CDIAC & CMTA
Advanced Securities Analysis: Analyzing Governmental Securities

Rick Phillips
President & Chief Investment Officer

January 27, 2016

FTN FINANCIAL
MAIN STREET ADVISORS
A Subsidiary of First Tennessee Bank National Association

Disclosure

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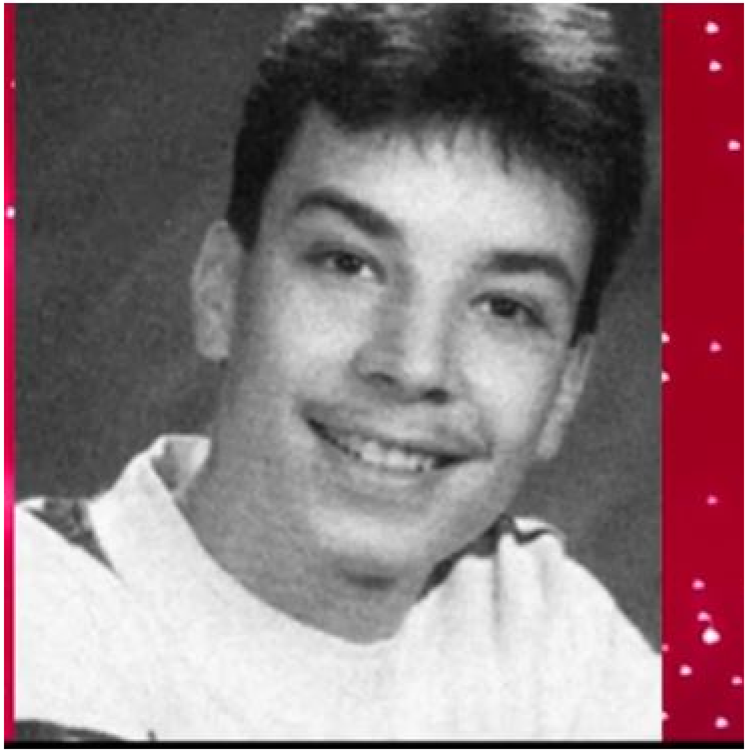
Guess Who?



Guess Who?

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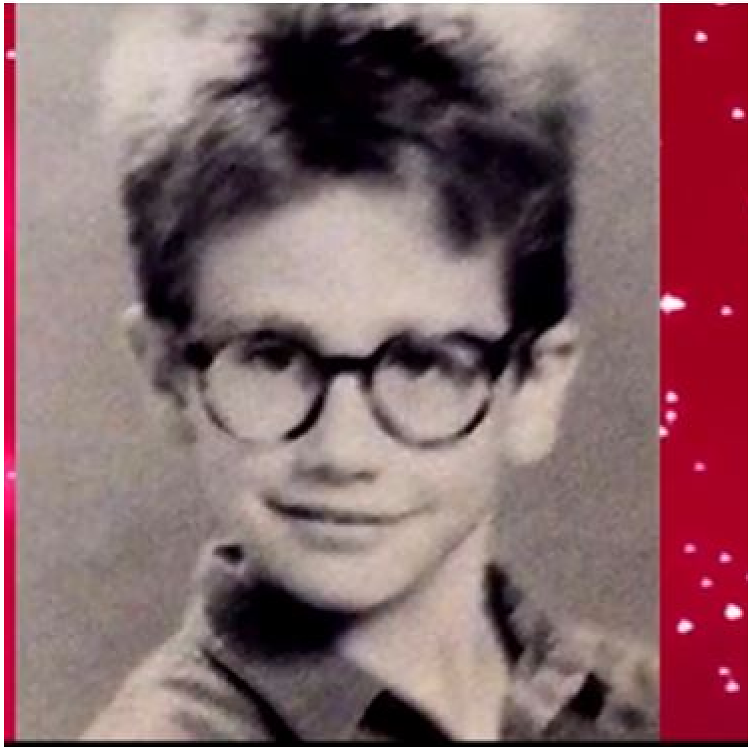

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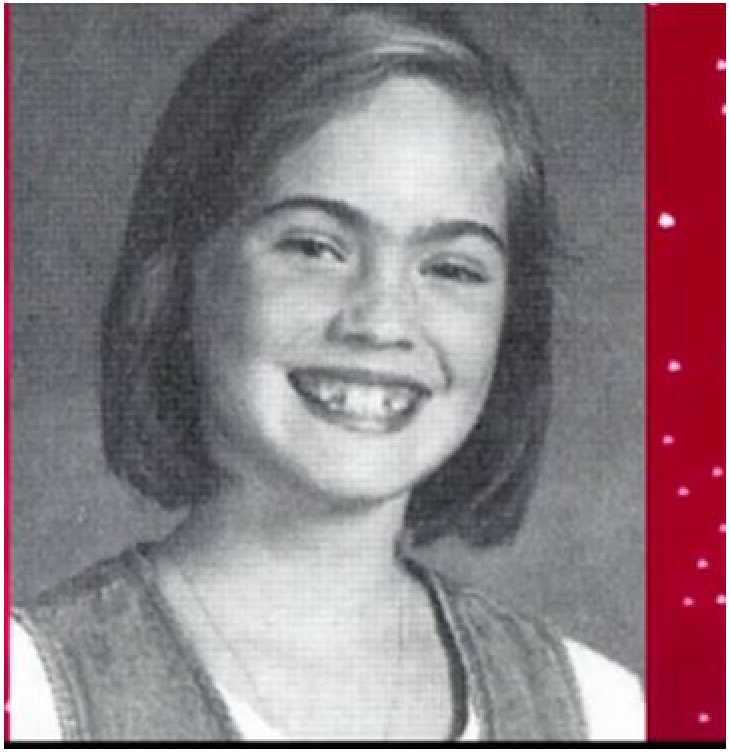

Guess Who?

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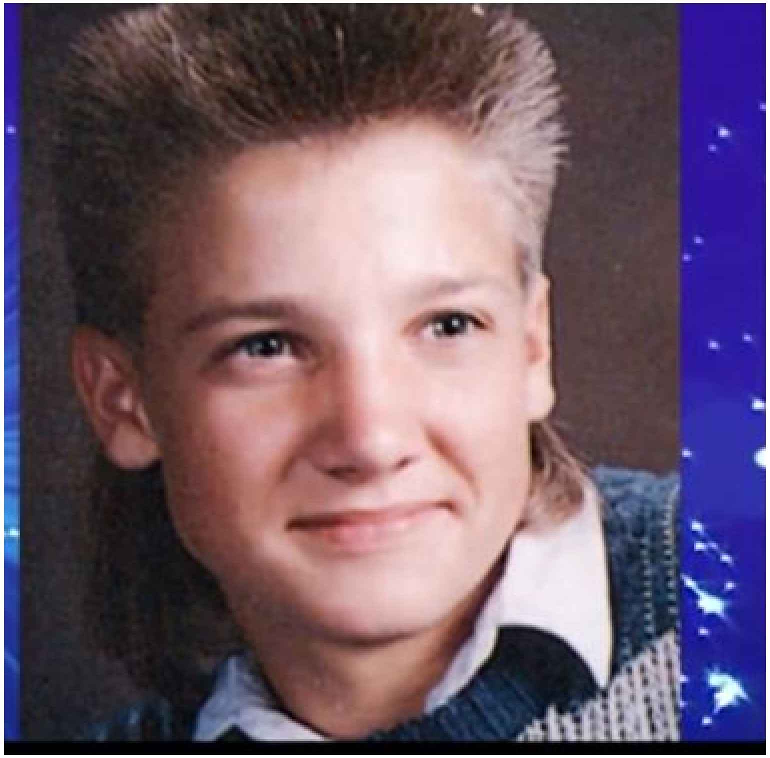
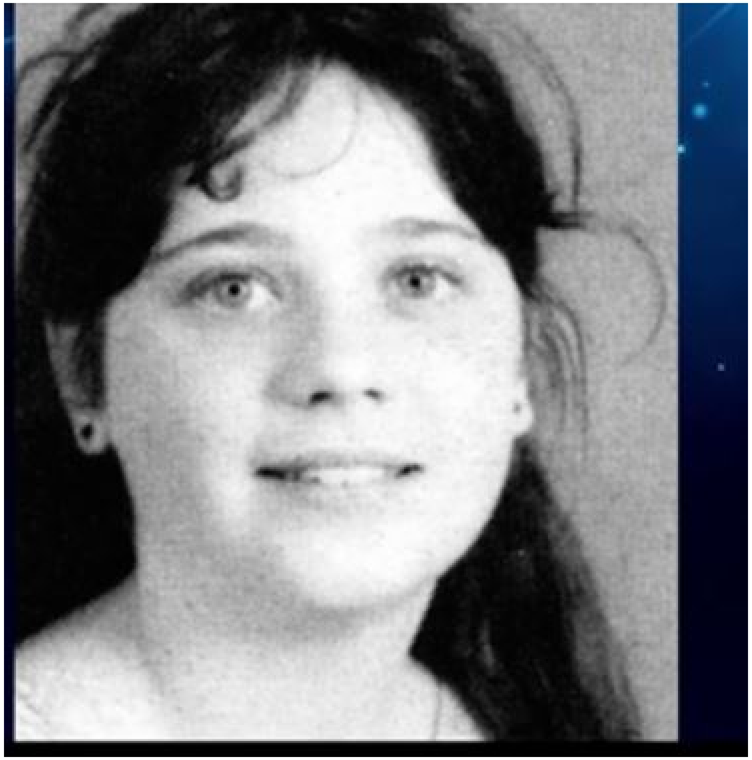


Guess Who?



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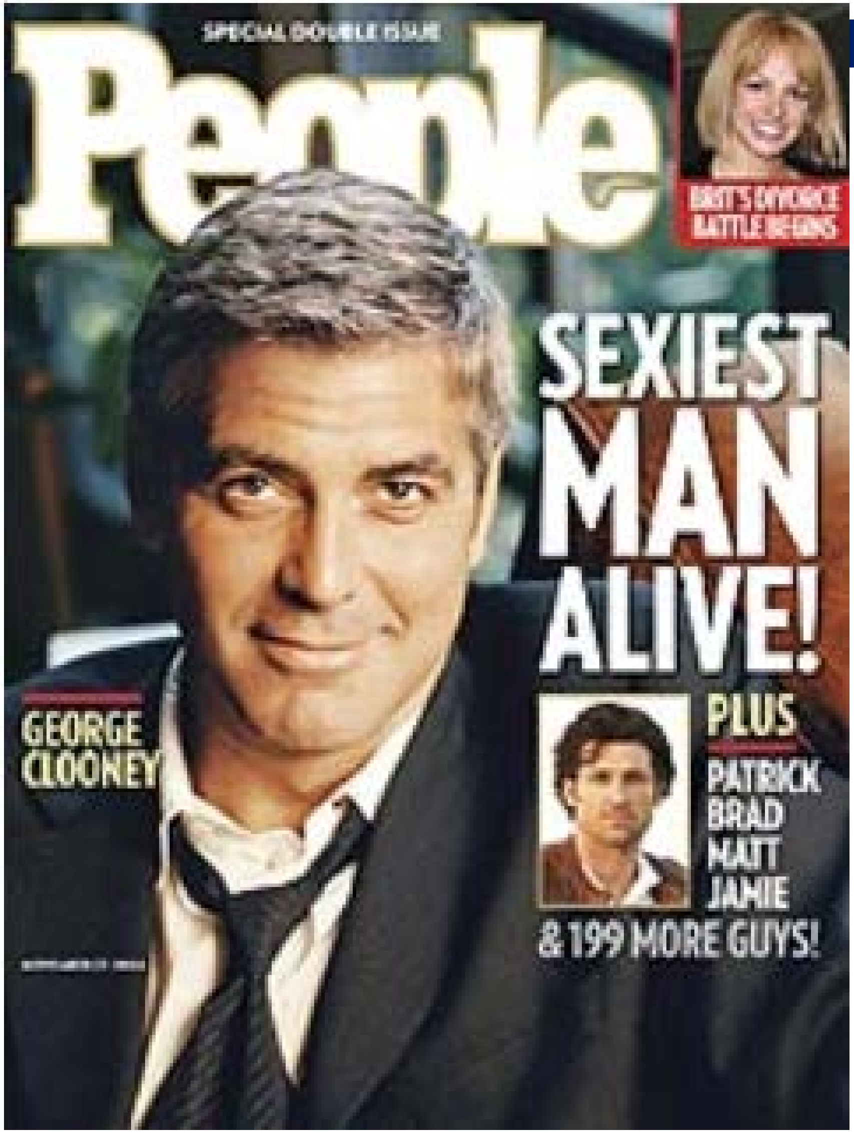
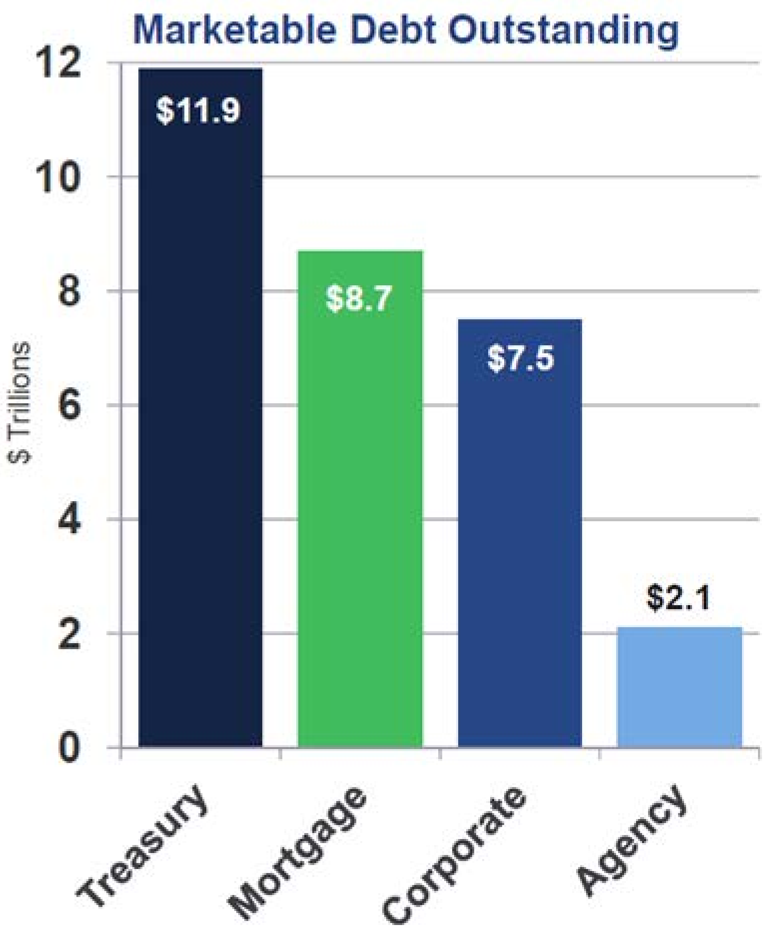
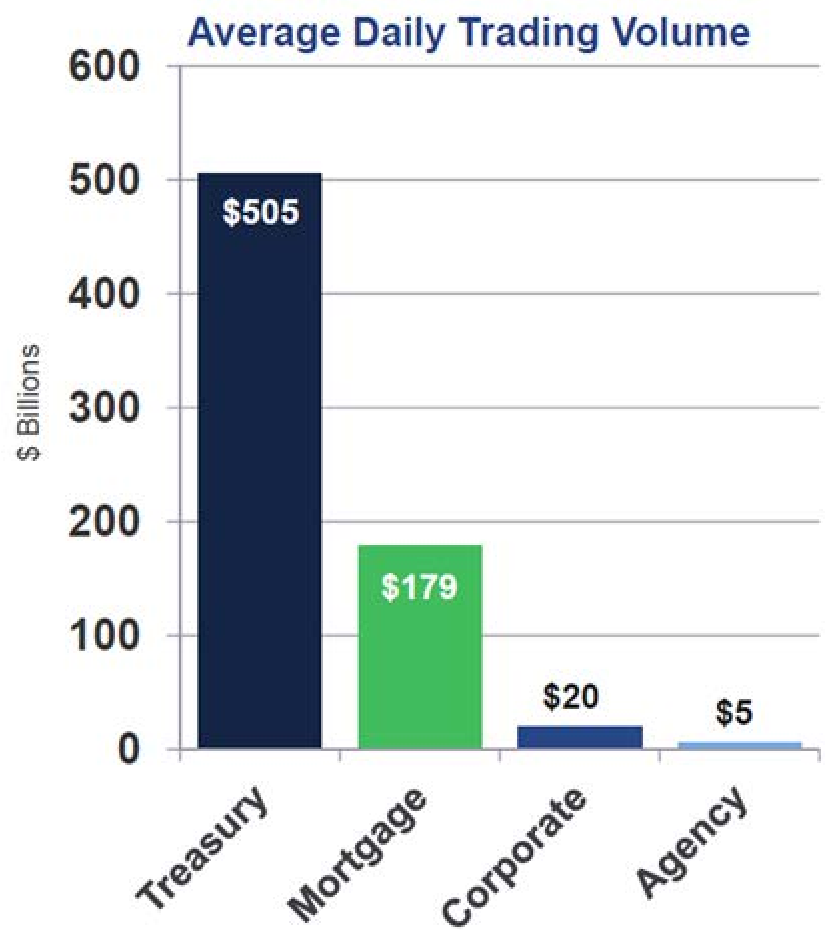

