



YESTERDAY, TOMORROW AND FINANCE
2020 CSMFO ANNUAL CONFERENCE
JANUARY 28-31, 2020
DISNEYLAND CA



7 Habits of Highly Successful Investment Programs



Introduction

Tom Juarez

- Dean Witter/Morgan Stanley 1985-1999
- Bank of America 1999-2004
- City of Los Angeles Investment Officer 2005-2010
- City of Los Angeles Chief Investment Officer 2010 - Present

Rick Phillips

- City of Las Vegas Investment Officer 1989-1998
- Clark County Chief Investment Officer 1998-2005
- FTN Main Street President & Chief Investment Officer 2005 - Present
- Manage/Consult on \$50+ Billion AUM
- GIOA Founder

7 Habits of Highly Effective Investment Programs

1. **You Have a Detailed Asset/Liability Matching Model** (aka: Cash Flow Model)
2. **You Have a Responsible Amount of Interest Rate Risk and Credit Risk**
3. **You Don't Try to Time the Market**
4. **You Love Losses and Hate Gains** (the unrealized kind)
5. **You Follow GAAP** (Generally Accepted Accounting Principles)
6. **You Benchmark Your Investment Program and Portfolio in Multiple Ways**
7. **You Provide Quality, Timely, Transparent Reporting**

Habit #1

**You Have a Detailed Asset/Liability Matching Model
(aka: Cash Flow Model)**

GIOA Model Investment Policy Primary Objectives

1. Safety of Principal: Safety of principal is the foremost objective of the [entity's] investment program. Investments by the [designated official] shall be undertaken in a manner that seeks to ensure the preservation of capital in the overall portfolio. To attain this objective, diversification of security types, sectors, issuers, and maturities is necessary in order that potential losses on individual securities do not exceed the income generated from the remainder of the portfolio.

2. Liquidity: The investment portfolio shall be structured to timely meet expected cash outflow needs and associated obligations which might be reasonably anticipated. This objective shall be achieved by matching investment maturities with forecasted cash outflows and maintaining an additional liquidity buffer for unexpected liabilities.

3. Investment Income: The investment portfolio shall be designed to earn a market rate of investment income in relation to prevailing budgetary and economic cycles, while taking into account investment risk constraints and liquidity needs of the portfolio.

Detailed Asset/Liability (Cash Flow) Model

- **If You Don't Know Where You've Been, You Won't Know Where You're Going**
- **Many Municipalities Have Too Much Liquidity** (But Your Risk is Asymmetrical)

Cash Flow Model:

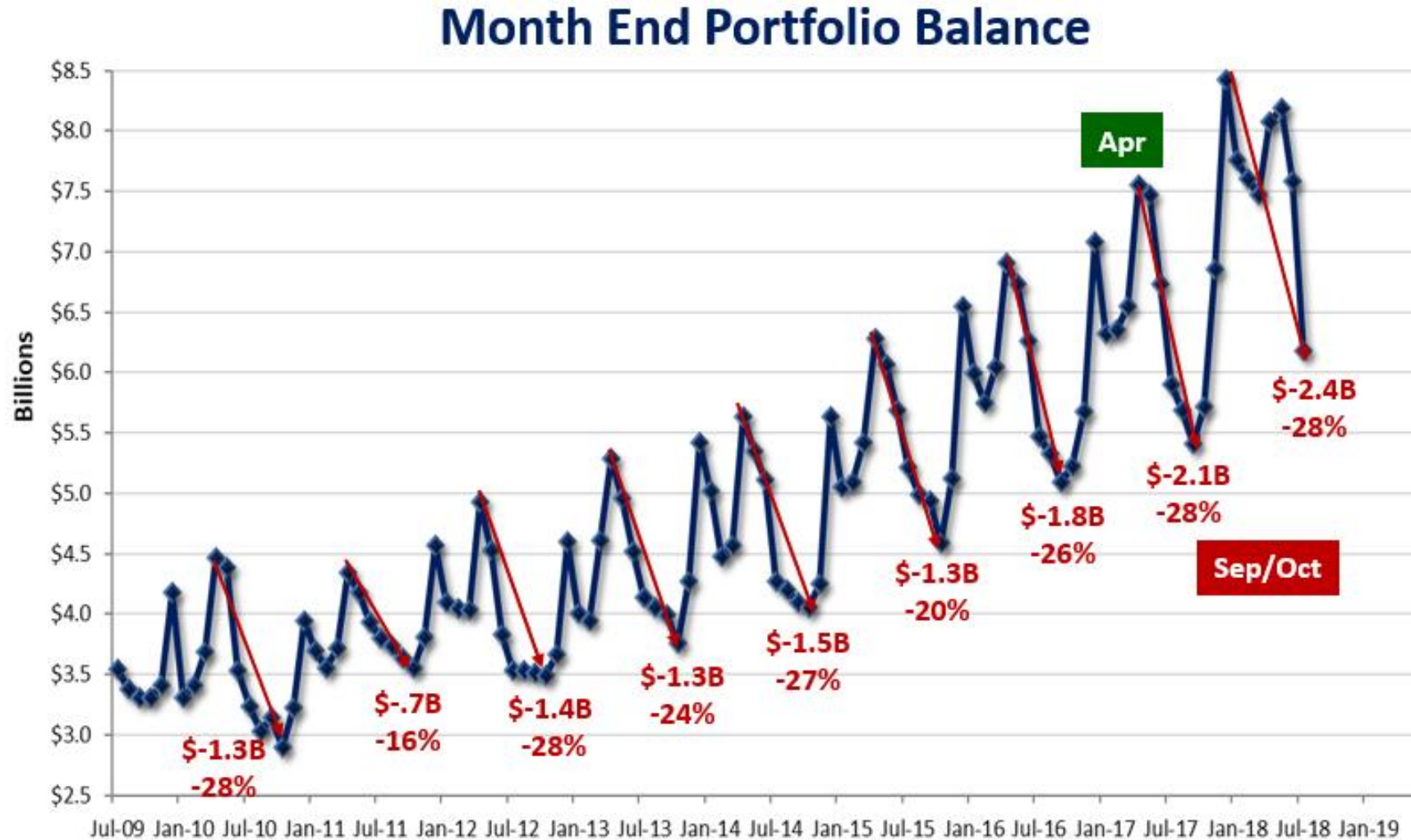
- Daily for 12 Months
- Monthly for 5 Years
- Worry About the Big Rocks (80/20 Rule)
- Excel is Awesome!

**You Have a Responsible
Amount of Liquidity to
Ensure You Don't Need
to Sell a Security for
Liquidity**

Cash Flow Model...Excel is Awesome!

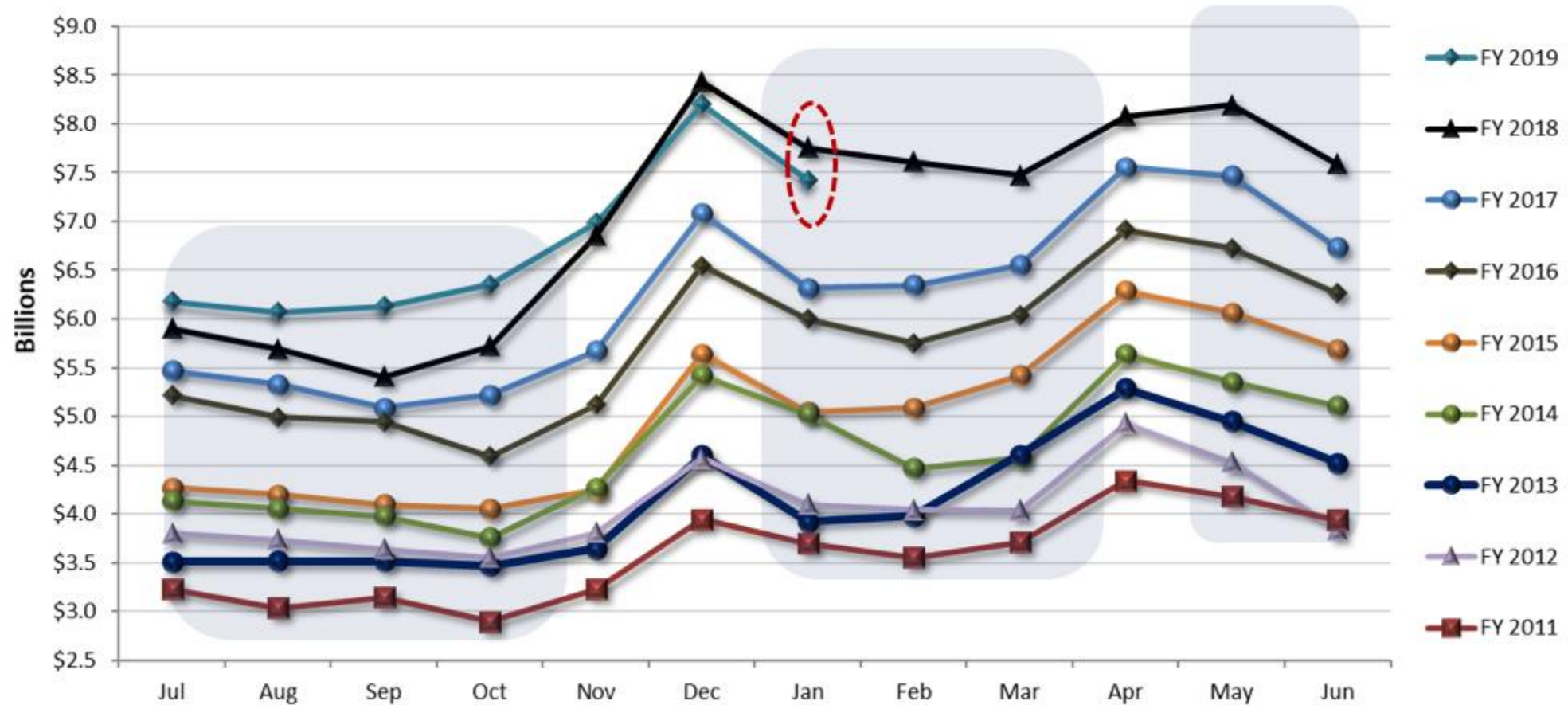
	A	B	AM	AN	AO	AP	AQ
1	CASH FLOW FORECAST		input #s in black				
2	Jul 2019 - Dec 2019		Mon	Tue	Wed	Thu	Fri
3	Date		8/5/2019	8/6/2019	8/7/2019	8/8/2019	8/9/2019
16	General Services Dept-5844	Wells Fargo x5844	100	100	25	50	100
17	Public Works-5899	Wells Fargo x5899	900	300	300	1,000	600
18	Property & State Taxes	Wells Fargo x3218		-	-	-	
19	Local Taxes	Wells Fargo x5763					
20	Other Deposits/Departments	Wells Fargo	4,185	1,500	799		
21	Bond Proceeds	Wells Fargo					
22	Core Maturities/Wires/Interest from Gen Pool	BNY	185	93	195	78	85
23	Special Fund Maturities/ Sales/MMF Rdm	BNY	-	34,088	-	-	-
24	Reserve Sales (General Pool)	BNY					
27	Wells Fargo Inflows	Wells Fargo	49,620	72,781	35,656	34,928	36,435
28	Total Inflows minus Special Funds		49,620	38,693	35,656	34,928	36,435
29	OUTFLOWS						
30	Fire & Police Pension	Wells Fargo x6112	-	-	-	-	-
31	DWP Retirement	Wells Fargo x6125	366	500	250	200	250
32	Accounts Payable (ACH, FMS ACH,Checks)	Wells Fargo x6141+5706 ACH only	16,546	15,000	15,531	15,696	20,274
33	Accounts Payable(DWP Retirement Wires)	Wells Fargo x5706 wire					
34	Accounts Payable (Wires)	Wells Fargo x8129, x5706 & x5698	-	5,000	5,000	5,000	5,982
35	Payroll	Wells Fargo x6251	2,338	1,000	500	500	200
36	Debt Service Payments	Wells Fargo	-		-		
37	PayrollTax	Wells Fargo		-			-
38	Other Outflows	Wells Fargo	-				
39	Wires/Reinvestment to Pool	BNY	12,981				
40	Wells Fargo Outflows	Wells Fargo x5763	32,231	21,500	21,281	21,396	26,706
41	Total Outflows	Wells Fargo	32,231	21,500	21,281	21,396	26,706
42	LEDGER BALANCE						
43	Wells Fargo Ending Ledger Balance	Wells Fargo	90,461	126,281	89,375	88,532	84,729
44	COLLECTED BALANCE						
45	Wells Fargo Float	Wells Fargo	15,461				
46	Wells Fargo Collected Balance & Pending Investment	Wells Fargo	75,000	126,281	89,375	88,532	84,729
47	Wells Fargo MTD Avg Collected Balance	Wells Fargo	82,891	84,033	84,170	84,279	84,290
48	Wells Fargo Target MTD Avg Collected Bal	Wells Fargo	75,000	75,000	75,000	75,000	75,000
49	Wells Fargo Excess/(Deficit)	Wells Fargo	-	51,281	14,375	13,532	9,729
52	Total Collected Balance		75,000	126,281	89,375	88,532	84,729
53			75,000	126,281	89,375	88,532	84,729
54	Projected Total Closing Ledger Wells		75,000	75,000	75,000	75,000	75,000
55	Additional Bank Balance to cover 1 to 2 day Liabilities						
56	Total Target Excess/(Deficit) MTD		0	51,281	14,375	13,532	9,729
59							
60	SPECIAL FUNDS		-	-	-	9,000	-
61	GENERAL FUND - 1		-	51,281	14,375	4,532	9,729

Cash Flows May Not Repeat Exactly...But Usually Rhyme



Knowing the Rhyme Helps Match Assets with Liabilities

Month End Portfolio Balance by Fiscal Year

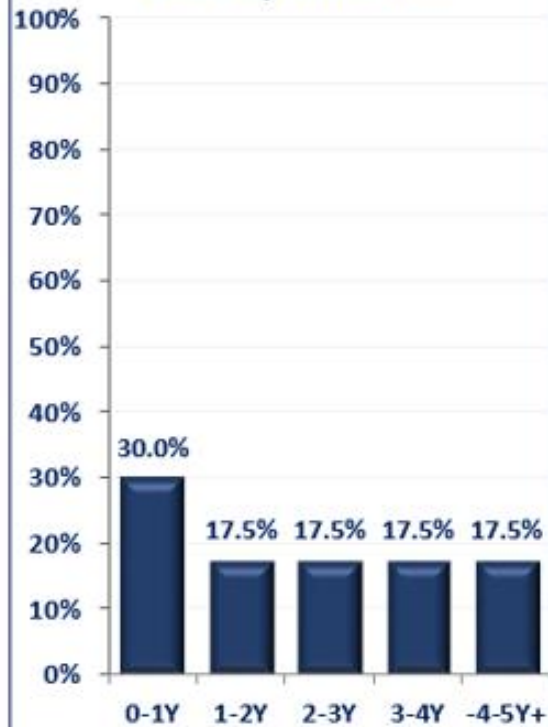


Different Operating Portfolio Strategies/Structures

Proactive Management or Buy & Hold

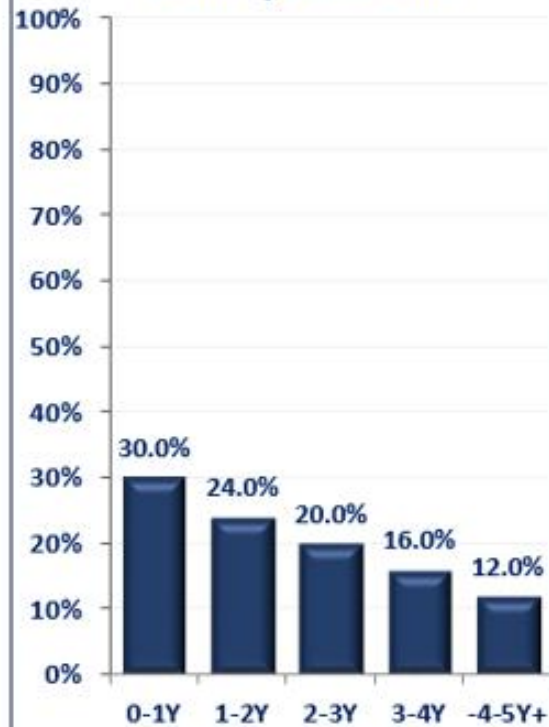
Cash Flow Matching

Maturity Distribution



Index Matching

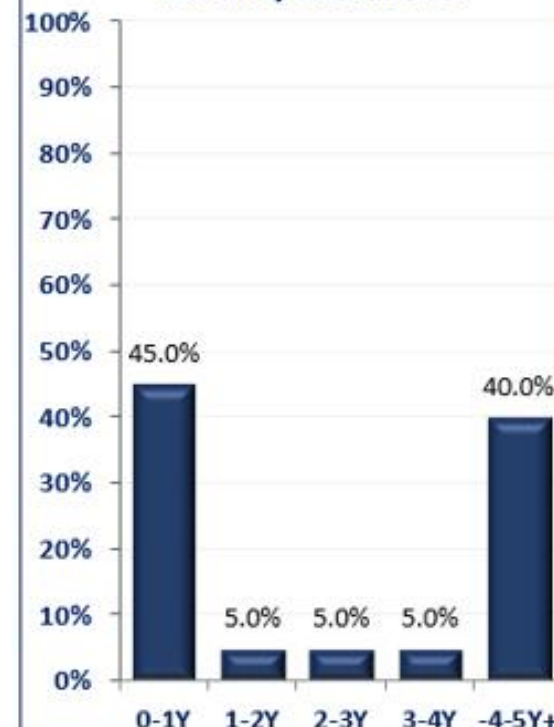
Maturity Distribution



Active Management

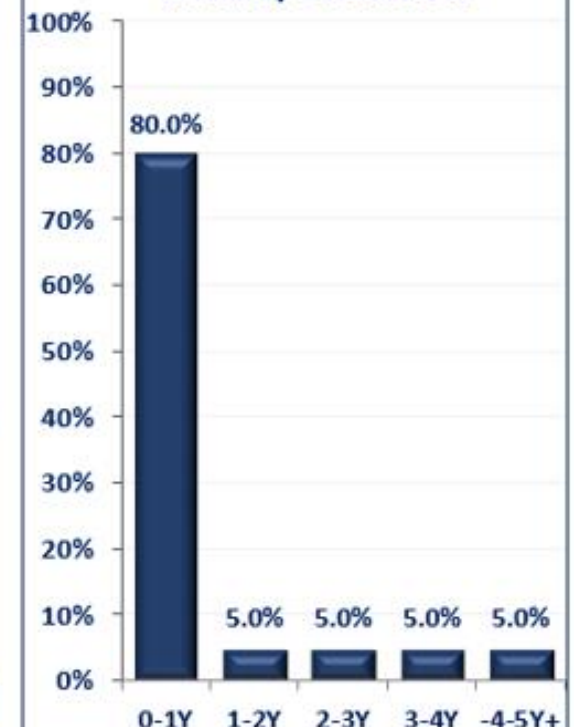
Barbell/Maketing Timing

Maturity Distribution



Market Timing/Relative Value

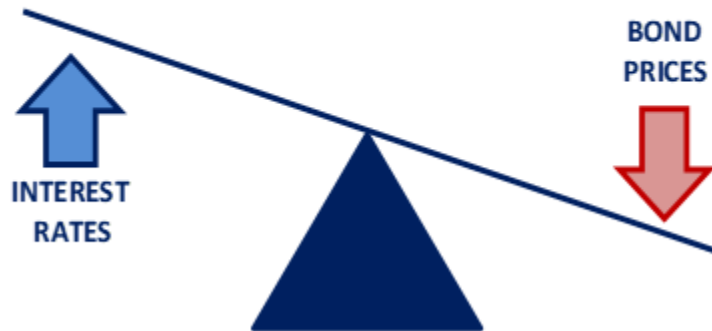
Maturity Distribution



Habit #2

**You Have a Responsible Amount of
Interest Rate Risk and Credit Risk**

Interest Rate Risk



Which Risk Has the
Largest Long-Term
Impact on My
Investment Income?

