54	.3375	.3350	170532	250	.3350
22)	FFG6	Feb16		--	12:09	.360	.355	147446	3680	.360
23)	FFH6	Mar16		--	12:32	.410	.405	35365	2407	.410
24)	FFJ6	Apr16		--	12:34	.460	.455	92965	20438	.465
25)	FFK6	May16		--	12:10	.485	.480	73885	13072	.490
26)	FFM6	Jun16		--	12:35	.525	.520	25662	1569	.525
27)	FFN6	Jul16		--	12:10	.560	.555	50516	4952	.560
28)	FFQ6	Aug16		--	12:32	.585	.580	32867	1585	.590
29)	FFU6	Sep16		--	12:27	.605	.595	12495	407	.605
30)	FFV6	Oct16		--	12:37	.640	.635	23802	2176	.655
31)	FFX6	Nov16		--	12:16	.675	.670	11877	901	.690
32)	FFZ6	Dec16		--	12:36	.720	.715	16444	1746	.745
33)	FFF7	Jan17		--	11:51	.750	.745	25125	3213	.775
34)	FFG7	Feb17		--	12:32	.785	.780	3964	2630	.815
35)	FFH7	Mar17		--	11:52	.820	.815	5479	443	.850
36)	FFJ7	Apr17		--	10:49	.850	.845	2208	261	.870
37)	FFK7	May17		--	10:48	.890	.880	5031	233	.910
38)	FFM7	Jun17		--	10:53	.925	.910	3409	213	.945
39)	FFN7	Jul17		--	10:53	.940	.930	623	190	.955
40)	FFQ7	Aug17		--	10:49	.990	.980	438	8	1.055
41)	FFU7	Sep17		--	11:11	1.025	1.010	579	13	1.030

Delayed Pricing

Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210
Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2016
SN 329860 EST GMT-5:00 G819-3253

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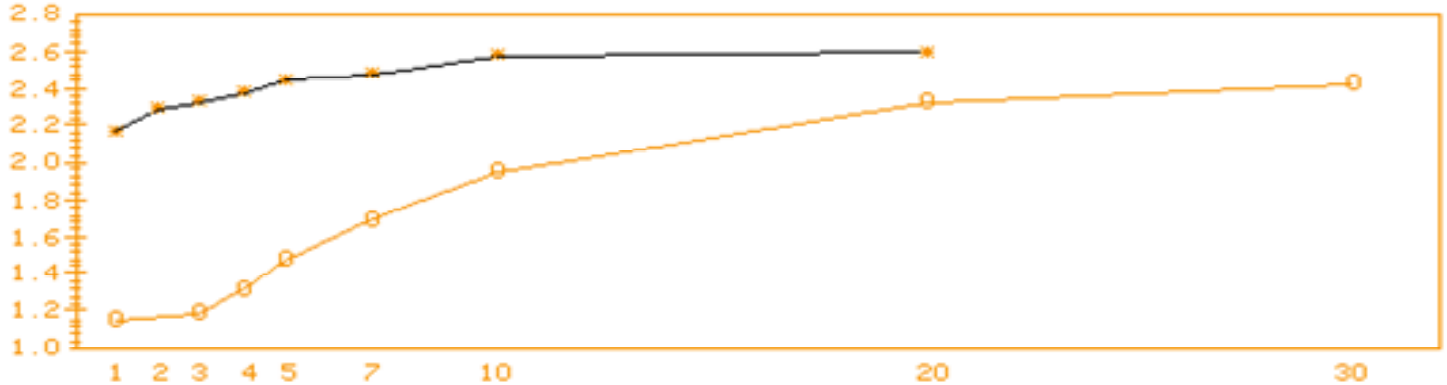
How Much Priced into Rest of Yield Curve?

12:49 **IMPLD FWD RATES:US Dollar Swap Rates**

YRS TO MATURITY

FORWARD YRS	1	2	3	4	5	7	10	20	30
NOW	1.15	1.00	1.18	1.33	1.47	1.71	1.96	2.33	2.42
1	0.84	1.19	1.39	1.55	1.68	1.88	2.09	2.40	
2	1.55	1.67	1.79	1.89	1.99	2.13	2.27	2.48	
3	1.79	1.91	2.00	2.10	2.16	2.29	2.39	2.53	
5	2.18	2.30	2.32	2.38	2.45	2.48	2.58	2.60	

YIELDS ARE 2/YR COMPOUND



YIELD CURVES

O-TODAYS

*- 5 YRS FWD

IYC CURVE # 52

Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2016 Bloomberg Finance L.P.
SN 329860 EST GMT-5:00 G819-3253-0 12-Jan-2016 12:49:20

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Industry Dynamics ARE Changing

- Fewer, Larger CUs
- Mergers of Small CUs
- Lower Returns/Profits
  - .50% ROA the "New 1%"

- Many Will Seek More Fee Related Income
- Use of Wholesale Funding Will Be "Needed" to Control COF, Increase Earnings and Manage IRR and Capital

- ***But….NII Will Remain Driver for most***

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Implication: NEED to Think Differently

- ….About Deposit Strategy
- ….About Loan Strategy
- ….About Capital Management
- ….About Liquidity
- ….About Wholesale funding
- ….About Earnings at Risk

….About SURVIVAL of Fittest!

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Regulatory Issues & Concerns

- Concerned about RISING Rates
  - However, earnings are now an issue, despite other metrics
- Questioning deposit stability
  - Core vs. non-core
- Credit Union-specific assumptions
  - Need to be defended
- Aggressive growth in long-term assets (LT Asset/Assets); NEV
- Stress testing a Must
  - IRR, Liquidity…Capital and Credit?
- Liquidity back at the forefront of discussions

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“Practical” Viewpoint of Interest Rate Risk

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Strategic ALCO *or* Analysis Paralysis?

- Earnings at Risk – Ramps
  - Static vs. Growth Model
  - Parallel & Non-Parallel Shifts
  - 1 Year vs. 5 Year
- Earnings at Risk – Shocks
- Earnings at Risk – Net Income (KEY)
- Value at Risk – NEV
- Stress Testing – NII, NEV
- Gap Reporting (1 year? Use as data base, look to >5 year…)
- Core Funding Utilization…poor man's surrogate for NEV, but powerful!

Upwards of 25-30 scenarios ***each*** quarter! YIKES…which ones to focus on?

What are the core scenarios to focus on when Developing Strategies?

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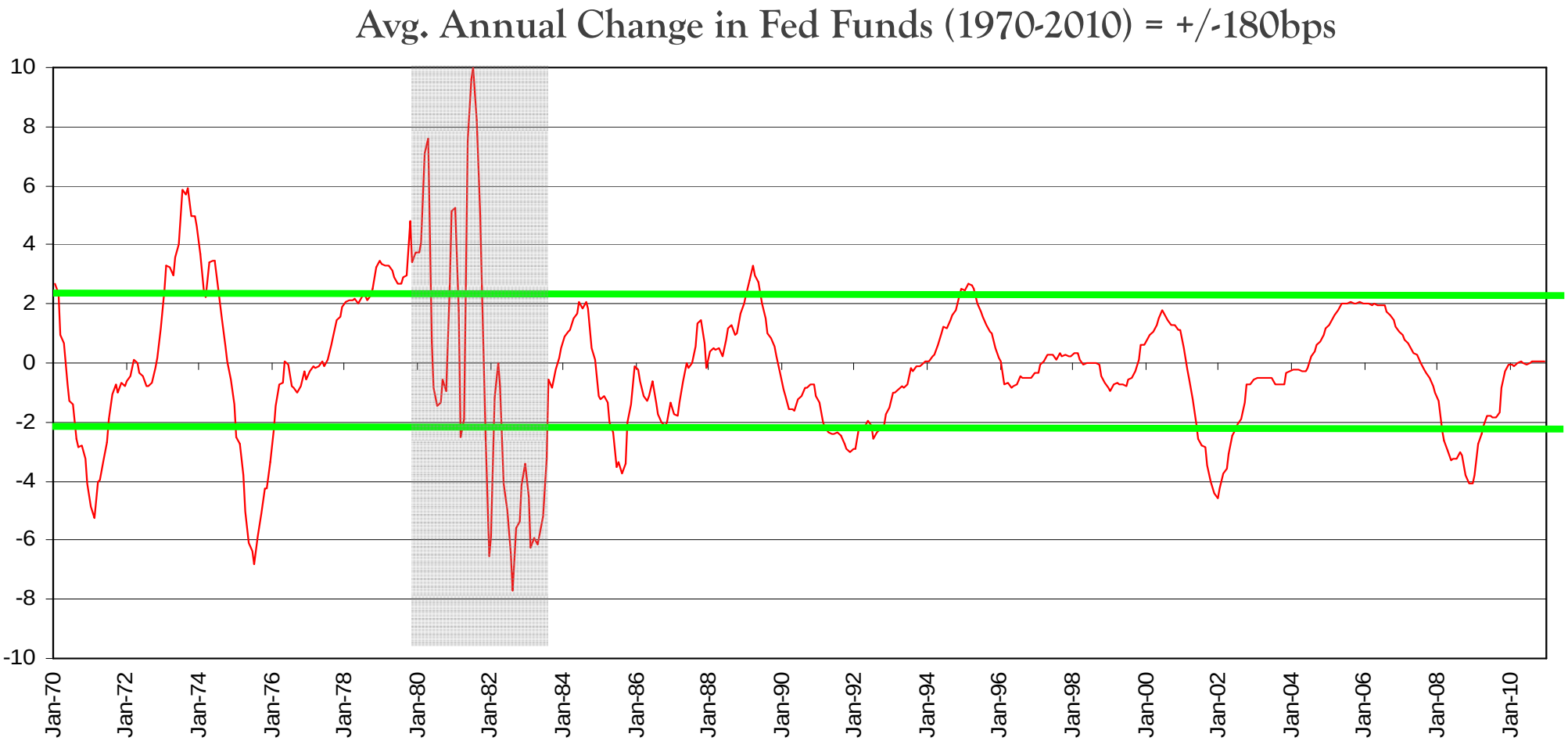
Rate Ramps or Rate Shocks?...



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Steep Curves, Flat Curves, Variable Curves

- Flatter yield curve = continued pressure on margins for most

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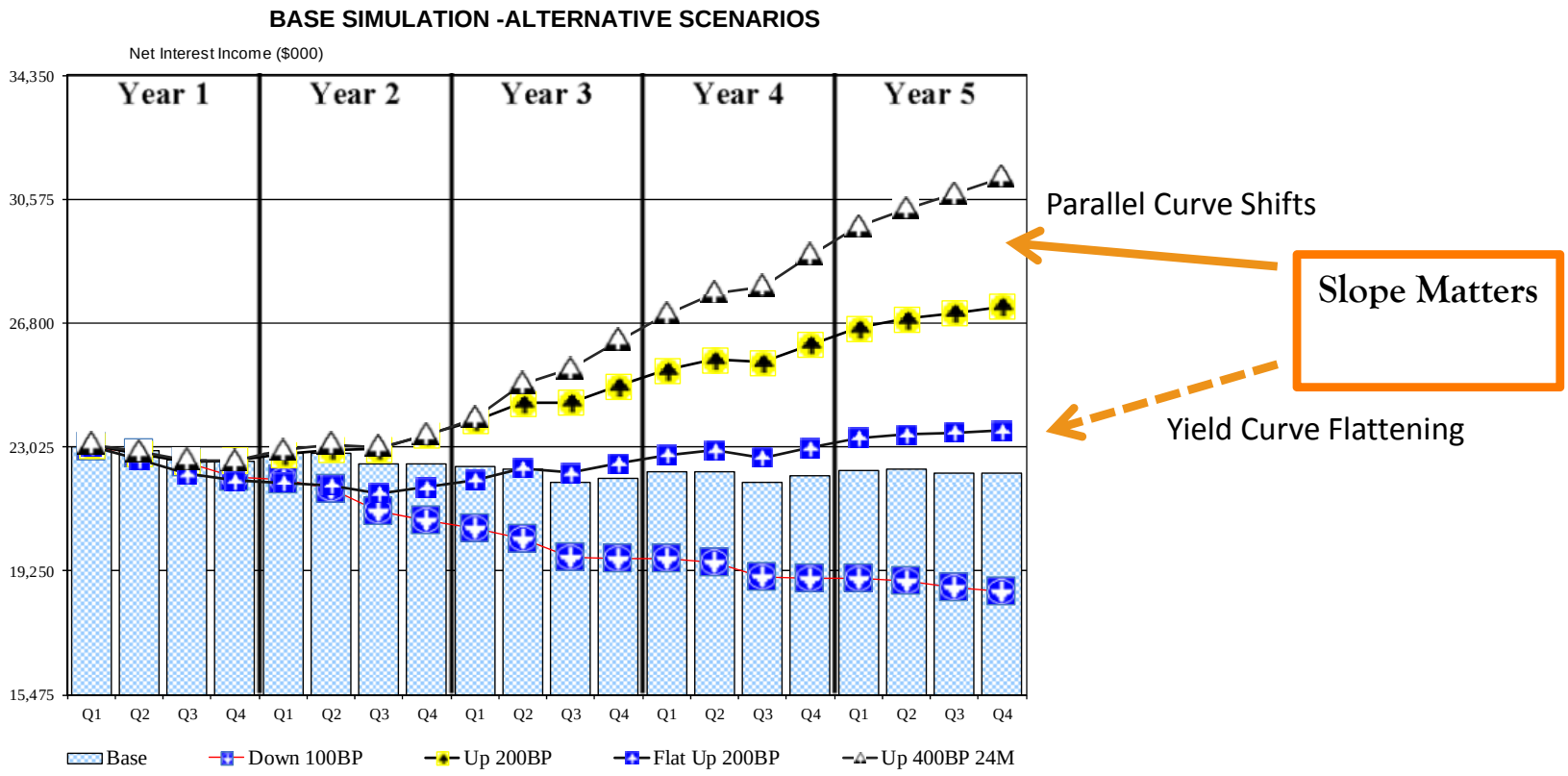
How Will The Long-End "Behave" As Fed Tightens?



NII SUMMARY

	Down 100BP	Base	Up 200BP	Flat Up 200BP	Up 400BP 24M
Year-1 NII	90,562	91,191	91,103	89,894	91,230
Year-2 NII	85,655	90,642	92,121	87,221	92,442
Year-3 NII	80,054	88,855	97,455	89,157	100,541
Year-4 NII	77,194	88,613	102,806	91,418	111,585
Year-5 NII	75,368	89,110	108,016	93,694	121,993

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Steep Curves, Flat Curves, Variable Curves

- Flatter yield curve = continued pressure on margins for most
- Key variable: **Pace** of Fed Tightening

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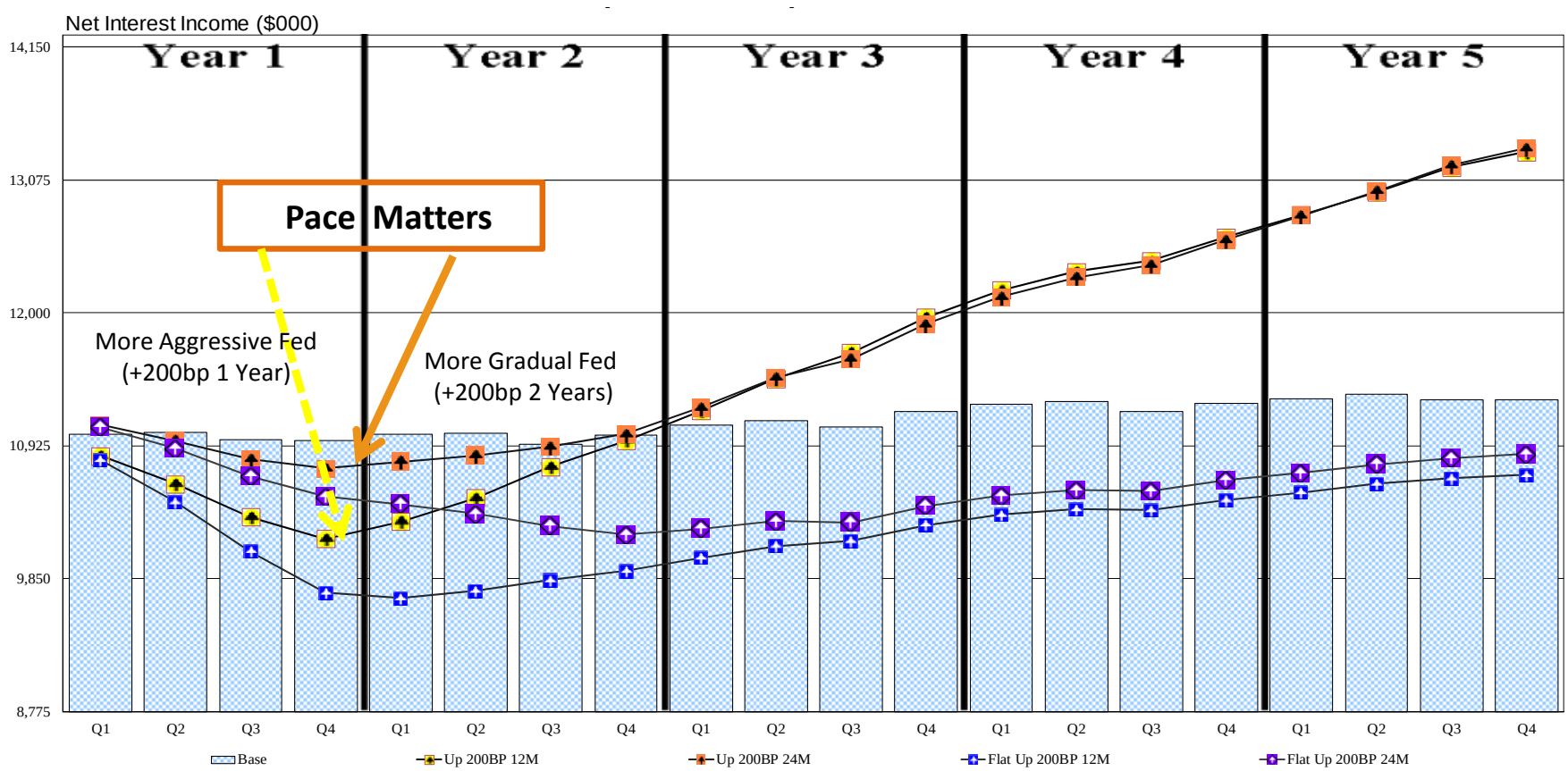
How Fast Will The Fed Tighten?