SPECIAL DOUBLE ISSUE
People
BRIT'S DIVORCE BATTLE BEGINS
SEXIEST MAN ALIVE!
GEORGE CLOONEY
PLUS
PATRICK
BRAD
MATT
JAMIE
& 199 MORE GUYS!

U.S. Fixed Income Market





Source: The Securities Industry and Financial Markets Association Data as of December 31, 2014

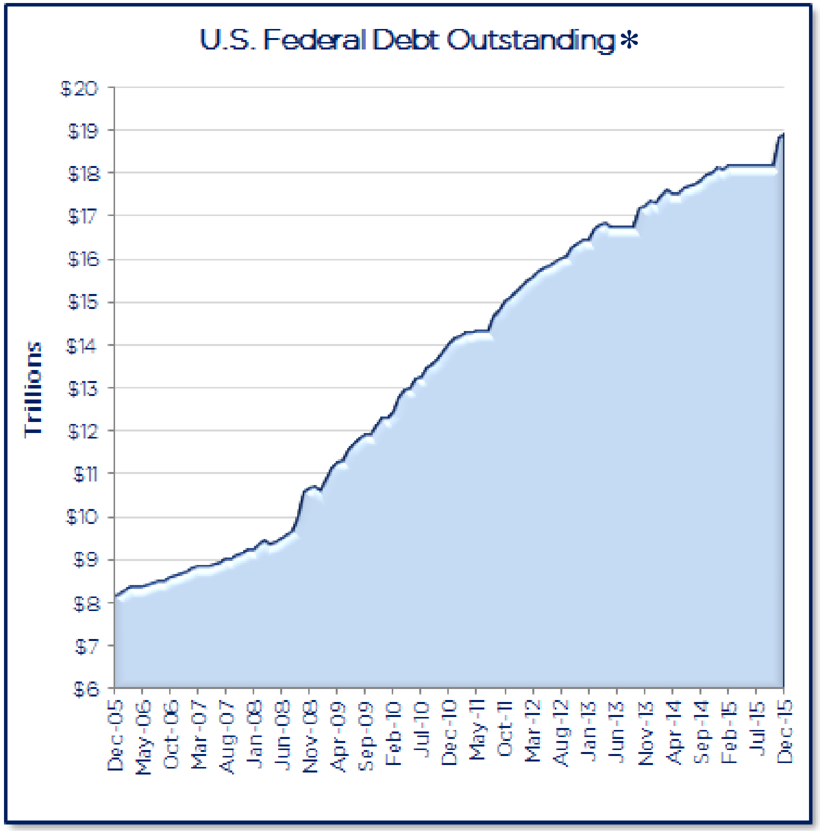
History of U.S. Treasury Debt

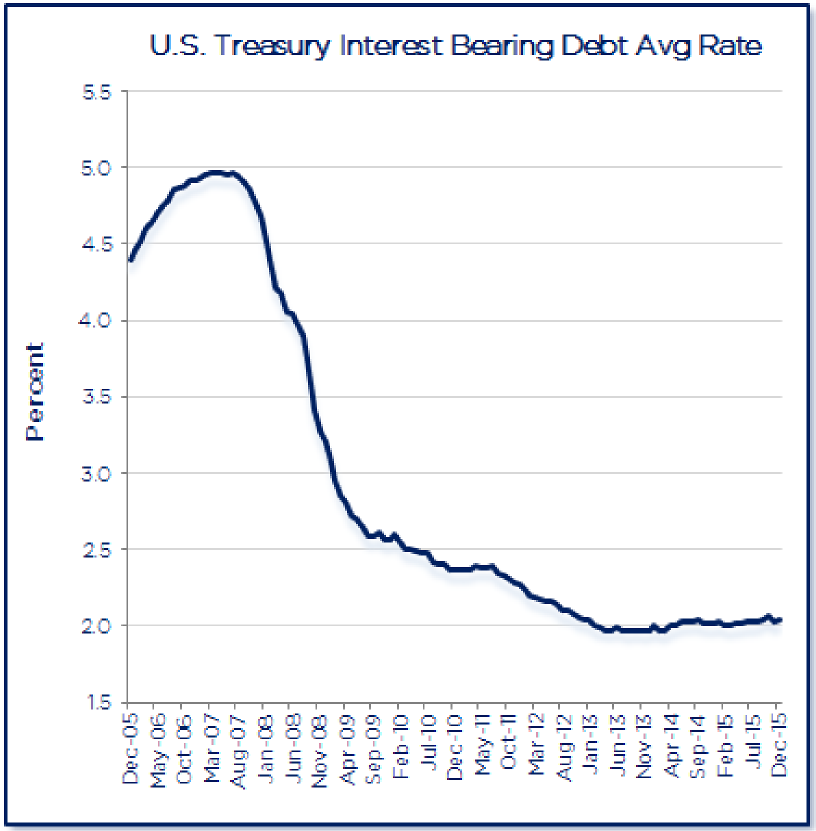
Federal Debt held by the public as a percent of GDP (1790-2013)

In 1790, Congress passed a law that had the Federal Government assuming State debts

