

# Funding Strategies for Funding Long-Term Fixed-Rate Assets

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Kevin Martin

VP/Manager, Member Financial Strategies

[kevin.martin@fhlbboston.com](mailto:kevin.martin@fhlbboston.com)

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# Today's Topics



- Overview of funding strategy model
  - Objectives and key issues
  - Gathering input to customize strategy
  - How to interpret model output
- Current funding strategies for holding long-term, fixed-rate assets
  - 30-year fixed-rate mortgages
  - 15-year fixed-rate mortgages
  - 5-year auto loans



# Overview of the Funding Strategy Model

# Objectives and Key Issues

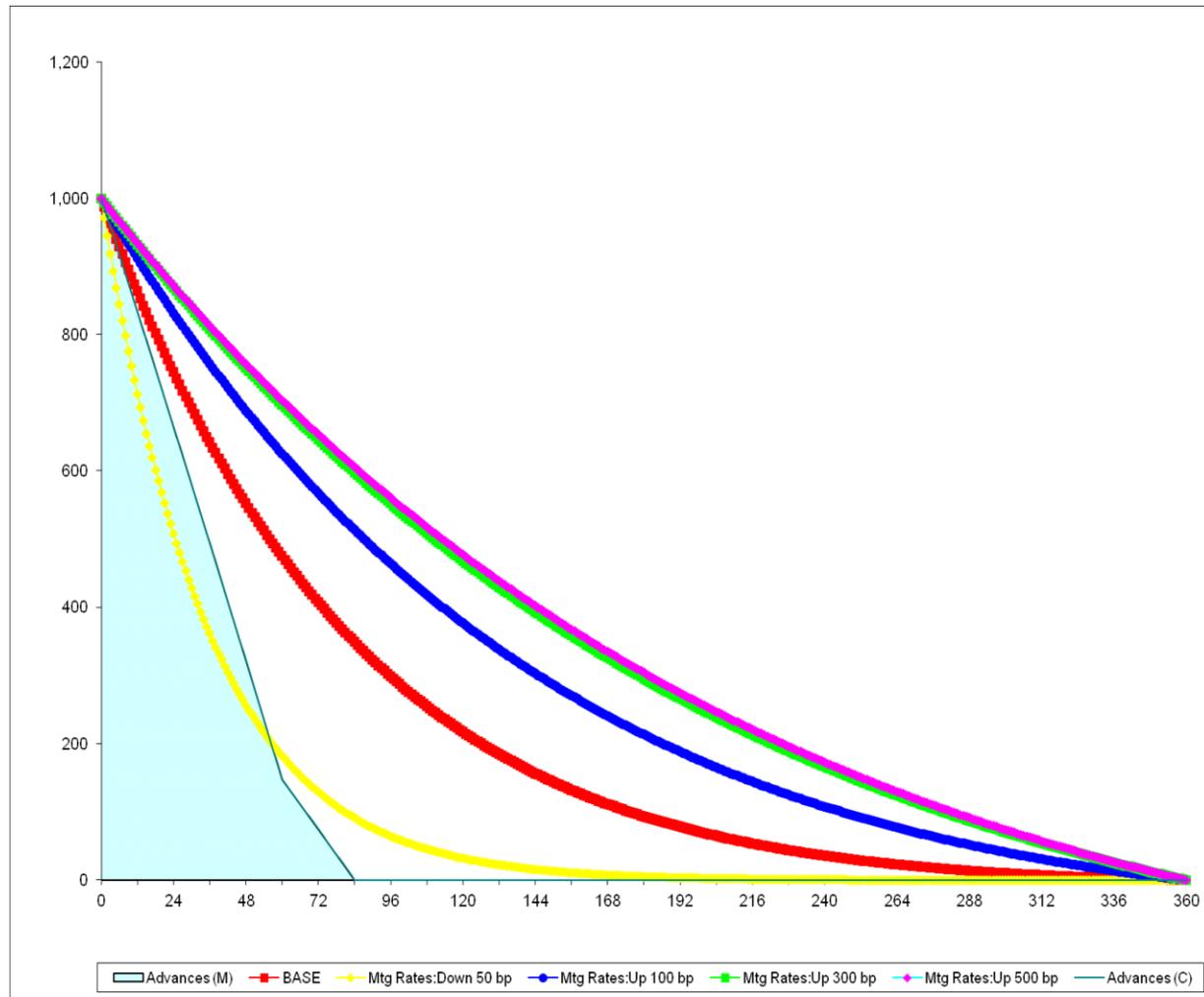
- Achieve a reasonable spread without excessive risk
  - Strike a balance between
    - High spread, high interest-rate risk
    - Low spread, low interest-rate risk
  - Spread on the transaction is at the margin
    - Spread is pre-tax, without taking on additional overhead expenses or loan loss provision
- Reduce overall interest-rate risk
- Generate additional net interest income

# Customize a Funding Strategy - Gathering Inputs and Making Assumptions

- Asset characteristics
  - Loan type, term, fixed-rate period, gross/net coupon, prepayment speeds, price paid or points received, dollar amount of strategy
- Mix of advances being considered
  - Type, term, amount to be funded with advances
- Member objectives
  - Manage interest-rate risk
  - Maximize net interest income in initial period
- Ensure assumptions are reasonable and appropriate

# Model Output: Graph as a visual representation of the strategy

- Colored lines represent the asset balance over time in different rate environments, illustrating impact of prepayment assumptions.
- Blue shaded area represents FHLB advances.
- White area between the colored lines and the blue shaded area represents the portion of the asset that is funded with short-term advances. White area illustrates the asset balance subject to *interest-rate risk*.



# Model Output: Summary of results for years 1 through 7

- Assumptions page includes details of asset, prepayment speeds used, and funding allocation
- Summary of transaction results for the first seven years

Strategy: 269 bps - \$0.50 MM 5 Year amort and \$0.50 MM 7 Year amort.

Rate Scenario	Initial Net Spread	TRANSACTION RESULTS						PRO-FORMA IMPACT			
		Average Long Term Assets	Average Capital/ Assets	Average Asset Yield	Average Cost of Funds	Average Net Interest Spread	7 Year Total Net Interest Income	Return on Assets		Return on Equity	
								Before	After	Before	After
Base Case/ Rates Flat	2.69%	626	11.77%	3.75%	0.92%	2.83%	\$127	0.86%	0.87%	7.33%	7.36%
Up 100 bp	2.69%	737	11.77%	3.75%	1.18%	2.57%	\$137	0.86%	0.87%	7.33%	7.36%
Up 300 bp	2.69%	789	11.77%	3.75%	2.01%	1.74%	\$102	0.86%	0.87%	7.33%	7.35%
Up 500 bp	2.69%	793	11.76%	3.75%	2.87%	0.88%	\$55	0.86%	0.86%	7.33%	7.34%
Down 50 bp	2.69%	387	11.77%	3.09%	1.09%	2.00%	\$68	0.86%	0.86%	7.33%	7.35%
Down 100 bp	2.69%	250	11.77%	2.09%	1.10%	0.99%	\$33	0.86%	0.86%	7.33%	7.34%
Down 150 bp	2.69%	199	11.77%	1.70%	1.10%	0.60%	\$20	0.86%	0.86%	7.33%	7.34%