Credit Risk



Optimal Operating Fund Duration: Risk Adjusted Return

Benchmark Treasury Modified Sharp Ratio Analysis

1/31/1990 to 12/31/2019

	Maturity	Avg Yield	Avg Duration	Modified Sharp Ratio	% Return of 30Yr / % 30Yr Risk
	3 Mon T-Bill	2.78	0.24		62% / 3%
	6 Mon T-Bill	2.91	0.48	0.277	65% / 6%
	1 Yr T-Bill	3.04	0.97	0.271	67% / 12%
Sweet Spot	2 Yr T-Note	3.35	1.90	0.299	74% / 24%
	3 Yr T-Note	3.57	2.85	0.277	79% / 36%
	5 Yr T-Note	3.97	4.45	0.267	88% / 56%
	10 Yr T-Note	4.52	7.96	0.218	100% / 100%

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

$(3.35\% \text{ 2y} - 2.78\% \text{ 3m}) / 1.90 \text{ 2y} = .299$

3.35% 2yr / 4.52% 10yr = 74%

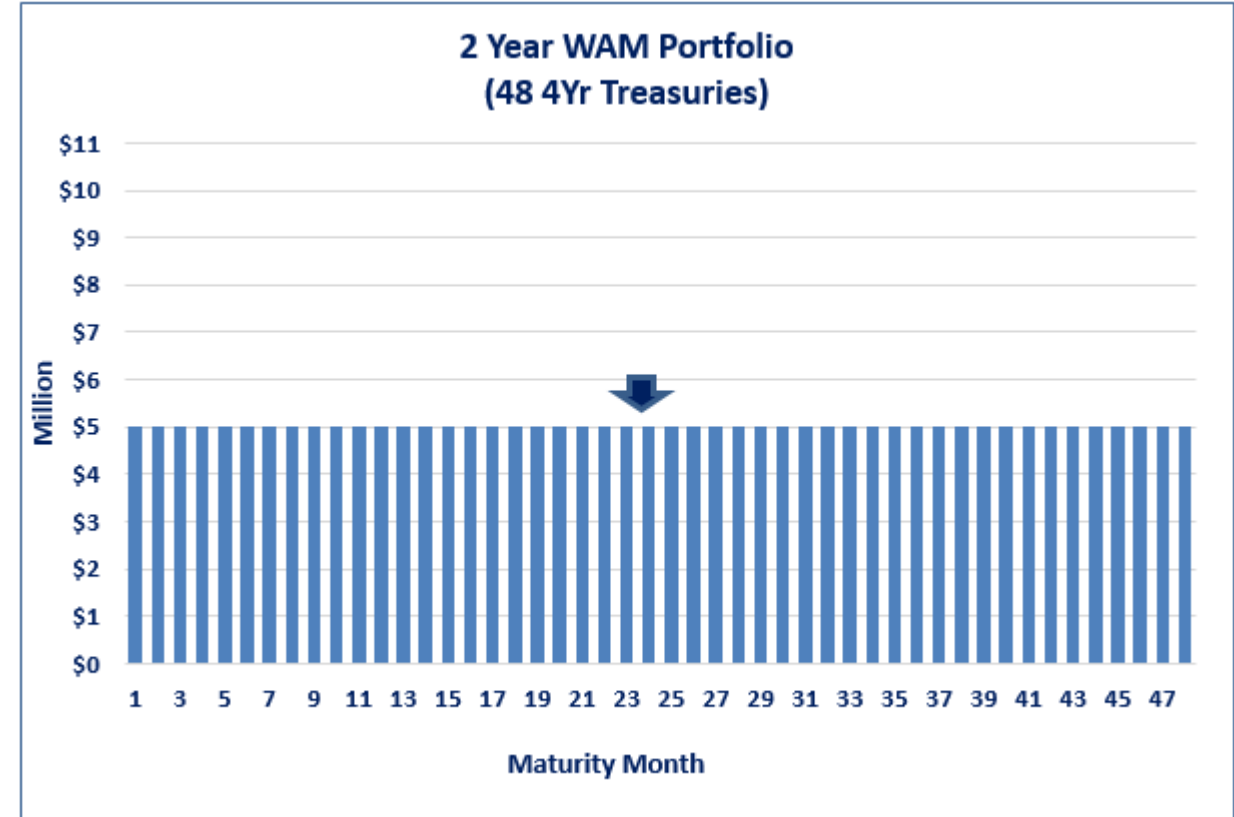
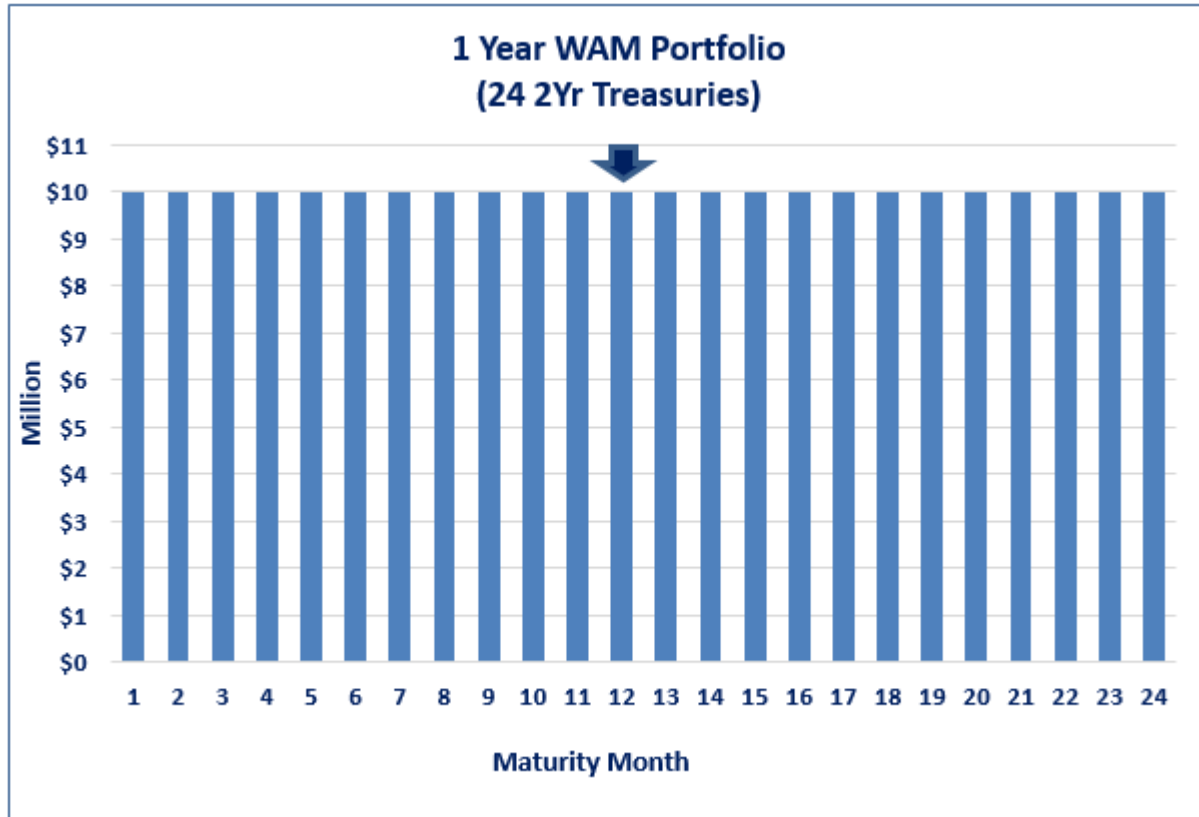
Yield Comparison

1.90 2Yr / 7.96 10Yr = 24%

Duration Comparison

Source: Bloomberg

Year Weighted Avg Maturity vs. 2 Year Weighted Avg Maturity



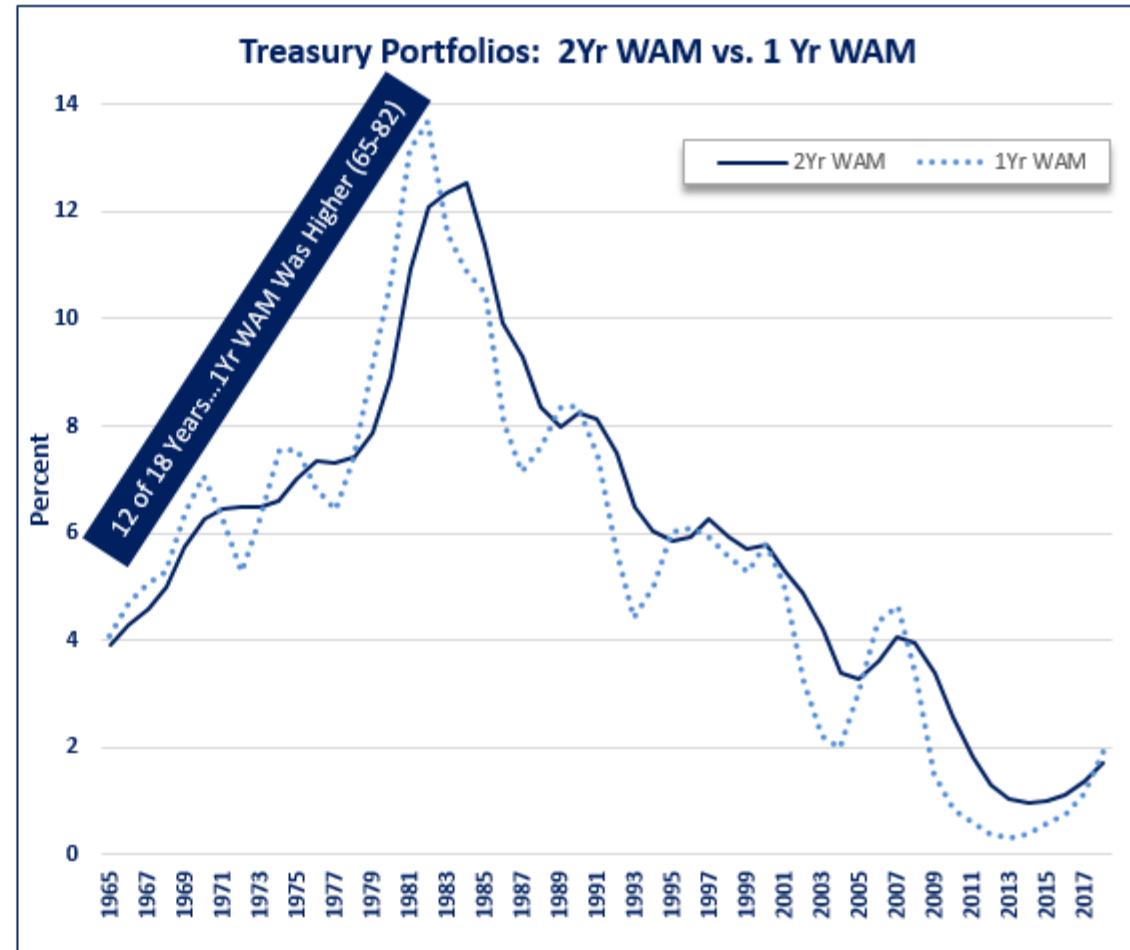
1 Year WAM vs. 2 Year WAM: A Long View of Returns

Year	1Y WAM	2Y WAM	Var
1965	4.06	3.90	(0.16)
1966	4.70	4.30	(0.40)
1967	5.05	4.60	(0.45)
1968	5.28	5.00	(0.29)
1969	6.38	5.73	(0.65)
1970	7.08	6.27	(0.81)
1971	6.31	6.46	0.15
1972	5.29	6.50	1.21
1973	6.24	6.48	0.24
1974	7.57	6.60	(0.97)
1975	7.56	7.01	(0.56)
1976	6.85	7.34	0.49
1977	6.43	7.31	0.88
1978	7.40	7.44	0.04
1979	9.06	7.87	(1.18)
1980	10.77	8.91	(1.86)
1981	13.17	10.94	(2.22)
1982	13.68	12.11	(1.57)
1983	11.61	12.34	0.74
1984	10.91	12.55	1.65
1985	10.46	11.38	0.93
1986	8.07	9.94	1.87
1987	7.15	9.30	2.15
1988	7.64	8.35	0.71
1989	8.34	7.97	(0.37)
1990	8.37	8.25	(0.11)
1991	7.44	8.13	0.69

1Yr WAM Avg Yield= 5.53

Year	1Y WAM	2Y WAM	Var
1992	5.74	7.49	1.75
1993	4.41	6.49	2.08
1994	4.99	6.03	1.03
1995	6.00	5.84	(0.16)
1996	6.08	5.91	(0.16)
1997	5.91	6.26	0.35
1998	5.56	5.93	0.37
1999	5.26	5.71	0.45
2000	5.81	5.77	(0.04)
2001	5.04	5.29	0.25
2002	3.23	4.87	1.64
2003	2.20	4.19	2.00
2004	1.97	3.39	1.42
2005	3.12	3.27	0.16
2006	4.33	3.60	(0.74)
2007	4.64	4.05	(0.59)
2008	3.34	3.95	0.61
2009	1.48	3.37	1.89
2010	0.83	2.56	1.73
2011	0.60	1.80	1.20
2012	0.38	1.27	0.89
2013	0.29	1.02	0.73
2014	0.39	0.96	0.57
2015	0.55	0.98	0.43
2016	0.74	1.12	0.38
2017	1.12	1.37	0.25
2018	1.96	1.72	(0.24)

2Yr WAM Avg Yield= 5.87

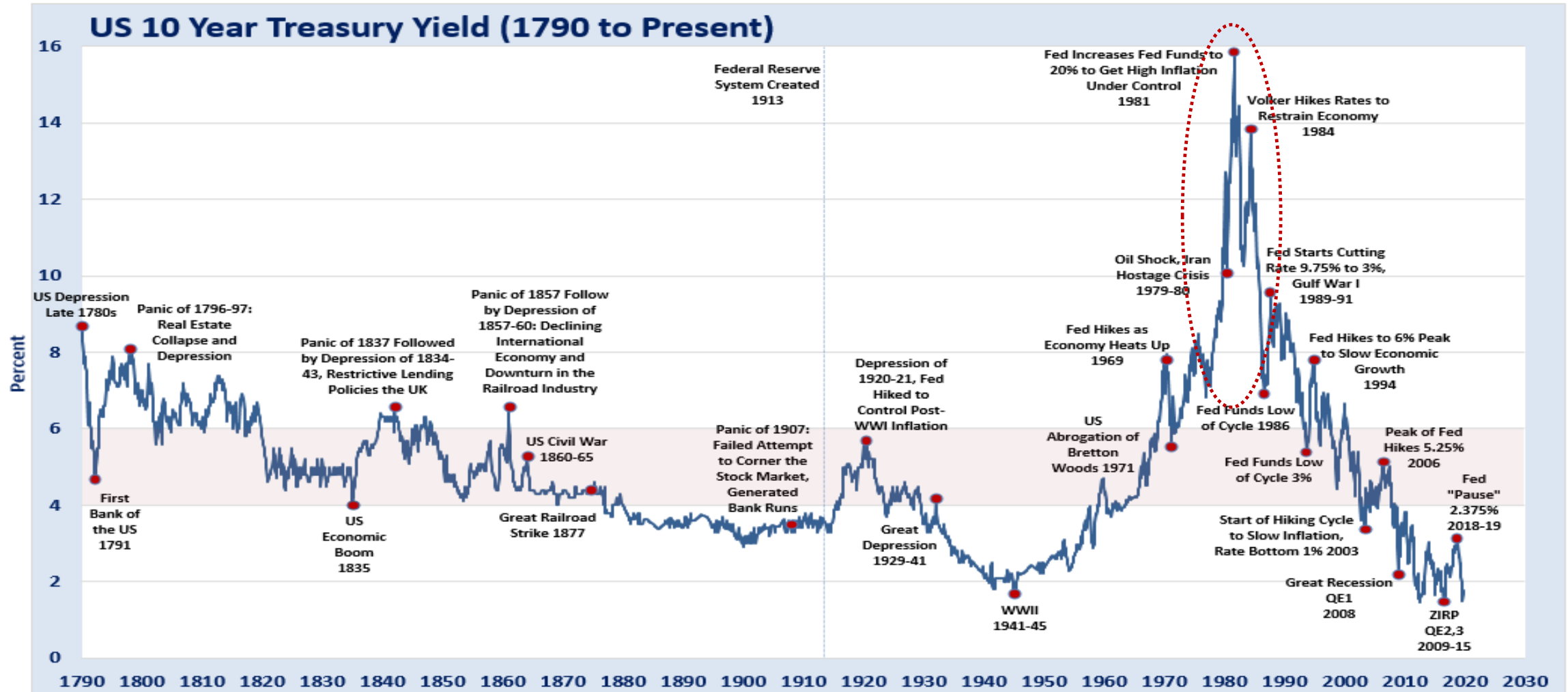


2Yr WAM vs. 1Yr WAM Yield = 0.34 Per Year

Notes: 2Yr WAM is the 48 month moving average of the 4yr treasury, the 1Yr WAM is the 24 month moving average of the 2 year treasury
The 4yr treasury is the average of the 3yr and 5yr treasury, since the US Treasury does not issue a 4 yr treasury

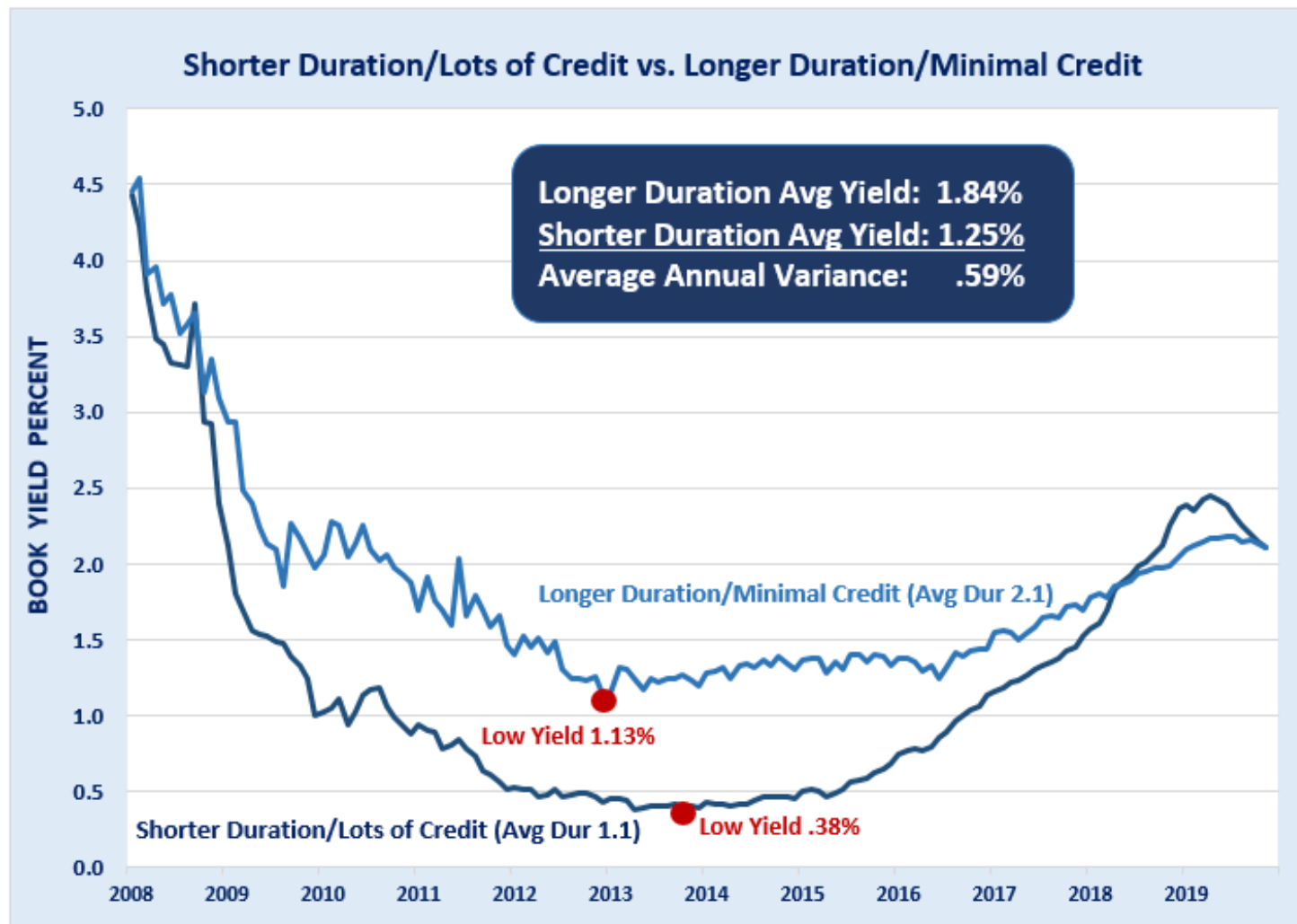
Source: Bloomberg

The Worry of Skyrocketing Interest Rates??