NII SUMMARY

	Base	Up 200BP 12M	Up 200BP 24M	Flat Up 200BP 12M	Flat Up 200BP 24M
Year-1 NII	43,992	41,984	43,615	41,085	43,175
Year-2 NII	43,999	42,537	43,583	39,194	41,310
Year-3 NII	44,504	46,317	46,244	40,568	41,309
Year-4 NII	45,017	49,547	49,391	41,670	42,291
Year-5 NII	45,242	52,243	52,290	42,514	43,163

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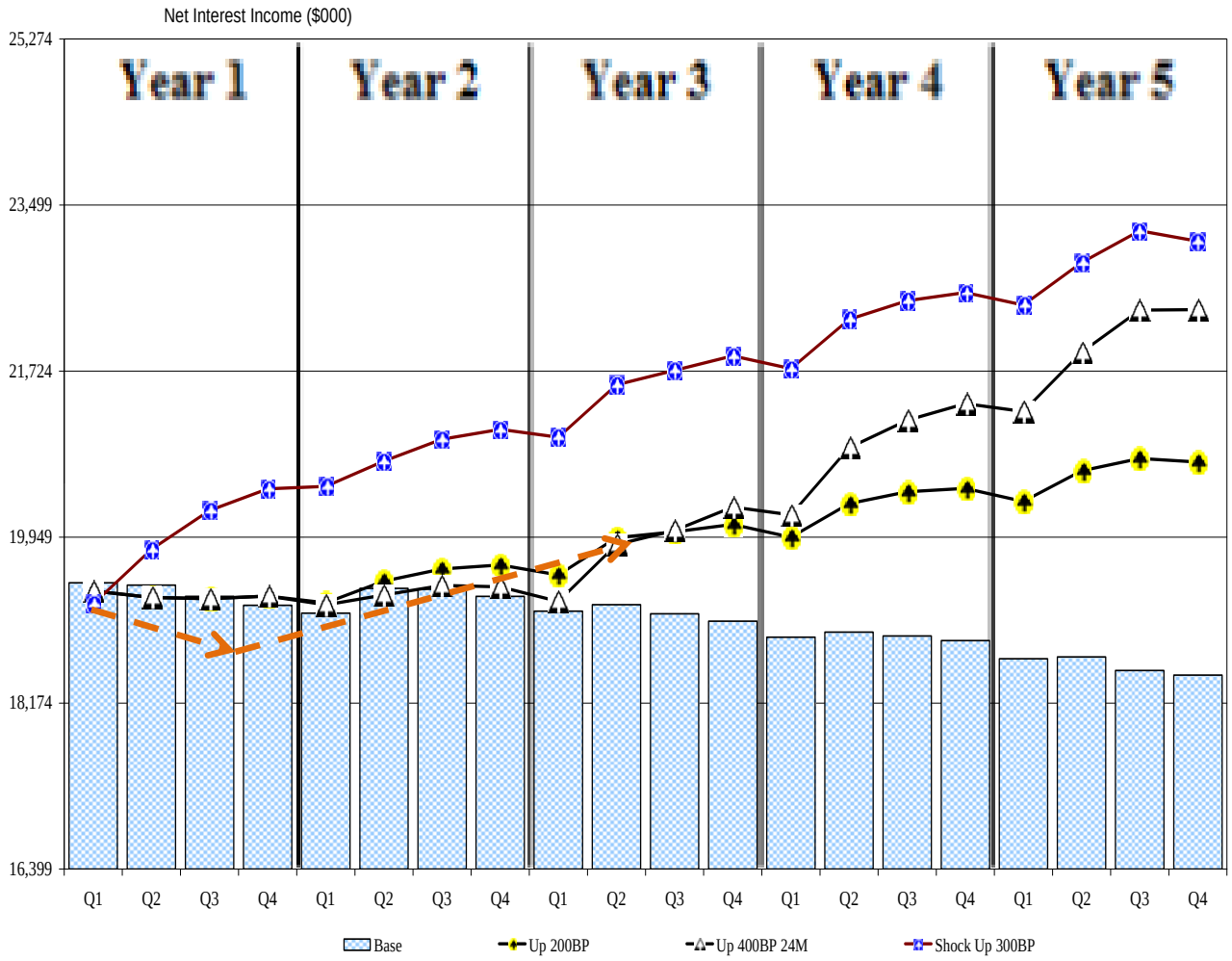
How Asset Sensitive & When?



Shocks Can Be Misleading; Why Ramps Are Also Important

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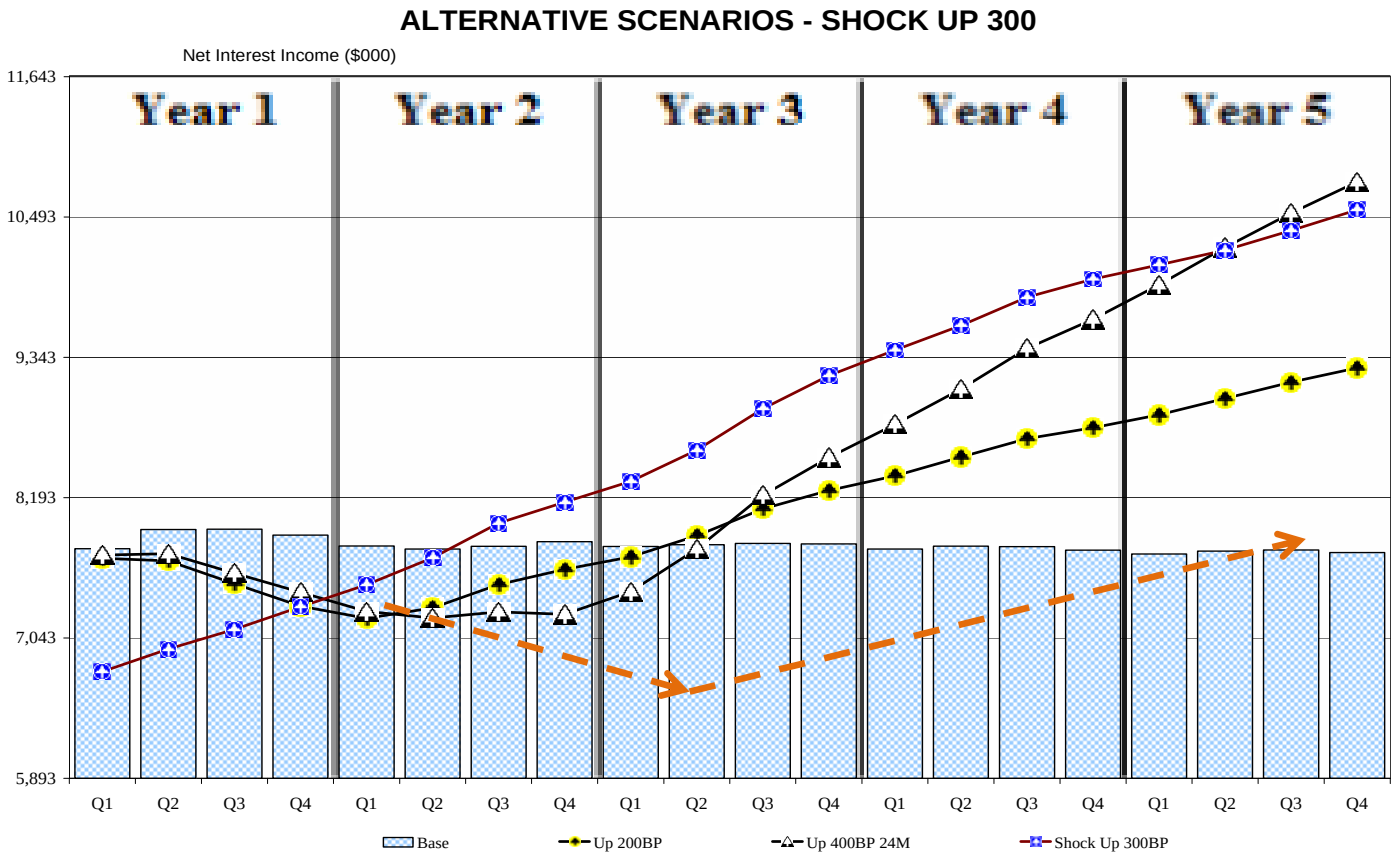
How Liability Sensitive (Shock vs. Ramps)?



NII SUMMARY

	Base	Up 200BP	Up 400BP 24M	Shock Up 300BP
Year-1 NII	31,526	30,162	30,451	28,133
Year-2 NII	31,195	29,582	28,960	31,320
Year-3 NII	31,231	31,942	31,929	35,025
Year-4 NII	31,121	34,342	36,948	38,825
Year-5 NII	30,996	36,272	41,489	41,254

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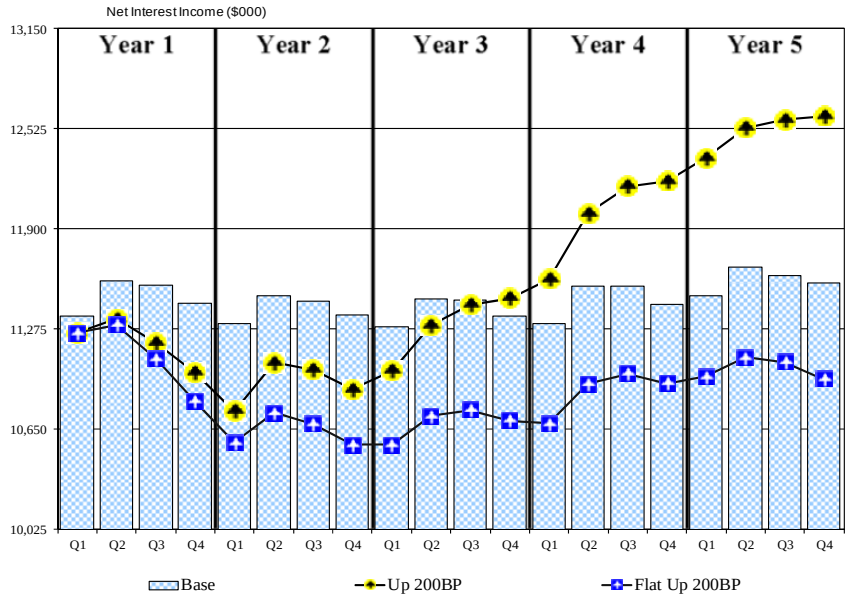
Alternative Pace of Rising Rates

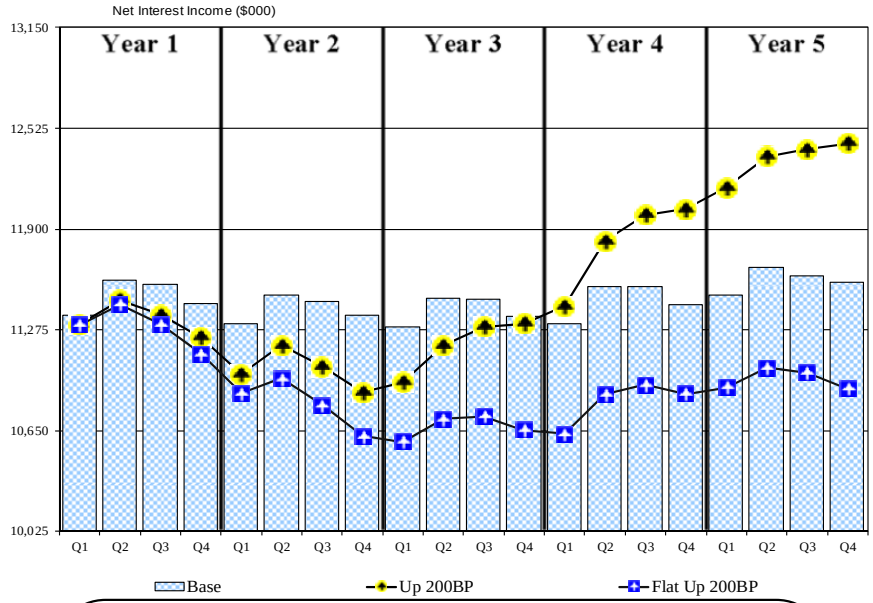
Base Simulation as of 11/30/2015 - 12 Month Rate Movements



NII SUMMARY

	Base	Up 200BP	Flat Up 200BP
Year-1 NII	45,923	44,782	44,462
Year-2 NII	45,605	43,746	42,553
Year-3 NII	45,567	45,210	42,760
Year-4 NII	45,823	47,950	43,551
Year-5 NII	46,319	50,066	44,109

Prolonged Rate Movements - 24 Months



NII SUMMARY

	Base	Up 200BP	Flat Up 200BP
Year-1 NII	45,923	45,362	45,174
Year-2 NII	45,605	44,108	43,279
Year-3 NII	45,567	44,730	42,689
Year-4 NII	45,823	47,260	43,312
Year-5 NII	46,319	49,330	43,872

CHANGE / DIFFERENCE IN RESULTS

	Base	Up 200BP	Flat Up 200BP
Year-1 NII	0	580	711
Year-2 NII	0	363	726
Year-3 NII	0	-480	-71
Year-4 NII	0	-690	-239
Year-5 NII	0	-736	-236

Pace closer to "Forward" Curve

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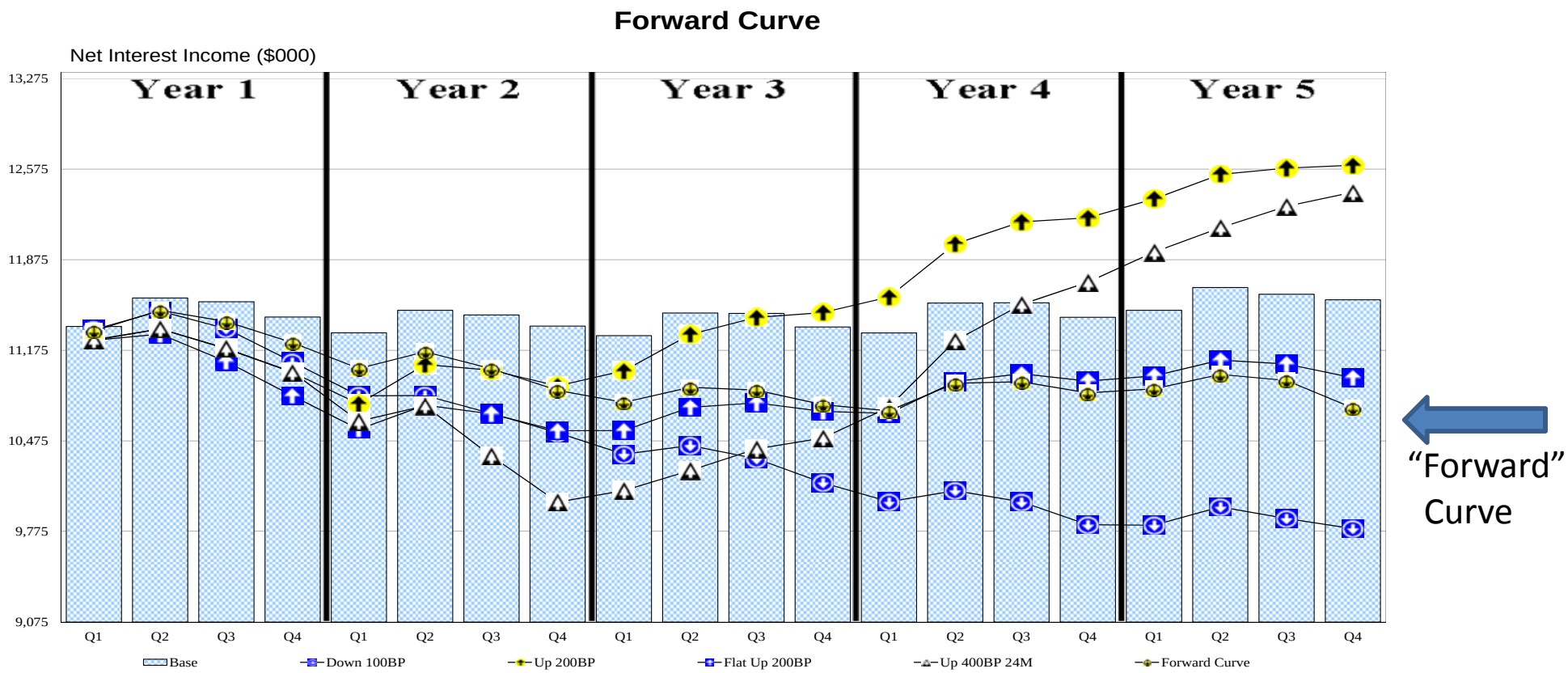
"Forward Curve" Rates



NII SUMMARY

	Down 100BP	Base	Up 200BP	Flat Up 200BP	Up 400BP 24M	Forward Curve
Year-1 NII	45,240	45,923	44,782	44,462	44,793	45,439
Year-2 NII	42,873	45,605	43,746	42,553	41,734	44,096
Year-3 NII	41,299	45,567	45,210	42,760	41,247	43,283
Year-4 NII	39,926	45,823	47,950	43,551	45,215	43,404
Year-5 NII	39,461	46,319	50,066	44,109	48,738	43,536

NOTE: Forward Curve as of 12/31/2015 and can be found on the next page.