#### Performance Statistics - All Rate Scenarios

Measure	High	Low	Average	Range	Dispersion*
Cost of Funds	2.87%	0.92%	1.47%	1.96%	0.56%
Net Spread	2.83%	0.60%	1.66%	2.23%	0.71%
Net Int Income	137	20	78	116	38
Pro-forma ROA	0.87%	0.86%	0.86%	0.00%	0.00%
Pro-forma ROE	7.36%	7.34%	7.35%	0.02%	0.01%

\* Measures Mean Absolute Deviation from Average

# Model Output: Yearly results

- Average balance sheet and income statement, year-by-year, for first seven years, across seven interest-rate scenarios

**MEMBER GENERIC**  
 30yr Fixed Rate Mortgage 3.75%  
 7-Year Annual Return Analysis  
 (\$000s)

**AVERAGE BALANCE SHEET**

**PRE-TAX RATIOS**

**INTEREST INCOME & EXPENSE**

Interest Rate Scenario : **BASE (Rates Flat)**

Year	<u>AVERAGE BALANCE SHEET</u>			<u>PRE-TAX RATIOS</u>			<u>INTEREST INCOME &amp; EXPENSE</u>												
	Mtg	S-T Inv	Total Assets	Fxd/Am Adv	Opt Adv	S-T Liabs	Total Liabs	Total Equity	Asset Yield	Cost of Funds	NI Spread	Mtg	S-T Inv	Tot Inc	Fxd/Am Adv	Opt Adv	S-T Liabs	Tot Exp	NI Inc
1	936	-	936	924	-	5	928	8	3.75	1.07	2.68	35	-	35	10	-	0	10	25
2	808	-	808	756	-	29	785	23	3.75	1.05	2.70	30	-	30	8	-	0	8	22
3	697	-	697	586	-	74	660	37	3.75	1.01	2.74	26	-	26	6	-	0	7	19
4	600	-	600	415	-	137	552	49	3.75	0.92	2.83	23	-	23	5	-	0	5	17
5	517	-	517	242	-	215	457	59	3.75	0.77	2.98	19	-	19	3	-	1	4	16
6	444	-	444	114	-	261	374	69	3.75	0.61	3.14	17	-	17	1	-	1	2	14
7	381	-	381	40	-	262	302	78	3.75	0.46	3.29	14	-	14	1	-	1	1	13
<b>Totals</b>												164	-	164	34	-	3	37	127

# The Net Interest Spread Will Fluctuate – Why?

- Seven interest rate scenarios are modeled
  - The short-term cost of funds and reinvestment rate will change based on the rate environment being modeled
- Mix of advances changes over time
  - Advances will mature and/or amortize
  - Structured advance products may reprice, call, extend or expand depending on the rate shock being simulated
- Asset prepayment speeds impact the mix of funding since short-term funds are used to balance the transaction
  - Funding shortfall is filled with short-term advance
  - Excess cash is reinvested at the short-term rate

# Modeling the Trade-Off: Hedging Interest-Rate Risk Versus Maximizing Potential Earnings

- The various interest rate scenarios illustrate:
  - Potential impact on net interest income if rates change
  - Potential liquidity needs through the modeling horizon
  - Effectiveness of the hedge
- Managing to balance sheet sensitivity is crucial for minimizing volatility on earnings in different rate environments

# Managing Effective Funding Strategies Over Time



- Implement funding strategies to adjust the aggregate interest-rate risk profile and/or supplement earnings
- Manage the transaction over time and ladder in new funding as advances mature or interest-rate risk increases
- Evaluate changes in rates and where we are in the business cycle and fund accordingly

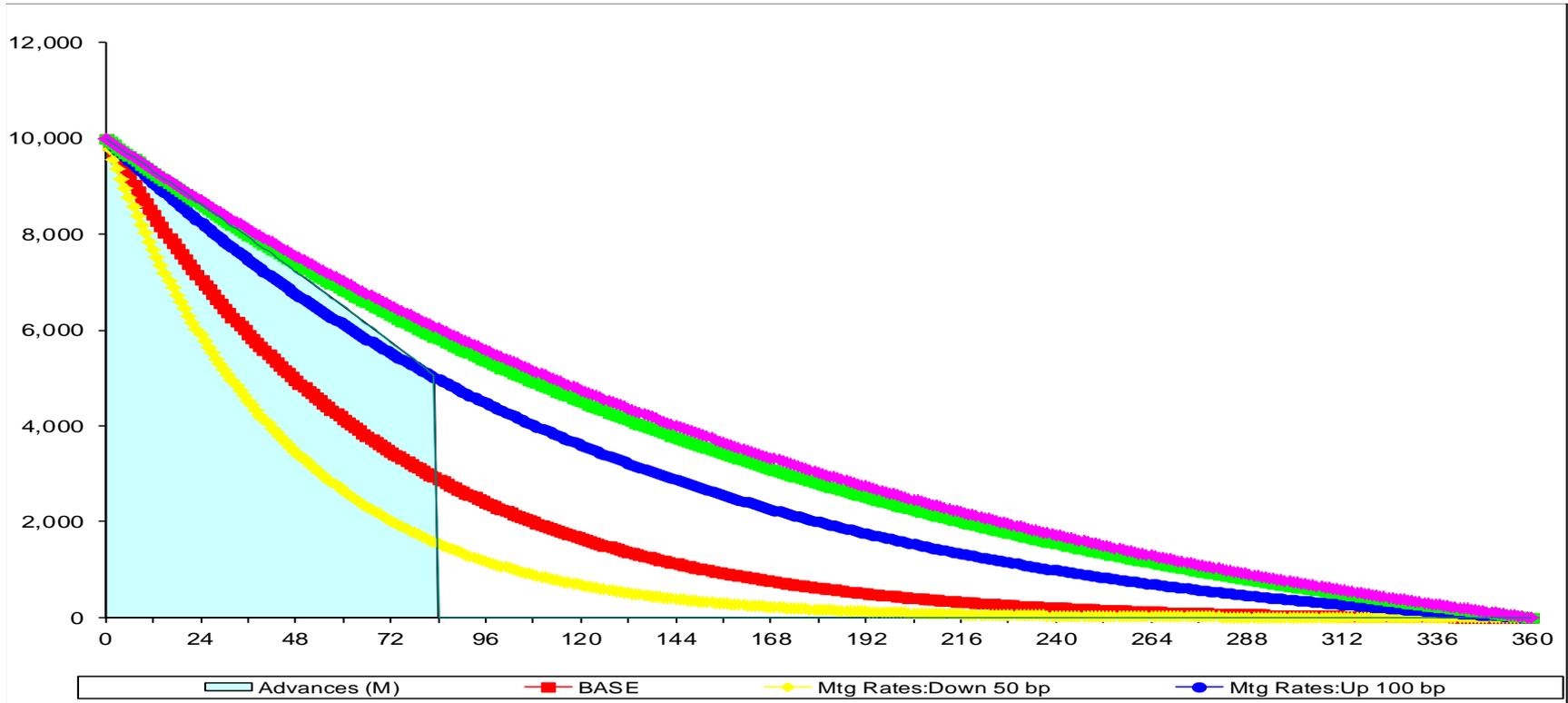


# Current Funding Strategies for Holding Long-Term, Fixed-Rate Assets

# Fixed-Rate Residential Mortgages

- Residential mortgages are difficult to hedge because the outstanding balance is unknown
  - Borrowers have a free prepay option
- Median prepayment assumptions for MBS with similar collateral are used
- Risk of extension versus risk of prepayment impacts the performance of the strategy
  - If rates rise, mortgages are likely to extend
    - You may be underfunded and funding costs for unhedged balance will increase
  - If rates fall, mortgages are likely to prepay
    - You may be overfunded and excess long-term funding will be reinvested at prevailing market rates (possibly at a negative spread)

