



# **Common Mistakes in Managing Your Municipality's Investment Portfolio**

Presented by

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Why it's important to  
have a written  
investment policy?

## Important reasons to have a written investment policy?

- Comply with legal restrictions and limitations.
- Clearly outline duties, responsibilities and accountability.
- Limit potential risks.
- Avoid any conflicts of interest.
- Guide outside vendors in determining appropriate investments.
- Provide an explicit understanding of issues such as reporting, oversight, risk management, deposits, withdrawals and liquidity.
- Allow for easy transition of responsibilities for new employees.



What are some of the  
common mistakes  
when creating a policy?

## Common mistakes when creating a policy:



- Too broad.
- Has no detail on how to measure performance vs. a benchmark.
- No guidelines on what to do if a bond is downgraded by rating agencies.
- Specific responsibilities in managing investments not clearly defined.
- Not enough flexibility.
- May not be written clearly or fully understood by decision makers and oversight committee.
- Does not identify all potential risks. These risks may include operational, counter-party and investment risks.



What are some of the  
common mistakes  
once a policy is created?

## Common mistakes once a policy is created:

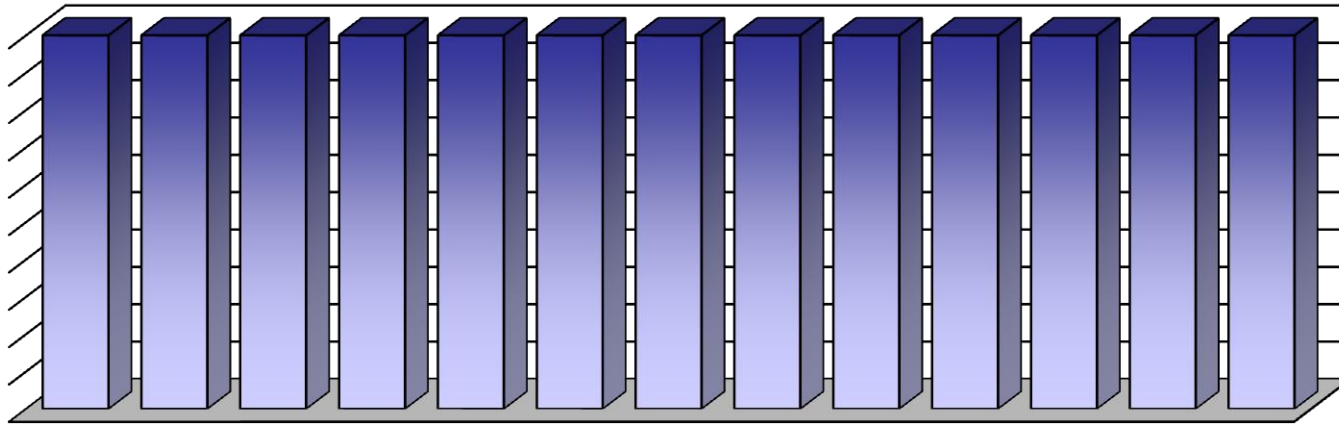
- Policy is not completely understood by decision makers.
- Investment portfolio is too liquid.
- Not enough diversity across asset classes.
- Too much optionality or callable bonds.
- Policy not widely distributed to outside vendors, or those vendors do not fully understand the document.
- Many risks are not accurately identified (i.e. credit risk, interest rate risk, re-investment risk or extension risk).
- Policy not submitted to Board on a timely basis and/or reviewed periodically.



