CPIM

Center For Public Investment Management

A PROGRAM BROUGHT TO YOU BY:

JOSH MANDEL

Treasurer of Ohio

General Session: Market Update

Presenters

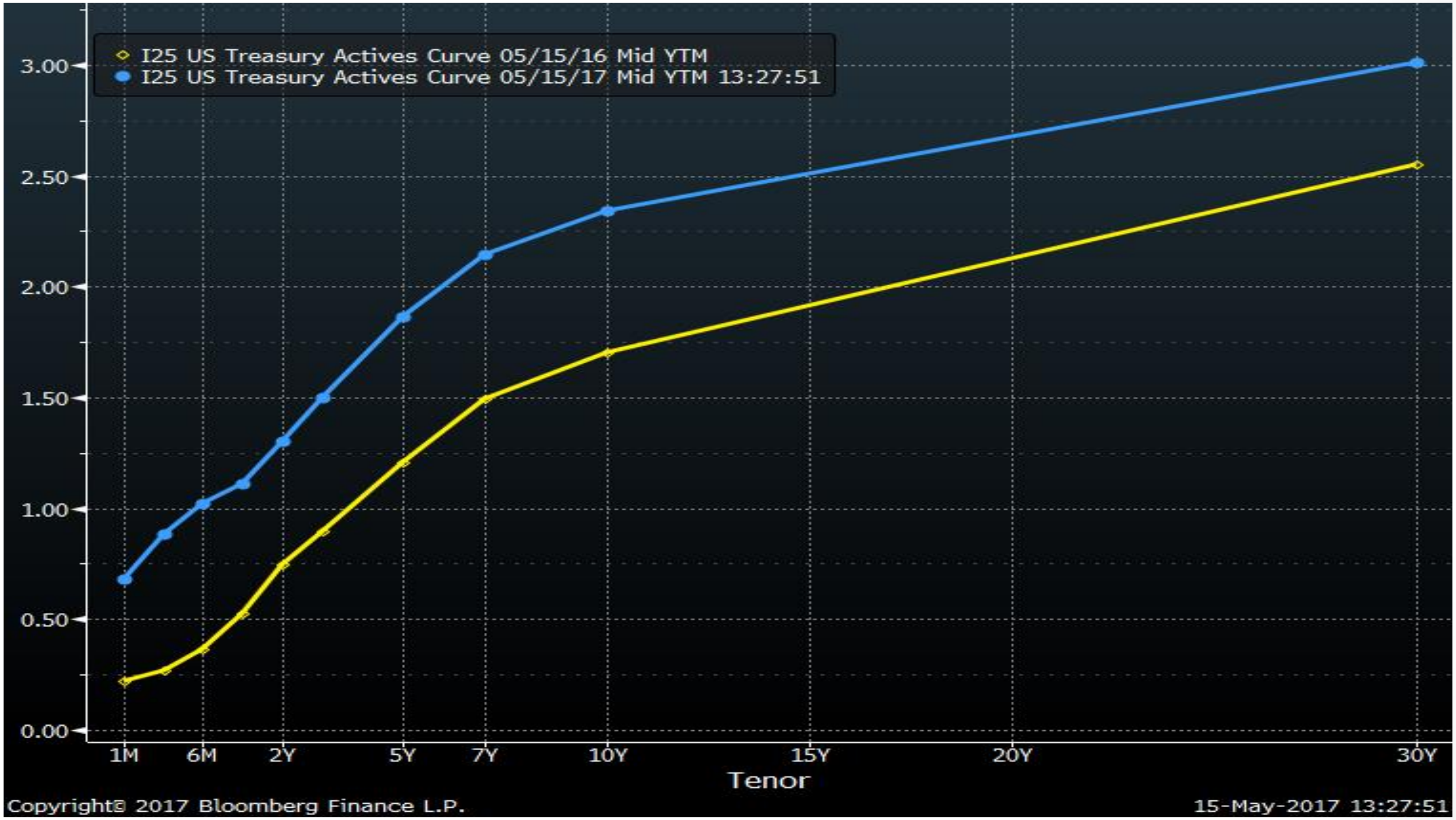
- Zach Amendolea, CFA, Investment Officer
- Office of Ohio Treasurer Josh Mandel
- zachary.amendolea@tos.ohio.gov

- Jason Click, President of Meeder Public Funds
- Meeder Investment Management
- jclick@meederinvestment.com

- Jof Cindric, Managing Director
- Huntington Capital Markets
- jof.cindric@huntington.com