# 30Y #1



## 30Y FRM

4.54%

## Results Years 1 through 7

50% 7Y Classic  
50% 7Y Amortizer  
**Total Funding**

2.92%  
2.06%  

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2.49%

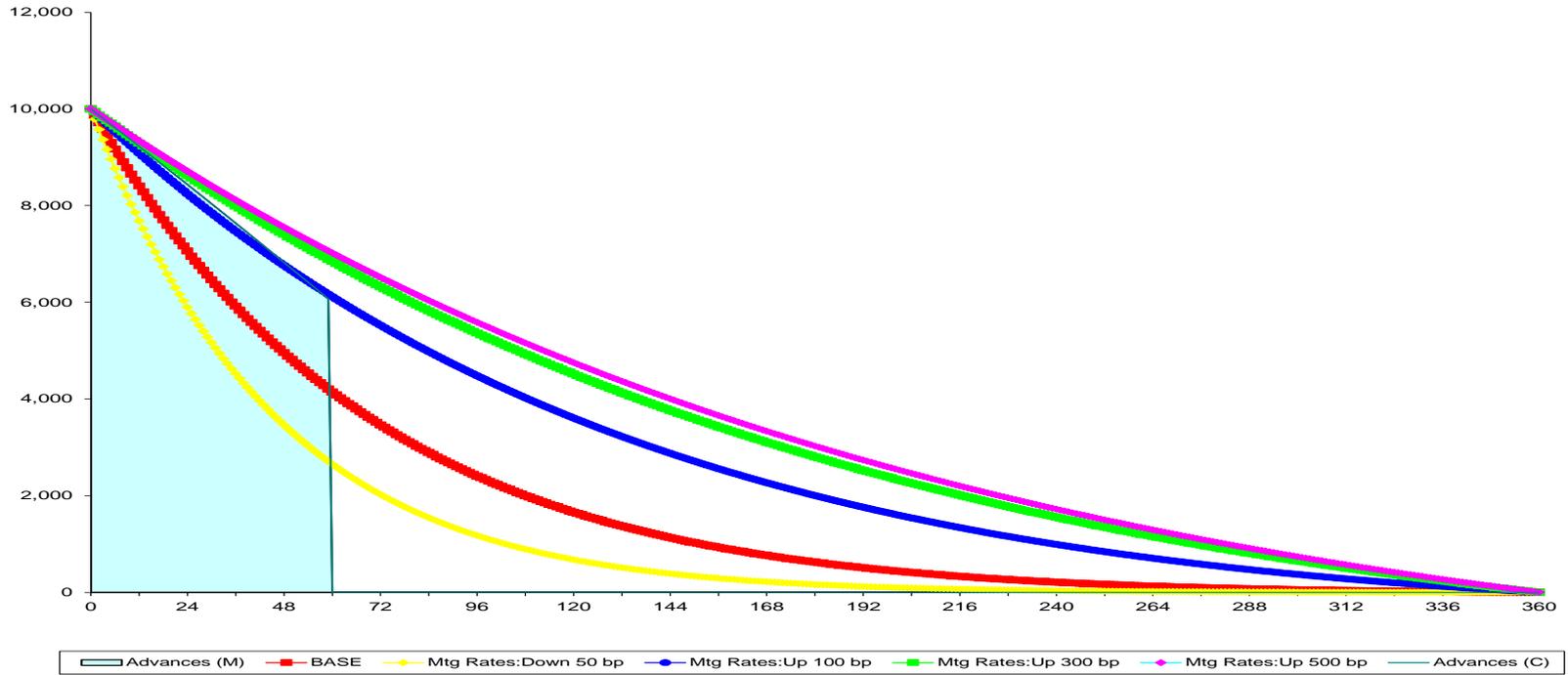
**Initial Net Spread**

**2.05%**

Down 100 basis points  
Down 50 basis points  
Rates Unchanged  
Up 100 basis points  
Up 300 basis points  
Up 500 basis points

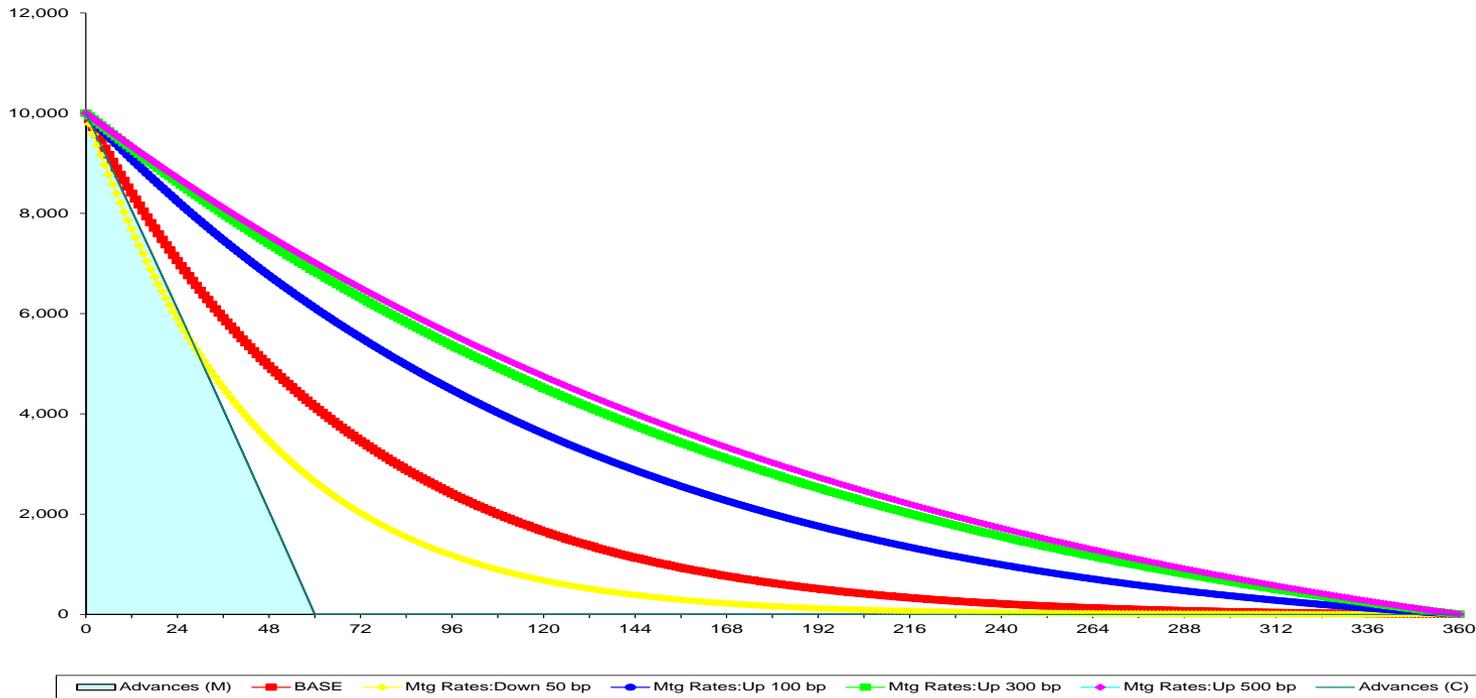
Spread	NII (000s)
-0.42%	(217)
0.06%	70
0.74%	478
1.53%	974
1.81%	1,155
1.90%	1,213