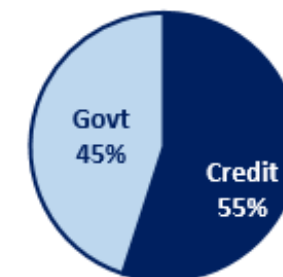


Sources: Goldman Sachs, Global Financial Database, Arbor Research

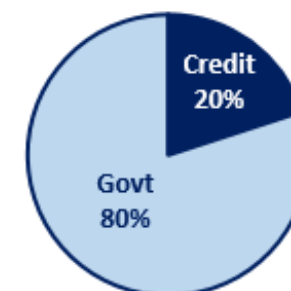
Real World Shorter Duration vs. Longer Duration #1



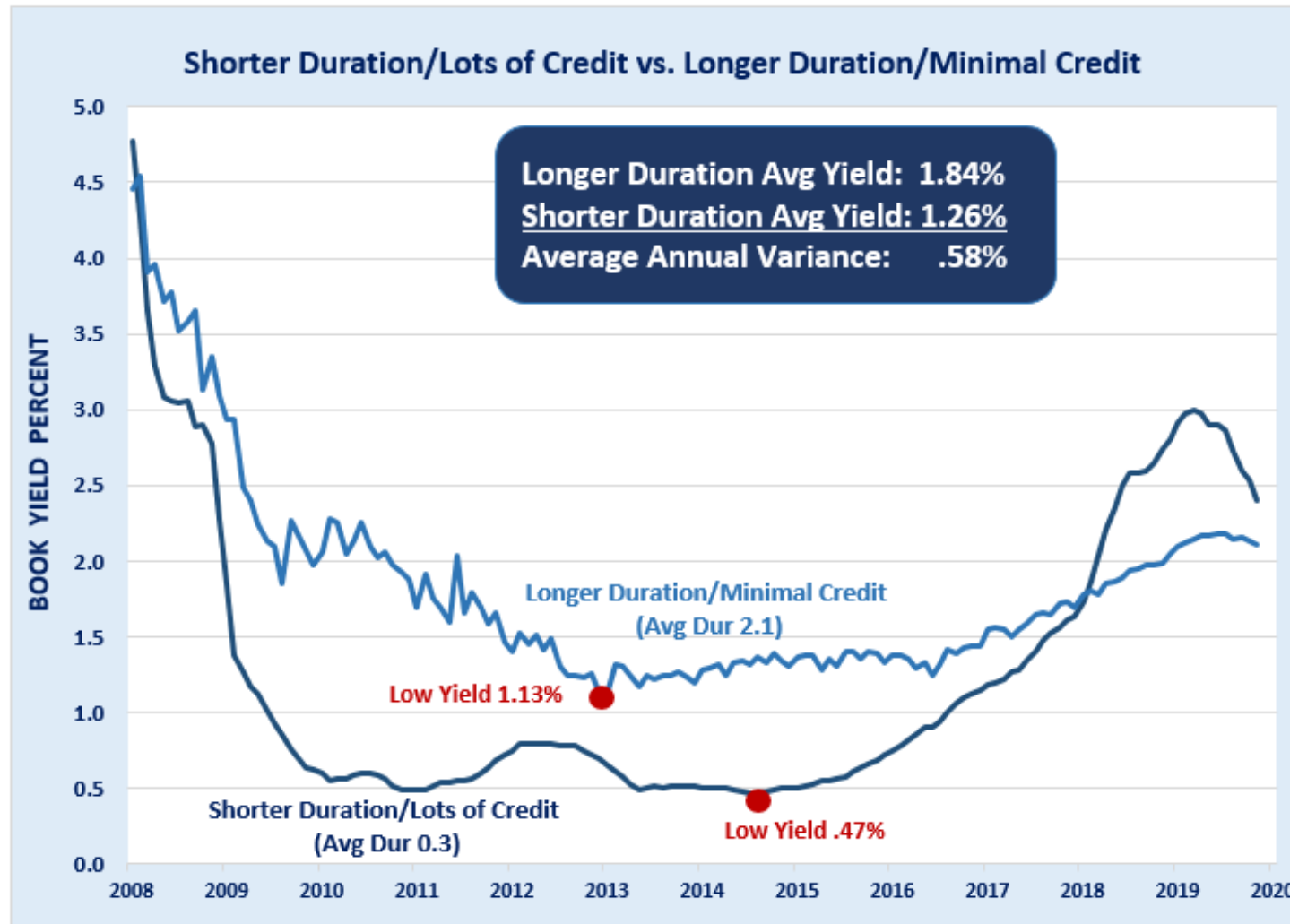
Shorter Duration
(Avg Dur 1.1)



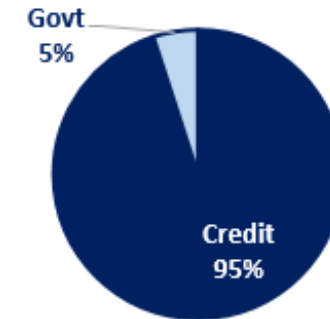
Longer Duration
(Avg Dur 2.1)



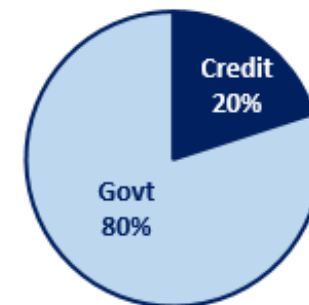
Real World Shorter Duration vs. Longer Duration #1



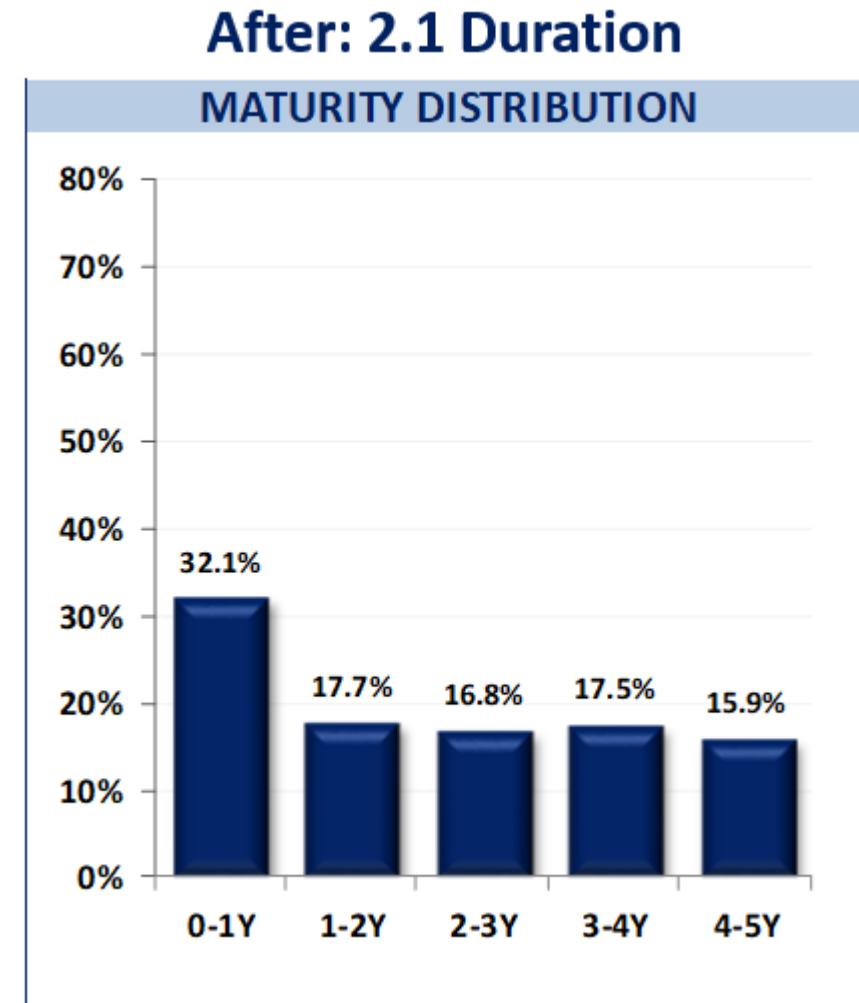
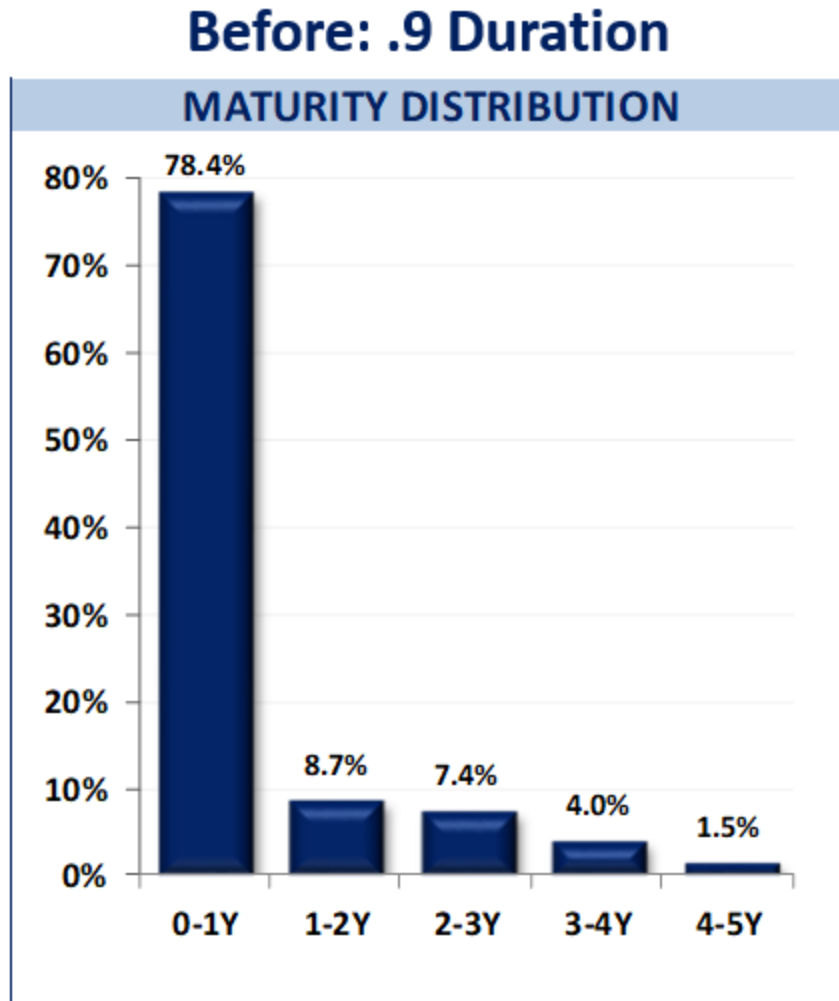
Shorter Duration
(Avg Dur .3)



Longer Duration
(Avg Dur 2.1)