# How to Prepare an Investment Portfolio for Higher Rates?

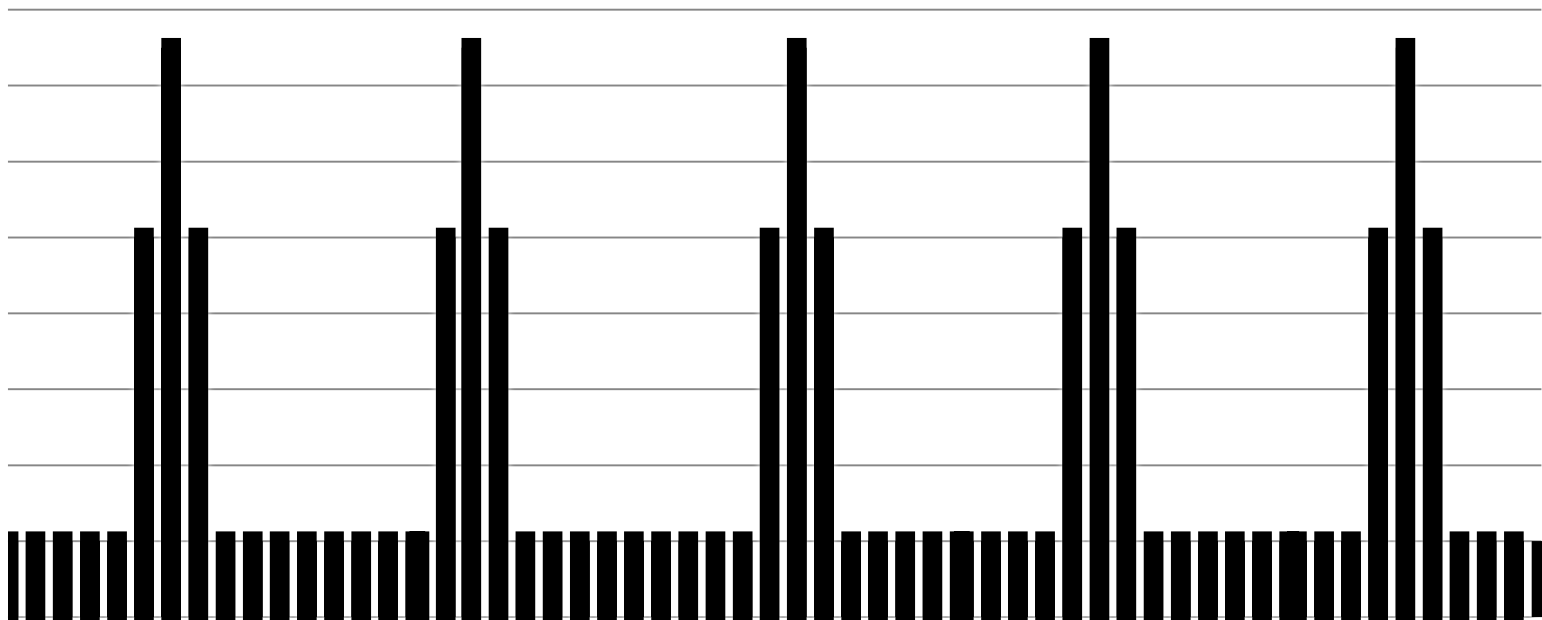


When institutions create a fixed income portfolio, most investment officers think of a traditional “laddered” approach as distributing principal cash flows evenly across the maturity spectrum, i.e. the same amount of money maturing in each annual bucket.



## Cash Flow Management

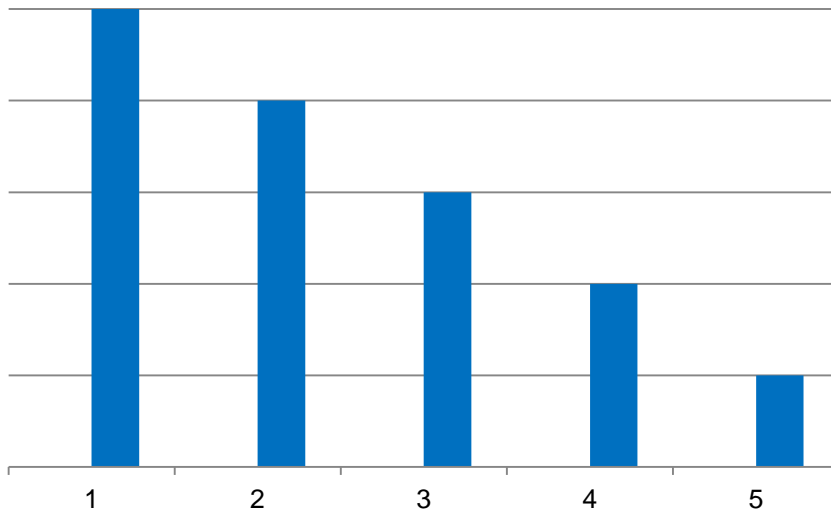
Many institutions have some seasonality or cyclical to their cash flows, hence a maturity ladder could be structured to take these liquidity needs into consideration.



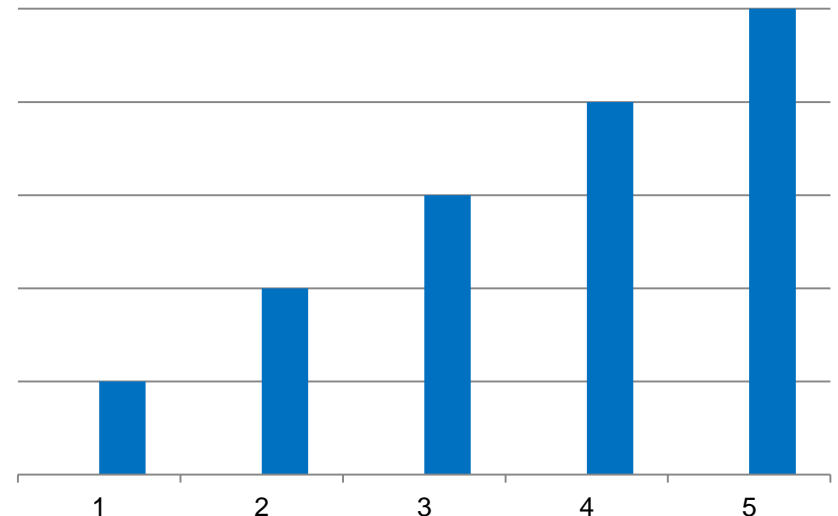
## Cash Flow Management and “Optionality”

Uncertainty of portfolio cash flow due to an overweight in callable bonds could create a “liquidity crunch”, as rates move higher.

