



Top 10 Common Mistakes of Municipal Investment Programs

**California Association of County Treasurers
and Tax Collectors Annual Conference**

June 7, 2017

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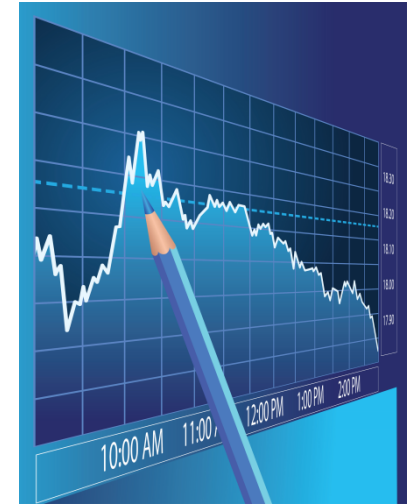
Top 10 Mistakes

- 1. Lack of a Thorough Cash Flow Analysis**
- 2. Having Too Much Liquidity**
- 3. Having Too Low of WAM/Duration**
- 4. Thinking One Can Time The Market**
- 5. Not Amortizing (Accreting)**
- 6. Lack of Diversification**
- 7. Having Too Many Investment Positions**
- 8. Not Having the Right Number/Mix of Brokers**
- 9. Not Providing Transparent Reporting**
- 10. Benchmarking Incorrectly (or Not At All)**



Public Fund Stewardship: You Have 3 Jobs!

- Preserving principal (Safety)
- Ensuring cash is available to pay bills on a timely basis (Liquidity)
- Generating a market rate of income/return for the taxpayer (Income/Yield)



The investment portfolio is the only area of state and local government where revenue can be generated without charging taxes and fees to the taxpayers

Good Stewardship?

Is having 100% of the portfolio in cash (LAIF/MMF), good stewardship?

Is having 100% of the portfolio invested in 5 year UST Notes all with gains, good stewardship?

Your Risk is Asymmetrical!

Safety and Liquidity Outweigh Income

But What is the First Question Asked?

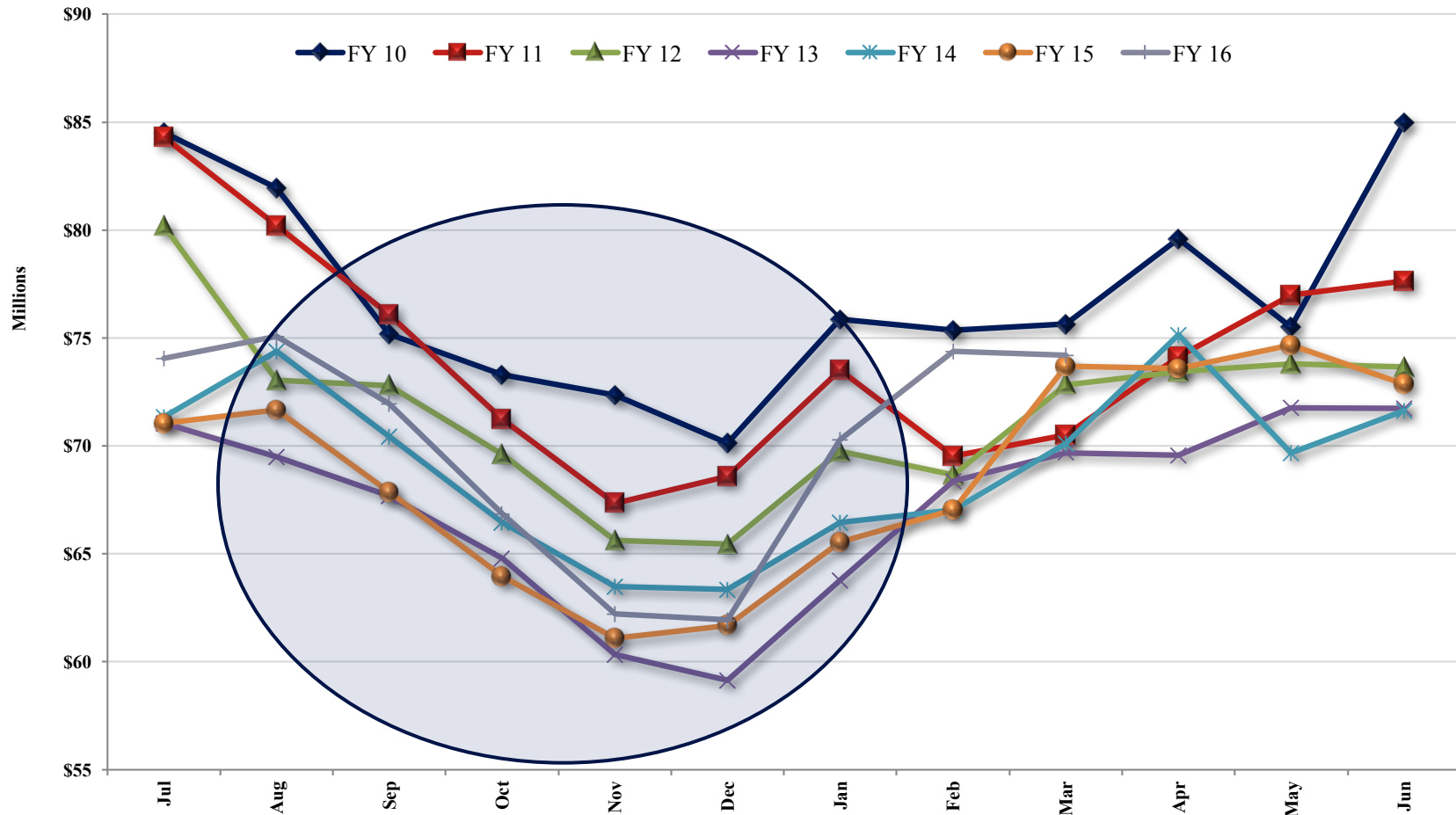


Top Ten Common Mistakes: #1

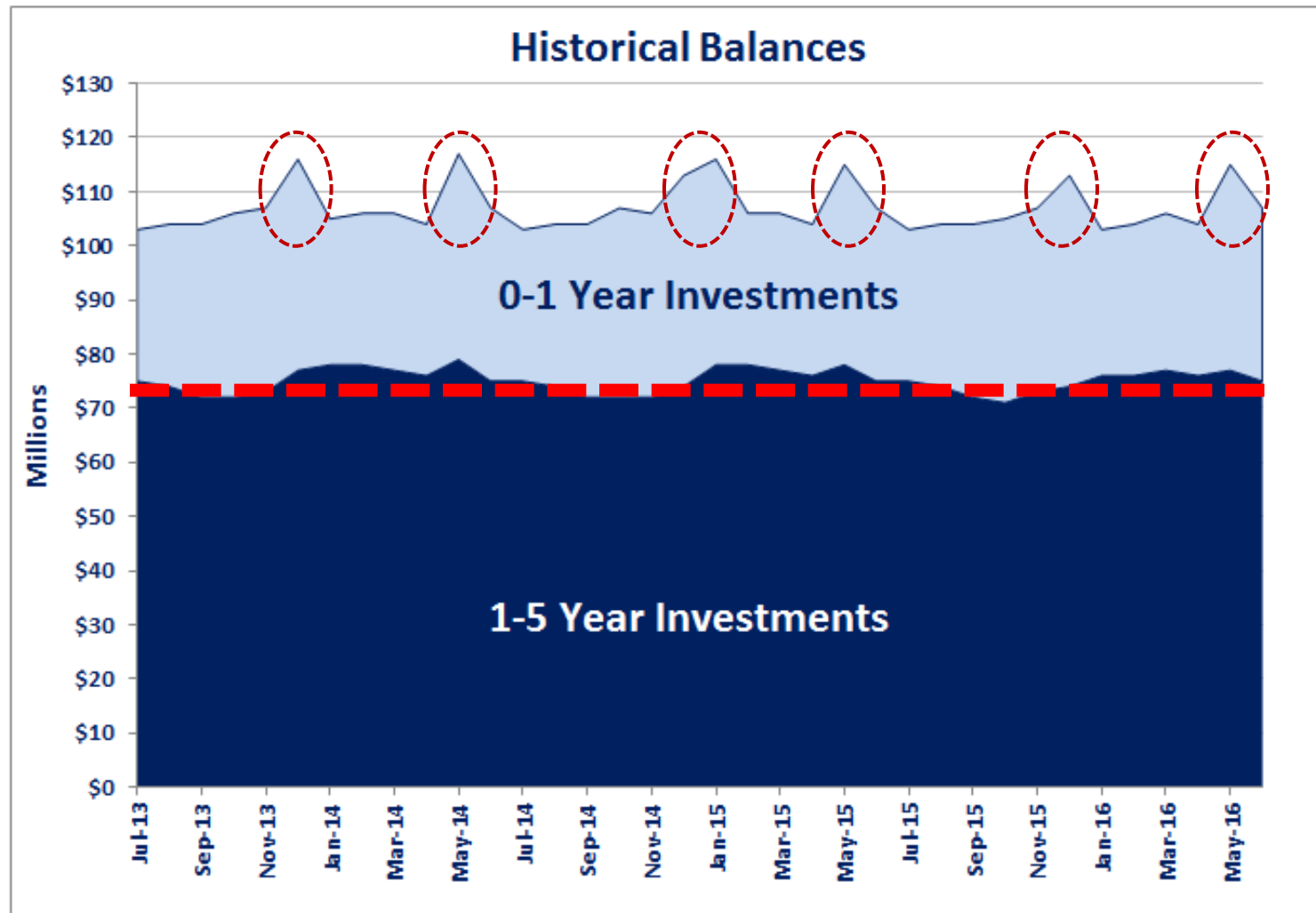
Lack of a Thorough Cash Flow Analysis

Cash Flow Analysis: Fiscal Years

Month End Portfolio Balance

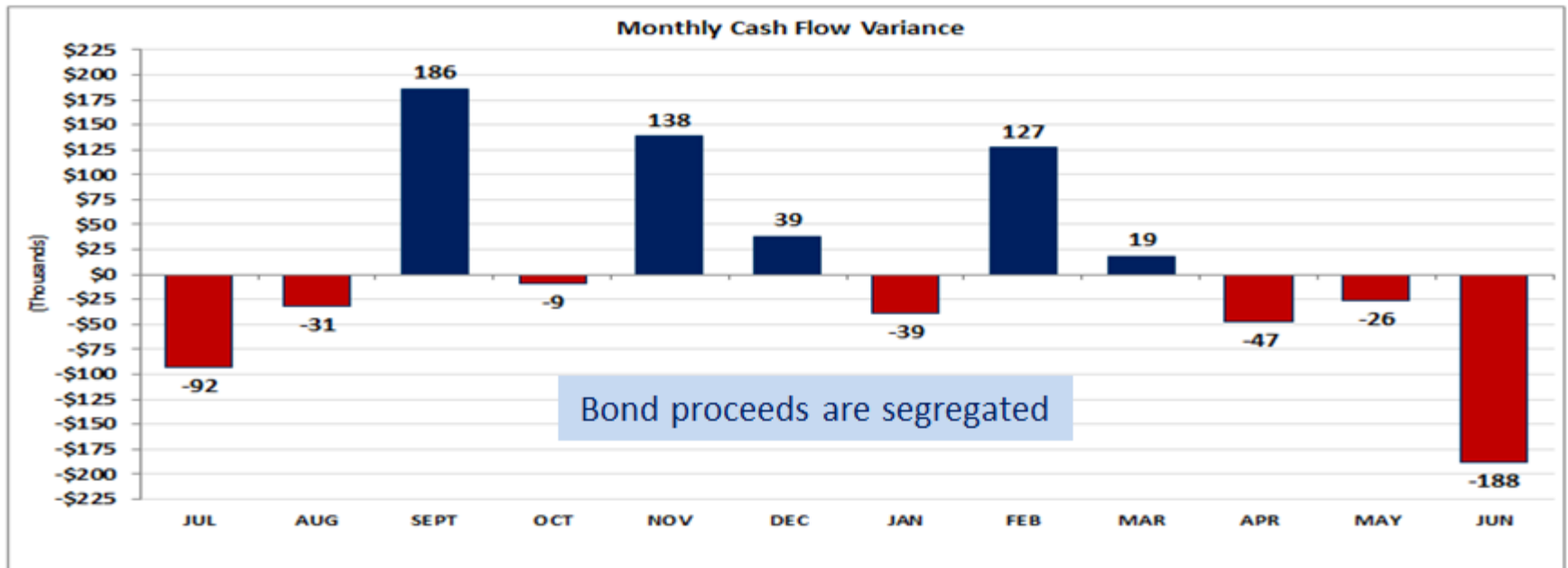


Cash Flow Analysis: Historical Balances



Cash Flow Analysis: Monthly (80/20 Rule)

REVENUES	JUL	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
Property Tax	0.0	11.6	155.6	39.0	90.6	7.3	35.5	88.1	16.3	102.7	45.0	3.0	594.7
State Revenues	101.9	90.4	84.8	70.0	84.4	105.3	71.9	89.2	84.2	77.4	71.0	72.0	1,002.5
Debt Service Proceeds	19.0	0.0	0.0	22.1	87.2	51.5	0.0	12.5	15.0	0.0	11.0	20.0	238.3
Misc. Revenues	304.8	215.7	280.9	310.9	302.4	294.1	301.4	300.7	273.0	218.0	252.0	210.0	3,263.9
TOTAL REVENUES	425.7	317.7	521.3	442.0	564.6	458.2	408.8	490.5	388.5	398.1	379.0	305.0	5,099.4
EXPENSES	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
Payroll	72.2	67.2	67.4	112.3	71.6	70.2	71.6	69.3	68.7	92.3	72.0	65.0	899.8
Accounts Payable	99.2	98.4	97.8	102.4	80.6	92.4	77.3	91.2	97.6	110.0	110.0	110.0	1,166.9
Wires/PERS	224.2	158.8	148.4	215.5	205.1	200.9	234.7	179.3	176.0	222.1	179.0	241.0	2,385.0
Debt Service	122.3	24.5	21.6	20.6	68.9	56.2	64.3	23.9	27.7	20.6	43.6	76.6	570.8
TOTAL EXPENSES	517.9	348.9	335.2	450.8	426.2	419.7	447.9	363.7	370.0	445.0	404.6	492.6	5,022.4
VARIANCE	(92.2)	(31.2)	186.1	(8.8)	138.4	38.5	(39.1)	126.8	18.5	(46.9)	(25.6)	(187.6)	77.0



Cash Flow Analysis: Daily

REVENUES	1	2	3	4	5	6	7	8	9	10	11	12	13
Beginning Cash (MMF)	6.0	6.0	1.0	5.0	10.0	1.0	1.8	1.8	1.8	6.8	1.8	6.8	1.8
Investment-Mature			24.0			5.8							39.0
Investment-Call													
Investment-Sell													
Property Tax													120.0
State Revenues		12.0											
Debt Service Proceeds		11.0											
Misc. Revenues-6293		20.0	10.0	10.0	10.0	10.0			10.0	10.0	10.0	10.0	10.0
TOTAL	6.0	49.0	35.0	15.0	20.0	16.8	1.8	1.8	11.8	16.8	11.8	16.8	170.8
EXPENSES	1	2	3	4	5	6	7	8	9	10	11	12	13
CC Payroll-2111		6.0											27.0
A/P- 6223,2133		5.0	5.0	5.0	5.0	5.0			5.0	5.0	5.0	5.0	5.0
Debt Service		23.0											
Wires/Pers- 2122		14.0			14.0								
Misc. Expenses													
Investment-Purchase			25.0			10.0				10.0		10.0	135.0
TOTAL	0.0	48.0	30.0	5.0	19.0	15.0	0.0	0.0	5.0	15.0	5.0	15.0	167.0
NET POSITION	6.0	1.0	5.0	10.0	1.0	1.8	1.8	1.8	6.8	1.8	6.8	1.8	3.8

Top Ten Common Mistakes: #2

Having Too Much Liquidity

Portfolio Structure: Rule of Thumb

Primary Liquidity: 0-3 Months

10%-15%

Secondary Liquidity: 3-12 Months

10%-15%

Core Investments: 1-5 Years

70%-80%

Total Portfolio

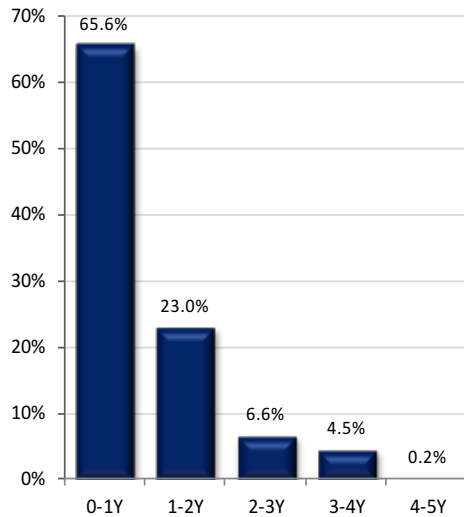
100%

Bond Proceeds? -- Municipal Advisor Rule

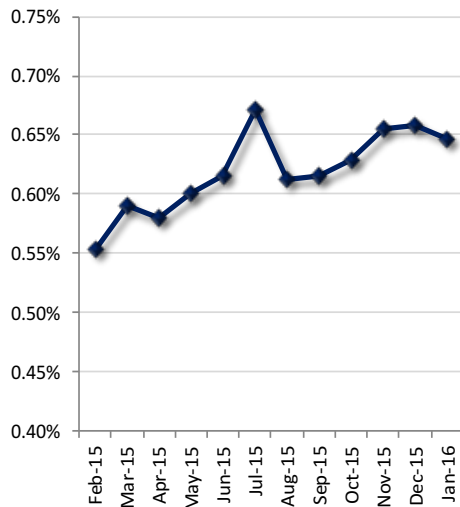
Before and After...(still in progress)

January 2016
WAM: .8 Yrs

MATURITY DISTRIBUTION

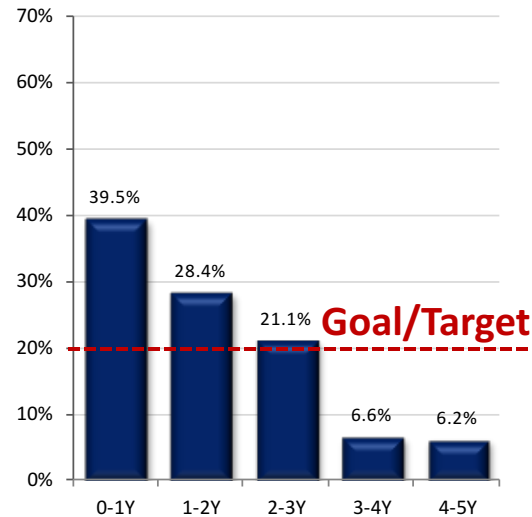


MONTH-END PORTFOLIO BOOK YIELD

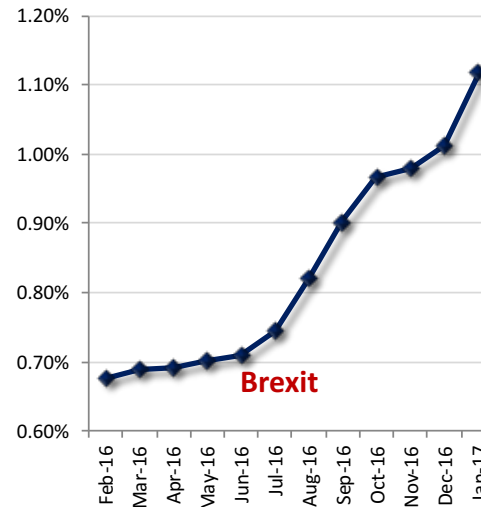


January 2017
WAM: 1.6 Yrs

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MONTH-END PORTFOLIO BOOK YIELD



Top Ten Common Mistakes: #3

Having Too Low of WAM/Duration

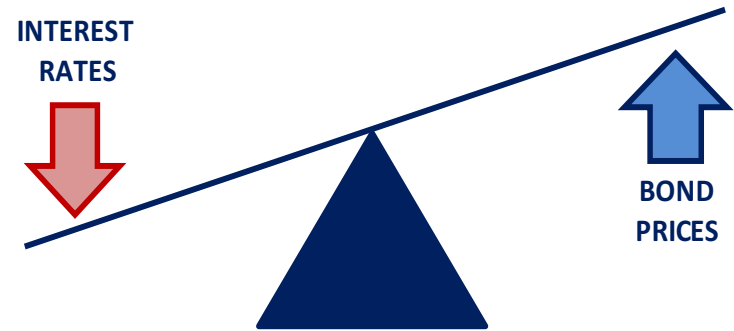
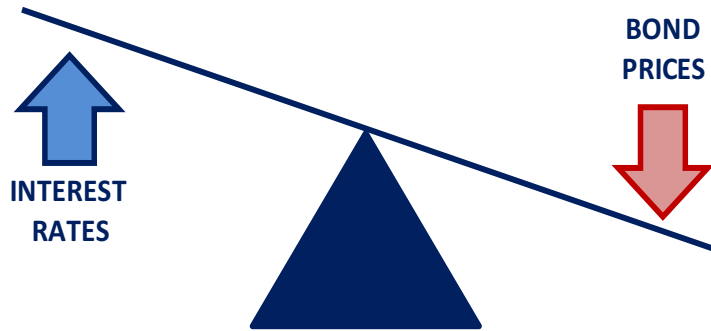
**(Having Too Many Callables...
And/Or the “Wrong Kind” of Callables)**

Two Main Portfolio Risks/Decisions

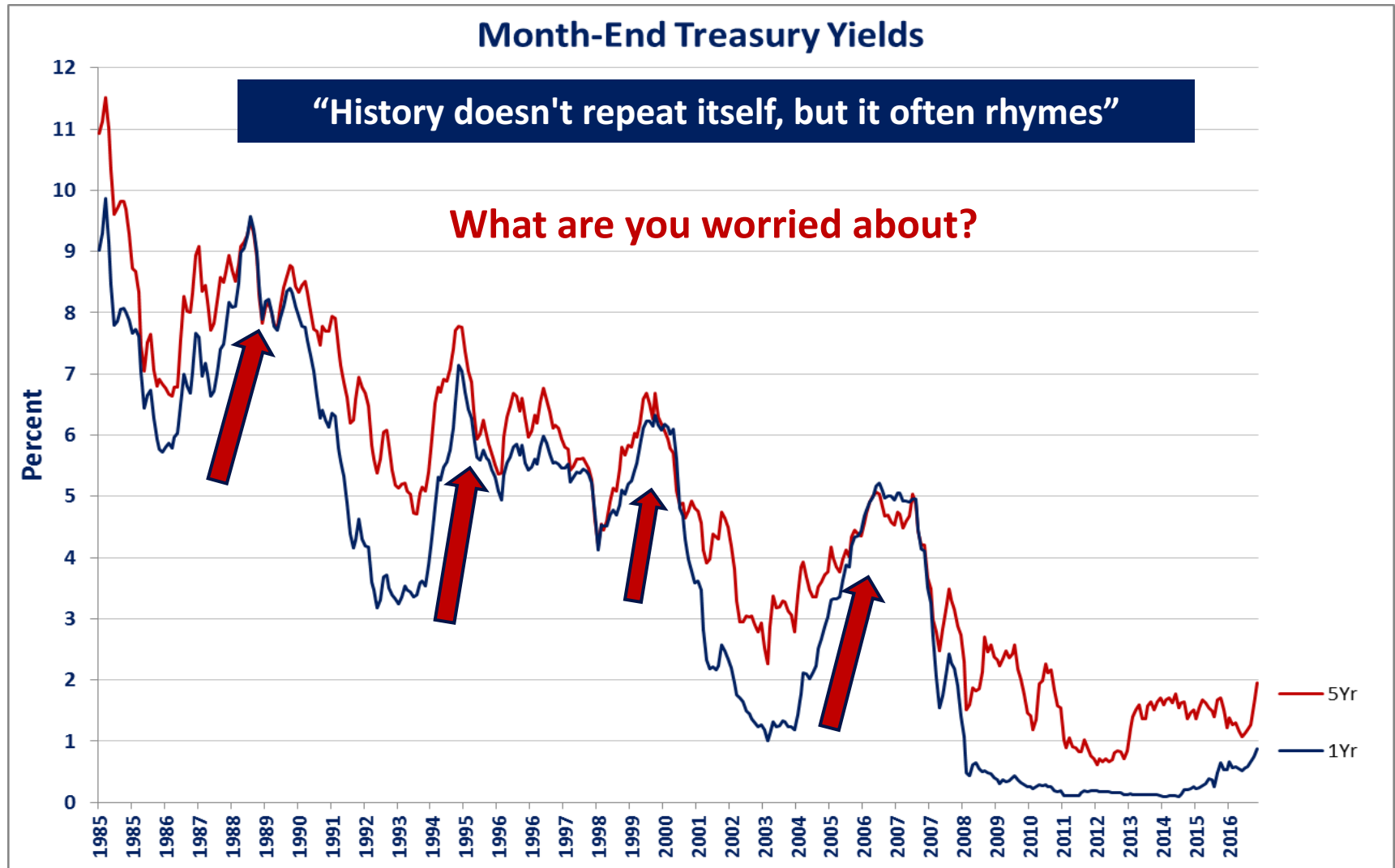


Interest Rate Risk

Credit Risk



Optimal WAM/Duration for Operating Funds?



Source: Bloomberg

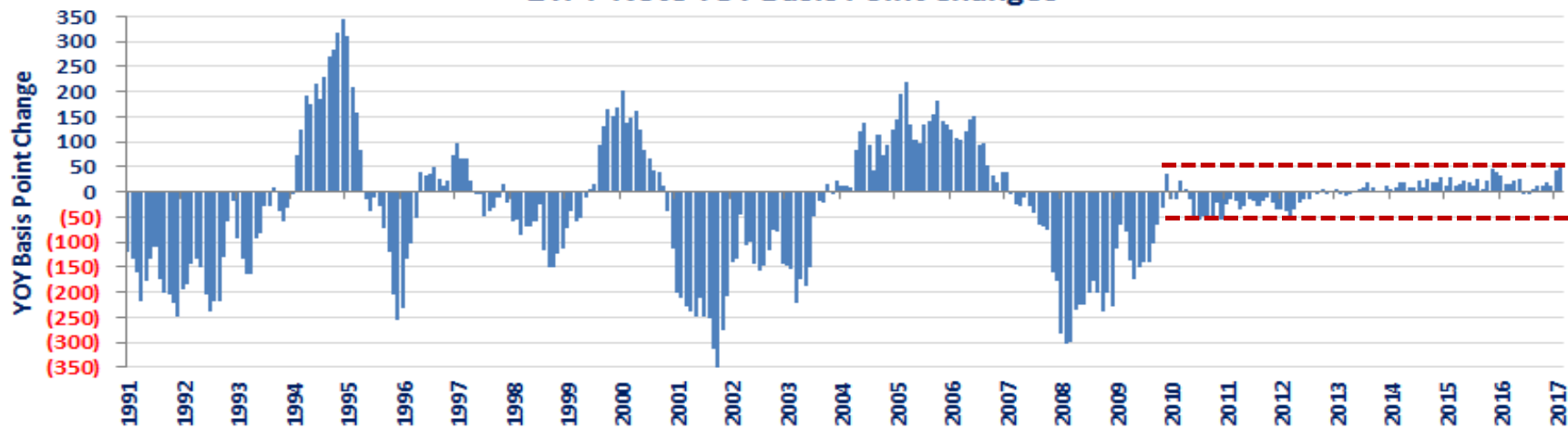
Will Volatility Wake Up?