Interest Rate Environment

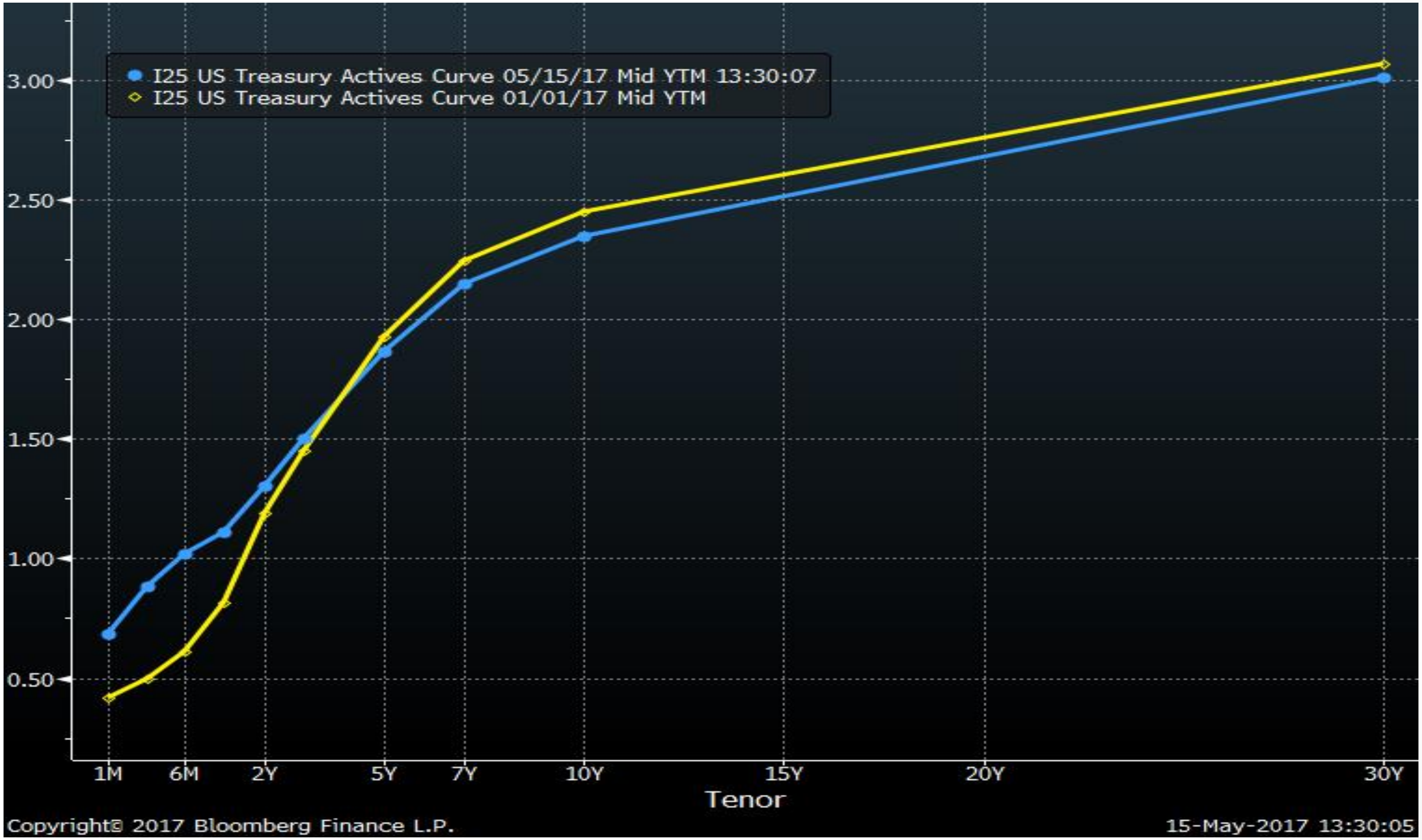
Over the last year, the Yield Curve has shifted upward



Source: Bloomberg as of 05/15/17

Interest Rate Environment

YTD the Yield Curve has Flattened



Source: Bloomberg as of 05/15/17

Fed Funds

Implied Probability of Rate Hike

- The Fed Funds implied probability of a rate increase in June is 94%
- Fed vs. market expectations on rates are not aligned for 2018 & 2019

GRAB

99) Export Data — World Interest Rate Probability

United States — Instrument: Futures: Fed Funds — FED Effective Rate 0.91

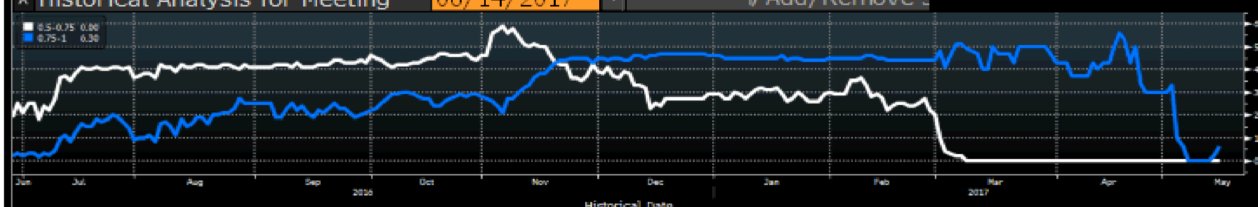
1) Overview | 2) Future Implied Probability

Current Implied Probabilities — 3) Add/Remove

Dates: Meeting / Calculation — Calculated 05/15/2017 — Based on rate 0.75-1.0

Meeting	Prob Of Hike	Prob of Cut	0.5-0.75	0.75-1	1-1.25	1.25-1.5	1.5-1.75	1.75-2	2-2.25
06/14/2017	93.8%	0.0%	0.0%	6.3%	93.8%	0.0%	0.0%	0.0%	0.0%
07/26/2017	92.1%	0.1%	0.1%	7.8%	92.1%	0.0%	0.0%	0.0%	0.0%
09/20/2017	94.9%	0.1%	0.1%	5.0%	61.8%	33.2%	0.0%	0.0%	0.0%
11/01/2017	95.0%	0.1%	0.1%	4.9%	60.6%	33.8%	0.7%	0.0%	0.0%
12/13/2017	96.2%	0.1%	0.1%	3.8%	47.3%	40.2%	8.6%	0.2%	0.0%
01/31/2018	96.4%	0.0%	0.0%	3.5%	44.6%	40.6%	10.5%	0.7%	0.0%
03/21/2018	97.2%	0.0%	0.0%	2.8%	35.6%	41.5%	17.1%	2.8%	0.2%
05/02/2018	97.3%	0.0%	0.0%	2.7%	34.9%	41.4%	17.6%	3.1%	0.2%
06/13/2018	98.1%	0.0%	0.0%	1.9%	24.6%	39.3%	25.2%	7.8%	1.1%
08/01/2018	98.2%	0.0%	0.0%	1.8%	23.7%	38.7%	25.8%	8.5%	1.4%