Flat Rate Environment



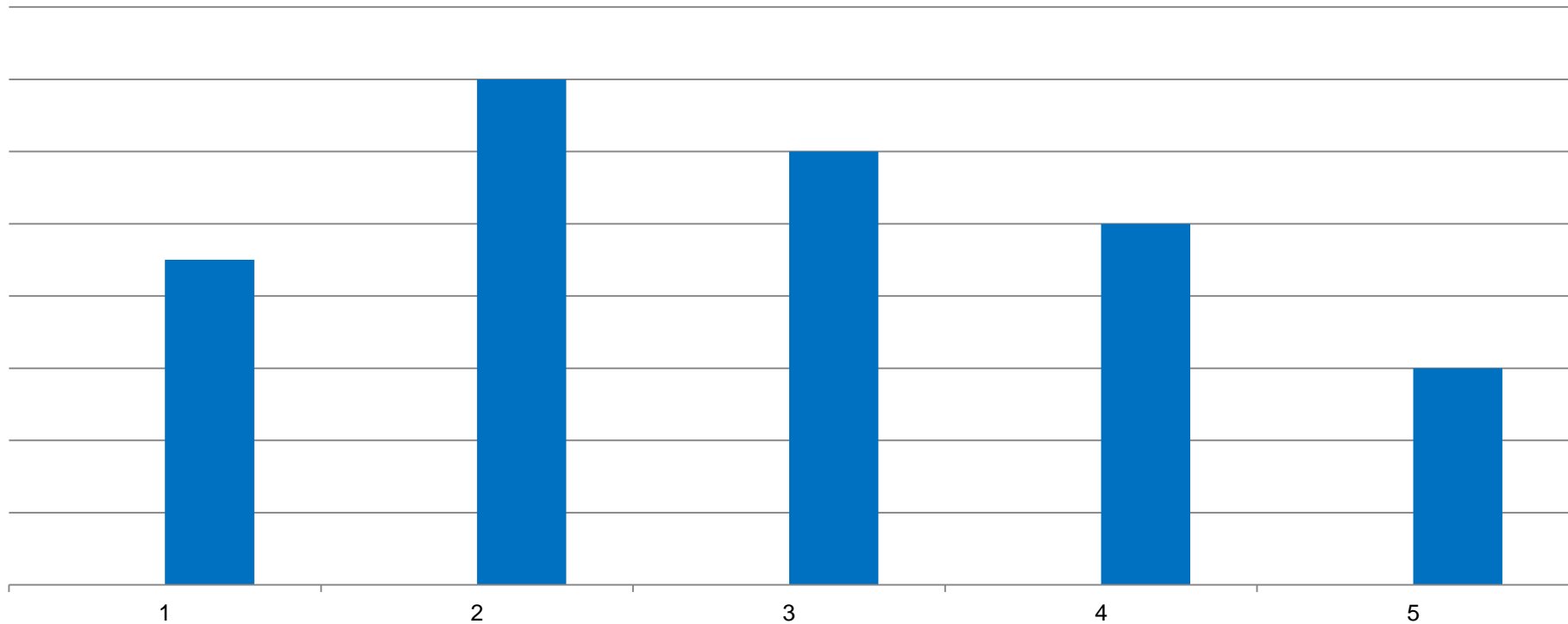
Rising Rate Environment



## Butterfly Cash Flow Profile

With market sentiment leaning towards one or two more rate increases by the Federal Reserve in late 2016, a “Butterfly” structure could benefit investors.