Source: Congressional Budget Office

Federal Debt Outstanding and Interest Rate

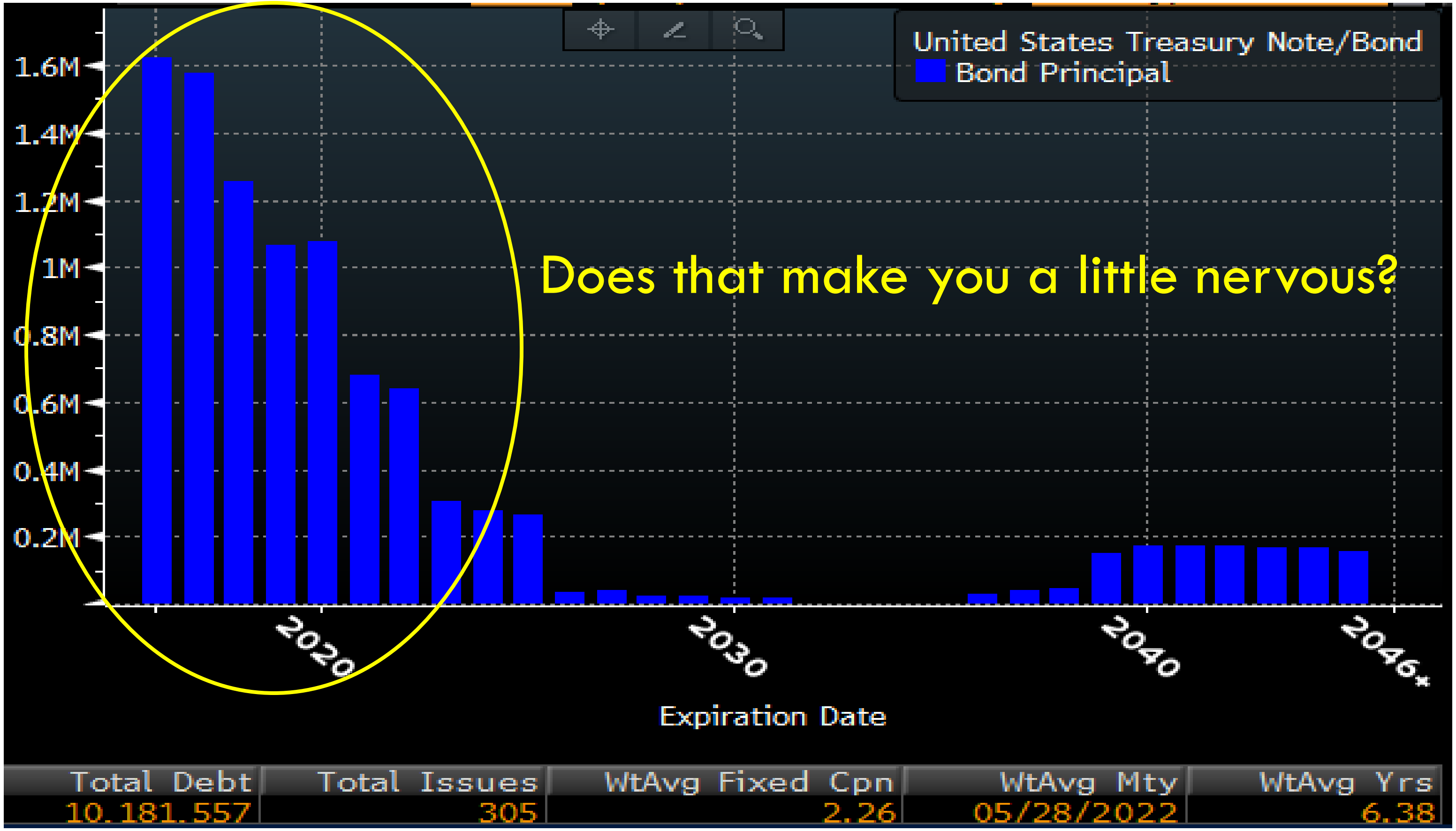




*Includes Social Security, Medicare, etc. Trust Funds

Source: U.S. Treasury

Treasury Notes and Bonds Maturity Distribution



T-Bills $1.04 Billion, TIPS 1.08$Billion, Floaters $164 Million

Source: Bloomberg, U.S. Treasury

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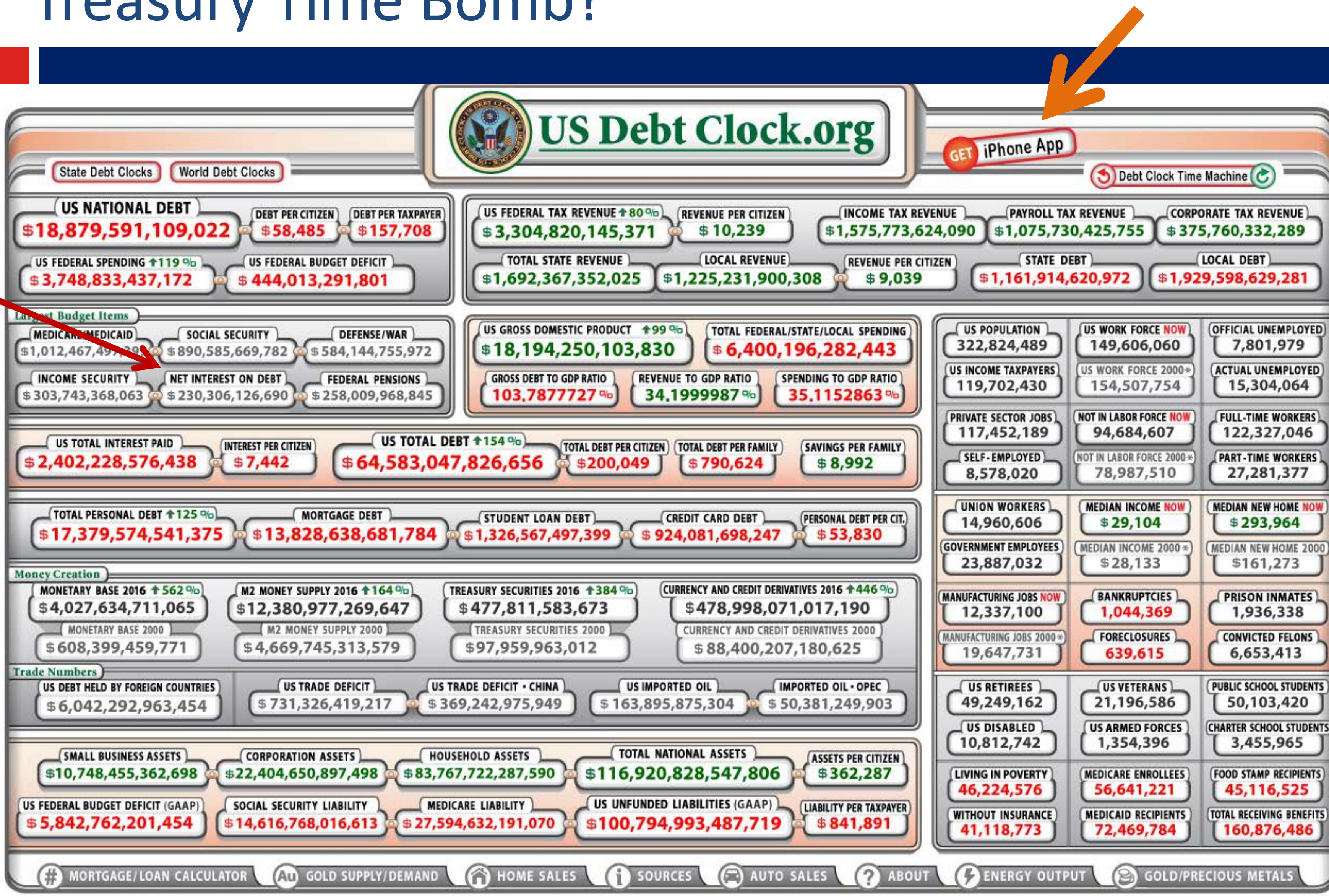
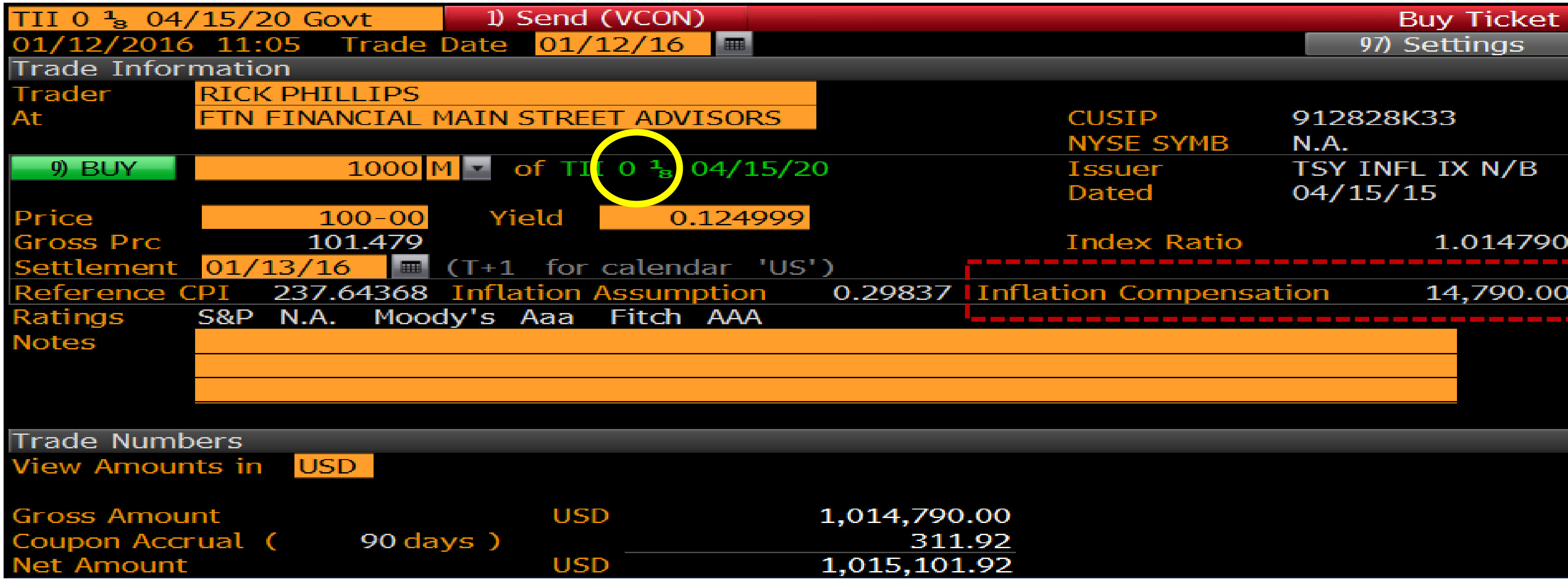
Treasury Time Bomb?



Source: USDebtClock.org

TIPS (Treasury Inflation Protected Securities)



Source: Bloomberg

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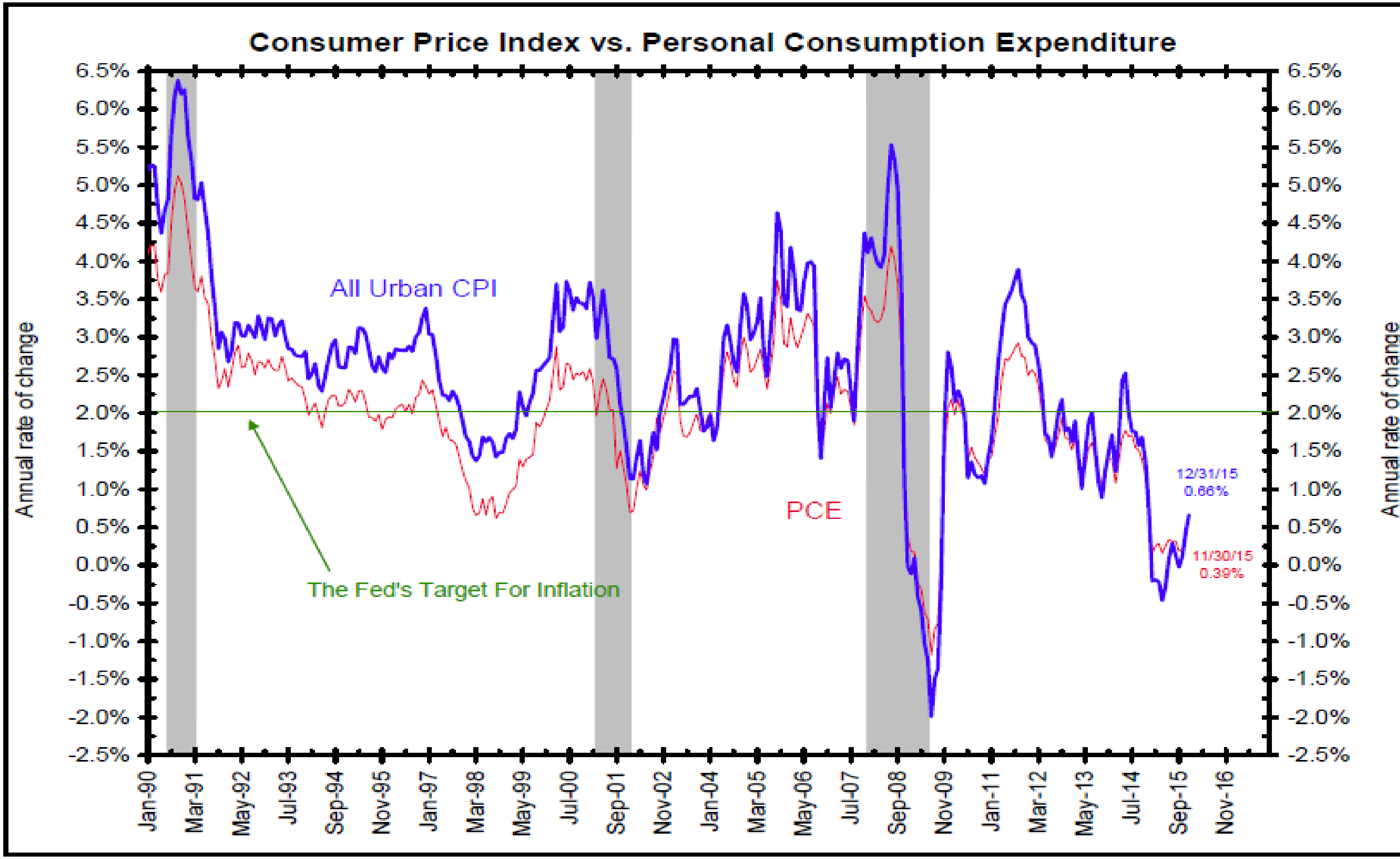
Inflation History



Source: Bianco

Duration: TIPS vs Treasury Bullets

99) Download — BofAML Bond Indices: Index Charts/Tables

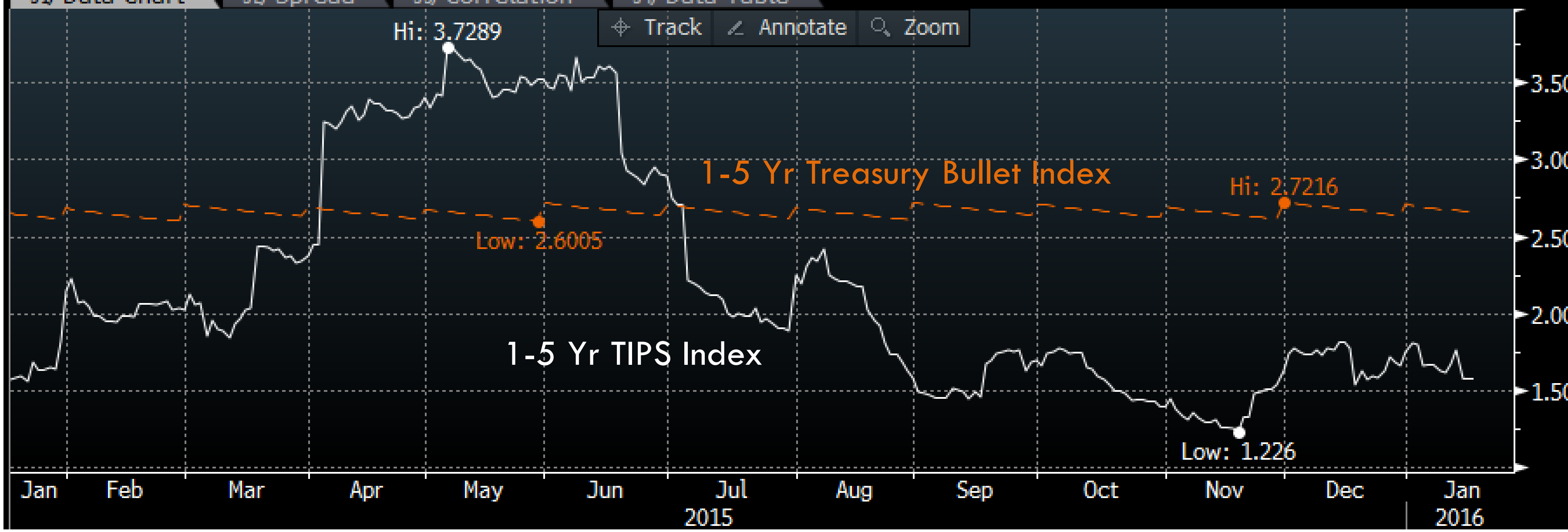
Date Range 01/19/2015 - 01/19/2016 Frequency Daily

Index	Currency	Start	End	High	Low	Avg	StDev	Annl StDev
GVQI		1.56	1.58	3.73	1.23	2.18	0.73	11.55
GVQ0		2.65	2.66	2.72	2.60	2.66	0.03	0.45

Attribute: Effective Duration

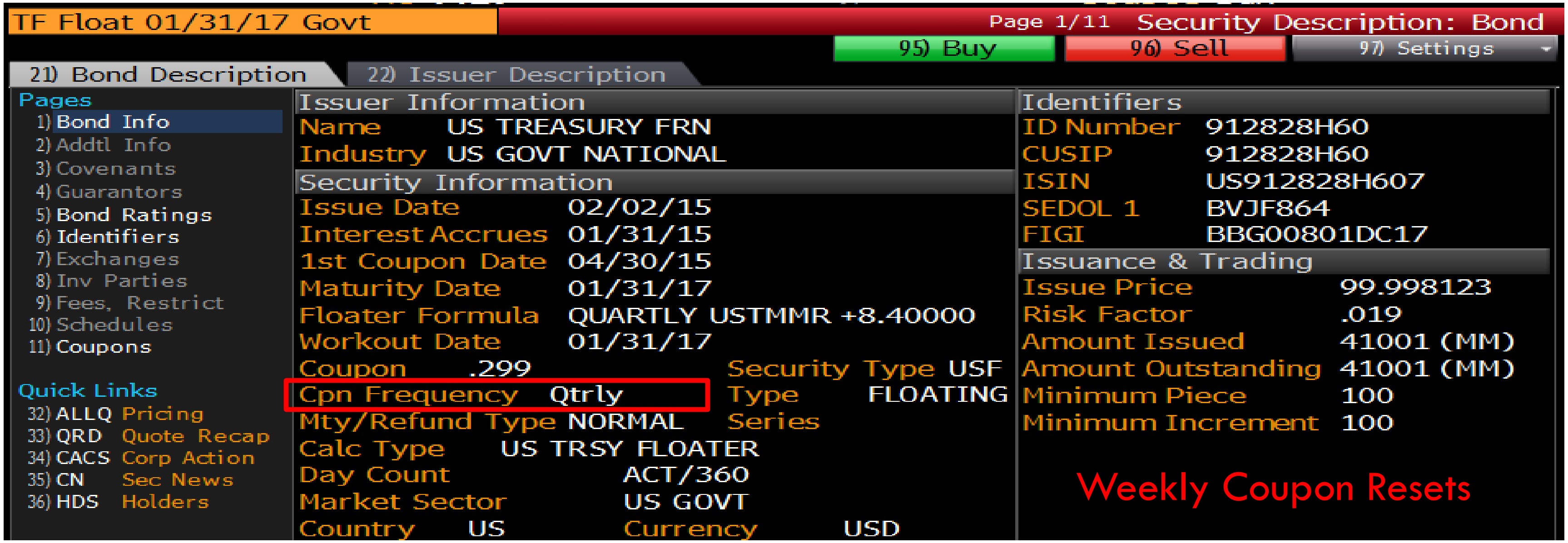
MTD 1M QTD 1Q YTD 1Y 3Y 5Y 10Y Max

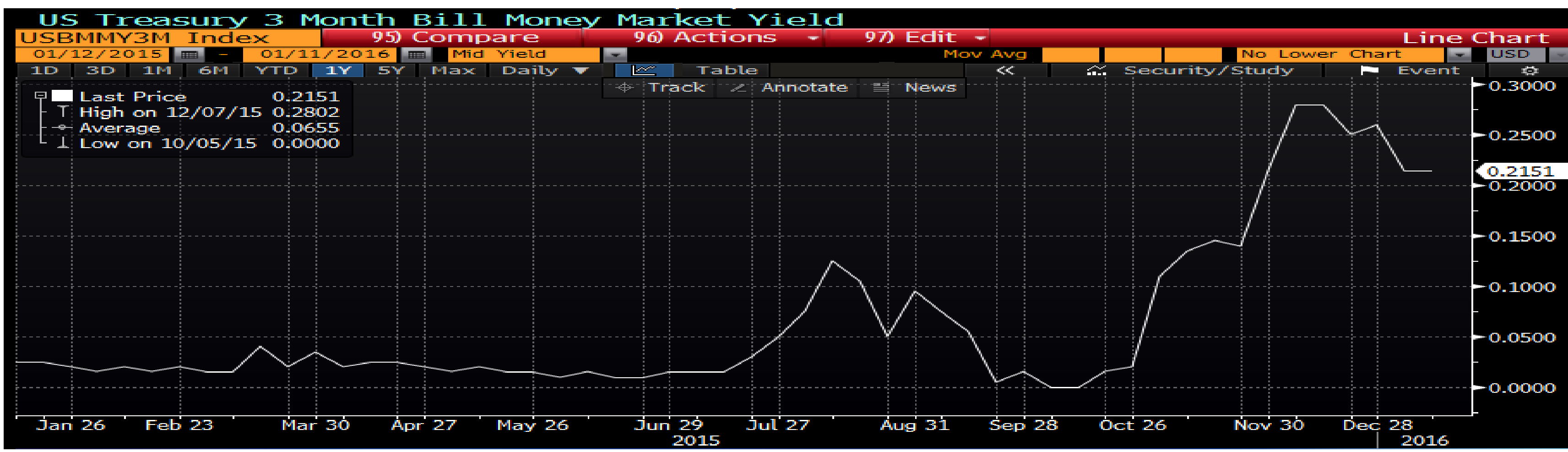
51) Data Chart 52) Spread 53) Correlation 54) Data Table