Historical Analysis for Meeting 06/14/2017 — 4) Add/Remove



Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2017 Bloomberg Finance L.P.
SN 499283 H608-1072-1 15-May-17 9:55:12 EDT GMT-4:00

Source: Bloomberg

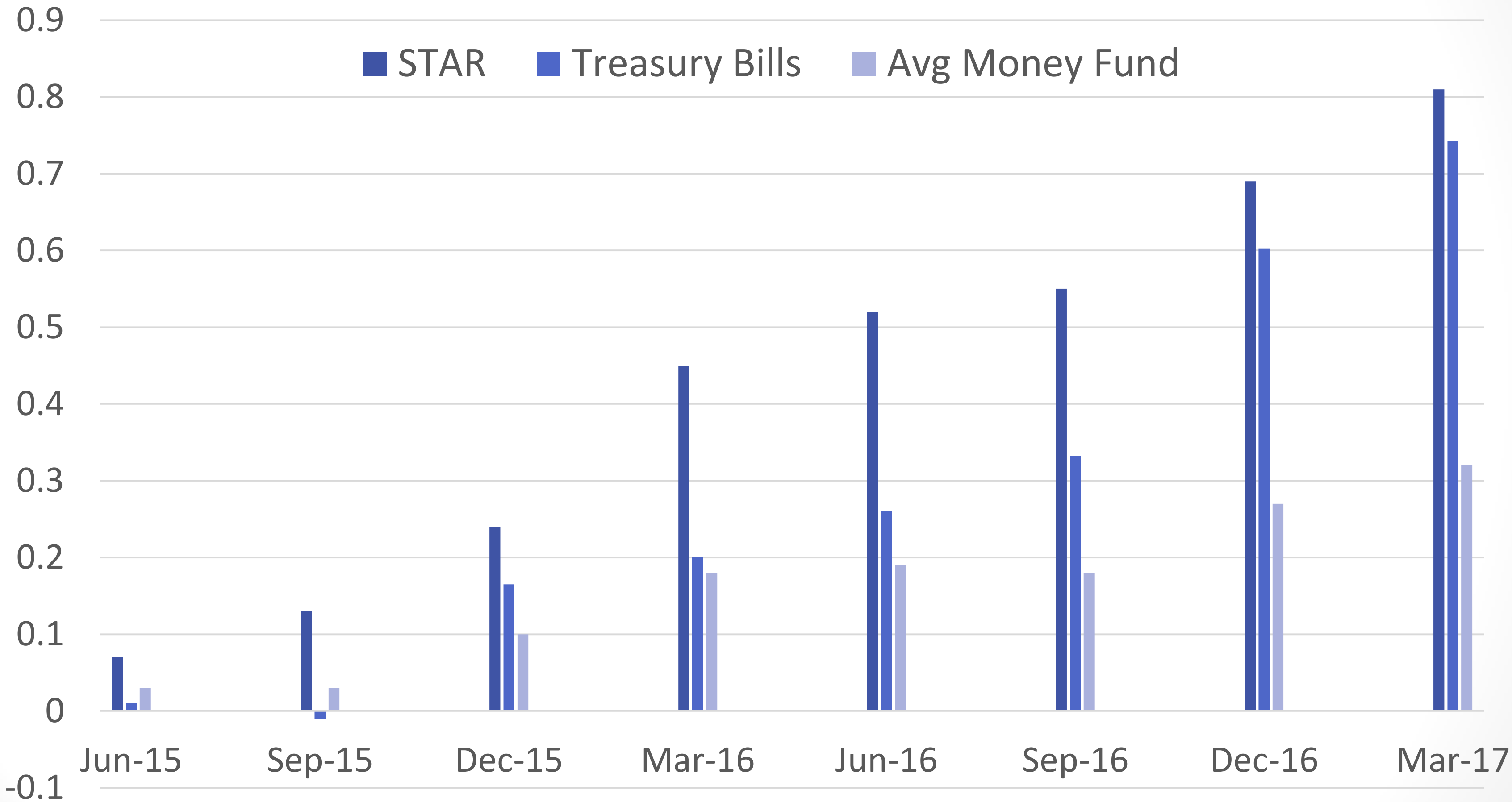
As of 05/15/2017

What does this mean for STAR?

- Expect yields in STAR Ohio to increase
  - Economists predicting multiple rate hikes in 2017
- Fed tightening may not harm growth
  - Long term rates still extremely low
- New administration & fiscal policy
  - Fiscal policy and the FED