2Yr T-Note Yield



2Yr T-Note YOY Basis Point Changes



Source: Bloomberg

WAM: Sweet Spot Analysis

Benchmark Treasury Modified Sharp Ratio Analysis

1/31/1990 to 12/31/2016

Maturity	Avg Yield	Avg Duration	Modified Sharp Ratio	% Return of 30Yr / % 30Yr Risk
3 Mon T-Bill	2.90	0.24		55% / 2%
6 Mon T-Bill	3.03	0.48	0.284	58% / 3%
1 Yr T-Bill	3.17	0.97	0.280	60% / 6%
Sweet Spot 2 Yr T-Note	3.50	1.90	0.315	67% / 12%
3 Yr T-Note	3.73	2.85	0.292	71% / 19%
5 Yr T-Note	4.16	4.45	0.283	79% / 29%
10 Yr T-Note	4.74	7.96	0.231	90% / 52%
30 Yr T-Bond	5.25	15.35	0.154	100% / 100%

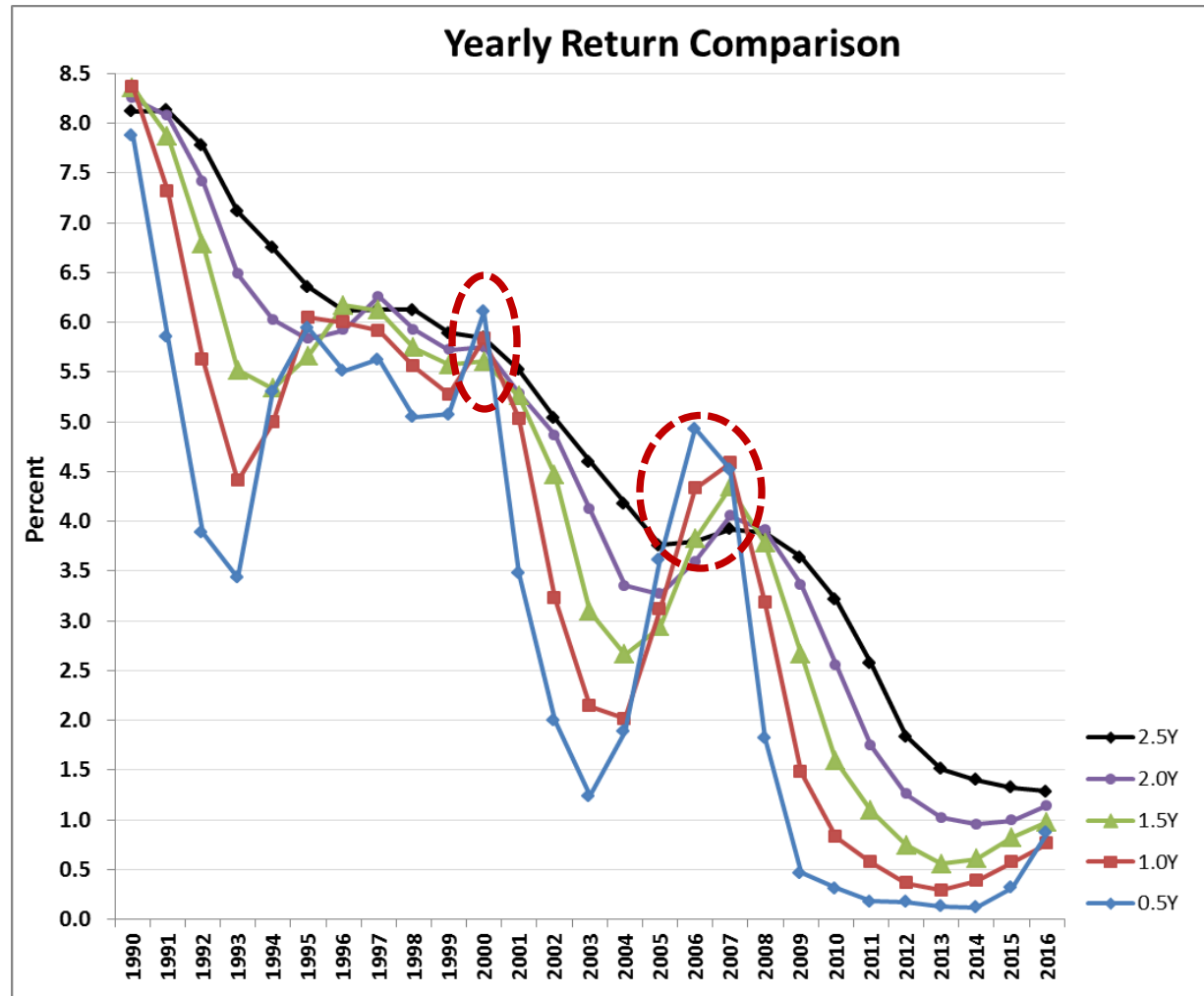
$(\text{Avg Yield} - \text{Risk Free Yield}) / \text{Avg Duration} = \text{MSR}$

$$(3.50 \text{ 2y} - 2.90 \text{ 3m}) / 1.90 \text{ 2y} = .315$$

Source: Bloomberg, FTN Main Street.

WAM: Sweet Spot Analysis

WAM	0.5Y	1.0Y	1.5Y	2.0Y	2.5Y
Treasury	1Y	2Y	3Y	4Y	5Y
1990	7.88	8.37	8.36	8.25	8.12
1991	5.86	7.32	7.87	8.07	8.13
1992	3.89	5.63	6.79	7.42	7.78
1993	3.43	4.41	5.52	6.49	7.12
1994	5.31	4.99	5.34	6.03	6.75
1995	5.95	6.05	5.66	5.84	6.36
1996	5.51	6.00	6.17	5.92	6.12
1997	5.63	5.91	6.12	6.26	6.12
1998	5.05	5.56	5.74	5.93	6.12
1999	5.08	5.28	5.57	5.73	5.90
2000	6.11	5.83	5.61	5.75	5.85
2001	3.48	5.03	5.26	5.29	5.52
2002	2.00	3.23	4.46	4.87	5.04
2003	1.24	2.15	3.10	4.12	4.60
2004	1.89	2.02	2.66	3.35	4.18
2005	3.62	3.12	2.94	3.27	3.76
2006	4.93	4.33	3.82	3.60	3.80
2007	4.52	4.59	4.34	4.06	3.92
2008	1.82	3.18	3.78	3.91	3.89
2009	0.47	1.48	2.67	3.37	3.64
2010	0.32	0.83	1.59	2.56	3.22
2011	0.18	0.58	1.09	1.74	2.57
2012	0.17	0.36	0.75	1.26	1.84
2013	0.13	0.29	0.56	1.02	1.51
2014	0.12	0.39	0.61	0.96	1.40
2015	0.32	0.57	0.82	0.99	1.33
2016	0.87	0.76	0.98	1.14	1.29
Avg Yield	3.18	3.64	4.01	4.34	4.66
3M Tsy Avg	2.90	2.90	2.90	2.90	2.90
Excess Return	0.28	0.74	1.11	1.44	1.76
WAM	0.50	1.00	1.50	2.00	2.50
Mod Sharp	0.555	0.739	0.738	0.720	0.705



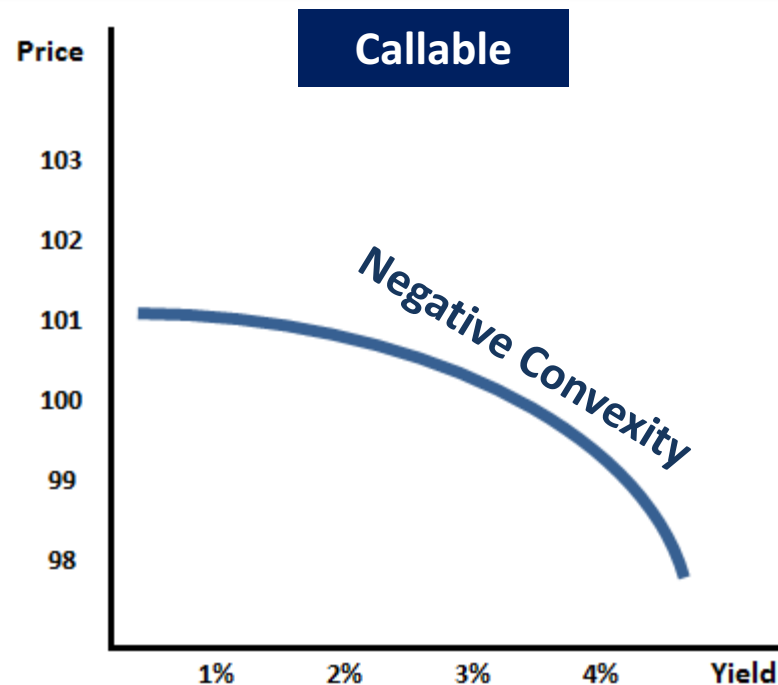
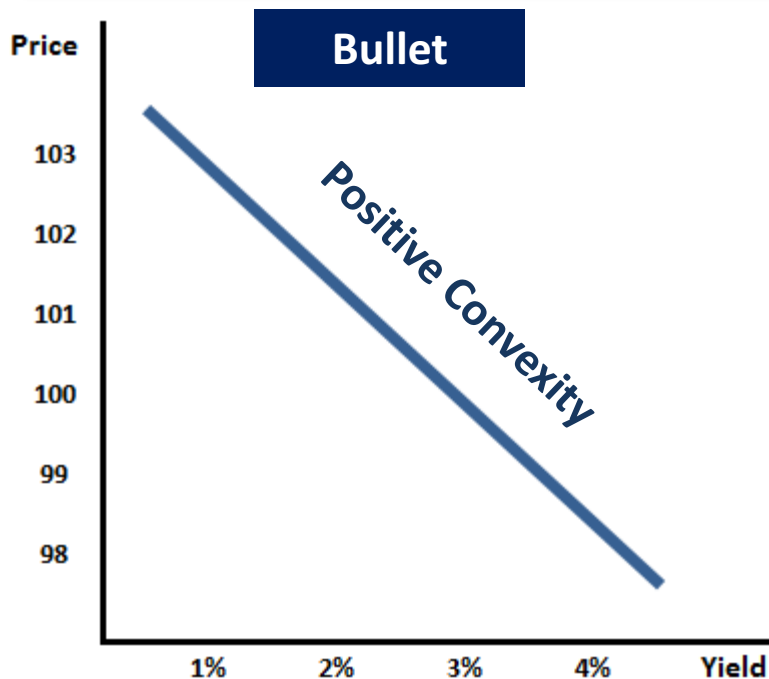
Source: Bloomberg, FTN Main Street

WAM/Duration Impact

WAM	Portfolio Size	%	Annual Interest	Total Interest
2Yr WAM	\$100,000,000 X	4.34% =	\$4,340,000 X 27 Years =	\$117,180,000
1Yr WAM	\$100,000,000 X	3.64% =	\$3,640,000 X 27 Years =	\$98,280,000
			Difference	\$18,900,000
2Yr WAM	\$1,000,000,000 X	4.34% =	\$43,400,000 X 27 Years =	\$1,171,800,000
1Yr WAM	\$1,000,000,000 X	3.64% =	\$36,400,000 X 27 Years =	\$982,800,000
			Difference	\$189,000,000
2Yr WAM	\$4,000,000,000 X	4.34% =	\$173,600,000 X 27 Years =	\$4,687,200,000
1Yr WAM	\$4,000,000,000 X	3.64% =	\$145,600,000 X 27 Years =	\$3,931,200,000
			Difference	\$756,000,000

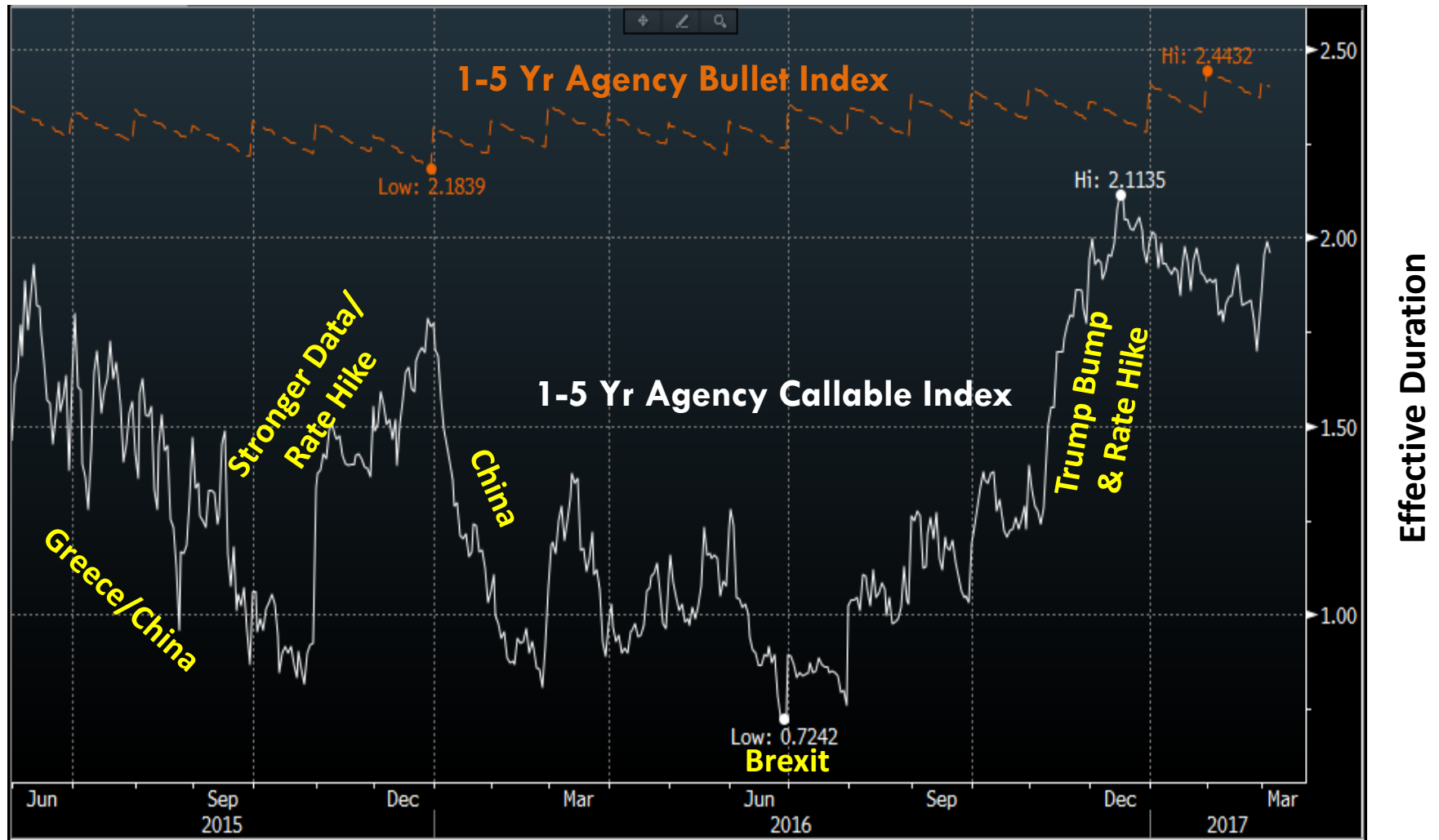
Callable Bonds: Friend and Foe

Bond Convexity is a measure of the non-linear relationship of bond prices to changes in interest rates, the second derivative of the price of the bond with respect to interest rates (duration is the first derivative).



If you buy a par or discounted callable, do you want it to be called?

Effective Duration: Bullets 1-5Yrs vs. Callables 1-5Yrs

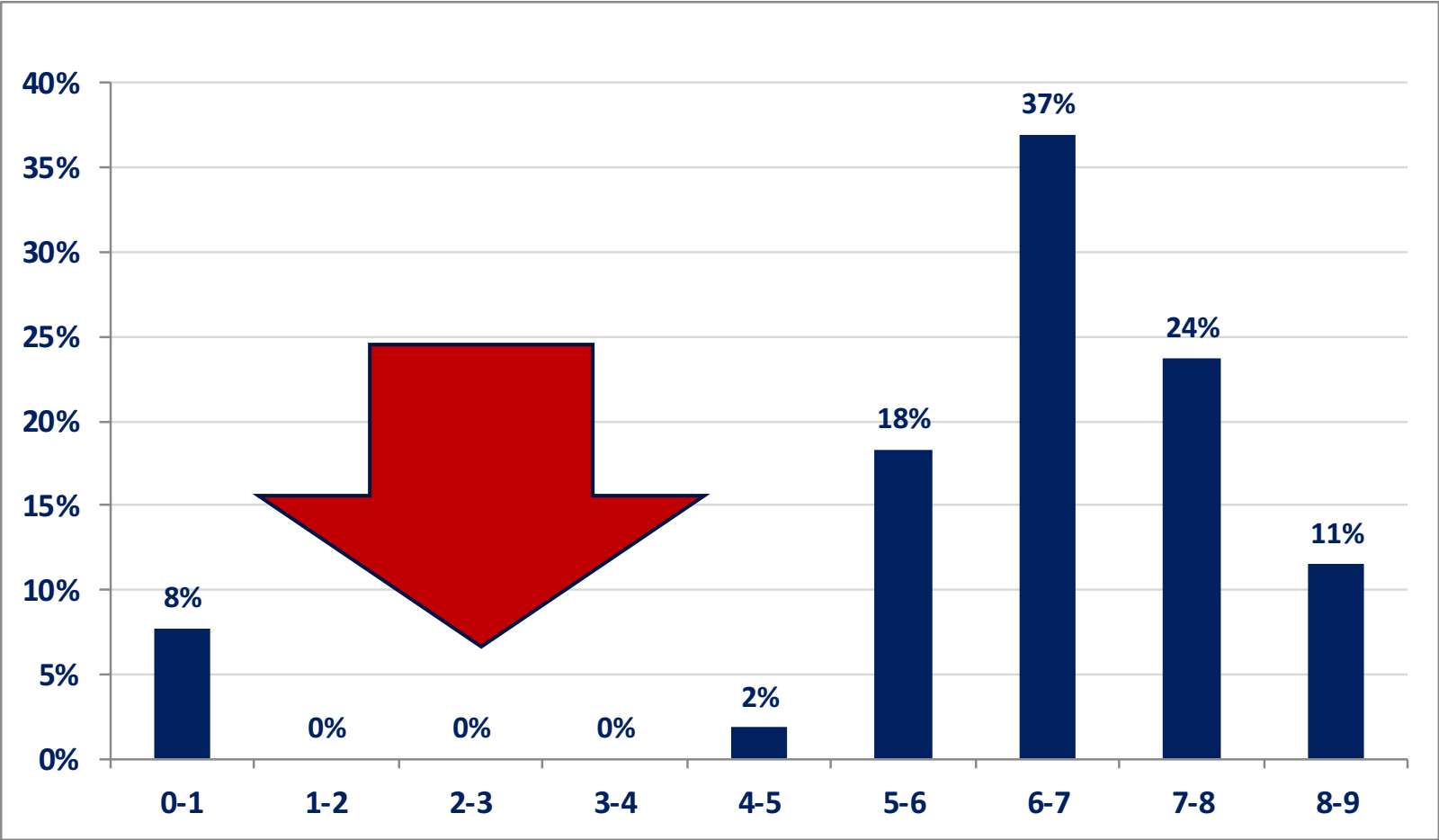


What's the maximum % of callables you should have? What types of callables?

Source: Bloomberg

Do You See a Problem?

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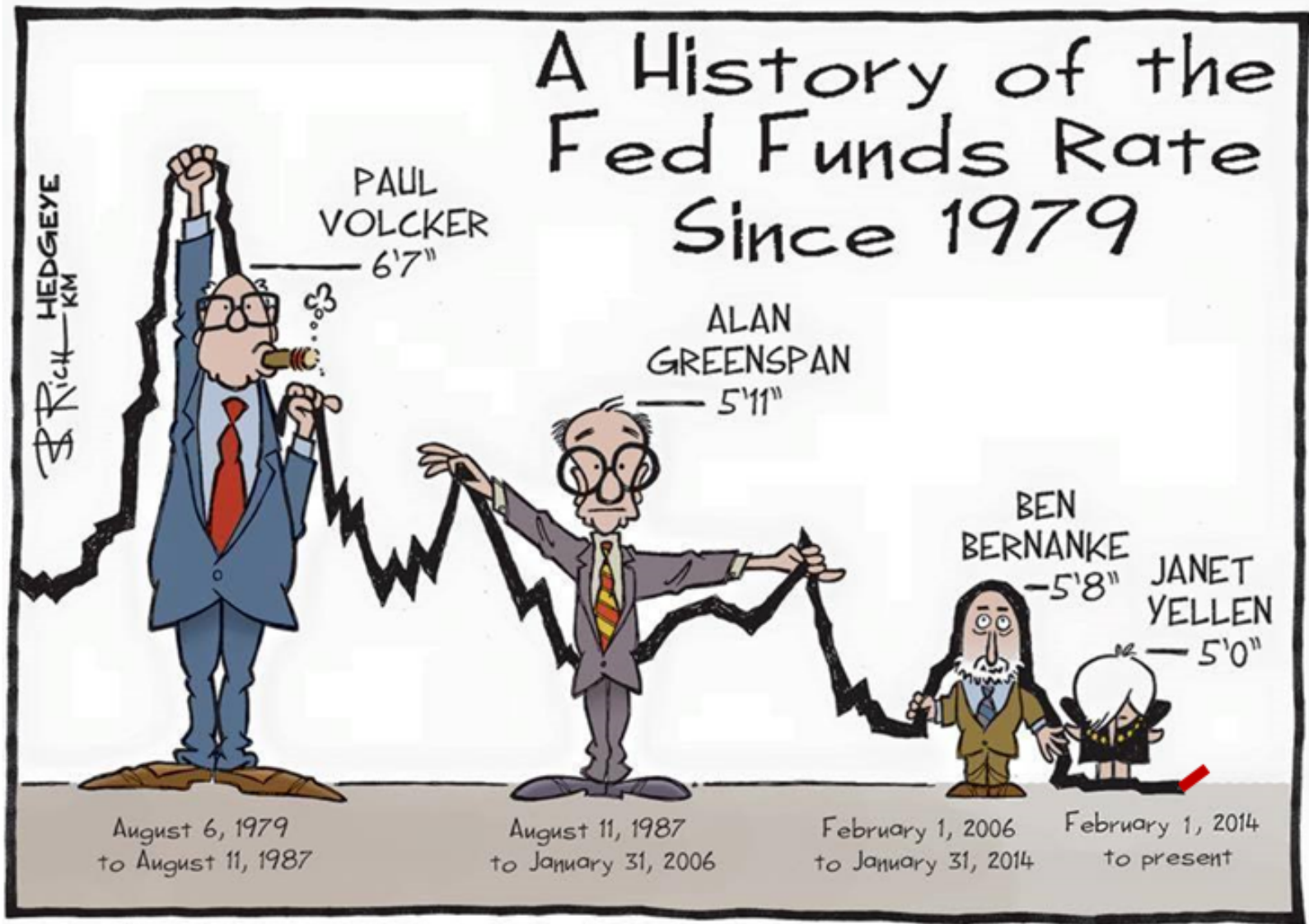
Years

1.80%

Top Ten Common Mistakes: #4

Thinking One Can Time the Market

Best Way to Know Where Rates are Heading



Awesome Advice

THE ONLY FUNCTION
OF ECONOMIC
FORECASTING IS TO
MAKE ASTROLOGY
LOOK RESPECTABLE.



John Kenneth Galbraith
Canadian-American Economist

QUOTEHD.COM

1908 - 2006



**“It's tough to make predictions,
especially about the future”** Yogi Berra

**Two economists walk into a bar...
they have no idea what happens next!**

Edgar Fiedler Quotes

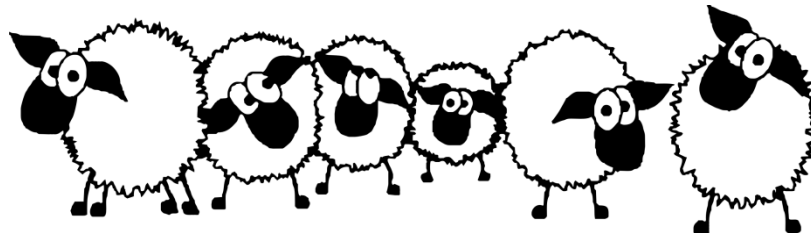
Economist—Asst. Treasury Secretary (Nixon & Ford)



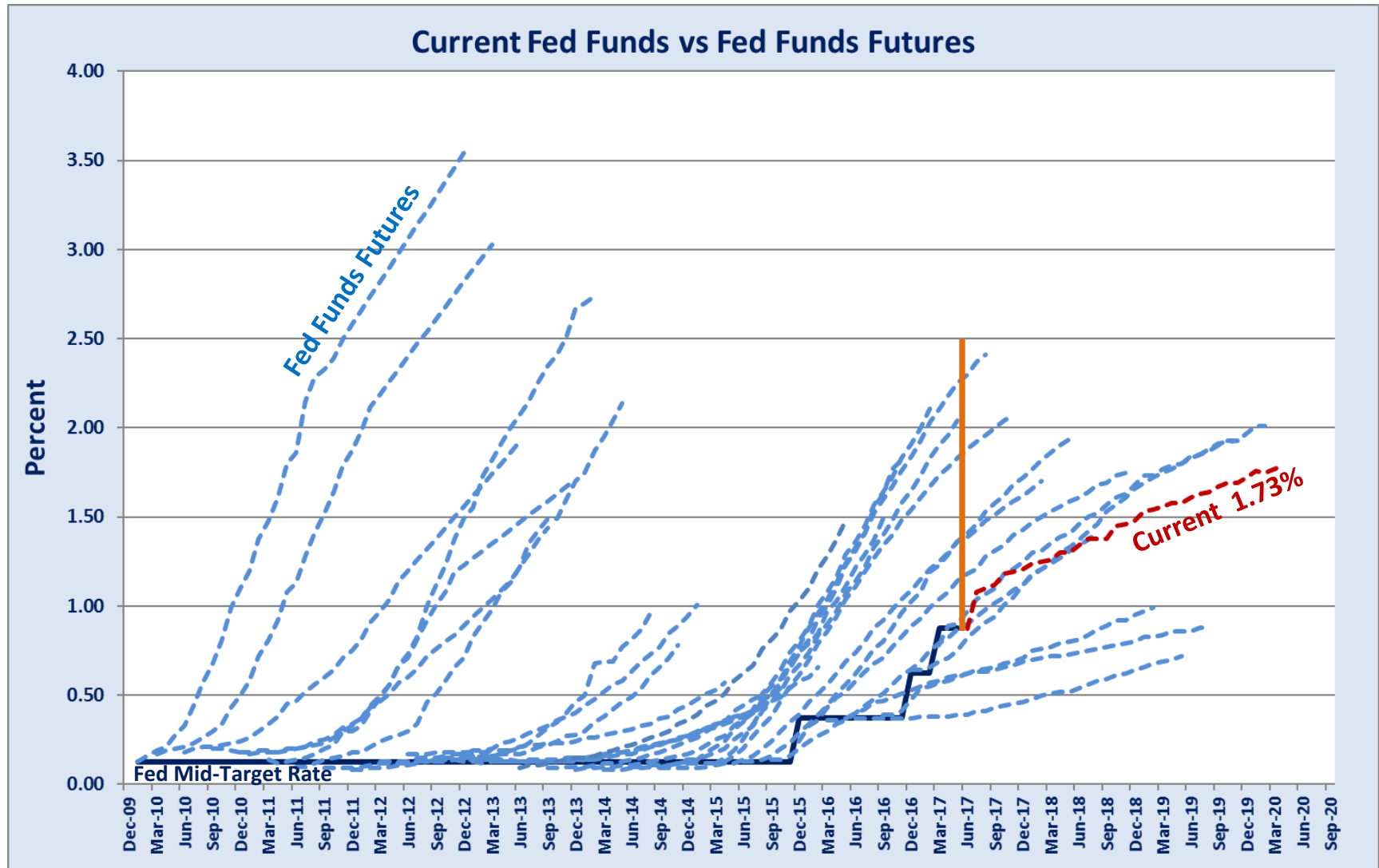
“If you have to forecast, forecast often.”

**“Ask five economists and you’ll get five different answers –
six if one of them went to Harvard.”**

**“The herd instinct among economic forecasters makes sheep
look like independent thinkers.”**

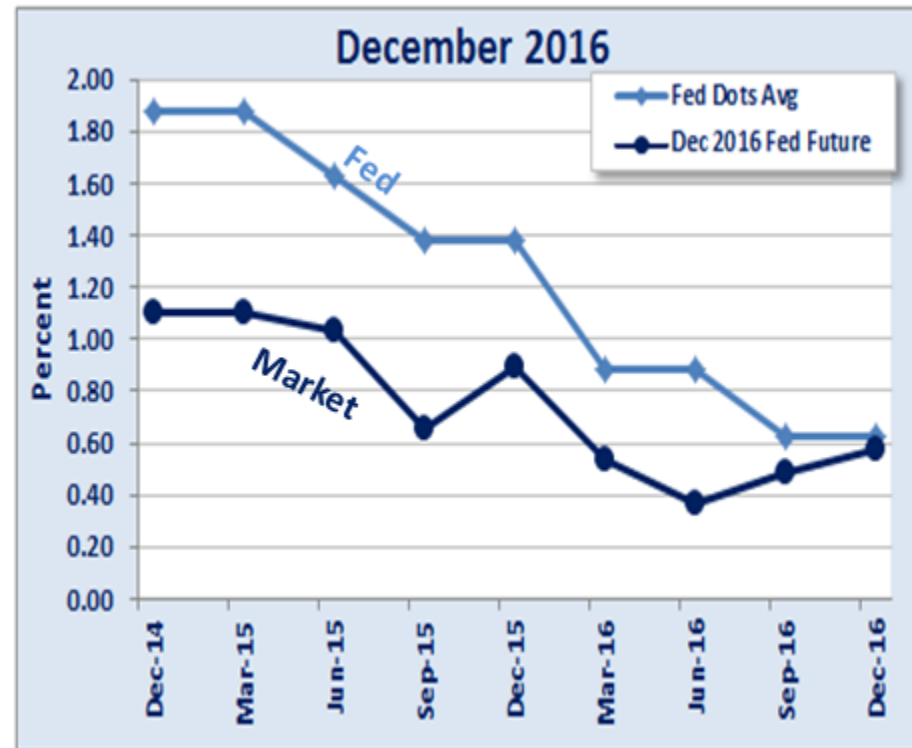
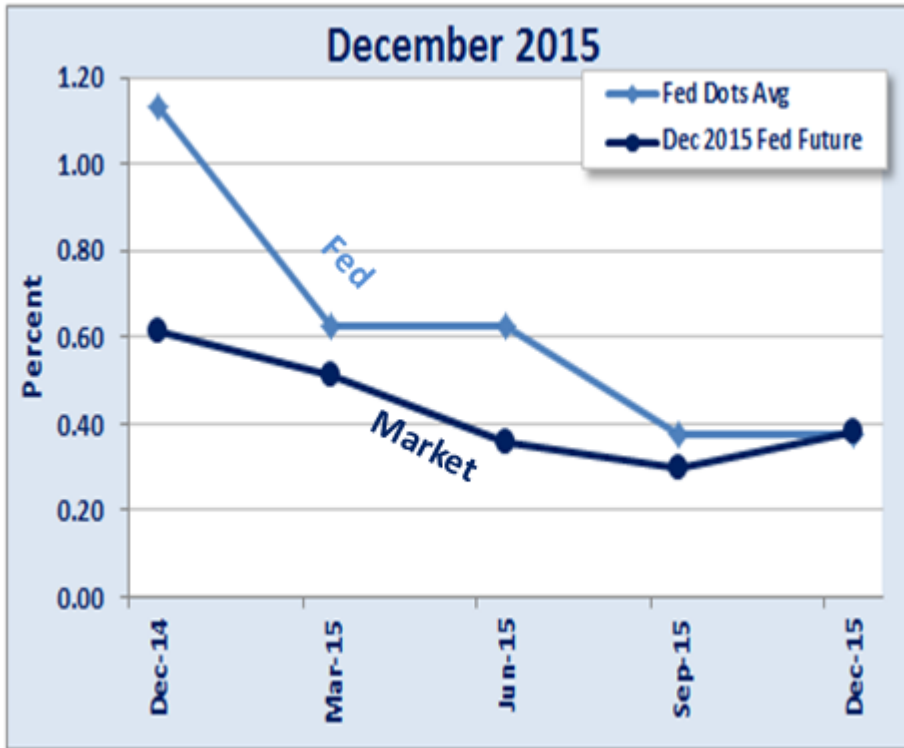


How Did the Market Do at Predicting Fed Funds?