# 30Y #2



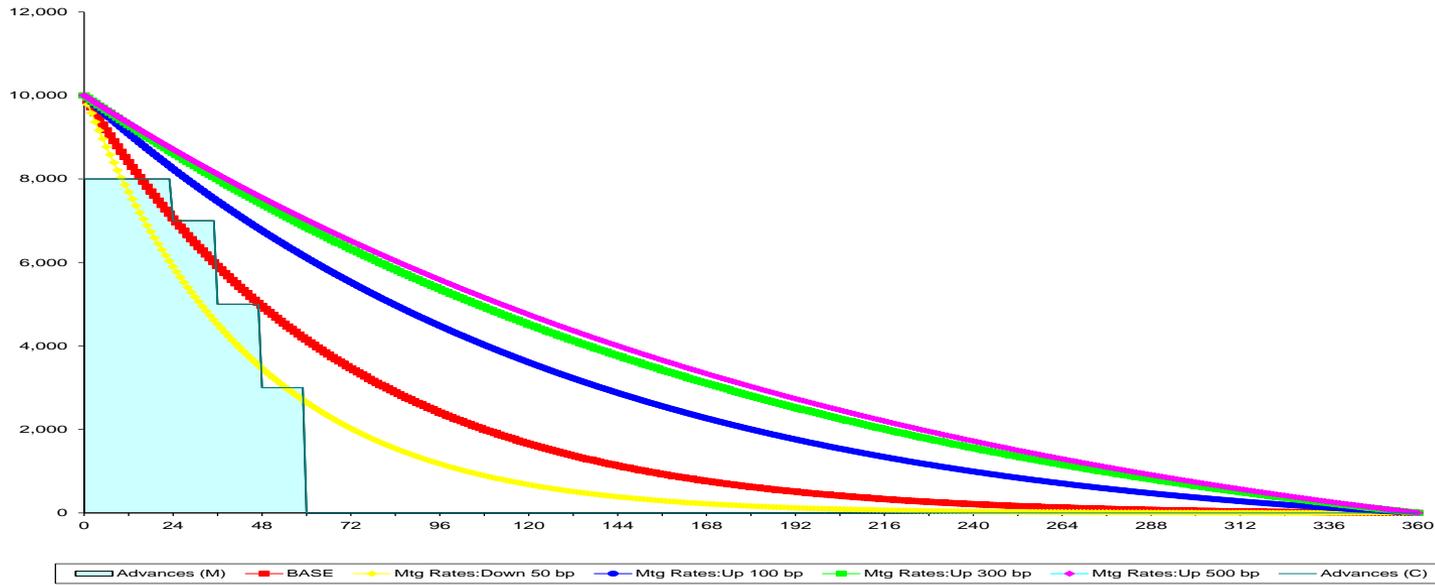
<b>30Y FRM</b>	4.54%	<b>Results Years 1 through 7</b>		
60% 5Y Classic	2.19%	Down 100 basis points	0.74%	NII 364
40% 5Y Amortizer	1.50%	Down 50 basis points	1.29%	651
<b>Total Funding</b>	<b>1.91%</b>	Rates Unchanged	1.94%	<b>1,033</b>
<b>Initial Net Spread</b>	<b>2.63%</b>	Up 100 basis points	2.43%	1,413
		Up 300 basis points	2.20%	1,352
		Up 500 basis points	1.80%	1,157

# 30Y #3



30Y FRM		Results Years 1 through 7	
		Spread	NII (000s)
100% 5Y Amortizer	4.54%	Down 100 basis points	2.40% 782
<b>Total Funding</b>	<b>1.50%</b>	Down 50 basis points	2.99% 1,069
<b>Initial Net Spread</b>	<b>3.04%</b>	<b>Rates Unchanged</b>	<b>3.34% 1,422</b>
		Up 100 basis points	3.11% 1,671
		Up 300 basis points	2.18% 1,317
		Up 500 basis points	1.15% 785