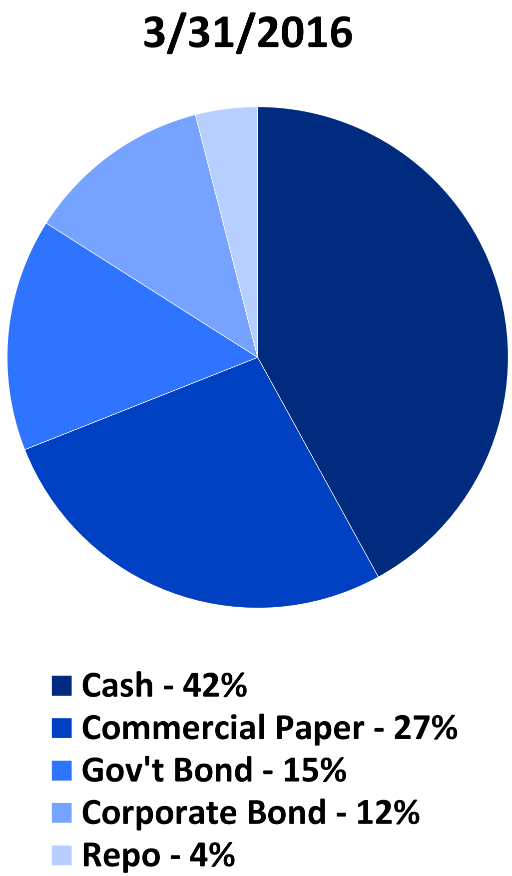
Yield Comparison

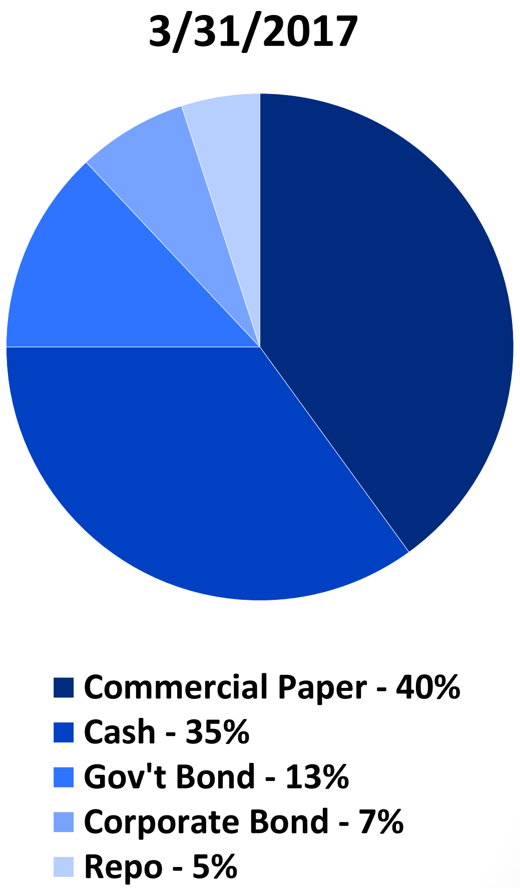
STAR Ohio vs. Treasury vs. Avg Money Fund