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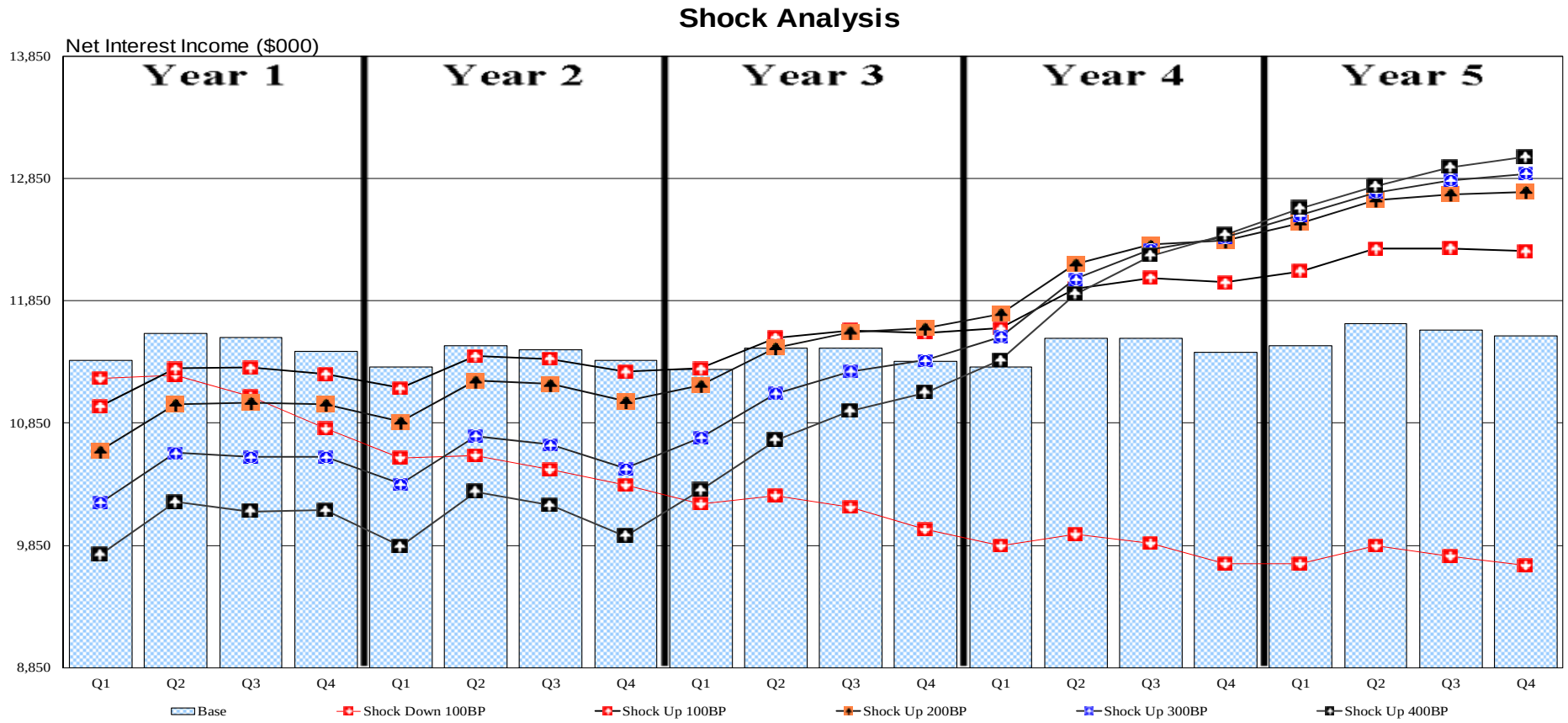
Parallel Rate Shocks (Instantaneous)



NII SUMMARY

	Shock Down 100BP	Base	Shock Up 100BP	Shock Up 200BP	Shock Up 300BP	Shock Up 400BP
Year-1 NII	44,331	45,923	44,837	43,656	41,952	40,242
Year-2 NII	41,957	45,605	45,172	44,250	42,245	40,231
Year-3 NII	40,583	45,567	46,037	45,848	44,458	43,058
Year-4 NII	39,354	45,823	47,610	48,538	48,215	47,870
Year-5 NII	38,989	46,319	48,895	50,618	51,004	51,355

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Net Economic Value (NEV)

Fact and Fiction

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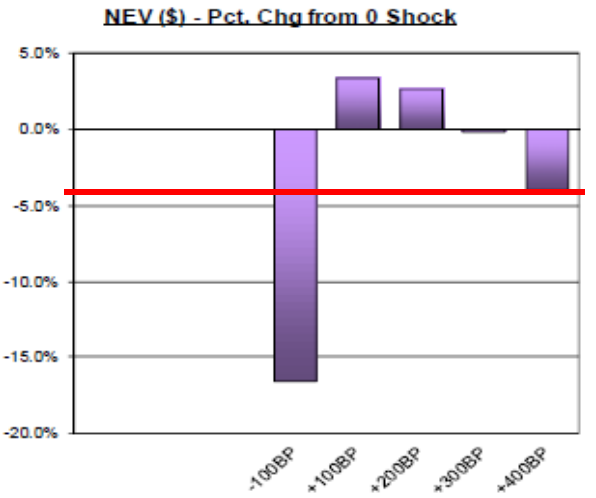
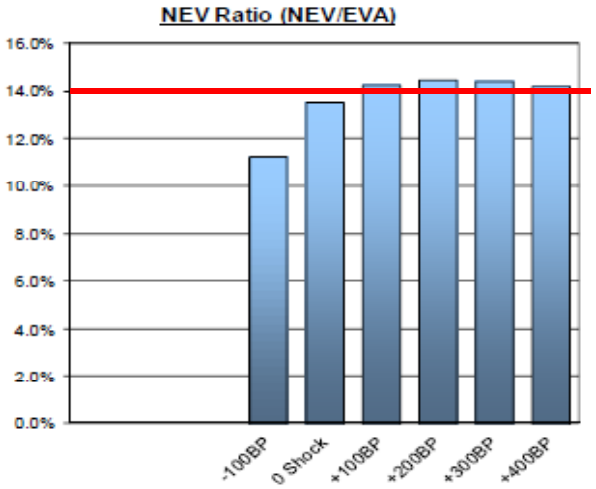
Non-Maturity Deposit Assumption is KEY

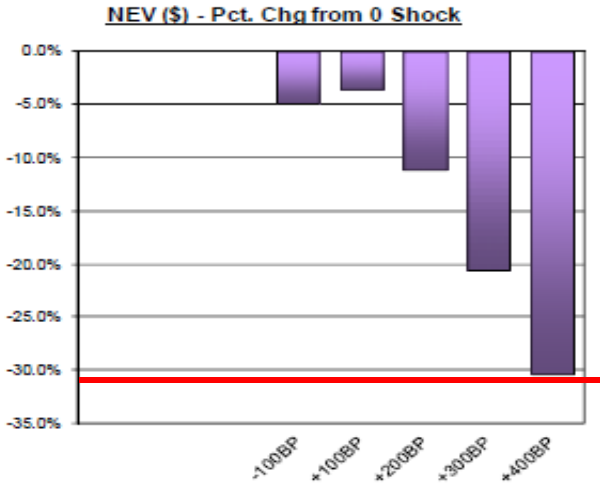
SAME CREDIT UNION – DIFFERENT RESULTS

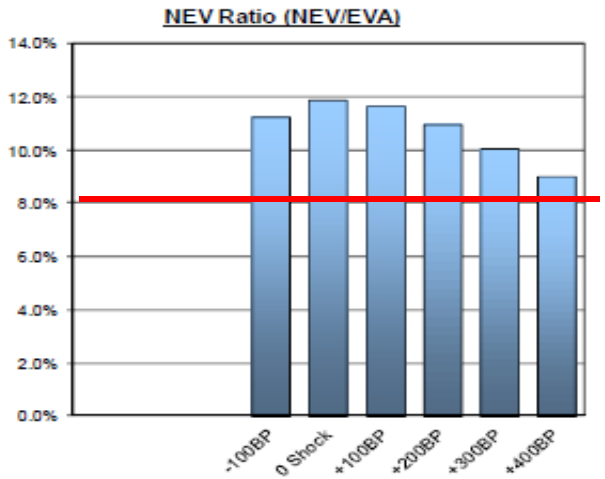
NMDs = 5yr Avg. Life



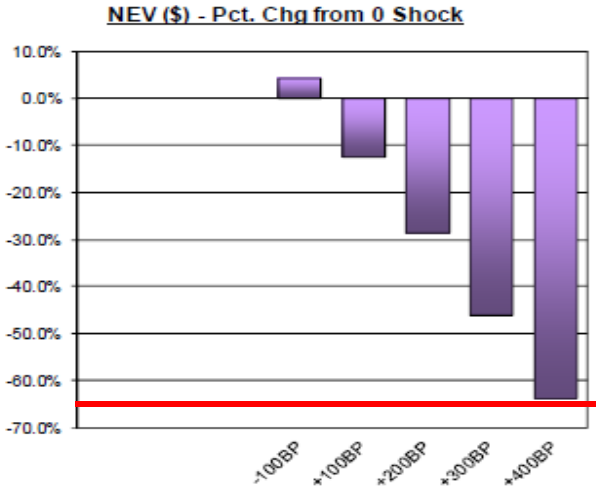


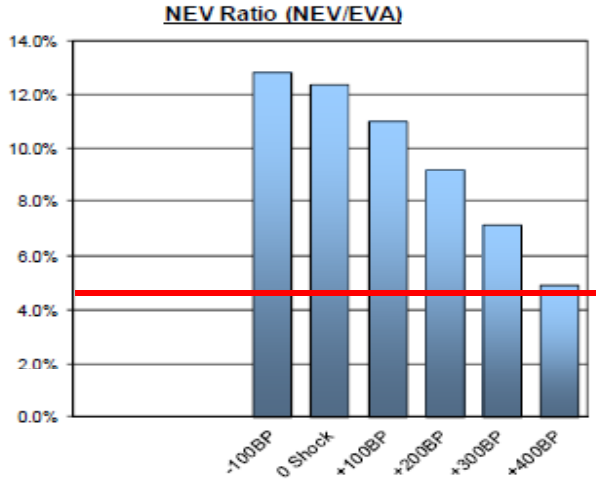
NMDs = 2.5yr Avg. Life





NMDs = 0yr Avg. Life





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Net Economic Value of Equity

RATE SHOCK SCENARIOS

	Book Value	-100BP	0 Shock	+100BP	+200BP	+300BP	+400BP
ASSETS							
Investments	350,847	354,720	350,847	343,653	335,506	327,260	319,184
Loans	331,852	344,317	339,155	330,285	322,718	315,951	309,608
Other Assets	10,526	10,526	10,526	10,526	10,526	10,526	10,526
TOTAL ASSETS (EVA)	**693,225**	**709,563**	**700,528**	**684,464**	**668,750**	**653,737**	**639,317**
% Chg from 0 Shock	*-1.04%*	*1.29%*		*-2.29%*	*-4.54%*	*-6.68%*	*-8.74%*
LIABILITIES							
Non Maturity Deposits	502,261	491,322	458,246	438,462	420,553	404,320	389,585
Time Deposits	108,772	109,815	109,071	107,944	106,841	105,762	104,706
Borrowings	0	0	0	0	0	0	0
Other Liabilities	4,642	4,642	4,642	4,642	4,642	4,642	4,642
TOTAL LIABILITIES (EVL)	**615,675**	**605,780**	**571,959**	**551,048**	**532,036**	**514,724**	**498,933**
% Chg from 0 Shock	*7.64%*	*5.91%*		*-3.66%*	*-6.98%*	*-10.01%*	*-12.77%*
NET ECONOMIC VALUE (NEV)	**77,550**	**103,783**	**128,569**	**133,417**	**136,714**	**139,013**	**140,384**
% Chg from 0 Shock		**-19.3%**		**3.8%**	**6.3%**	**8.1%**	**9.2%**
Policy Limits		*-10.0%*		*-10.0%*	*-20.0%*	*-30.0%*	*-40.0%*
NEV Ratio (NEV/EVA)	**11.19%**	**14.63%**	**18.35%**	**19.49%**	**20.44%**	**21.26%**	**21.96%**
BP Chg from 0 Shock		**-373**		**114**	**209**	**291**	**361**

Strong

Risk Summary Grid*

Post Shock NEV/EVA Ratio	**0 to 100bp**	**100 to 200bp**	**200 to 400bp**	**Over 400bp**
Over 10%	Min. Risk -1	Min. Risk -1	**MIN. RISK (1)**	Mod. Risk -2
6.00% to 10.00%	Min. Risk -1	Min. Risk -1	Mod. Risk -2	Sig. Risk -3
4.00% to 6.00%	Min. Risk -1	Mod. Risk -2	Sig. Risk -3	High Risk -4
Below 4.00%	Mod. Risk -2	Sig. Risk -3	High Risk -4	High Risk -4

*Included for discussion purposes only. Grid evaluates +200/-100 scenarios for risk assessment.
*Current risk assessment for Risk Summary Grid is based on -100 scenario.

Average lives of non-maturity deposits are based upon DCG deposit study. The aggregate average life based upon the current deposit mix is 8.03 years. Please refer to Deposit Study Tear Sheet for additional documentation.

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Core Funding Utilization Improving

INTEREST RATE SCENARIOS

	Base		Down 100BP		Up 200BP		Up 400BP 24M	
Assets (> 60 Months)	109,444		82,537		125,913		130,147	
Core Liabilities (> 60 Months)	**Volume**	**Cumulative Excess**	**Volume**	**Cumulative Excess**	**Volume**	**Cumulative Excess**	**Volume**	**Cumulative Excess**
Equity	77,550		77,550		77,550		77,550	
Other Liabilities	4,642		4,642		4,642		4,642	
DDA	67,702	40,450	67,702	67,357	67,702	23,981	67,702	19,747
Shares	187,885	228,335	187,885	255,242	187,885	211,866	187,885	207,632
	337,779		337,779		337,779		337,779	
% Utilization	32.4%		24.4%		37.3%		38.5%	

HISTORICAL ASSESSMENT

June 30, 2015	27.8%	20.5%	32.1%	33.5%
March 31, 2015	20.9%	14.8%	25.3%	26.2%
December 31, 2014	16.3%	11.4%	21.5%	22.1%
September 30, 2014	14.8%	11.0%	21.1%	21.6%

NOTE #1: Core funding utilization measures the long term structural position of the balance sheet (i.e. NEV simulation) and quantifies the degree to which the Credit Union utilizes long-term (i.e. >5-years) funding sources to support long-term assets. The cumulative excess may be used as an indicator of the Credit Union's capacity to add additional long-term assets.

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CORE Funding "LOW," Stable

INTEREST RATE SCENARIOS

	Base		Down 100BP		Up 200BP		Up 400BP 24M	
Assets (> 60 Months)	609,221		562,847		648,495		663,202	
Core Liabilities (> 60 Months)	**Volume**	**Cumulative Excess**	**Volume**	**Cumulative Excess**	**Volume**	**Cumulative Excess**	**Volume**	**Cumulative Excess**
Equity	645,817	36,596	645,817	82,970	645,817		645,817	
Other Liabilities	72,692	109,288	72,692	155,662	72,692	70,014	72,692	55,307
DDA	581,776	691,064	581,776	737,438	581,776	651,790	581,776	637,083
NOW	729,242	1,420,306	729,242	1,466,680	729,242	1,381,032	729,242	1,366,325
Savings	343,686	1,763,992	343,686	1,810,366	343,686	1,724,718	343,686	1,710,011
Other Deposits	3,879	1,767,871	3,879	1,814,245	3,879	1,728,597	3,879	1,713,890
Borrowings	7,617	1,775,488	7,617	1,821,862	7,617	1,736,214	7,617	1,721,507
	2,384,709		2,384,709		2,384,709		2,384,709	
% Utilization	25.5%		23.6%		27.2%		27.8%	

HISTORICAL ASSESSMENT

September 30, 2015	24.8%	22.6%	26.8%	27.5%
June 30, 2015	25.7%	23.7%	27.4%	28.0%
March 31, 2015	24.1%	21.9%	26.2%	26.9%
December 31, 2014	25.9%	23.6%	27.9%	28.6%

NOTE #1: Core funding utilization measures the long term structural position of the balance sheet (i.e. EVE simulation) and quantifies the degree to which the Bank utilizes long-term (i.e. >5-years) funding sources to support long-term assets. The cumulative excess may be used as an indicator of the Bank's capacity to add additional long-term assets.

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Steep Curves, Flat Curves, Variable Curves

- Flatter yield curve = continued pressure on margins for most
- Key variable: Pace of Fed Tightening
- **Important Q: Depositor Behavior** as Fed Raises Rates?