Source: Bloomberg

The Fed Was Worse

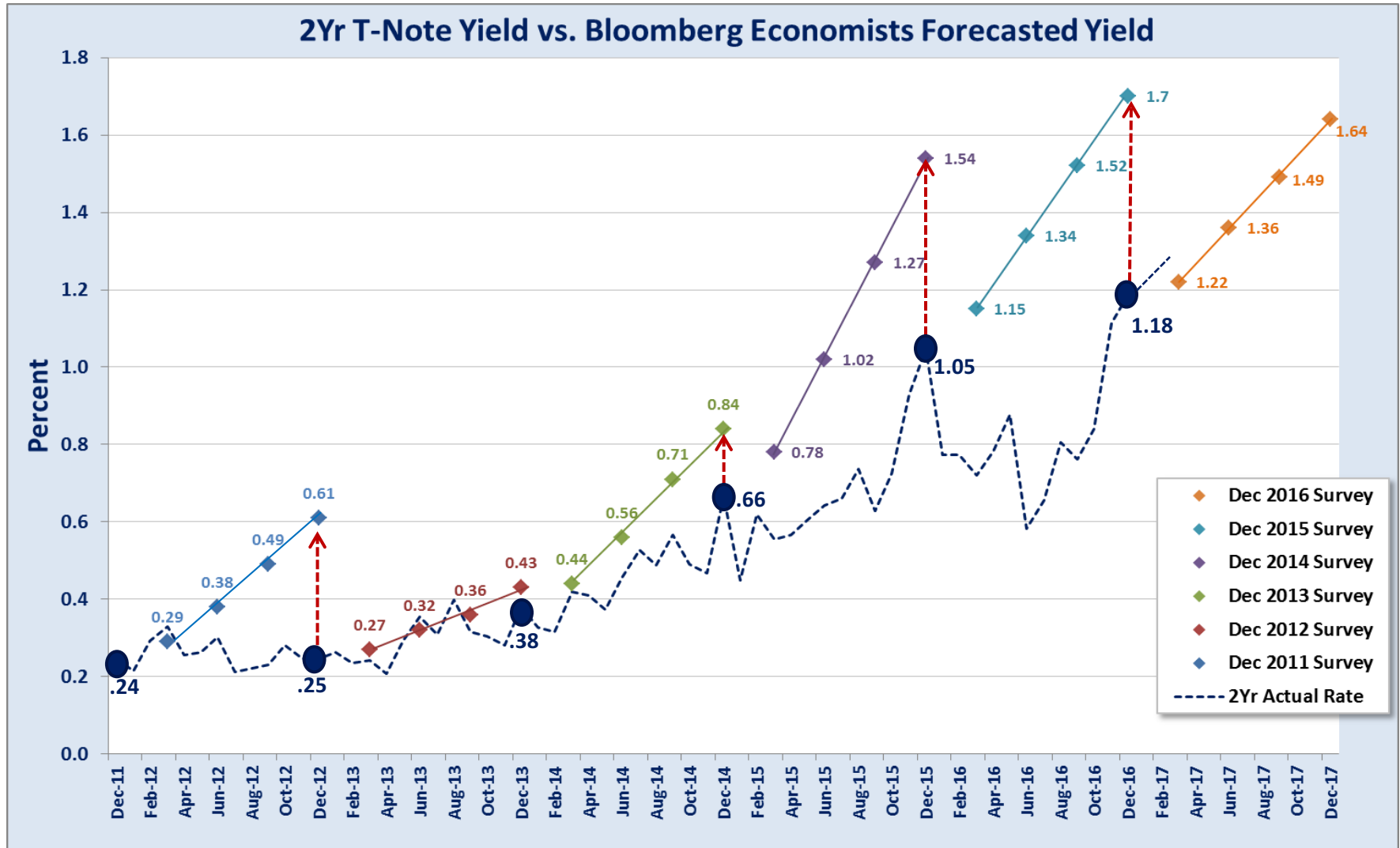


Source: Bloomberg, Federal Reserve

100+ PhDs



How Did Non-Fed Forecasters Do Out the Curve?

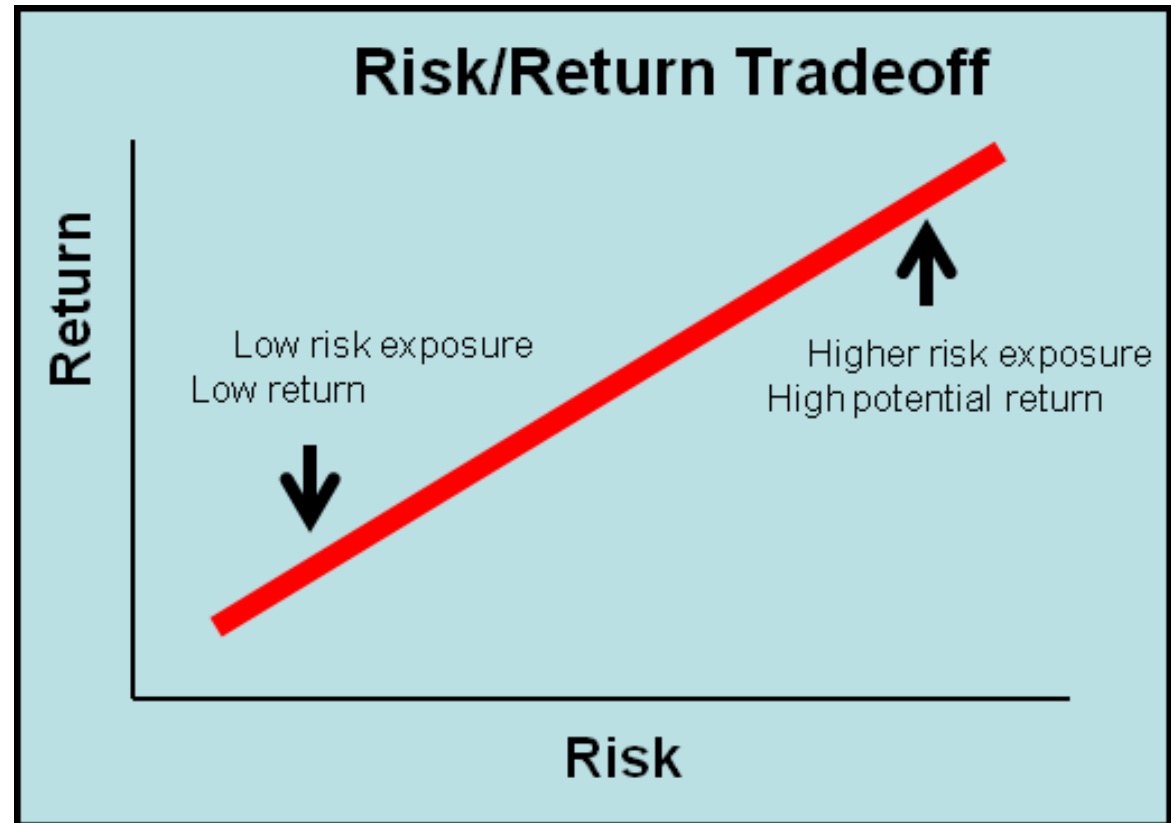


Source: Bloomberg

Hotels.com Captain Obvious Alert!



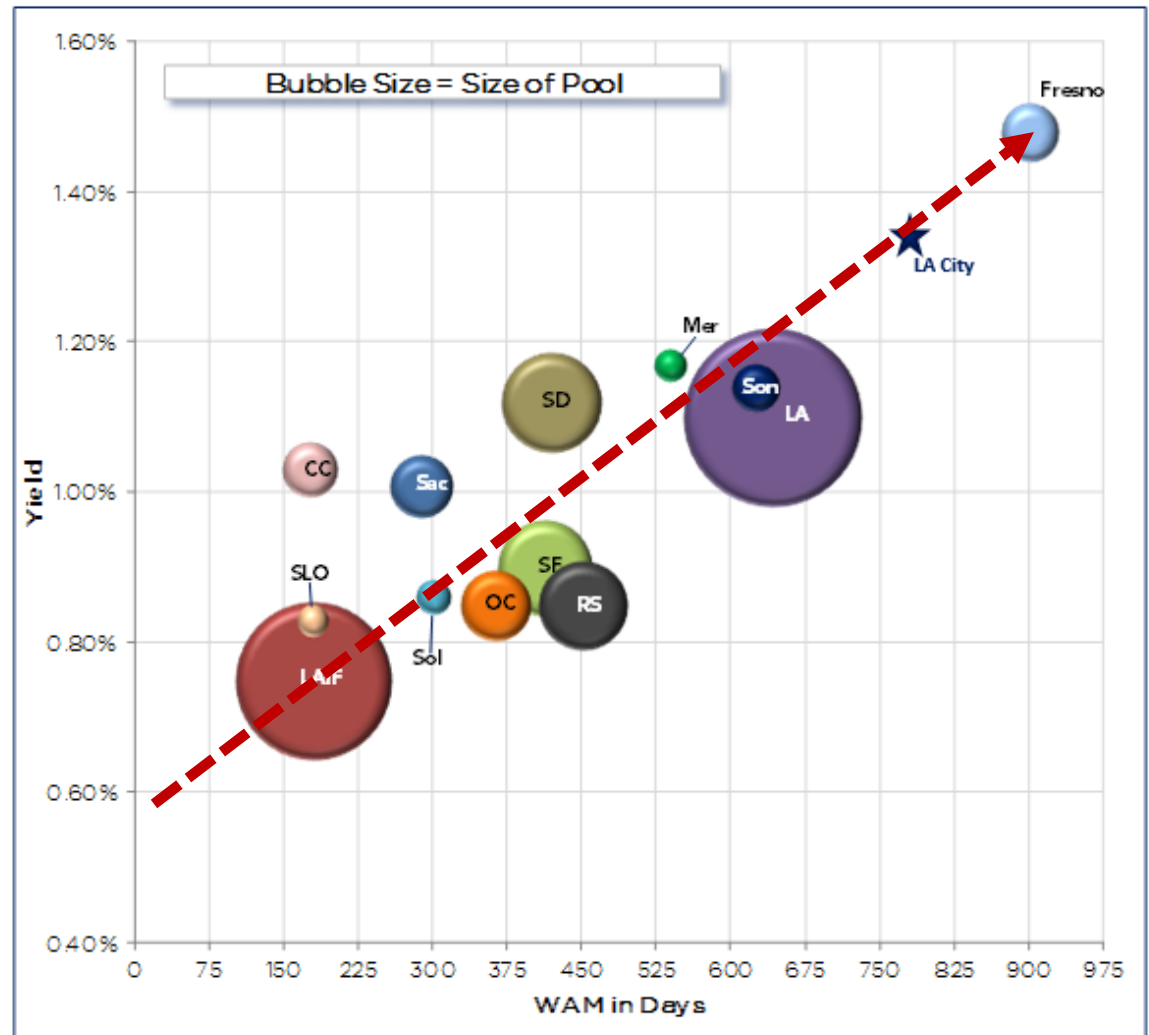
Risk and Return are Related



Risk and Return Are Related

County	Amount Billions	WAM in Days	Yield
Sac: Sacramento	\$ 3.54	289	1.01%
LAIF	\$ 22.63	180	0.75%
CC: Contra Costa	\$ 2.68	176	1.03%
Fresno	\$ 2.96	900	1.48%
LA: Los Angeles	\$ 28.90	642	1.10%
Mer: Merced	\$ 0.84	539	1.17%
OC: Orange	\$ 4.27	364	0.85%
RS: Riverside	\$ 7.10	452	0.85%
SD: San Diego	\$ 8.91	419	1.12%
SF: San Francisco	\$ 8.16	412	0.90%
SLO: San Luis Obispo	\$ 0.84	179	0.83%
Sol: Solano	\$ 1.05	300	0.86%
Son: Sonoma	\$ 2.05	625	1.14%

Data as of: January 31, 2017



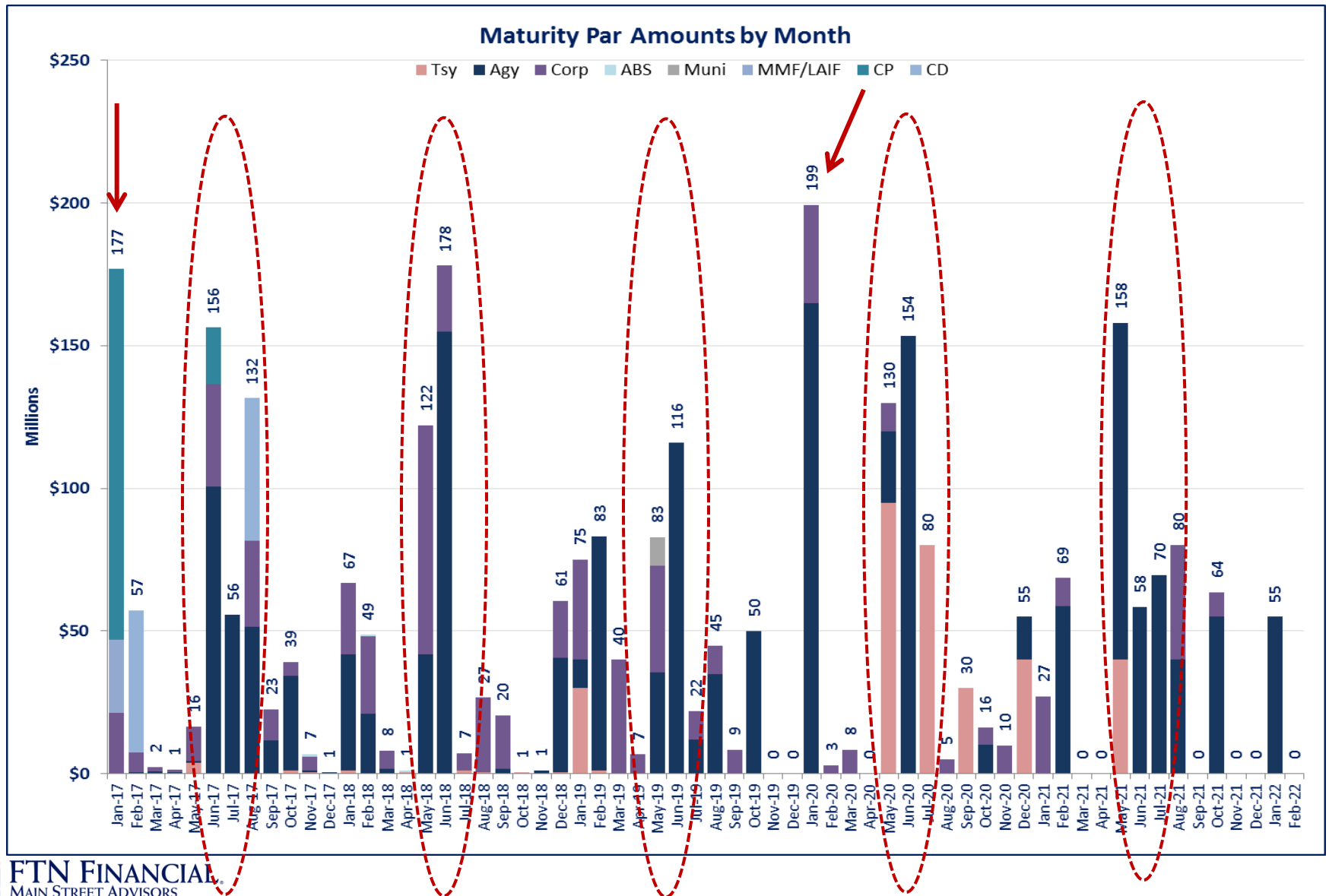
Source: Entities' Websites

Portfolio Structure/Strategy

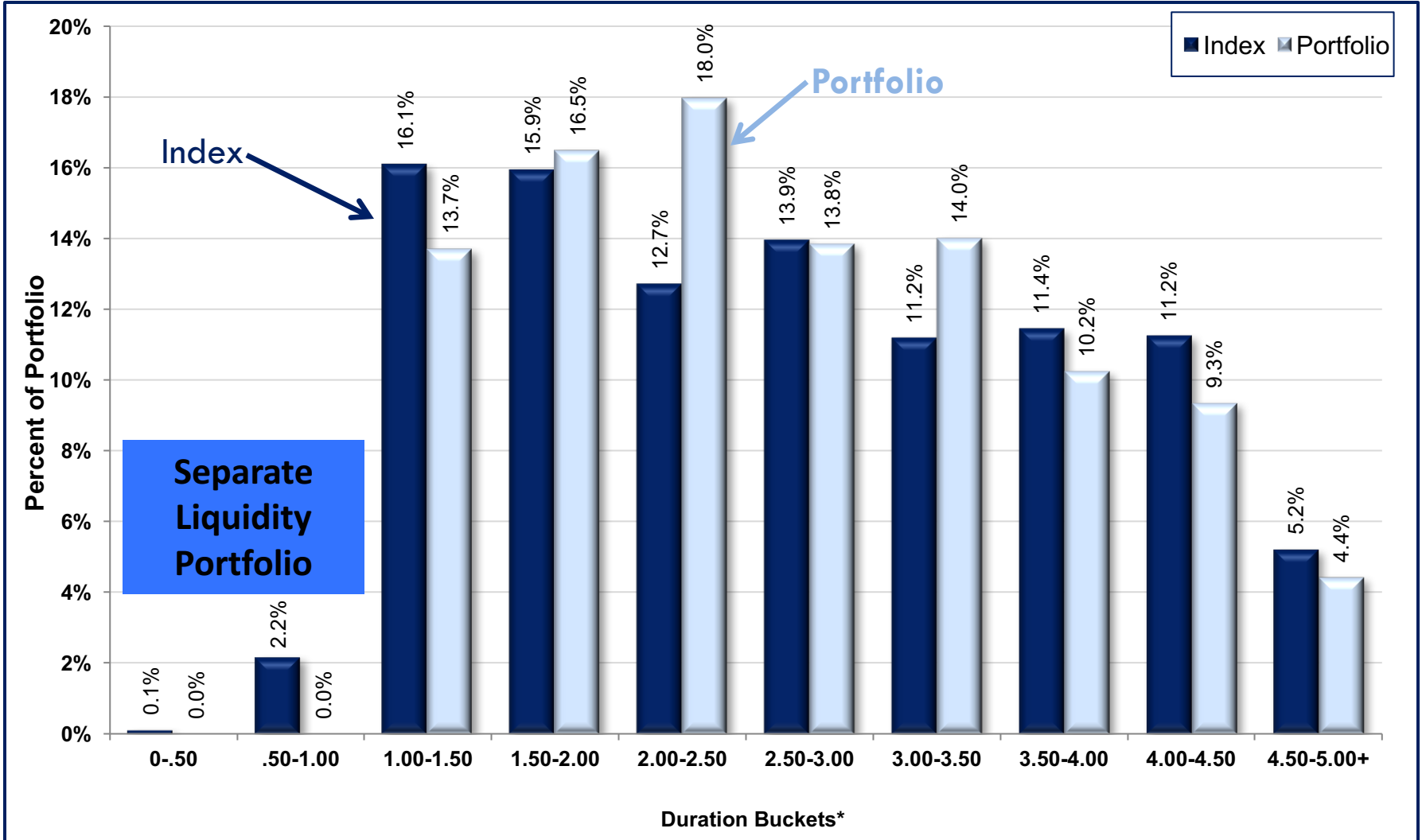
There are three primary ways to structure an operating portfolio:

- Matching Cash Flows
- Matching an Index
- Optimizing Relative Value

0-5 Year Cash Flow Matched Portfolio



1-5 Year Index Matched Portfolio



Optimizing Relative Value

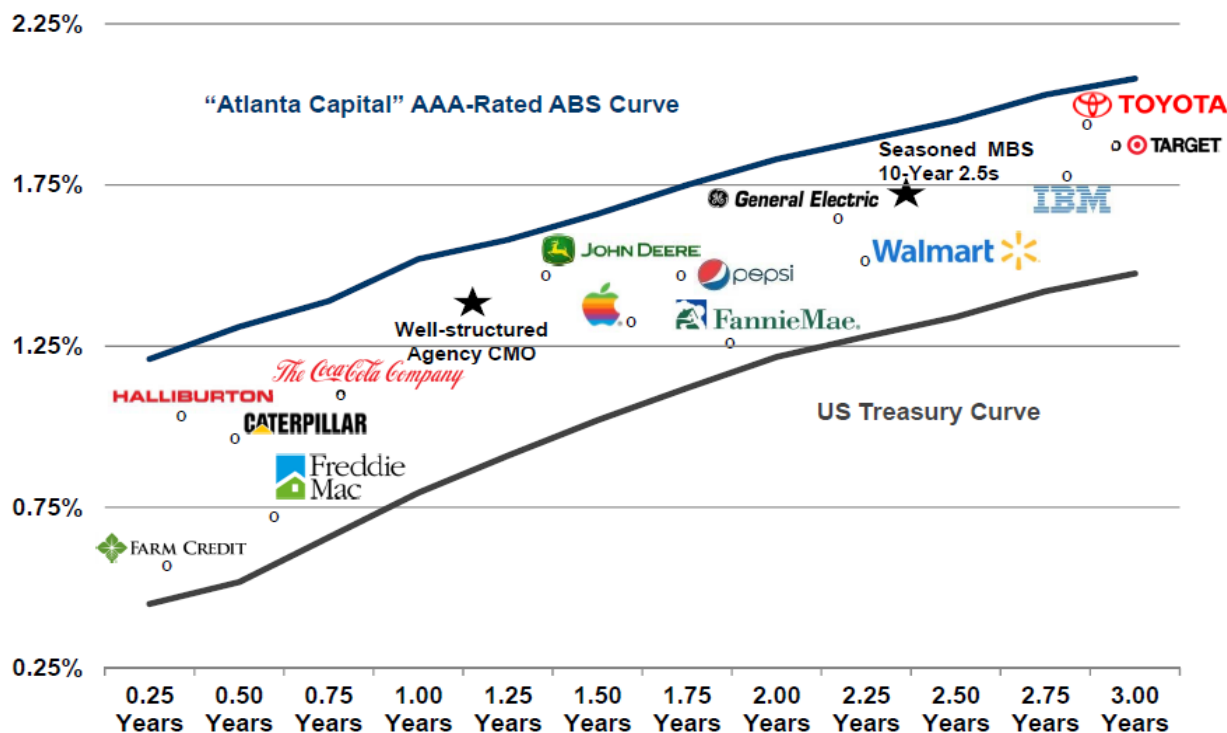
Interest Rate



Credit

Auto ABS: Relative Value

Our Preferred 'AAA' Rated ABS Offer Exceptional Value Compared to Alternatives

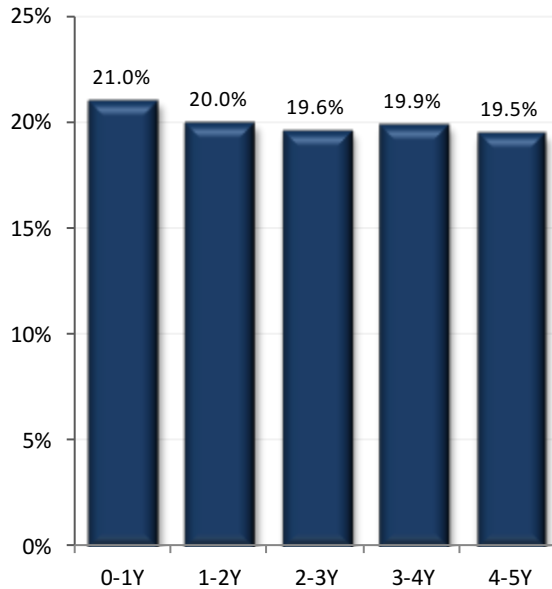


Strategy Comparison

Proactive Management

Cash Flow Matching Structure

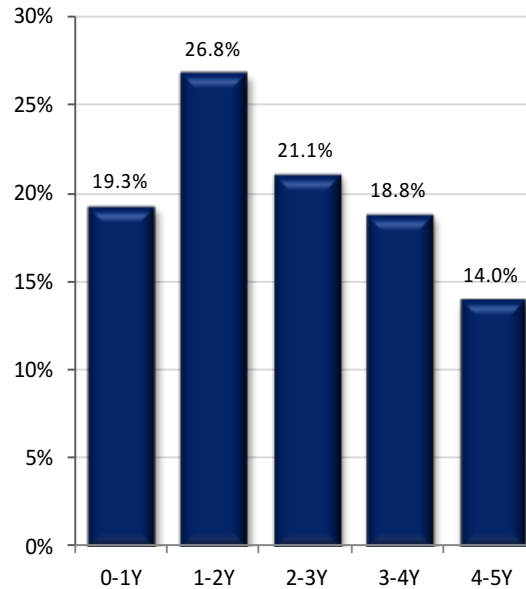
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WAM: 2.42 Yrs
Book YTM: 1.41%

Index Matching Structure

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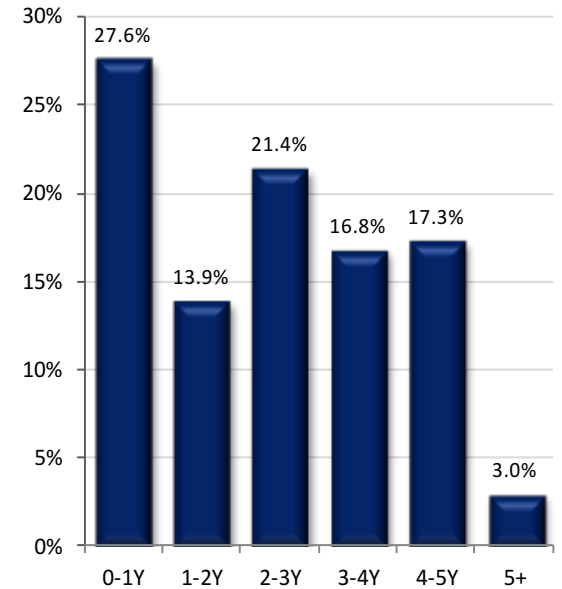


WAM: 2.38 Yrs
Book YTM: 1.34%

Active Management

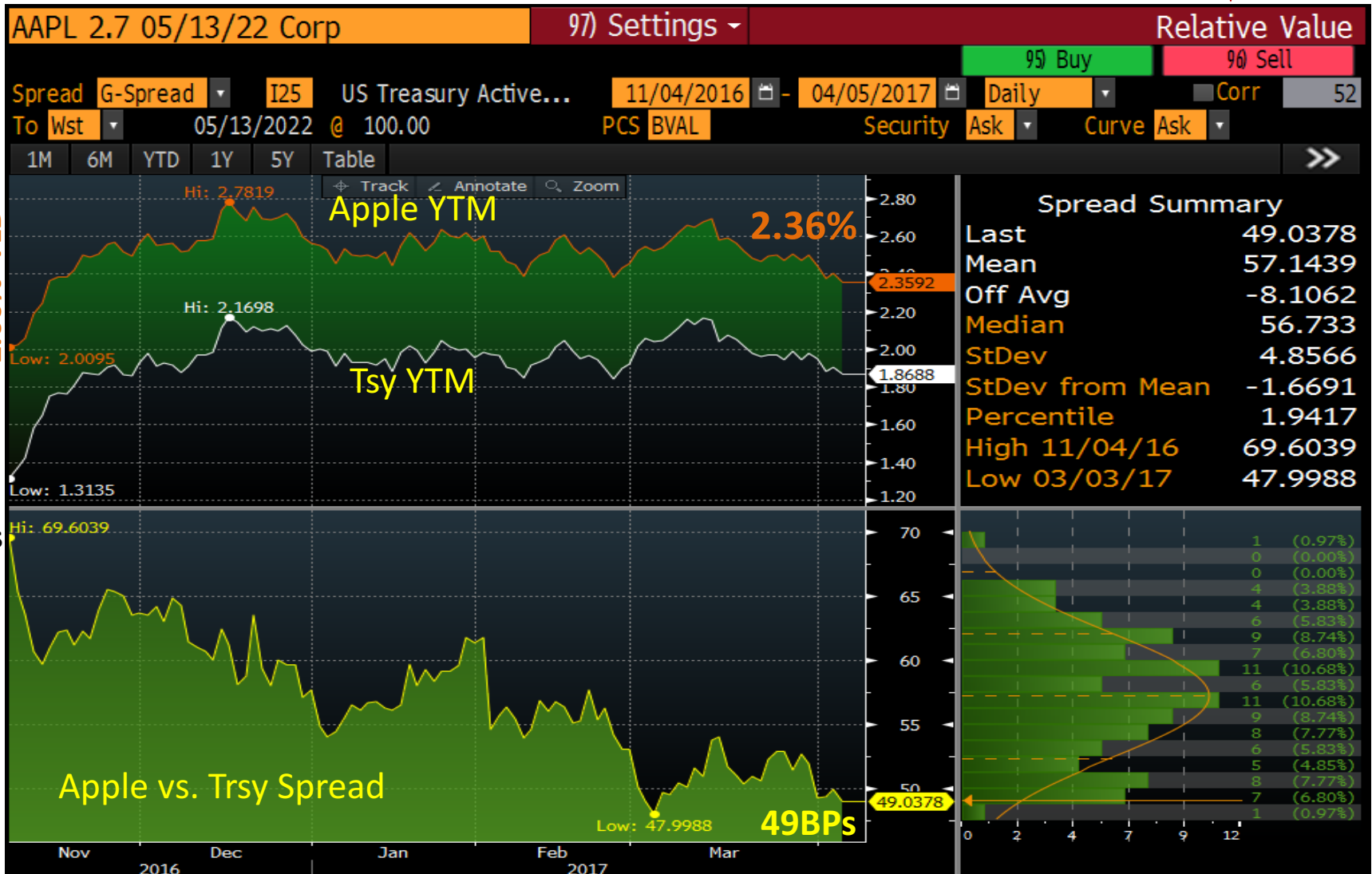
Relative Value Structure

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WAM: 2.62 Yrs
Book YTM: 1.48%

The Relative Value "Dilemma"



Source: Bloomberg

Top Ten Common Mistakes: #5

Not Amortizing

Amortization vs. Holding at Cost: Discount Note

Buy/Sell	Buy	Cusip	313385HR0	Status	Accepted
Issue	FHDN 0 07/03/17	Broker	FTNF	Benchmark	
Audit Trail				Broker Name	
Quantity	10,000,000	Disc Rate	0.9917	Principal	\$ 9,900,000.00
Price	99.0000	Yield	1.0131	Acc Int	0.00
Settle Date	07/05/2016	Spread		Net	9,900,000.00
B/Price	0.000000 (0-00)	B/Yield		B/Discount	

If you are not amortizing, when will you recognize the \$100,000 gain (income)?