Source: Bloomberg, Bank of America Merrill Lynch

Treasury Floating Rate Notes





Source: FTN Financial

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The “Big Four” Federal Agencies

FannieMae

http://www.fanniemae.com/portal/funding-the-market/debt/index.html

Freddie Mac

http://www.freddiemac.com/debt/index.html

FHLBANKS OFFICE OF FINANCE

http://www.fhlb-of.com/ofweb_userWeb/pageBuilder/debt-securities-21

Farm Credit

http://www.farmcreditfunding.com/ffcb_live/debtSecurities.html

FARMERMAC Financing Rural America

Source: FTN Financial

Organizational Information

Agency	Creation	Purpose	Use of Funds	Guarantee	Owner(s)
FHLB	1932	Restore confidence in the thrift industry	Advances (loans) to member banks	None; joint and several obligations of the FHLBs (12)	Member banks: 7,300 (approx)
FNMA	1938	Provide liquidity to the U.S. mortgage market	Purchase mortgage loans	"Essentially Guaranteed" U.S. Treasury	Conservatorship to the U.S. Treasury; public stock still trades
FHLMC	1970	Increase liquidity to the U.S. mortgage market	Purchase mortgage loans	"Essentially Guaranteed" U.S. Treasury	Conservatorship to the U.S. Treasury; public stock still trades
FFCB	1971 (1916)	Act as financial intermediary to provide credit to farmers	Provide short and long term loans to farms and affiliated businesses	None; joint and several obligations of the FFCBs (4)	Cooperative of borrowers

Source: FTN Financial

FNMA/FHLMC Conservatorship

FNMA / FHLMC Timeline

- Jul 2008: Federal Housing Finance Agency (FHFA) Created
- Jul 2008: U.S. Treasury Granted Emergency Authority to Assist GSEs
- Sep 2008: FNMA/FHLMC Placed into Conservatorship
- Sep 2008: Senior Preferred Stock Purchase Agreement (SPSPA) by the Treasury ($100Bil Each)
- Feb 2009: U.S. Treasury Raises SPSPA to $200Bil Each FNMA/FHLMC
- Mar 2009: Fed Announces Program to Buy $200Bil GSE Debt and $1.25Tril MBS
- Dec 2009: U.S. Treasury Extends/Amends SPSPA – Dec 2012
- Feb 2011: U.S. Treasury Issues "White Paper" Outlining Three Options for GSE Reform
- May 2011: Campbell (R-CA) /Peters (D-MI) Bill Introduced in the House of Representatives
- Aug 2011: S&P Downgrades GSE Senior Debt from AAA to AA+

Campbell/Peters Bill Highlights

- Encourages Private Sector Investment in the Secondary Mortgage Market
- Limited Charter for FNMA and FHLMC
- Limits Taxpayer Liability
- Accurately Prices Risk
- Winds down FNMA and FHLMC

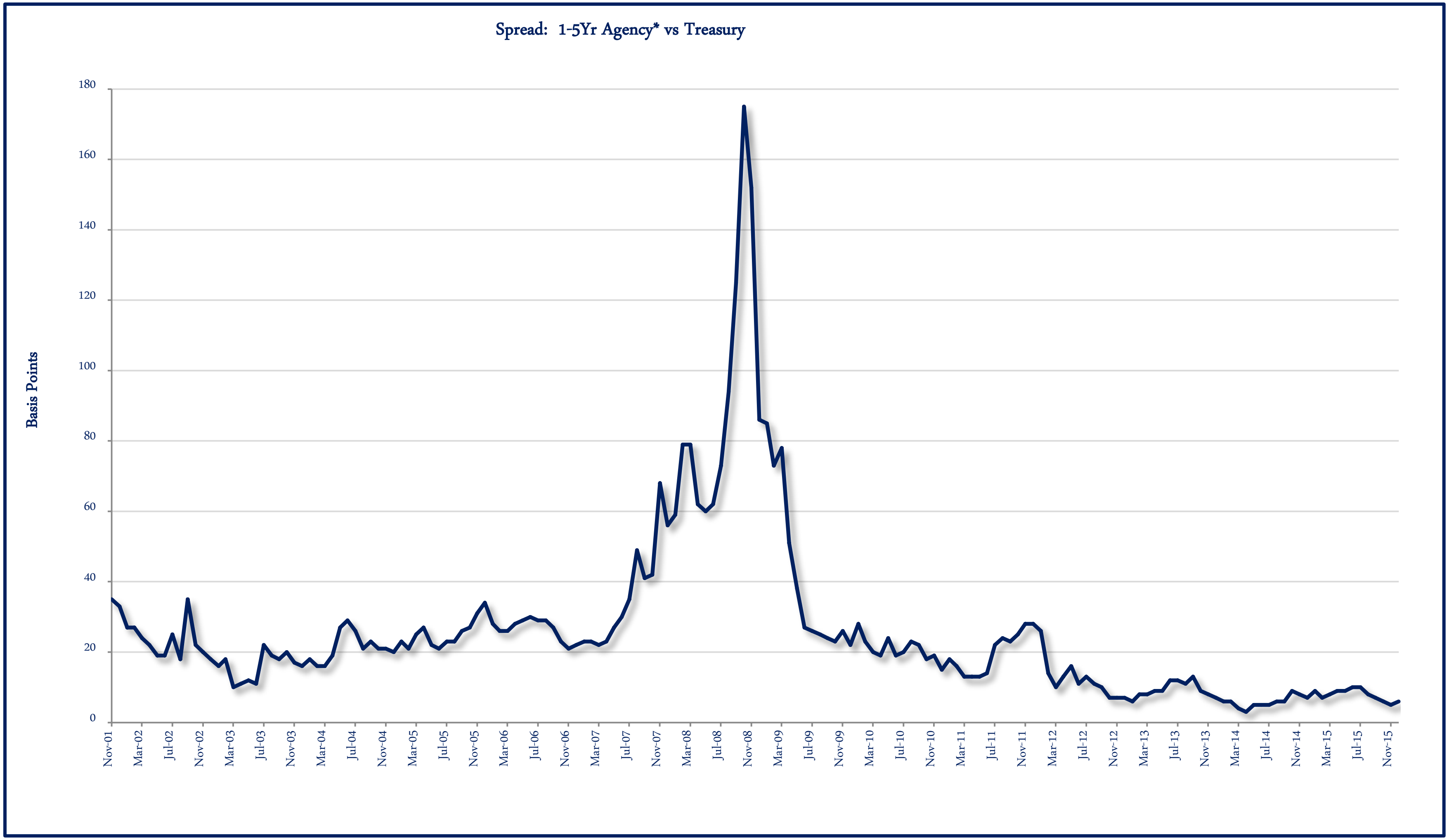
Source: Bloomberg

Types of Federal Agency Securities

- Discount Notes
- Bullets (non-callable)
- Floating Rate Notes (FRN)
- Fixed to Floating Rate Notes
- Callables (many types)
- Mortgage Backed Securities (FNMA and FHLMC)
- Subordinated Notes

Source: FTN Financial

Agency Spread History



Source: *Bank of America Merrill Lynch

Discount Note Calculations

Buy/Sell	Buy	Cusip	313385AM8	Status	Accepted
Issue	FHDN 0 01/12/17	Broker	FTNF	Benchmark	
Audit Trail				Broker Name	FTN FINANCIAL
Quantity	1,000,000	Disc Rate	0.9836	Principal	$ 990,000.00
Price	99.0000	Yield	1.0076	Acc Int	0.00
Settle Date	01/12/2016	Spread		Net	990,000.00
B/Price	0.000000 (0-00)	B/Yield		B/Discount	
Entry/Exec Time	13:46:16 / 13:46:18	Seq No	53040		
Trade Date	01/12/2016	TS Tick No	0		
User Name	RICK PHILLIPS			Login	IDAHORICK
Customer	FTN FINANCIAL MAIN STREET ADVISORS			Account	
Submitter Firm	FTN FINANCIAL MAIN STREET ADVISORS			Submitter	RICK PHILLIPS

Original Cost vs. Amortize

Source: Bloomberg

Agency Discount Notes

Discount Notes | 91) Searches | 92) Settings | 97) Trading Access | Money Market Offerings

93) Refine Search DEFAULT | Prim & Sec | Group by None | 88) Sellback | 89) Chart

86) Table | 87) RateRun

AskSz (M)	Issuer	Maturity	SD	Dsc/Cpn	AskYld	Dlr	Pgm	Ticker	DTM	Time
50,000	FHLB DISC CORP	07/07 - 07/11	1	0.340	0.340	RBSM	AGD	FHDN	177 - 181	10:40
50,000	FHLB DISC CORP	07/07	1	0.340	0.340	CITI	AGD	FHDN	177	10:40
50,000	FHLB DISC CORP	07/07 - 07/11	1	0.340	0.341	MS	AGD	FHDN	177 - 181	10:41
50,000	FHLB DISC CORP	07/07 - 07/11	1	0.340	0.341	MTBK	AGD	FHDN	177 - 181	10:42
50,000	FHLB DISC CORP	07/07 - 07/11	1	0.340	0.341	BNY	AGD	FHDN	177 - 181	10:42
50,000	FHLB DISC CORP	07/07 - 07/11	1	0.340	0.341	MZUH	AGD	FHDN	177 - 181	10:42
50,000	FHLB DISC CORP	07/07 - 07/11	1	0.340	0.341	WFS	AGD	FHDN	177 - 181	10:42
50,000	FHLB DISC CORP	07/07 - 07/11	1	0.340	0.341	BMO	AGD	FHDN	177 - 181	10:42
50,000	FHLB DISC CORP	07/07 - 07/11	1	0.340	0.341	BAML	AGD	FHDN	177 - 181	10:42
50,000	FHLB DISC CORP	07/07 - 07/11	1	0.340	0.341	JEFF	AGD	FHDN	177 - 181	10:42
50,000	FHLB DISC CORP	07/07 - 07/11	1	0.340	0.341	DIWA	AGD	FHDN	177 - 181	10:42
50,000	FHLB DISC CORP	07/07 - 07/11	1	0.340	0.341	ALAC	AGD	FHDN	177 - 181	10:42
50,000	FHLB DISC CORP	07/07 - 07/11	1	0.340	0.341	JPM	AGD	FHDN	177 - 181	10:43
50,000	FHLB DISC CORP	07/07	1	0.340	0.341	UBS	AGD	FHDN	177	10:50
139,000	FHLB DISC CORP	07/08		0.565	0.567	GS	AGD	FHDN	178	11:01
72,000	FHLB DISC CORP	07/08		0.565	0.565	RBSM	AGD	FHDN	178	09:41
50,000	FHLB DISC CORP	07/08	1	0.340	0.340	CITI	AGD	FHDN	178	10:40
50,000	FHLB DISC CORP	07/11	1	0.340	0.340	CITI	AGD	FHDN	181	10:40
47,000	FHLB DISC CORP	07/13	1	0.570	0.572	UBS	AGD	FHDN	183	09:57
91,000	FHLB DISC CORP	07/13	1	0.574	0.576	GS	AGD	FHDN	183	11:01
250,000	FHLB DISC CORP	07/13	1	0.570	0.570	CITI	AGD	FHDN	183	09:33
25,000	FHLB DISC CORP	07/13	1	0.570	0.570	RBSM	AGD	FHDN	183	09:35
20,000	FHLB DISC CORP	07/13	1	0.575	0.577	MZUH	AGD	FHDN	183	11:29

Treasury Notes

4) Actives | 5) Bills | 6) Notes | 7) TIPS | 8) Strips | 9) Sprds | 10) Curves | 11) FRN

21) T/0-1 | 22) T/1-2 | 23) T/2-4 | 24) T/4-7 | 25) T/7-10 | 26) T/10-30

31) 0 3/8	116	99-31 7/8 / 100-00 3/8	-1.776	+ 00 1/8		54) 0 1/2	616	100-00 3/8 / 100-00 3/4	0.444	- 00 1/8
32) 2	116	100-02+ / 100-03	0.083	- 00 1/8		55) 0 1/2	616	100-00 / 100-00+	0.466	- 00 1/4
33) 0 3/8	116	99-31 7/8 / 100-00 1/4	0.215	- 00 1/4		56) 3 1/4	616	101-08 3/8 / 101-08 7/8	0.492	- 00 1/4
34) 4 1/2	216	100-11 7/8 / 100-12+	0.141	- 00+		57) 1 1/2	616	100-14 5/8 / 100-15 1/8	0.479	- 00 1/4
35) 9 1/4	216	100-25 5/8 / 100-26 3/8	0.057	- 00 3/4		58) 0 5/8	716	100-01 1/4 / 100-01 3/4	0.517	- 00 3/8
36) 0 3/8	216	100-00 1/8 / 100-00+	0.201	- 00 1/8		59) 3 1/4	716	101-14 3/4 / 101-15 3/8	0.545	- 00 1/8
37) 2 5/8	216	100-09 3/8 / 100-10 1/4	0.143	- 00 1/4		60) 0 1/2	716	99-30 5/8 / 99-31 1/8	0.550	-
38) 2 1/8	216	100-07 3/8 / 100-08	0.187	- 00 3/8		61) 1 1/2	716	100-16 / 100-16+	0.558	- 00 1/8

Source: Bloomberg

Bullets, Callables, FRN Offerings – NIM Page

95) Actions ▾ | 96) Alerts ▾ | 97) Export ▾ | 98) Summary | 99) Set Homepage | New Issue Monitor

Selection: U.S. Agencies (NIM 2) | 1) Show Filters | 2) Clear Filters | Issues & News