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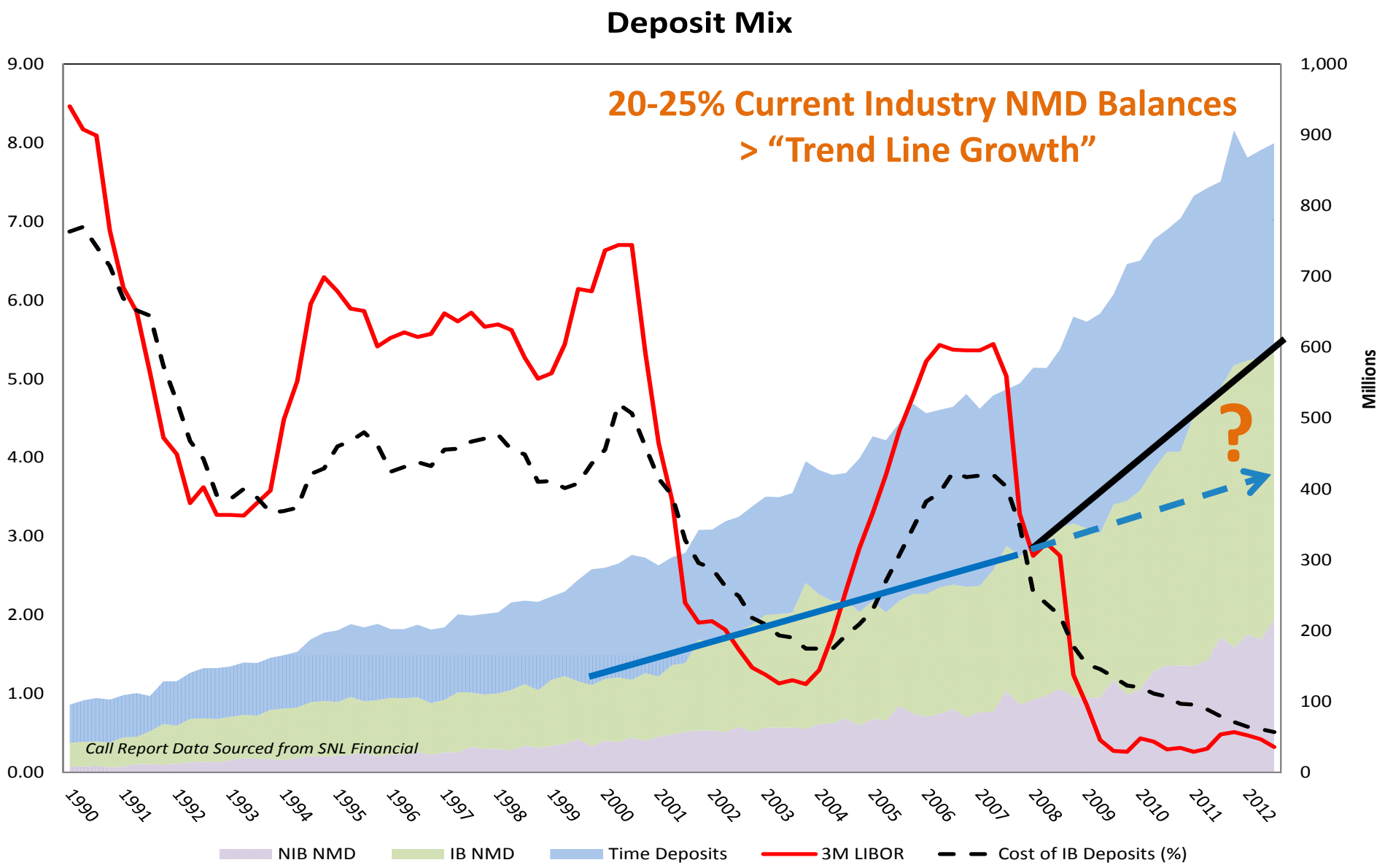
Deposit Composition/Historical Behavior (Sample)



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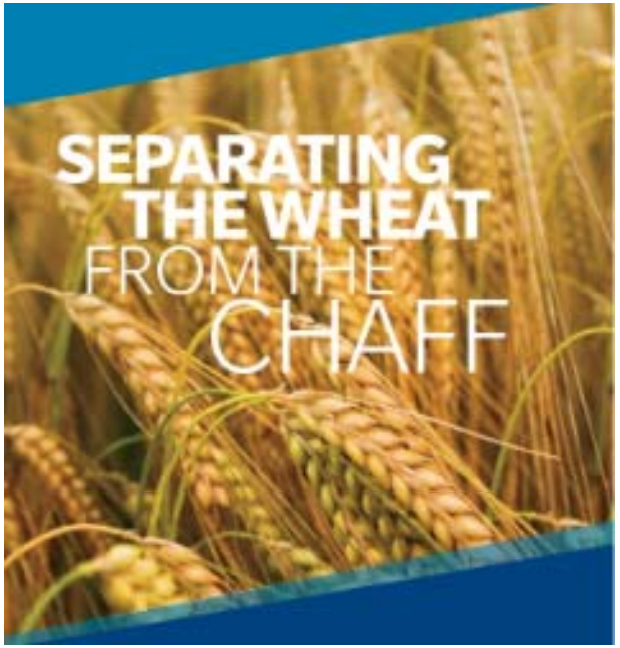
Deposit Strategy: An Important First Point



Deposit Pricing Discipline & Strategy Is A Key Business Issue

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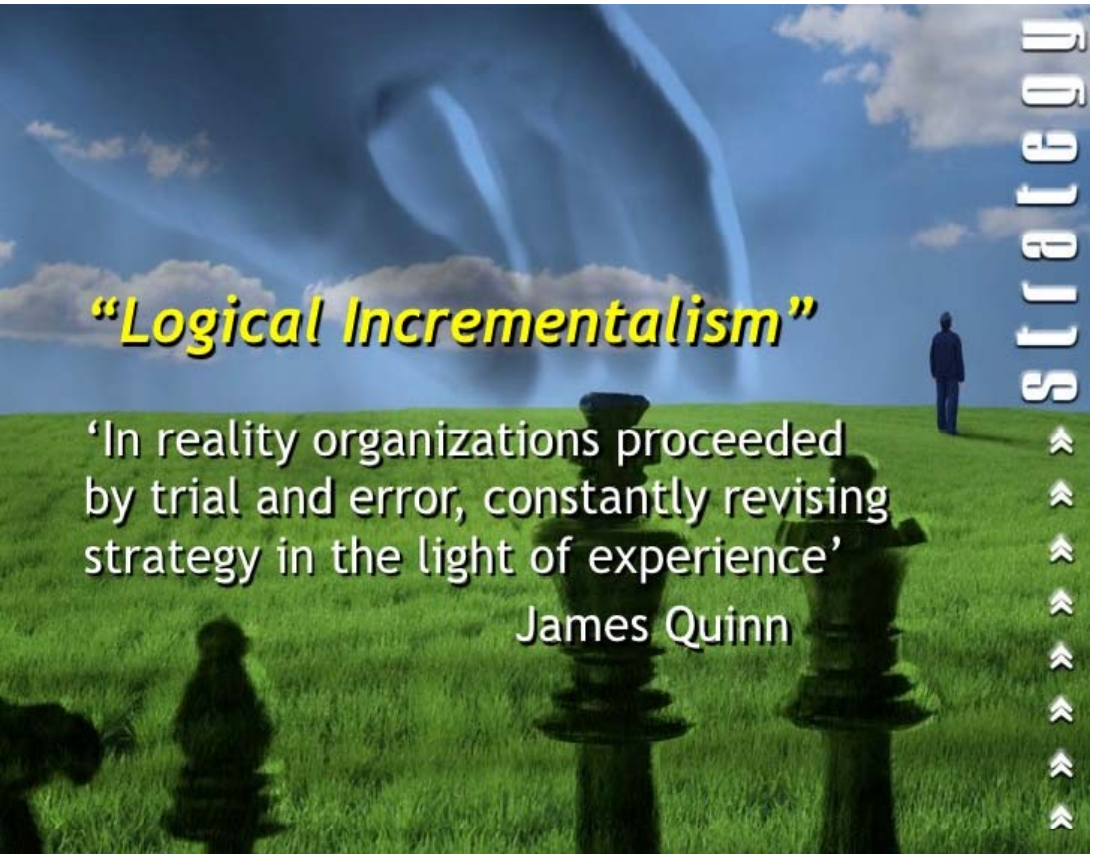

COST OF FUNDS MANAGEMENT

The Importance of
Marginal Cost Analysis

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Marginal Cost of Funds Example

MMDA

BALANCE: $50,000

CURRENT RATE: 0.35%

		RATE INCREASE		
		0.25%	0.50%	1.00%
RUNOFF PROTECTED	10.00%	2.85%	5.35%	10.35%
	20.00%	1.60%	2.85%	5.35%
	30.00%	1.18%	2.02%	3.68%
Annualized NII Impact (000s)		**($125)**	**($250)**	**($500)**

Liquidity a factor in deposit initiatives

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Marginal Cost of Funds Example

Following represents marginal cost of conversion of current deposits for a promotional product and required growth to offset

	Balance	Rate	Ann. Int. Expense	Cost of Conversion	Required Growth Offset		
Existing Savings/MM DA base:	50,000	0.350%	175				
					Spread Assumed on Growth		
Promotional / Defensive 7 Month CD Rate:		1.250%					
					2%	**3%**	**4%**
	% Converted						
Cost of Conversion:	10%	0.440%	220	45	2,250	1,500	1,125
	20%	0.530%	265	90	4,500	3,000	2,250
	30%	0.620%	310	135	6,750	4,500	3,375
	40%	0.710%	355	180	9,000	6,000	4,500
	50%	0.800%	400	225	11,250	7,500	5,625

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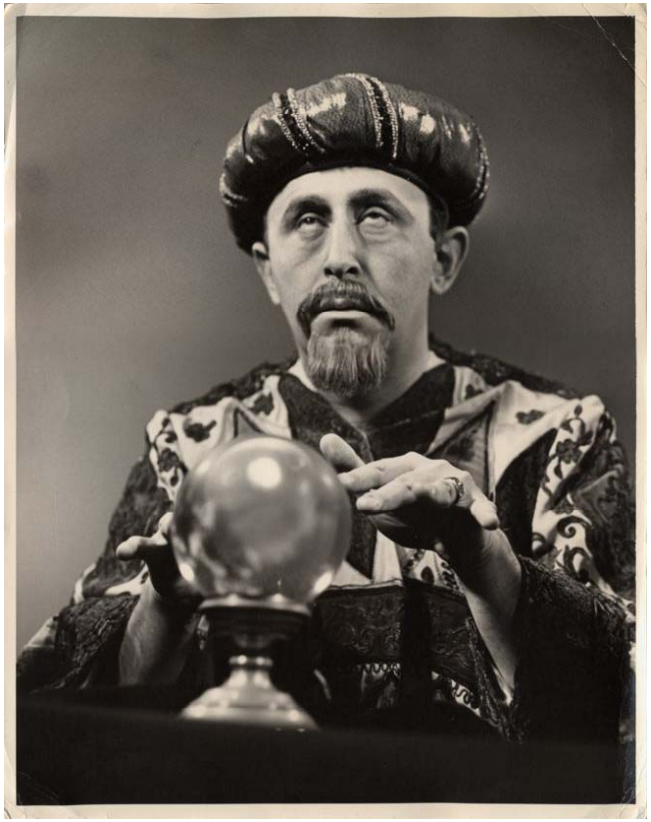
HOW CORE ARE MY DEPOSITS?

&

What Should I Do To Better Understand Potential Ramifications?



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Liability Pricing: Mirror, Mirror on the Wall*

Fixed-Rate Advance		
Type	Regular	CI*
1 Week	0.60%	
2 Weeks	0.60%	
3 Weeks	0.60%	
1 Month	0.60%	
2 Months	0.64%	
3 Months	0.70%	
4 Months	0.73%	
5 Months	0.77%	
6 Months	0.82%	
1 Year	1.03%	0.80%
2 Years	1.23%	1.00%
3 Years	1.44%	1.21%
4 Years	1.65%	1.42%
5 Years	1.81%	1.58%
6 Years	2.00%	1.77%
7 Years	2.22%	1.99%

✓Consider Dividend Impact @ est. 4.10% (x 1/20th of spread between advance rate and dividend rate).
(4.10%-.60%=3.50%) X (1/20th stock req.)=18bps!

✓No NCUA Insurance premium

✓No operational costs or "cannibalization"

✓"Least" expensive source of funds at the margin

SO, WHAT GETS IN THE WAY?
(a rhetorical question…I've heard it all)

***article written for FHLBNY on effective use of wholesale funding….read it and share it with Board!**

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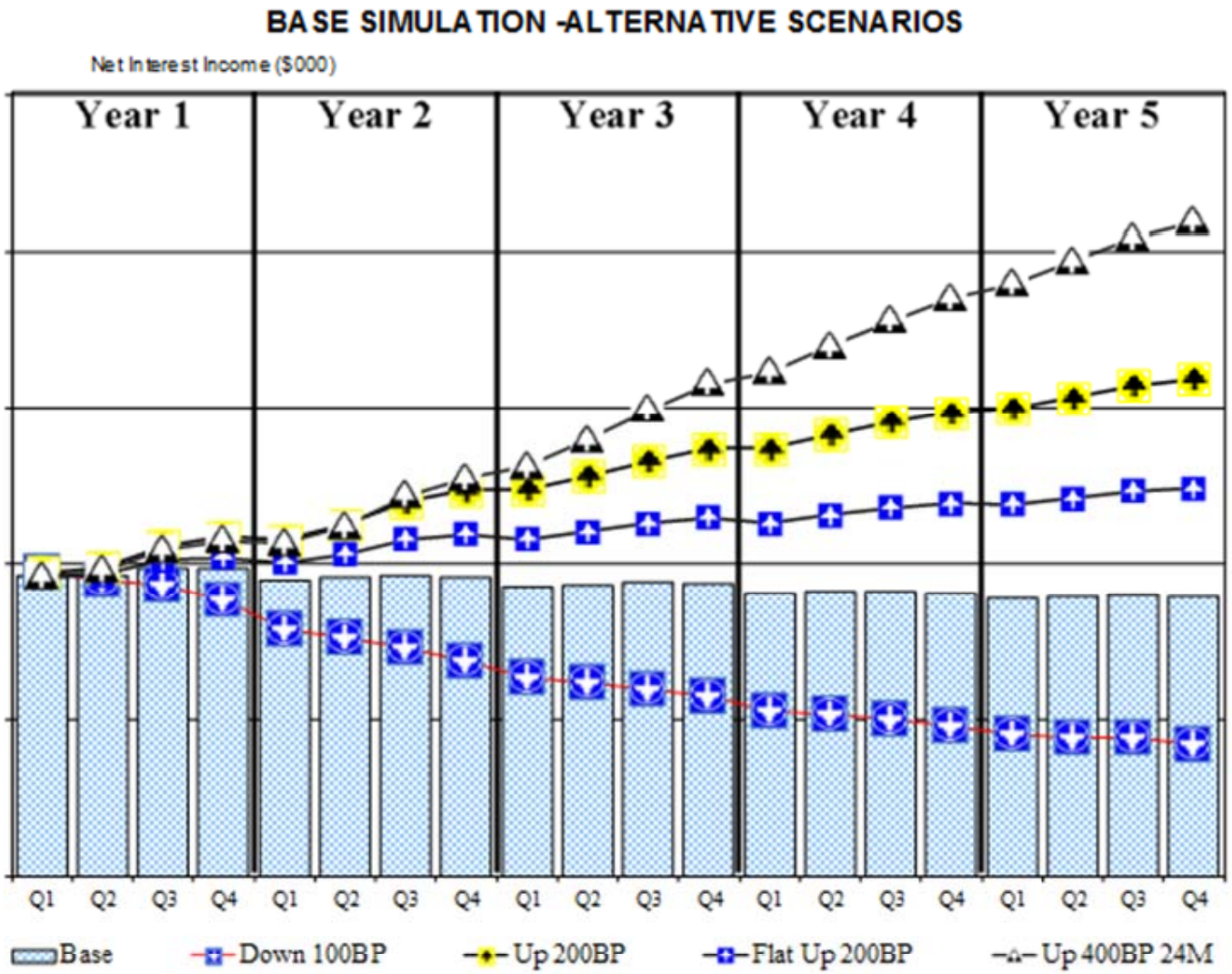
If Asset Sensitive…



Consider:

- Understand capacity to extend assets
- Extend cash
- Mismatched leverage
- Hold fixed rate mortgages
- Flexibility with commercial/business deals and structures

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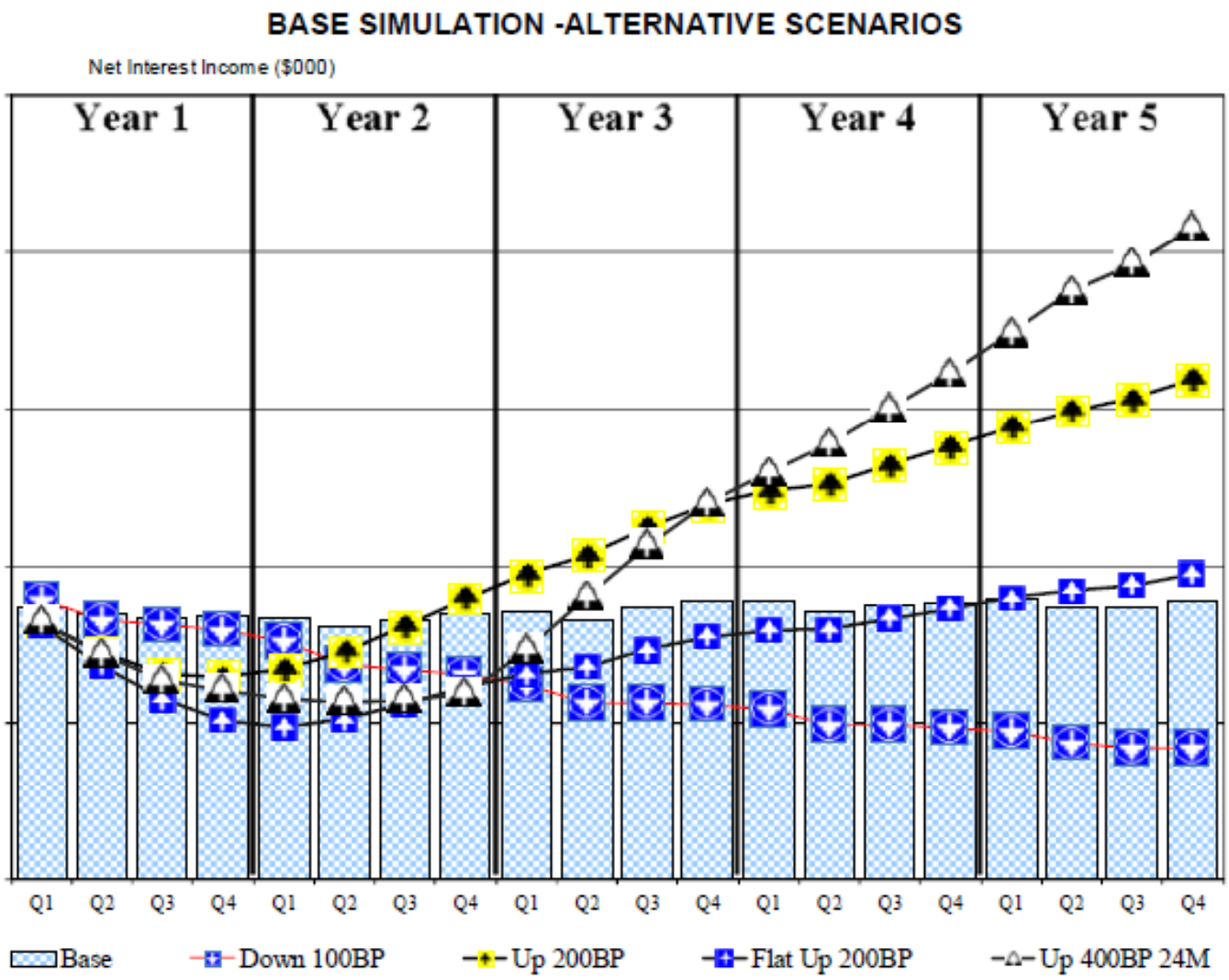
If Liability Sensitive…



Consider:

- Understand magnitude of exposure
- More fearful of rising or falling rates?
- If extending: how much insurance and how far out on the curve?
- Deposit pricing game plan
- Shorten assets?