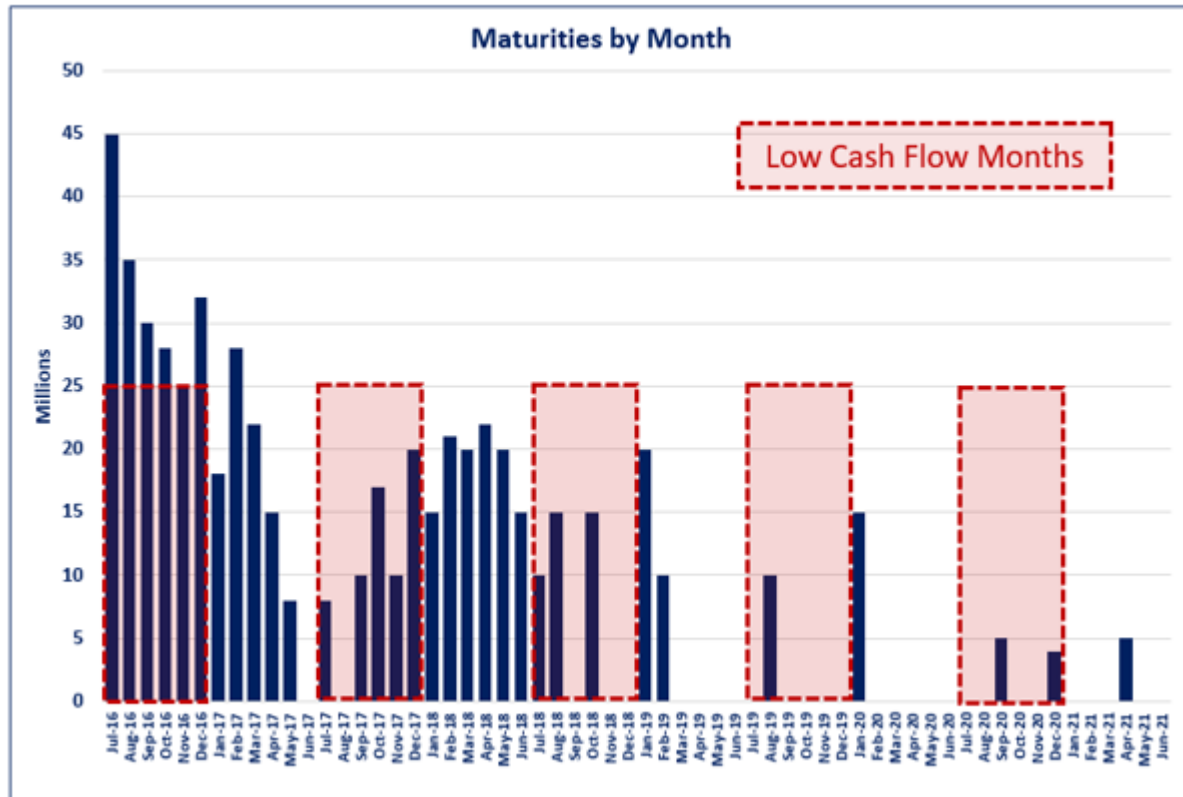


Before/After: Implementing a Asset/Liability Matching Strategy

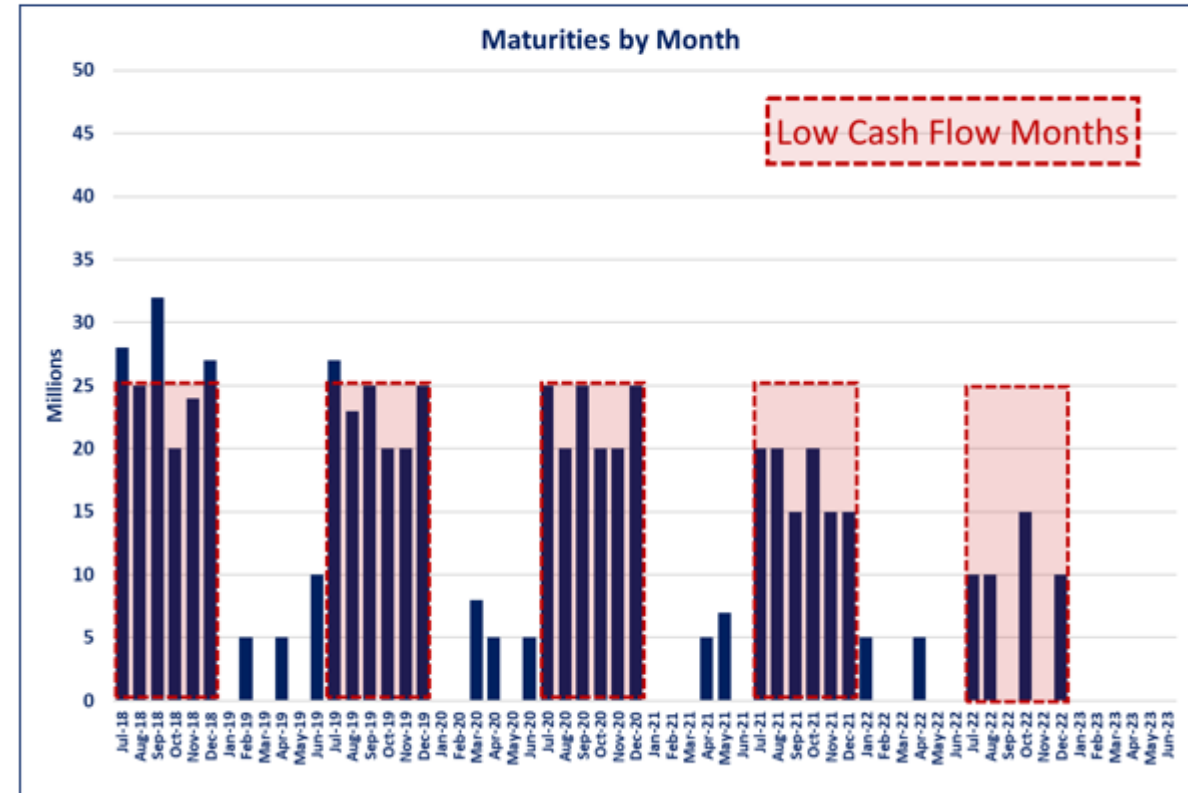


You Have a Responsible Amount of Interest Rate Risk

Before: .9 Duration



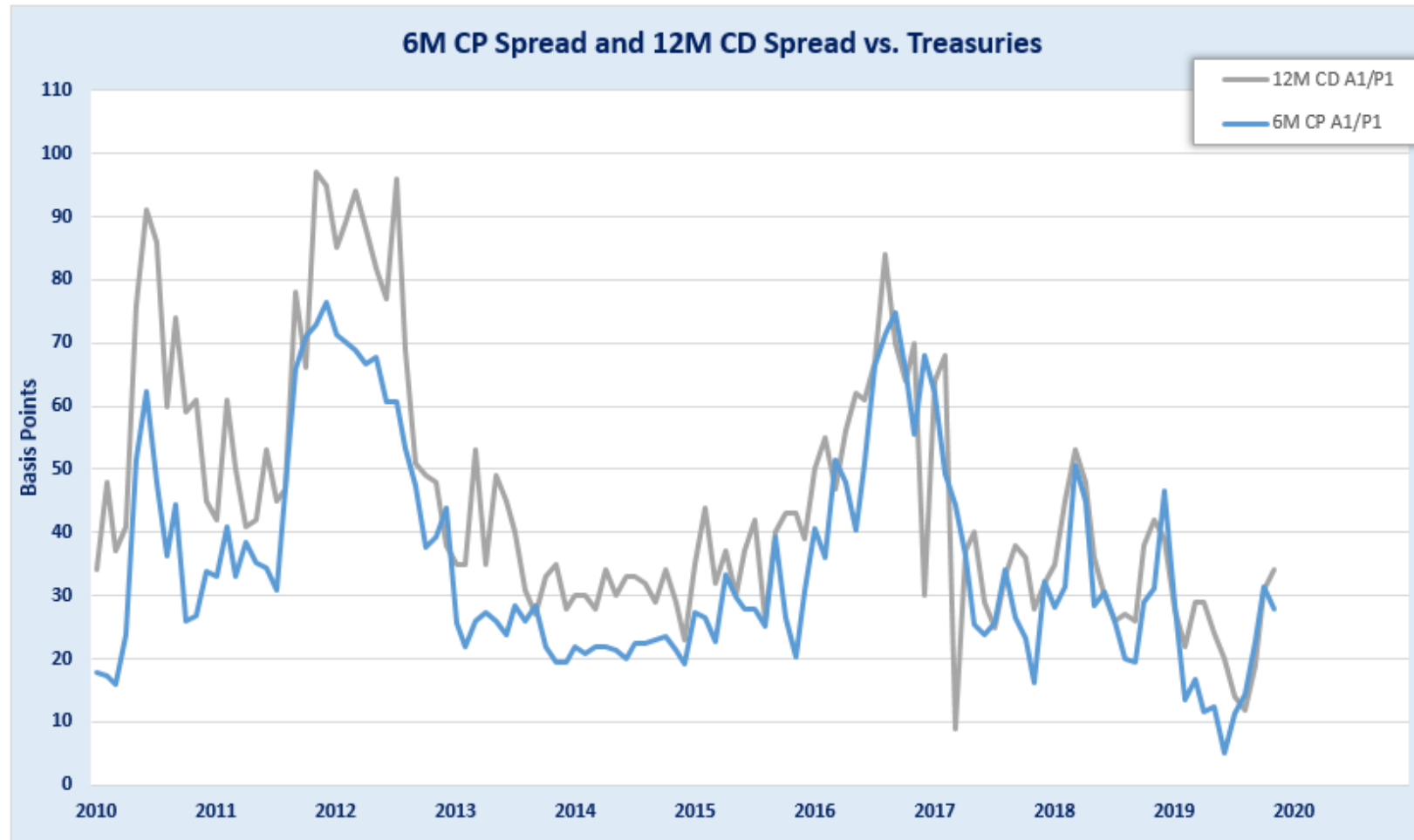
After: 2.1 Duration



CREDIT



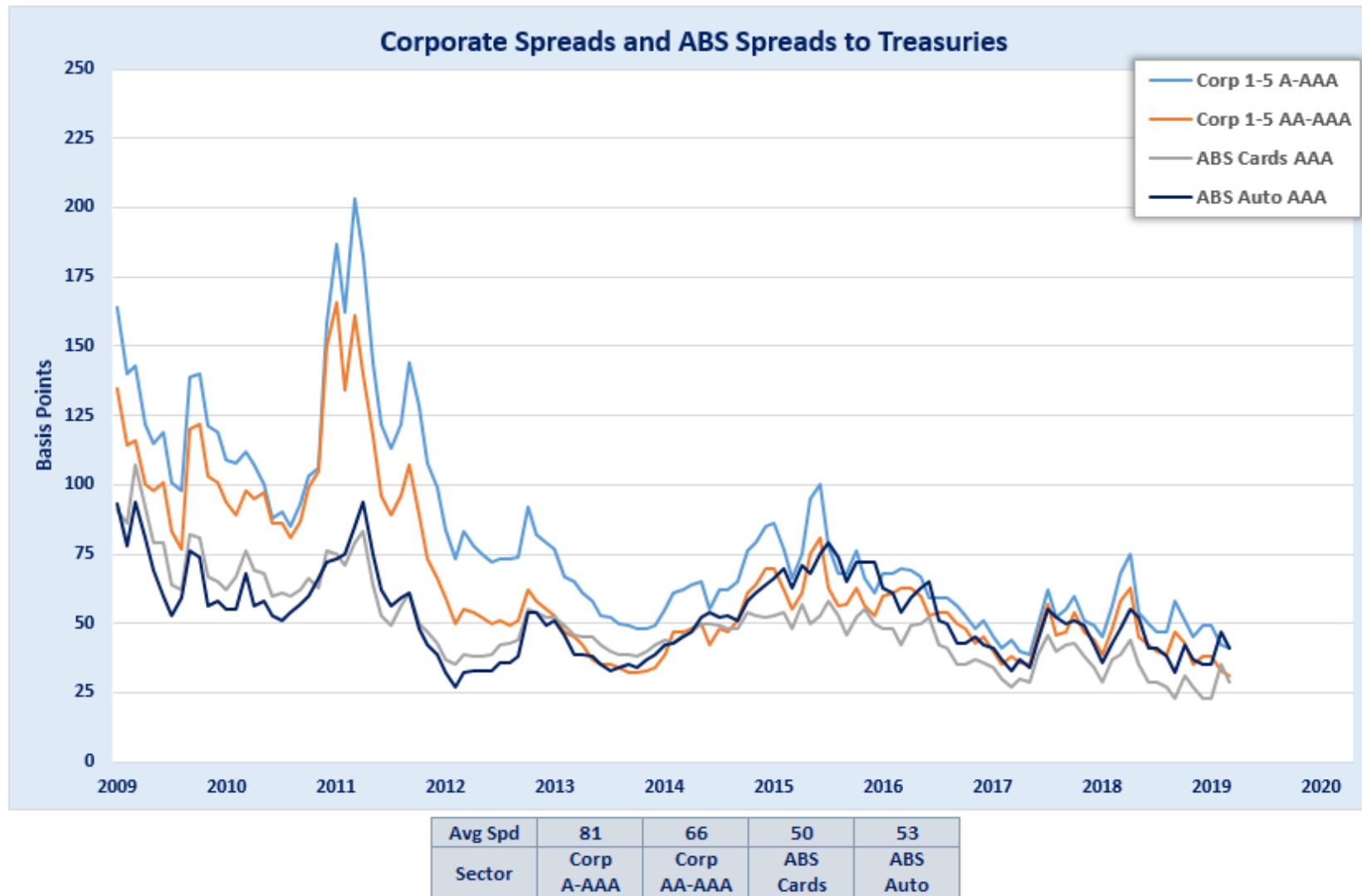
Is Credit Worth the Risk?



Avg Spd	35	46
Sector	CP 6M A1/P1	CD 12M A1/P1

Source: Bloomberg

Is Credit Worth the Risk?



Source: Bloomberg



$\$1,000,000,000 \times 45\% \text{ Credit Exposure} \times 40 \text{ BPs Avg Spread} = \$1,800,000/\text{Yr Investment Income}$



One-Year Default Rates

Descriptive Statistics On One-Year Global Default Rates

	AAA	AA	A	BBB	BB	B	CCC/C
Minimum	0.00	0.00	0.00	0.00	0.00	0.25	0.00
Maximum	0.00	0.38	0.39	1.02	4.22	13.84	49.46
Weighted long-term average	0.00	0.02	0.06	0.17	0.65	3.44	26.63
Median	0.00	0.00	0.00	0.06	0.58	3.40	24.83
Standard deviation	0.00	0.07	0.10	0.26	1.00	3.29	11.47
2008 default rates	0.00	0.38	0.39	0.49	0.81	4.10	27.27
Latest four quarters (2018Q1-2018Q4)	0.00	0.00	0.00	0.00	0.00	0.98	27.18
Difference between last four quarters and weighted average	0.00	(0.02)	(0.06)	(0.17)	(0.65)	(2.46)	0.54
Number of standard deviations	0.00	(0.29)	(0.55)	(0.64)	(0.64)	(0.75)	0.05

Sources: S&P Global Fixed Income Research and S&P Global Market Intelligence's CreditPro®.

Cumulative Default Rates

Average Cumulative Default Rates For Corporates By Region (1981-2018)

(%)	--Time horizon (years)--														
Rating	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
U.S.															
AAA	0.00	0.04	0.17	0.29	0.41	0.54	0.58	0.66	0.75	0.83	0.88	0.92	0.97	1.06	1.16
AA	0.03	0.08	0.17	0.30	0.43	0.58	0.72	0.83	0.92	1.03	1.12	1.20	1.29	1.36	1.45
A	0.07	0.19	0.34	0.52	0.69	0.90	1.12	1.33	1.56	1.78	1.99	2.18	2.37	2.53	2.71
BBB	0.20	0.54	0.92	1.41	1.92	2.44	2.90	3.37	3.82	4.26	4.70	5.02	5.31	5.64	5.97
BB	0.75	2.36	4.28	6.17	7.89	9.54	10.93	12.22	13.36	14.39	15.24	16.02	16.74	17.33	17.95
B	3.63	8.45	12.71	16.08	18.70	20.85	22.60	23.98	25.21	26.36	27.32	28.06	28.73	29.35	29.96
CCC/C	28.89	39.73	45.37	48.83	51.42	52.62	54.10	55.02	55.89	56.58	57.25	57.79	58.36	58.89	58.89

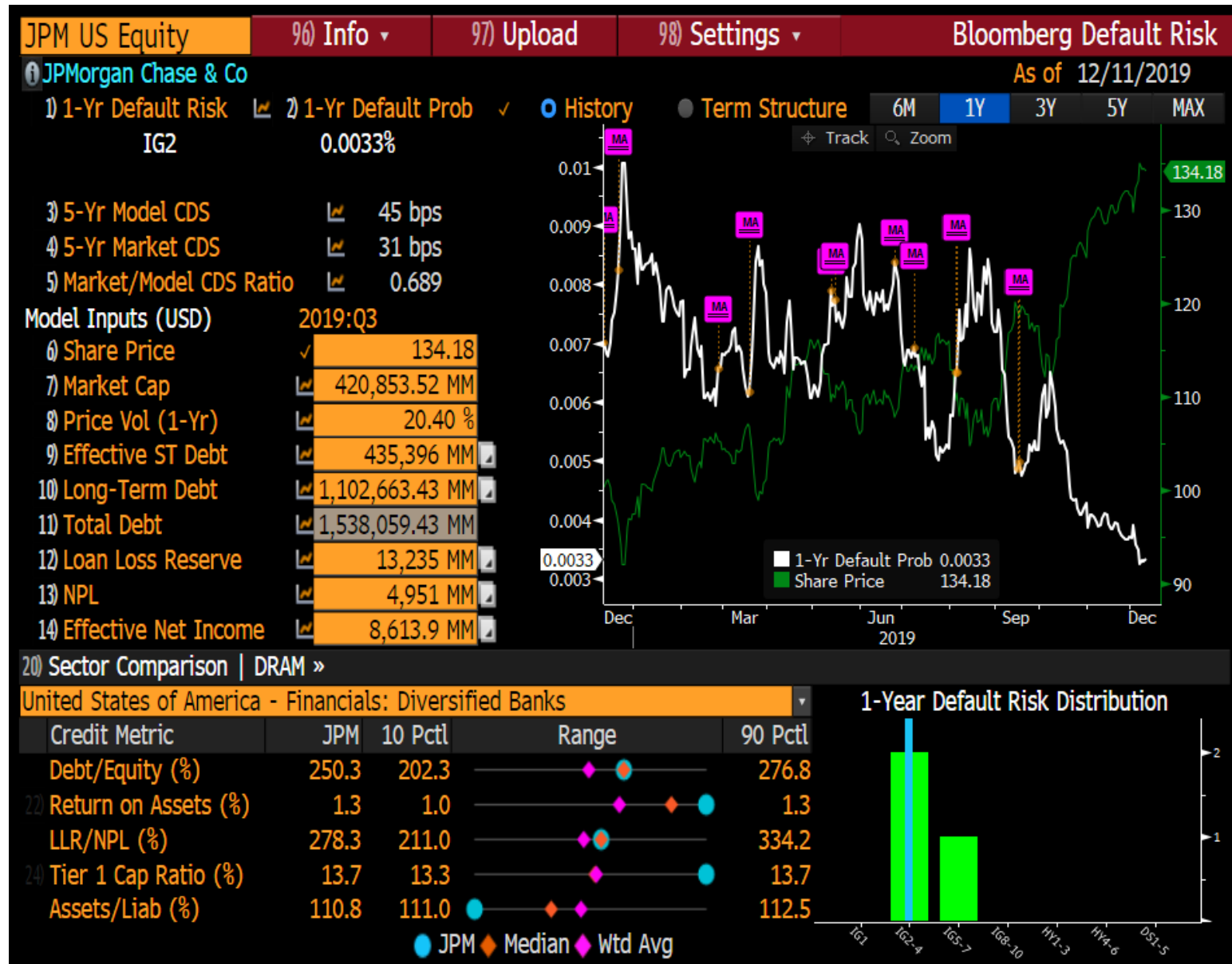
Sources: S&P Global Fixed Income Research and S&P Global Market Intelligence's CreditPro®.

Composite Credit Rating

Numeric Rating	Composite Rating	Moody's Rating	S&P Rating	Fitch Rating
1	AAA	Aaaa	AAA	AAA
2	AA1	Aa1	AA+	AA+
3	AA2	Aa2	AA	AA
4	AA3	Aa3	AA-	AA-
5	A1	A1	A+	A+
6	A2	A2	A	A
7	A3	A3	A-	A-
8	BBB1	Baa1	BBB+	BBB+
9	BBB2	Baa2	BBB	BBB
10	BBB3	Baa3	BBB-	BBB-

JPMorgan		
NRSRO	Rating	Number
Moody's	A2	6
S&P	A-	7
Fitch	AA-	4
Average		5.67
Rounded		6
Composite	A2	

Credit Risk Tools



Source: Bloomberg

Habit #3

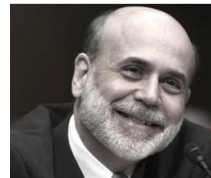
You Don't Try to Time the Market

Forecasting



"The only function of economic (and interest rate) forecasting is to make astrology look respectable."

John Kenneth Galbraith, Economist



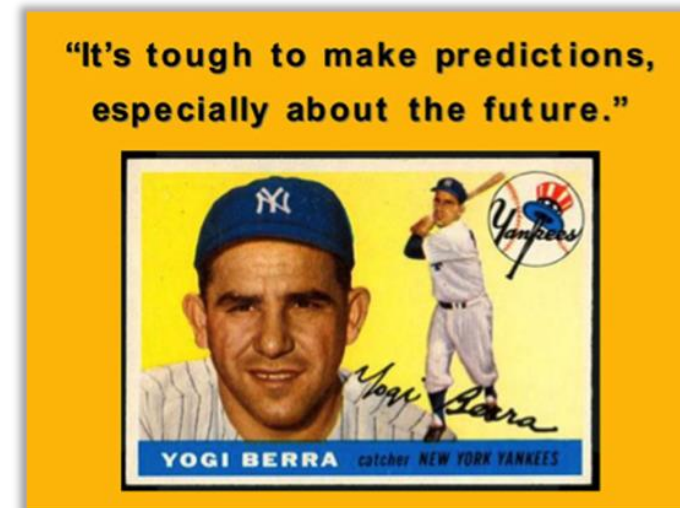
"The Federal Reserve is currently not forecasting a recession."

Ben Bernanke (former Fed Chair), January 10, 2008



"Our ability to forecast is limited".

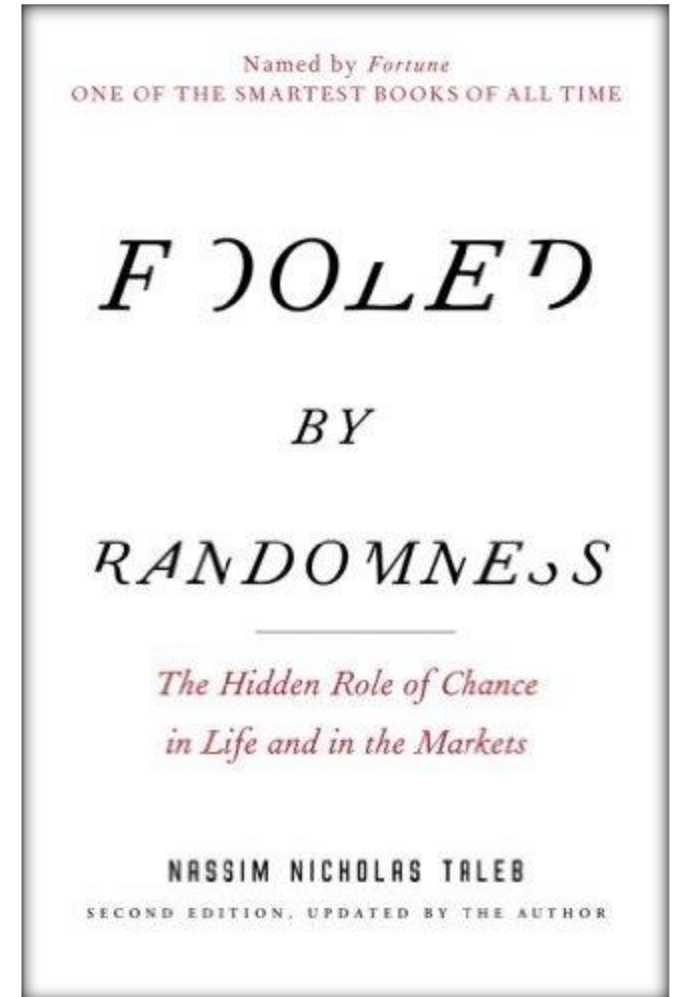
CNBC November 2019



Source: Google

Fooled By Randomness

“Generate a long series of coin flips producing heads and tails with 50% odds each and fill up sheets of paper. If the series is long enough you may get eight heads or eight tails in a row, perhaps even ten of each. Yet you know that in spite of these wins the conditional odds of getting a head or a tail is still 50%.”



It's Tough to Time the Stock Market

S&P Dow Jones Indices

A Division of S&P Global

Research

SPIVA® U.S. Scorecard

Report 11: Percentage of Fixed Income Funds Outperformed by Benchmarks

FUND CATEGORY	COMPARISON INDEX	1-YEAR (%)	3-YEAR (%)	5-YEAR (%)	10-YEAR (%)	15-YEAR (%)
Government Long Funds	Bloomberg Barclays US Government Long	100.00	76.79	98.31	98.73	98.00
Government Intermediate Funds	Bloomberg Barclays US Government Intermediate	94.12	89.47	85.71	85.29	91.07
Government Short Funds	Bloomberg Barclays US Government (1-3 Year)	91.67	84.00	82.14	69.70	82.86
Investment-Grade Long Funds	Bloomberg Barclays US Government/Credit Long	97.65	72.04	98.91	95.97	97.50
Investment-Grade Intermediate Funds	Bloomberg Barclays US Government/Credit Intermediate	50.50	39.90	55.50	51.65	72.68
Investment-Grade Short Funds	Bloomberg Barclays US Government/Credit (1-3 Year)	83.87	37.50	62.12	41.27	68.00
High Yield Funds	Bloomberg Barclays US Corporate High Yield	82.91	91.94	95.59	95.98	99.15
Mortgage-Backed Securities Funds	Bloomberg Barclays US Aggregate Securitized - MBS	84.31	71.70	81.13	66.07	95.74
Global Income Funds	Bloomberg Barclays Global Aggregate	44.12	33.64	59.48	51.85	61.11
Emerging Markets Debt Funds	Bloomberg Barclays Emerging Markets	79.63	66.67	96.15	100.00	85.71
General Municipal Debt Funds	S&P National AMT-Free Municipal Bond	82.67	69.14	58.75	50.65	86.67
California Municipal Debt Funds	S&P California AMT-Free Municipal Bond	66.67	61.11	33.33	45.95	82.61
New York Municipal Debt Funds	S&P New York AMT-Free Municipal Bond	80.00	74.07	53.57	56.25	86.84
Loan Participation Funds	S&P/LSTA U.S. Leveraged Loan 100	100.00	85.71	68.09	78.95	

Source: S&P Dow Jones Indices LLC, Bloomberg. Data as of June 30, 2019. Returns shown are annualized. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

It's Tough to Time the Bond Market

S&P Dow Jones Indices

A Division of S&P Global

Research

SPIVA® U.S. Scorecard

Report 11: Percentage of Fixed Income Funds Outperformed by Benchmarks

FUND CATEGORY	COMPARISON INDEX	1-YEAR (%)	3-YEAR (%)	5-YEAR (%)	10-YEAR (%)	15-YEAR (%)
Government Long Funds	Bloomberg Barclays US Government Long	100.00	76.79	98.31	98.73	98.00
Government Intermediate Funds	Bloomberg Barclays US Government Intermediate	94.12	89.47	85.71	85.29	91.07
Government Short Funds	Bloomberg Barclays US Government (1-3 Year)	91.67	84.00	82.14	69.70	82.86
Investment-Grade Long Funds	Bloomberg Barclays US Government/Credit Long	97.65	72.04	98.91	95.97	97.50
Investment-Grade Intermediate Funds	Bloomberg Barclays US Government/Credit Intermediate	50.50	39.90	55.50	51.65	72.68
Investment-Grade Short Funds	Bloomberg Barclays US Government/Credit (1-3 Year)	83.87	37.50	62.12	41.27	68.00
High Yield Funds	Bloomberg Barclays US Corporate High Yield	82.91	91.94	95.59	95.98	99.15
Mortgage-Backed Securities Funds	Bloomberg Barclays US Aggregate Securitized - MBS	84.31	71.70	81.13	66.07	95.74
Global Income Funds	Bloomberg Barclays Global Aggregate	44.12	33.64	59.48	51.85	61.11
Emerging Markets Debt Funds	Bloomberg Barclays Emerging Markets	79.63	66.67	96.15	100.00	85.71
General Municipal Debt Funds	S&P National AMT-Free Municipal Bond	82.67	69.14	58.75	50.65	86.67
California Municipal Debt Funds	S&P California AMT-Free Municipal Bond	66.67	61.11	33.33	45.95	82.61
New York Municipal Debt Funds	S&P New York AMT-Free Municipal Bond	80.00	74.07	53.57	56.25	86.84
Loan Participation Funds	S&P/LSTA U.S. Leveraged Loan 100	100.00	85.71	68.09	78.95	

Source: S&P Dow Jones Indices LLC, Bloomberg. Data as of June 30, 2019. Returns shown are annualized. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Oops!