Source: Bloomberg

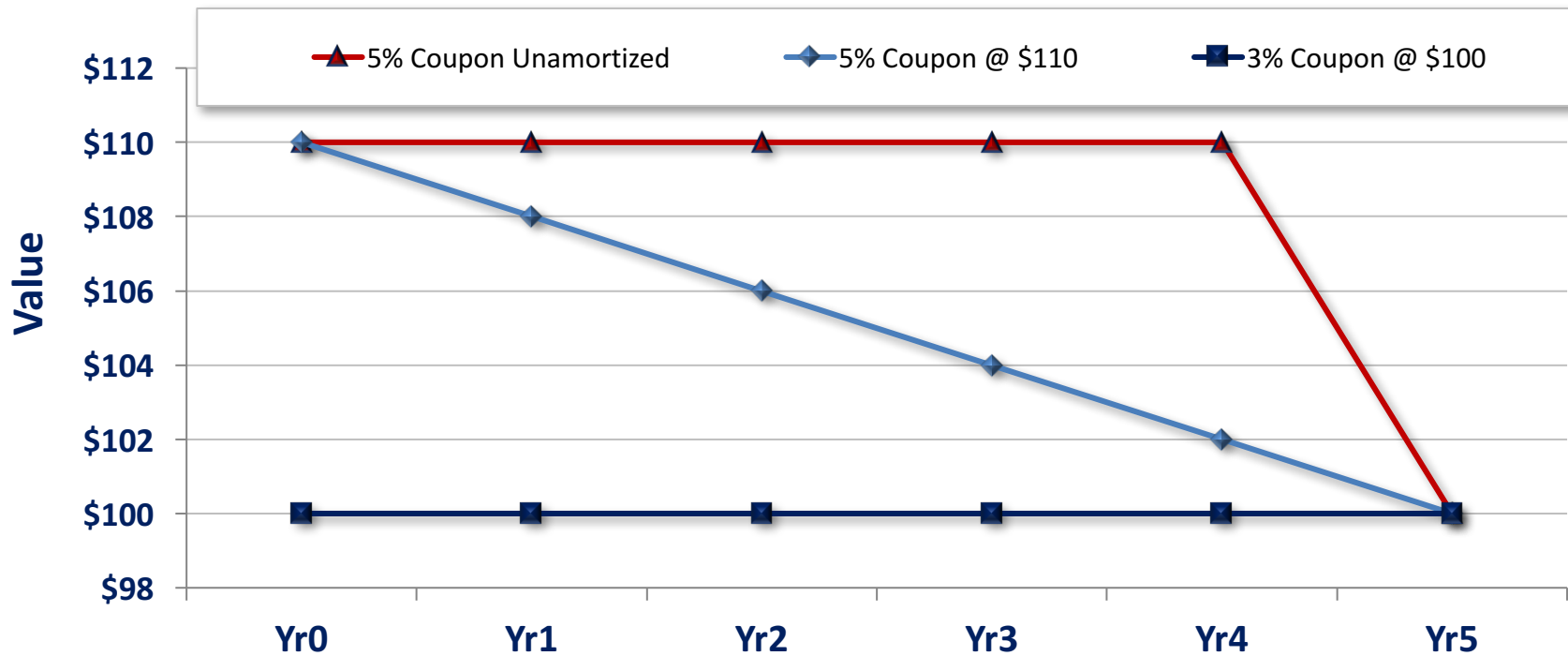
Amortization vs. Holding at Cost: Coupon

Maturity	Price	Coupon	Interest Payments					Total
			Yr1	Yr2	Yr3	Yr4	Yr5	
5Yr	\$100	3%	\$3	\$3	\$3	\$3	\$3	\$15
5Yr (Old 7yr)	\$110	5%	\$5	\$5	\$5	\$5	\$5	\$25
(Amortization)			-\$2	-\$2	-\$2	-\$2	-\$2	-\$10
(Net Earnings)			\$3	\$3	\$3	\$3	\$3	\$15

	End of Year Amortized Value					
	Yr0	Yr1	Yr2	Yr3	Yr4	Yr5
5Yr (Old 7yr)	\$110	\$108	\$106	\$104	\$102	\$100
5Yr	\$100	\$100	\$100	\$100	\$100	\$100
5Yr (Old 7yr-Unamortized)	\$110	\$110	\$110	\$110	\$110	\$100

Amortization vs. Holding at Cost

End of Year Amortized Value



Top Ten Common Mistakes: #6

Lack of Diversification

How Do We Diversify Portfolios?

- **Maturities**
- **Major Sectors: Treasury, Agency, Corporate, ABS, Muni**
- **Minor Sectors: Industrial, Finance, Utilities**
- **Issuers**
- **Structures: Bullet, Callable, Floating, TIPS, Paydowns**

Legal vs. Suitable

For example: State Code allows 5% in a corporate, 5% in a CP, and 5% in a CD

Check “Foreign” Issuers

Issuer Information		Privileging	
Program Name	TORONTO DOMINION BANK NY	Firm (FTN FINANCIAL)	
Industry	Banks	Identifiers	
Program Information		ID	89113WSG2
Ticker (Issuer)	TDNY	BB#	PPBT2ZN07
Program Type	(YCD) YANKEE CD	DTC Cusip	
Reg Type		FIGI	BBG00FJR0PB8
Day Type	ACT/360	Ratings : Program/Long/Short	
Calc Type	(7) INTEREST@MTY	S&P	N.A. / AA- / A-1+
Dealer		MDY	N.A. / Aa1 / P-1
		FITCH	N.A. / AA- / F1+

Issuer Information		Identifiers	
Name	TORONTO-DOMINION BANK	ID Number	EK7960066
Industry	Banks	CUSIP	89114QAZ1
Security Information		ISIN	US89114QAZ19
Mkt Iss	Global	Bond Ratings	
Country	CA	Moody's	Aa1
Currency	USD	S&P	AA-
Rank	Sr Unsecured	Composite	AA
Coupon	1.625000	Series	MTN
Cpn Freq	S/A	Type	Fixed
Day Cnt	30/360	Iss Price	99.99700
Maturity	03/13/2018	Issuance & Trading	
BULLET		Amt Issued/Outstanding	
Iss Sprd	52.00bp vs T 1 02/15/18	USD	1,000,000.00 (M) /
		USD	1,000,000.00 (M)

Top Ten Common Mistakes: #7

Having Too Many Investment Positions

Diversification is Great...But

What do you have to do for each investment:

- **Analyze It**
- **Check Compliance for It**
- **Buy It**
- **Deliver It**
- **Price It**
- **Reconcile It**
- **Post Interest for It**
- **Mature, Call, Sell It**
- **Report It**



Top Ten Common Mistakes: #8

Not Having the Right Number/Mix of Brokers

Developing a Win-Win Relationship with Brokers



Dealers

Primary Dealers of the Federal Reserve

Cantor Fitzgerald & Co.
Citigroup Global Markets
Goldman, Sachs & Co.
Jefferies LLC
J.P. Morgan Securities LLC
Merrill Lynch, Pierce, Fenner & Smith
Morgan Stanley & Co. LLC
Wells Fargo



Bank of Nova Scotia
BMO Capital Markets Corp.
RBC Capital Markets, LLC
TD Securities (USA), LLC



BNP Paribas Securities Corp.
Barclays Capital Inc.
Credit Suisse Securities (USA) LLC
Deutsche Bank Securities Inc.
HSBC Securities (USA) Inc.
RBS Securities Inc.
SG Americas Securities, LLC
UBS Securities LLC



Daiwa Capital Markets America
Mizuho Securities USA Inc.
Nomura Securities International



Select Regional Dealers

FTN Financial
Arbor Trading
D.A. Davidson
Government Perspectives
Hilltop Securities
InCapital
Intl FC Stone
Key Bank
Multi-Bank Securities
Oppenheimer
Piper Jaffray
R.W. Baird
Raymond James
Southwest Securities
Sterne Agee
Stifel Nicolaus
Stone & Youngberg
Vining Sparks
Zions Capital

Competitive Shopping

Sell: FHLB 1.375% 2/18/21 Par: \$50,000,000

Dealer	Yield	Price	Principal
1	2.010%	97.4701	48,735,037
2	2.015%	97.4504	48,725,224
3	2.018%	97.4387	48,719,338
4	2.021%	97.4269	48,713,452
5	2.025%	97.4112	48,705,606
6	2.027%	97.4034	48,701,683
7	2.034%	97.3759	48,687,957
8	2.039%	97.3563	48,678,155
9	2.043%	97.3406	48,670,315
10	2.050%	97.3132	48,656,599
11	2.059%	97.2779	48,638,970
12	2.059%	97.2779	48,638,970
13	2.067%	97.2466	48,623,306
14	2.074%	97.2192	48,609,605
15	2.089%	97.1605	48,580,260
16	2.094%	97.1410	48,570,482
17	2.102%	97.1097	48,554,844
18	2.105%	97.0980	48,548,981
19	2.108%	97.0862	48,543,118
20	2.110%	97.0784	48,539,211
21	2.137%	96.9730	48,486,491

**Maximum Bid
vs.
Minimum Bid
\$248,546**

Trading



Bloomberg



Dealer Platforms

Electronic Trading

Page 1/1 Activity Panel							
X	T 0 ⁷ / ₈ 08/15/17				1:05	Detail	Pass
	Sell	Dealer	Quantity	Yield	Price		Status
Cusip	912828D49	BAML	2,000,000	0.864	100-00 ¹ / ₈	Hit	Firm 0:01
Settle	03/29/17	JPM	2,000,000	0.854	100-00 ¹ / ₄	Hit	Firm 0:01
CBBT Px	100-00/100-00+	TD	2,000,000	0.864	100-00 ¹ / ₈	Hit	Firm 0:01
CBBT Yld	0.874/0.833	JEFF	2,000,000	0.844	100-00 ³ / ₈	Hit	Firm 0:01
		RBC	2,000,000	0.874	100-00	Hit	Subject

Page 1/1 Activity Panel							
X	T 0 ⁷ / ₈ 08/15/17					Detail	Resubmit
	Sell	Dealer	Quantity	Yield	Price		Status
Cusip	912828D49	BAML	2,000,000	0.864	100-00 ¹ / ₈		Traded Away
Settle	03/29/17	JPM	2,000,000	0.854	100-00 ¹ / ₄		Covered
CBBT Px	100-00/100-00+	TD	2,000,000	0.864	100-00 ¹ / ₈		Traded Away
CBBT Yld	0.874/0.833	JEFF	2,000,000	0.844	100-00 ³ / ₈		Accepted
		RBC	2,000,000	0.874	100-00		Traded Away

Top Ten Common Mistakes: #9

Not Providing Transparent Reporting

Clearly Communicating Information to Your Audiences

- **Know Your Audiences:**
 - **Governing Body**
 - **Management**
 - **Auditors**
 - **Rating Agencies**
 - **GFOA (CAFR)**
 - **Peers**
 - **Taxpayers**
- **Provide Details to the Appropriate Audiences**
- **Be Completely Transparent**
- **Keep it Simple – Charts/Graphs/Tables**
- **Demonstrate How the Investment Portfolio is Meeting Objectives**

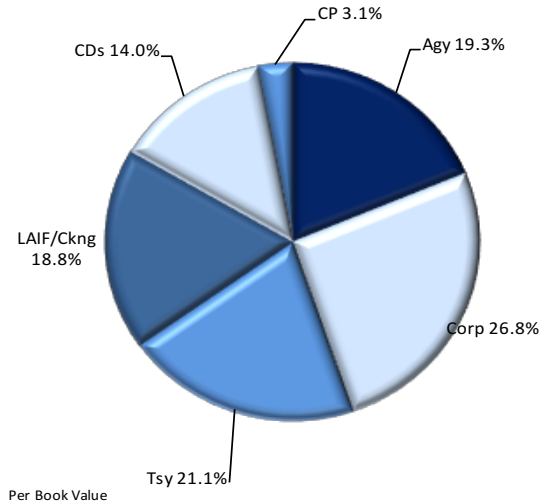
Reporting Fundamentals

"When performance is measured, performance improves. When performance is measured and reported, the rate of improvement accelerates." Thomas S. Monson

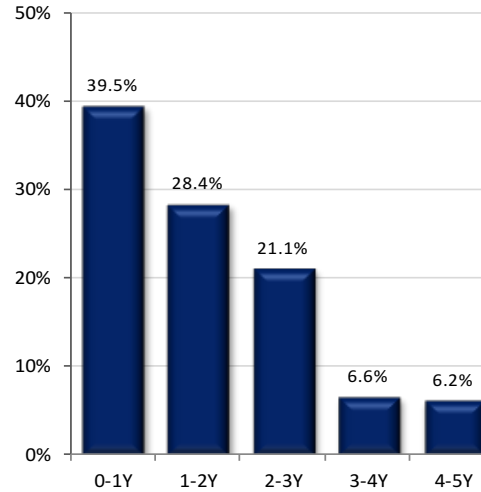


Summary -- "Dashboard"

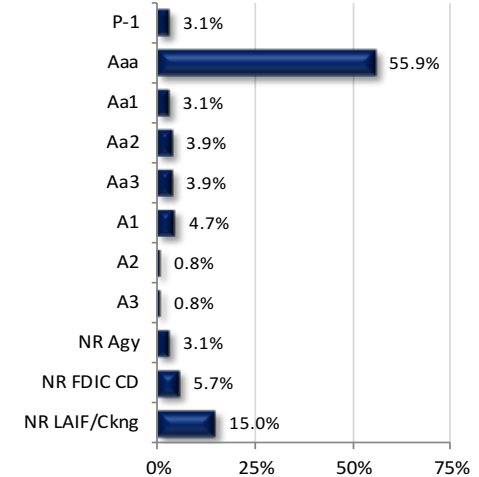
SECTOR ALLOCATION



MATURITY DISTRIBUTION



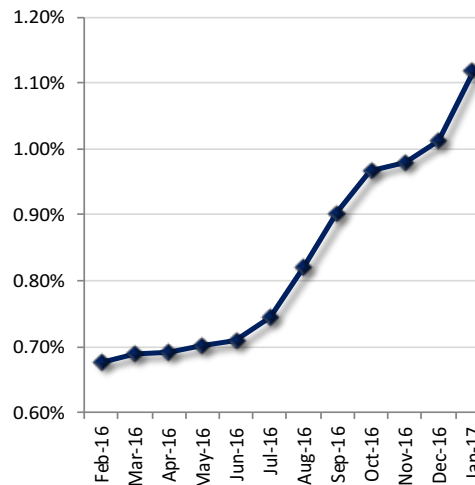
CREDIT QUALITY (MOODY'S)



ACCOUNT SUMMARY

	1/31/17	12/31/16
Market Value	\$128,060,865	\$123,941,950
Book Value	\$128,403,420	\$124,356,442
Variance	-\$342,555	-\$414,492
Par Value	\$128,661,273	\$124,509,909
Net Asset Value	\$99.733	\$99.667
Book Yield	1.12%	1.01%
Years to Maturity	1.61	1.36
Effective Duration	1.51	1.27

MONTH-END PORTFOLIO BOOK YIELD



TOP ISSUERS

Issuer	% Portfolio
U.S. Treasury	17.0%
LAIF/Checking	15.0%
FNMA	12.5%
FHLB	12.4%
FHLMC	6.2%
FFCB	6.2%
FAMCA	3.1%
Apple	3.1%
American Honda	2.3%
Wells Fargo	2.3%
Chevron	2.3%
IBM	2.3%
Toyota	2.3%
Branch Banking Trust	1.6%
JP Morgan Securities	1.5%

Per Book Value

* Book Value is Amortized

Compliance

Item / Sector	Parameters	In Compliance
Weighted Average Maturity	Weighted Average Maturity (WAM) must be less than 2.5 years	Yes: 1.61 Yrs
U.S. Treasuries	No limit, maximum maturity 5 years	Yes: 21.1%
U.S. Federal Agencies	60% limit, 30% issuer limit (such as FHLB, FFCB, FHLMC, FNMA, TVA, GNMA), maximum maturity 5 years	Yes: 19.3%
Supranational Debt	10% limit, 5% issuer limit (IFC, IADB, and IBRD), maximum maturity 5 years, Aaa or AAA by at least two rating agencies	Yes: 0.0%
Local Agency Investment Fund	50% limit (including funds invested in a Joint Powers Authority) , California State's deposit limit is \$65 million	Yes: 18.8%
Commercial Paper	20% limit, 5% per issuer, maximum maturity 270 days, rated P-1, A-1, or F1 by Moody's, S&P, or Fitch (long-term rating of A3, or A- by Moody's, S&P or Fitch), issued by a domestic corporation with at least \$500 million total assets	Yes: 3.1%
Corporate Bonds	30% limit, 5% per issuer, maximum maturity 5 years; rated at least A3, or A- by at least two rating agencies, maturities past three years must be rated at least Aa3 or AA- by at least two rating agencies	Yes: 26.8%
Money Market Funds	20% limit, 10% issuer limit, rated AAA-m or Aaa-mf, treasury and agency funds	Yes: 0.0%
FDIC Insured CDs	30% limit, FDIC limit per issuer (currently \$250,000), maximum maturity 5 years	Yes: 14.0%
Joint Powers Authority	20% limit (maximum limit of 50% of Successor Agency/Authorities' portfolios)	Yes: 0.0%
Bankers' Acceptances	20% limit, 5% per issuer, 180 days maximum maturity, rated P-1, A-1, or F1 by Moody's, S&P, or Fitch	Yes: 0.0%

Investment transactions were executed in accordance with the California State Government Code and the City's Investment Policy. The City believes the Investment Pool contains sufficient cash flow liquidity to meet the next six months of expected expenditures.

Securities' market values are derived from the Entity's custodian.

Comparison (Monthly/Quarterly/Annually)

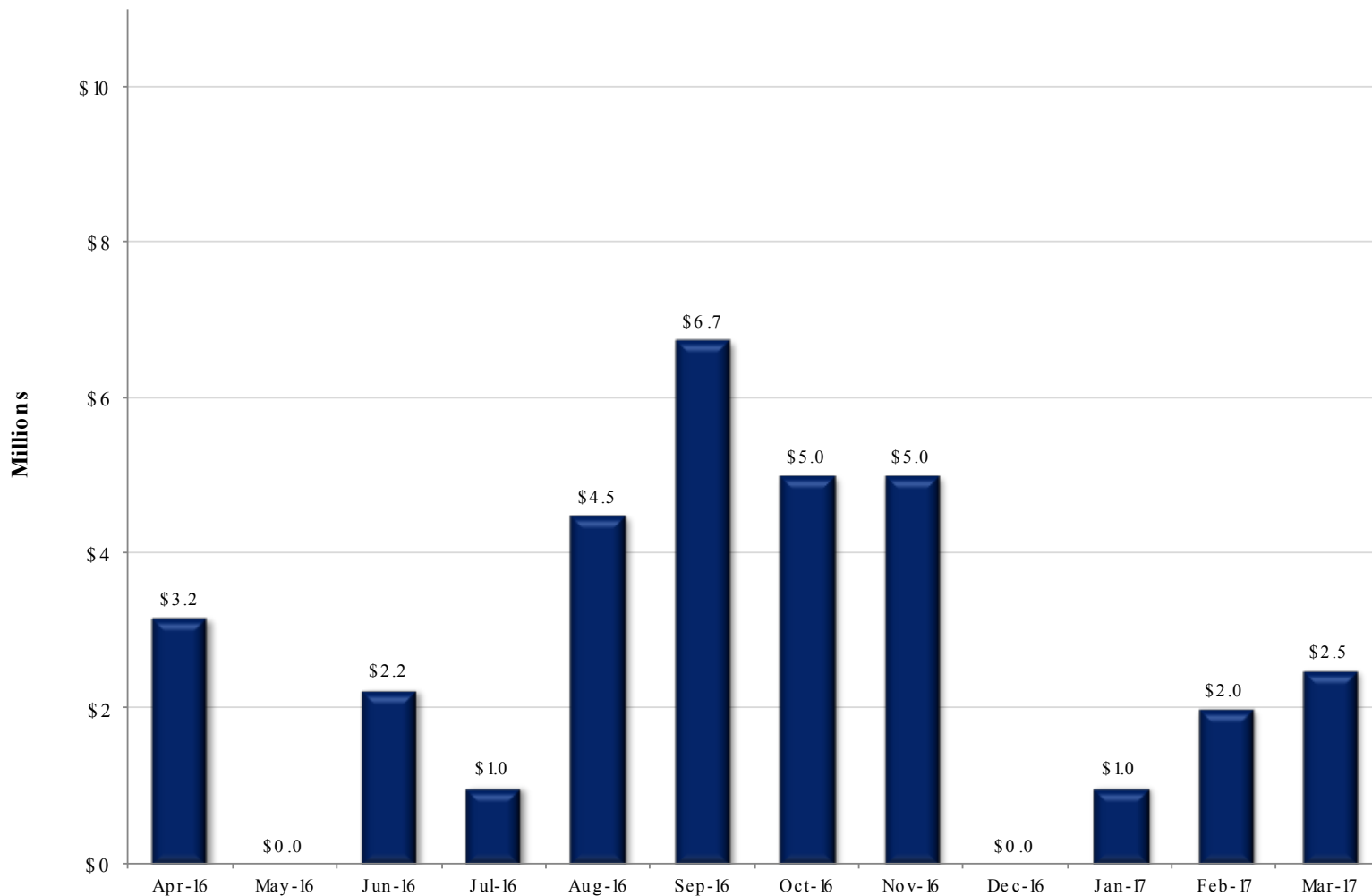
Portfolio Metrics	12/31/2016	9/30/2016	Change
Market Value	\$87,086,531	\$91,710,223	
Book Value	\$87,359,544	\$91,576,188	
Par Value	\$87,224,000	\$91,417,468	
Net Asset Value	\$0.997	\$1.001	-\$0.005
Yield to Maturity	1.410%	1.280%	0.130%
2Yr Treasury Note Yield	1.190%	0.764%	0.426%
LAIF Yield (monthly avg)*	0.710%	0.630%	0.080%
Average Years to Maturity	2.12	2.10	0.02
Effective Duration	2.09	2.06	0.03

*LAIF rate is estimated for current month/quarter end

Sectors (Book Value)	12/31/2016	9/30/2016	Change
Federal Agency	\$43,115,977	\$49,133,855	-\$6,017,878
LAIF	\$15,000,000	\$7,500,000	\$7,500,000
Corporate	\$15,013,261	\$15,019,110	-\$5,849
Certificates of Deposit	\$4,224,000	\$4,471,908	-\$247,908
U.S. Treasury	\$10,006,306	\$10,005,847	\$459
Total	\$87,359,544	\$86,130,720	\$1,228,824

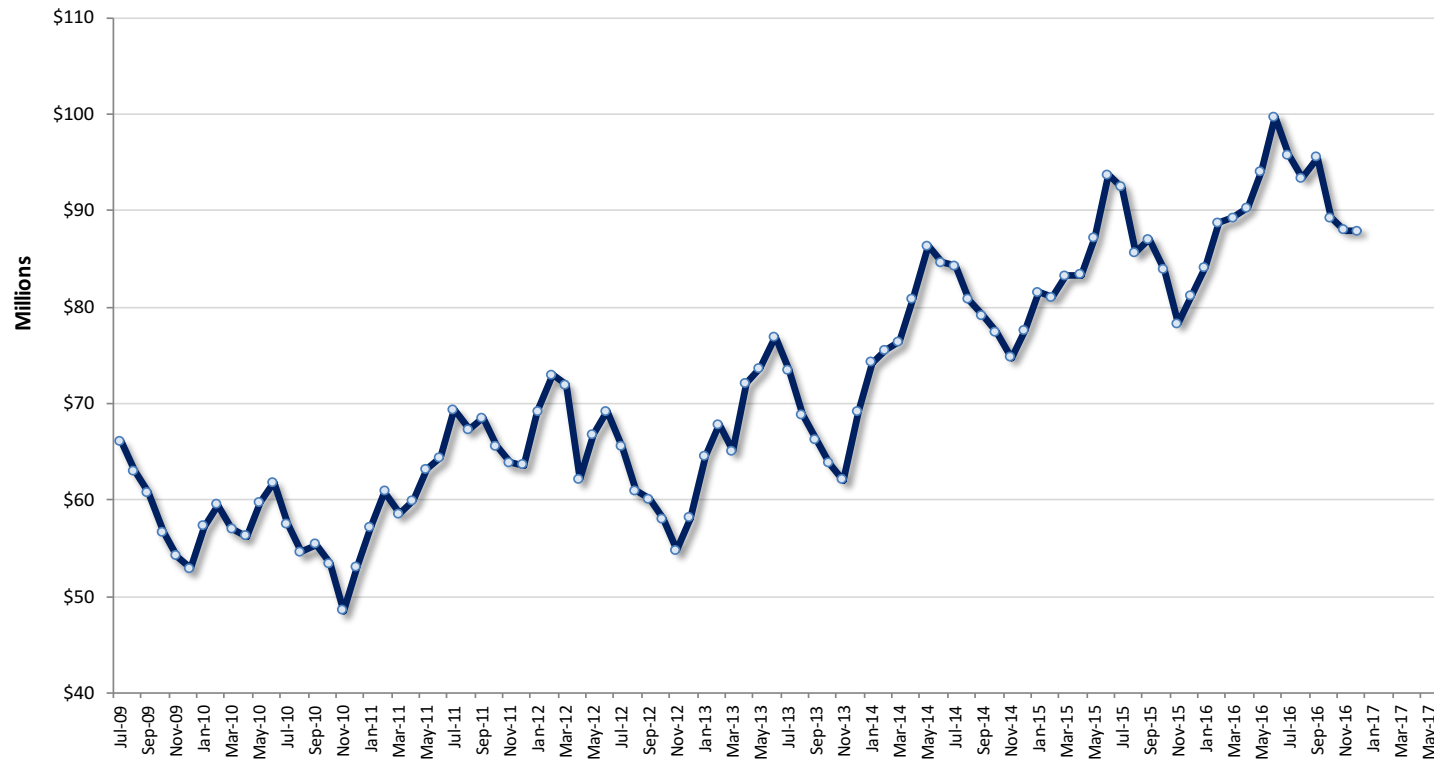
Cash Flow

Next Twelve Month Maturities



History

Book Value

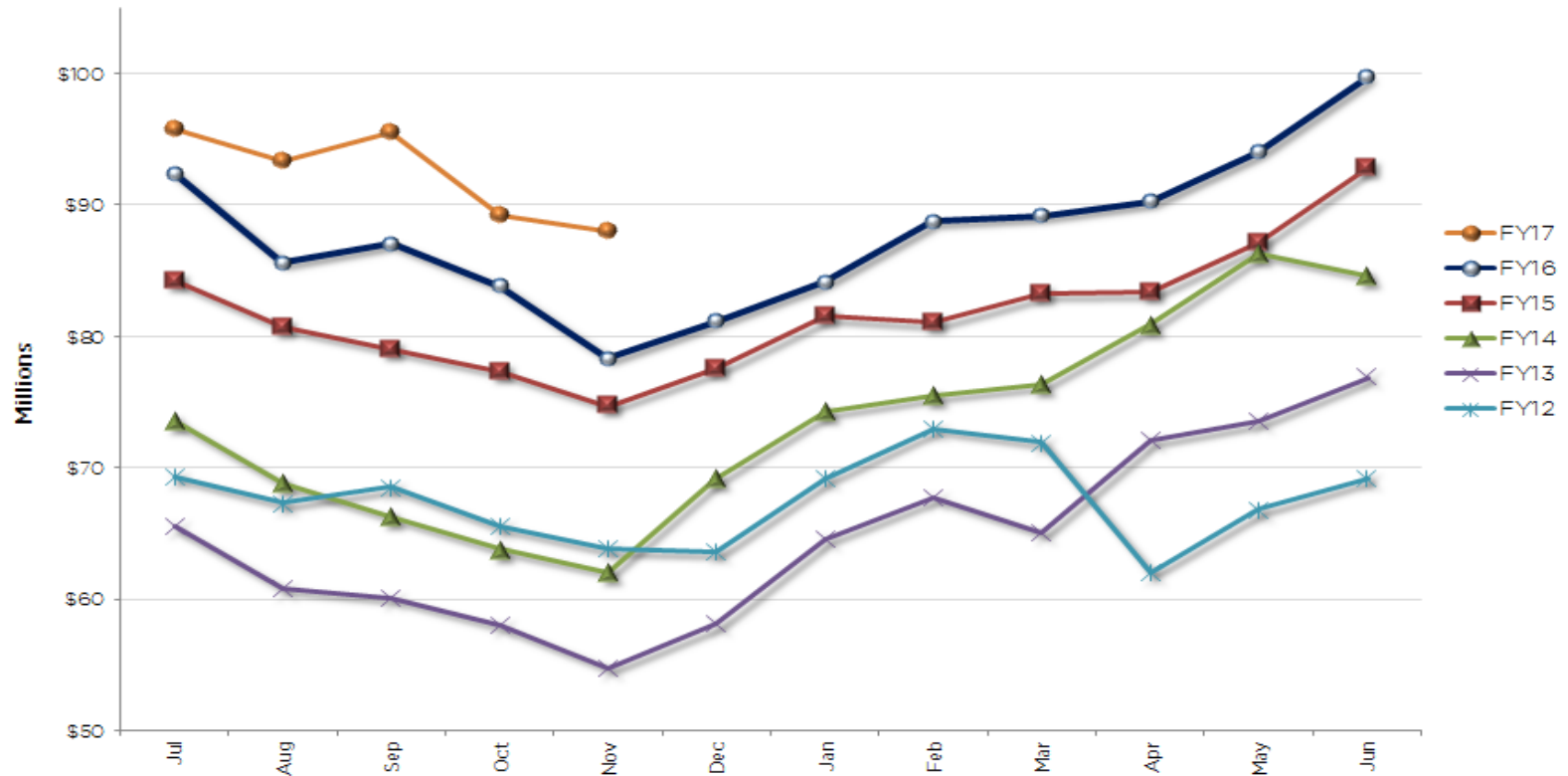


	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Fiscal Year 2010	\$66.1	\$63.0	\$60.7	\$56.6	\$54.2	\$52.9	\$57.2	\$59.5	\$57.0	\$56.2	\$59.8	\$61.9
Fiscal Year 2011	\$57.5	\$54.6	\$55.4	\$53.3	\$48.5	\$53.1	\$57.1	\$60.9	\$58.6	\$59.8	\$63.2	\$64.3
Fiscal Year 2012	\$69.3	\$67.3	\$68.5	\$65.5	\$63.8	\$63.6	\$69.2	\$73.0	\$71.9	\$62.1	\$66.8	\$69.2
Fiscal Year 2013	\$65.5	\$60.9	\$60.1	\$58.0	\$54.8	\$58.1	\$64.6	\$67.8	\$65.1	\$72.1	\$73.6	\$76.9
Fiscal Year 2014	\$73.5	\$68.8	\$66.3	\$63.8	\$62.1	\$69.2	\$74.2	\$75.5	\$76.3	\$80.9	\$86.3	\$84.6
Fiscal Year 2015	\$84.3	\$80.8	\$79.1	\$77.4	\$74.8	\$77.6	\$81.5	\$81.0	\$83.3	\$83.3	\$87.1	\$92.9
Fiscal Year 2016	\$92.4	\$85.6	\$87.1	\$83.8	\$78.3	\$81.2	\$84.2	\$88.7	\$89.2	\$90.2	\$94.0	\$99.7
Fiscal Year 2017	\$95.7	\$93.4	\$95.5	\$89.2	\$87.9	\$87.9						