Date ↑	Issuer/Headline	Coupon	Maturity	Spread	Curr	Outst	Book Mgr	Note
		All	All	All	All	All		
13:48	FREDDIE MAC	1.6	5/28/2019		USD	125	BNYM,MS,WFS	4-NC3MO INC
13:41	FED HOME LN BANK	STEP	5/27/2020		USD	55	AP,MTBK	5-NC6MO INC
13:30	FREDDIE MAC	1	11/27/2017		USD	155	JOINT LEADS	2.5-NC6MOINC
13:26	FREDDIE MAC	0.85	8/25/2017		USD	25	JOINT LEADS	2.25-NC1 1X
13:24	FED HOME LN BANK	STEP	5/28/2020		USD	35	INCAP,MSRW	5-NC3MO INC
13:00	FED HOME LN BANK	STEP	5/25/2018		USD	40	FTN-sole	3-NC3MO INC
12:56	FREDDIE MAC	1.7	6/25/2019		USD	25	JOINT LEADS	4-NC3MO BERM
12:51	FREDDIE MAC	0.77	5/26/2017		USD	25	STFL-sole	2-NC3MO 1X
12:50	FREDDIE MAC	STEP	6/17/2020		USD	25	FTN,RJA,VS	5-NC1 BERM
12:15	FREDDIE MAC	STEP	6/29/2020		USD	15	MTBK-sole	5-NC3MO BERM
11:56	FED HOME LN BANK	1.04	2/26/2018		USD	25	FTN,RJA,VS	2.75-NC9MINC
11:41	FED FARM CREDIT	2.93	6/3/2024		USD	42	GS,NOM	9-NC1 CONT
11:40	FED FARM CREDIT	2.98	5/28/2024		USD	85	GS,NOM	9-NC3MO CONT
11:39	FED FARM CREDIT	3.25	11/27/2026		USD	50	JOINT LEADS	11.5-NC3MCON
11:38	FED FARM CREDIT	0.77	6/1/2017		USD	20	MS-sole	2-NC3MO CONT
11:36	FED FARM CREDIT	FRN	6/1/2018		USD	100	DAIWA-sole	06/01/15
11:18	FREDDIE MAC	0.95	8/28/2017		USD	35	JEFF-sole	2.25-NC3MBER
11:00	FREDDIE MAC	0.91	8/25/2017		USD	25	DB-sole	2.25-NC6MBER
10:48	FREDDIE MAC	1.25	5/25/2018		USD	500	JOINT LEADS	3-NC3MO BERM

Source: Bloomberg

Bullet Details *

FNMA 0 7/8 02/08/18 Corp | Page 1/11 Description: Bond

94) Notes | 95) Buy | 96) Sell | 97) Settings

21) Bond Description | 22) Issuer Description

Pages
1) Bond Info
2) Addtl Info
3) Covenants
4) Guarantors
5) Bond Ratings
6) Identifiers
7) Exchanges
8) Inv Parties
9) Fees, Restrict
10) Schedules
11) Coupons

Quick Links
32) ALLQ Pricing
33) QRD Quote Recap
34) TDH Trade Hist
35) CACS Corp Action
36) CF Prospectus
37) CN Sec News
38) HDS Holders
39) VPRD Underly Info

Issuer Information

Name FANNIE MAE
Industry Government Agencies

Security Information

Mkt Iss Global
Country US — Currency USD
Rank Unsecured — Series
Coupon 0.875 — Type Fixed
Cpn Freq S/A
Day Cnt 30/360 — Iss Price 99.72300
Maturity 02/08/2018
BULLET
Iss Sprd 17.00bp vs T 0 ¾ 12/31/17
Calc Type (1)STREET CONVENTION
Announcement Date 01/03/2013
Interest Accrual Date 01/07/2013
1st Settle Date 01/07/2013
1st Coupon Date 02/08/2013

Identifiers

ID Number EJ4992099
CUSIP 3135G0TG8
ISIN US3135G0TG87

Bond Ratings

Moody's Aaa
S&P AA+
Fitch AAA
Composite AA+

Issuance & Trading

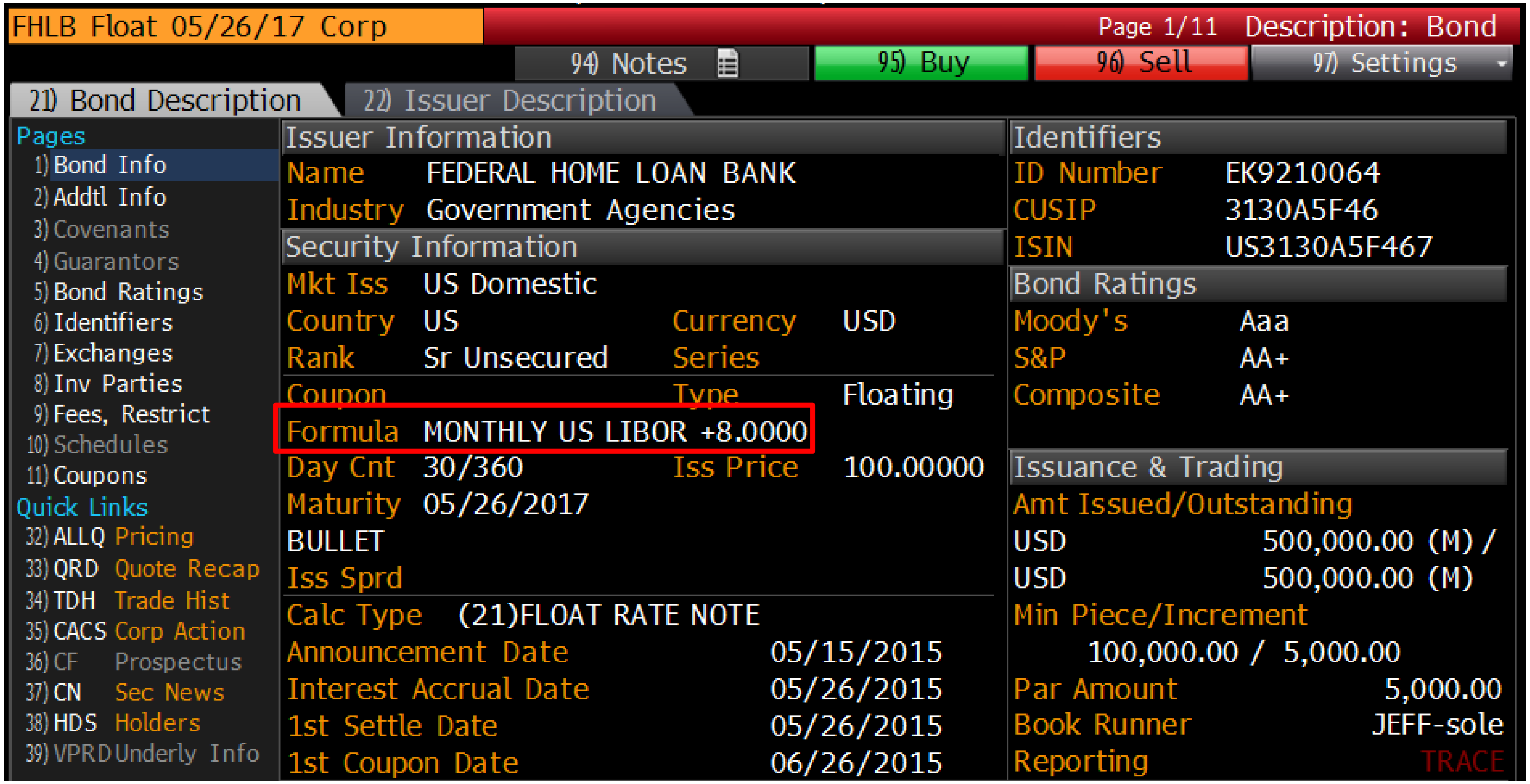
Amt Issued/Outstanding
USD 5,000,000.00 (M) /
USD 5,000,000.00 (M)
Min Piece/Increment
2,000.00 / 1,000.00
Par Amount 1,000.00
Book Runner BCLY,DB,JPM
Reporting TRACE

Cash Flow (Coupon Payments)

Payment Date	Interest	Principal	Total
02/08/2013	753.47	0.00	753.47
08/08/2013	4,375.00	0.00	4,375.00
02/08/2014	4,375.00	0.00	4,375.00
08/08/2014	4,375.00	0.00	4,375.00
02/08/2015	4,375.00	0.00	4,375.00
08/08/2015	4,375.00	0.00	4,375.00
02/08/2016	4,375.00	0.00	4,375.00
08/08/2016	4,375.00	0.00	4,375.00
02/08/2017	4,375.00	0.00	4,375.00
08/08/2017	4,375.00	0.00	4,375.00
02/08/2018	4,375.00	1,000,000.00	1,004,375.00

Source: FTN Financial

Floating Rate Note (FRN) Details



"WAM Real Estate"

Source: Bloomberg

Floating Rate Indices

T-bill

Issuer Information			
Name	FEDERAL FARM CREDIT BANK		
Industry	Government Agencies		
Security Information			
Mkt of Issue	US Domestic		
Country	US	Currency	USD
Rank	Unsecured	Series	
Coupon		Type	Floating
Formula	WEEKLY T-BILL +6.0000		
Day Cnt	30/360	Iss Price	100.00000
Maturity	03/18/2014		

Quarterly LIBOR

Issuer Information			
Name	FEDERAL HOME LOAN BANK		
Industry	Government Agencies		
Security Information			
Mkt of Issue	US Domestic		
Country	US	Currency	USD
Rank	Unsecured	Series	
Coupon		Type	Floating
Formula	QUARTLY US LIBOR -11.0000		
Day Cnt	ACT/360	Iss Price	100.00000
Maturity	03/06/2015		

Monthly LIBOR

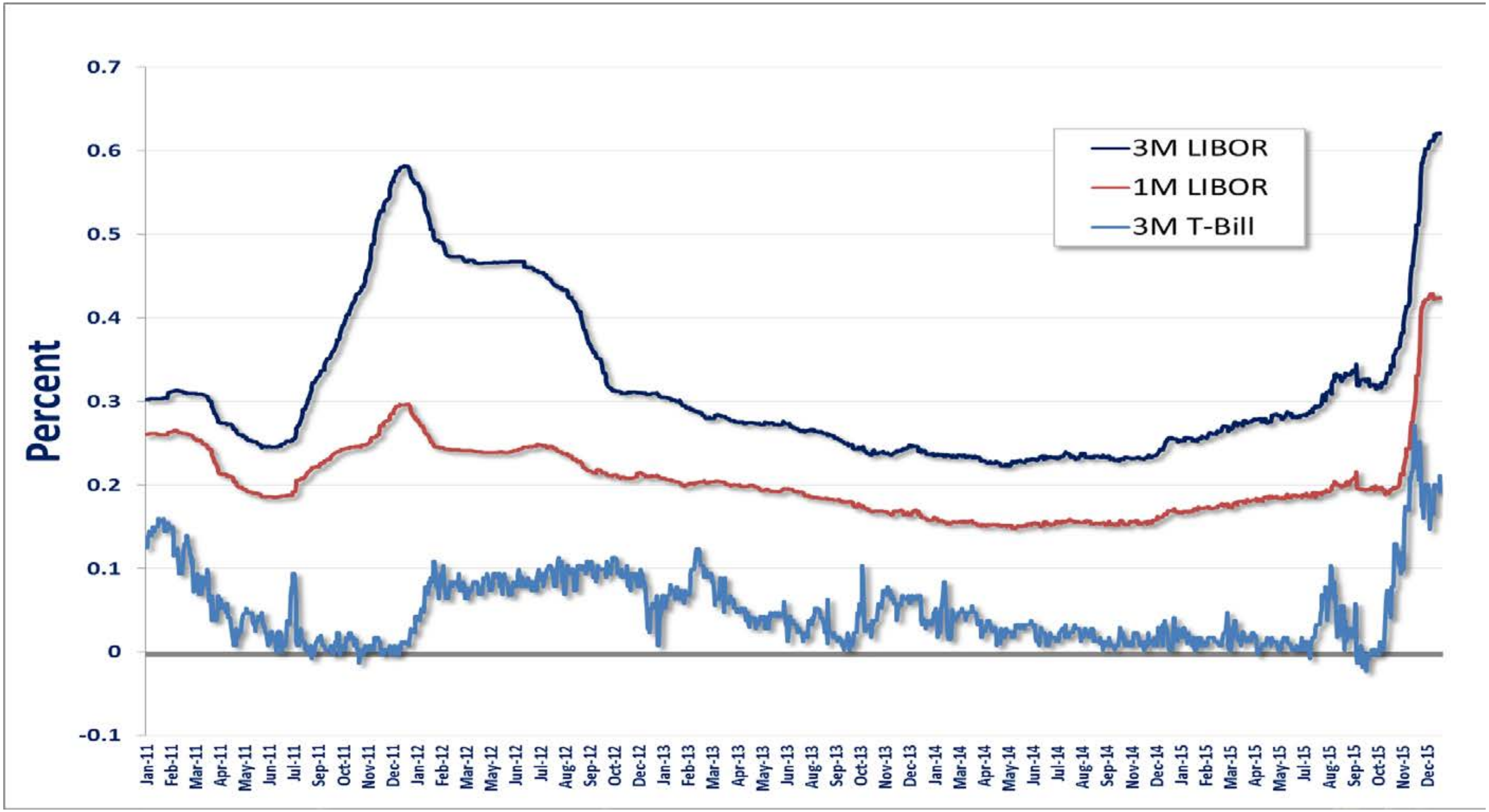
Issuer Information			
Name	FEDERAL FARM CREDIT BANK		
Industry	Government Agencies		
Security Information			
Mkt of Issue	US Domestic		
Country	US	Currency	USD
Rank	Unsecured	Series	1
Coupon		Type	Floating
Formula	MONTHLY US LIBOR -4.0000		
Day Cnt	ACT/360	Iss Price	100.00000
Maturity	09/15/2014		

Prime Rate

Issuer Information			
Name	FEDERAL FARM CREDIT BANK		
Industry	Government Agencies		
Security Information			
Mkt of Issue	US Domestic		
Country	US	Currency	USD
Rank	Unsecured	Series	_
Coupon	0.22	Type	Floating
Formula	DAILY FCPR -303.0000		
Day Cnt	ACT/360	Iss Price	100.00000
Maturity	03/04/2015		