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Strategies For All Shapes and Sizes

“NO One Size Fits All Strategy”

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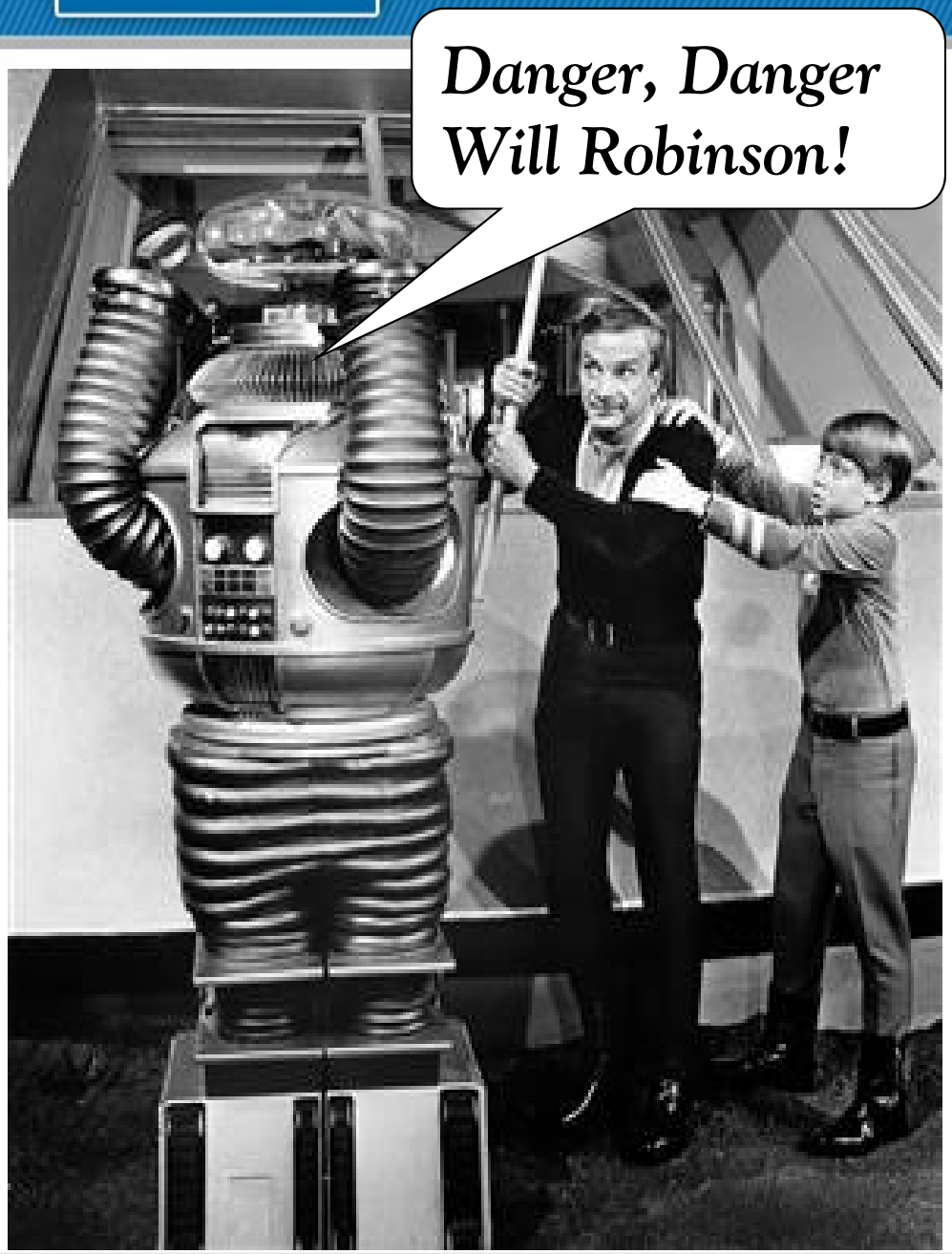
Investment Strategy (not getting easier)



- Opportunity or Trap?
- Avoid cash build up
- AVOID CALLABLE BONDS
- BEWARE PREMIUMS
- CMO's? Better Do homework!!!
- Compare to Loans (incl. 30 yr FR)
- Pre-Invest 2016 CF if cant absorb into loans!?
- Extension Risk Concerns?: Can we support?

- Key Q: If not loan demand, how to offset Margin Compression? Earnings? Consider Impact on IRR, NEV and NII

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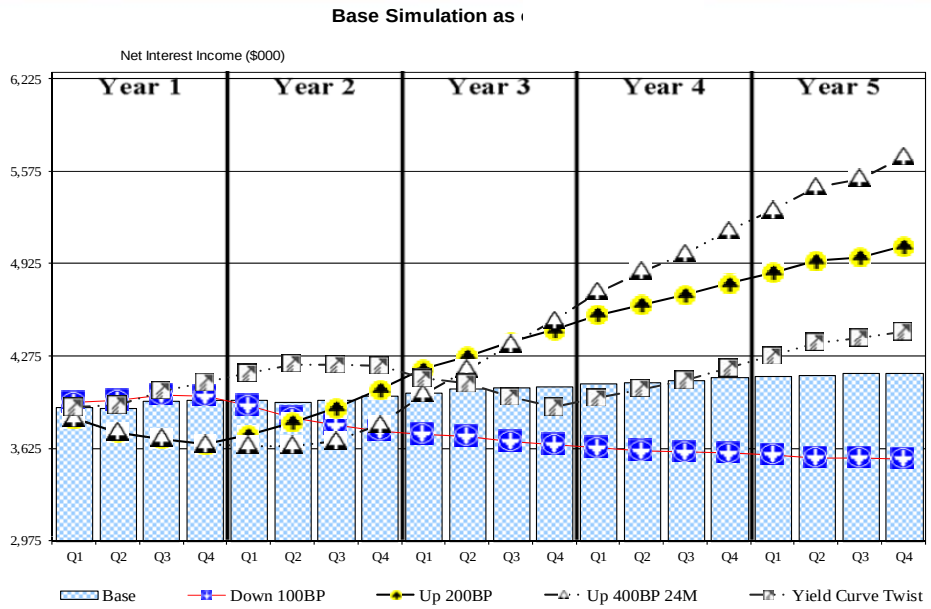
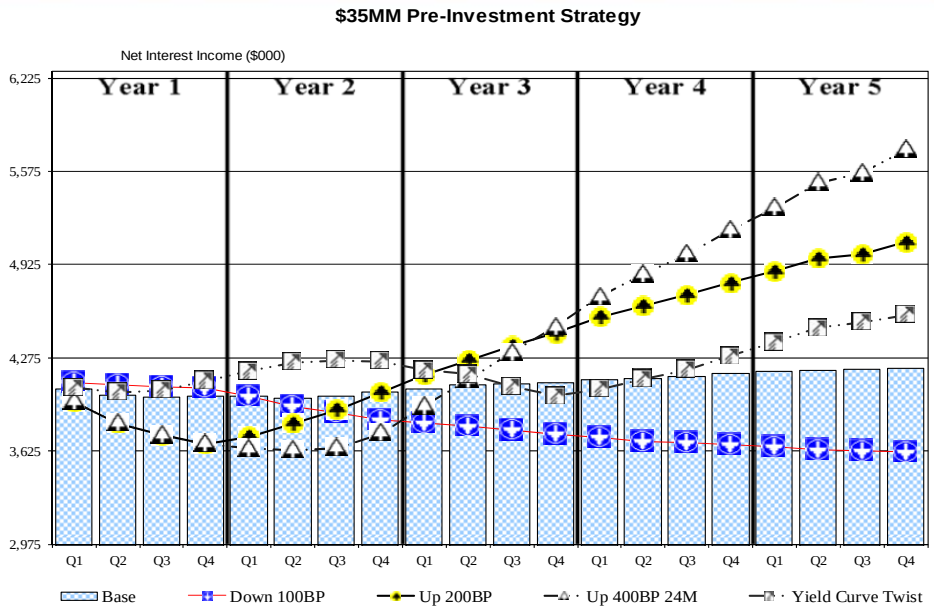
Pre-investment Cash Flows to MBS@2.32%





NII SUMMARY

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Yield Curve Twist
Year-1 NII	15,897	15,730	14,911	14,911	15,956
Year-2 NII	15,300	15,861	15,472	14,748	16,787
Year-3 NII	14,756	16,161	17,284	17,062	16,098
Year-4 NII	14,431	16,383	18,689	19,741	16,313
Year-5 NII	14,237	16,577	19,826	21,958	17,489

NII SUMMARY

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Yield Curve Twist
Year-1 NII	16,326	16,101	15,200	15,200	16,265
Year-2 NII	15,687	16,065	15,494	14,671	16,936
Year-3 NII	15,133	16,364	17,223	16,863	16,434
Year-4 NII	14,766	16,586	18,714	19,723	16,671
Year-5 NII	14,533	16,780	19,927	22,099	17,970

CHANGE / DIFFERENCE IN RESULTS

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Yield Curve Twist
Year-1 NII	429	371	289	289	309
Year-2 NII	387	203	21	-76	150
Year-3 NII	378	203	-61	-198	336
Year-4 NII	334	203	25	-18	358
Year-5 NII	296	203	101	141	481

Pre-invest $35MM into a 15 Yr MBS at 2.32% and funded with overnight borrowings. The overnight borrowings are paid down with investment cash flow.

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Example 1:
Loan Growth Critical

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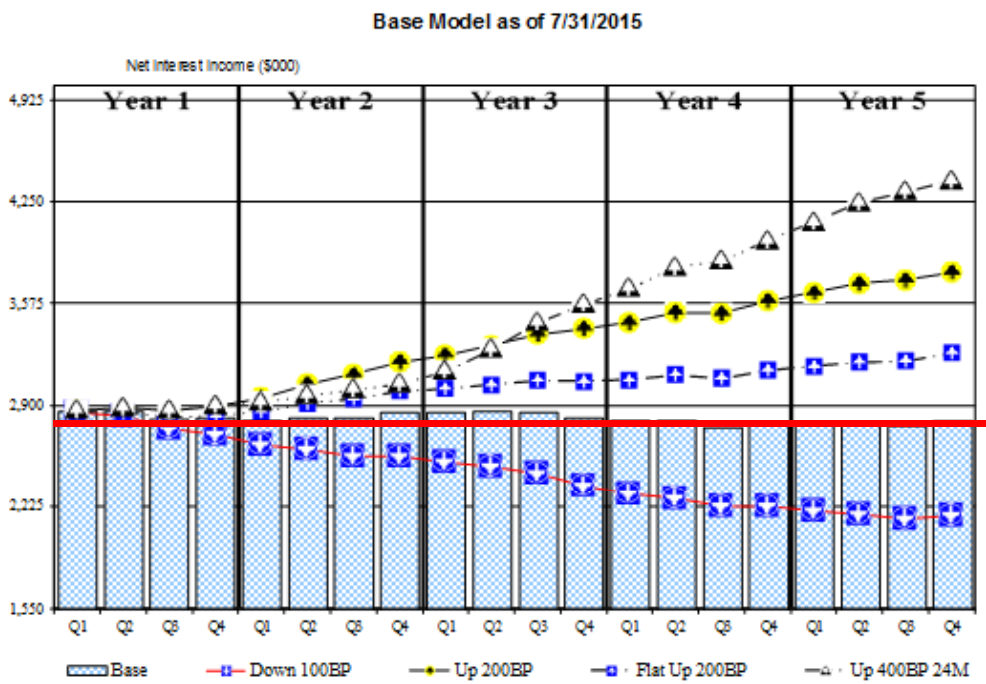
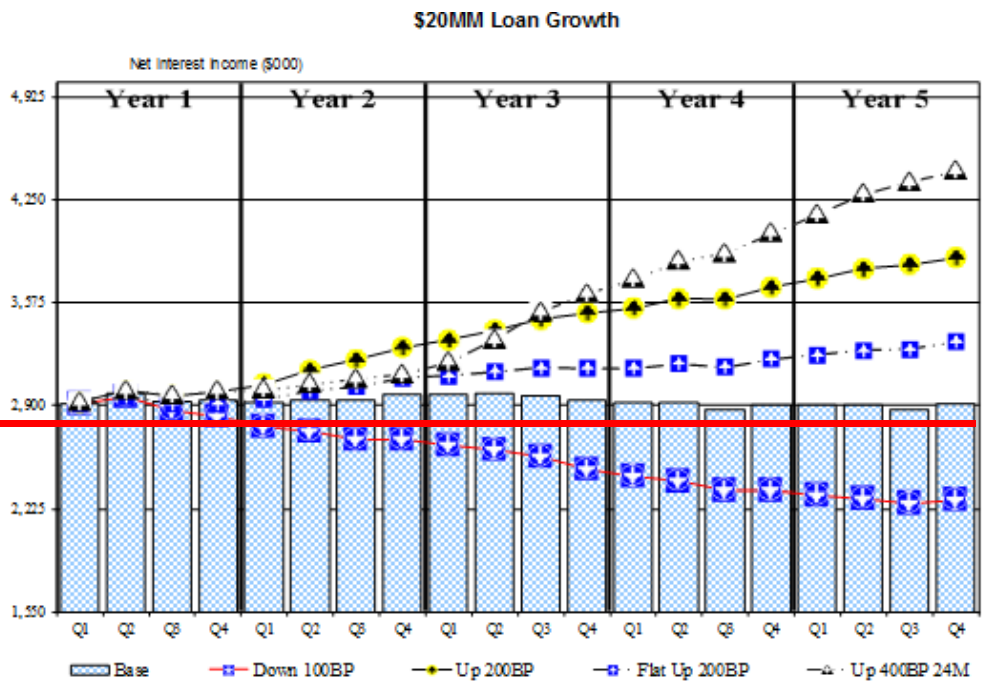
Loan Growth Funded with Investments & FHLB





- $20MM Loan Growth (combination of ARMs & Long Term Loans)
- Funded $10MM Bond CF, $5MM ST FHLB, $5MM 3Yr FHLB

Question: Do we need term borrowings? NO, but feels better for some

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Loan Growth Impact on Liquidity

					Oct-15	Jan-16	Apr-16
Cash In/Out Flow					($16,424)	($16,583)	($15,977)
Cumulative					($288)	($16,871)	($32,848)
Starting Cash Position				$16,136			
COLLATERALIZED/SECURED FUNDING RESOURCES	**Gross Avail Collateral**	**Weighted Haircut**	**Avail. Coll. (Net Haircut)**	**Avail. Capacity**			
Free UST/GSE Bond Collateral	$50,792	5.00%	$48,252	$14,947	$14,364	$14,364	$14,364
Free Non-GSE Bond Collateral			$0	$0	$0	$0	$0
Loan Based Borrowing Capacity(FHLB)			$98,946	$74,946	$76,319	$80,723	$85,056
Residential Mtg Loan Collateral(FHLB)	*$108,267*	*25.00%*	*$81,200*	*$74,946*	*$79,222*	*$82,917*	*$86,453*
Non-Residential Mtg Loan Collateral (FHLB)	*$35,492*	*50.00%*	*$17,746*	*$0*	*($2,903)*	*($2,193)*	*($1,398)*
TOTAL PRIMARY LIQUIDITY				**$89,894**	**$90,683**	**$95,088**	**$99,420**
				21.97%	22.22%	23.30%	24.36%
OTHER LIQUIDITY RESOURCES	**Maximum Capacity**			**Avail. Capacity**			
Unsecured Funding							
Remaining Brokered Deposit Capacity	$40,916			$40,616	$40,616	$40,616	$40,616
Other Unsecured Funds (i.e. Fed Fund Lines..)	$6,500			$6,500	$6,500	$6,500	$6,500
Other Secured Funding Resource(s)							
Other Loan Based Borrowing Capacity (FRB)			$0	$0	$0	$0	$0
TOTAL OTHER LIQUIDITY RESOURCES				**$47,116**	**$47,116**	**$47,116**	**$47,116**
				11.52%	11.54%	11.54%	11.54%
Total Funds Availability ($000)				**$153,145**	**$137,511**	**$125,332**	**$113,688**
Total Assets ($000)				**$409,156**	**$408,156**	**$408,156**	**$408,156**
Total Funds Availability (% of Assets)				**37.43%**	**33.69%**	**30.71%**	**27.85%**
LIQUIDITY MINIMUM (% of Assets)				**5.00%**	**5.00%**	**5.00%**	**5.00%**
FUNDING EXCESS/(SHORTFALL)				**$132,687**	**$117,103**	**$104,924**	**$93,280**

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Example 2:

Loan Growth for Liability Sensitive Position

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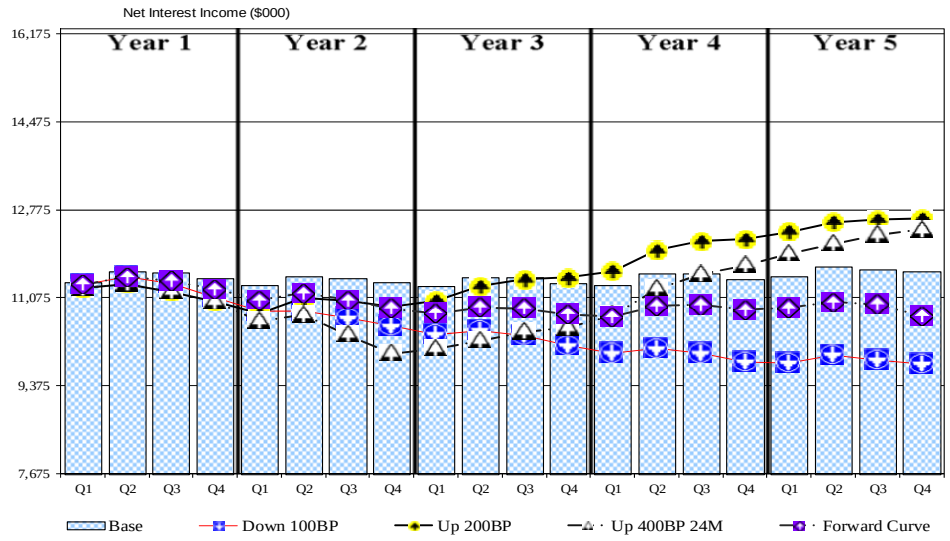
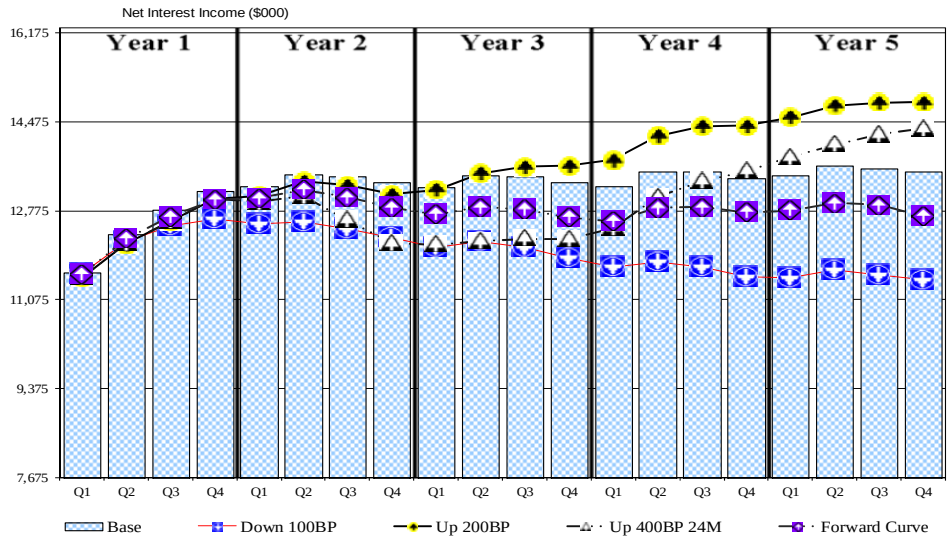
1 Year Growth Model: $232 Million