# 30Y #4



### 30Y FRM

4.54%

20%	1M Classic
10%	2Y Classic
20%	3Y Classic
20%	4Y Classic
30%	5Y Classic

2.19%

### Total Funding

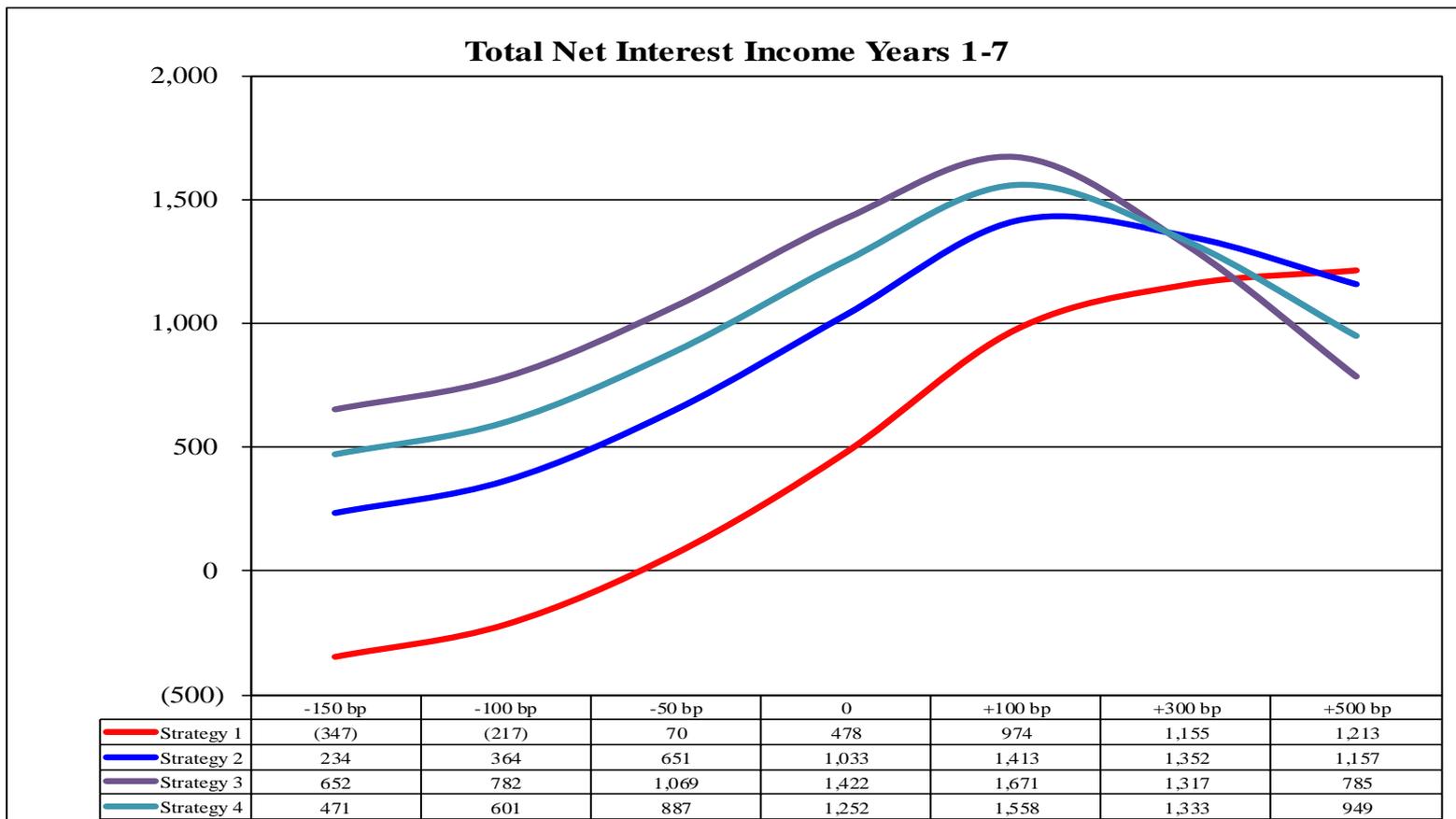
### Initial Net Spread

**3.11%**

### Results Years 1 through 7

	Spread	NII (000s)
Down 100 basis points	1.54%	601
Down 50 basis points	2.15%	887
Rates Unchanged	2.76%	1,252
Up 100 basis points	2.87%	1,558
Up 300 basis points	2.21%	1,333
Up 500 basis points	1.45%	949

# 30Y Funding Strategies Comparison



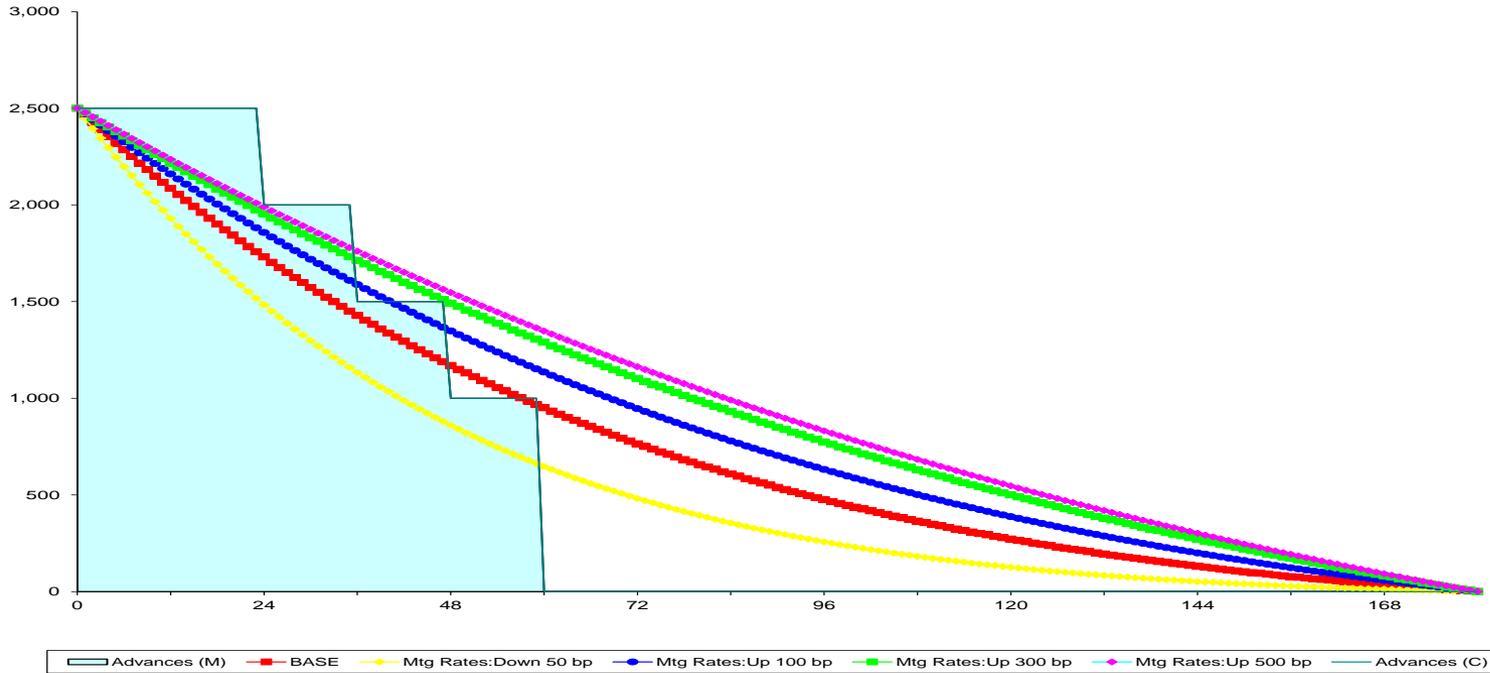
**Strategy 1** 205 bps - \$5.00 MM 7 Yr Bullet and \$5.00 MM 7 Year amort.

**Strategy 2** 263 bps - \$6.00 MM 5 Yr Bullet and \$4.00 MM 5 Year amort.

**Strategy 3** 304 bps - \$10.00 MM 5 Year amort.

**Strategy 4** 311 bps - \$1.00 MM 2 Yr Bullet, \$2.00 MM 3 Yr Bullet, \$2.00 MM 4 Yr Bullet, \$3.00 MM 5 Yr Bullet and \$2.00 MM Short-Term Funding.