Source: Bloomberg

Floating Rate Indices History



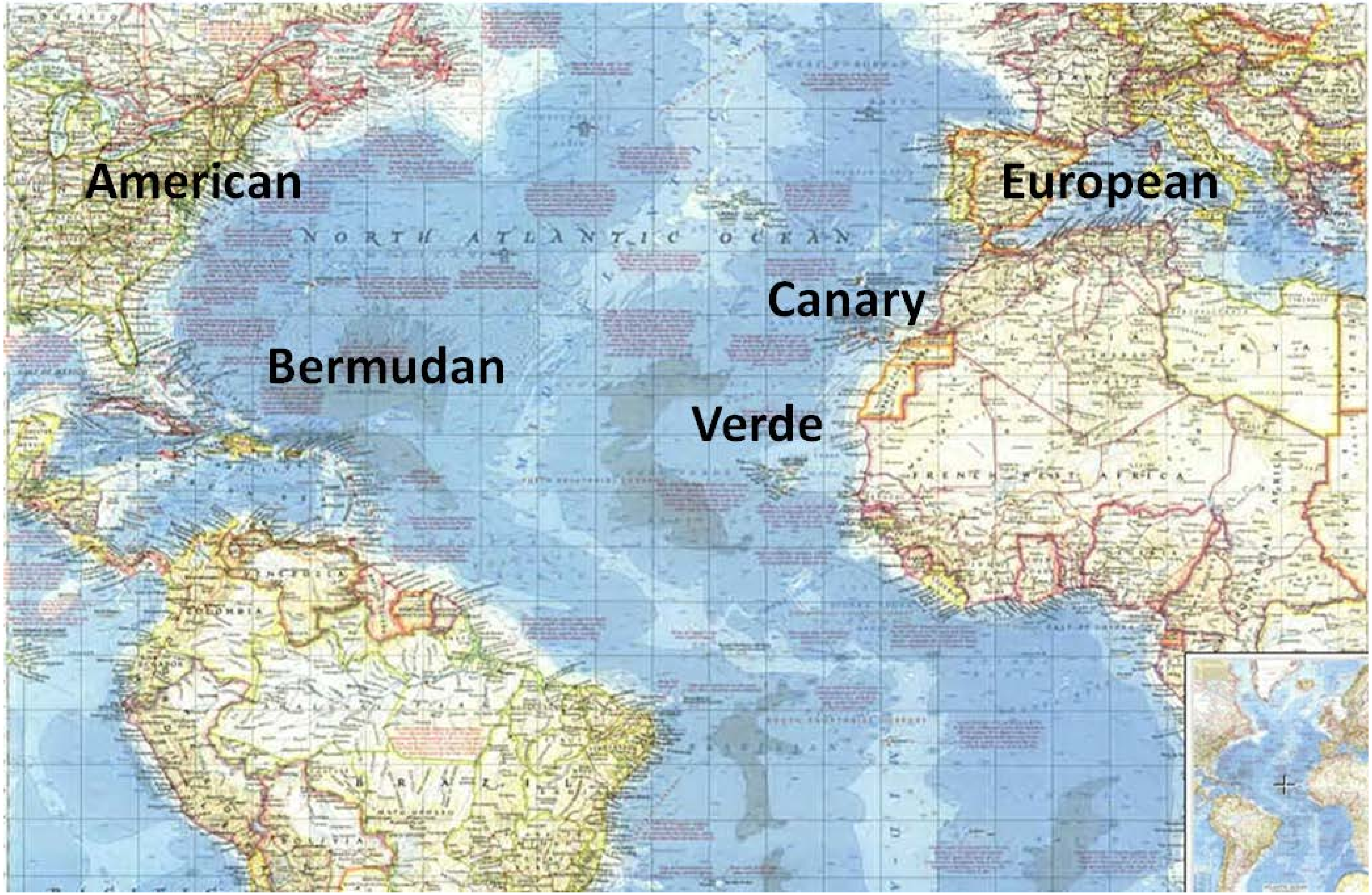
Source: Bloomberg

Callable Bond Checklist

- ✓ When you purchase a callable, you are selling a call option to the issuer
- ✓ You should be paid for selling that option by means of receiving a higher coupon than a bullet
- ✓ The issuer has the right to call the bond
- ✓ The purchaser has the obligation to relinquish the bond
- ✓ Refinancing: The issuer will most likely call the bonds if the interest rate has dropped

Source:

Callables–What's Up With the Names *



Source: FTN Financial

Callables - American

Source: Bloomberg

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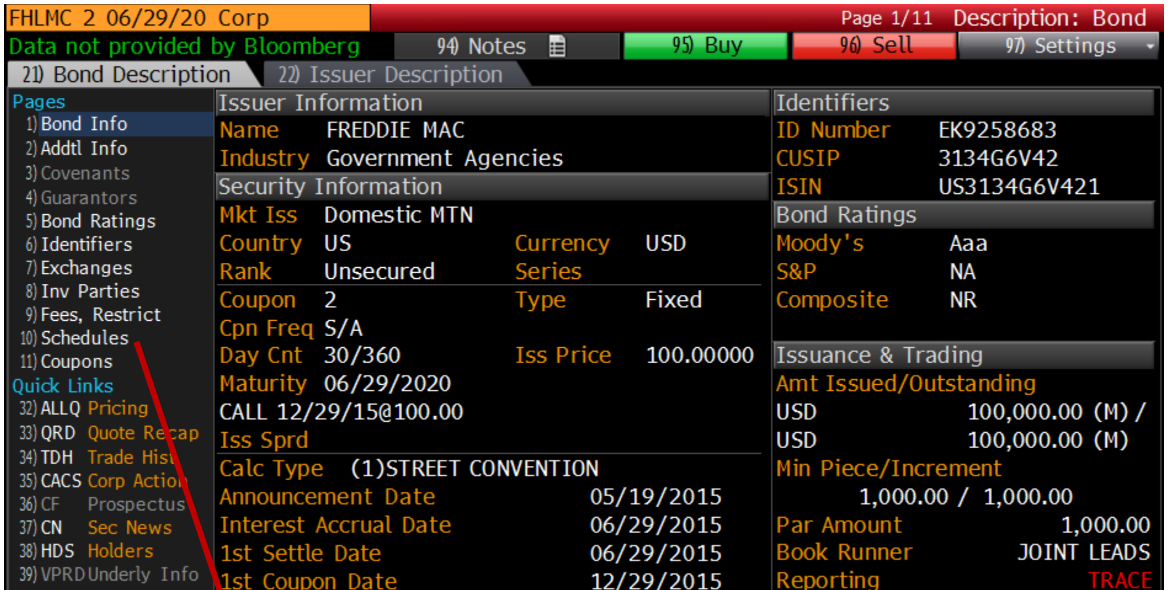
Callables - Bermudan


FHLMC 2 06/29/20 Corp
Page 1/11 Description: Bond
Data not provided by Bloomberg
94) Notes
95) Buy
96) Sell
97) Settings
21) Bond Description
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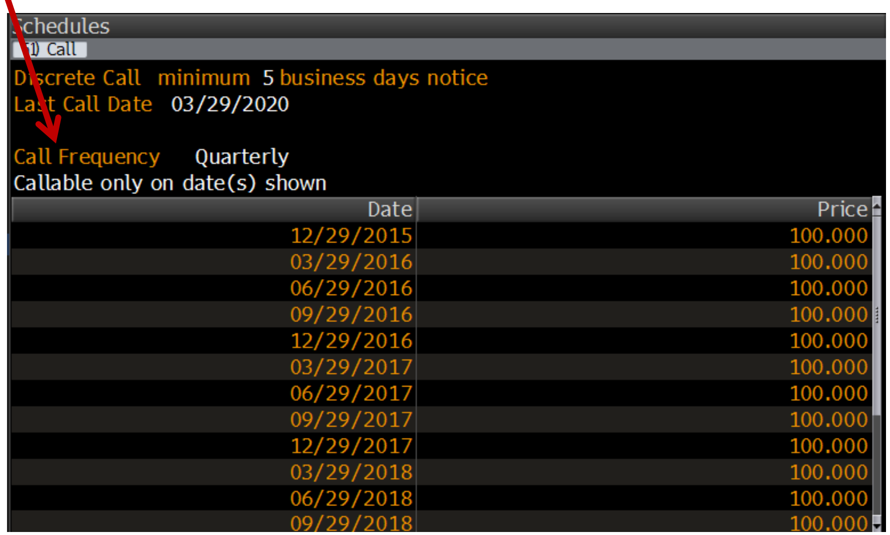
Issuer Information
Name FREDDIE MAC
Industry Government Agencies

Security Information
Mkt Iss Domestic MTN
Country US
Currency USD
Rank Unsecured
Series
Coupon 2
Type Fixed
Cpn Freq S/A
Day Cnt 30/360
Iss Price 100.00000
Maturity 06/29/2020
CALL 12/29/15@100.00
Iss Sprd
Calc Type (1)STREET CONVENTION
Announcement Date 05/19/2015
Interest Accrual Date 06/29/2015
1st Settle Date 06/29/2015
1st Coupon Date 12/29/2015

Identifiers
ID Number EK9258683
CUSIP 3134G6V42
ISIN US3134G6V421

Bond Ratings
Moody's Aaa
S&P NA
Composite NR

Issuance & Trading
Amt Issued/Outstanding
USD 100,000.00 (M) /
USD 100,000.00 (M)
Min Piece/Increment
1,000.00 / 1,000.00
Par Amount 1,000.00
Book Runner JOINT LEADS
Reporting TRACE


Schedules
1) Call
Discrete Call minimum 5 business days notice
Last Call Date 03/29/2020

Call Frequency Quarterly
Callable only on date(s) shown

Date	Price
12/29/2015	100.000
03/29/2016	100.000
06/29/2016	100.000
09/29/2016	100.000
12/29/2016	100.000
03/29/2017	100.000
06/29/2017	100.000
09/29/2017	100.000
12/29/2017	100.000
03/29/2018	100.000
06/29/2018	100.000
09/29/2018	100.000

Source: Bloomberg

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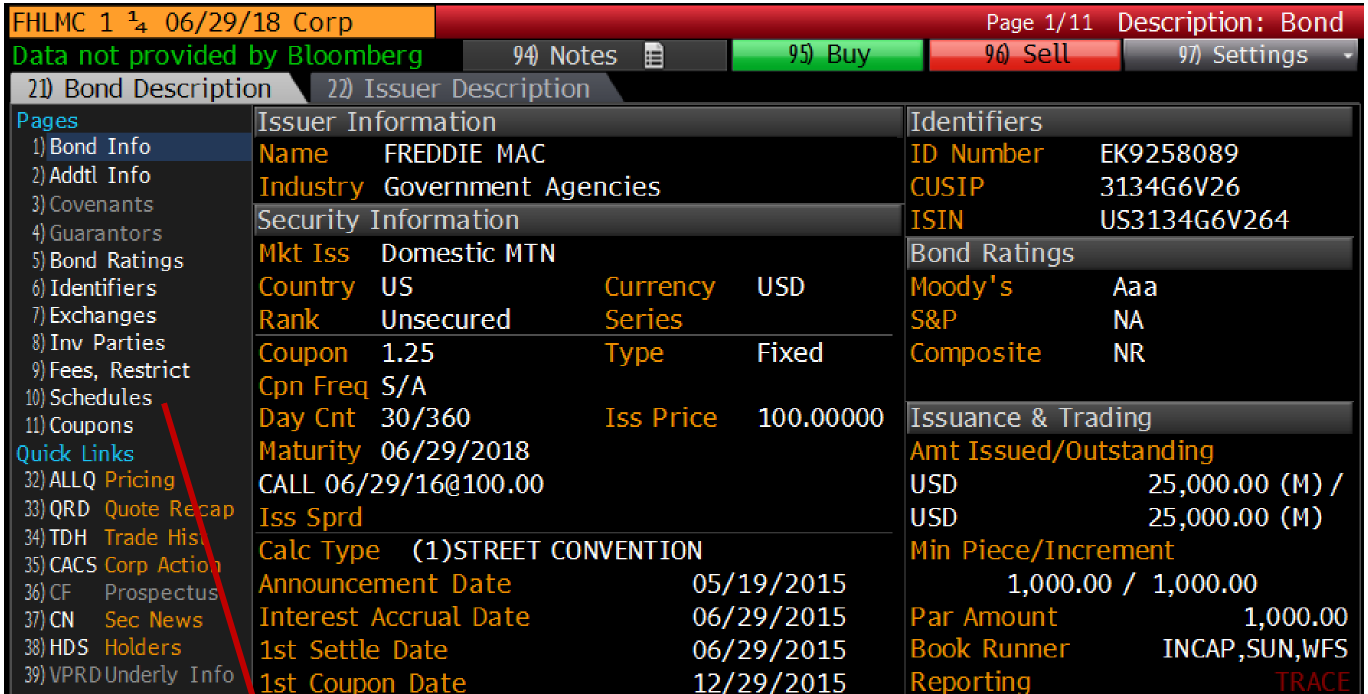
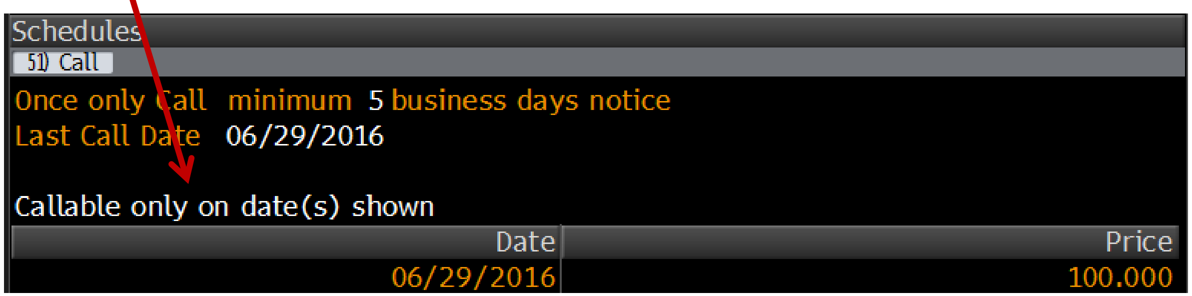
Callables - European





Source: Bloomberg

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Bullets vs. Callables vs. Callables

	Coupons				Number of Callable Days			
Structure	**2Yr**	**3Yr**	**4yr**	**5yr**	**2Yr**	**3Yr**	**4yr**	**5yr**
T-Note	0.94	1.19	1.41	1.56	0	0	0	0
Bullet	0.98	1.26	1.49	1.67	0	0	0	0
European One-Time Calls								
NC 3mon	1.00	1.31	1.68	1.72	1	1	1	1
NC 6mon	0.90	1.31	1.67	1.74	1	1	1	1
NC 1Yr	0.87	1.29	1.63	1.77	1	1	1	1
NC 2Y		1.28	1.58	1.79		1	1	1
Bermudan Discrete Calls								
NC 3mon	1.10	1.38	1.76	1.93	7	11	15	19
NC 6mon	1.09	1.37	1.74	1.89	6	10	14	18
NC 1Yr	1.05	1.34	1.69	1.85	4	8	12	16
NC 2Y		1.30	1.63	1.82		4	8	12
American Continuous Calls								
NC 3mon	1.12	1.41	1.79	2.00	635	1,000	1,365	1,730
NC 6mon	1.11	1.39	1.77	1.95	545	910	1,275	1,640
NC 1Yr	1.08	1.36	1.73	1.92	360	725	1,090	1,455
NC 2Y		1.33	1.68	1.89		360	725	1,090

Data as of 1/12/16, assumes 2-3 weeks forward settlements and standard fees on callables, agency bullets are MTNs

Source: FTN Financial

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Callables – "Cushion Callable" Analysis

3Yr NC 6Month 1X Call

Issuer Information			
Name	FANNIE MAE		
Industry	Government Agencies		
Security Information			
Mkt Iss	US Domestic		
Country	US	Currency	USD
Rank	Unsecured	Series	
Coupon	2.000000	Type	Fixed
Cpn Freq	S/A		
Day Cnt	30/360	Iss Price	100.64700
Maturity	01/29/2019		
CALL 07/29/16@100.00			