Figures in Millions, Average Daily Balance

History

Book Value by Fiscal Year

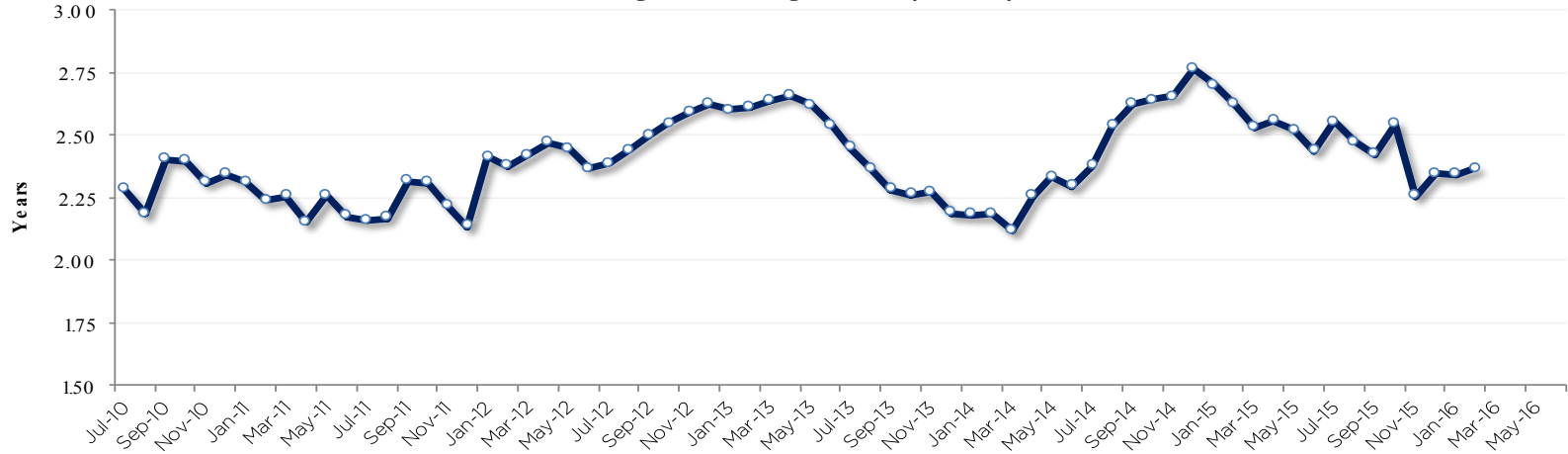


	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Fiscal Year 2012	\$69.3	\$67.3	\$68.5	\$65.5	\$63.8	\$63.6	\$69.2	\$73.0	\$71.9	\$62.1	\$66.8	\$69.2
Fiscal Year 2013	\$65.5	\$60.9	\$60.1	\$58.0	\$54.8	\$58.1	\$64.6	\$67.8	\$65.1	\$72.1	\$73.6	\$76.9
Fiscal Year 2014	\$73.5	\$68.8	\$66.3	\$63.8	\$62.1	\$69.2	\$74.2	\$75.5	\$76.3	\$80.9	\$86.3	\$84.6
Fiscal Year 2015	\$84.3	\$80.8	\$79.1	\$77.4	\$74.8	\$77.6	\$81.5	\$81.0	\$83.3	\$83.3	\$87.1	\$92.9
Fiscal Year 2016	\$92.4	\$85.6	\$87.1	\$83.8	\$78.3	\$81.2	\$84.2	\$88.7	\$89.2	\$90.2	\$94.0	\$99.7
Fiscal Year 2017	\$95.7	\$93.4	\$95.5	\$89.2	\$87.9							

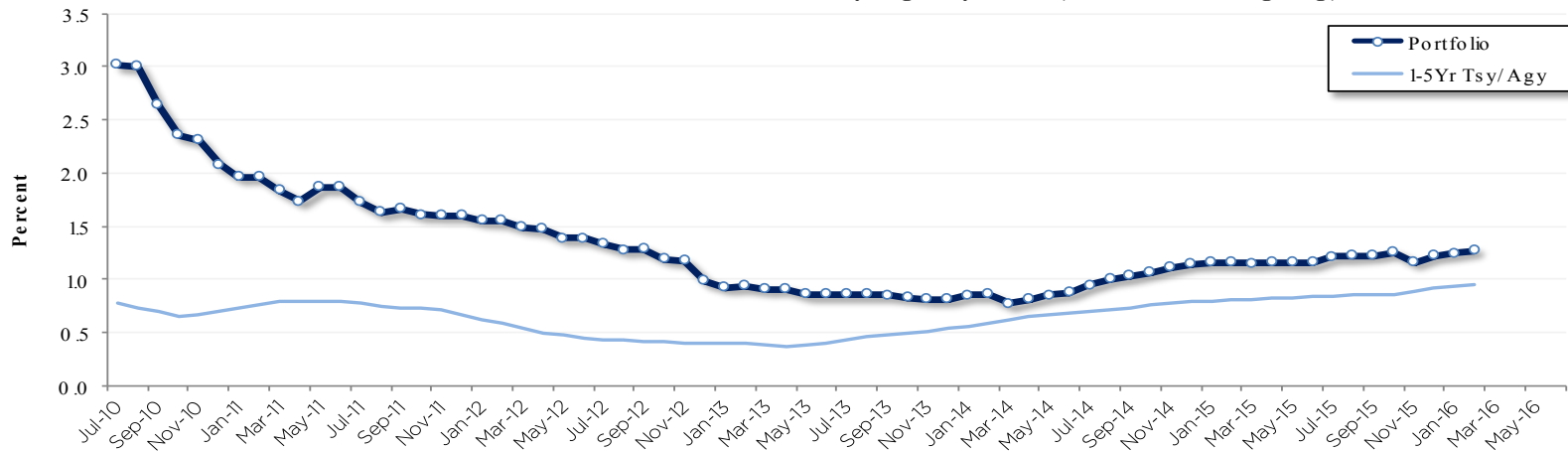
Figures in Millions, Average Daily Balance

History

Weighted Average Maturity History

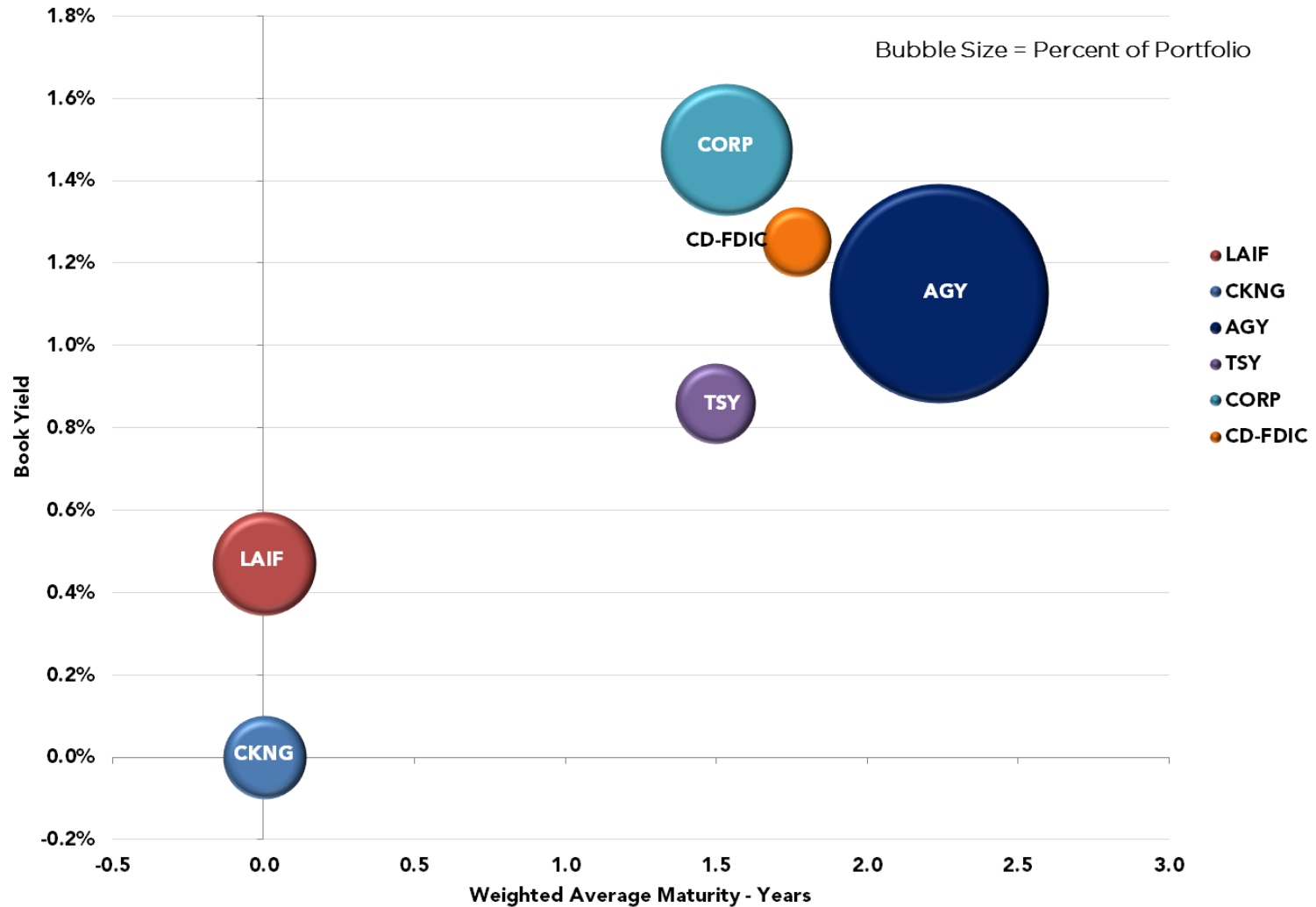


Month-End Book Yield vs 1-5Yr Treasury/ Agency Index (12 month moving avg)



Analysis

Purchase Yield and Weighted Average Maturity

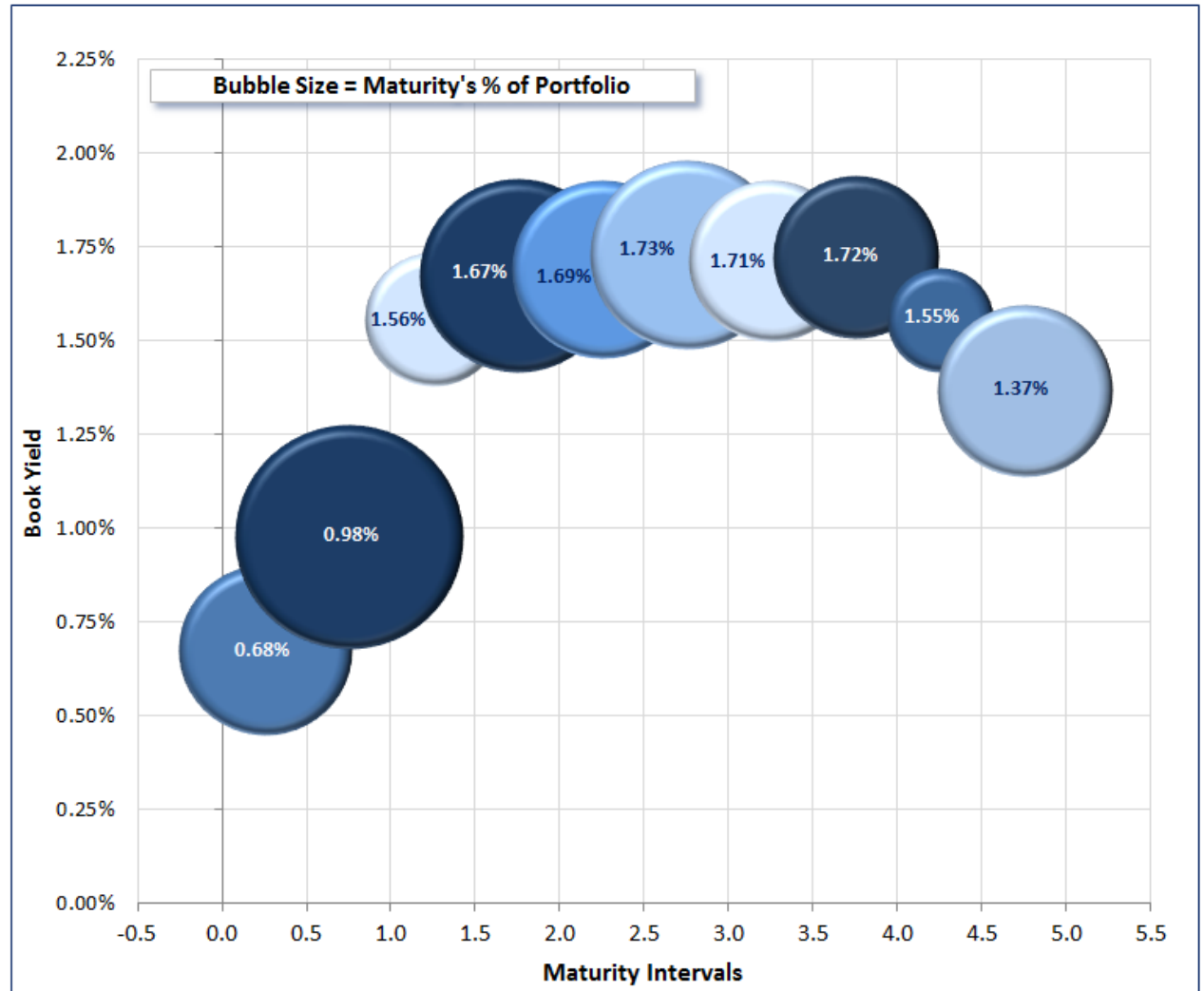


Analysis

Purchase YTM Per 6-Month Maturity Intervals

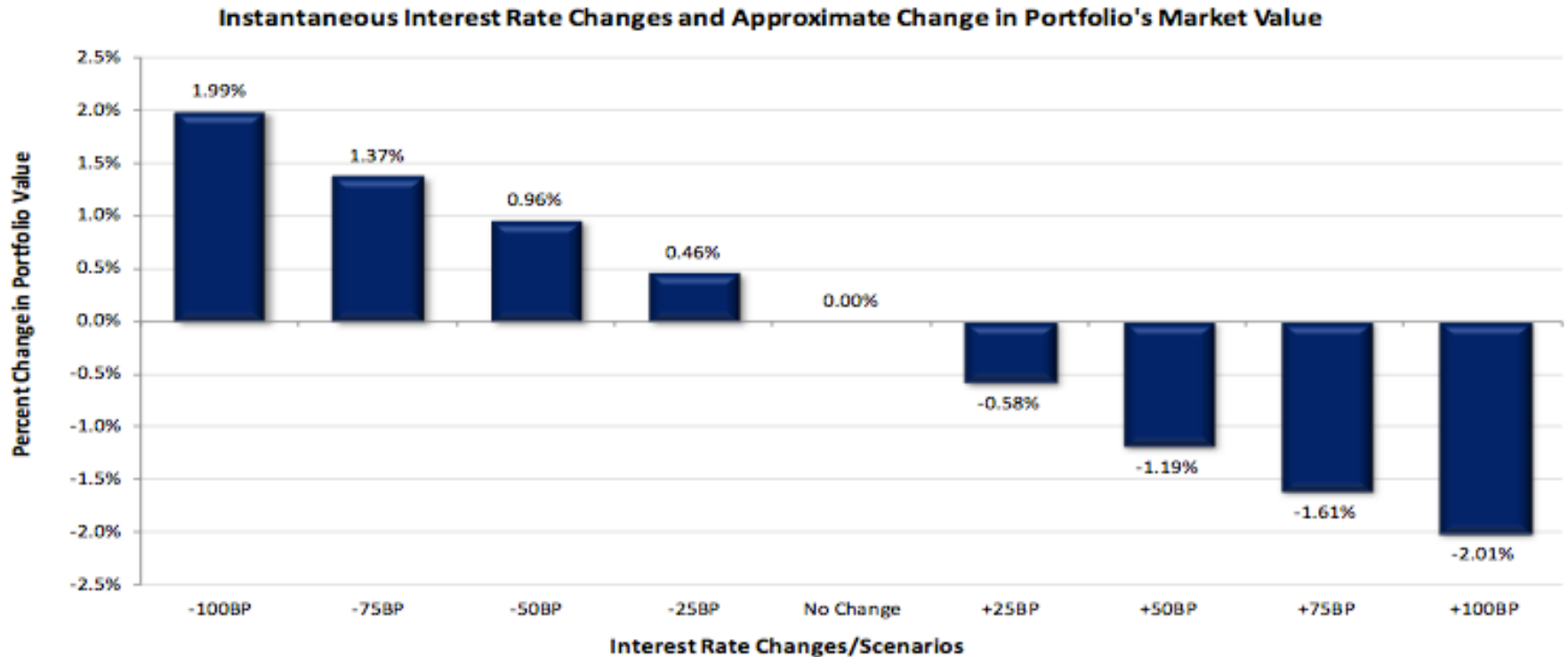
Years	Book Yield	% of Portfolio*
0 to .5	0.68%	9.80%
.5 to 1.0	0.98%	17.05%
1.0 to 1.5	1.56%	6.06%
1.5 to 2.0	1.67%	12.79%
2.0 to 2.5	1.69%	10.70%
2.5 to 3.0	1.73%	12.16%
3.0 to 3.5	1.71%	8.87%
3.5 to 4.0	1.72%	8.91%
4.0 to 4.5	1.55%	3.61%
4.5 to 5.0+	1.37%	10.06%

*Based on Book Value



Analysis

Interest Rate Shock Analysis

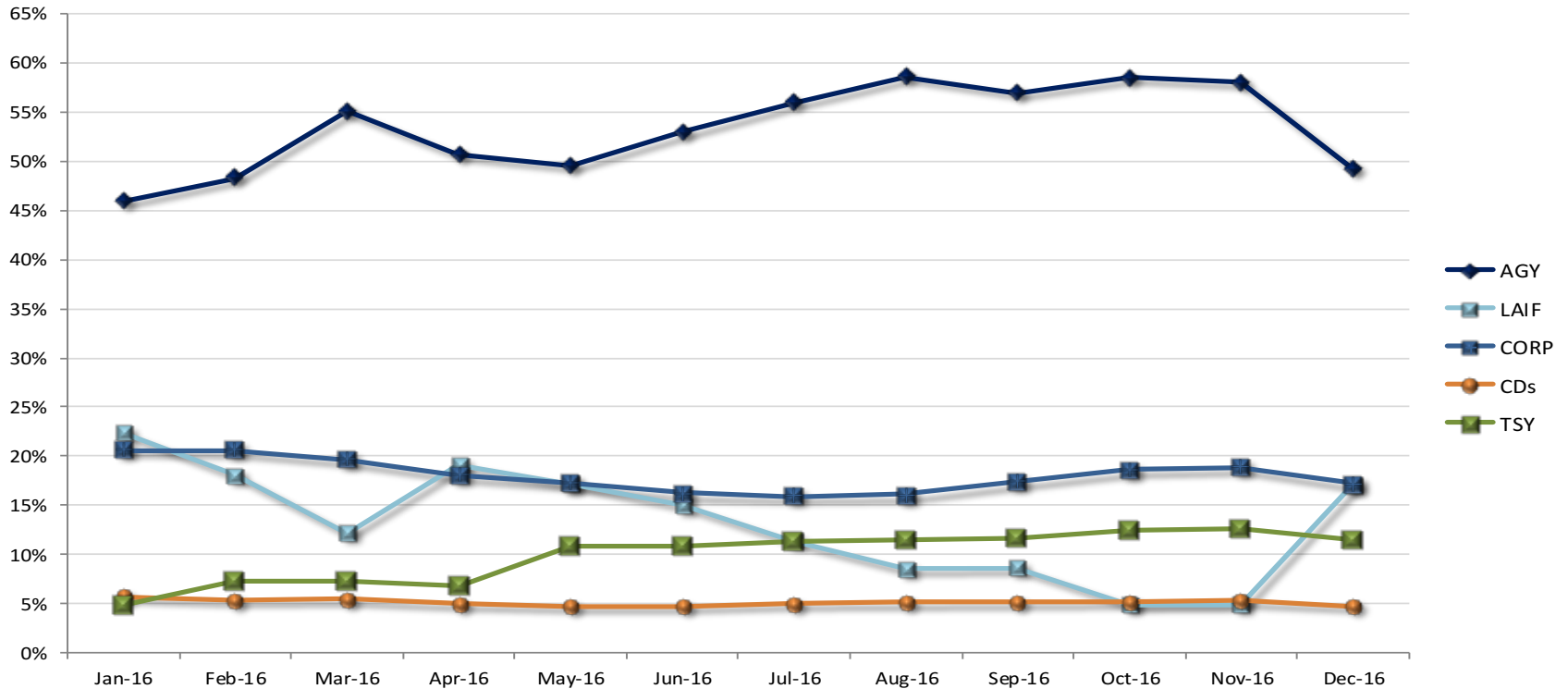


?

What's the approximate duration of this portfolio

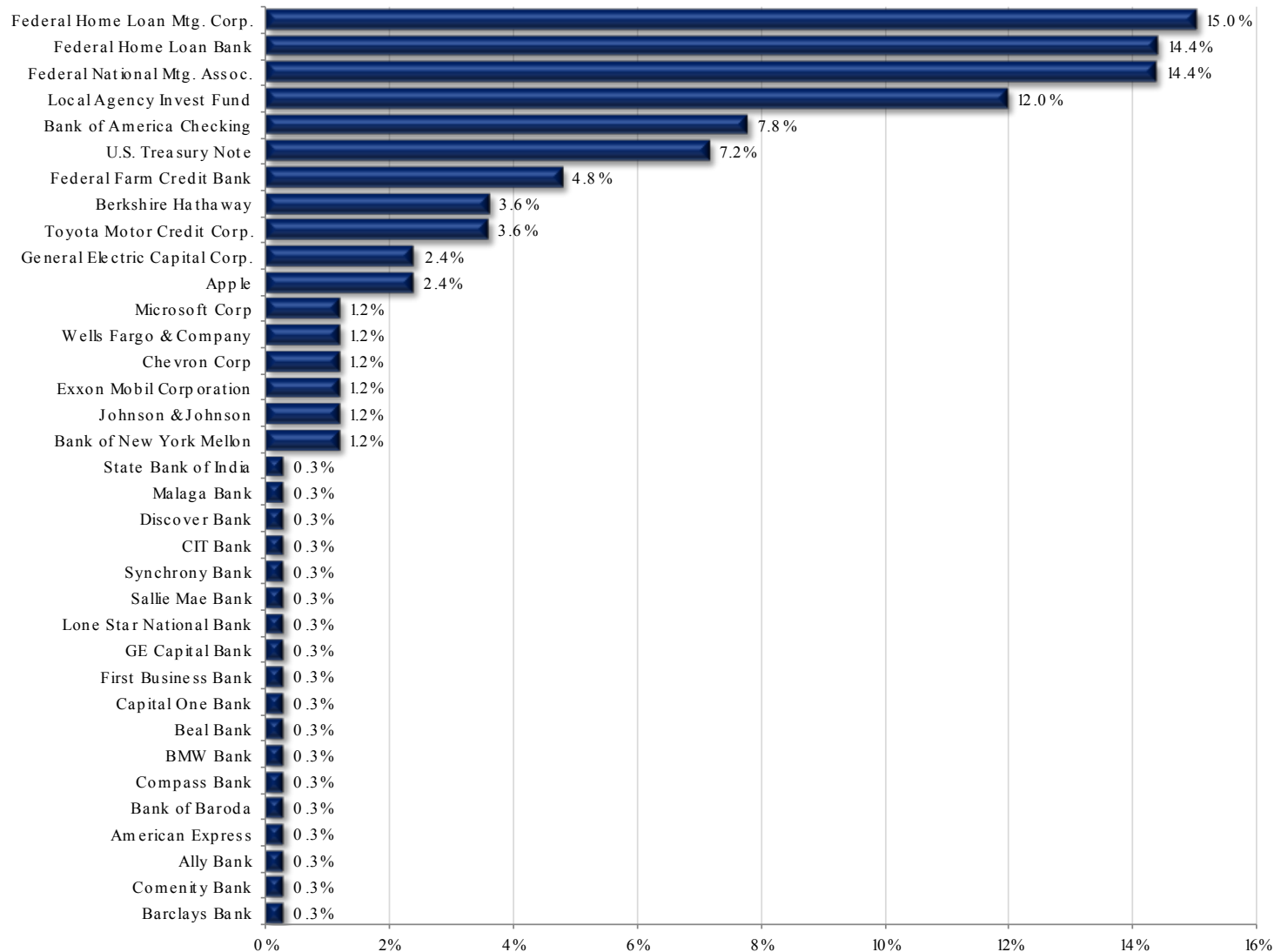
History

Sector History



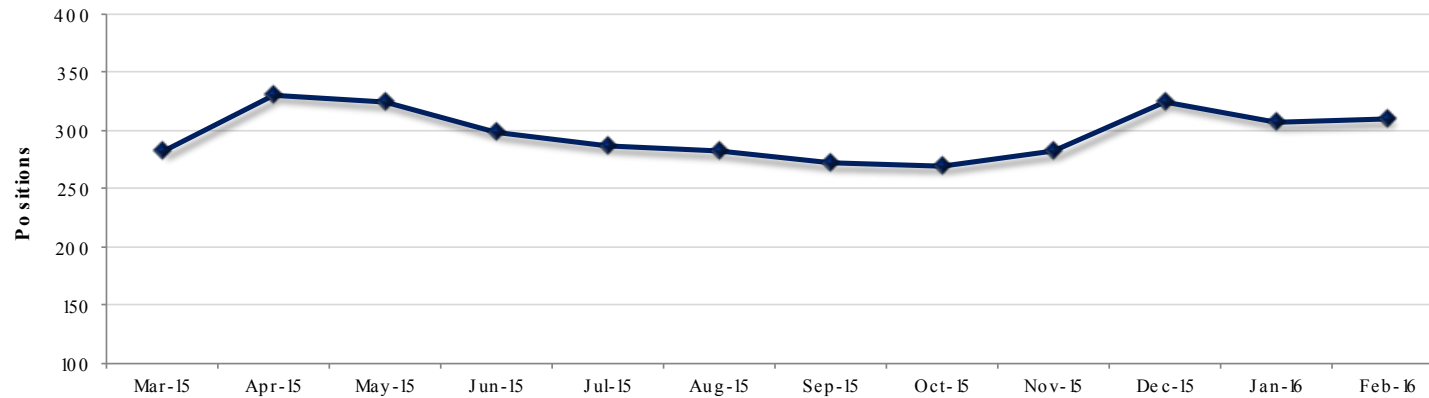
Sector	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16
Agency	46.1%	48.5%	55.2%	50.9%	49.7%	53.0%	56.1%	58.7%	57.0%	58.6%	58.1%	49.4%
Corporate	20.7%	20.7%	19.7%	18.1%	17.3%	16.2%	16.0%	16.1%	17.4%	18.7%	18.9%	17.2%
Treasury	4.9%	7.3%	7.3%	6.8%	10.8%	10.8%	11.4%	11.5%	11.6%	12.4%	12.6%	11.5%
Certificates of Deposit	5.8%	5.4%	5.5%	5.1%	4.8%	4.8%	5.1%	5.1%	5.2%	5.3%	5.3%	4.8%
LAIF	22.5%	18.2%	12.3%	19.2%	17.3%	15.1%	11.4%	8.6%	8.7%	5.0%	5.1%	17.2%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Issuers