### Annual Projected Cash Flows – 5 Years, Principal and Interest

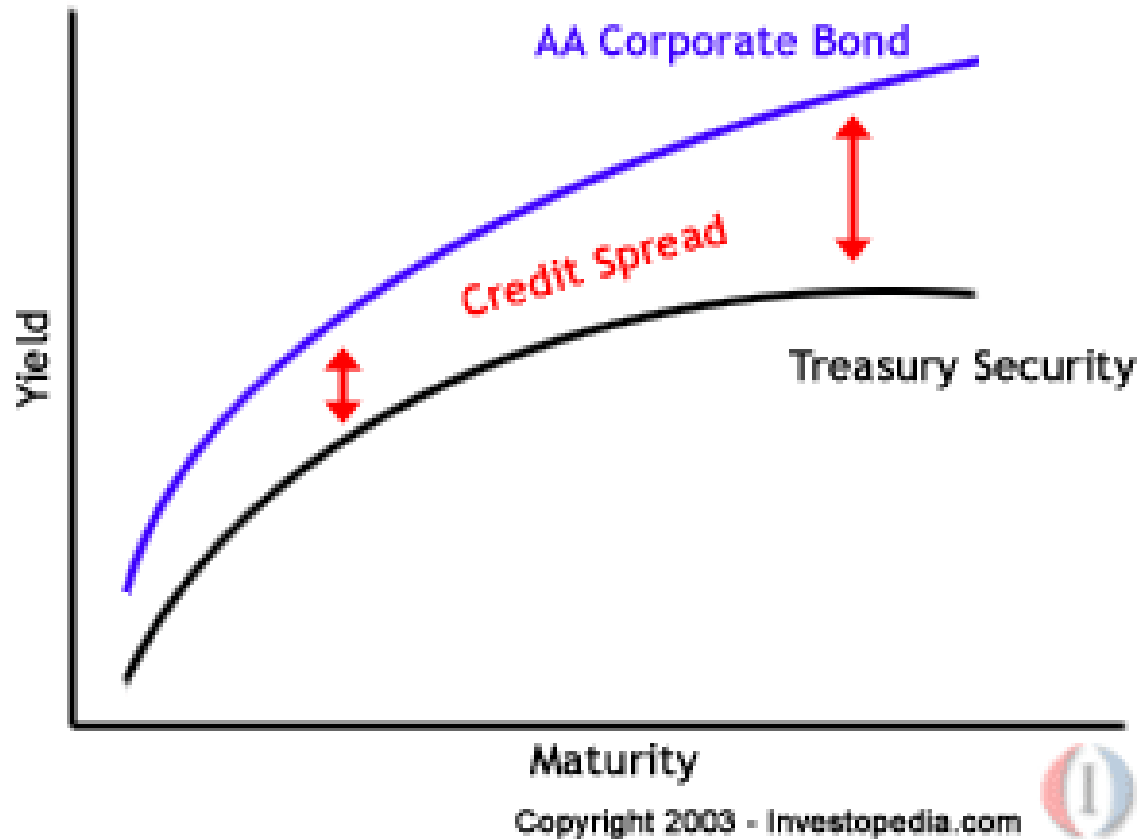


## Spread Product – Historical Review

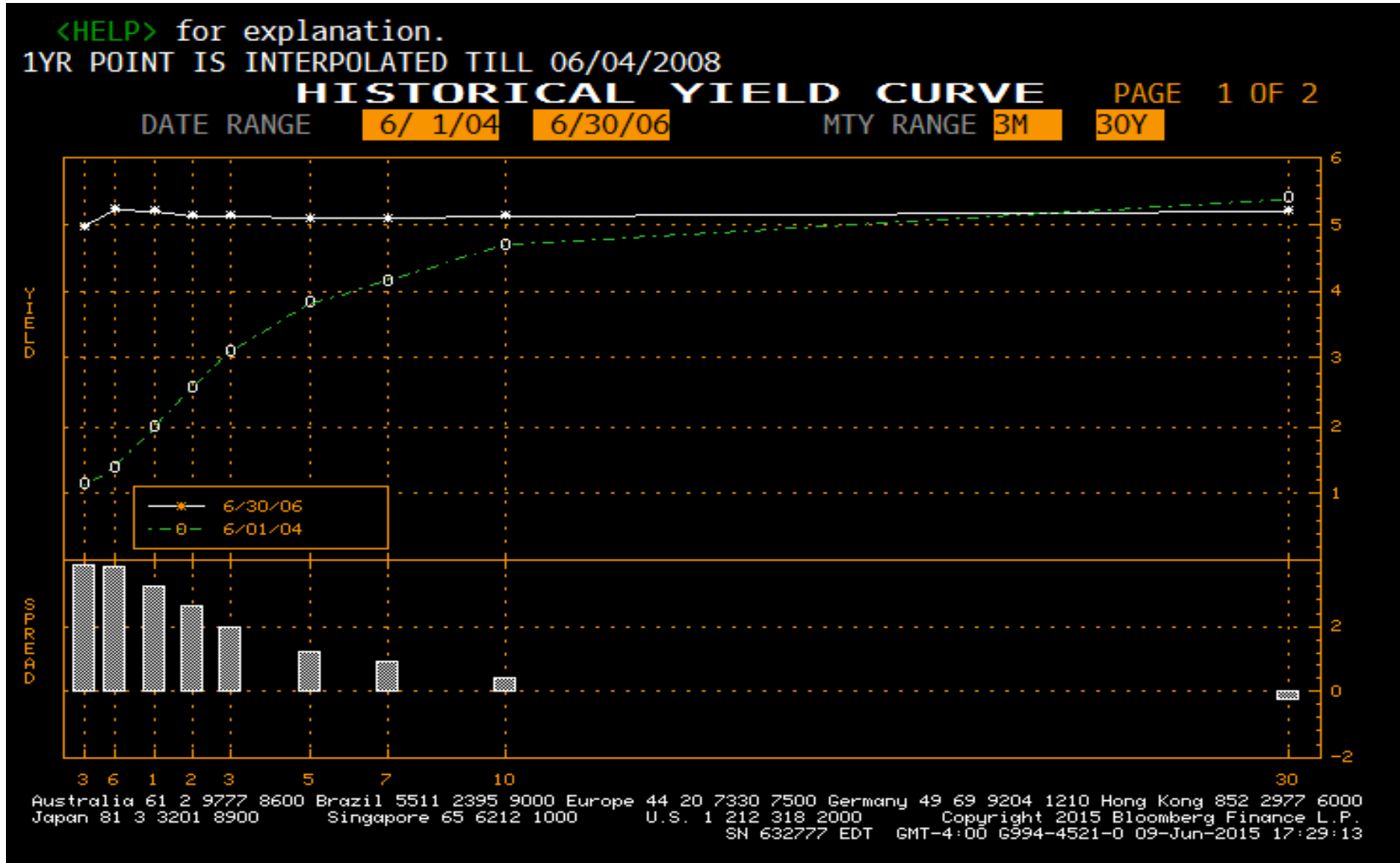
- Corporate Bonds
  - Economic improvement as rates rise.
  - Stronger balance sheets.
  - More free cash flow to support debt service.
- Municipal Bonds
  - Improving credit fundamentals as rates rise.
  - More tax revenue as economy recovers.
  - Rising assessed values of taxable property.