Issued at a Premium

6 Month Agy Bullet = .60% (+10 BPS)

3 Year Bullets = 1.27% (+70 BPs)

2.5 Year Bullets = 1.10% (90 BPs In-The-Money)

FNMA 2 01/29/19 Corp — 97) Settings — Page 1/1 Yield and Spread Analysis

95) Buy 96) Sell

1) Yield & Spread 2) Yields 3) Graphs 4) Pricing 5) Description 6) Custom 7) Calls

Settlement Date 01/29/16 Price 100.647 Blend Full Screen

YTC (3136G2W52)	Date	Price	Yield	
Yield to Maturity	01/29/2019	100.00	1.7776	YTM
Yield to Custom	07/29/2016	100.00	0.7015	YTC
Yield to Next Call	07/29/2016	100.00	0.7015	
Yield to Worst Call	07/29/2016	100.00	0.7015	

May be called on 07/29/2016

"Principal Loss"

"WAM Real Estate"

Source: FTN Financial

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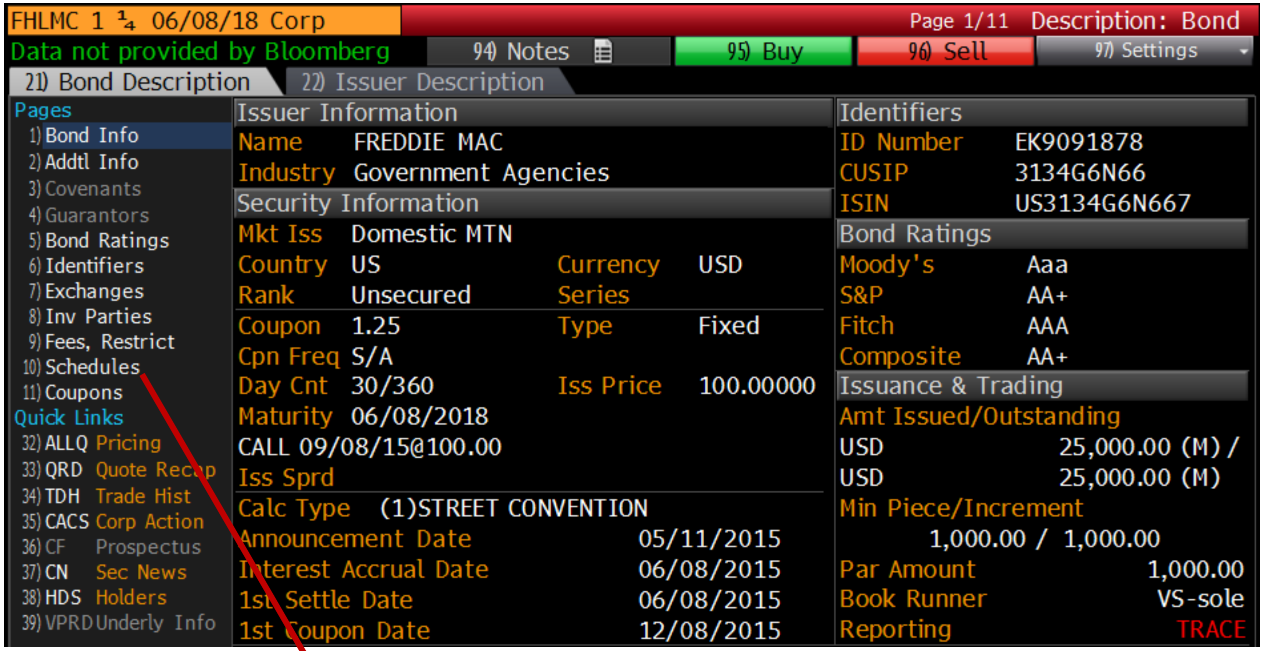
Callables – Canary


FHLMC 1 ¼ 06/08/18 Corp

Page 1/11 Description: Bond

Data not provided by Bloomberg

94) Notes 95) Buy 96) Sell 97) Settings

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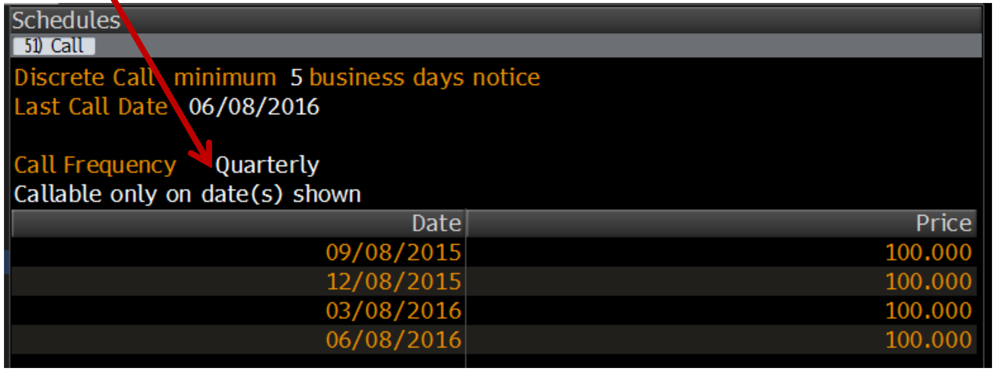
Issuer Information
Name FREDDIE MAC
Industry Government Agencies

Security Information
Mkt Iss Domestic MTN
Country US Currency USD
Rank Unsecured Series
Coupon 1.25 Type Fixed
Cpn Freq S/A
Day Cnt 30/360 Iss Price 100.00000
Maturity 06/08/2018
CALL 09/08/15@100.00
Iss Sprd
Calc Type (1)STREET CONVENTION
Announcement Date 05/11/2015
Interest Accrual Date 06/08/2015
1st Settle Date 06/08/2015
1st Coupon Date 12/08/2015

Identifiers
ID Number EK9091878
CUSIP 3134G6N66
ISIN US3134G6N667

Bond Ratings
Moody's Aaa
S&P AA+
Fitch AAA
Composite AA+

Issuance & Trading
Amt Issued/Outstanding
USD 25,000.00 (M) /
USD 25,000.00 (M)
Min Piece/Increment
1,000.00 / 1,000.00
Par Amount 1,000.00
Book Runner VS-sole
Reporting TRACE


Schedules
51) Call

Discrete Call minimum 5 business days notice
Last Call Date 06/08/2016

Call Frequency Quarterly
Callable only on date(s) shown

Date	Price
09/08/2015	100.000
12/08/2015	100.000
03/08/2016	100.000
06/08/2016	100.000

Source: Bloomberg

Callables - Step-Up

FHLMC 1 ⅛ 01/27/21 Corp | Page 1/11 | Security Description: Structured Note

Data not provided by Bloombe... | 94) Notes | 95) Buy | 96) Sell | 97) Settings

21) Bond Description | 22) Issuer Description

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39) VPRD Underly Info

Issuer Information

Issuer	FREDDIE MAC
Industry	Government Agencies

Security Information

Mkt Iss	Domestic MTN		
Country	US	Currency	USD
Rank	Unsecured	Series	
Coupon	1.125000	Type	Step-Up...
Cpn Freq	S/A		
Day Cnt	30/360	Iss Price	100.00000
Maturity	01/27/2021		
CALL 01/27/17@100.00			
Iss Sprd			
Calc Type	(1311)MULTI-STEP CPN BND		
Announcement Date		01/13/2016	
Interest Accrual Date		01/27/2016	
1st Settle Date		01/27/2016	
1st Coupon Date		07/27/2016	

Identifiers

ID Number	JV6478368
CUSIP	3134G8HE2
ISIN	US3134G8HE21

Bond Ratings

Moody's	NA
S&P	NA
Fitch	NA
DBRS	NA

Issuance & Trading

Amt Issued/Outstanding
USD 25,000.00 (M) /
USD 25,000.00 (M)
Min Piece/Increment
1,000.00 / 1,000.00
Par Amount 1,000.00
Book Runner FTN,RJA,VS
Reporting TRACE

Coupons

51) Coupons

Issue Date	01/27/2016	First Coupon	Normal
1st Coupon Date	07/27/2016	Last Coupon	Normal
Observation Index	N/A	Paying Index	N/A

Coupon	End Date
1.125	01/27/2017
1.500	01/27/2018
2.000	01/27/2019
3.000	01/27/2020
4.000	01/27/2021

Discrete Call minimum 5 business days notice
Last Call Date 01/27/2020

Call Frequency Annual
Callable only on date(s) shown

Date	Price
01/27/2017	100.000
01/27/2018	100.000
01/27/2019	100.000
01/27/2020	100.000

Source: FTN Financial

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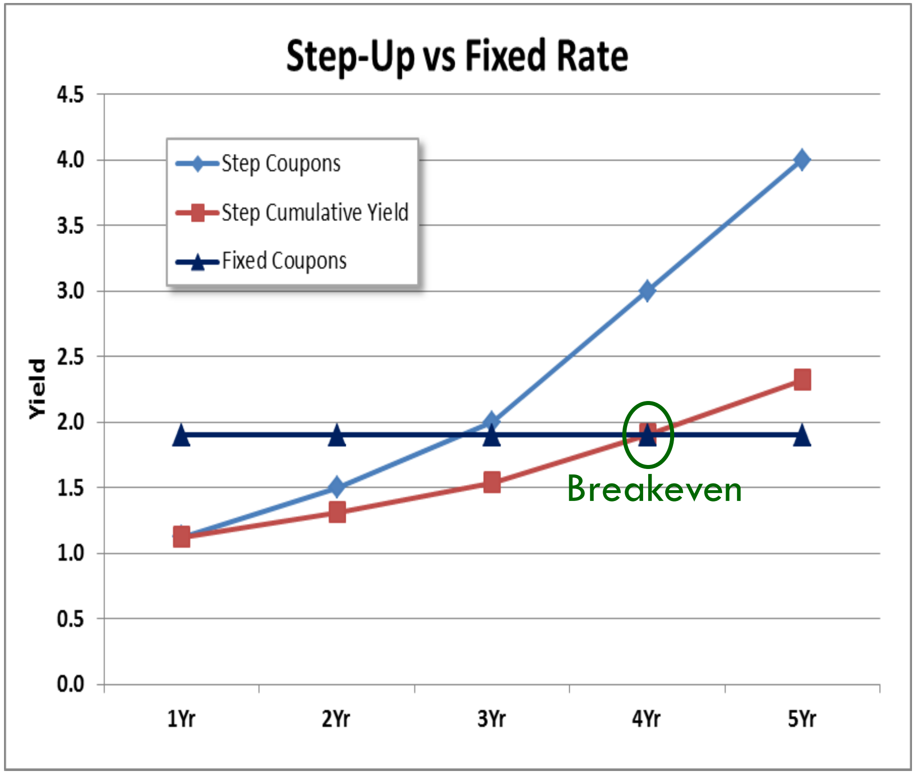
Step-Up vs. Fixed Coupon Callable

Step Up Analysis 5yr Annual Steps				
Time	Step Coupons	Cumltv Cpn	Fixed Coupon	Var
1Yr	**1.125**	1.125	**1.900**	(0.775)
2Yr	**1.500**	1.313	1.900	(0.588)
3Yr	**2.000**	1.542	1.900	(0.358)
4Yr	**3.000**	1.906	1.900	0.006
5Yr	**4.000**	2.325	1.900	0.425



Step-up and fixed coupon callable yields as of 1/13/16

Some Investment Accounting Systems average the coupons for YTM
Which is Not Correct!!

Source: Bloomberg, FTN Calculations

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Callables - Verde

FHLB 1 06/11/20 Corp — Page 1/11 — Description: Structured Note

Data not provided by Bloomberg — 94) Notes — 95) Buy — 96) Sell — 97) Settings

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Issuer Information

Issuer	FEDERAL HOME LOAN BANK
Industry	Government Agencies

Security Information

Mkt Iss	US Domestic		
Country	US	Currency	USD
Rank	Unsecured	Series	0000
Coupon	1	Type	Step-Up...
Cpn Freq	Quarterly		
Day Cnt	30/360	Iss Price	100.00000
Maturity	06/11/2020		

CALL 09/11/15@100.00

Iss Sprd

Calc Type (1311)MULTI-STEP CPN BND

Announcement Date	05/13/2015
Interest Accrual Date	06/11/2015
1st Settle Date	06/11/2015
1st Coupon Date	09/11/2015

Identifiers

ID Number	EK9151821
CUSIP	3130A5EQ8
ISIN	US3130A5EQ81

Bond Ratings

Moody's	Aaa
S&P	AA+
Composite	AA+

Issuance & Trading

Amt Issued/Outstanding
USD 15,000.00 (M) /
USD 15,000.00 (M)
Min Piece/Increment
100,000.00 / 5,000.00

Par Amount	5,000.00
Book Runner	HAPSEC-sole
Reporting	TRACE

Schedules

51) Call

Discrete Call minimum 5 business days notice
May be called in full or part
Last Call Date 06/11/2019

Call Frequency Quarterly
Callable only on date(s) shown

Date	Price
09/11/2015	100.000
12/11/2015	100.000
03/11/2016	100.000
06/11/2016	100.000
06/11/2019	100.000

Coupons

51) Coupons

Issue Date	06/11/2015	First Coupon	Normal
1st Coupon Date	09/11/2015	Last Coupon	Normal
Observation Index	N/A	Paying Index	N/A

Coupon	End Date
1.000	09/11/2015
1.250	12/11/2015
1.500	03/11/2016
1.750	06/11/2016
2.000	06/11/2019
3.000	06/11/2020

Source: Bloomberg

Callable – Step-Down

FHLB 7 ¾ 03/18/20 Corp | Page 1/11 | Description: Structured Note

Data not provided by Bloomberg | 94) Notes | 95) Buy | 96) Sell | 97) Settings

21) Bond Description | 22) Issuer Description

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39) VPRD Underly Info

Issuer Information

Issuer	FEDERAL HOME LOAN BANK
Industry	Government Agencies

Security Information

Mkt Iss	US Domestic		
Country	US	Currency	USD
Rank	Unsecured	Series	
Coupon	7.75	Type	Step-Dow...
Cpn Freq	Quarterly		
Day Cnt	30/360	Iss Price	100.00000
Maturity	03/18/2020		

CALL 09/18/15@100.00

Iss Sprd

Calc Type (1311)MULTI-STEP CPN BND

Announcement Date	02/19/2015
Interest Accrual Date	03/18/2015
1st Settle Date	03/18/2015
1st Coupon Date	06/18/2015

Identifiers

ID Number	EK7655120
CUSIP	3130A4EV0
ISIN	US3130A4EV02

Bond Ratings

Moody's	Aaa
S&P	AA+
Composite	AA+

Issuance & Trading

Amt Issued/Outstanding
USD 25,000.00 (M) /
USD 25,000.00 (M)
Min Piece/Increment
100,000.00 / 5,000.00