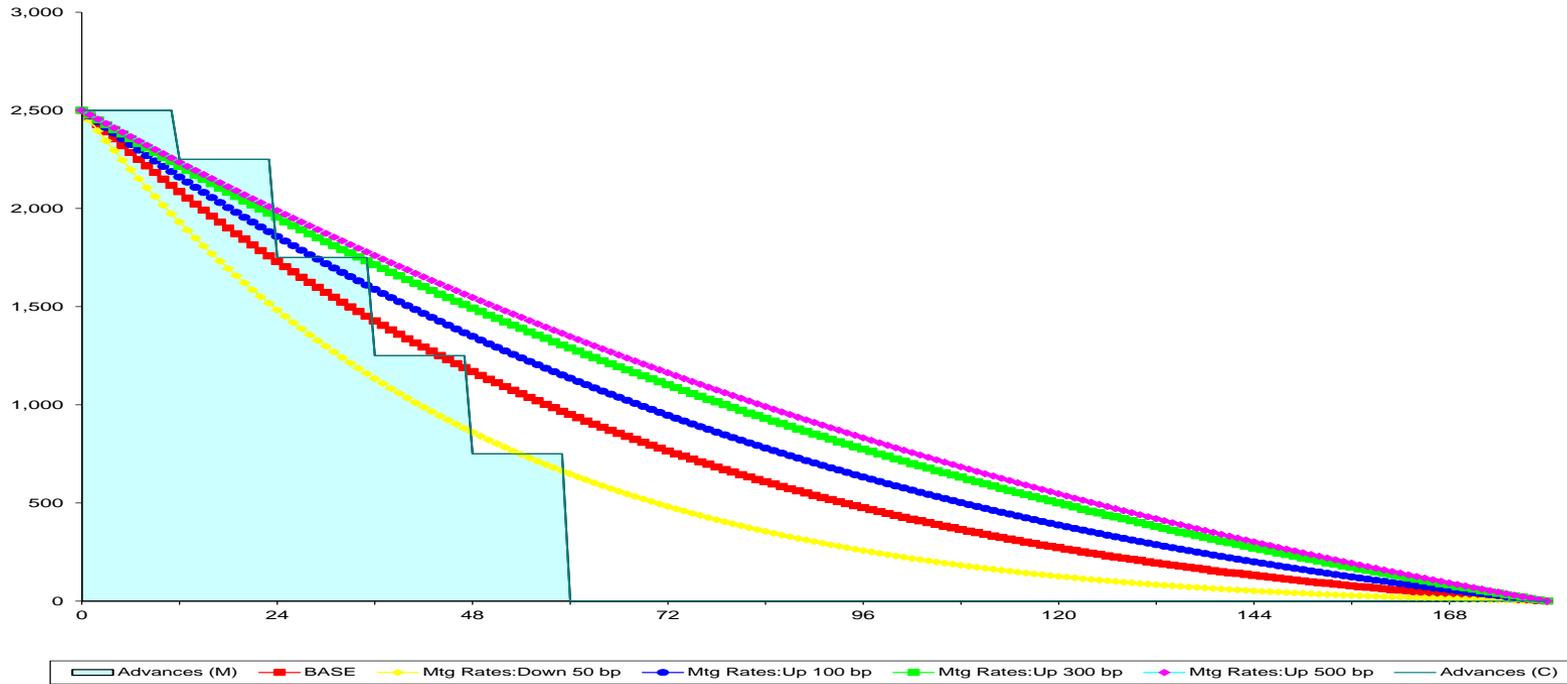
# 15Y #1



Advances (M)    BASE    Mtg Rates:Down 50 bp    Mtg Rates:Up 100 bp    Mtg Rates:Up 300 bp    Mtg Rates:Up 500 bp    Advances (C)

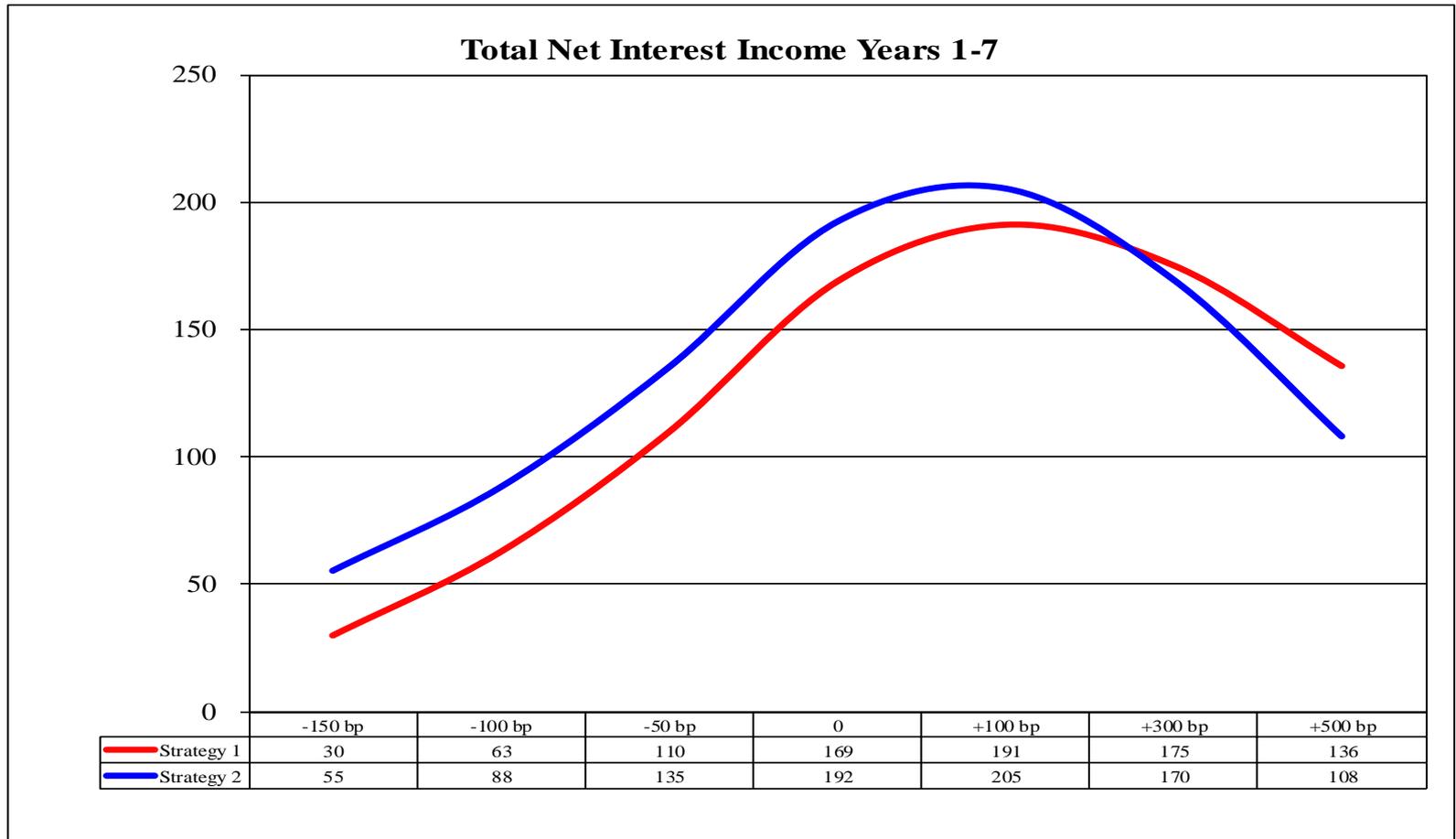
<b>15Y FRM</b>	<b>3.50%</b>	<b>Results Years 1 through 7</b>	
20% 2Y Classic	0.80%	Down 100 basis points	<b>Spread</b> <b>NII</b>
20% 3Y Classic	1.27%	Down 50 basis points	0.58%    (000s)
20% 4Y Classic	1.78%	<b>Rates Unchanged</b>	0.98%    110
40% 5Y Classic	2.15%	Up 100 basis points	1.43%    169
<b>Total Funding</b>	<b>1.63%</b>	Up 300 basis points	1.54%    191
<b>Initial Net Spread</b>	<b>1.87%</b>	Up 500 basis points	1.31%    175
			0.97%    136