***As economy recovers and rates rise, perceived “risk”  
of credit sensitive products is reduced.***

## Spread Product – Historical Review



# The Last Tightening Cycle

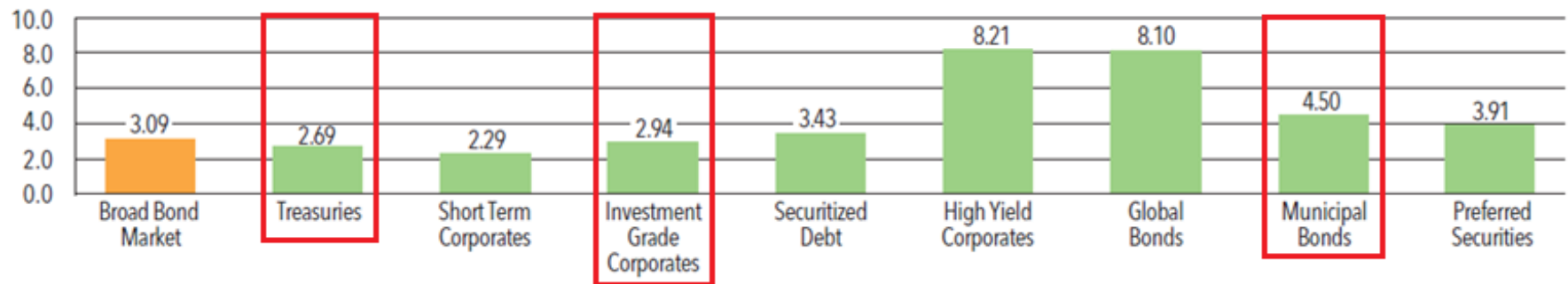


Source: Bloomberg

## Spread Product – Historical Review

- All fixed income asset classes experienced positive returns
- Yield/Coupon enough to “offset” price declines
- Rates rose gradually over long period of time
  - Fed raised rates 17 times in small increments over 24-month period
  - Fed Funds increased from 1.00% to 5.25%
- This scenario could represent future Fed policy, compared to more aggressive tightening cycles

Rising Rate Period 3: 6/1/04 – 6/30/06



Source: Barclays Capital



## Floating Rate Securities

- Coupon adjusts periodically – monthly, quarterly or annually.
- Could have an initial fixed rate period before floating.
- Based upon varying benchmarks.
  - 1 month LIBOR
  - 3 month LIBOR
  - 1 yr CMT (Constant Maturity Treasury)
  - CPI
- May have long (5 - 30 year) final maturities, but limited price volatility due to short coupon reset.
- Allow investors to “capture” rise in interest rates as coupon resets.

# Where are Interest Rates Headed?

# Curve Movement in 2016

HISTORICAL YIELD CURVE					PAGE 2 OF 2
DATE RANGE	12/31/15	3/22/16	MTY RANGE	3M	30Y
	12/31/15	3/22/16	Change		
3 MONTH	0.163	0.295	0.1323		
6 MONTH	0.474	0.447	-0.0267		
1 YEAR	0.597	0.611	0.0137		
2 YEAR	1.048	0.889	-0.1592		
3 YEAR	1.307	1.069	-0.2374		
5 YEAR	1.760	1.413	-0.3472		
7 YEAR	2.091	1.733	-0.3584		
10 YEAR	2.269	1.939	-0.3308		
30 YEAR	3.016	2.721	-0.2950		

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

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Source: Bloomberg

# Rate Hike Probability

99) Export Data

United States

Instrument

Futures: Fed Funds

World Interest Rate Probability

FED Effective Rate 0.37

1) Overview

2) Future Implied Probability

3) Add/Remove

Current Implied Probabilities

Dates

Meeting

Calculation

Calculated 03/22/2016

Based on rate 0.25-0.50

Meeting	Prob Of Hike	Prob of Cut	0.25-0.5	0.5-0.75	0.75-1	1-1.25	1.25-1.5	1.5-1.75	1.75-2
04/27/2016	10.0%	0.0%	90.0%	10.0%	0.0%	0.0%	0.0%	0.0%	0.0%
06/15/2016	46.0%	0.0%	54.0%	42.0%	4.0%	0.0%	0.0%	0.0%	0.0%
07/27/2016	53.6%	0.0%	46.4%	43.7%	9.3%	0.6%	0.0%	0.0%	0.0%
09/21/2016	62.8%	0.0%	37.2%	44.2%	16.2%	2.3%	0.1%	0.0%	0.0%
11/02/2016	66.7%	0.0%	33.3%	43.5%	19.1%	3.7%	0.3%	0.0%	0.0%
12/14/2016	75.2%	0.0%	24.8%	40.9%	25.4%	7.7%	1.2%	0.1%	0.0%
02/01/2017	77.2%	0.0%	22.8%	39.6%	26.6%	9.1%	1.7%	0.2%	0.0%