Over $7 billion in Deposits

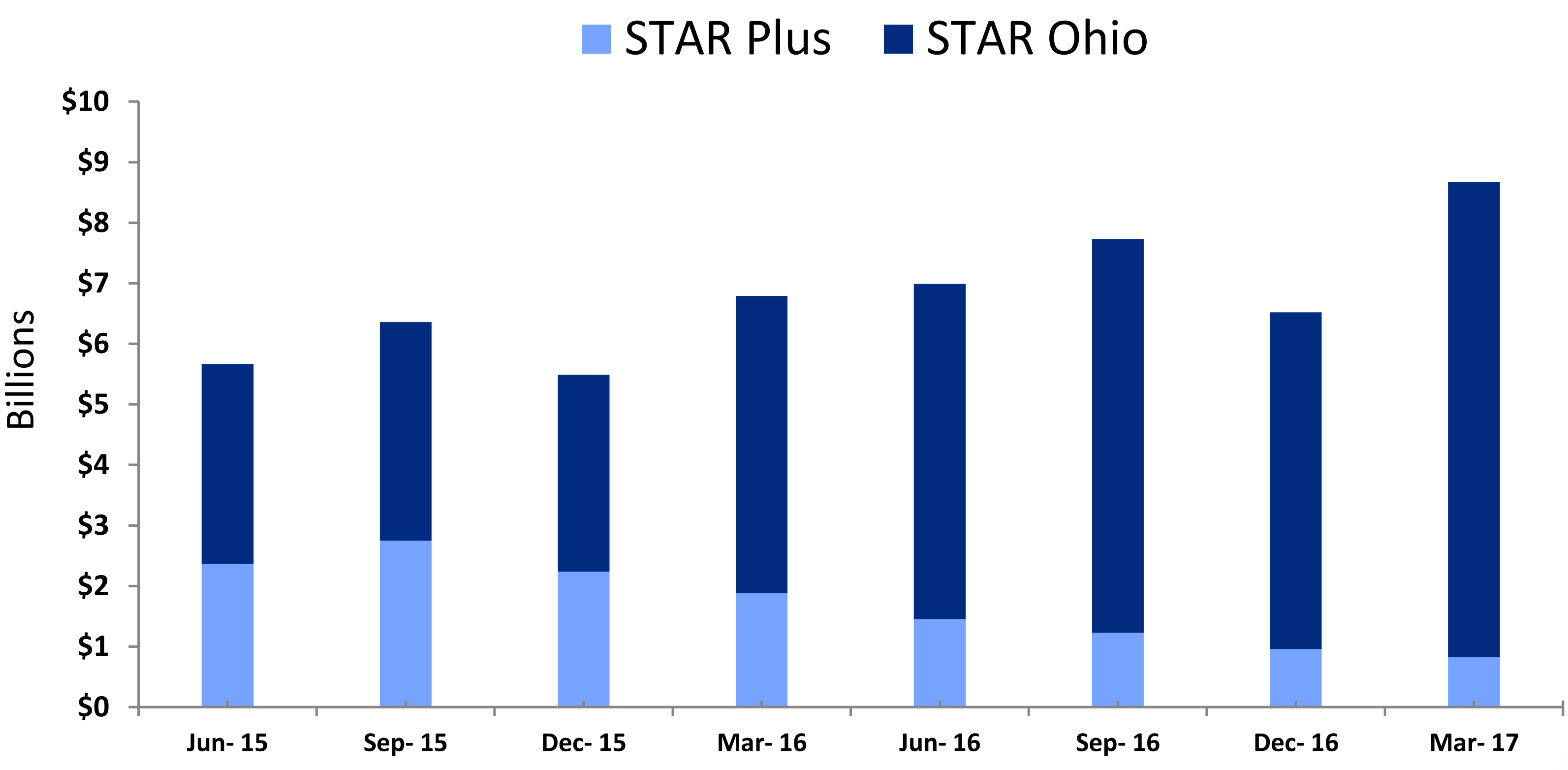
Composition





Program Assets

Star Ohio vs Star Plus



Data as of 3/31/2017

STAR Ohio vs. STAR Plus

STAR Ohio

- Yield is based on portfolio of underlying securities
- Yield of securities is largely based on economic factors and expectations for interest rates, as well as credit risk
- As securities mature, the rate at which they can be reinvested depends on economic conditions at that time
- Current securities include: US Treasuries, US Government Agencies, Commercial Paper, Corporate Bonds, Repurchase Agreements, and Money Market Funds

STAR Plus

- Yield is based on underlying bucket of bank deposit account
- Yield of bank deposit accounts is based upon each banks current desire for deposits
- As banks demand for deposits increase, the bank will increase the rate it pays in order to attract deposits
- As banks demand for deposits decreases, the bank will decrease the rate it pays in order to push deposits out of the bank
- Economic outlook has less affect on bank rates

Federal Reserve Outlook

Near Term Policy Outlook

- Fed raised rates in March – 3rd rate hike in 16 months
- Two more rate hikes likely in 2017

Longer Term Policy Outlook

- Janet Yellen and Board of Governors service TBD
- Further rate increases with expanding economy
- Fed independence challenged

Driving Forces Behind Fed Policy

U.S. economy is betting on the consumer

- The labor market is nearing full employment (unemployment < 5.00%)
- Personal earnings and consumption growth holding up
- GDP growing at a moderate pace (2.00% target being achieved)

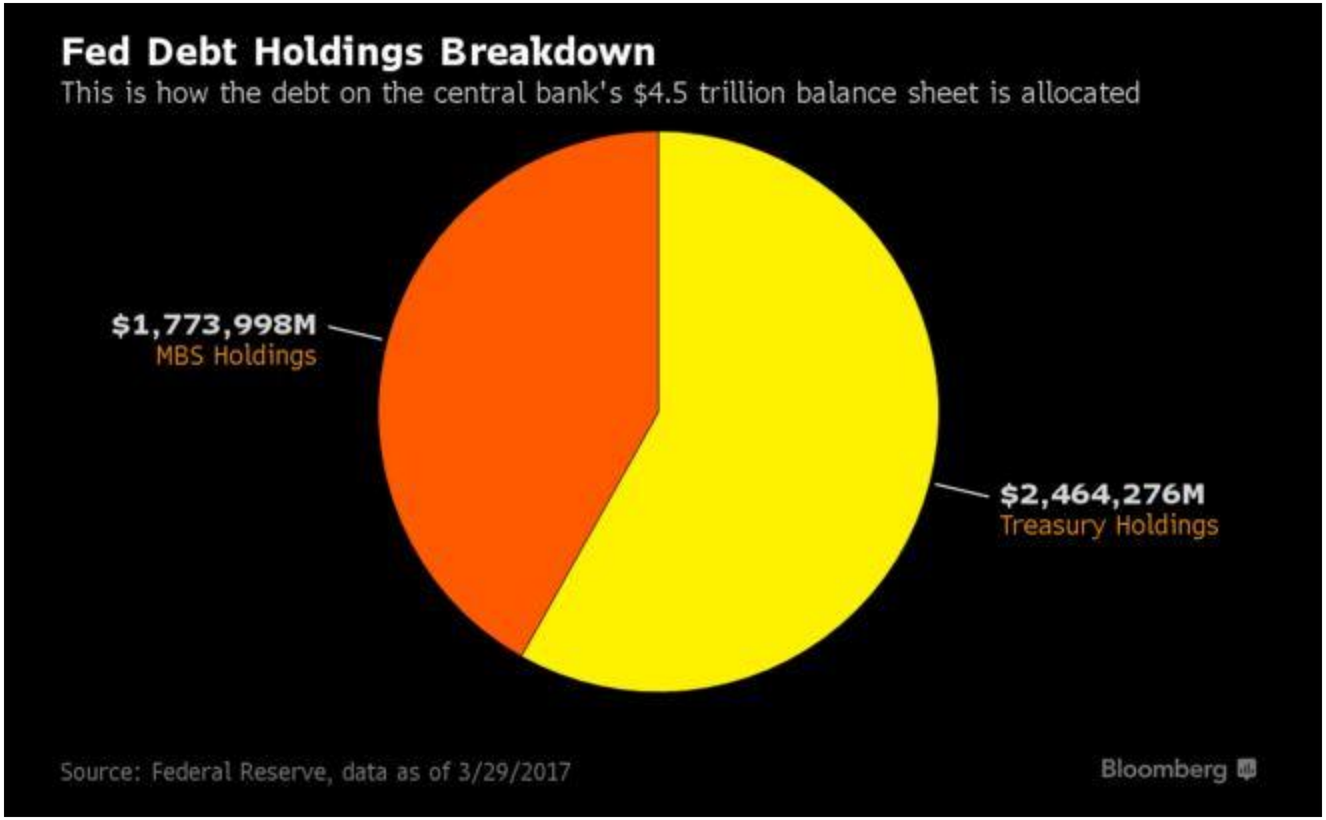
Global economy has the attention of the Fed

- Weakness in China and other emerging markets creating headwinds
- Global volatility remains elevated
- ECB and BOJ continue to maintain accommodative monetary policy