# 15Y #2



15Y FRM		3.50%	Results Years 1 through 7	
			Spread	NII (000s)
10%	1Y Classic	0.34%	Down 100 basis points	88
20%	2Y Classic	0.80%	Down 50 basis points	135
20%	3Y Classic	1.27%	Rates Unchanged	192
20%	4Y Classic	1.78%	Up 100 basis points	205
30%	5Y Classic	2.15%	Up 300 basis points	170
<b>Total Funding</b>		<b>1.45%</b>	Up 500 basis points	108
<b>Initial Net Spread</b>		<b>2.05%</b>		

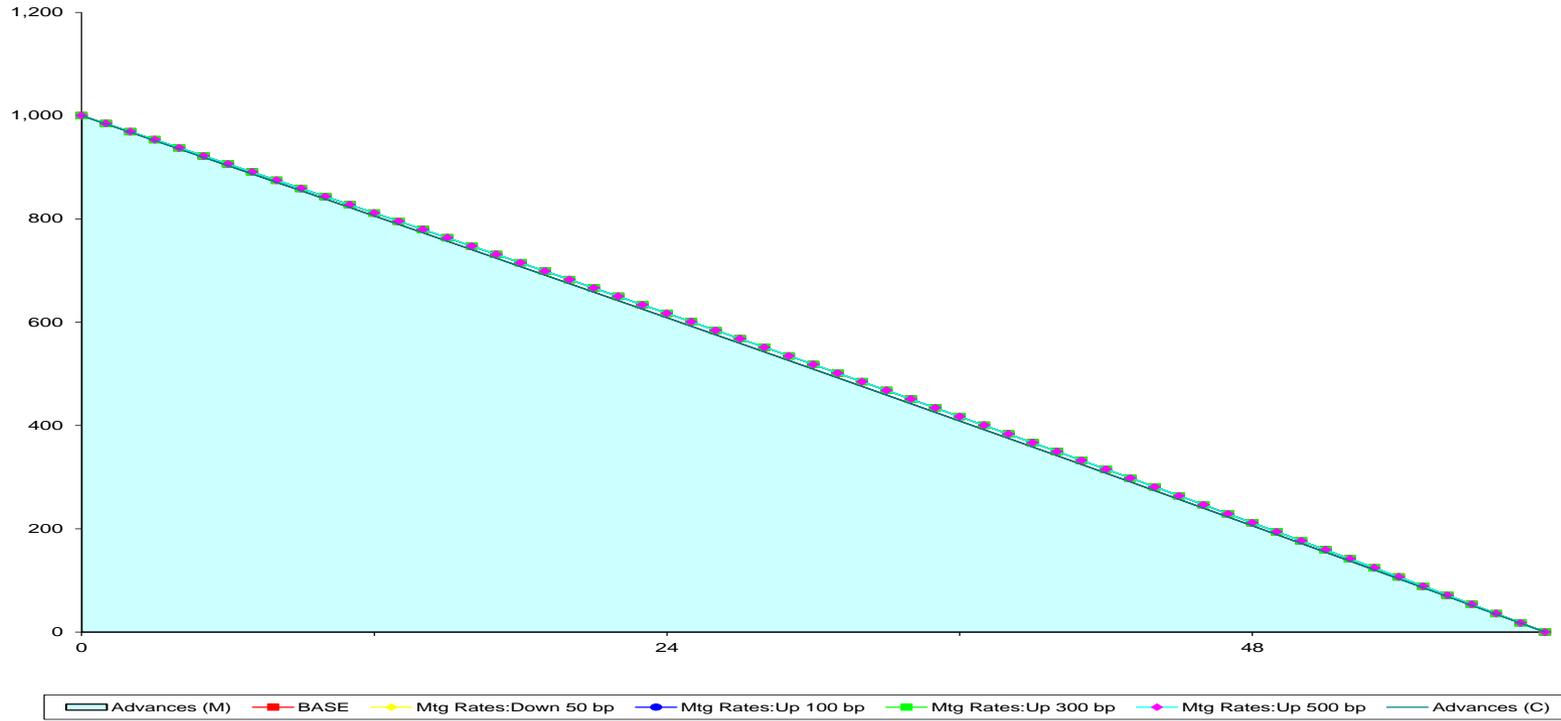
# 15Y Funding Strategies Comparison



**Strategy 1** 187 bps - \$.50 MM 2 Yr Bullet, \$.50 MM 3 Yr Bullet, \$.50 MM 4 Yr Bullet and \$1.00 MM 5 Yr Bullet.

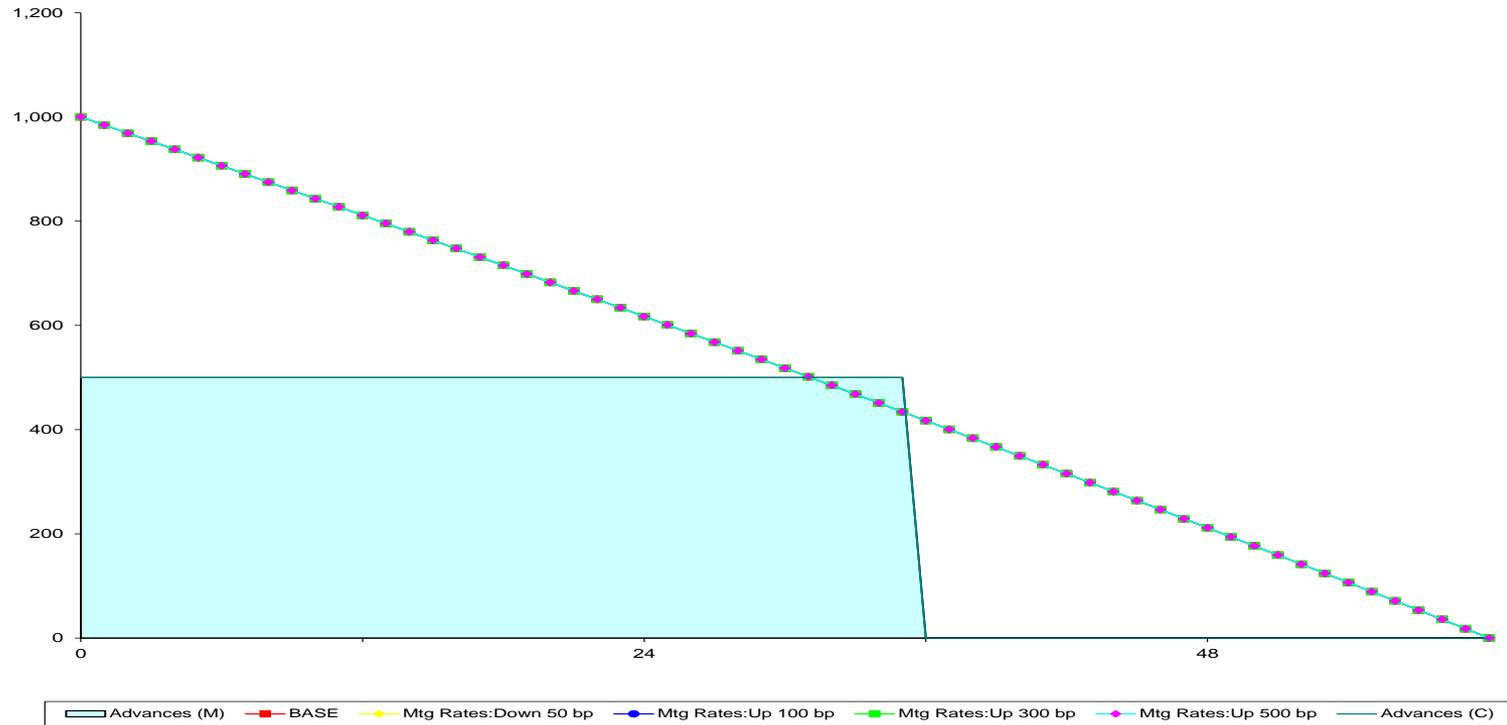
**Strategy 2** 205 bps - \$.25 MM 1 Yr Bullet, \$.50 MM 2 Yr Bullet, \$.50 MM 3 Yr Bullet, \$.50 MM 4 Yr Bullet and \$.75 MM 5 Yr Bullet.