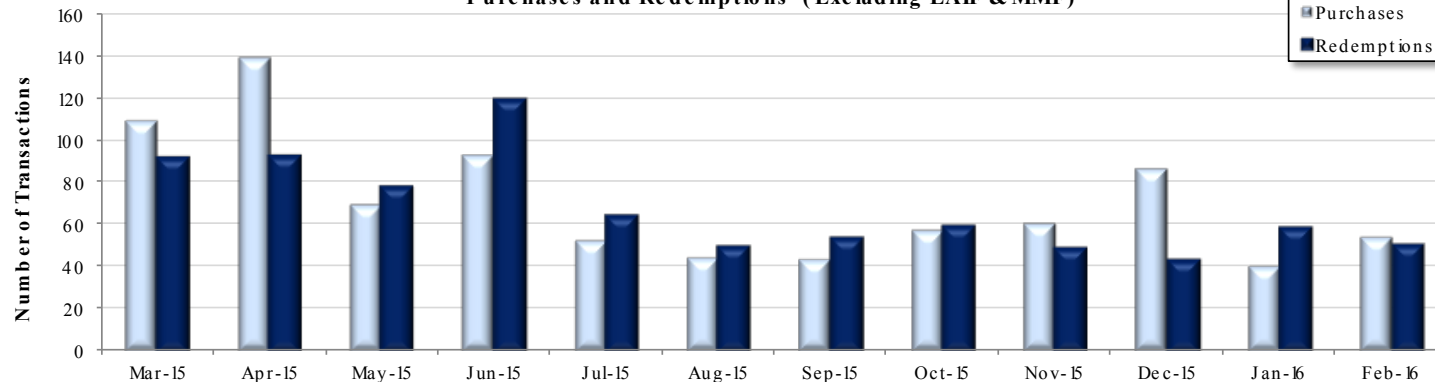
Activity

Number of Positions at Month End



	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16
Number of Positions	283	332	325	299	288	283	273	271	283	326	308	311

Purchases and Redemptions* (Excluding LAIF & MMF)



*Redemptions include maturities, calls, and sells (excluding paydowns)

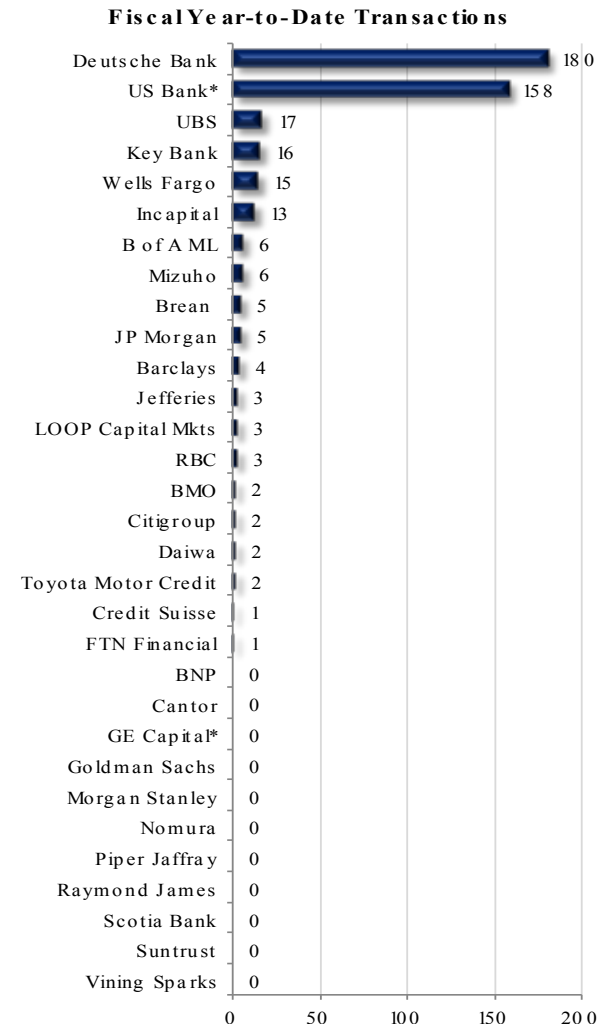
	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16
Number of Purchases	109	139	70	93	53	45	44	58	61	87	41	55
Number of Redemptions	92	93	78	119	65	50	54	60	49	44	59	51
Total Transactions	201	232	148	212	118	95	98	118	110	131	100	106

Activity

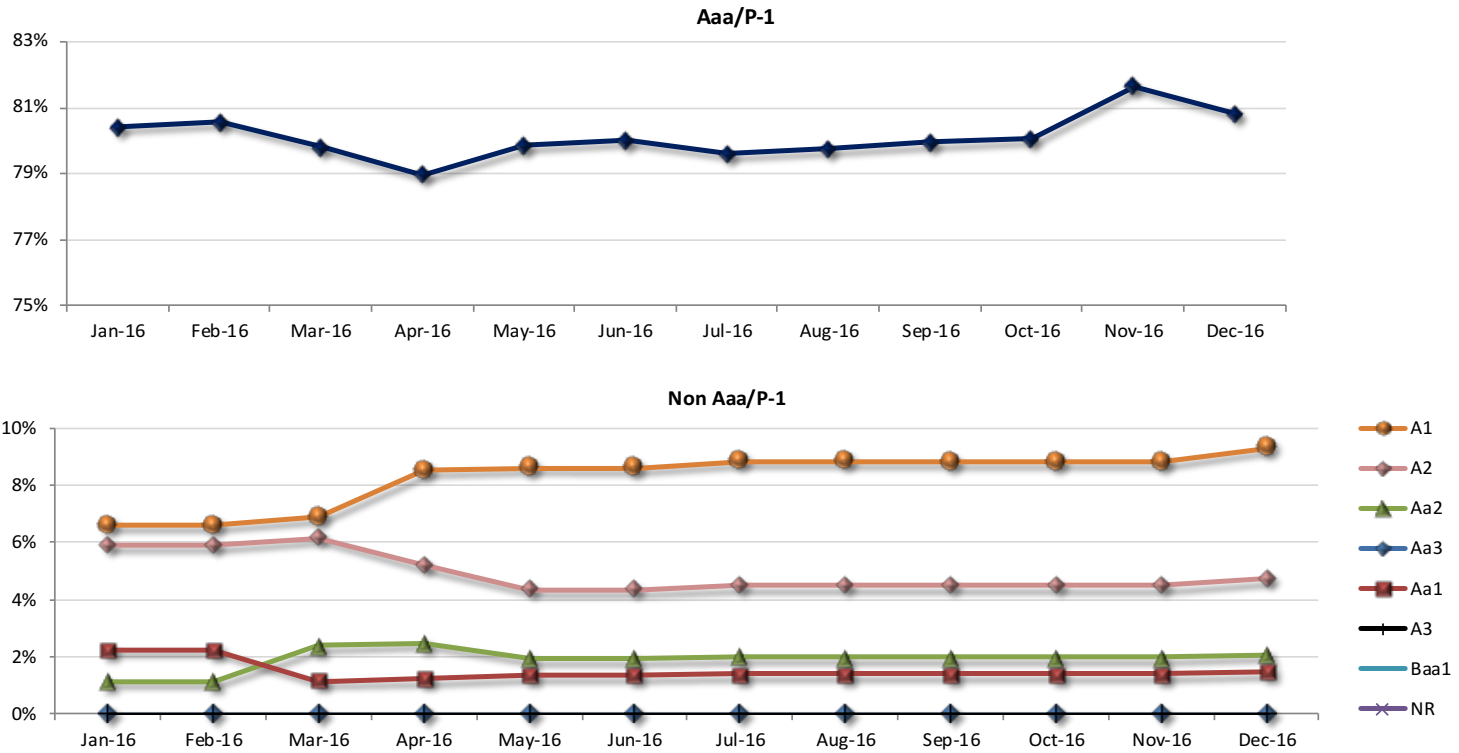
Transactions by Dealer

Dealer	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
Deutsche Bank	22	23	20	23	23	28	20	21					180
US Bank*	22	18	21	19	19	21	18	20					158
UBS	2			1	1	13							17
Key Bank	1		1	6	5	1		2					16
Wells Fargo	2	1		2	3	5		2					15
Incapital	2			1	1	5		4					13
B of A ML			1	1		2		2					6
Mizuho		1			1	3	1						6
Brean	1	1				2	1						5
JP Morgan				1	2			2					5
Barclays	1			1	2								4
Jefferies	1	1					1						3
LOOP Capital Mkts						3							3
RBC	1		1			1							3
BMO					1	1							2
Citigroup					1			1					2
Daiwa				1		1							2
Toyota Motor Credit					2								2
Credit Suisse				1									1
FTN Financial								1					1
BNP													0
Cantor													0
GE Capital*													0
Goldman Sachs													0
Morgan Stanley													0
Nomura													0
Piper Jaffray													0
Raymond James													0
Scotia Bank													0
Suntrust													0
Vining Sparks													0
Total	55	45	44	57	61	86	41	55	0	0	0	0	444

*Direct Issuers



Ratings



Sector	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16
Aaa/P-1	80.4%	80.6%	79.8%	78.9%	79.8%	80.0%	79.6%	79.7%	79.9%	80.0%	81.6%	80.8%
Aa1	2.2%	2.2%	1.2%	1.2%	1.3%	1.3%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%
Aa2	1.1%	1.1%	2.4%	2.5%	1.9%	1.9%	2.0%	2.0%	2.0%	2.0%	2.0%	2.1%
Aa3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
A1	6.6%	6.6%	6.9%	8.6%	8.7%	8.6%	8.9%	8.9%	8.9%	8.9%	8.8%	9.4%
A2	5.9%	5.9%	6.2%	5.2%	4.4%	4.4%	4.5%	4.5%	4.5%	4.5%	4.5%	4.8%
A3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
NR-Not Rated	3.7%	3.5%	3.6%	3.6%	3.9%	3.7%	3.7%	3.5%	3.4%	3.3%	1.7%	1.6%
Baa1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

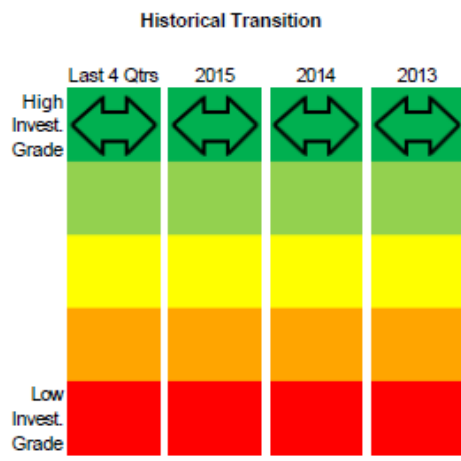
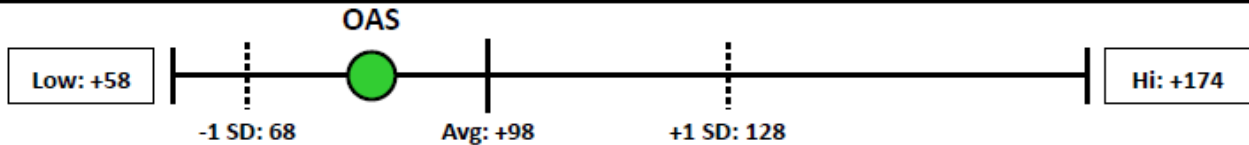
Credit Analysis

Descriptive Information		Last 4 Qtrs	2015	2014	2013	2012	Relative Credit Performance - Most Recent Period		
CUSIP	94974BFG0	Key Credit Metrics					Pct Ranking vs Peer Group		
Issuer	Wells Fargo & Co	3-Yr Average Pre-Provision Net Revenue/ RWA (%)	2.80	2.83	3.03	3.11	3.29	90%	1
Ticker	WFC	Tier 1 CET Common Ratio (%)	10.82	11.07	11.04	10.72	10.03	50%	3
Sector	Financial	NPA+ Loans 90PD/ Tang Common Equity + LLR (%)	16.14	28.88	35.51	45.46	52.93	20%	4
Subgroup	Bank - Domestic	Reliance on Wholesale Funding (3-yr Avg)	26.38	24.06	22.08	21.35	20.44	20%	4
Peer Group	Bank - Domestic	Efficiency Ratio (%)	57.10	56.95	57.01	56.35	56.35	20%	4
Maturity	01/16/2018	Liquidity Ratio (%)	39.07	37.76	37.78	35.26	28.54	20%	4
Issue Date	12/26/2012	Earnings Stability Ratio (3-yr Avg) (%)	97.72	96.72	95.71	95.28	95.24	80%	1
Coupon	1.500	ROAE (%)	11.47	12.02	12.83	13.36	12.60	80%	1
Currency	USD	Total Assets (\$000)	1,889,235,000	1,787,632,000	1,687,155,000	1,527,015,000	1,422,968,000	60%	2
Amt		Tier 1 Common Capital (\$000)	169,287,000	164,584,000	154,666,000	140,735,000	126,607,000	60%	2
Outstanding	\$2,100,000,000	Financials(\$000)					Rank vs Peers		
		Total Loans & Leases	974,706,000	931,918,000	877,996,000	839,988,000	841,894,000	90%	1
		Total Deposits	1,245,866,000	1,223,559,000	1,168,708,000	1,079,531,000	1,003,205,000	90%	1
		Risk-Weighted Assets	1,354,621,610	1,303,142,460	1,242,544,700	1,141,514,100	1,077,149,700	100%	1
		Total Liquid Assets	675,776,000	641,154,000	595,738,000	500,772,000	399,311,000	90%	1
		Loans/Deposits (%)	78.24	76.16	75.13	77.81	83.92	90%	1
		NPAs/Total Loans (%)	2.71	2.84	3.44	4.10	4.62	100%	1
		Net Interest Margin (NIM) (%)	2.85	2.84	2.99	3.26	3.61	100%	1
		Yield/ Cost Spread (%)	2.74	2.73	2.88	3.12	3.43	100%	1
		Net NonCore Funding Dependence (%)	11.66	8.51	7.70	6.37	8.71	100%	1

All Pricing as of:
11/14/2016
All Financials as of:
09/27/2016

Market Monitor - Debt Performance					Market Monitor - Equity Performance				
Issuer 5-yr OAS	OAS(bps)	Diff(bps)	SD	SDs +/-	Equity	1Yr(%)	Diff.	Sharpe	Diff.
Peer Group Avg	83	-15	30.5	-0.48	Issuer Eqy	0.31	-19.39	0.01	-0.68
Issuer Rank Avg	98	14	32.5	0.42	Peer Group Avg	19.70	-43.56	1.55	-1.54
IG Index Avg	70	-39	135.8	-0.29	Issuer Rank Avg	43.87	-13.09	0.49	-0.48
					IG Index Avg	13.40	-8.92	0.58	-0.57
					S&P Index				
5-yr CDS	CDS(bps)	Diff(bps)	SD	SDs +/-					
Peer Group Avg	52	-10	18.2	-0.55					
Issuer Rank Avg	62	-38	86.2	-0.46					
IG Index Avg	90	-40							
	92								

5-yr Issuer OAS vs Peer Group



Sources: FTN Financial

Quarterly GASB 31 Calculation

INVESTMENT POOL
MARK-TO-MARKET
FISCAL YEAR 2016 Y-T-D

DESCRIPTION	AMOUNT
Invested Value at December 31, 2015	333,092,674
Add: Proceeds of Investments Matured/Sold in FY16	172,338,733
Less: Cost of Investments Purchased in FY16	(159,417,821)
Add: Amortization Adjustment	0
Less: Invested Value at June 30, 2015	(346,590,397)
Change in Market Value of Investments	(576,810)

NO. 347 | FEBRUARY 2015

Governmental Accounting Standards Series

Statement No. 72 of the
Governmental Accounting
Standards Board

Fair Value Measurement
and Application

Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities or offer same day liquidity at a price of par.

Level 2 of the fair value hierarchy are generally valued using a matrix pricing technique. Matrix pricing is the process of estimating the market price of a bond based on the quoted prices of more frequently traded comparable bonds.

Level 3 of the fair value hierarchy are generally used for assets where there are unobservable inputs.

NO. 355 | DECEMBER 2015

Governmental Accounting Standards Series

Statement No. 79 of the
Governmental Accounting
Standards Board

Certain External Investment Pools
and Pool Participants



LAIF Performance Report Quarter Ending 12/31/15

Apportionment Rate:	0.37%
Earnings Ratio:	0.00001006140492611
Fair Value Factor:	0.999186963
Daily:	0.43%
Quarter to Date:	0.38%
Average Life:	179

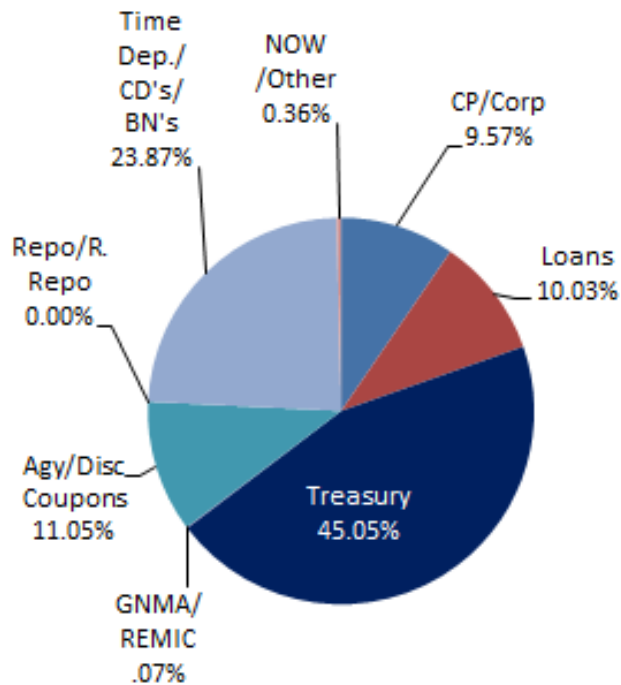
NO. 355 | DECEMBER 2015

Governmental Accounting Standards Series

Statement No.100 of the
Governmental Accounting
Standards Board

Lost Opportunity Costs

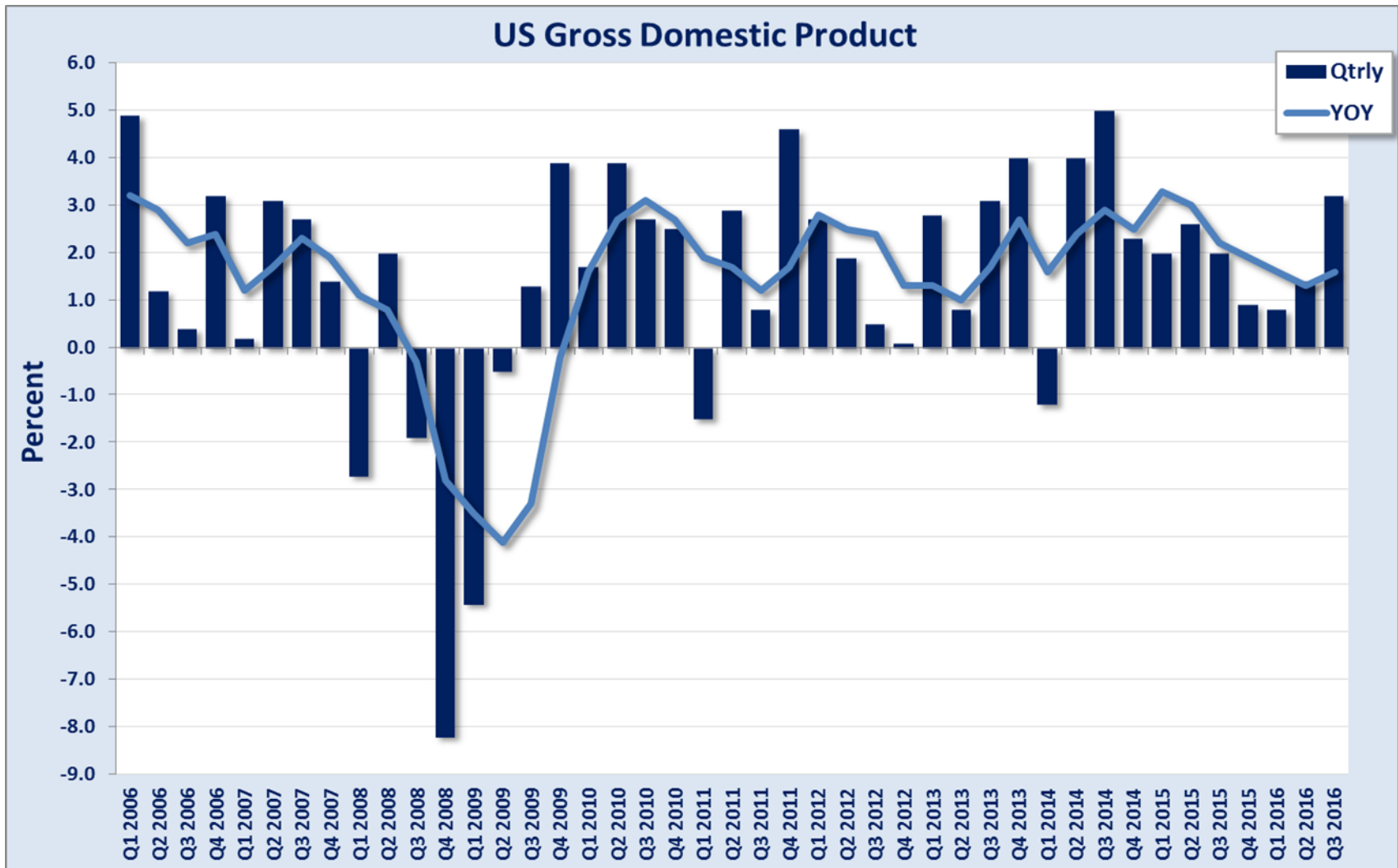
PMIA Avg. Monthly Yield 0.654%



Type of Security	Amount	% of Portfolio
Government	(000's)	
Bills	\$11,051,333	15.71%
Bonds	\$0	0.00%
Notes	\$20,643,257	29.34%
Strips	\$0	0.00%
Total Government	\$31,694,590	45.05%
Federal Agency Coupons	\$1,793,214	2.55%
Certificates of Deposit	\$11,000,028	15.63%
Bank Notes	\$600,000	0.85%
Bankers' Acceptances	\$0	0.00%
Repurchase Agreements	\$0	0.00%
Fed. Agency Disc. Notes	\$5,979,780	8.50%
Time Deposits	\$5,197,440	7.39%
GNMA's	\$0	0.00%
Commercial Paper	\$6,734,264	9.57%
FHLMC/REMIC	\$52,205	0.07%
Corporate Bonds	\$0	0.00%
AB 55 Loans	\$620,831	0.88%
GF Loans	\$6,437,300	9.15%
NOW Accounts	\$0	0.00%
Other	\$249,997	0.36%
Reverse Repo	\$0	0.00%
Total	\$70,359,649	100.00%

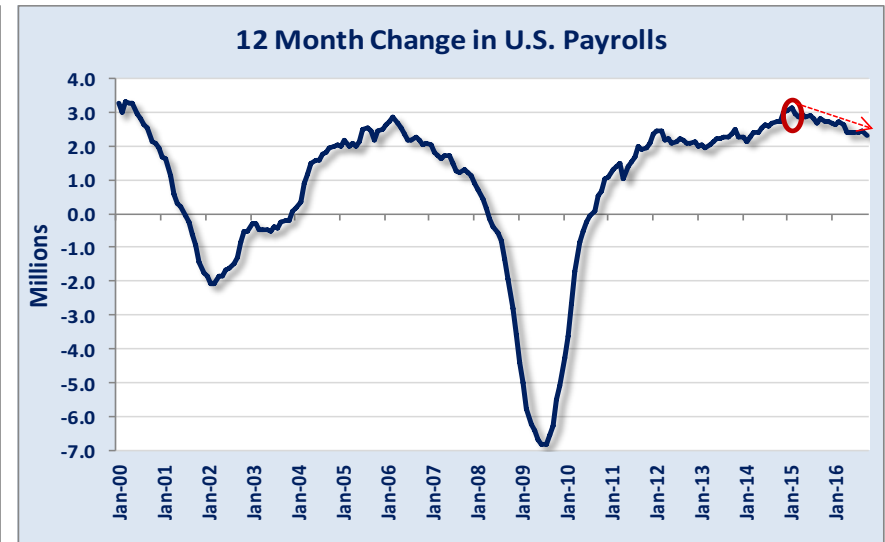
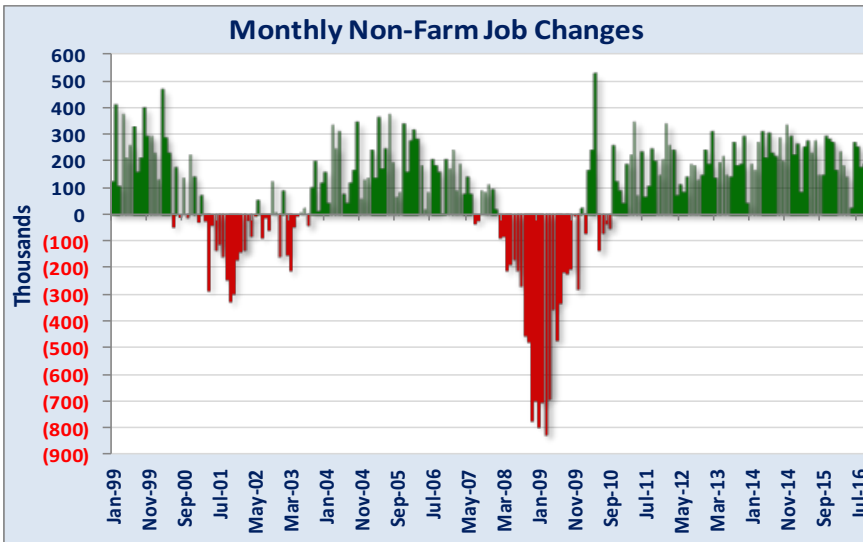
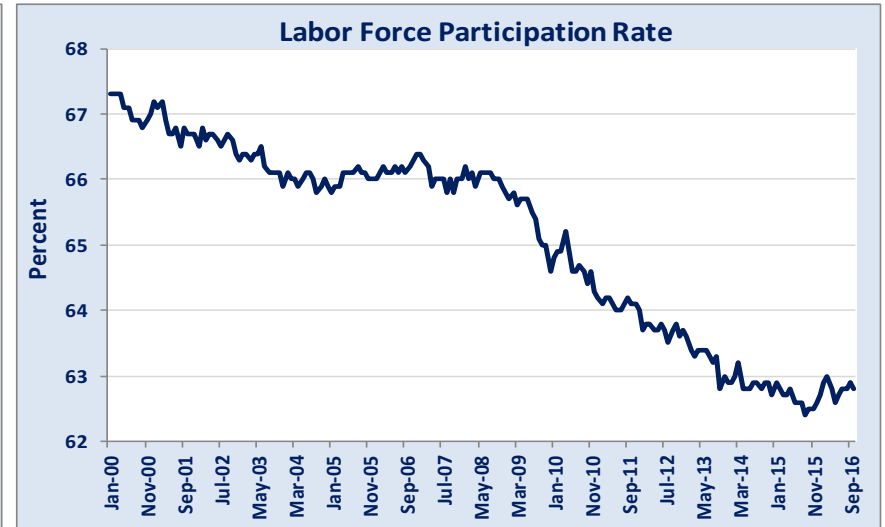
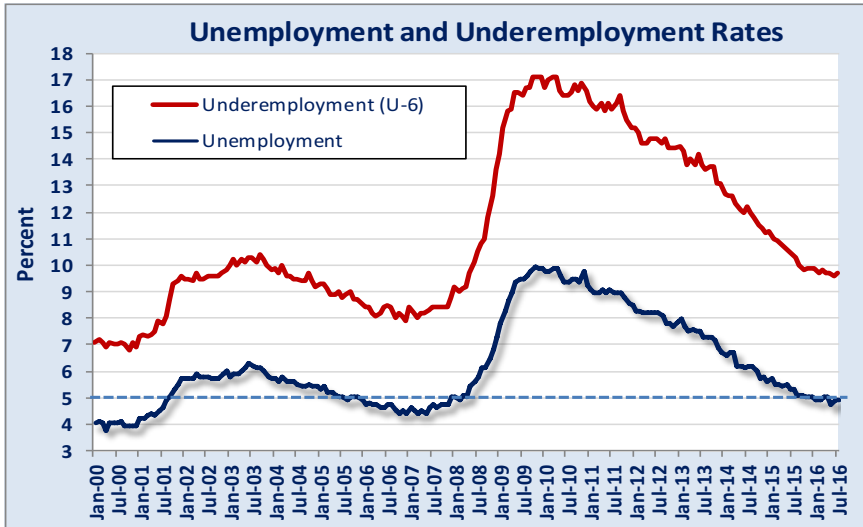
Source: LAIF Website, FTN Main Street Calculations