\* Historical Analysis for Meeting

04/27/2016

4) Add/Remove

0.5-0.75 10.00

Historical Date

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

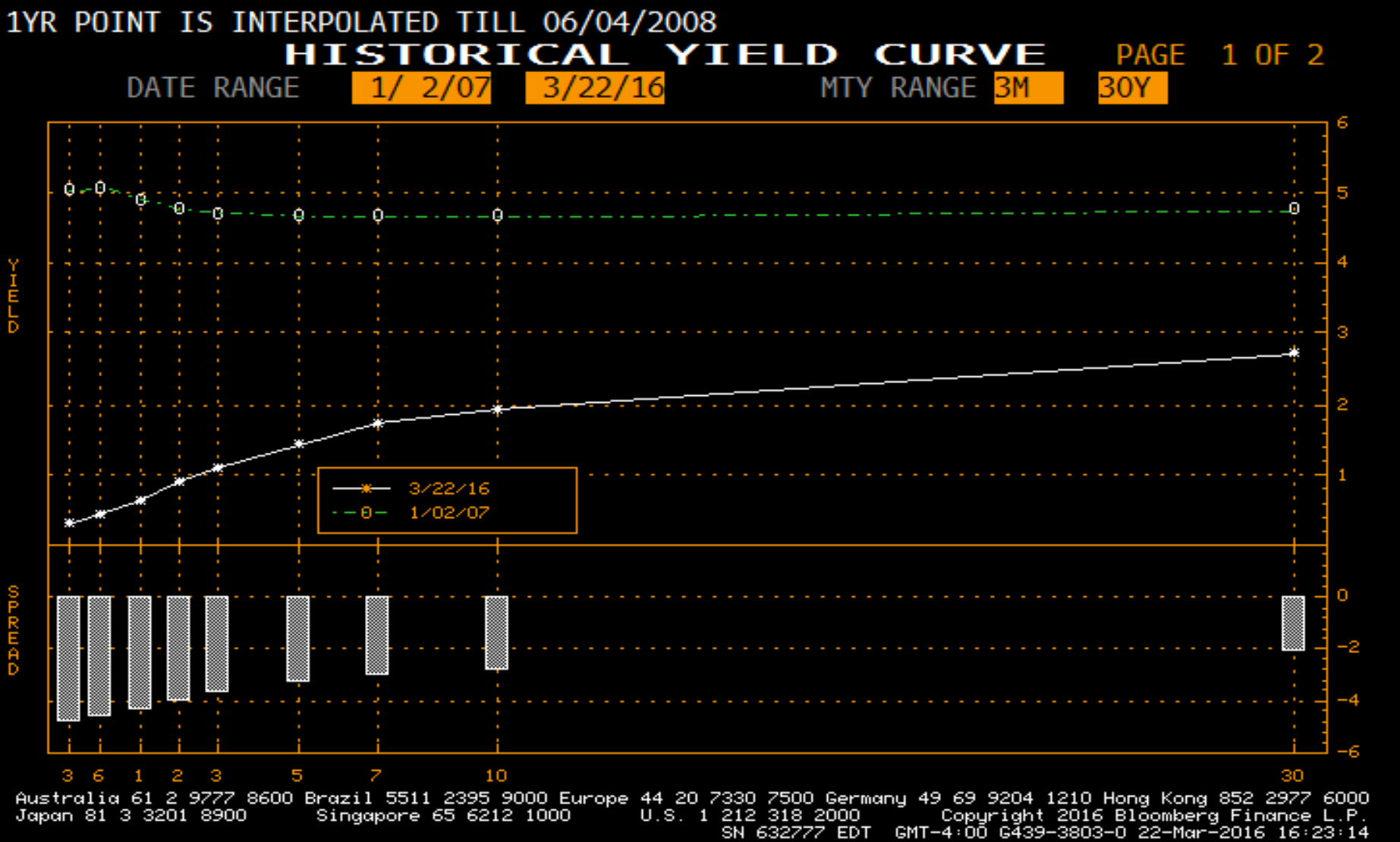
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Source: Bloomberg