Base Simulation as of 11/30/2015



Growth Model



NII SUMMARY

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Forward Curve
Year-1 NII	45,240	45,923	44,782	44,793	45,439
Year-2 NII	42,873	45,605	43,746	41,734	44,096
Year-3 NII	41,299	45,567	45,210	41,247	43,283
Year-4 NII	39,926	45,823	47,950	45,215	43,404
Year-5 NII	39,461	46,319	50,066	48,738	43,536

NII SUMMARY

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Forward Curve
Year-1 NII	48,841	49,870	49,218	49,230	49,442
Year-2 NII	49,792	53,477	52,750	50,734	52,059
Year-3 NII	48,190	53,439	53,919	48,774	50,997
Year-4 NII	46,699	53,695	56,742	52,353	50,997
Year-5 NII	46,161	54,217	59,037	56,419	51,254

CHANGE / DIFFERENCE IN RESULTS

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Forward Curve
Year-1 NII	3,602	3,947	4,437	4,437	4,003
Year-2 NII	6,920	7,872	9,004	9,000	7,963
Year-3 NII	6,890	7,872	8,708	7,527	7,714
Year-4 NII	6,773	7,872	8,793	7,139	7,593
Year-5 NII	6,700	7,897	8,971	7,681	7,718

Assumes $232 million of asset growth over the next 12 months: CRE: $140MM, C&I: $75MM, CRE Construction: $9MM, and Agencies: $64MM.
Growth funded by the following: DDA: $20MM, MMDA: $88MM, TD: $151MM, and FRB Cash: $52MM (assumes $44MM of NOW and Savings outflows).
Note: $52MM of Agency purchases with cash is captured as subsequent activity in the base simulation.

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Example 3:

Getting CASH OUT!

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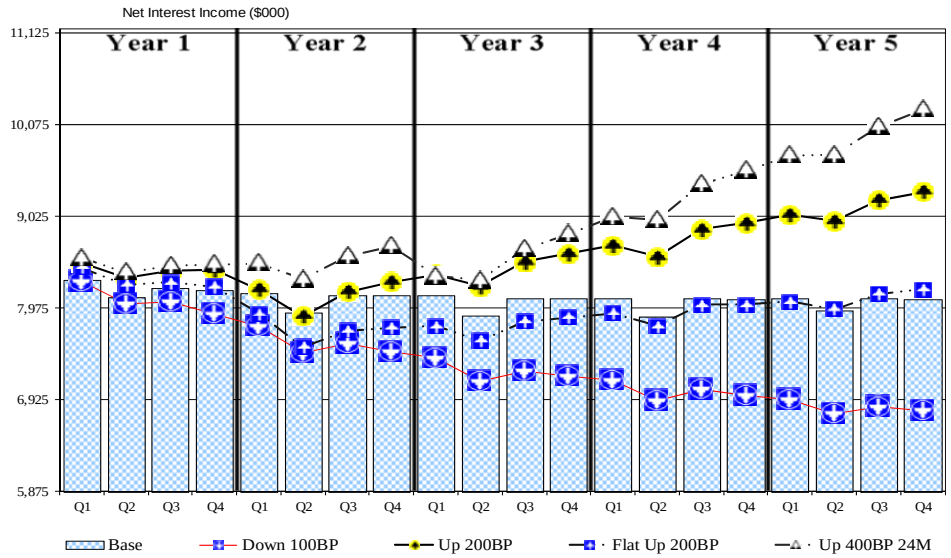
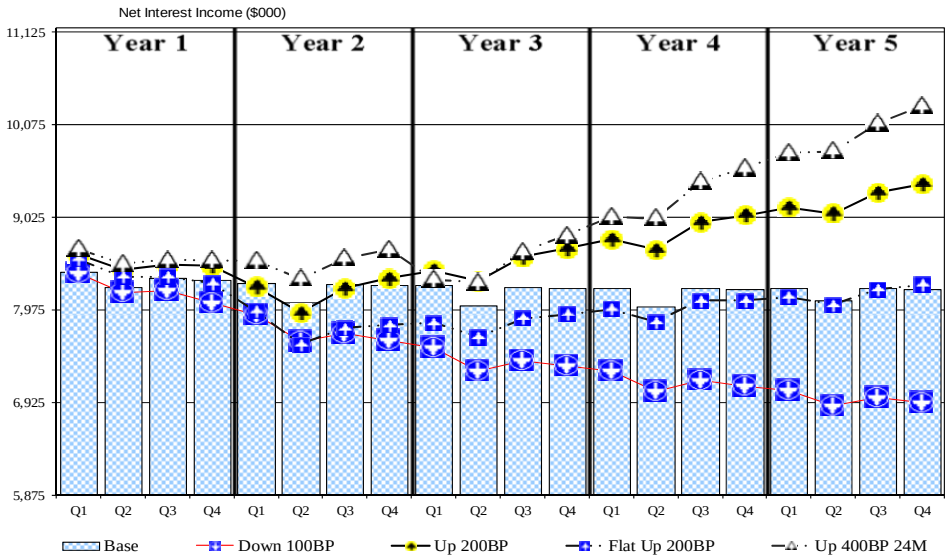
$20MM Loan Growth & Investments Funded by CASH

Base Simulation as of 10/31/2015



Redeployment of Cash Investments



NII SUMMARY

	Down 100BP	Base	Up 200BP	Flat Up 200BP	Up 400BP 24M
Year-1 NII	32,242	32,755	33,616	33,167	33,856
Year-2 NII	30,258	32,289	32,491	30,905	34,038
Year-3 NII	28,988	32,162	33,675	31,052	34,105
Year-4 NII	28,075	32,094	35,074	31,706	36,932
Year-5 NII	27,325	32,154	36,519	32,333	39,735

NII SUMMARY

	Down 100BP	Base	Up 200BP	Flat Up 200BP	Up 400BP 24M
Year-1 NII	32,813	33,318	33,996	33,527	34,236
Year-2 NII	30,862	32,876	32,735	31,117	34,068
Year-3 NII	29,569	32,749	33,970	31,291	34,054
Year-4 NII	28,619	32,681	35,444	31,981	37,041
Year-5 NII	27,854	32,741	36,916	32,620	39,901

CHANGE / DIFFERENCE IN RESULTS

	Down 100BP	Base	Up 200BP	Flat Up 200BP	Up 400BP 24M
Year-1 NII	571	563	380	361	380
Year-2 NII	605	587	244	211	30
Year-3 NII	581	587	295	239	-51
Year-4 NII	544	587	370	275	108
Year-5 NII	530	587	396	286	166

Assume $20MM of cash investments are redeployed.
Cash redeploys into $14MM 30yr Residential @ 4.00%, $1.5MM 2yr UST @ 0.95%, $3MM 3yr UST @ 1.25%, and $1.5MM 5yr UST @ 1.75%.

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Example 4:

Earnings Enhance/Capital Management Strategy (a.k.a. LEVERAGE)

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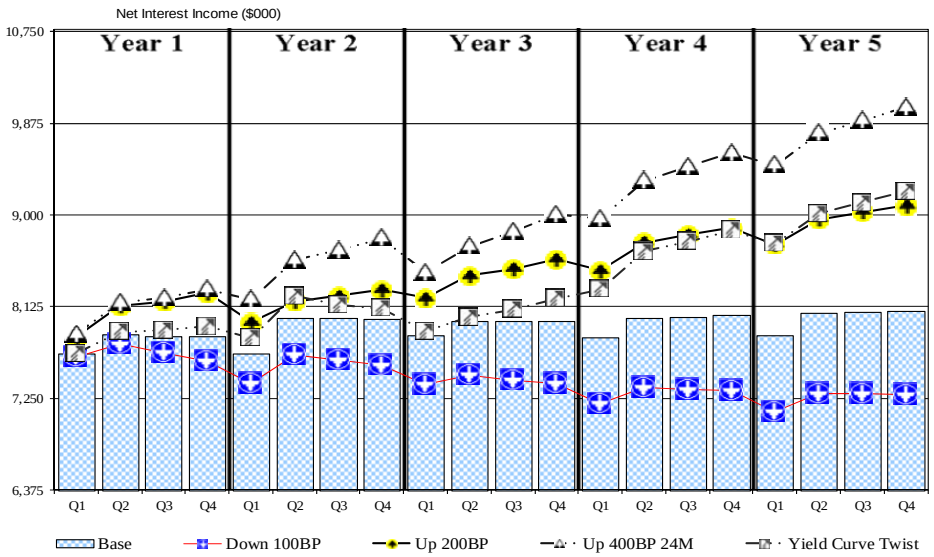
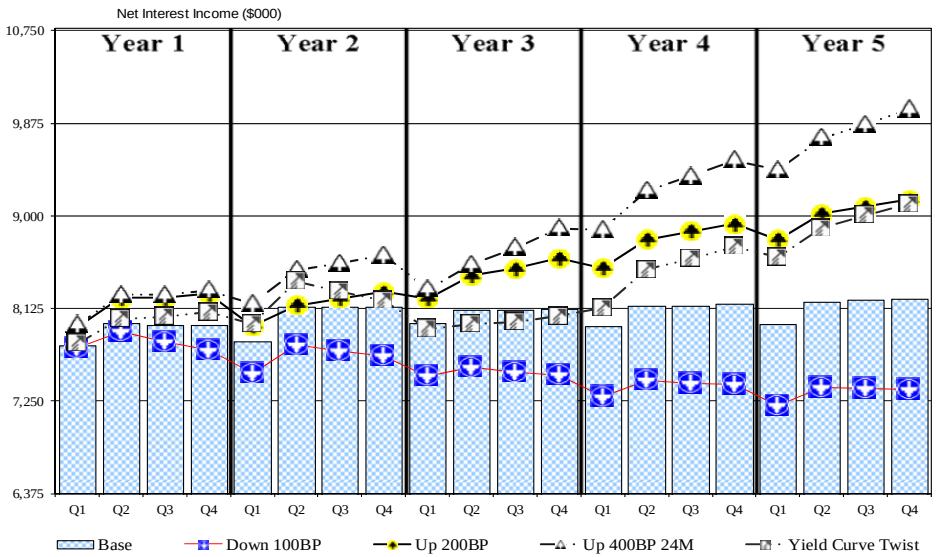
MBS Purchase Funded w/ Short-Term FHLB

Base Simulatio[illegible]



$40MM 10Y 2.5% Coupon MBS Purchase Funded Short



NII SUMMARY

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Yield Curve Twist
Year-1 NII	30,708	31,196	32,391	32,513	31,397
Year-2 NII	30,235	31,694	32,662	34,197	32,297
Year-3 NII	29,665	31,800	33,691	34,990	32,212
Year-4 NII	29,217	31,898	34,886	37,335	34,544
Year-5 NII	28,998	32,053	35,789	39,181	36,080

NII SUMMARY

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Yield Curve Twist
Year-1 NII	31,198	31,719	32,656	32,778	31,959
Year-2 NII	30,699	32,241	32,614	33,835	32,855
Year-3 NII	30,068	32,346	33,758	34,430	31,959
Year-4 NII	29,570	32,444	35,056	37,002	33,924
Year-5 NII	29,310	32,599	36,042	39,041	35,617

CHANGE / DIFFERENCE IN RESULTS

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Yield Curve Twist
Year-1 NII	489	523	265	265	563
Year-2 NII	465	546	-48	-362	558
Year-3 NII	403	546	67	-559	-253
Year-4 NII	353	546	171	-333	-620
Year-5 NII	312	546	253	-140	-463

A $40MM purchase of 10Y 2.50% MBS securities (1.67%) is funded via 3M FHLB advances (0.30%).

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Example 5:

Funding Extension

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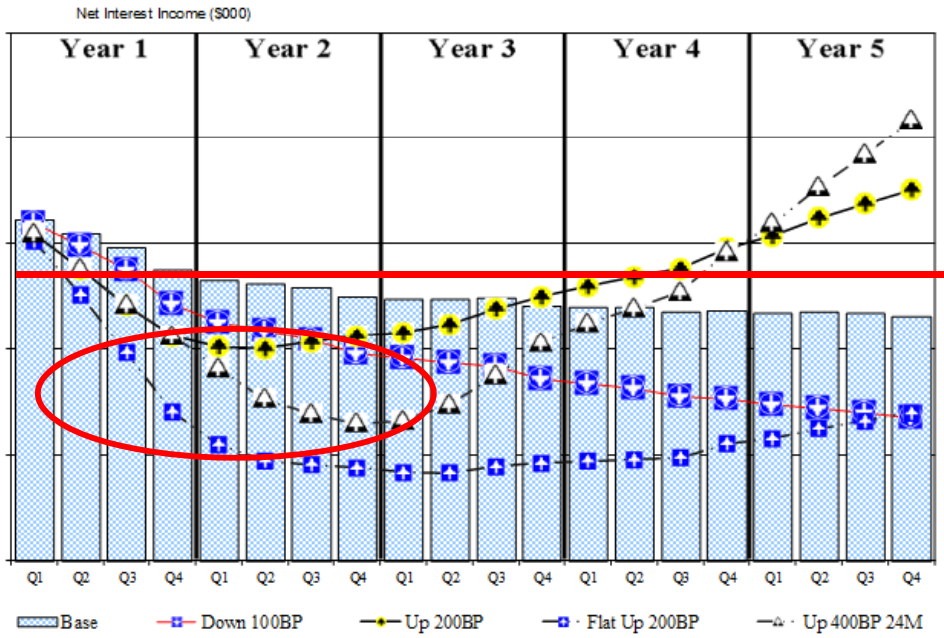
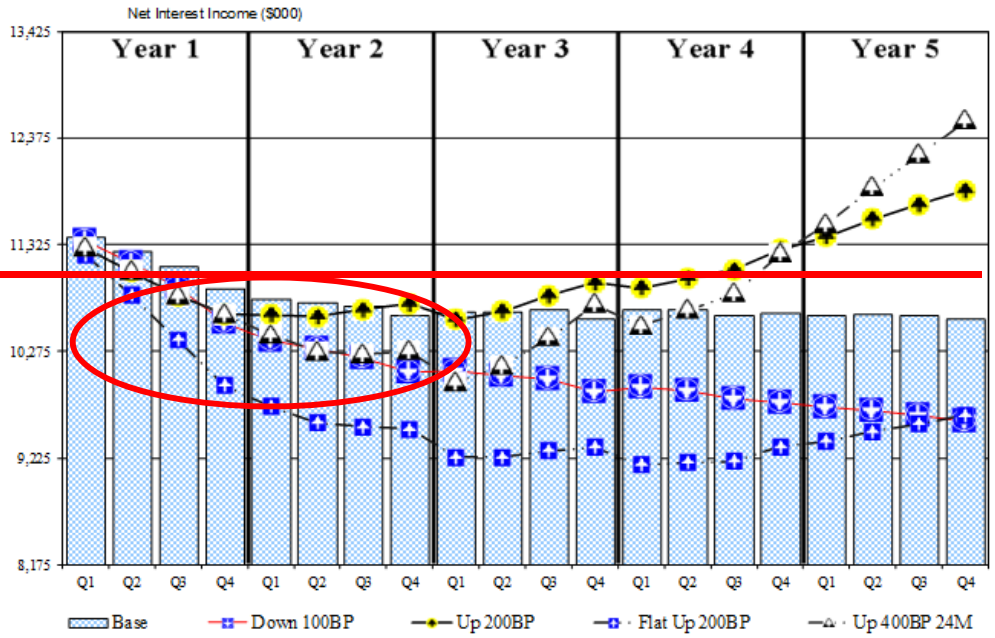
Funding Extension? Earnings Impact?