Economic/Market - GDP



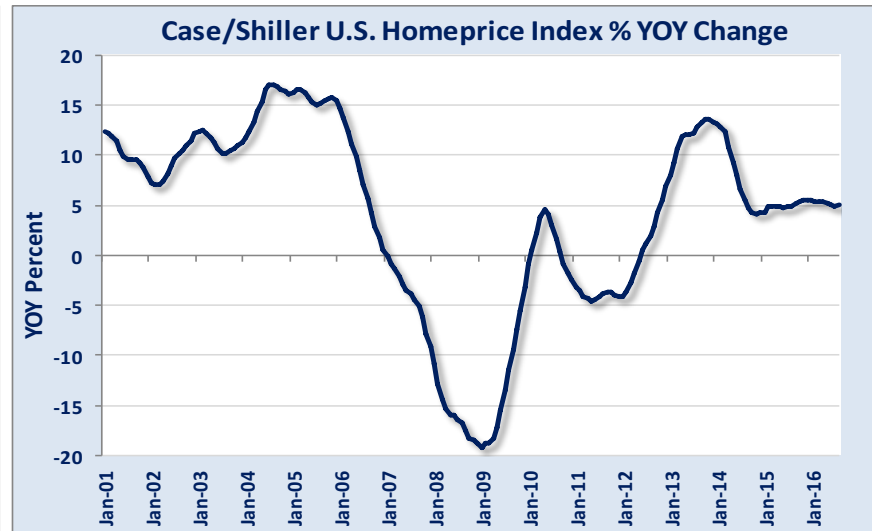
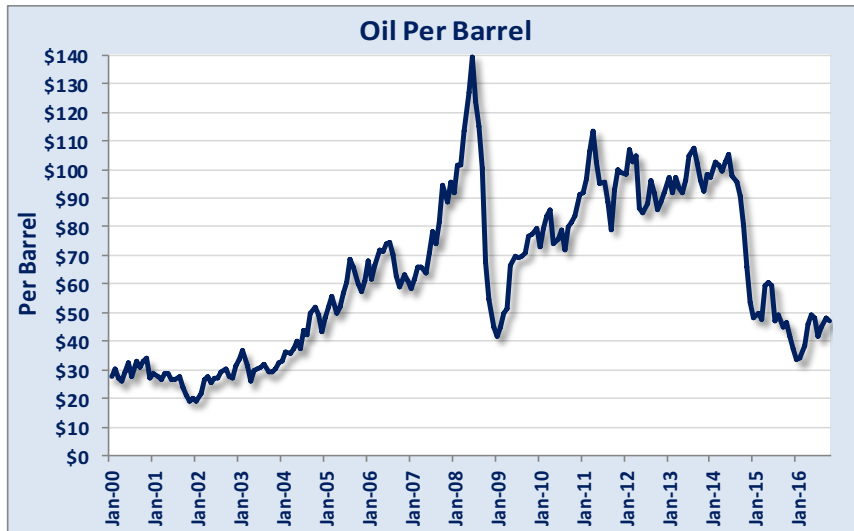
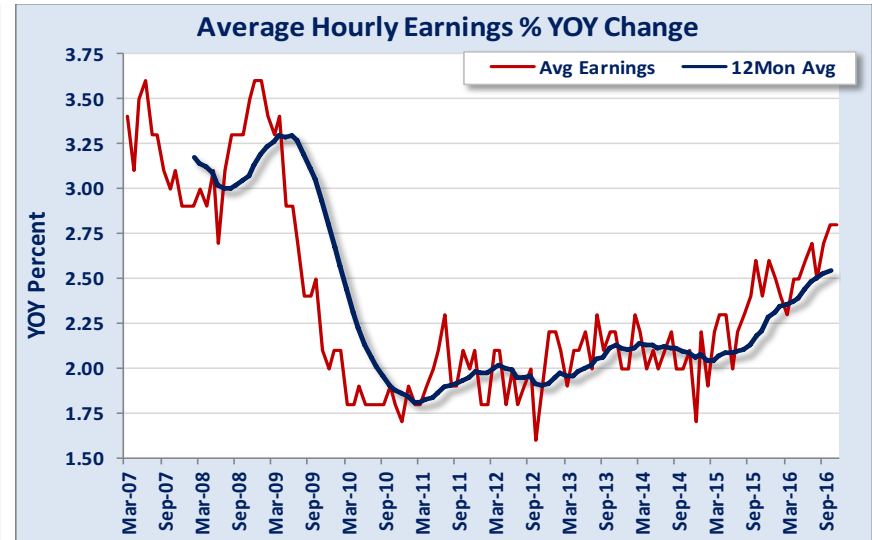
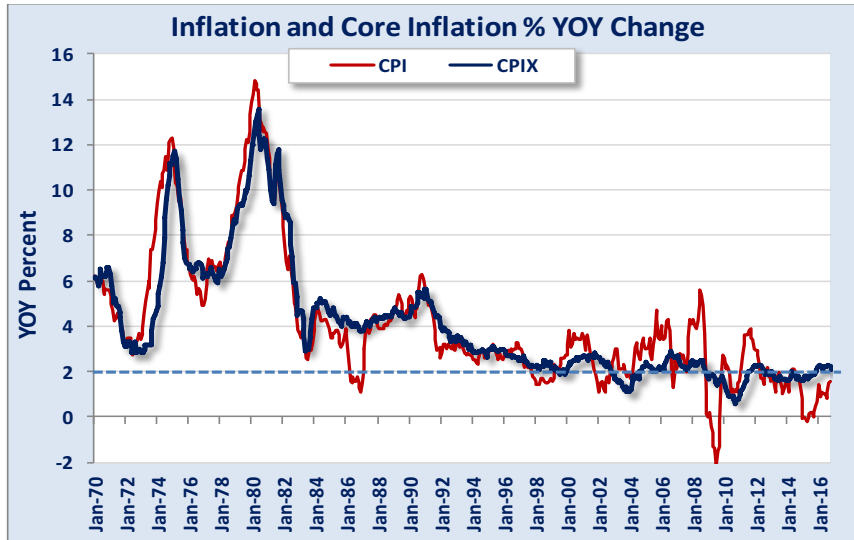
Source: Bloomberg

Economic/Market - Employment



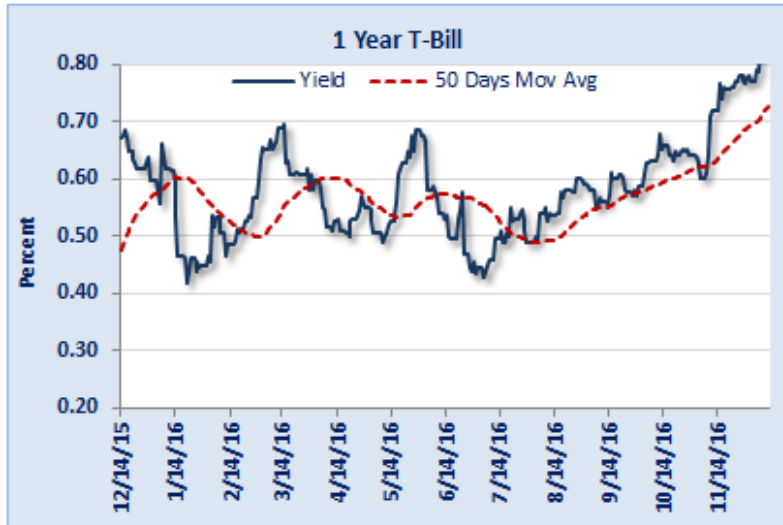
Source: Bloomberg

Economic/Market -- Inflation



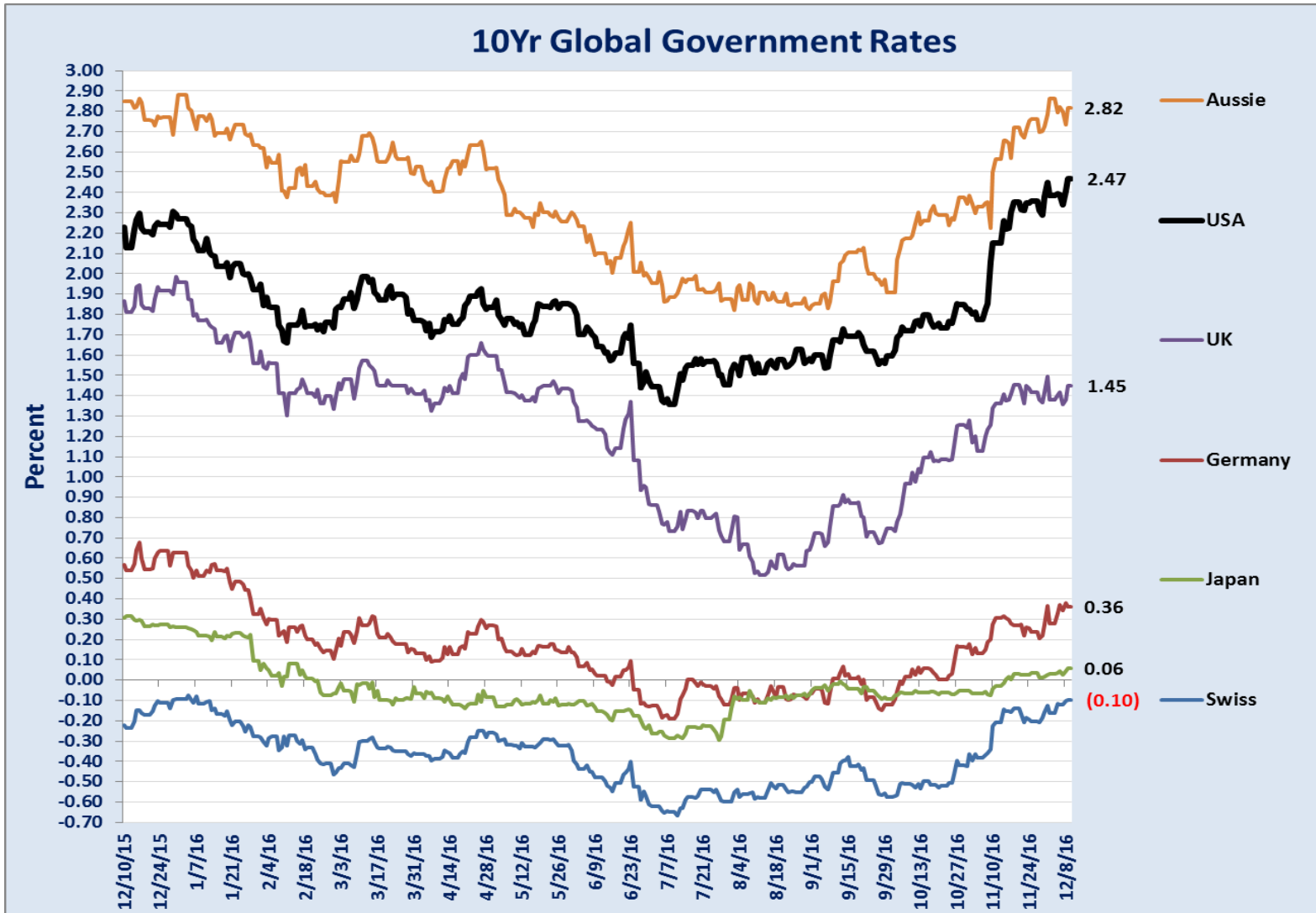
Source: Bloomberg

Economic/Market -- Rates



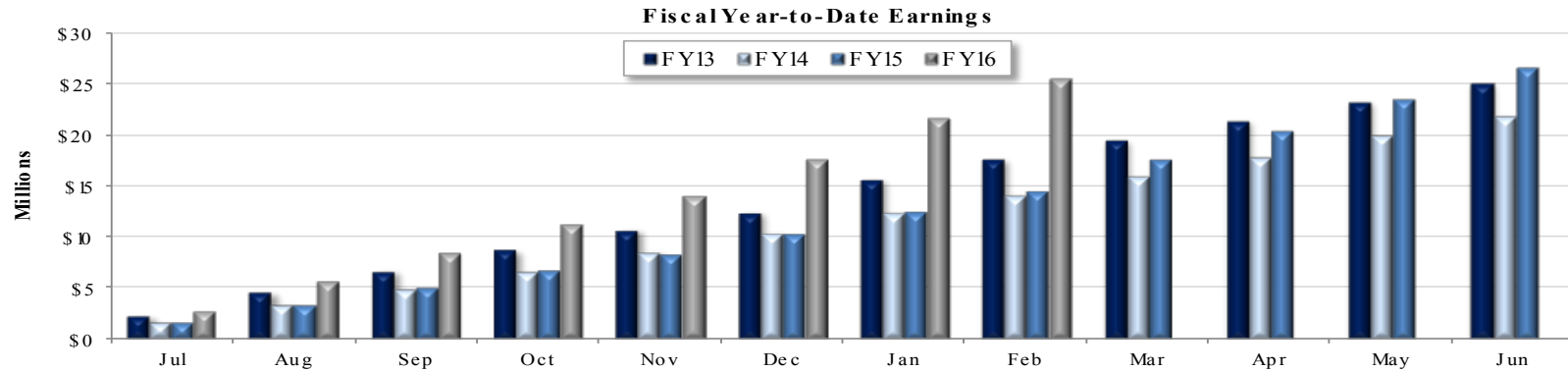
Source: Bloomberg

Economic/Market -- Global Rates

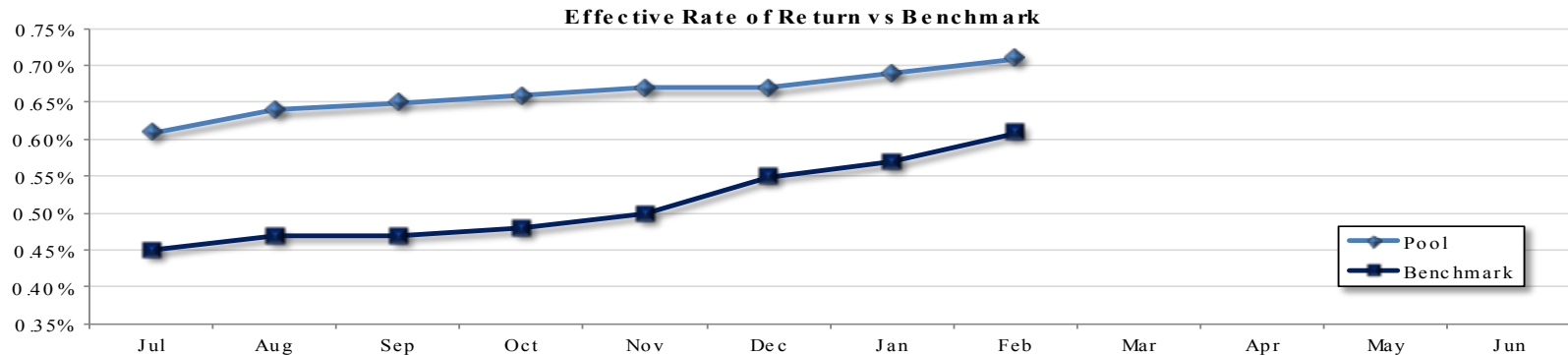


Source: Bloomberg

Performance



Fiscal YTD	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
FY 2013	\$2.4	\$4.7	\$6.8	\$8.9	\$10.8	\$12.6	\$15.8	\$17.8	\$19.6	\$21.5	\$23.4	\$25.2
FY 2014	\$1.8	\$3.5	\$5.0	\$6.8	\$8.7	\$10.5	\$12.5	\$14.2	\$16.1	\$18.0	\$20.0	\$21.9
FY 2015	\$1.8	\$3.5	\$5.2	\$6.9	\$8.5	\$10.4	\$12.6	\$14.7	\$17.8	\$20.6	\$23.7	\$26.8
FY 2016	\$2.9	\$5.8	\$8.6	\$11.3	\$14.2	\$17.8	\$21.8	\$25.7				



Fiscal YTD	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Effective Rate of Rtn	0.61%	0.64%	0.65%	0.66%	0.67%	0.67%	0.69%	0.71%				
Custom Benchmark*	0.45%	0.47%	0.47%	0.48%	0.50%	0.55%	0.57%	0.61%				
Variance	0.16%	0.17%	0.18%	0.18%	0.17%	0.12%	0.12%	0.10%				

*Benchmark: 40% Agy 1-3Y, 30% Agy Discount Note 180D, 10% Corp AA-AAA 1-3Y, 10% CP 1D, 5% Repo 1D, 5% MMF

Benchmarking Incorrectly (or Not At All)

What Does Your BOS Want You to Show Them



Why Do We Benchmark Performance?

Model Investment Policy -- Primary Objectives

Safety: Safety of principal is the primary objective of the (Local Agency's) investment program. Investments shall be undertaken in a manner that seeks to ensure the preservation of principal in the overall portfolio by mitigating credit risk and interest rate risk. To attain this objective, the (Local Agency) will diversify the portfolio by investing funds among a variety of securities with independent returns.

Liquidity: The investment portfolio will remain sufficiently liquid to enable the (Local Agency) to meet all operating requirements which might be reasonably anticipated. This objective shall be achieved by matching investment maturities with forecasted cash outflows and inflows, and maintaining an additional liquidity buffer for unexpected cash needs.

Income: The investment portfolio shall be designed with the objective of **attaining a market rate of return throughout budgetary and economic cycles**, taking into account the investment risk constraints of safety and liquidity needs.

Primary Benchmarking Factors to Consider

A benchmark is a collection of securities or risk factors and associated weights that represents the persistent and prominent investment characteristics of a manager's investment process. A benchmark should be:

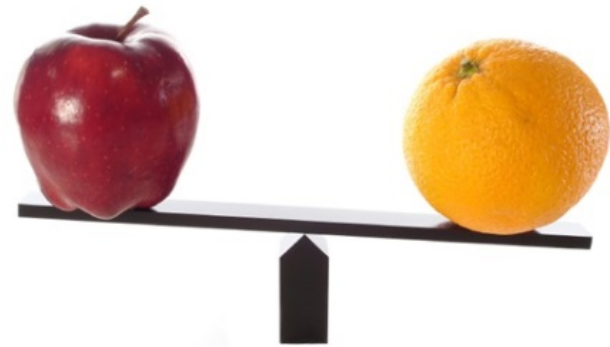
- **Unambiguous**: The identities and weights of securities constituting the benchmark are clearly defined.
- **Investable**: It is possible to forgo active management and simply hold the benchmark.
- **Measurable**: The benchmark's return is readily calculable on a reasonably frequent basis.
- **Appropriate**: The benchmark is consistent with the manager's investment style and sectors.
- **Specified in Advance**: The benchmark is specified prior to the start of an evaluation period and known to all interested parties.

“The failure of a benchmark to possess these properties compromises its utility as an effective investment management tool. The properties listed merely formalize intuitive notions of what constitutes a fair and relevant performance comparison. It is interesting to observe that a number of commonly used benchmarks fail to satisfy these properties.” **CFA Institute**

Relevant General Characteristics

To Be Relevant, Benchmarks Should Reflect the General Characteristics of a Portfolio's:

- Sector Allocations
- Duration/Maturity
- Turnover



Three Types of Benchmarking

Keeping Score of Your Portfolio



- Weighted Yield
- Book Rate of Return
- Total Rate of Return

Calculation Methodology of Each Benchmark

Weighted Yield= Portfolio's Weighted Average Purchase Yield

+ Accrued/Received Interest

Book Return= +/- Amortization/Accretion of Premiums/Discounts

+/- Realized Gains/Losses

Average Daily Book Balance for the Period

+ Accrued/Received Interest

Total Return= +/- Realized Gains/Losses

+/- **Unrealized Gains/Losses**

Time Weighted Invested Market Value for the Period

Yield Return-Custom Benchmark

Yields

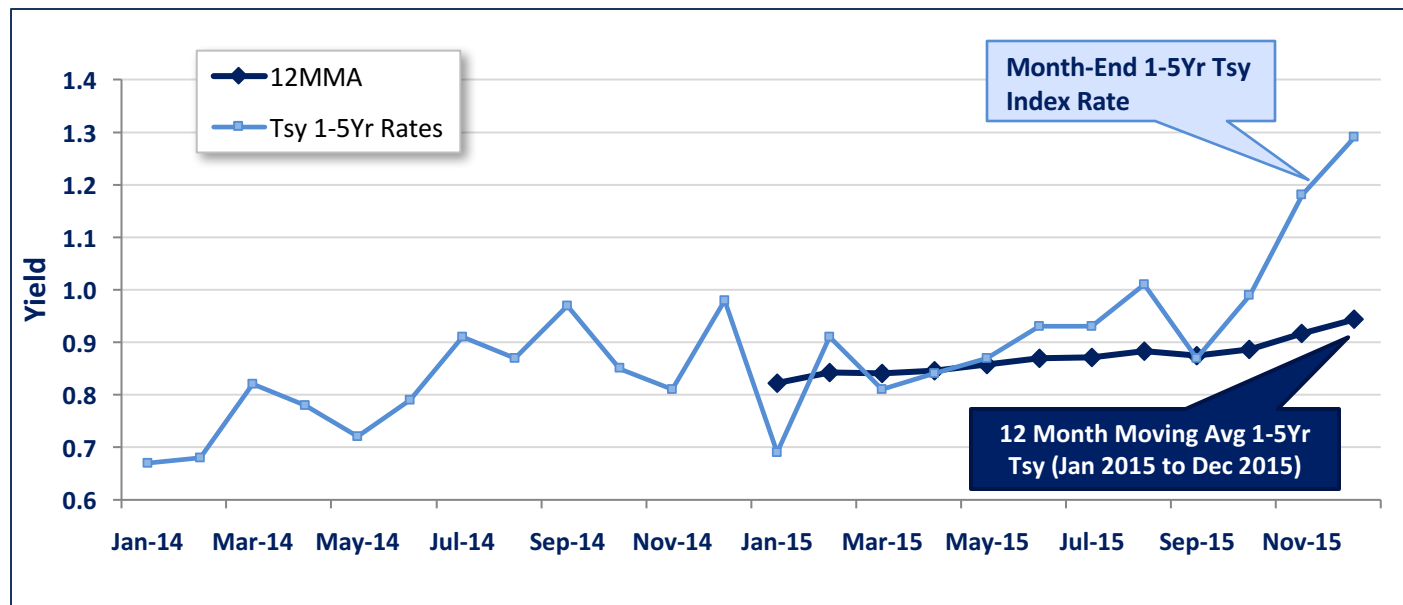
Index	Jan-2015	Feb-2015	Mar-2015	Apr-2015	May-2015	Jun-2015	Jul-2015	Aug-2015	Sep-2015	Oct-2015	Nov-2015	Dec-2015
MMF	0.03%	0.04%	0.05%	0.06%	0.06%	0.07%	0.08%	0.08%	0.10%	0.10%	0.11%	0.24%
BAML 1-5Yr Agy	0.75%	0.92%	0.84%	0.88%	0.89%	0.96%	0.96%	0.99%	0.86%	0.98%	1.13%	1.30%
BAML 1-5Yr Tsy	0.69%	0.91%	0.81%	0.84%	0.87%	0.93%	0.93%	1.01%	0.87%	0.99%	1.18%	1.29%

Weights

Index	Jan-2015	Feb-2015	Mar-2015	Apr-2015	May-2015	Jun-2015	Jul-2015	Aug-2015	Sep-2015	Oct-2015	Nov-2015	Dec-2015
MMF	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
BAML 1-5Yr Agy	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
BAML 1-5Yr Tsy	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Weighted Yield

Index	Jan-2015	Feb-2015	Mar-2015	Apr-2015	May-2015	Jun-2015	Jul-2015	Aug-2015	Sep-2015	Oct-2015	Nov-2015	Dec-2015	12 Mon. Avg.
Weighted Yield	0.51%	0.65%	0.59%	0.62%	0.64%	0.68%	0.69%	0.72%	0.63%	0.72%	0.84%	0.98%	0.69%



Data Source: Bank of America Merrill Lynch (BAML)

Yield Return-Pros and Cons

Pros:

- Ease of Calculation
- Ease of Understanding (presenting to governing body)
- Helpful for Budgeting Interest Income

Cons:

- Does Not Account for Realized Gains or Losses
- Does Not Accurately Account for Accrued Interest
- Subject to Yield To Maturity Assumptions

Book Rate of Return-Calculation Complexities

$$\text{Book Return} = \frac{\begin{aligned} &+ \text{ Accrued/Received Interest} \\ &+/- \text{ Amortization/Accretion of Premiums/Discounts} \\ &+/- \text{ Realized Gains/Losses} \end{aligned}}{\text{Average Daily Book Balance for the Period}}$$

Amortization: The accumulation of value until maturity (premiums)

Accretion: The accumulation of value until maturity (discounts)

Realized Gains/Losses: Liquidation Principal minus Book Value Principal

Book Rate of Return-Pros and Cons

Pros:

- Matches Budgeting Process
- Closely Matches Actual Cash Flows

Cons:

- Subject to Manipulation of Realized Gains/Losses
- Won't Reflect Portfolio's Market Volatility Changes and Risks
- Calculation is More Complex
- Does Not Have a Standardized Calculation

Note: Benchmark Development is Similar to Weighted Yield Methodology

When Should You Change Your Benchmark?

Total Rate of Return -- GIPS Methodology

$$\text{Total Return} = \frac{\begin{aligned} &+ \text{Accrued/Received Interest} \\ &+/- \text{Realized Gains/Losses} \\ &+/- \text{Unrealized Gains/Losses} \end{aligned}}{\text{Time Weighted Invested Market Value for the Period}}$$



Total Rate of Return Complexities

Bond Index Almanac

Calculation methodologies

Bond Indices

Bond Indices | Global
28 January 2013

Bank of America
Merrill Lynch



Total return calculations

Calculating index values

The daily closing Index value is a function of the prior month-end index value and the current month-to-date return:

$$IV_n = IV_0 \times (1 + TRR_n)$$

where:

IV_n = closing index value on day n

IV_0 = closing index value on prior month-end

TRR_n = month-to-date index total return on day n

The month-to-date return of an index (TRR_n) is equal to the sum of the individual constituent returns times their respective beginning of month weights:

$$TRR_n = \sum_{i=1}^k B_i TRR_{n,i} \times B_i Wgt_0$$

where:

TRR_n = Index month-to-date total return on day n

$B_i TRR_{n,i}$ = month-to-date total return on day n of bond i

$B_i Wgt_0$ = beginning of month weight of bond i

Periodic returns between any two dates can be derived from the beginning and end of period index values. Since index values represent closing levels, period returns will include market movement on the end of period date but exclude market movement on the beginning of period date. Therefore, to capture returns for the month of June, divide the June 30 Index value by the May 31 Index value:

$$TRR = \frac{IV_n}{IV_0} - 1$$

where:

TRR = periodic total return

IV_n = closing index value on the end of period date

IV_0 = closing index value on the beginning of period date

Annualized returns are derived from period total returns:

$$AnnTRR_n = (1 + TRR_n)^{365/d} - 1$$

where:

$AnnTRR_n$ = annualized total return for period n

TRR_n = periodic total return for period n

d = number of actual days in period n

Source: BAML

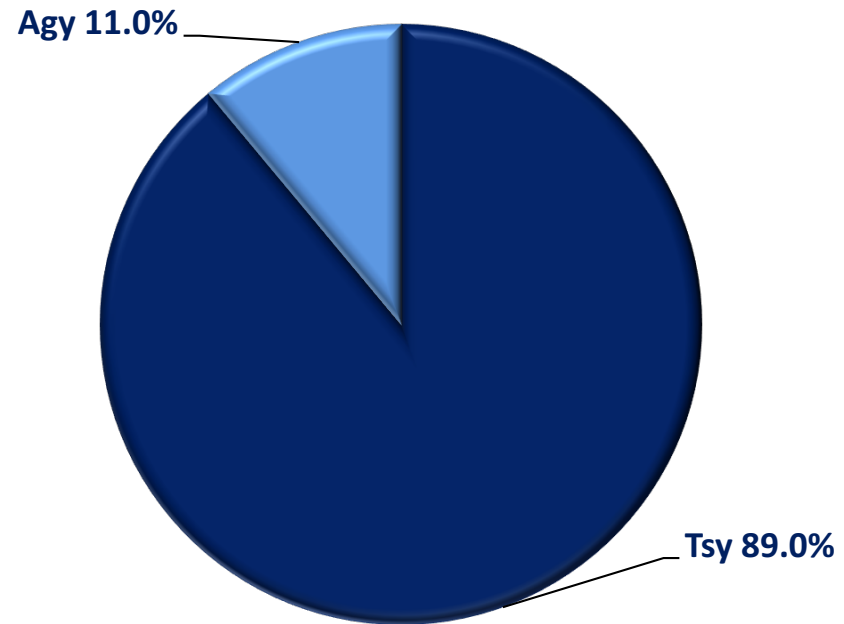
Total Return Index Parameters/Rules

Bank of America/Merrill Lynch 1-3 Year Treasury and Agency Index (Ticker: G1A0 -- Fixed Coupon)

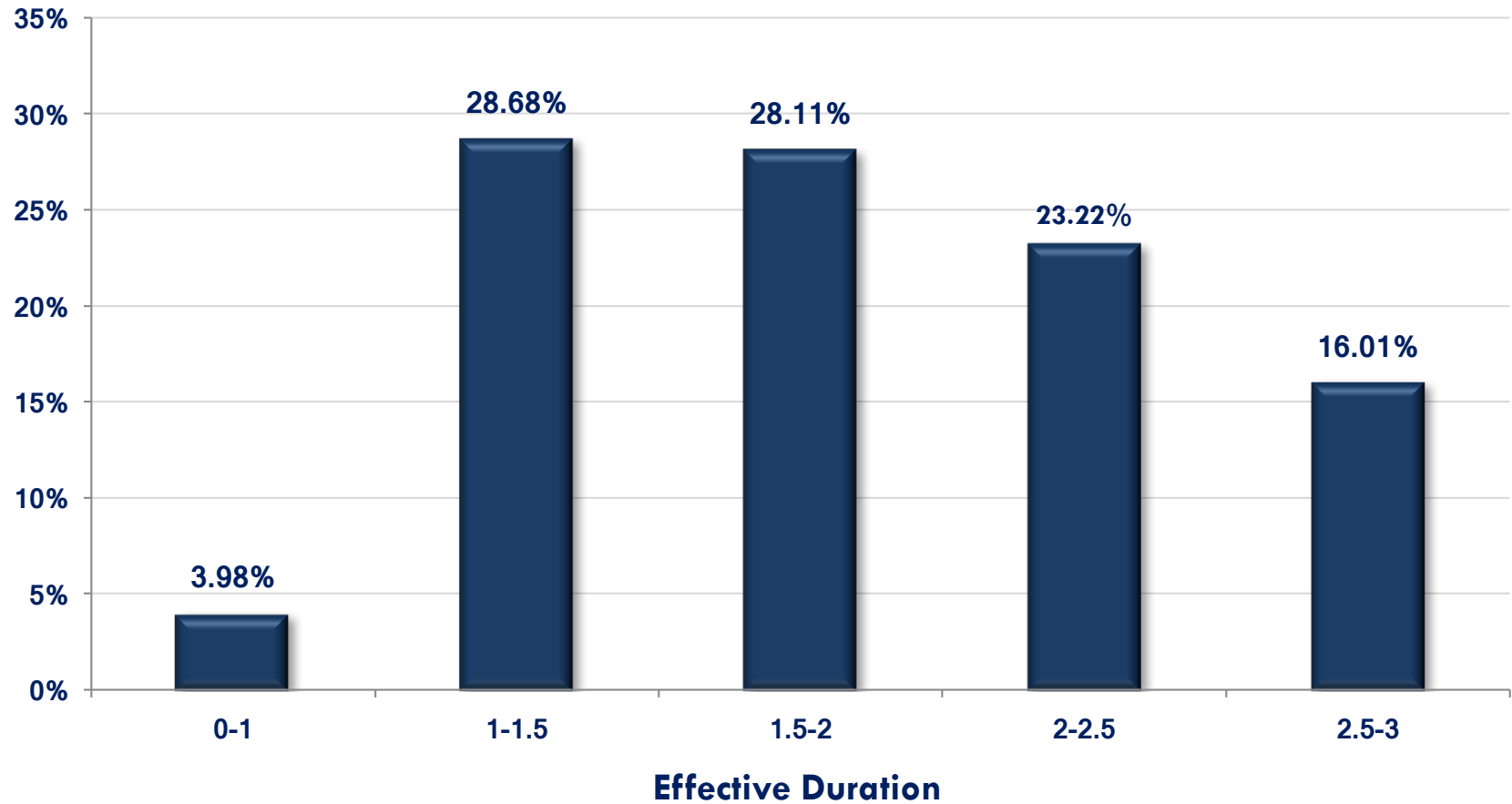
- Issue Size: \$250 Million and Up (Agency), \$1 Billion and Up (Treasury)
- Monthly Rebalanced
- Index “Buys” all Treasuries and Agency (non-subordinated) Fixed Rate Securities Between 1-3 Yrs
- Index “Sells” all Treasury and Agency Fixed Rate Securities Less Than 1 Yr
- “Buys” Newly Added Securities at the Bid