Source: Bloomberg

Security Type Selection for Different Strategies

Securities to Match Cash Outflows:

- Bullets
- ABS Credit Card (soft bullets)
- Floating Rate Notes

Securities to Market Time:

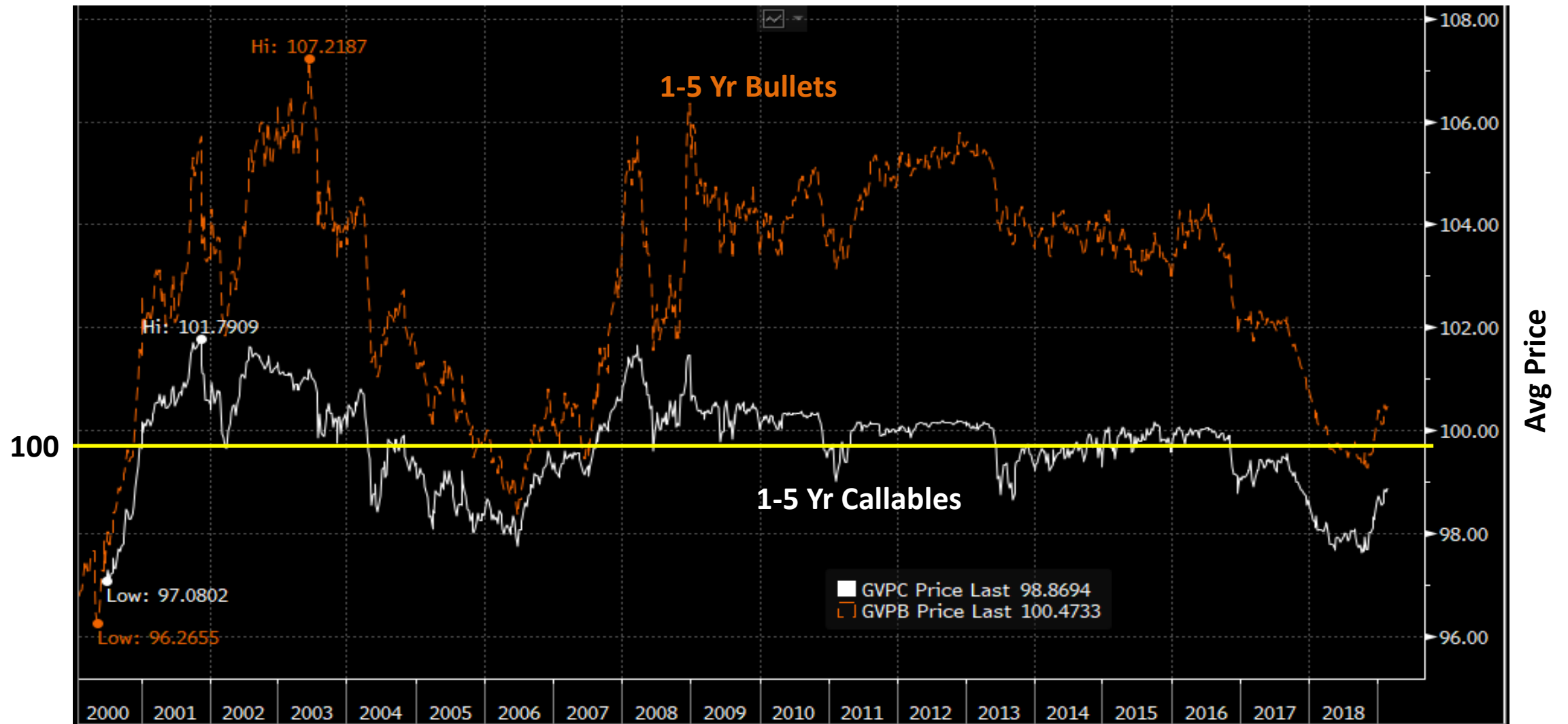
- Bullets
- Paydowns (ABS/MBS/SBA)
- Floating Rate Notes
- Callables
- Step-Ups/Step-Downs
- Bond Mutual Funds
- Floating NAV Funds
- **(Remove Preservation of Principal from the Investment Policy?)**

Effective Duration: Agency 1-5Yr Bullets vs. 1-5Yr Callables



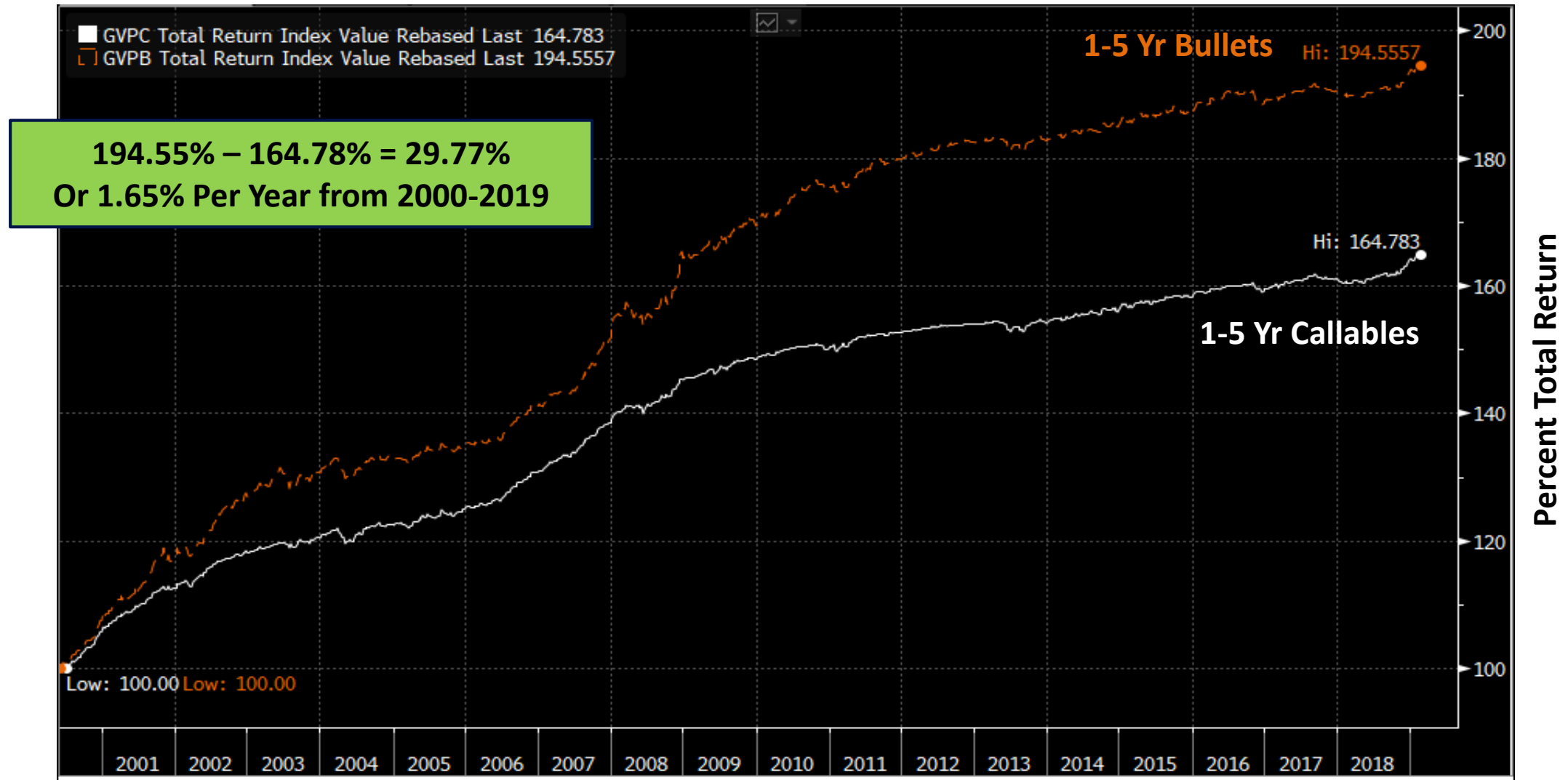
Source: Bloomberg

Average Prices: 1-5Yr Callables vs. 1-5Yr Bullets



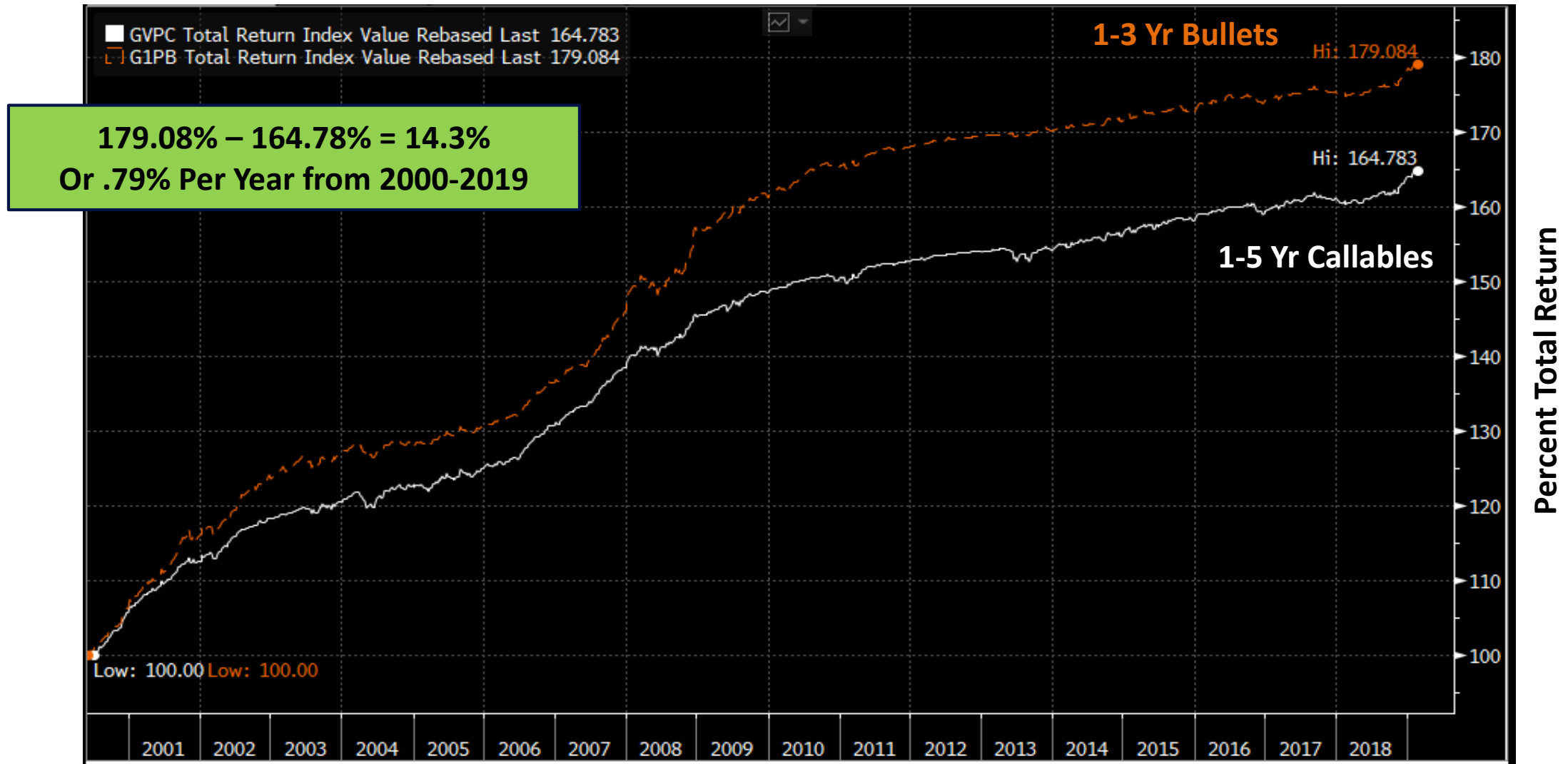
Source: Bloomberg

Total Return: 2000-2019 1-5Yr Callables vs. 1-5Yr Bullets



Source: Bloomberg

Total Return: 2000-2019 1-5Yr Callables vs. 1-3Yr Bullets



Source: Bloomberg

What If Your Timing Was Awesome!



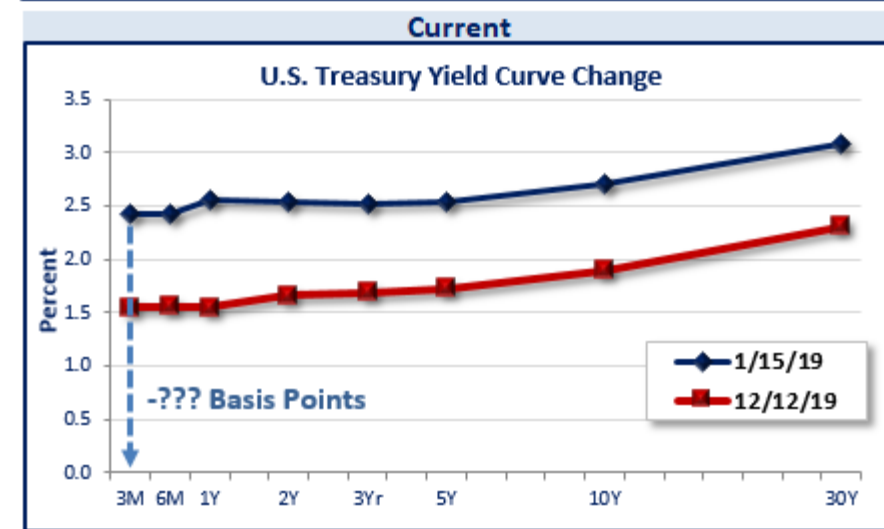
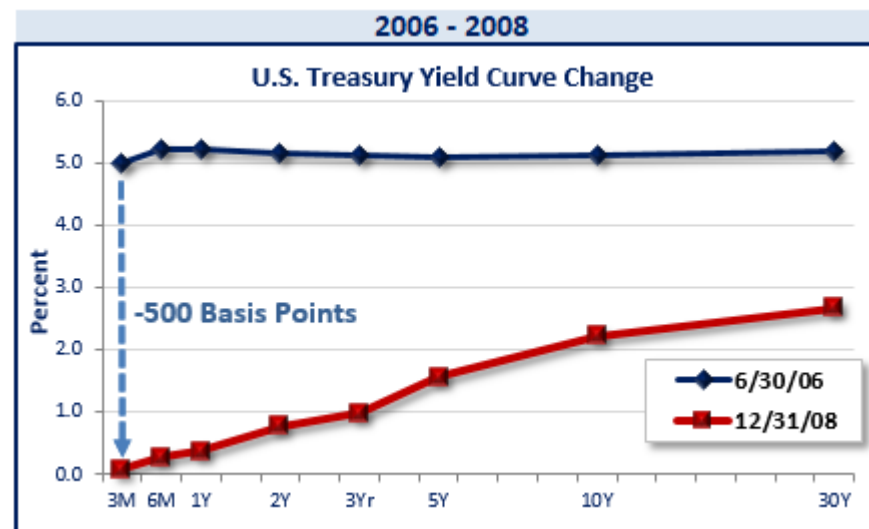
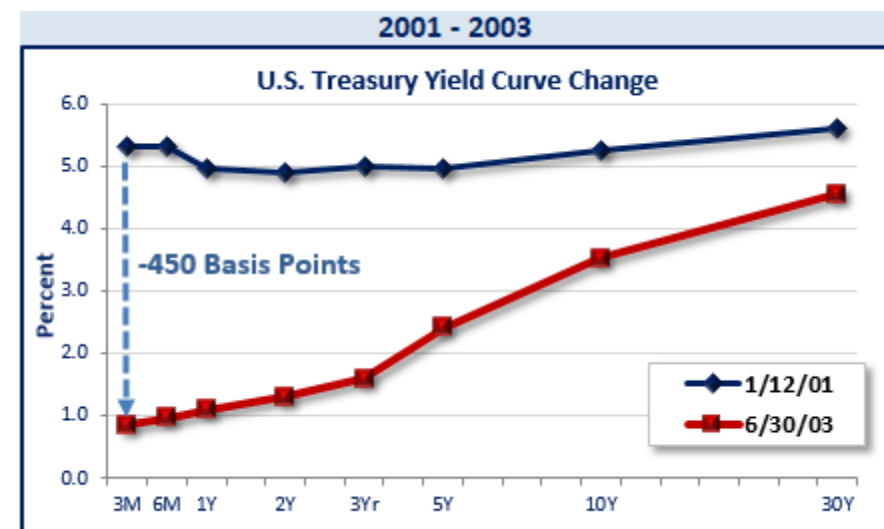
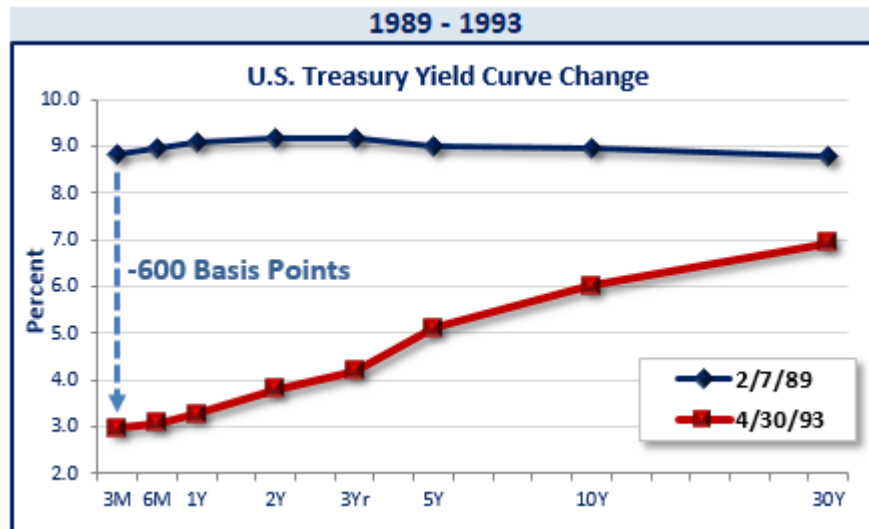
Source: Bloomberg

Awesome Timing: 1-3Yr Bullets vs. 1-5Yr Callables Total Return



Source: Bloomberg

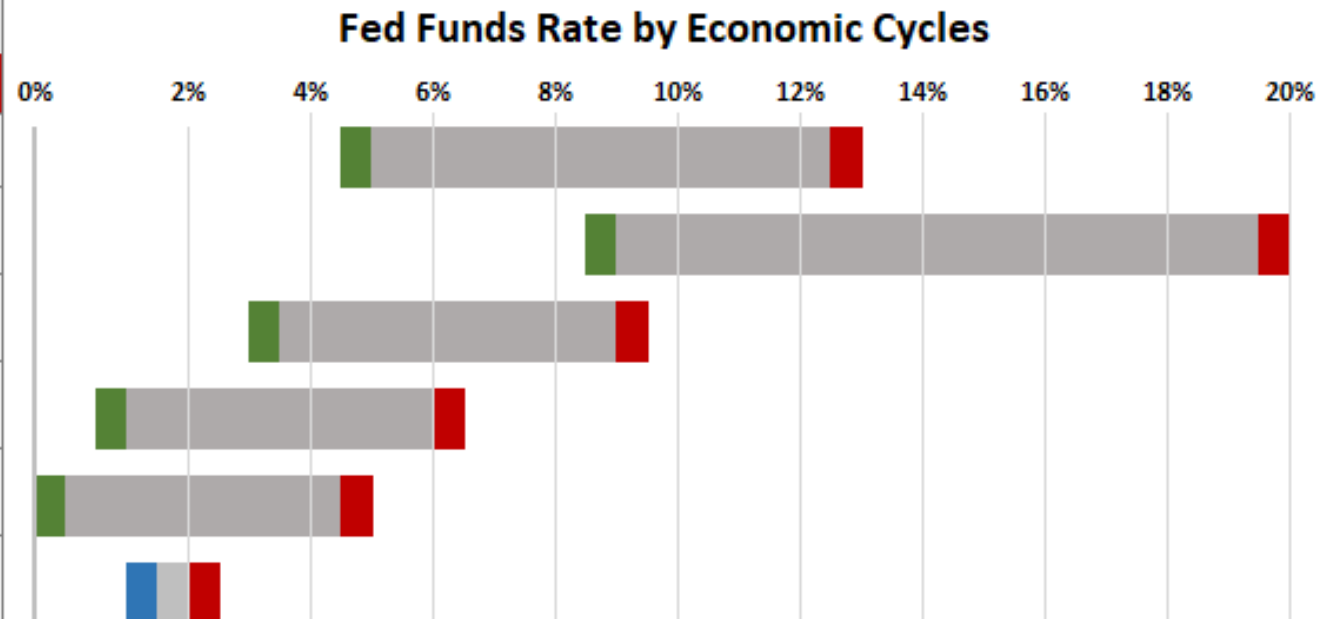
“Why Would I Buy a 5Yr When the 3Mo is the Same or Higher?”