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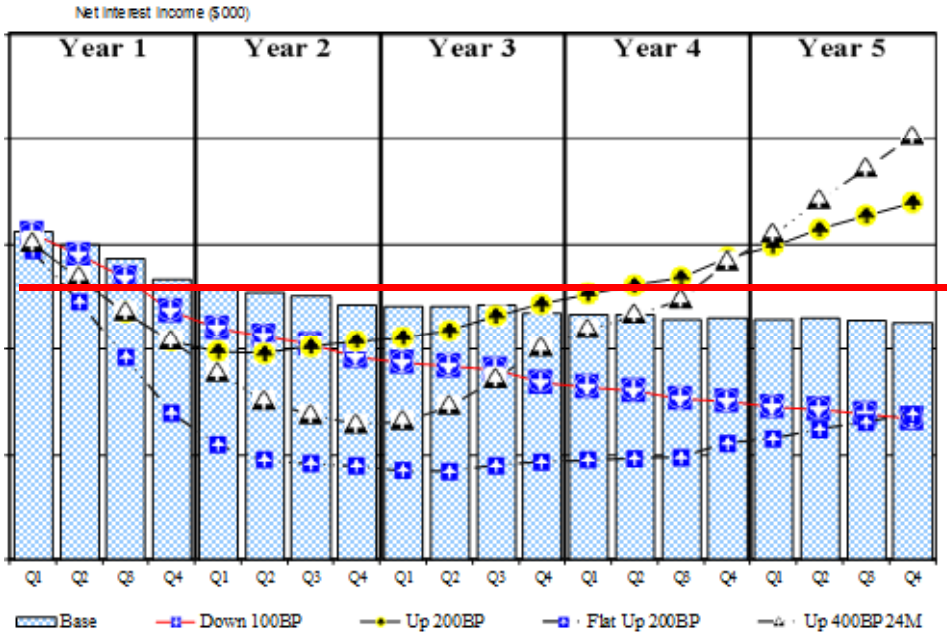
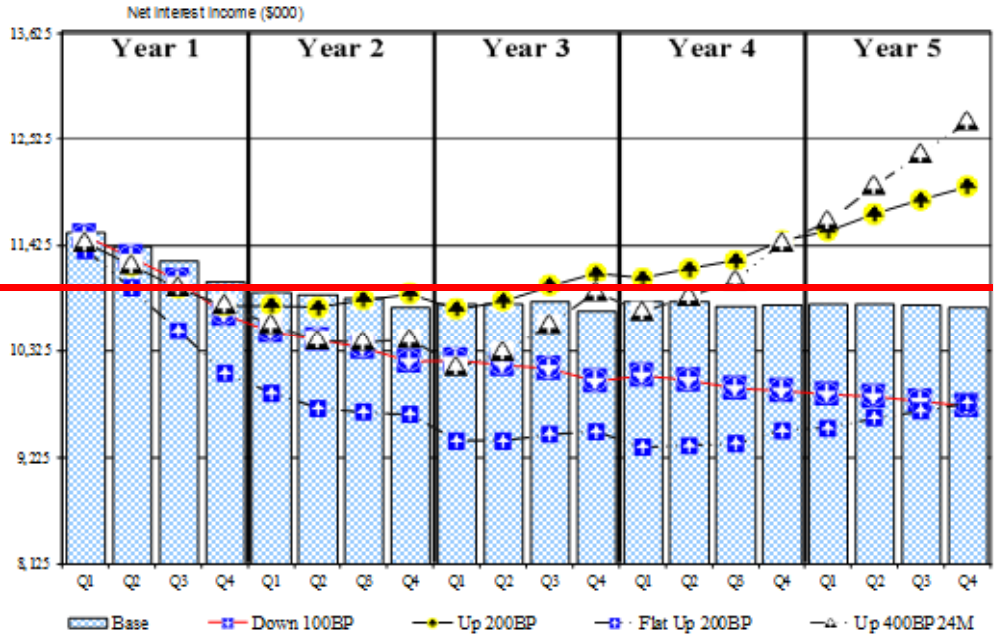
Funding Extension with Growth





Impact of adding growth to funding extension

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Market with Strong Loan Demand

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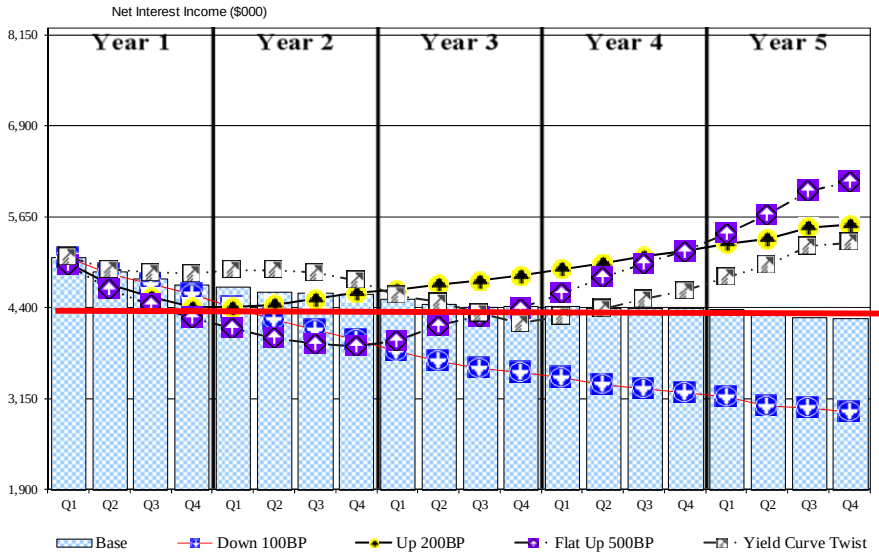
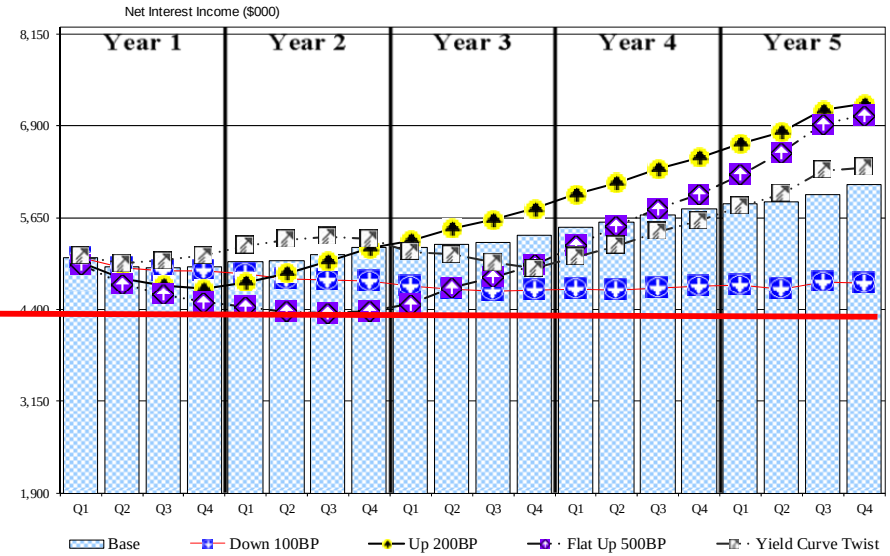
Reinvest "Investment" Cash Flow into *Loans*

Base Simulation as of 9/30/2013



Alt Investment Cash Flow Assumption - Loans



NII SUMMARY

	Down 100BP	Base	Up 200BP	Flat Up 500BP	Yield Curve Twist
Year-1 NII	19,254	19,478	18,679	18,330	19,775
Year-2 NII	16,686	18,461	17,968	15,871	19,486
Year-3 NII	14,544	17,766	18,969	16,774	17,540
Year-4 NII	13,295	17,574	20,226	19,596	17,815
Year-5 NII	12,205	17,184	21,659	23,230	20,332

NII SUMMARY

	Down 100BP	Base	Up 200BP	Flat Up 500BP	Yield Curve Twist
Year-1 NII	19,934	20,079	19,270	18,869	20,359
Year-2 NII	19,292	20,547	19,963	17,529	21,363
Year-3 NII	18,697	21,286	22,238	19,011	20,327
Year-4 NII	18,753	22,620	24,887	22,550	21,461
Year-5 NII	18,956	23,812	27,785	26,741	24,411

CHANGE / DIFFERENCE IN RESULTS

	Down 100BP	Base	Up 200BP	Flat Up 500BP	Yield Curve Twist
Year-1 NII	680	601	590	538	584
Year-2 NII	2,606	2,087	1,995	1,658	1,877
Year-3 NII	4,152	3,521	3,268	2,237	2,787
Year-4 NII	5,458	5,046	4,661	2,954	3,647
Year-5 NII	6,752	6,628	6,126	3,511	4,079

NOTE: In the base simulation, all investment cash flow is assumed to roll into a blend of 2-5 year Agencies and Investment CDs.
This alternative simulation assumes that all investment cash flow will fund 30 Yr Residential mortgages @ 4.25%.

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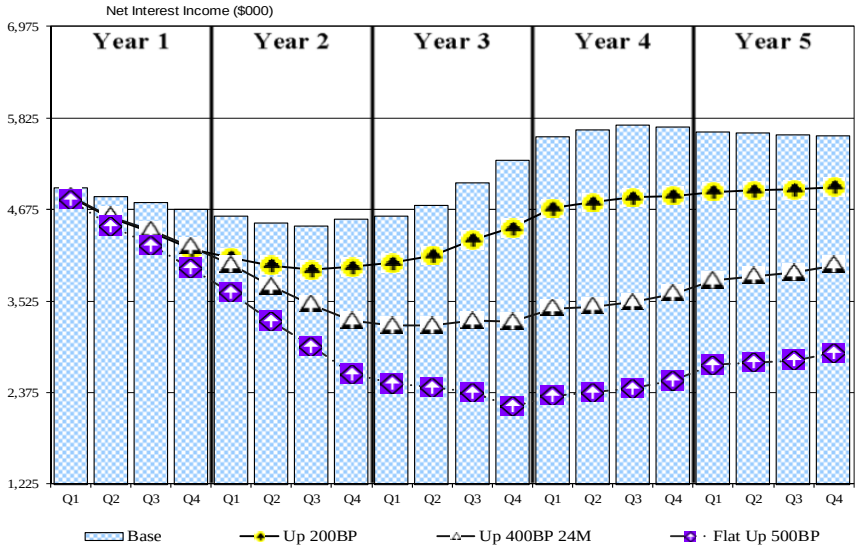
Portfolio Mortgages & Adjust Deposit Pricing

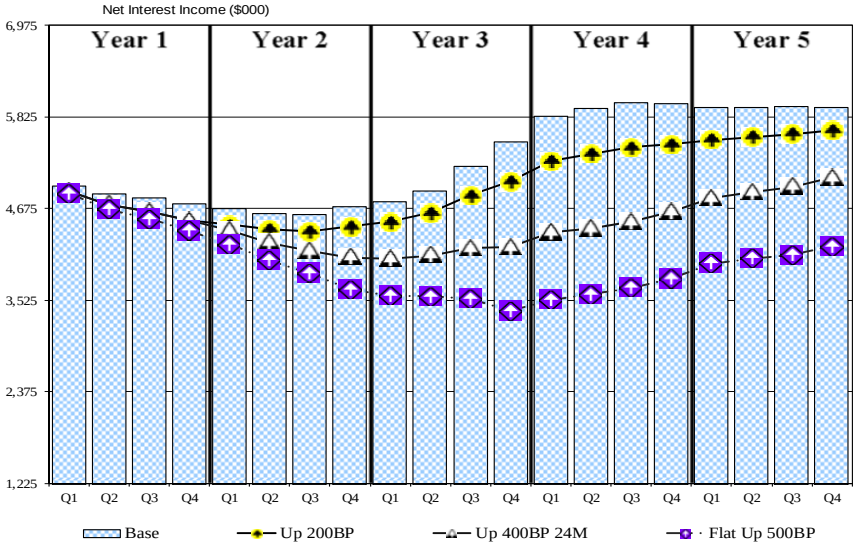
Base Model as of 12/31/2014



NII SUMMARY

	Base	Up 200BP	Up 400BP 24M	Flat Up 500BP
Year-1 NII	19,237	17,971	18,040	17,430
Year-2 NII	18,115	15,916	14,433	12,466
Year-3 NII	19,624	16,838	12,970	9,497
Year-4 NII	22,719	19,127	14,007	9,665
Year-5 NII	22,500	19,688	15,473	11,121

Combined Alt. Bond Cashflow/Deposit Pricing



NII SUMMARY

	Base	Up 200BP	Up 400BP 24M	Flat Up 500BP
Year-1 NII	19,390	18,763	18,769	18,461
Year-2 NII	18,599	17,717	16,845	15,763
Year-3 NII	20,392	18,980	16,492	14,086
Year-4 NII	23,767	21,559	17,930	14,601
Year-5 NII	23,802	22,377	19,687	16,327

CHANGE / DIFFERENCE IN RESULTS

	Base	Up 200BP	Up 400BP 24M	Flat Up 500BP
Year-1 NII	153	792	729	1,031
Year-2 NII	484	1,801	2,412	3,297
Year-3 NII	768	2,141	3,521	4,589
Year-4 NII	1,048	2,432	3,923	4,936
Year-5 NII	1,303	2,688	4,214	5,206

Assumes all bond cashflow reinvests into 30 YR fixed mortgages @ 3.90% (rather than a 20 YR MBS @ 2.00% in the base case simulation).Assumes all bond cashflow reinvests into 30 YR fixed mortgages @ 3.90% (rather than a 20 YR MBS @ 2.00% in the
Assumes deposit betas are based-off those from the 6/30/14 review. Aggregate betas of NMD's & CD's in strategy are approximately 50% & 90% respectively.
Aggregate betas of NMD's & CD's in base case simulation are approximately 75% & 100% respectively.

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Market with Weak Loan Demand

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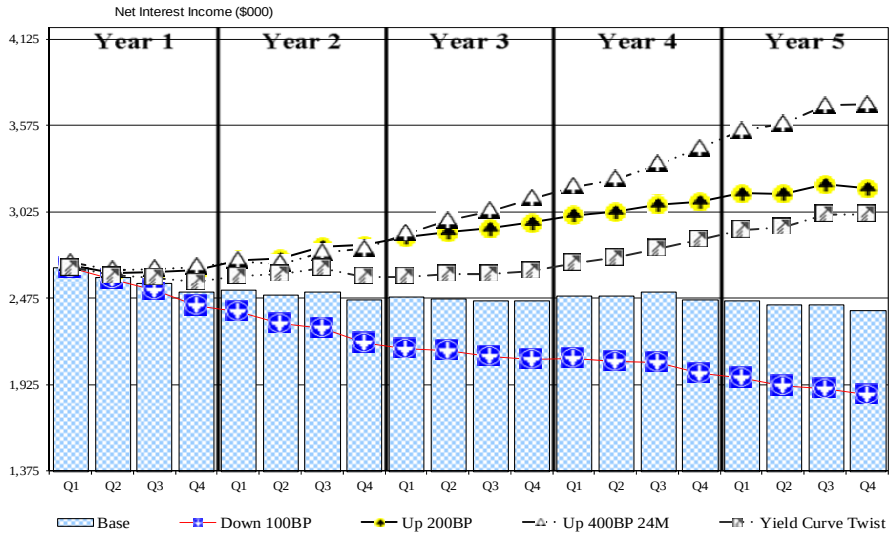
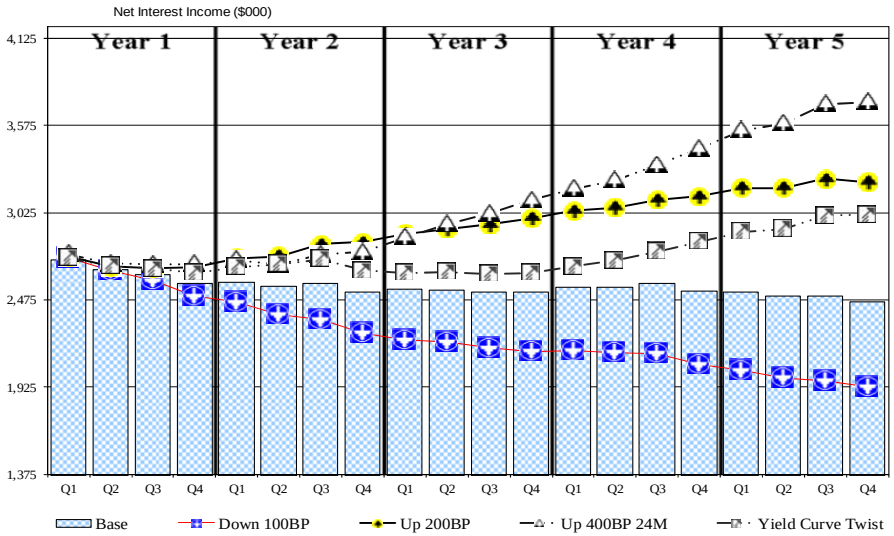
$10 Million Loan Purchase Funded "Short"

Base Model as of 4/30/2014



$10M Purchased Loans



NII SUMMARY

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Yield Curve Twist
Year-1 NII	10,214	10,355	10,608	10,688	10,471
Year-2 NII	9,176	9,992	11,056	10,956	10,517
Year-3 NII	8,480	9,863	11,626	11,990	10,515
Year-4 NII	8,230	9,953	12,185	13,167	11,063
Year-5 NII	7,645	9,715	12,652	14,532	11,852

NII SUMMARY

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Yield Curve Twist
Year-1 NII	10,497	10,629	10,787	10,867	10,747
Year-2 NII	9,463	10,271	11,158	10,963	10,778
Year-3 NII	8,758	10,146	11,753	11,941	10,583
Year-4 NII	8,501	10,239	12,334	13,160	11,031
Year-5 NII	7,910	10,005	12,820	14,563	11,842

CHANGE / DIFFERENCE IN RESULTS

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Yield Curve Twist
Year-1 NII	283	274	179	179	276
Year-2 NII	287	279	102	7	260
Year-3 NII	278	283	127	-48	68
Year-4 NII	271	286	149	-7	-32
Year-5 NII	265	290	168	30	-10

This model assumes $5M of Resi 5/1 ARM (@ 2.50%), $2.5M of Resi 7/1 ARM (@ 3%) and $2.5M of 30 Yr Jumbo (@ 3.875%) funded with short term funding (@ 25 bps).