BofA Merrill 1-3 Year Treasury & Agency Index (12/31/16)

Issuer	Percent
TSY	88.98%
FNMA	3.15%
FHLMC	3.13%
FHLB	2.39%
NCUA	1.66%
FFCB	0.39%
FICO	0.14%
TVA	0.11%
PEFCO	0.06%
TOTAL	100.00%



BofA Merrill 1-3 Year Treasury & Agency Index (1/31/16)



Source: Bloomberg

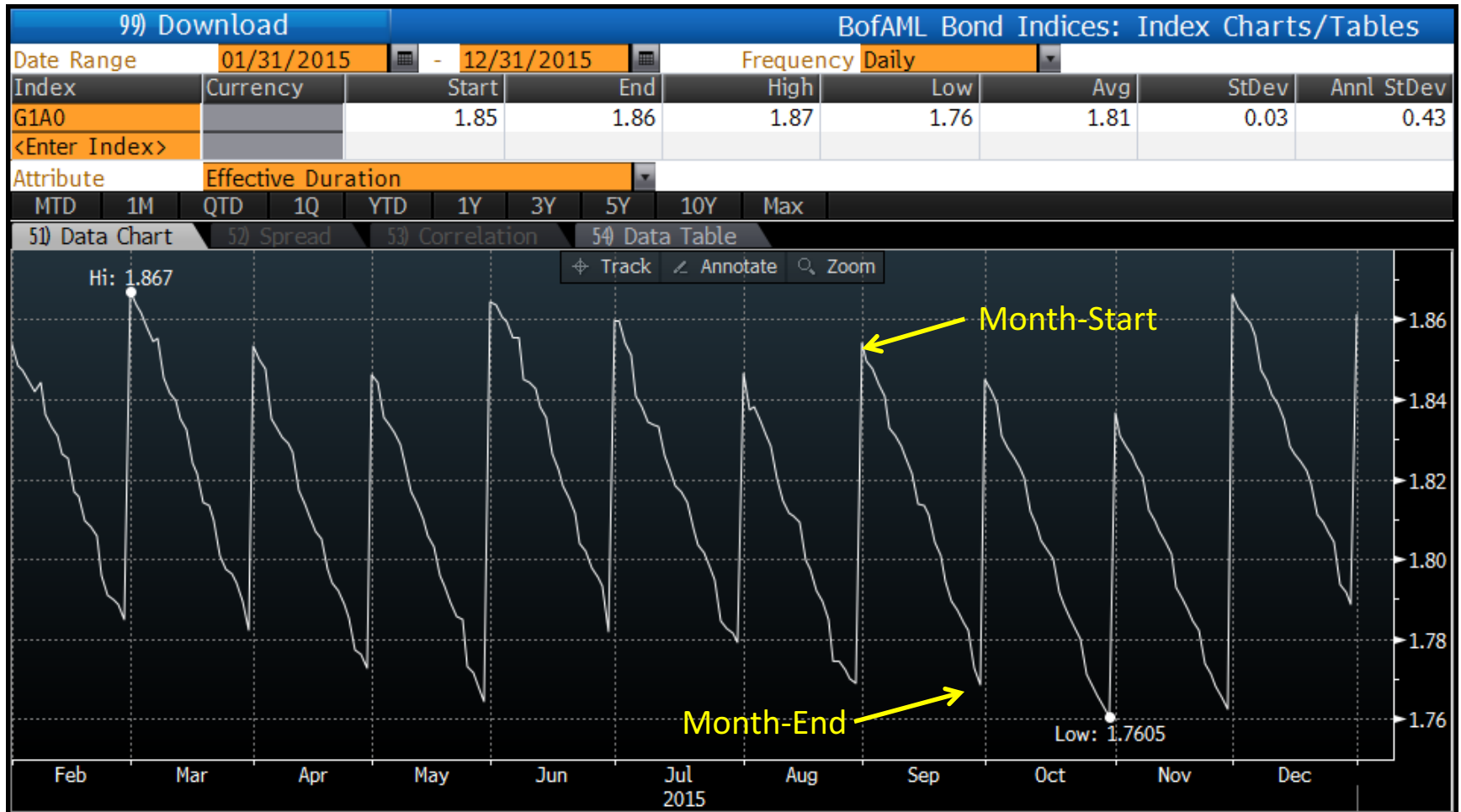
BofA Merrill 1-3 Year Treasury & Agency Index

G1A0		99) Download		BofAML Bond Indices: Index Characteristics			
The BofA Merrill Lynch 1-3 Year US Treasury & Agency Index				Inception Date		09/30/1982	
01/31/2016		Currency	USD	Calculation		Conventional	
		1/31 Rebalancing			Jan Market Change		
		Feb Index	Jan Index	Rebal Chg	Jan Index	MTD Chg	
		1/31/2016	1/31/2016	1/31/2016	12/31/2015	1/31/2016	
Returns							
Total Return Value		652.172			648.234		
Valuations (Scale MM)							
# of Issues		398	396	2	396	0	
Face Value		3,103,588	3,146,688	-43,100	3,146,688	0	
Accrued Interest		13,174	13,230	-56	11,725	1,505	
Cash		0	3,029	-3,029	0	3,029	
Full Market Value		3,168,148	3,214,287	-46,140	3,194,879	19,408	
% of GOA0		32.59	33.01	-0.43	33.52	-0.51	
Yield							
Effective Yield		0.81	0.79	0.01	1.07	-0.28	
Yield to Worst		0.81	0.79	0.01	1.07	-0.28	
Yield to Maturity		0.81	0.80	0.01	1.07	-0.27	
Spread (in Semi-Annual Terms)							
To Worst (vs Govt)		1	2	-1	1	1	
OAS (vs Govt)		1	1	0	1	0	
Libor OAS		-2	-3	1	-7	4	
Asset Swap		-2	-2	0	-6	4	
Duration							
Effective Duration		1.84	1.77	0.07	1.86	-0.09	
Spread Duration		1.84	1.76	0.07	1.86	-0.09	

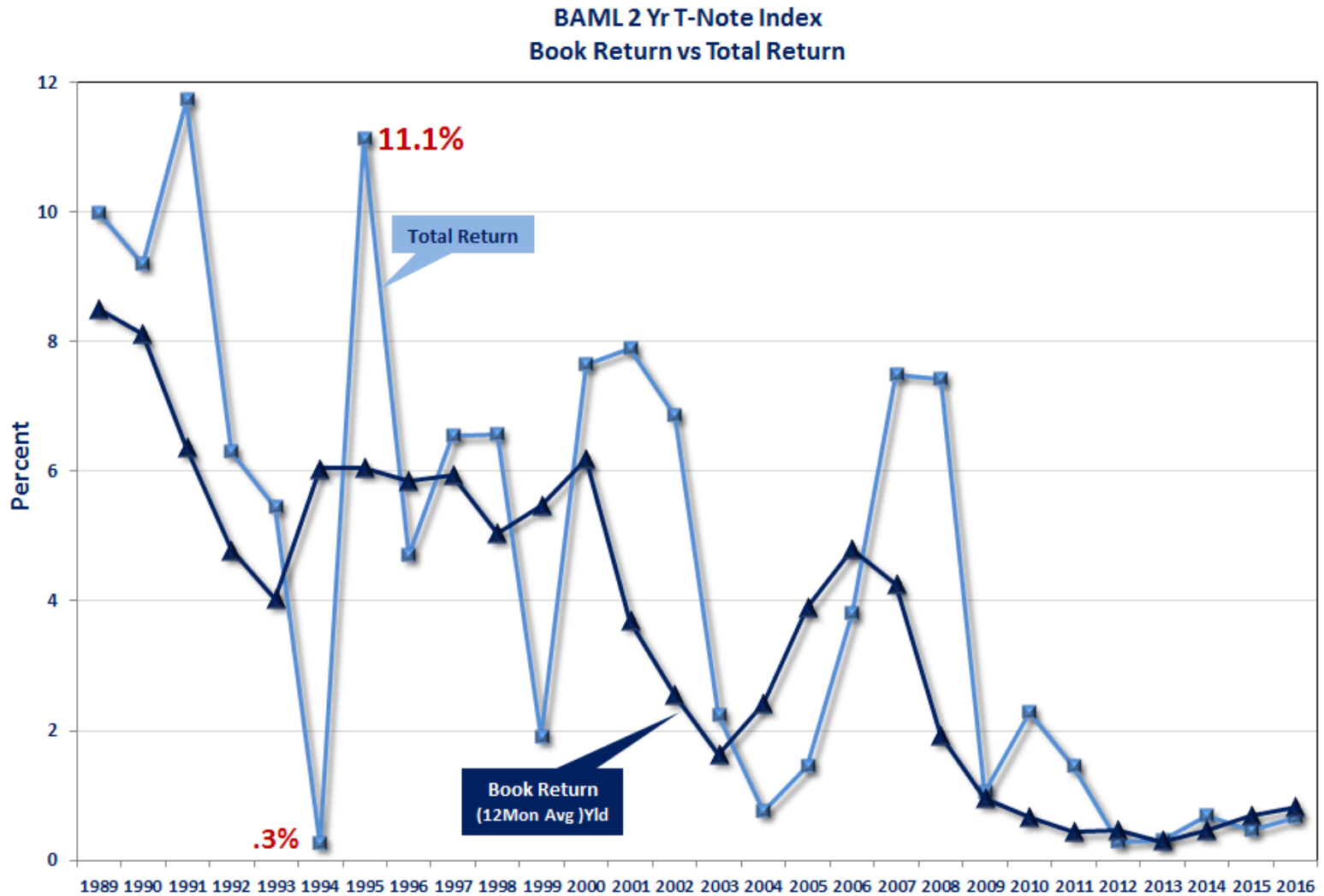
30 Bonds Left the Index and 32 Bonds Were Added to the Index

Source: Bloomberg

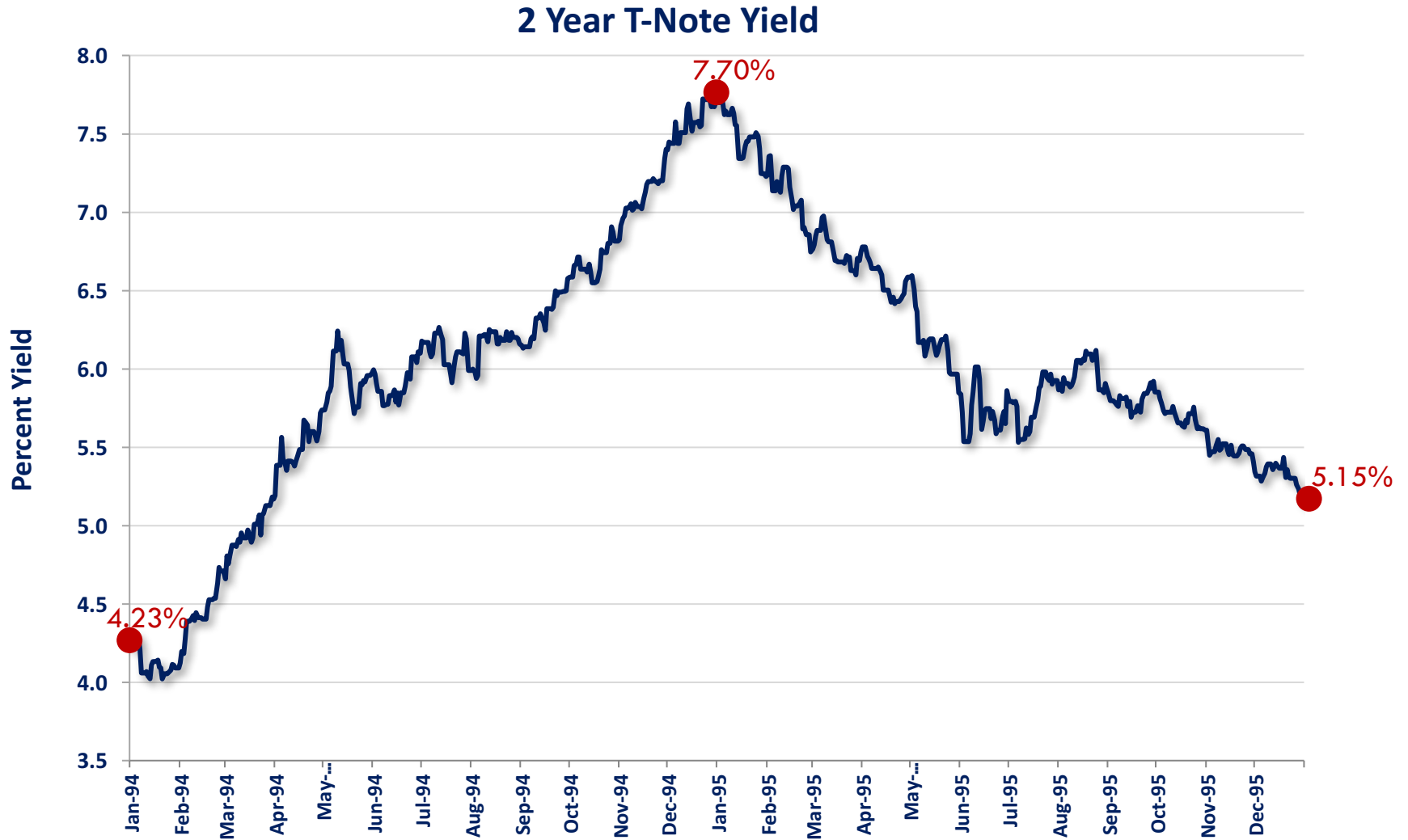
BofA Merrill 1-3 Year Treasury & Agency Index



Book Return vs. Total Return

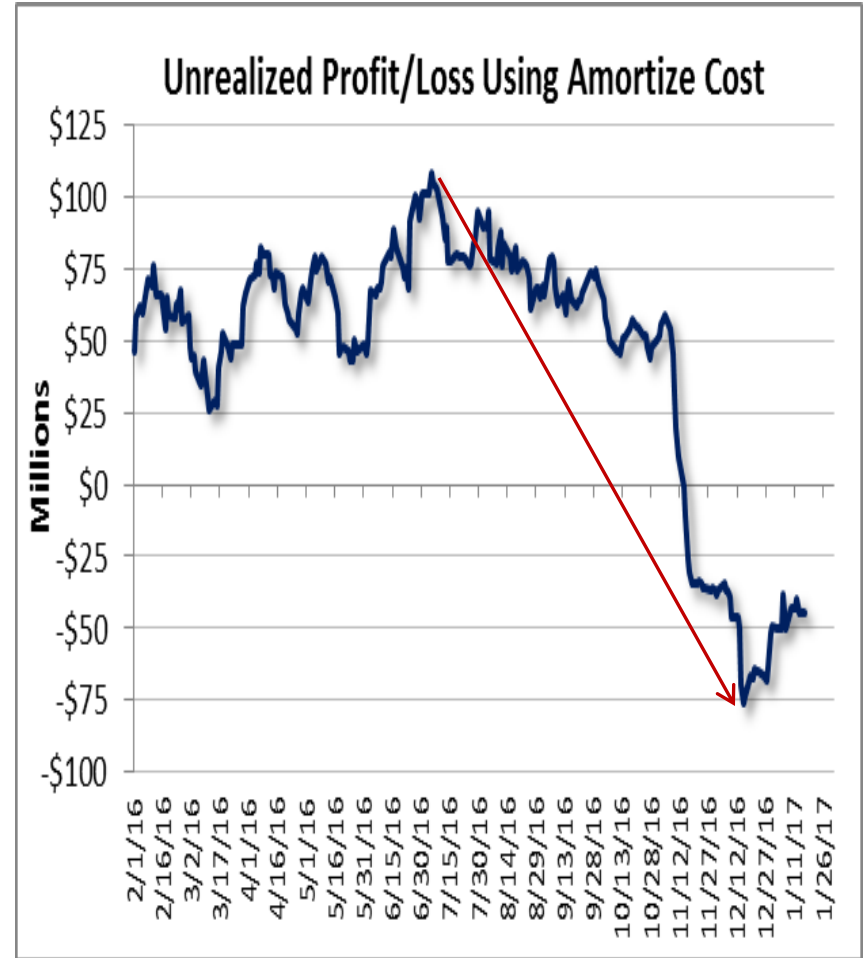
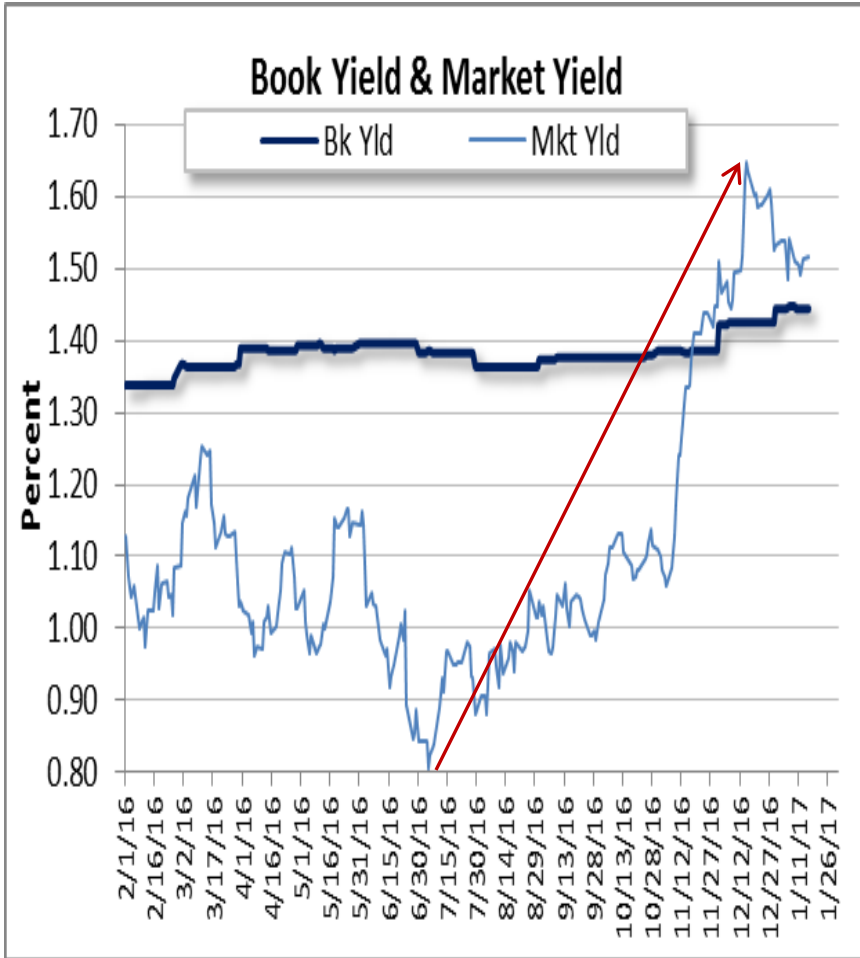


Yield vs. Price



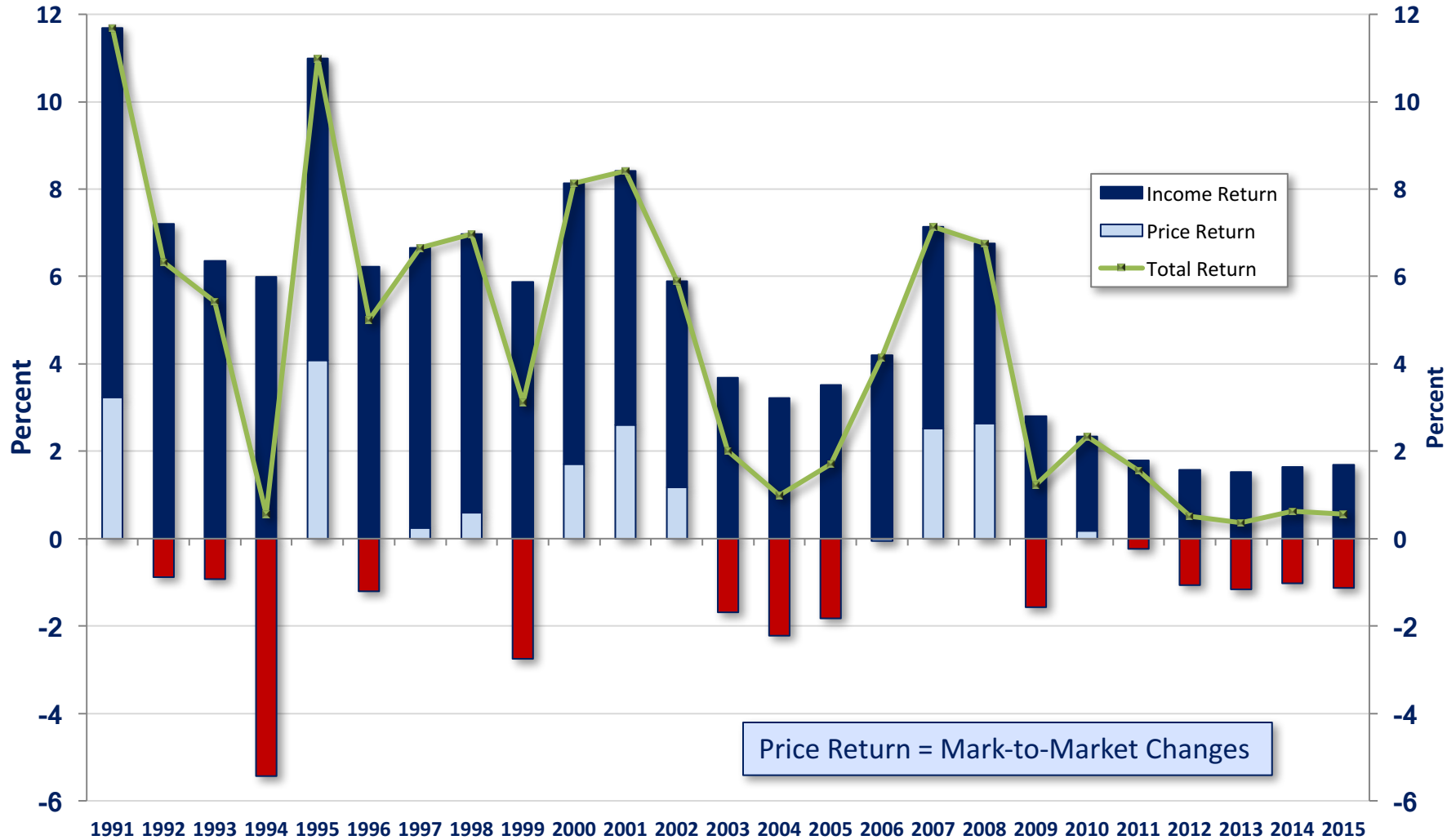
Source: Bloomberg

Real World Example



Which would you rather have?

1-3Yr Tsy/Agy Index Components of Total Return



Source: Bloomberg

1-3Yr Tsy/Agy Index Components of Total Return

Price Return vs Coupon Return 1991 to 2015

Component	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Price	3.2	-0.9	-0.9	-5.4	4.1	-1.2	0.2	0.6	-2.8	1.7	2.6	1.2	-1.7
Income	8.5	7.2	6.4	6.0	6.9	6.2	6.4	6.4	5.9	6.4	5.8	4.7	3.7
Total	11.7	6.3	5.4	0.6	11.0	5.0	6.7	7.0	3.1	8.1	8.4	5.9	2.0

Component	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Price	-2.2	-1.8	0.0	2.5	2.6	-1.6	0.2	-0.2	-1.1	-1.2	-1.0	-1.1
Income	3.2	3.5	4.2	4.6	4.1	2.8	2.2	1.8	1.6	1.5	1.6	1.7
Total	1.0	1.7	4.1	7.1	6.7	1.2	2.3	1.6	0.5	0.4	0.6	0.6

Component	% of Total	Avg Return
Coupon Return	102.3%	4.5%
Price Return	-2.3%	-0.1%
Total Return	100.0%	4.4%

Book Return and Total Return are basically the same over the long run for short-term fixed income indexes and portfolios

Source: Bloomberg

How Did This Go Over in November 2016?



How Did This Go Over in June 2016?





GFOA Best Practice...**NOT!**

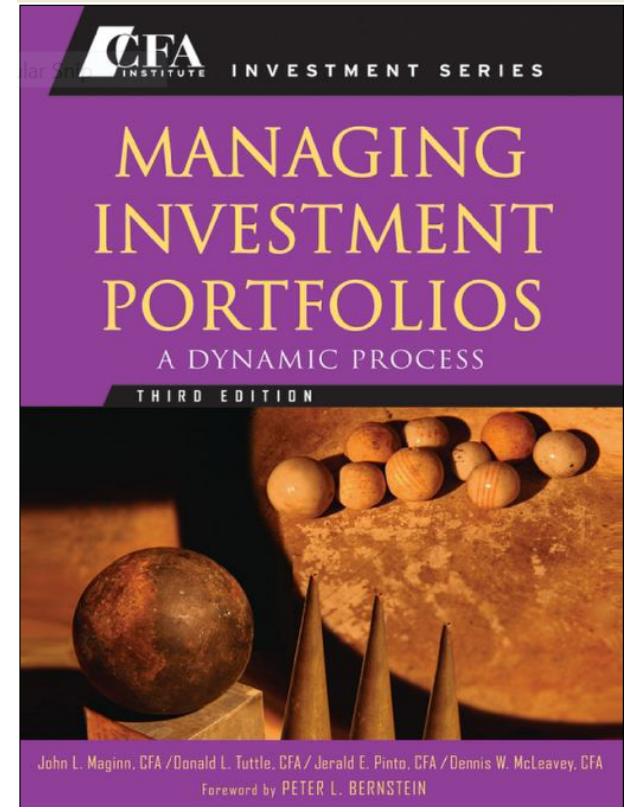
Using Benchmarks to Assess Portfolio Risk and Return

Background. Measuring portfolio risk and return results against appropriate market benchmarks¹ is a technique to verify that all the investment objectives are being met and that portfolio investment returns are appropriate for the risk incurred. Comparing total return to a proper benchmark or index is the preferred means for assessing performance relative to risk and investment objectives.

Investment yield alone is not sufficient for assessing risk and performance. Investment yield measures the percentage increase or decrease that a portfolio generates during a given period and is useful for budgeting purposes but overall, is unreliable for decision making and assessing the risk and return characteristics of the portfolio.

Total Return Implications

“**Total rate of return** measures the increase in the investor’s wealth due to both investment income (for example, dividends and interest) and capital gains (both realized and unrealized). The total rate of return implies that a dollar of wealth is equally meaningful to the investor whether that wealth is generated by the secure income from a 90-day Treasury bill or by the unrealized appreciation in the price of a share of common stock.” (emphasis added)



Does your benchmarking methodology represent “the persistent and prominent investment characteristics” of your investment process and your investment objectives?

Source: (2010-03-18). Managing Investment Portfolios: A Dynamic Process (CFA Institute Investment Series) (Kindle Locations 18222-18225). Wiley. Kindle Edition.

Total Rate of Return-Pros and Cons

Pros:

- Provides a GASB 31 Type of Risk Assessment
- Reflects Portfolio's Market Volatility Changes
- Provides a standardized approach of returns (GIPS)

Cons:

- May not match objective in investment policy (principal preservation)
- May not match interest income budget objectives
- You don't generally "cash in" your total return
- More complex calculations

Knowledge vs. Wisdom

Knowledge is knowing that a
tomato is a fruit.

Wisdom is not putting it in a
fruit salad.

- Miles Kington



Benchmark Reporting Conclusions

- **To Adhere To the Third Object of Your Investment Policy-One Needs to Benchmark the Portfolio to See If It's Earning a "Market Rate of Return"**
- **Change the Benchmark Only When There Are Material Changes to the Portfolio**
- **It's Okay to Use All Three Measures**
- **Total Return Shows a Portfolios' Risk Similar to GASB 31 and is Helpful in Assessing Market Risks**
- **Book Return and Total Return Are More Sophisticated Measures**
- **Book Return Is Generally More Congruent With Most Municipalities' Budgeting Process and Investment Process**
- **It's Hard to "Spend" Total Return**
- **GIOA Best Practice for the Primary Benchmark is Book Return**