Source: Bloomberg

Fed Funds...Not a Lot of Runway Left for the Next Recession

Period	Current	After Recession	Before Recession
1973-75		4.75%	13.00%
1980-82*		8.50%	20.00%
1990-91		3.00%	9.75%
2001		1.00%	6.50%
2007-09		0.25%	5.25%
Current Rate	1.75%	???	2.50%



*Combined Recessions

Source: Bloomberg

Habit #4

You Love Losses and Hate Gains
(the unrealized kind)

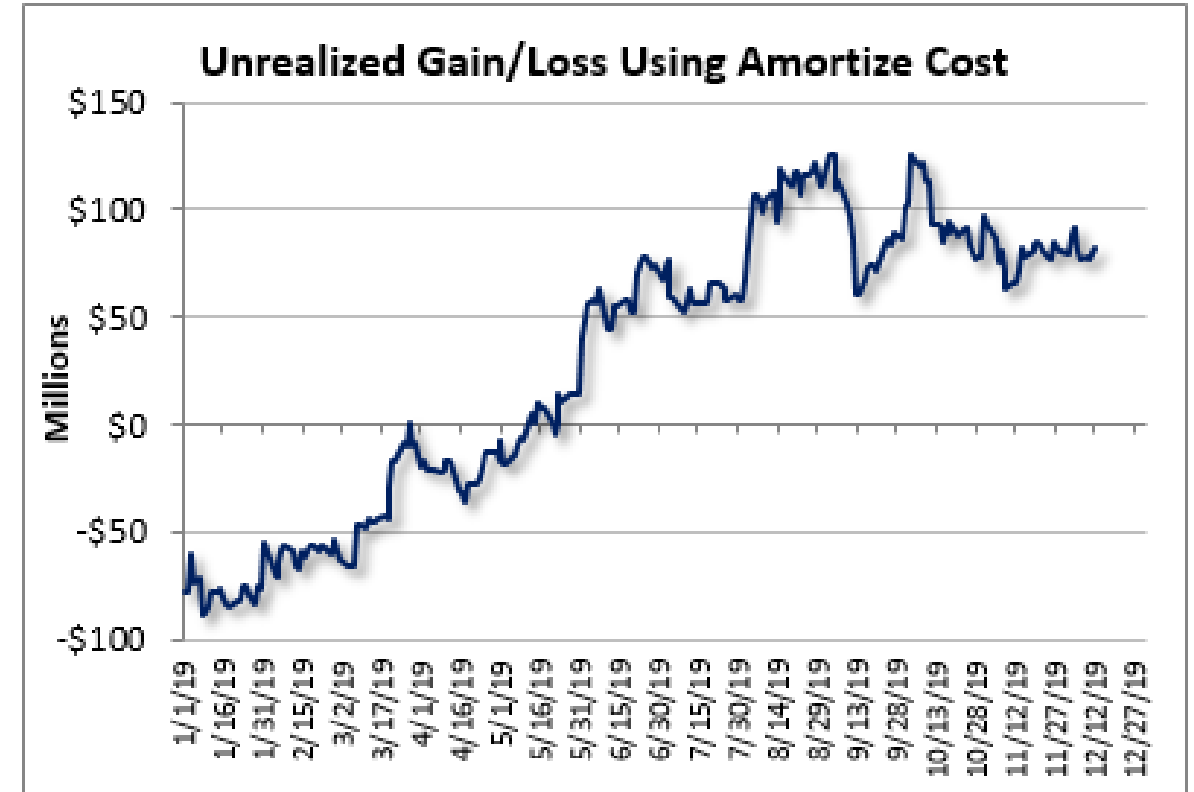
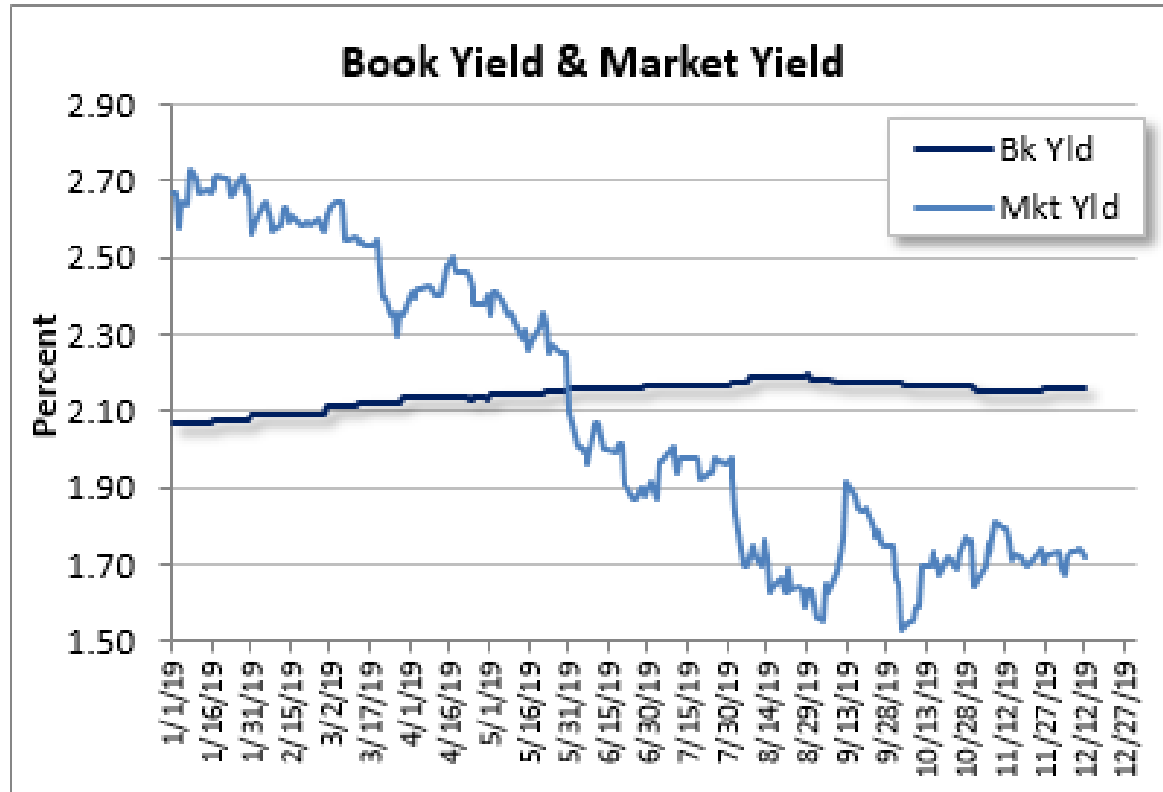


It is not the return on my
investment that I am concerned
about; it's the return of my
investment

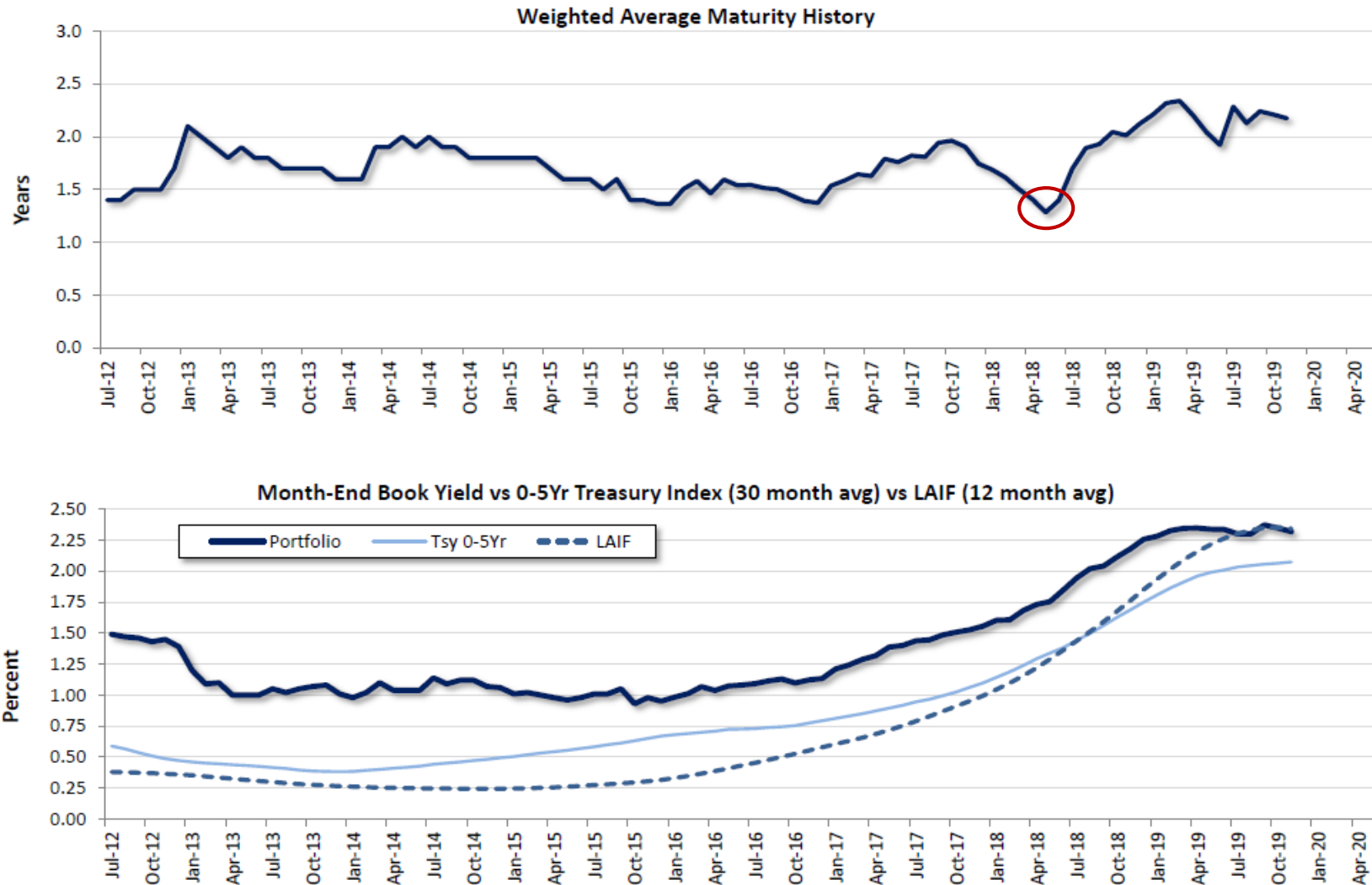
— *Will Rogers* —

Source: Google

The “Bad News” of “Good News”



Creating a Stable'r Investment Income



Habit #5

**You Follow GAAP
(Generally Accepted Accounting Principles)**

#5: You Follow GAAP (Generally Accepted Accounting Principles)

You Amortize

Buy/Sell	Buy	Cusip	313588HP3		
Issue	FNDN 0 07/01/19	Broker			
Audit Trail					
DlrFutBrkr	--				
Quantity	10,000,000	Disc Rate	1.0000	Principal	\$ 9,900,000.00
Price	99.0000	Yield	1.0216	Acc Int	0.00
Settle Date	07/01/2018	Spread		Net	9,900,000.00

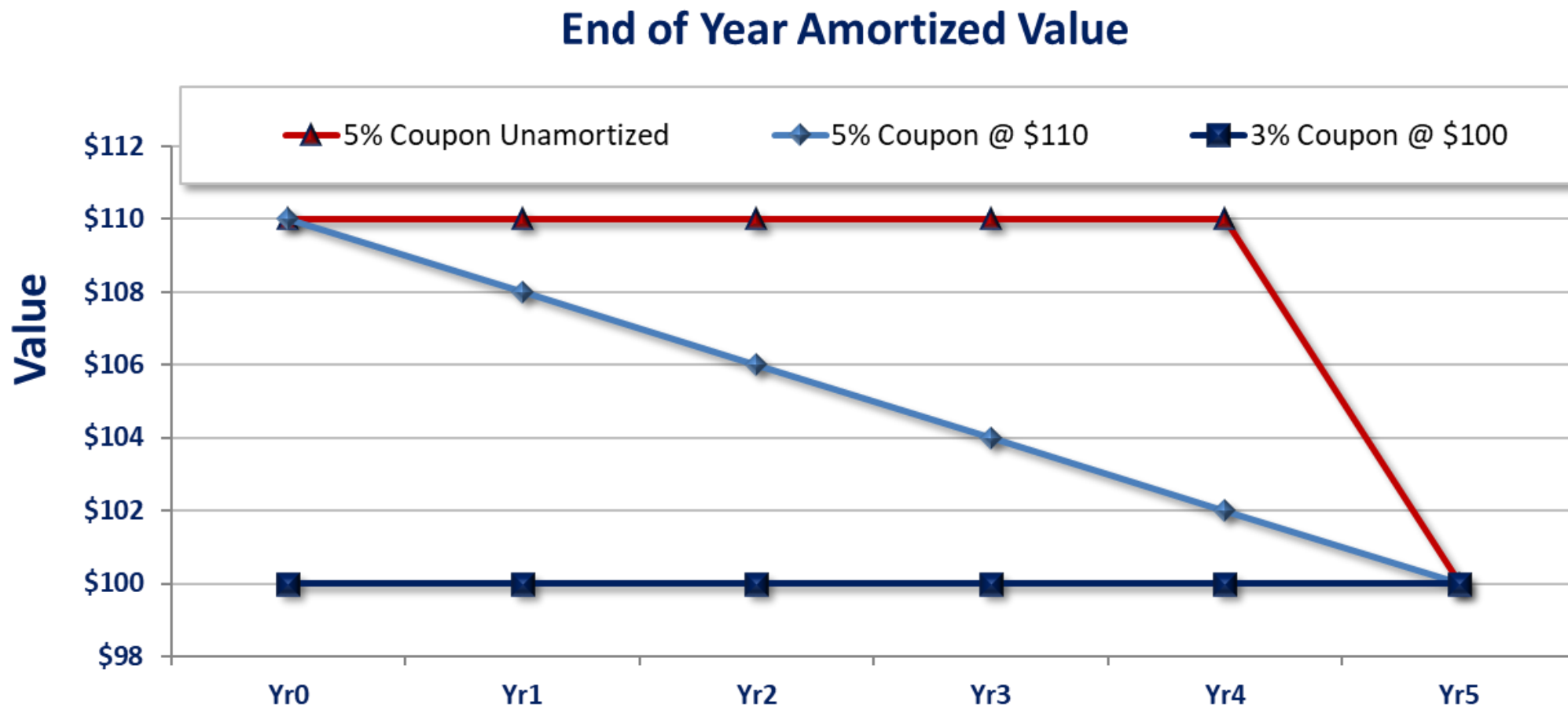
If you are not amortizing, when will you recognize the \$100,000 gain (income)?



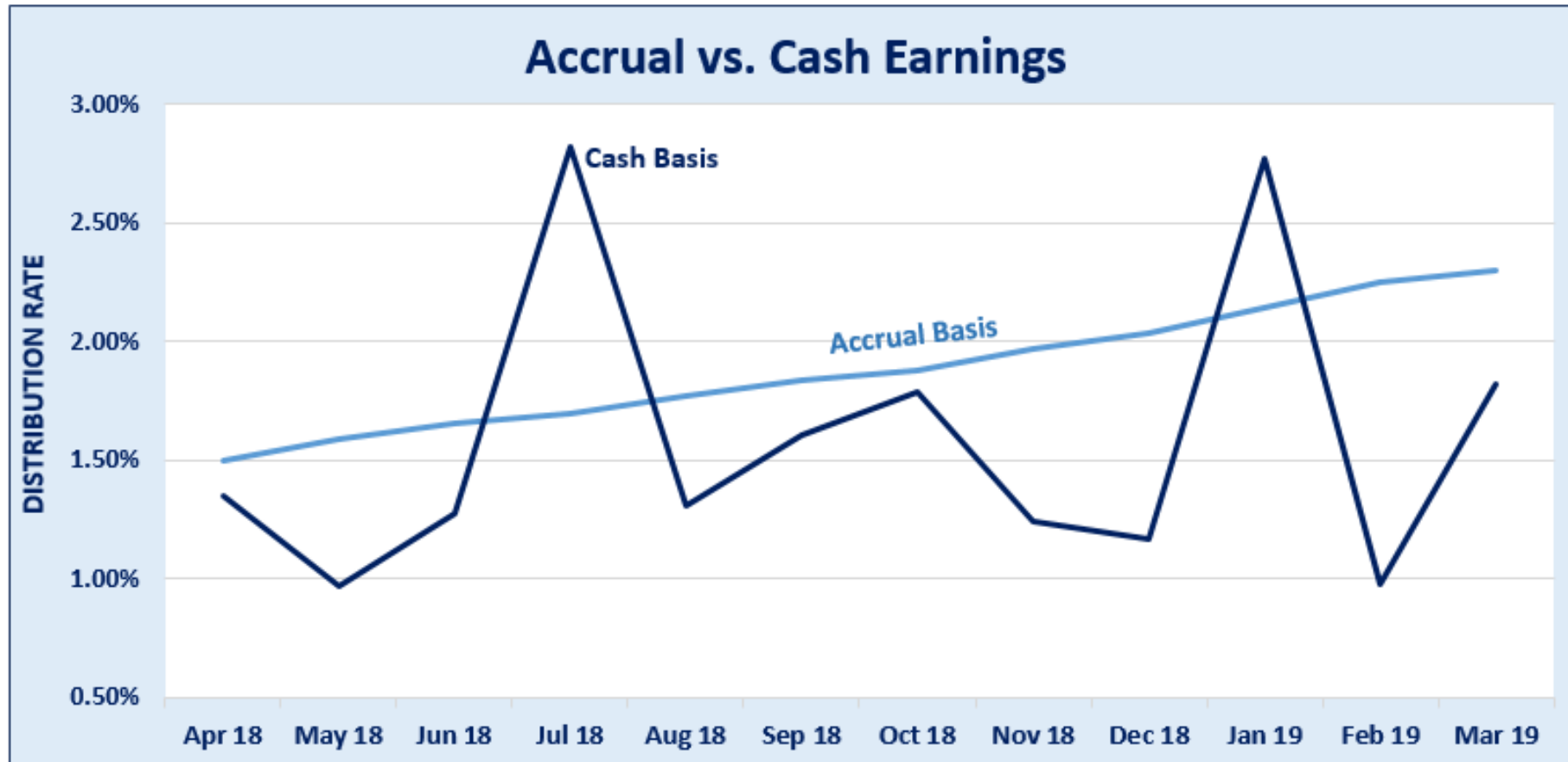
- ☐ Involves More Work: Monthly Journal Entries
- ☐ Custodians' Amortization Methodology May Not Match Your Investment Accounting System

Source: Bloomberg

Not Amortizing Premiums: Overstating Income



You Distribute Inv Income on an Accrual Basis...Not a Cash Basis



Month	Apr 18	May 18	Jun 18	Jul 18	Aug 18	Sep 18	Oct 18	Nov 18	Dec 18	Jan 19	Feb 19	Mar 19	Avg
Accrual	1.50%	1.59%	1.66%	1.70%	1.77%	1.84%	1.88%	1.97%	2.04%	2.14%	2.25%	2.30%	1.89%
Cash	1.35%	0.97%	1.28%	2.82%	1.31%	1.61%	1.79%	1.24%	1.17%	2.77%	0.98%	1.82%	1.59%
Variance	0.15%	0.62%	0.38%	(1.12%)	0.46%	0.23%	0.09%	0.73%	0.87%	(0.63%)	1.27%	0.48%	0.29%