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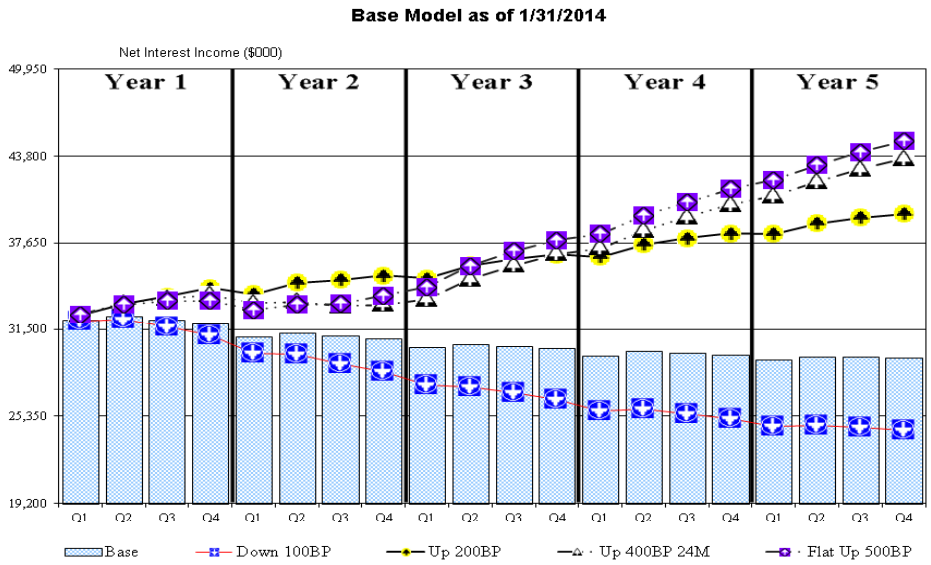
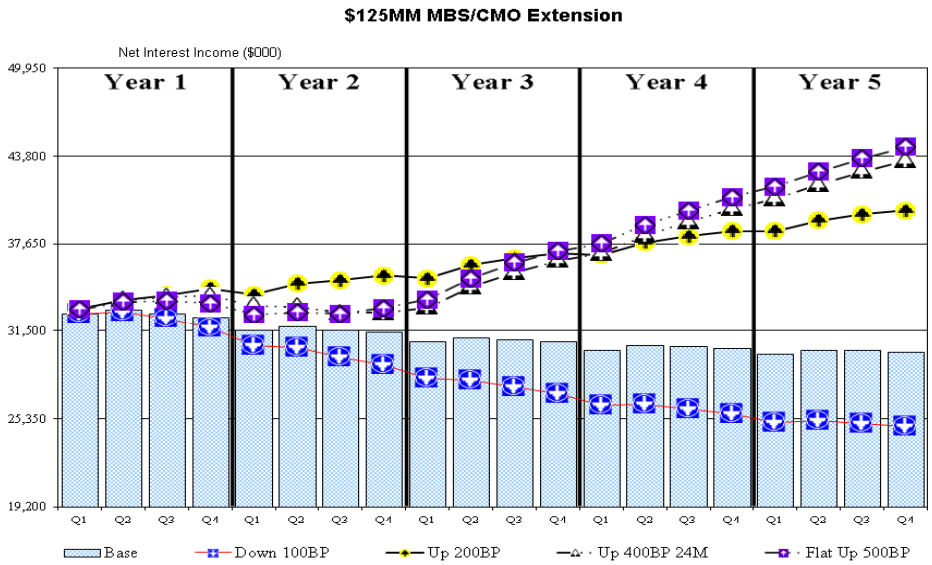
Extension of Overnight "Cash" to 15 Year MBS





NII SUMMARY

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Flat Up 500BP
Year-1 NII	127,104	128,660	134,224	133,820	132,956
Year-2 NII	116,962	123,921	139,274	133,311	133,502
Year-3 NII	108,475	120,950	144,554	141,673	145,495
Year-4 NII	102,221	118,897	150,555	155,654	159,924
Year-5 NII	98,234	117,758	156,530	169,433	174,250

NII SUMMARY

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Flat Up 500BP
Year-1 NII	129,753	131,174	135,399	134,794	133,788
Year-2 NII	119,561	126,435	139,504	132,204	131,439
Year-3 NII	110,810	123,464	145,049	139,908	142,524
Year-4 NII	104,313	121,411	151,337	154,471	157,584
Year-5 NII	100,134	120,272	157,582	168,801	172,506

CHANGE / DIFFERENCE IN RESULTS

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Flat Up 500BP
Year-1 NII	2,650	2,514	1,175	1,174	833
Year-2 NII	2,599	2,514	230	-1,107	-2,062
Year-3 NII	2,335	2,514	494	-1,765	-2,971
Year-4 NII	2,092	2,514	782	-1,183	-2,340
Year-5 NII	1,899	2,514	1,052	-632	-1,744

Extend $125MM of overnight investments into a 50/50 split of 15 Yr MBS at 2.31% and 4 Yr CMO at 2.22%.

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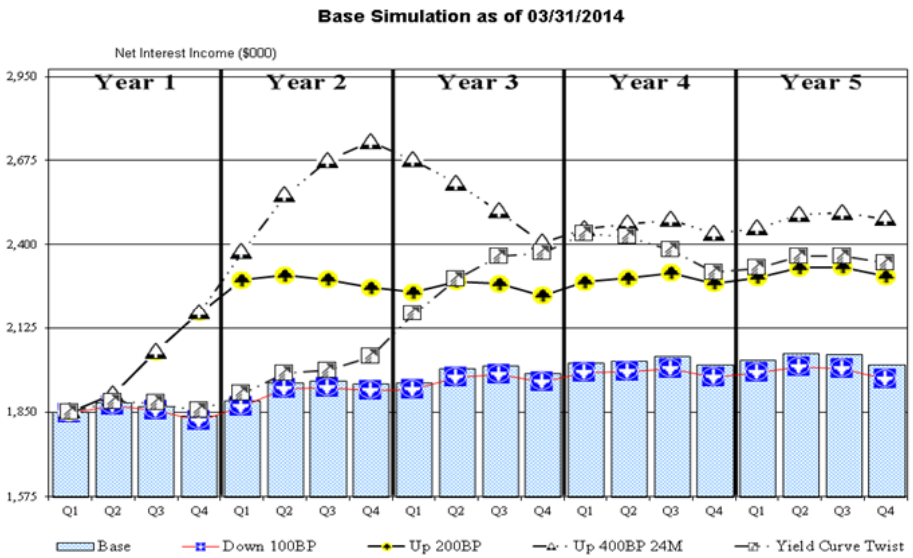
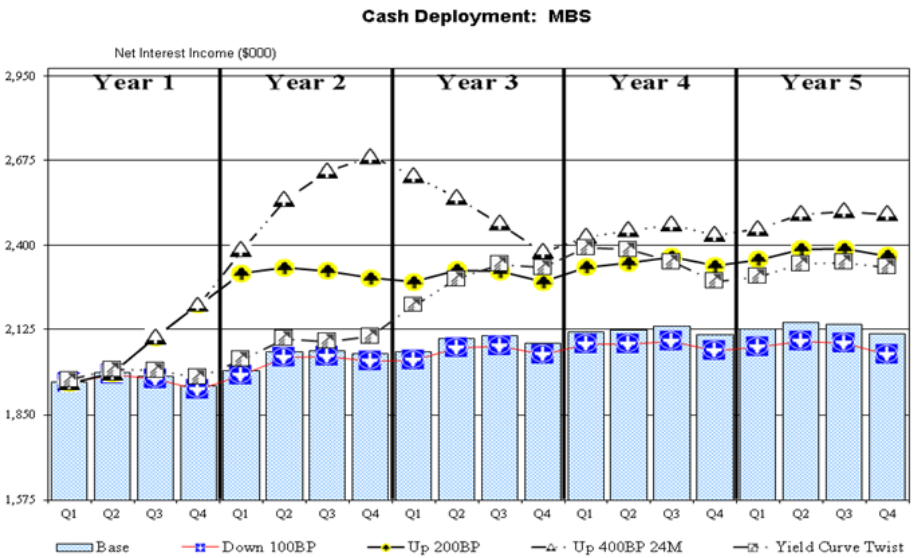
Strategy "Revisited" Cash Deployment into MBS (discuss "why" avoided so long)





NII SUMMARY

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Yield Curve Twist
Year-1 NII	7,394	7,435	7,984	7,984	7,469
Year-2 NII	7,644	7,723	9,130	10,341	7,902
Year-3 NII	7,807	7,910	9,029	10,188	9,193
Year-4 NII	7,916	8,059	9,150	9,834	9,551
Year-5 NII	7,921	8,101	9,241	9,936	9,385

NII SUMMARY

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Yield Curve Twist
Year-1 NII	7,828	7,868	8,241	8,241	7,921
Year-2 NII	8,070	8,156	9,251	10,255	8,310
Year-3 NII	8,206	8,344	9,203	10,026	9,164
Year-4 NII	8,293	8,492	9,369	9,775	9,409
Year-5 NII	8,280	8,534	9,497	9,964	9,314

CHANGE / DIFFERENCE IN RESULTS

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Yield Curve Twist
Year-1 NII	434	433	258	258	453
Year-2 NII	426	433	120	-86	408
Year-3 NII	400	433	174	-161	-29
Year-4 NII	377	433	219	-59	-142
Year-5 NII	359	433	256	28	-72

$20 million is assumed to immediately fund MBS purchases:
$15 million in 15 Year MBS @ 2.26% and $5 million in 20 Year MBS @ 2.72%.

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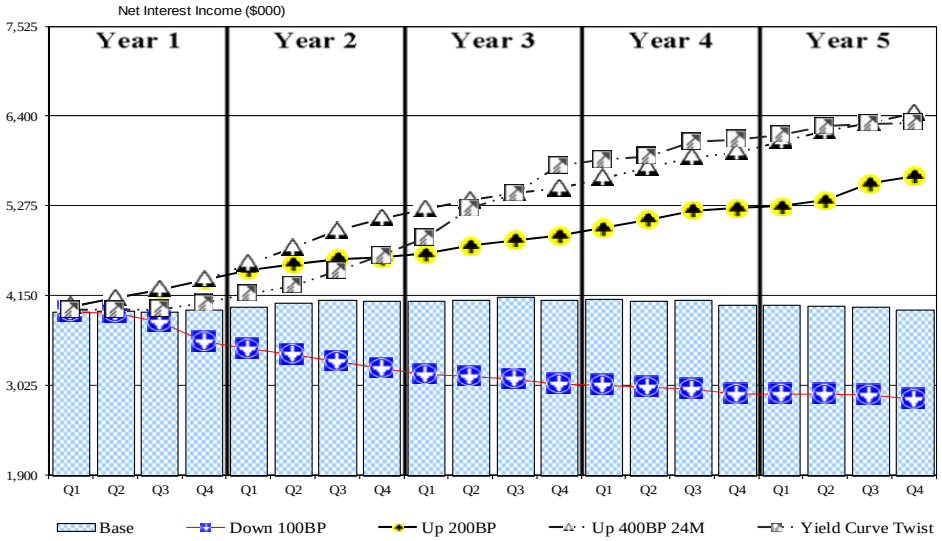
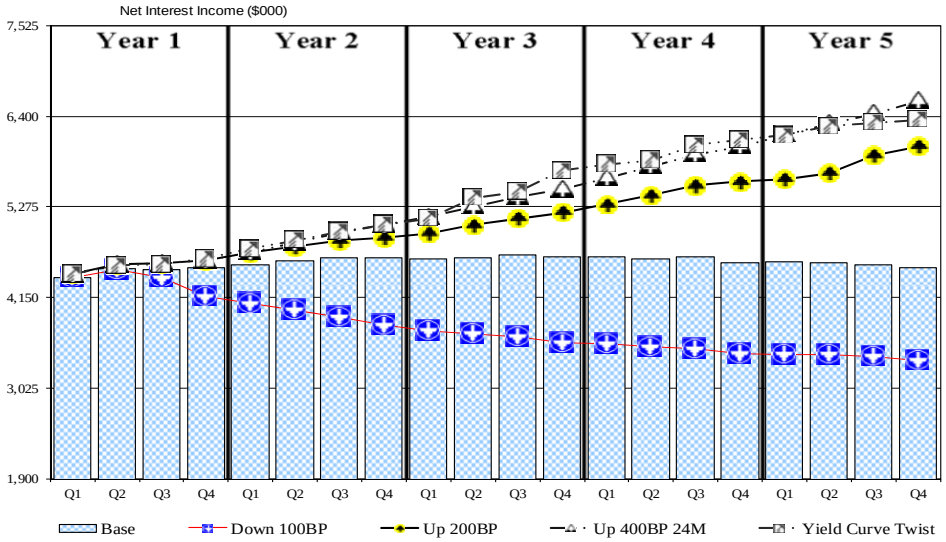
$75 Million Cash Extension into MBS

Base Simulation as of 3/31/2014



$75 Million MBS Purchase



NII SUMMARY

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Yield Curve Twist
Year-1 NII	15,263	15,795	16,713	16,709	15,975
Year-2 NII	13,465	16,229	18,251	19,368	17,557
Year-3 NII	12,447	16,387	19,191	21,503	21,324
Year-4 NII	11,934	16,301	20,564	23,202	23,931
Year-5 NII	11,579	16,023	21,817	25,034	25,057

NII SUMMARY

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Yield Curve Twist
Year-1 NII	17,447	17,948	18,178	18,174	18,178
Year-2 NII	15,781	18,483	19,221	19,543	19,637
Year-3 NII	14,684	18,642	20,325	21,310	21,690
Year-4 NII	14,090	18,556	21,858	23,359	23,795
Year-5 NII	13,665	18,277	23,250	25,494	25,115

CHANGE / DIFFERENCE IN RESULTS

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Yield Curve Twist
Year-1 NII	2,185	2,153	1,465	1,465	2,203
Year-2 NII	2,317	2,254	970	175	2,080
Year-3 NII	2,237	2,255	1,134	-193	366
Year-4 NII	2,156	2,255	1,294	157	-136
Year-5 NII	2,086	2,255	1,433	460	57

Assumes $75 million of cash equivalents is invested evenly in month one into a 15 year MBS at 2.77% and a 30 year discounted jumbo MBS at 3.75%.

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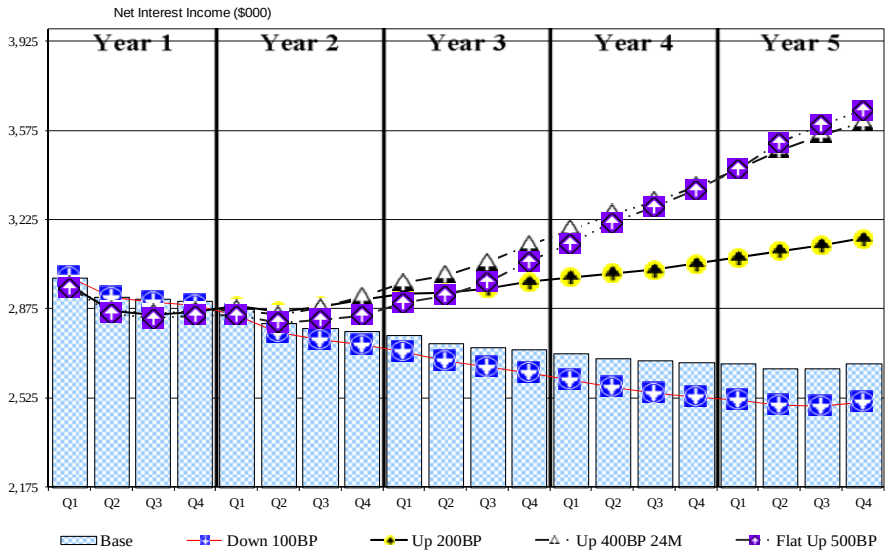
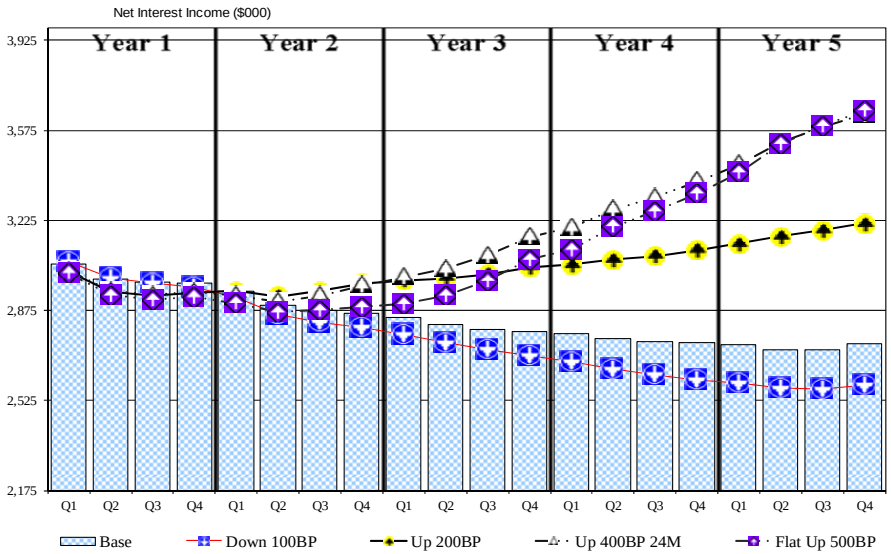
Purchase "Discounted" 30 Year MBS Funded with Laddered FHLBNY Advances

Base Simulatio



MBS Purchases



NII SUMMARY

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Flat Up 500BP
Year-1 NII	11,710	11,727	11,548	11,557	11,497
Year-2 NII	11,115	11,272	11,542	11,518	11,347
Year-3 NII	10,646	10,943	11,808	12,162	11,862
Year-4 NII	10,237	10,710	12,094	13,081	12,958
Year-5 NII	10,011	10,592	12,453	14,081	14,198

NII SUMMARY

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Flat Up 500BP
Year-1 NII	12,010	12,034	11,855	11,864	11,799
Year-2 NII	11,427	11,599	11,811	11,750	11,538
Year-3 NII	10,956	11,279	12,052	12,290	11,897
Year-4 NII	10,556	11,066	12,323	13,158	12,904
Year-5 NII	10,321	10,948	12,700	14,197	14,181

CHANGE / DIFFERENCE IN RESULTS

	Down 100BP	Base	Up 200BP	Up 400BP 24M	Flat Up 500BP
Year-1 NII	300	307	308	308	302
Year-2 NII	313	327	269	232	190
Year-3 NII	310	336	243	128	35
Year-4 NII	319	357	229	78	-54
Year-5 NII	310	357	247	116	-17

$10MM of 30Y Jumbo MBS @ 3.74% is funded with $4MM of 1Y FHLB, $3MM 2Y FHLB, and $3MM 3Y FHLB.

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Key Takeaways

- Margins Under Pressure….expect more of the same 2016
- Rising Rates HELPS!
- Flatter Curve will require GROWTH and/or shift in mix
- Member Behavior a Wildcard in 2016 (COF mgm't KEY)
- OPPORTUNITIES EXIST NOW! Take Action that fits your CU and not what others are doing or based on Regulator fears
- Wholesale Funds are a CU's best friend, use them to your Strategic Advantage!

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BUT…What's On Your Mind?

- Interest Rate Risk (Asset vs. Liability Sensitive)
- Role of Derivatives (Swaps/Caps/Floors)
- Capital Management/NEV
- Investment Portfolio Mgmt.
- Particular Regulatory Concerns/Issues
- Other

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