Fed guidance has shifted

- Decision to raise rates will remain data dependent
- Focus on global economy as well as domestic economic targets
- Guidance suggests 3 rate hike in 2017

Fed Balance Sheet Unwinding



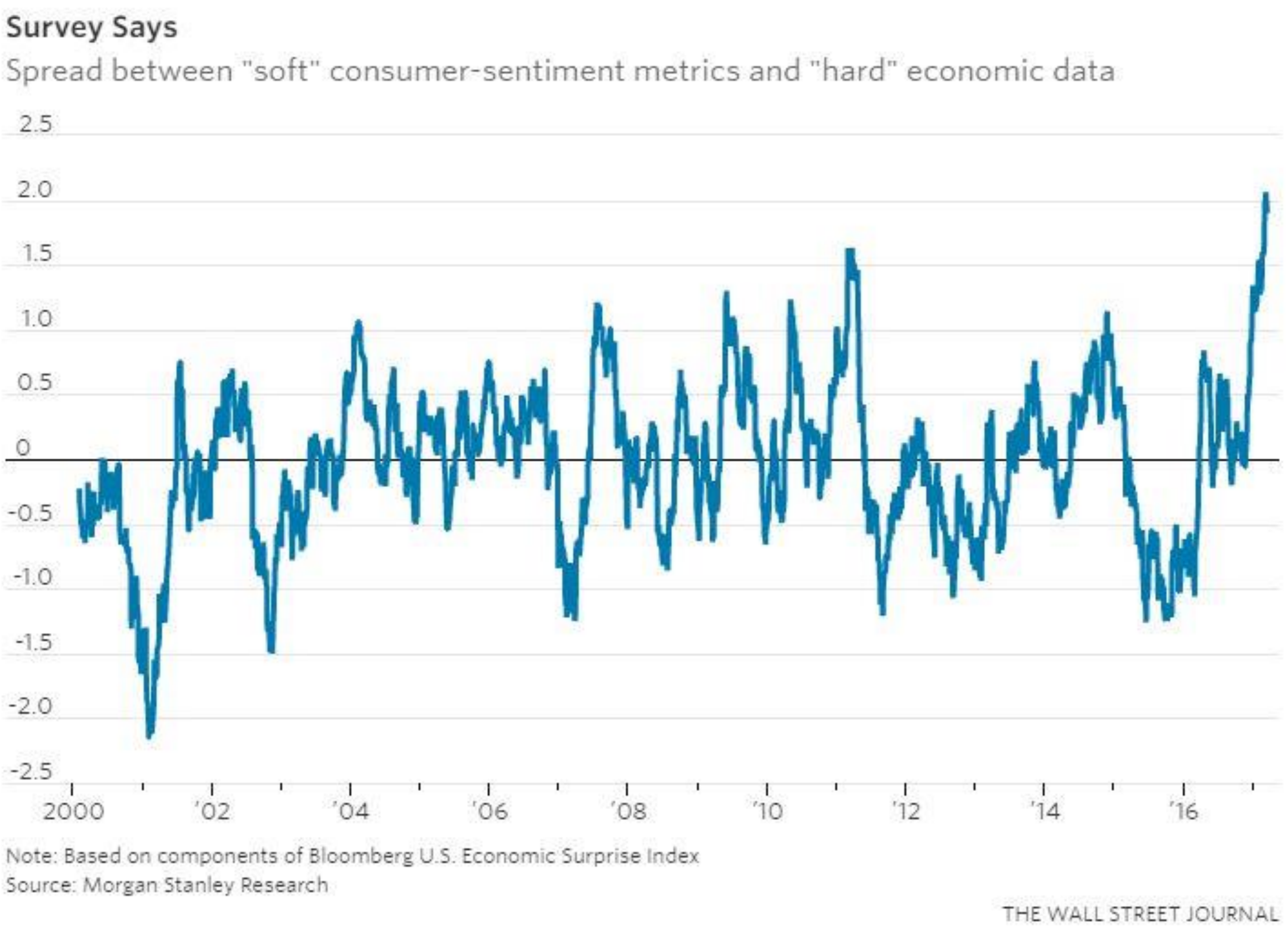
U.S. Economic Factors

- Employment
  - April unemployment rate at 4.4%
  - Slight decrease from previous month
  - Participation rate remains low, 63%

- Inflation
  - Inflation projected to increase
  - Trumponomics effect moving forward

- Other
  - Student loan debt increasing
  - Subprime automobile loans increasing

“Soft” vs. “Hard” data



Negative Interest Rate Policy

Current Global Rates

- 5 central banks are still executing a negative interest rate policy
- NIRP has thus far failed to stimulate economies as expected
- Larger central banks seem to be losing confidence in NIRP and may need to lean more heavily on expansionary monetary policy.

Country	2 year	5 year	10 year
US	1.299	1.863	2.343
Canada	0.687	1.017	1.585
UK	0.118	0.521	1.126
France	-0.436	-0.059	0.879
Germany	-0.688	-0.314	0.417
Sweden	-0.682	-0.097	0.562
Switzerland	-0.938	-0.596	-0.103
Japan	-0.182	-0.126	0.028
Australia	1.638	2.089	2.582

Source: Bloomberg

As of 5/15/2017

Investing in Rising Rate Environment

Be Opportunistic

- Interest rate volatility will create moments of opportunity
- Keep cash on hand, but be willing to put it to work

Be Disciplined

- Following a laddered or barbell strategy will keep portfolio balanced
- Investing regularly will be smartest in the long run