Habit #6

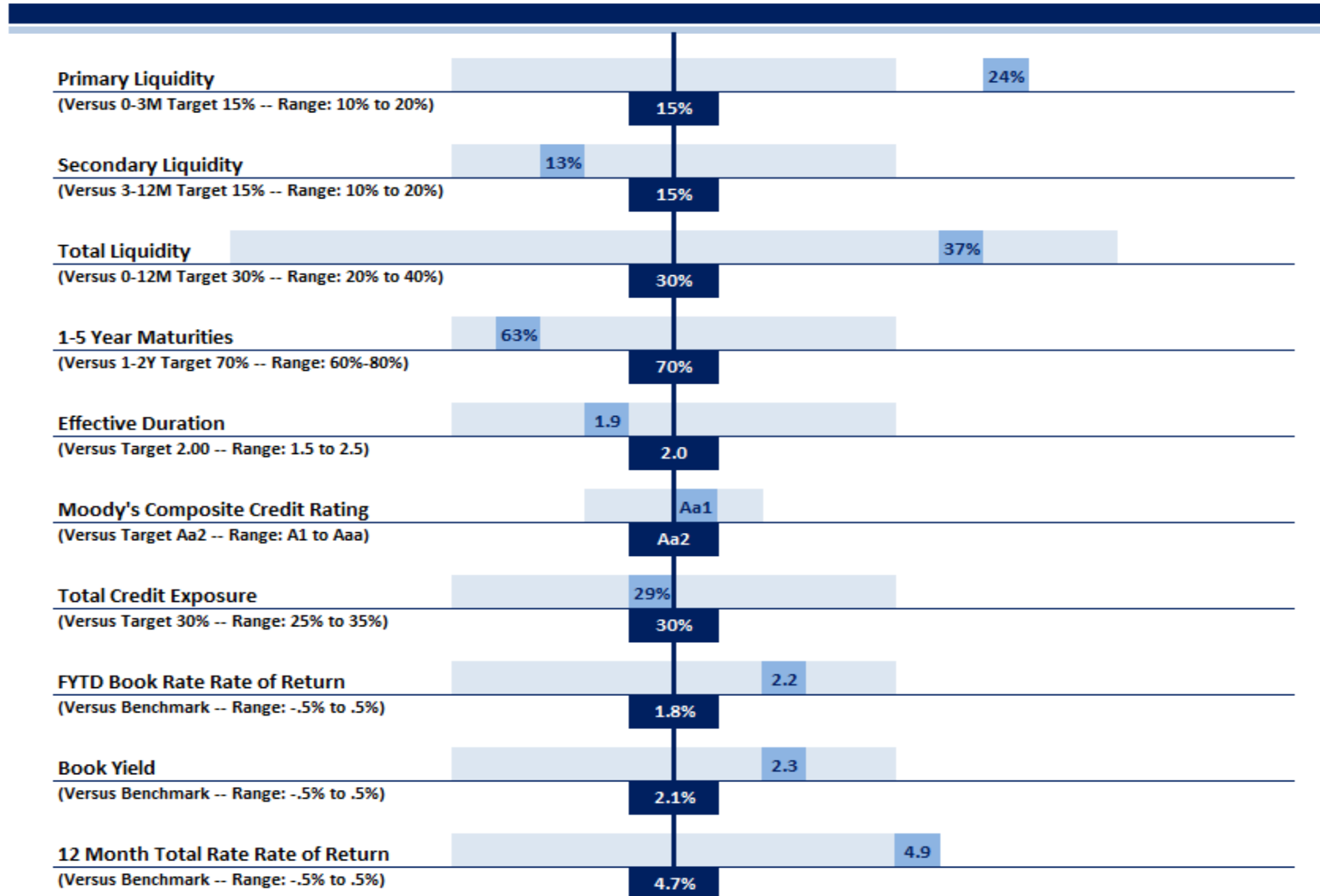
You Benchmark Your
Investment Program and Portfolio in Multiple Ways

GIOA Model Investment Policy Primary Objectives

- 1. Safety of Principal:** Safety of principal is the foremost objective of the [entity's] investment program. Investments by the [designated official] shall be undertaken in a manner that seeks to ensure the preservation of capital in the overall portfolio. To attain this objective, diversification of security types, sectors, issuers, and maturities is necessary in order that potential losses on individual securities do not exceed the income generated from the remainder of the portfolio.
- 2. Liquidity:** The investment portfolio shall be structured to timely meet expected cash outflow needs and associated obligations which might be reasonably anticipated. This objective shall be achieved by matching investment maturities with forecasted cash outflows and maintaining an additional liquidity buffer for unexpected liabilities.
- 3. Investment Income:** The investment portfolio shall be designed to earn a market rate of investment income in relation to prevailing budgetary and economic cycles, while taking into account investment risk constraints and liquidity needs of the portfolio.

Investment Portfolios are the Only Area Which Provide Revenue to Your Entity Without Charging Taxes or Fees to Your Citizens

Benchmarking Your Investment Plan: Suitable vs. Legal



CFA Institute: Characteristics of Useful Performance Benchmarks

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:

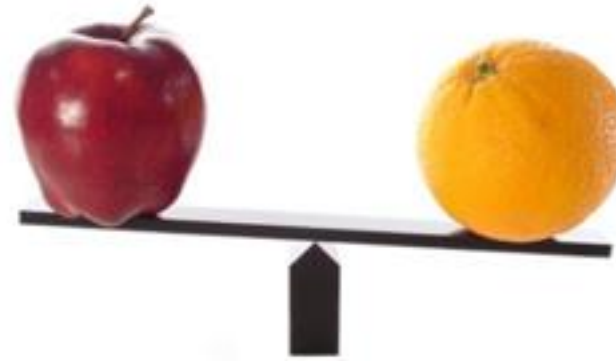
- Unambiguous: The identities and weights of securities constituting the benchmark are clearly defined.
- Investable: It is possible to forgo active management and simply hold the benchmark.
- Measurable: The benchmark's return is readily calculable on a reasonably frequent basis.
- Appropriate: The 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

Important Benchmark Characteristics

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

- Sector Allocations
- Duration/Maturity
- Turnover



Three Types of Benchmarking:

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

Performance Benchmarking

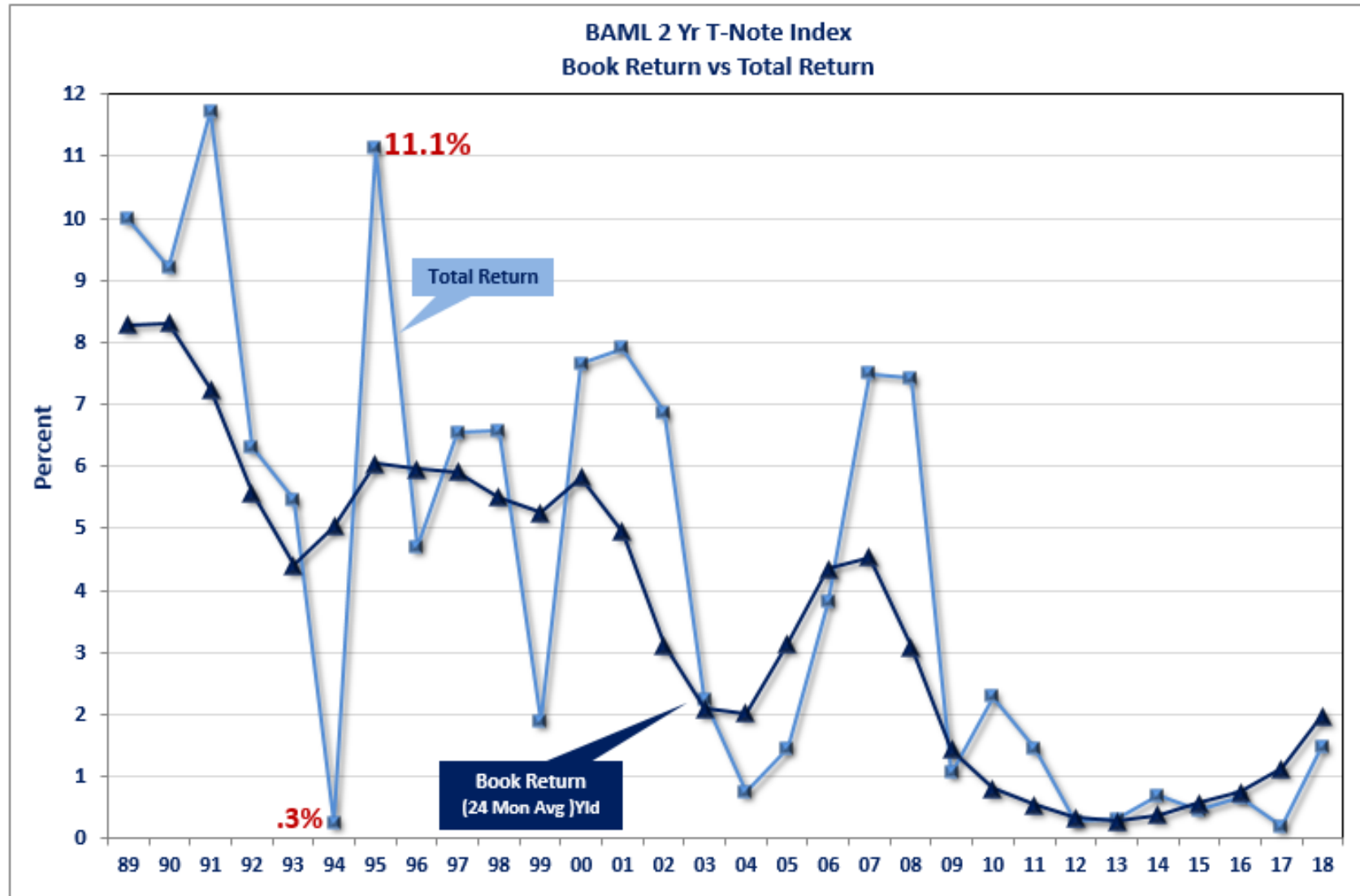
$$\text{Book Return} = \frac{\begin{aligned} &+ \text{Accrued/Received Interest} \\ &+/- \text{Amortization/Accretion or Premiums/Discounts} \\ &+/- \text{Realized Gains/Losses} \end{aligned}}{\text{Average Daily Book Balance for the Period}}$$



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

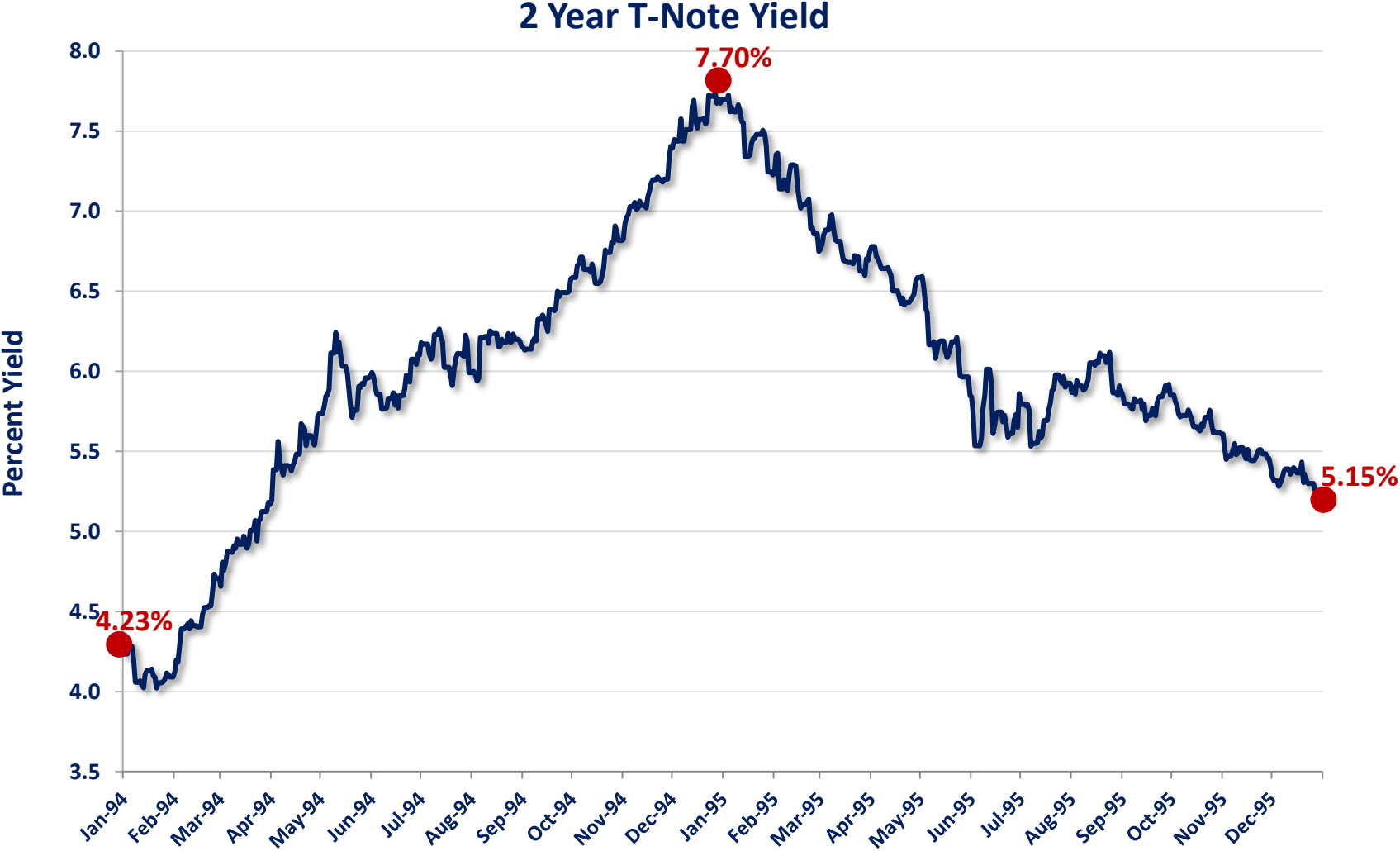


Book Return vs. Total Return





Source: Bloomberg

Book Return vs. Total Return



Source: Bloomberg

Long Run: Total Return and Book Return...Basically Equal

GVQ0	99) Download		ICE Bond Indices: Flexible Returns			
ICE BofAML 1-5 Year US Treasury Index			Inception Date		01/31/1978	
02/26/1988		- 12/12/2019		Currency	LOC	0 % Hedged
			Periodic Return	Annualized Return		
Total Return Factors			% of Total Return			
Price Return (Local)			1.139	0.036	0.8%	
Income Return (Local)			330.194	4.667	99.2%	
Total Return (Local)			331.332	4.702	100.0%	
Total Return Index Values						
Beginning Index Value			282.006			
Ending Index Value			1,216.383			
Price Return Index Values						
Beginning Index Value			107.820			
Ending Index Value			109.048			

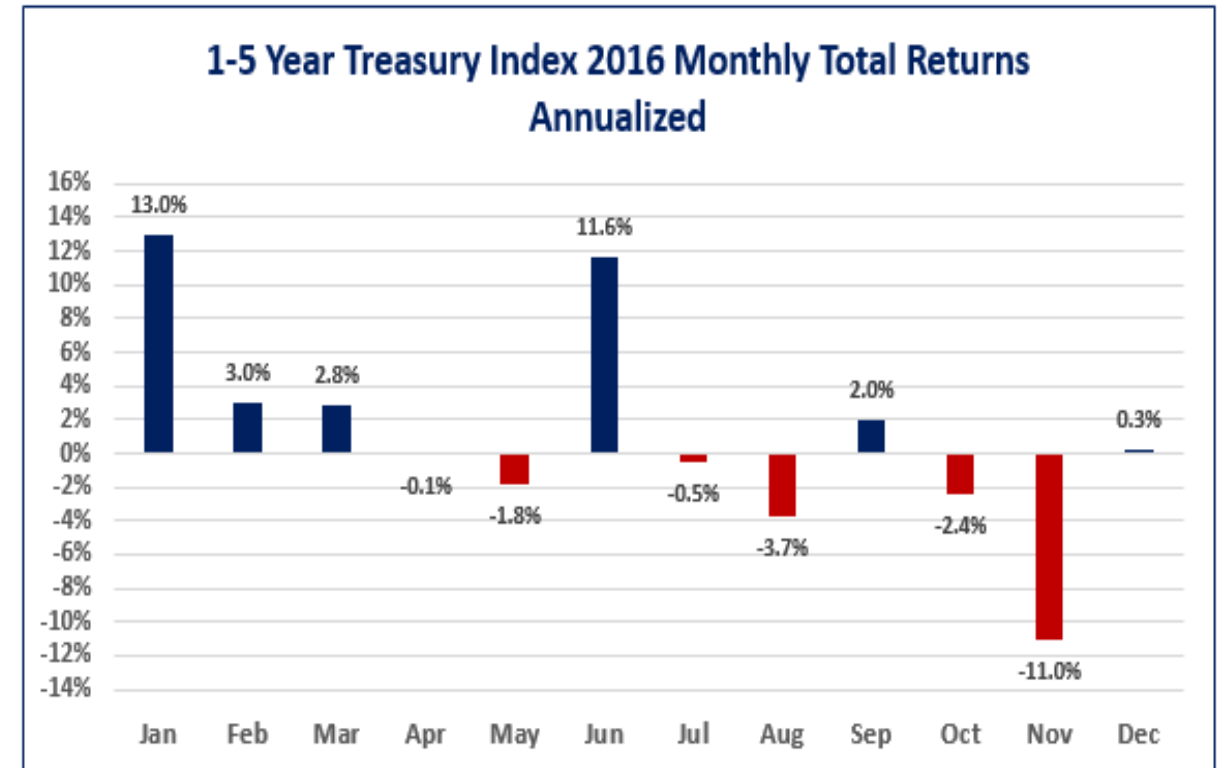
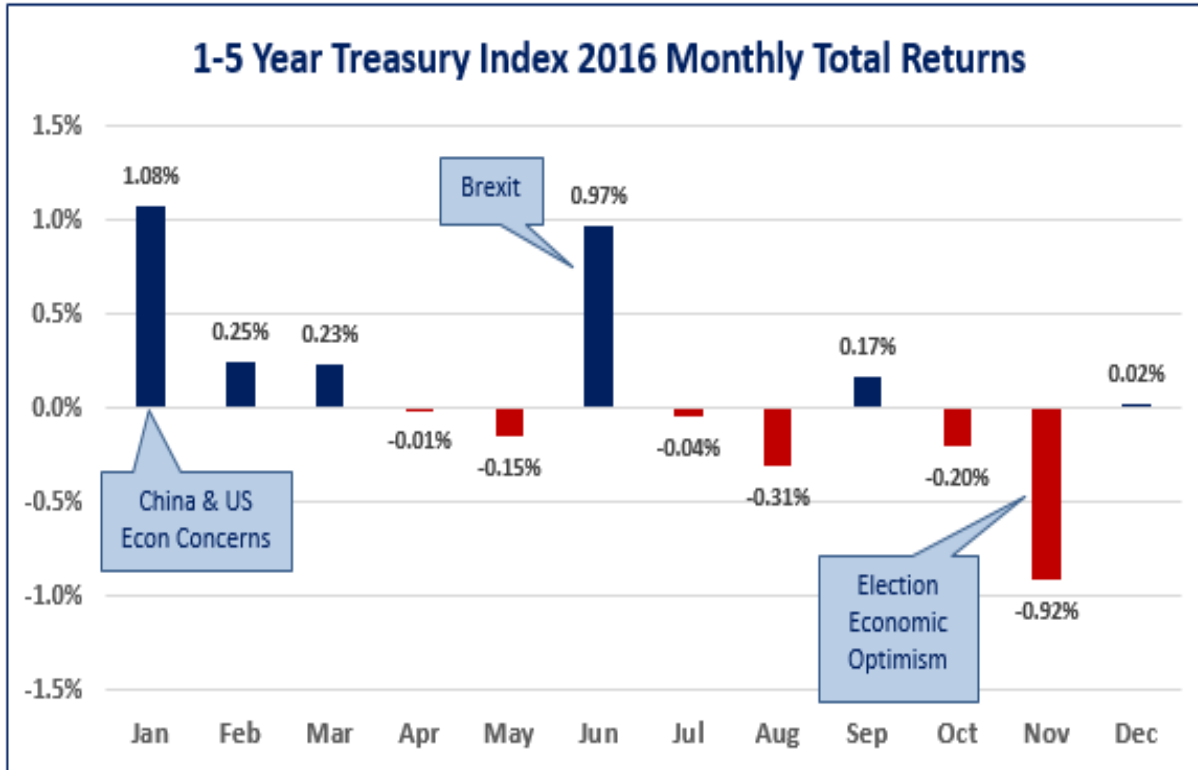
Source: Bloomberg