# Rate Hike Probability



Source: Bloomberg



Source: Bloomberg

# How Long Can Low Interest Rates Persist?

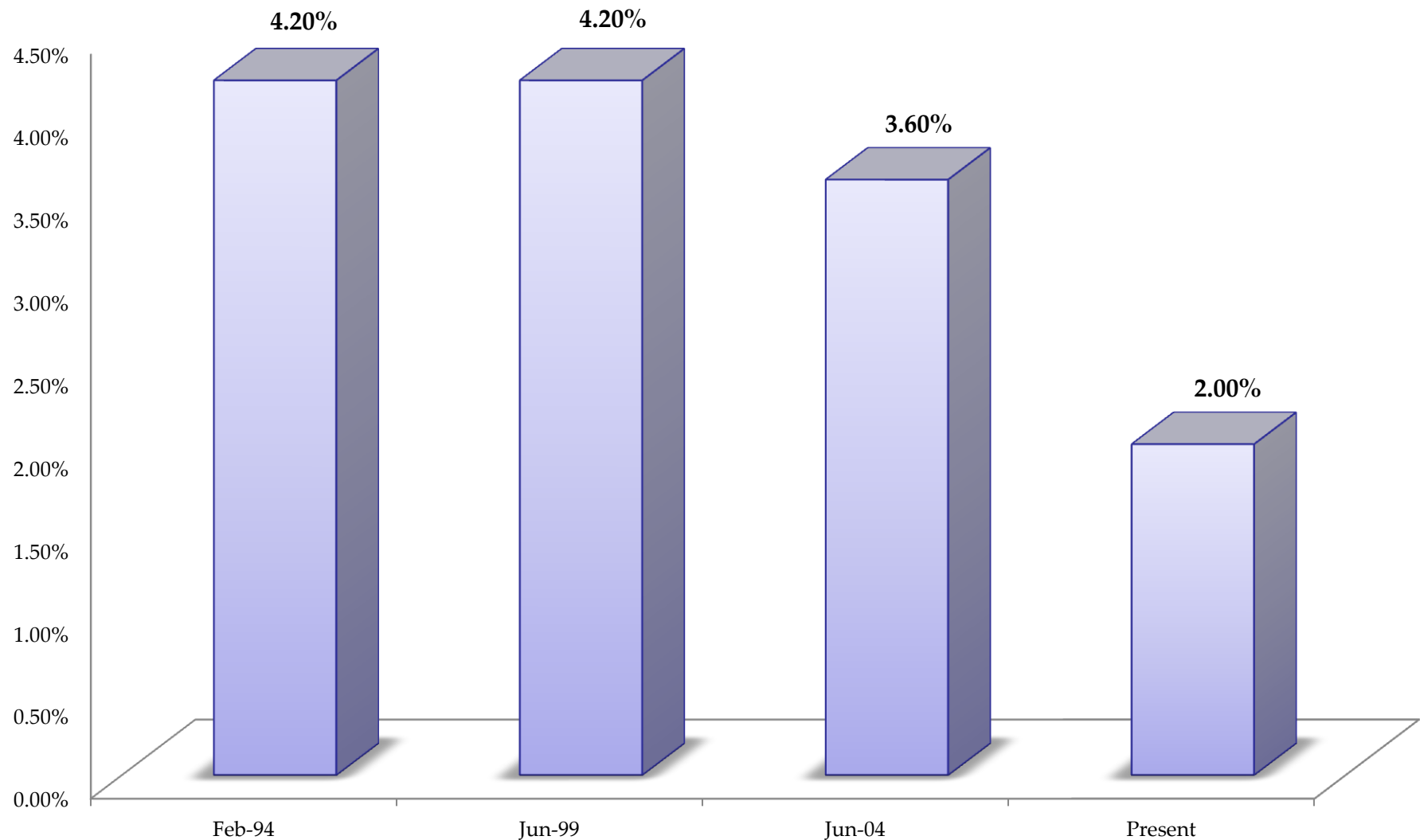
# Economic Activity Actual/Forecasts

90 Chart		7) Set as Default View		Economic Forecasts						
Country/Region/World		Contributor		Contributor Composite		Yearly		Quarterly		
United States		Browse		Private		Official				
Actual / Forecasts										
Indicator	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Economic Activity										
*Real GDP (YoY%)	-2.8	2.5	1.6	2.2	1.5	2.4	2.4	2.1	2.3	2.1
Industrial Production (YoY %)	-11.2	5.6	3.0	2.9	1.9	3.7	1.3	0.8	2.2	2.3
Price Indices										
CPI (YoY%)	-0.3	1.6	3.2	2.1	1.5	1.6	0.1	1.3	2.2	2.2
=PCE Price Index (YoY%)								1.2	1.9	2.0
└Core PCE (yoy%)	1.2	1.3	1.5	1.9	1.5	1.5	1.3	1.6	1.8	1.9
Housing Market										
Housing Starts (000s SAAR, mo								1226	1348	1418
New Home Sales (000s SAAR,								553	620	664
Existing Home Sales (000s SAA								542	551	549
Building Permits (000s SAAR,								1316	1424	1471
Labor Market										
Unemployment (%)	9.3	9.6	8.9	8.1	7.4	6.2	5.3	4.8	4.6	4.7
Non Farm Payrolls (000s SA,								189	164	145
External Balance										
Curr. Acct. (% of GDP)	-2.7	-3.0	-3.0	-2.8	-2.3	-2.3	-2.7	-2.7	-2.8	-2.8
50) News Headlines   NSE »										
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 632777 EDT GMT-4:00 G439-3803-1 22-Mar-2016 16:25:16										

Source: Bloomberg



# GDP Growth prior to First Rate Hike



Source: Bloomberg

# Yield Curve Flattening



Source: Bloomberg

# History-Implied Forward Rates

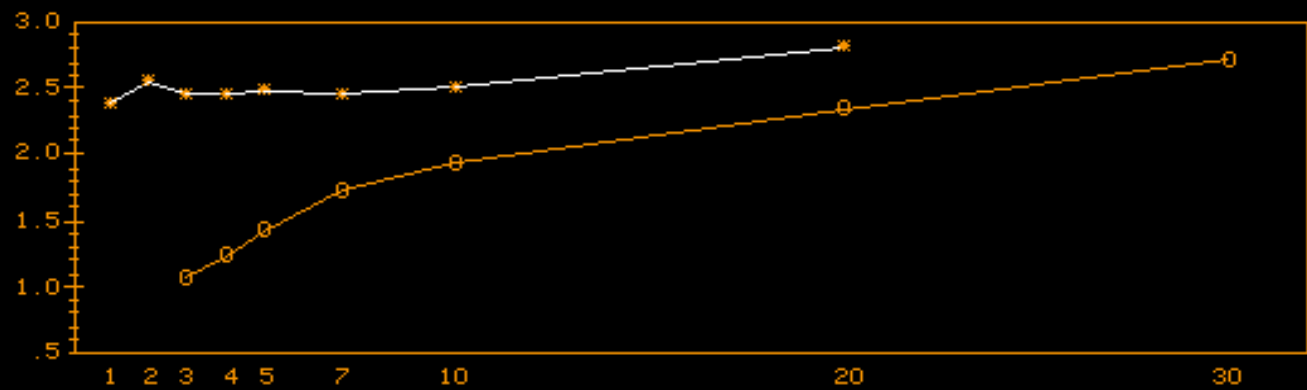
Enter all values and hit <GO>.