# 5Y Auto #1



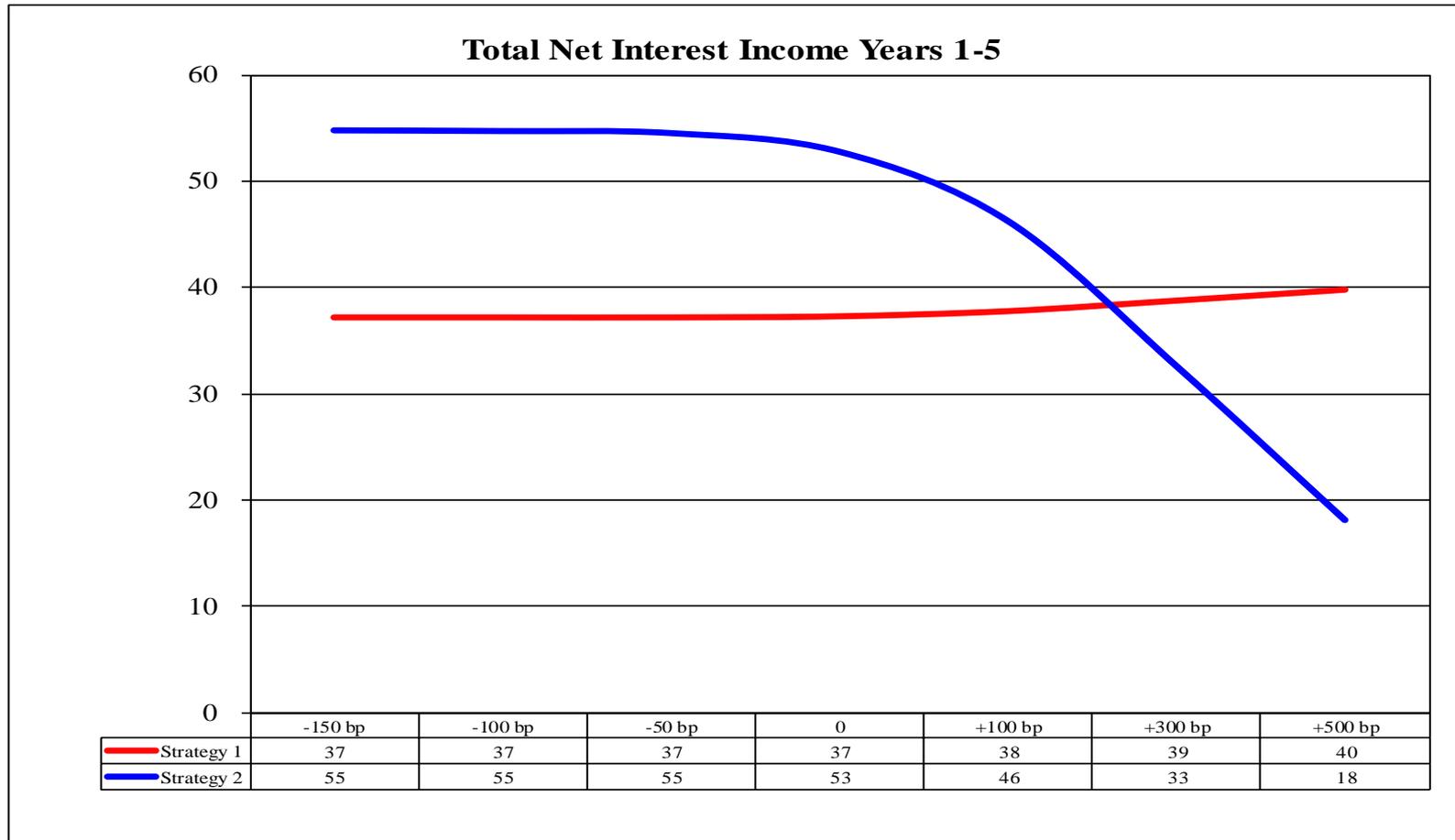
<b>5Y Auto Laons</b>	2.89%	<b>Results Years 1 through 5</b>		
			<b>Spread</b>	<b>NII (000s)</b>
100% 5Y Amortizer	1.46%	Down 100 basis points	1.36%	37
<b>Total Funding</b>	<b>1.46%</b>	Down 50 basis points	1.36%	37
<b>Initial Net Spread</b>	<b>1.43%</b>	<b>Rates Unchanged</b>	<b>1.36%</b>	<b>37</b>
		Up 100 basis points	1.38%	38
		Up 300 basis points	1.42%	39
		Up 500 basis points	1.45%	40

# 5Y Auto #2



5Y Auto Laons		Results Years 1 through 5		
			Spread	NII (000s)
50% 1M Classic	2.89%	Down 100 basis points	2.05%	55
50% 3Y Classic	0.31%	Down 50 basis points	2.04%	55
<b>Total Funding</b>	<b>0.79%</b>	<b>Rates Unchanged</b>	<b>1.97%</b>	<b>53</b>
<b>Initial Net Spread</b>	<b>2.10%</b>	Up 100 basis points	1.72%	46
		Up 300 basis points	1.19%	33
		Up 500 basis points	0.64%	18

# 5Y Auto Loans Comparison



**Strategy 1** 143 bps - \$1.00 MM 5 Year amort.

**Strategy 2** 210 bps - \$0.50 MM 3 Yr Bullet and \$0.50 MM Short-Term Funding.



**For customized funding strategies, please contact  
one of the Bank's financial strategists:**

[kevin.martin@fhlbboston.com](mailto:kevin.martin@fhlbboston.com) 617.292.9644

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