1-5 Year Tsy/Agy Index Yield History



Source: Bloomberg

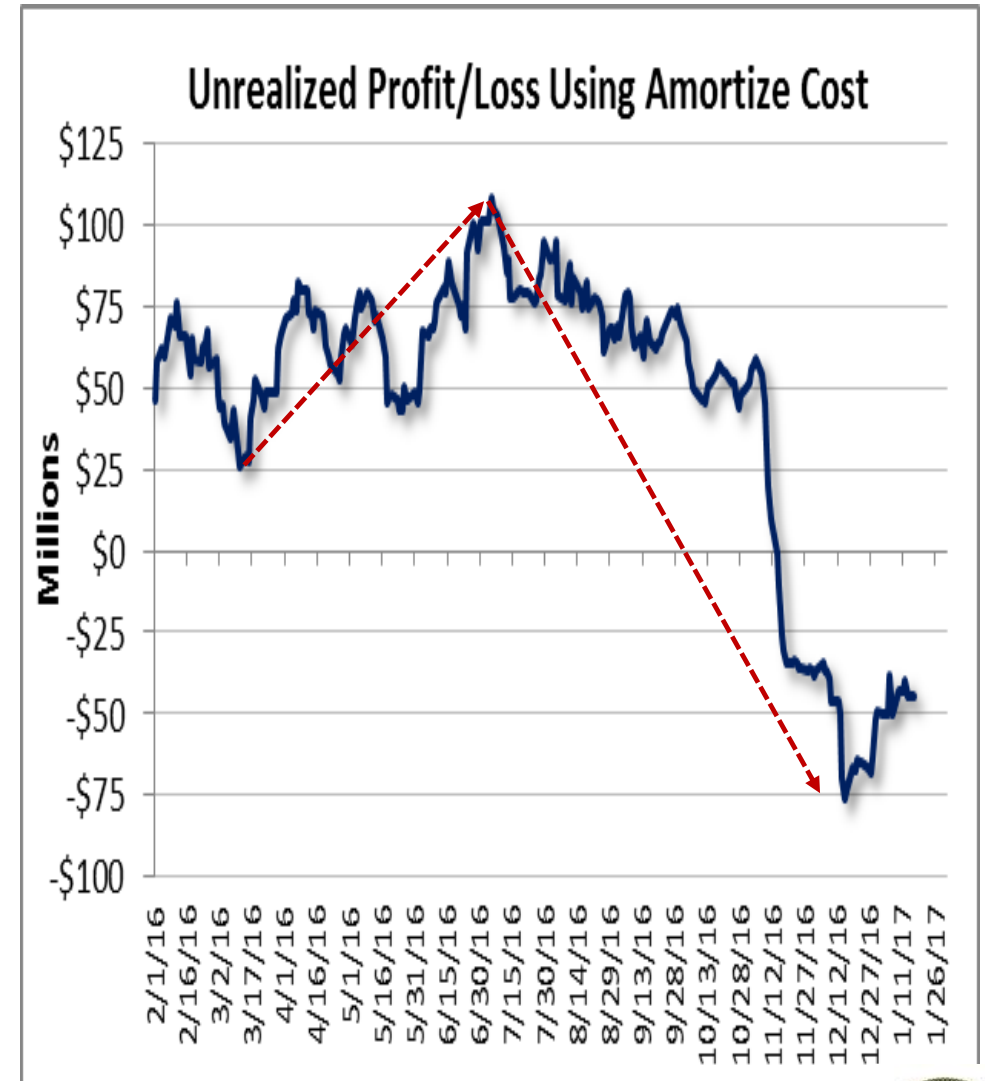
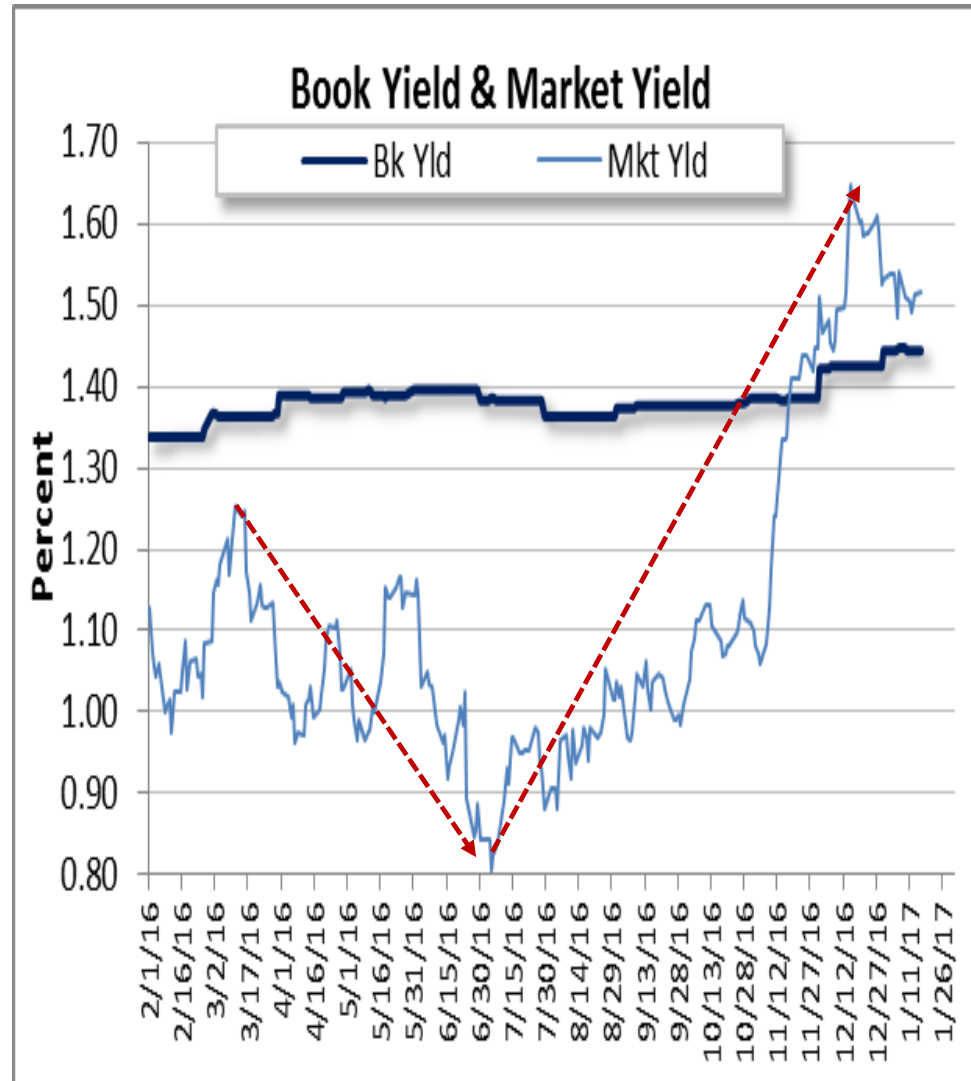
2016: A Volatile Total Return Year



GVQ0	99) Download	ICE BofAML
ICE BofAML 1-5 Year US Treasury Index		
12/31/2015	-	12/31/2016
Currency	LOC	0 % Hedged
	Periodic Return	Annualized Return
Total Return Factors		
Price Return (Local)	-0.739	-0.739
Income Return (Local)	1.827	1.827
Total Return (Local)	1.088	1.088

Source: Bloomberg

A Real World Example



Habit #7

You Provide Quality, Timely, Transparent Reporting

Clearly Communicating Information to Your Audiences

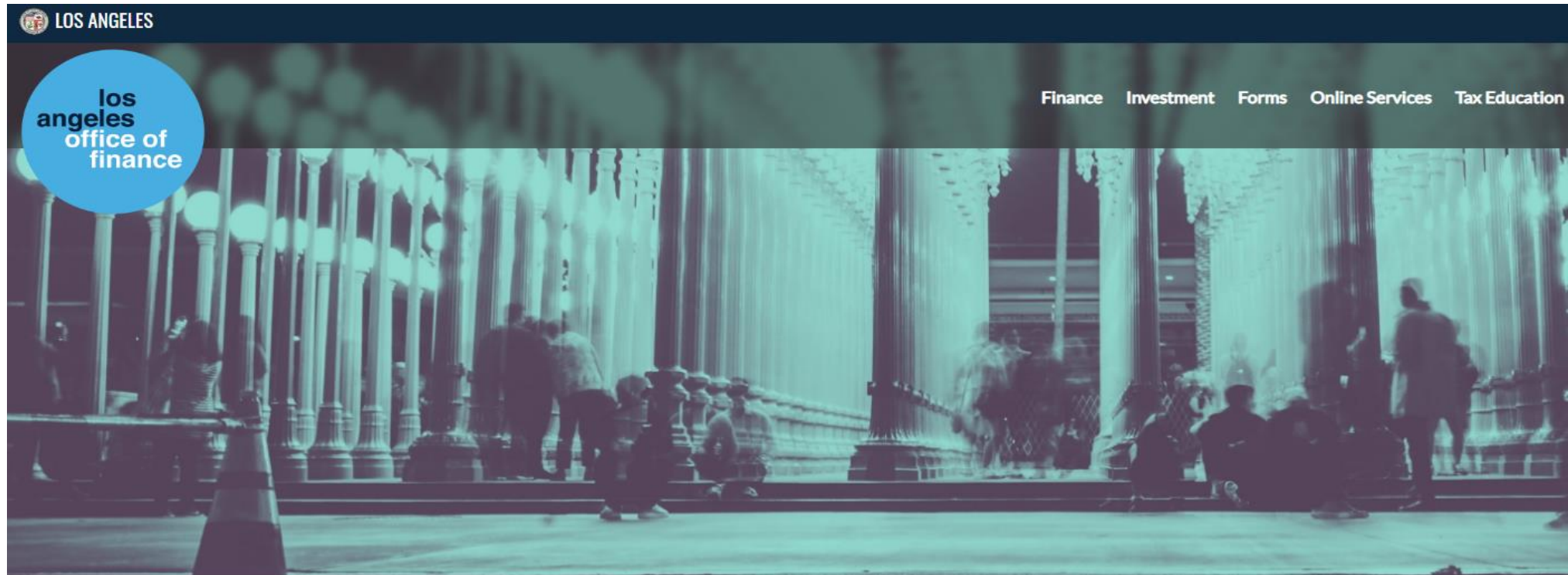
- **Know Your Audiences:**
 - Governing Body
 - Management
 - Auditors
 - Rating Agencies
 - GFOA (CAFR)
 - Peers
 - Taxpayers
- **Be Completely Transparent**
- **Keep it Simple – Charts/Graphs/Tables**
- **Provide Details to the Appropriate Audiences**
- **Demonstrate How the Investment Portfolio is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

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



Your Investment Report Should Be on Your Website

City of Los Angeles...Best Practice Example



Monthly Investment Reports to Council-Archived

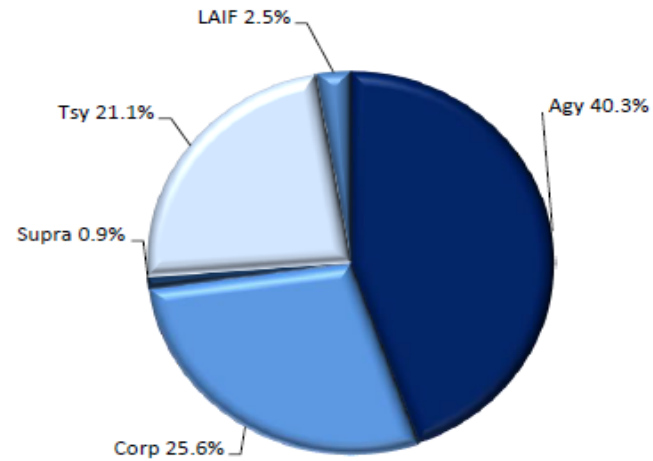
Each month the Office of Finance's Treasury Division publishes a report outlining the city's investment portfolio for review by the City Council.

Reports for 2019

 [May 2019 Investment Report](#)

 [April 2019 Investment Report](#)

SECTOR ALLOCATION



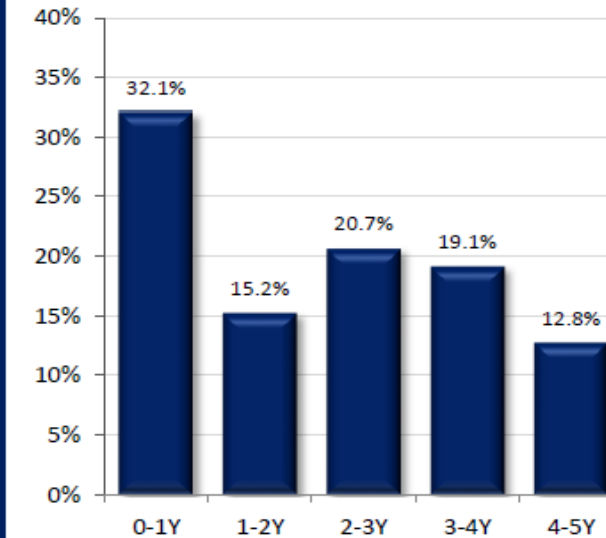
Per Book Value

ACCOUNT SUMMARY

	11/30/19	10/31/19
Market Value	\$573,684,042	\$566,339,090
Book Value	\$563,843,802	\$555,166,081
Variance	\$9,840,241	\$11,173,009
Par Value	\$564,014,840	\$555,809,862
Net Asset Value	\$101.745	\$102.013
Book Yield	2.32%	2.35%
Years to Maturity	2.17	2.21
Effective Duration	2.11	2.14

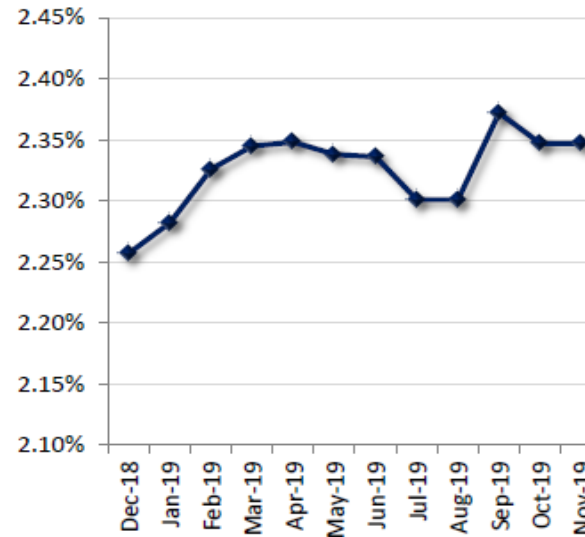
Book Value is Amortized

MATURITY DISTRIBUTION

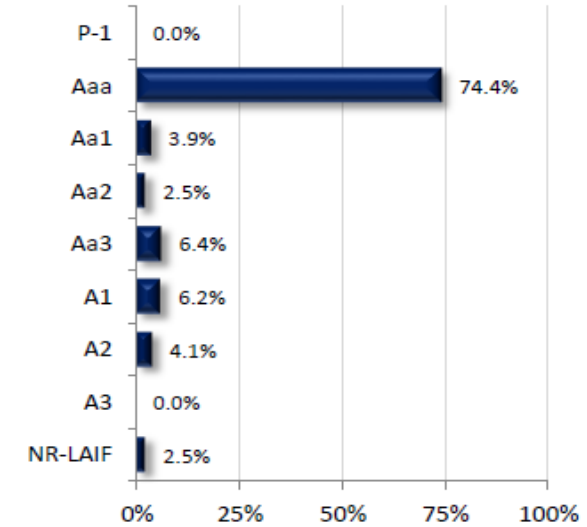


Per Book Value

MONTH-END PORTFOLIO BOOK YIELD



CREDIT QUALITY (MOODY'S)



NR: Not Rated

TOP ISSUERS

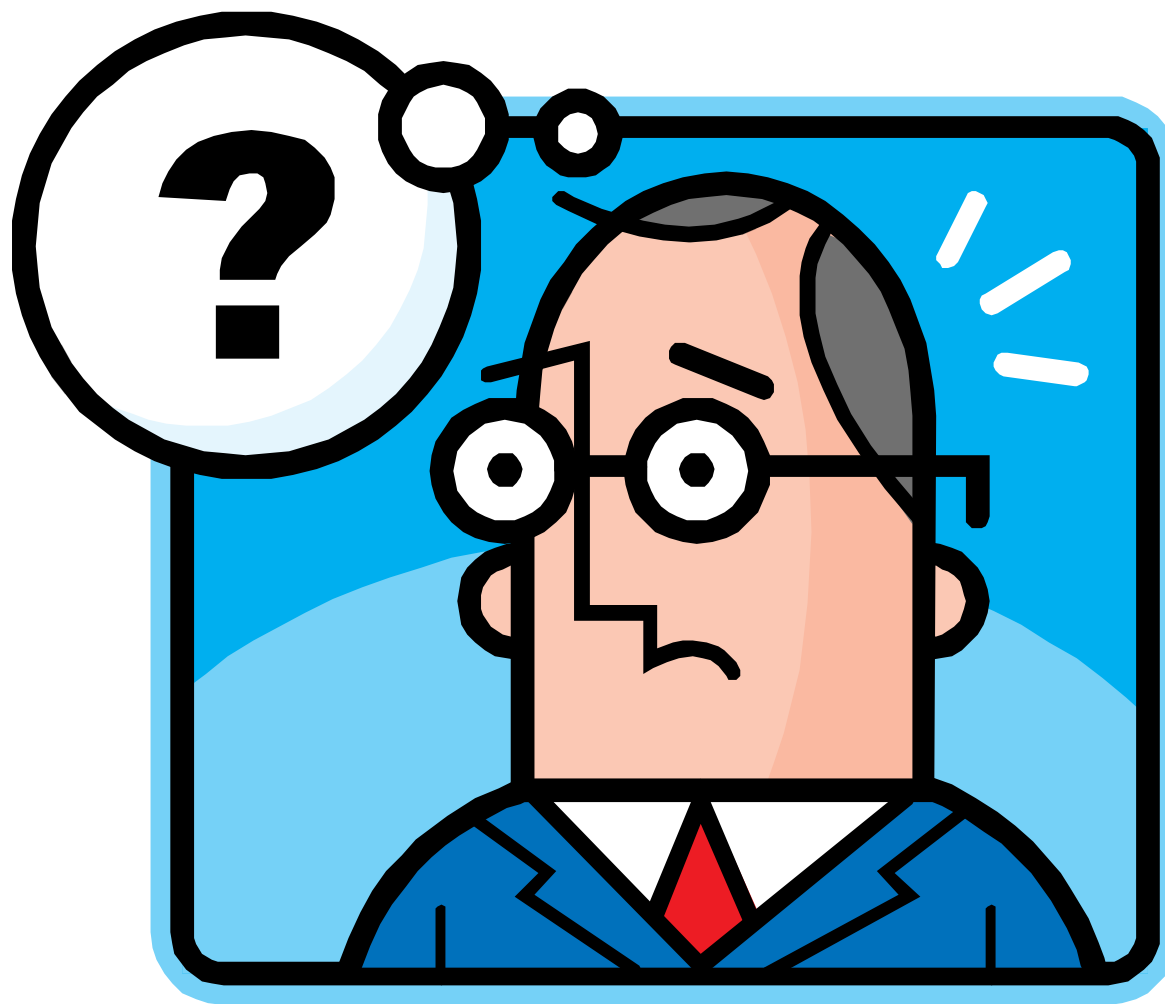
Issuer	% Portfolio
U.S.Treasury	21.1%
FFCB	20.7%
FHLB	10.7%
Wells Fargo Govt Inst MMF	8.5%
FHLMC	5.3%
Apple	3.9%
FNMA	3.5%
Met Life	3.2%
LAIF	2.5%
Citibank	1.9%
Honda	1.8%
US Bank	1.8%
Cisco	1.8%
Wells Fargo Bank	1.6%
Microsoft	1.6%

Per Book Value

You Have a Repeatable, Structured Process Based Upon:

2 Things We Know Well and 1 We Don't:

- ✓ Longer Duration Provides Higher Returns Over the Long Run
- ✓ Your Cash Flows Don't Always Repeat, But They Usually Really Rhyme
- ✓ Your Can't Time the Market



Disclosure

Although this information has been obtained from sources which we believe to be reliable, we do not guarantee its accuracy, and it may be incomplete or condensed. This is for informational purposes only and is not intended as an offer or solicitation with respect to the purchase or sale of any security. All herein listed securities are subject to availability and change in price. Past performance is not indicative of future results, and changes in any assumptions may have a material effect on projected results. Ratings on all securities are subject to change.

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FHN Financial Municipal Advisors is a registered municipal advisor. FHN Financial Portfolio Advisors is a portfolio manager operating under the trust powers of First Horizon Bank. FHN Financial Main Street Advisors, LLC is a registered investment advisor. None of the other FHN entities, including FHN Financial Capital Markets, FHN Financial Securities Corp., or FHN Financial Capital Assets Corp. are acting as your advisor, and none owe a fiduciary duty under the securities laws to you, any municipal entity, or any obligated person with respect to, among other things, the information and material contained in this communication. Instead, these FHN entities are acting for their own interests. You should discuss any information or material contained in this communication with any and all internal or external advisors and experts that you deem appropriate before acting on this information or material.

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