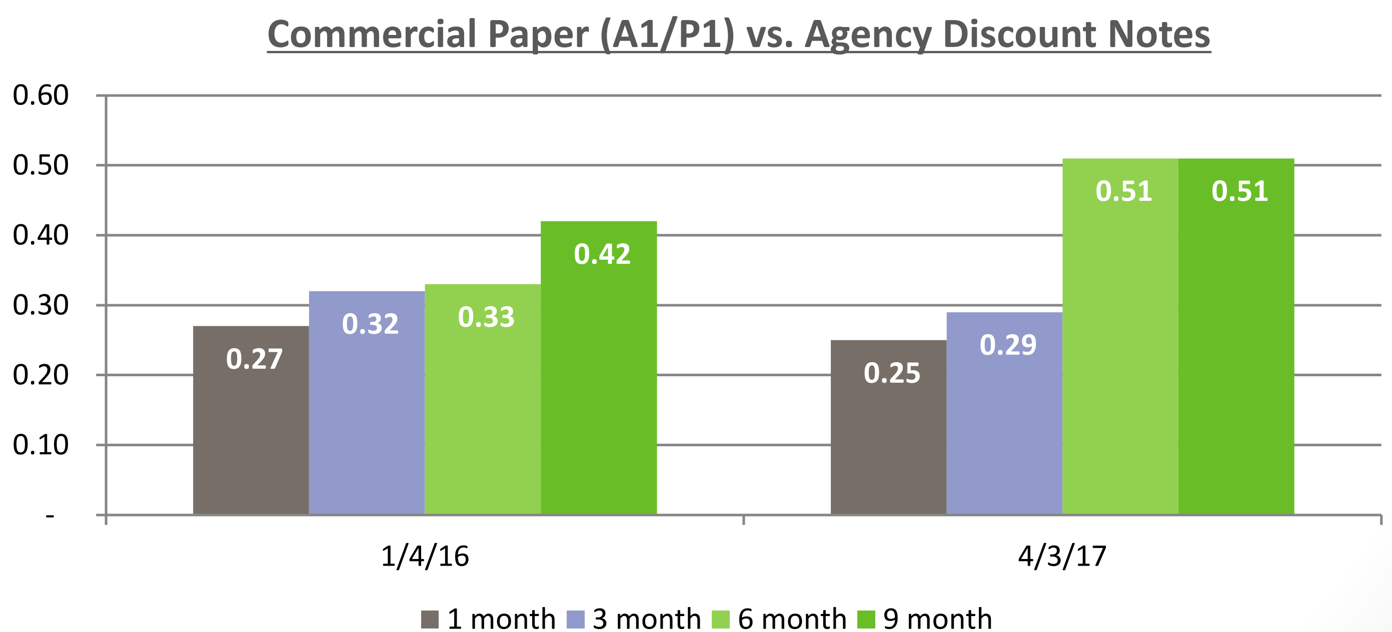
Be Flexible

- Keep your paradigm adaptable to a changing environment
- New products and programs will come into favor while others will fade

Commercial Paper

Spreads Have Widened

- Money market reform resulted in changes to prime funds
- As a result, over $900B in assets moved to government funds
- Commercial paper is a large component of prime funds
- Decreased demand resulted in increased commercial paper yields