16:29 COUPON IMPLIED FORWARD RATES: USA

YRS TO MATURITY

F		1	2	3	4^	5	7	10	20^	30	
O											
R	NOW	0.62	0.89	1.07	1.25	1.42	1.74	1.95	2.34	2.73	
W											
A	1	1.17	1.30	1.46	1.62	1.77	1.98	2.12	2.46		
R											
D	2	1.44	1.60	1.77	1.92	2.08	2.16	2.25	2.57		
Y	3	1.76	1.93	2.08	2.24	2.25	2.32	2.36	2.66		
R											
S	5	2.38	2.54	2.46	2.45	2.48	2.46	2.50	2.81		

YIELDS  
ARE  
2/YR  
COMPOUND



^:interpolated  
YIELD CURVES

O-TODAYS

\*- 5 YRS FWD

IYC CURVE # 25

Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000  
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Source: Bloomberg

# Global Bond Yields – 5 year

Regional		97) Settings		World Bond Markets							
91) Bonds		92) Spreads		93) Curves							
Maturity 5 Year		Trading Mode		Data Range		3 Months					
Country	CMI	Security	Bid	Ask	Yield	Yld Chg	Yield	Low	Range	High	3M Chg
1) Americas											
10) United States		T 1 ½ 02/21	98-19+ / 98-19¾		1.416	+3.8		1.121		1.793	-28.9
11) Canada		CAN0 ¾ 03/21	99.937 / 99.963		0.758	+3.2		.480		.805	+8
12) Brazil (USD)		BRAZIL4 7/8 21	101.475 / 101.915		4.428	-2.2		4.428		6.589	-209.1
13) Colombia (USD)		COLOM 4 ¾ 21	104.440 / 104.865		3.362	+0.0		3.345		4.750	-84.7
14) Mexico (USD)		MEX3 ½ 01/21	103.450 / 103.730		2.669	+0.3		2.608		3.247	-49.5
2) EMEA											
20) United Kingdom		UKT1 ½ 01/21	102.995 / 103.015	c	0.862	-1.9		.671		1.366	-39.6
21) France		FRTR 0 ¾ 20	101.960 / 101.975	c	-0.171	-0.4		-.241		.094	-24.3
22) Germany		OBL0 04/09/21	101.525 / 101.545	c	-0.304	-0.7		-.409		-.037	-24.1
23) Italy		BTPS 0.65 20	101.635 / 101.665	c	0.286	+1.6		.270		.656	-24.5
24) Spain		SPGB 1.15 20	103.380 / 103.435	c	0.353	+0.1		.347		.717	-35.9
25) Portugal		PGB3.85 04/21	109.635 / 109.815	c	1.803	+0.3		1.032		2.751	+71.9
26) Sweden		SGB5 12/01/20	124.081 / 124.232	c	-0.149	-1.0		-.211		.319	-43.9
27) Netherlands		NETHER3 ½ 20	116.565 / 116.590	c	-0.318	-0.6		-.409		-.028	-26.8
28) Switzerland		SWISS 2 04/21	114.465 / 114.870	c	-0.844	-0.4		-.946		-.604	-12.6
3) Asia/Pacific											
29) Japan		JGB 0.1 03/21	101.568 / 101.619	c	-0.221	+1.7		-.260		.037	-24.5
30) Australia		ACGB 1 ¾ 20	98.222 / 98.270	c	2.142			1.869		2.249	-10.2
31) New Zealand		NZGB 6 05/21	117.187 / 117.467		2.371	+2.1		2.307		2.982	-58.9
32) South Korea		NDFB 2 09/20	101.724 / 101.779	c	1.602	+1.1		1.541		1.830	-22.7
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.											
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Source: Bloomberg

# Japan's 10-Year Note



Source: Bloomberg

If I think rates will rise soon,  
should I just stay very liquid  
so we can re-invest at  
higher rates?

## Opportunity Cost – Waiting to Invest

If I wait in money market funds, at what yield do I need to invest in the future?

- Investment assumptions: Amount = \$1,000,000      Maturity = 5 Years
- Interest rate assumptions: LAIF = 0.45%      Alternative = 1.50%



Waiting Period (Months)	Accumulated Income		Foregone Income	Remaining Term (Years)	Income Needed Through Maturity To "Breakeven"	Yield Needed to BE
	MMkt @ 0.45%	5yr Agency @ 1.50%				
3	\$ 1,125	\$ 3,750	\$ (2,625)	4.75	\$ 73,875	1.56%
6	\$ 2,250	\$ 7,500	\$ (5,250)	4.50	\$ 72,750	1.62%
9	\$ 3,375	\$ 11,250	\$ (7,875)	4.25	\$ 71,625	1.69%
12	\$ 4,500	\$ 15,000	\$ (10,500)	4.00	\$ 70,500	1.76%
15	\$ 5,625	\$ 18,750	\$ (13,125)	3.75	\$ 69,375	1.85%
18	\$ 6,750	\$ 22,500	\$ (15,750)	3.50	\$ 68,250	1.95%
21	\$ 7,875	\$ 26,250	\$ (18,375)	3.25	\$ 67,125	2.07%
24	\$ 9,000	\$ 30,000	\$ (21,000)	3.00	\$ 66,000	2.20%
27	\$ 10,125	\$ 33,750	\$ (23,625)	2.75	\$ 64,875	2.36%
30	\$ 11,250	\$ 37,500	\$ (26,250)	2.50	\$ 63,750	2.55%





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