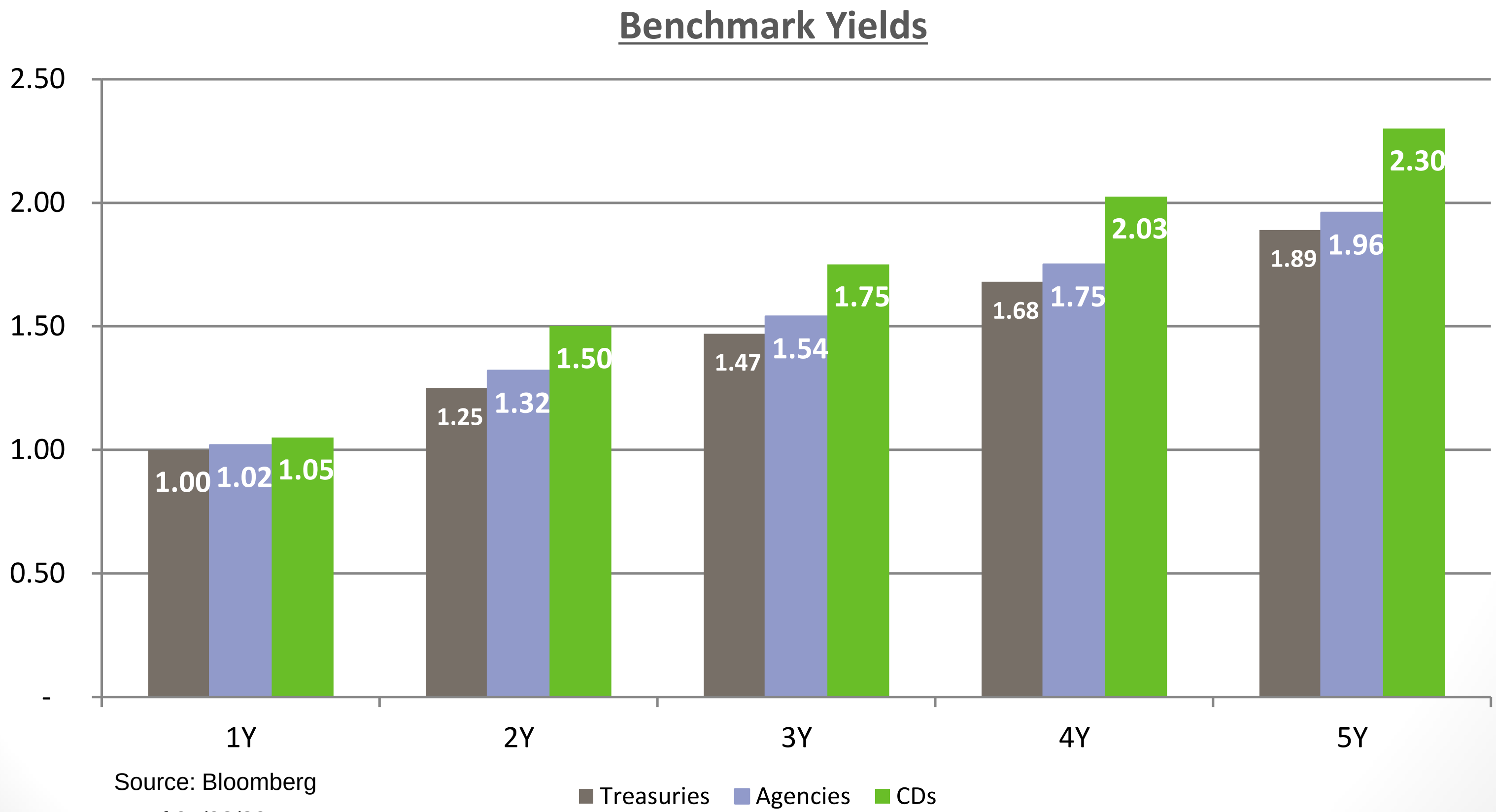


Source: Bloomberg
As of 04/03/2017

Certificates of Deposit

CD Yields are Highest Amongst Other Bullet Options

- As agency spreads have narrowed, CD spreads have maintained
- Negotiable CD rates are 15-30 bps higher than 2–5 year agency bullets

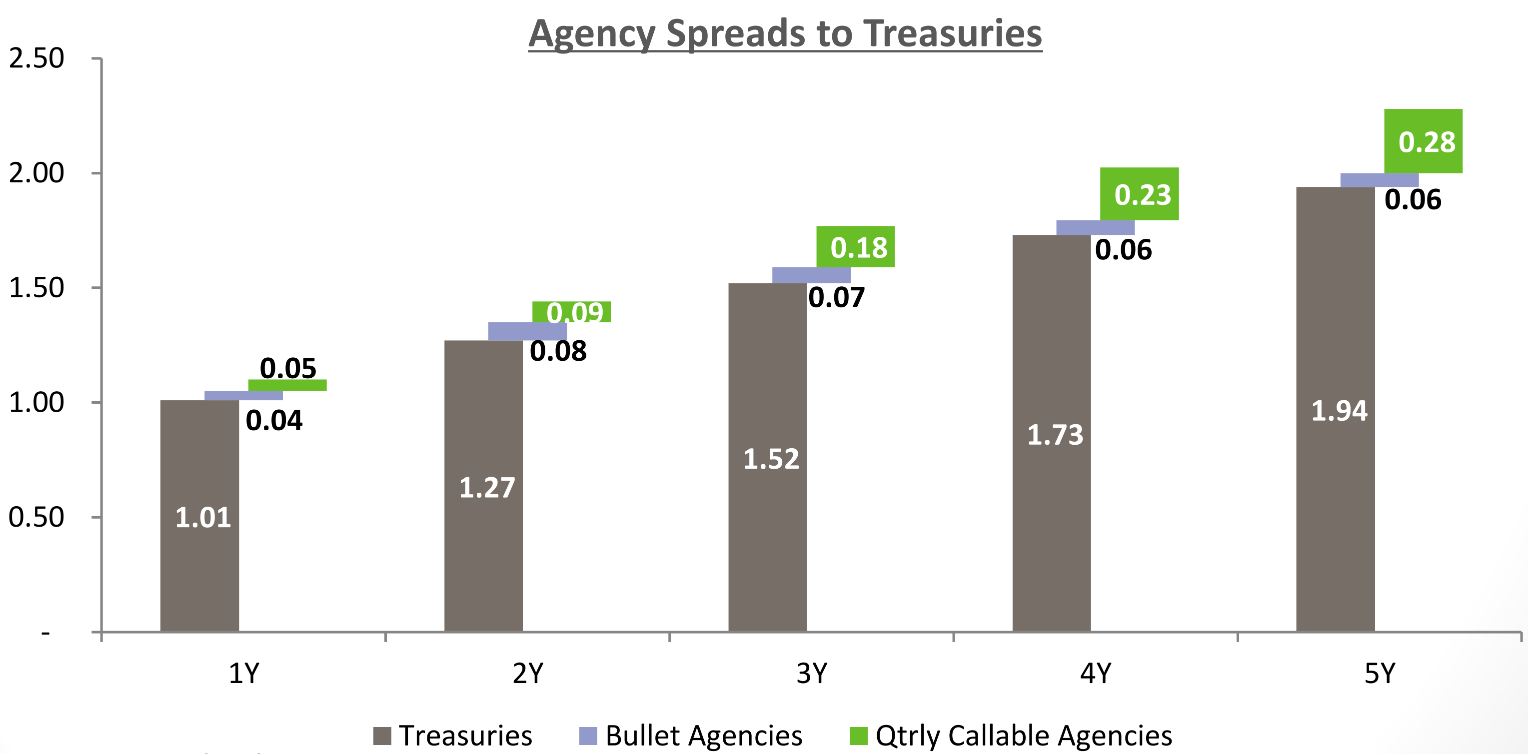


Source: Bloomberg
As of 04/03/2017

Callable Agency Bonds

Provides Yield Enhancement Over Bullets

- Callables can achieve incremental yield compared to noncallable agencies
- Required liquidity is an important factor when deciding to add callable agency bonds to a portfolio.



Source: Bloomberg
As of 04/03/2017