Par Amount	5,000.00
Book Runner	MS-sole
Reporting	TRACE

Schedules

51) Call

Discrete Call minimum 5 business days notice
May be called in full or part
Last Call Date 12/18/2019

Call Frequency Quarterly
Callable only on date(s) shown

Date	Price
09/18/2015	100.000
12/18/2015	100.000
03/18/2016	100.000
06/18/2016	100.000
09/18/2016	100.000
12/18/2016	100.000
03/18/2017	100.000
06/18/2017	100.000
09/18/2017	100.000
12/18/2017	100.000
03/18/2018	100.000

Coupons

51) Coupons

Issue Date	03/18/2015	First Coupon	Normal
1st Coupon Date	06/18/2015	Last Coupon	Normal
Observation Index	N/A	Paying Index	N/A

Coupon	End Date
7.750	06/18/2015
2.000	03/18/2016
1.250	03/18/2020

Average Coupon = 1.69
5Yr Bullet = 1.61 as of 2/19/15

Source: Bloomberg

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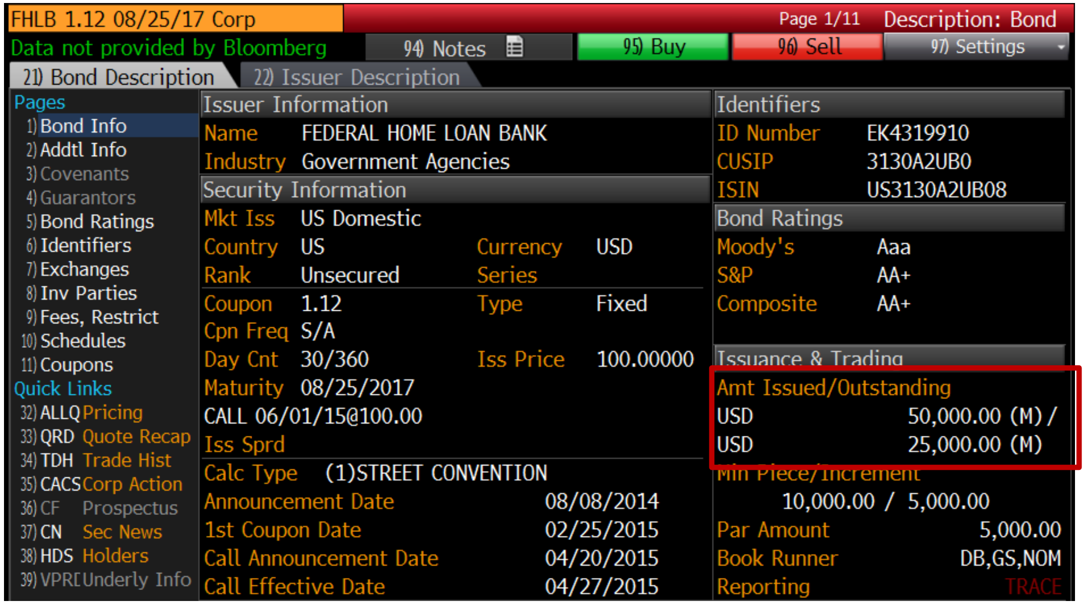
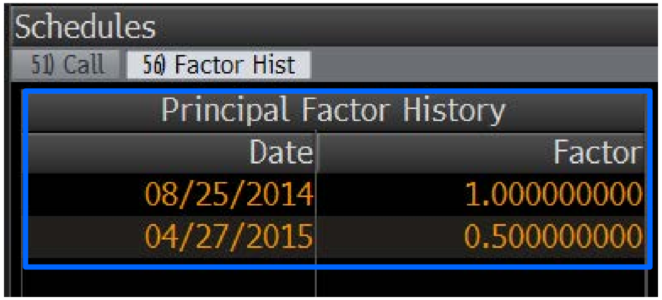
Callables - Fixed to Floating Rate

Source: Bloomberg

Callables – Partial Call





Source: FTN Financial

Callables – Cost of Carry (3Yr-1Yr-1X)

COST OF CARRY MODEL

Par Amount	$1,000,000
Announce Date	01/13/16
Issue/Setlmnt Date	01/25/16
Maturity Date	01/25/19
Call Date	01/25/17
Coupon	1.300%
MMF Rate	0.45%
AOAS Eff Duration	2.28
Forward Settle Days	11
Daily Int for MMF	$12.50
Daily Int for Bond	$36.11

Inputs: Blue Fields

RESULTS	
Date	Cost of Carry-Basis Points
To Call Date	2.6
To Mat. Date	0.9
To Eff. Dur. Date	1.1

COST OF CARRY EFFECT TO CALL DATE	
Callable's YTC	1.300%
Less COC	-0.026%
Net YTC	1.274%
Matching Mat Bullet's YTM	1.250%
Variance	0.024%

Source: FTN Financial

Spread Analysis – Two Approaches

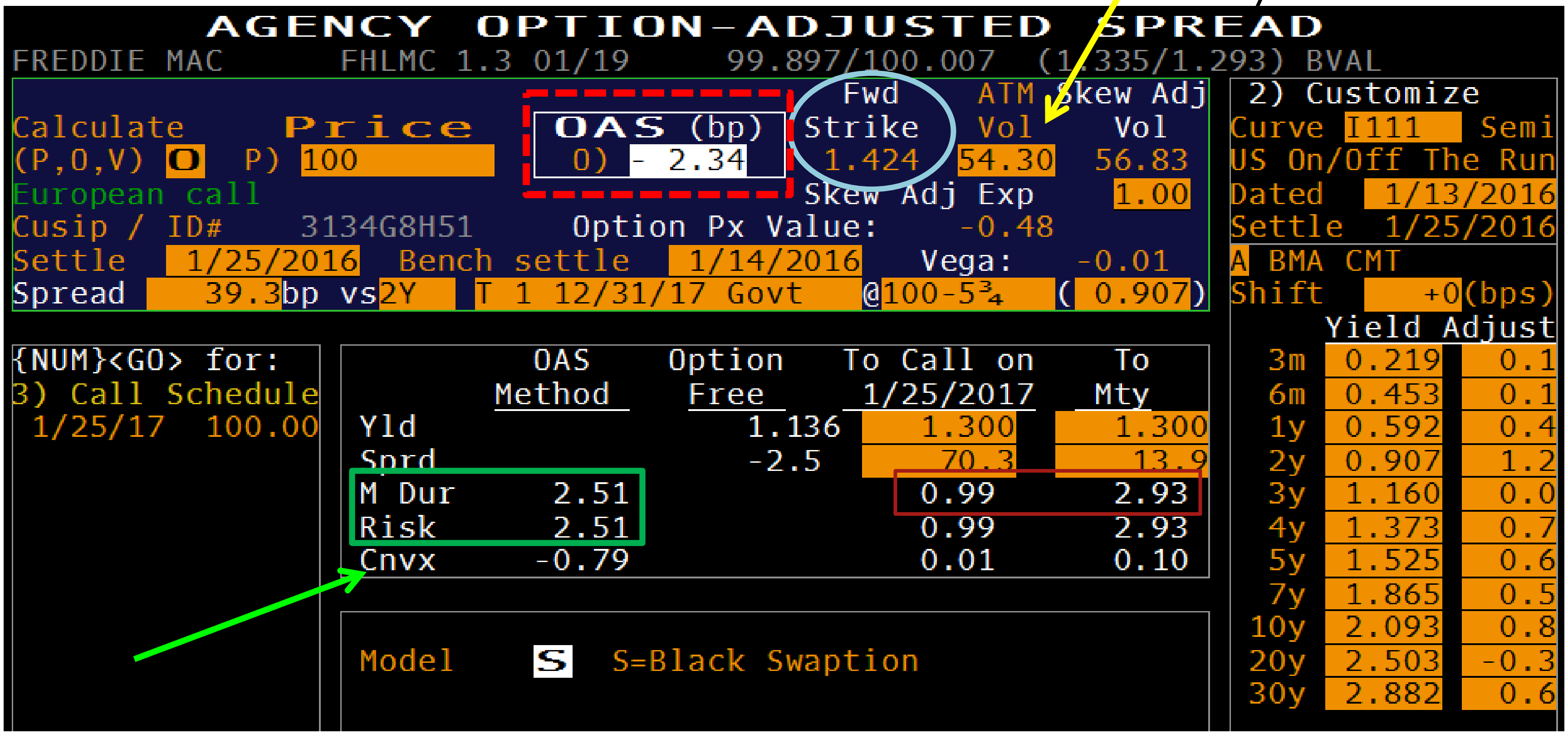
Yield Spread Analysis: Usually quoted in basis points (1/100th of 1%) by subtracting a benchmark bond yield (usually a US Treasury of similar maturity) from the yield of the bond being analyzed. The spread represents the incremental return over the benchmark the investor earns for taking on Interest Rate Risk, Reinvestment Risk, Call Risk, and Credit Risk. This incremental return is to a specific date (usually maturity) and does not take into account the possibility of an early redemption.

Option Adjusted Spread Analysis: A financial-analysis method that analyzes the impact of any options embedded in a bond's structure and measures the issue's expected incremental return. Quoted in basis points, the OAS represents the constant spread applied to the benchmark rates in a fixed-income option model to recover the price of the bond being analyzed. The measure is called OAS because (1) it is a spread and (2) it adjusts the cash flows for the option when computing the spread to the benchmark interest rates.

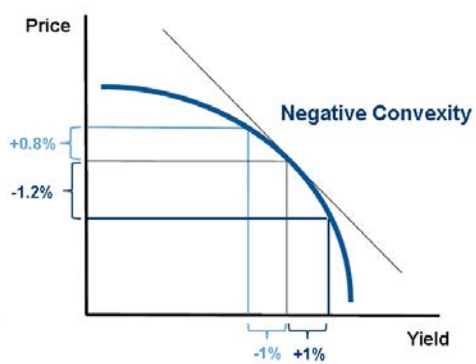
Source: FTN Financial

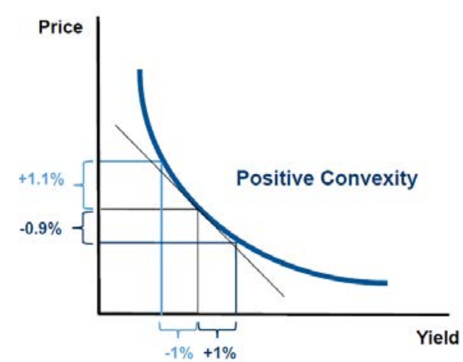
Callables – Option Adjusted Spread (3Yr-1Y-1X)

Volatility



Treasury Yields





Source: FTN Financial

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Forward Treasury Yield Curve Analysis

15:10 COUPON IMPLIED FORWARD RATES: USA

YRS TO MATURITY

FORWARD YRS	1	2	3	4^	5	7	10	20^	30
NOW	0.60	0.91	1.15	1.34	1.53	1.87	2.09	2.49	2.88
1	1.22	$\boxed{1.43}$	1.59	1.76	1.92	2.14	2.29	2.63	YIELDS ARE 2/YR COMPOUND
2	1.63	1.78	1.94	2.09	2.25	2.34	2.43	2.73	
3	1.93	2.09	2.25	2.41	2.42	2.50	2.53	2.83	
5	2.55	2.72	2.64	2.64	2.66	2.64	2.68	2.98	

2 Year T-Note: .91% x 2 years = 1.82%

<u>Minus Current 1 Year T-Bill: - .60%</u>

1Yr T-Bill Rate 1 Year Forward: 1.22%

Source: FTN Financial

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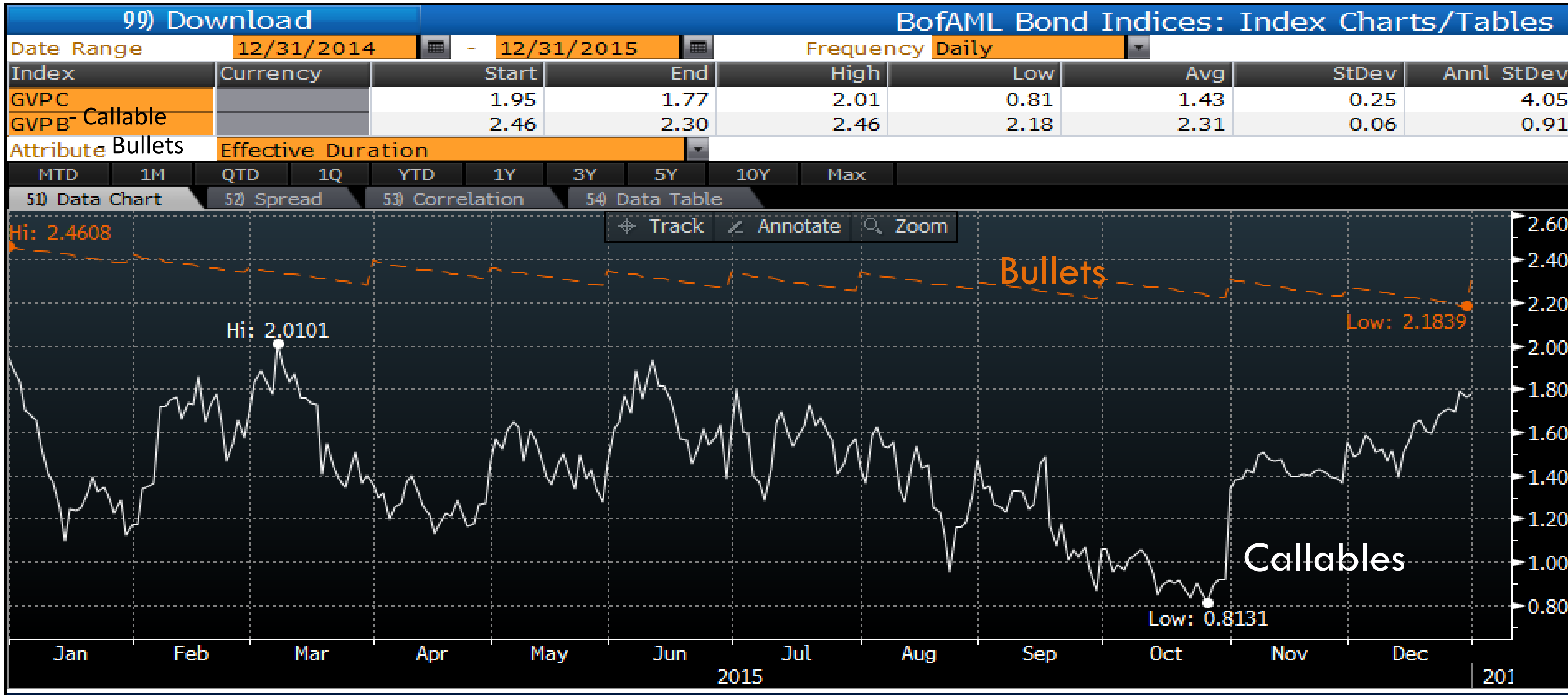
A Subsidiary of First Tennessee Bank National Association

Effective Duration – Callables vs. Bullets *

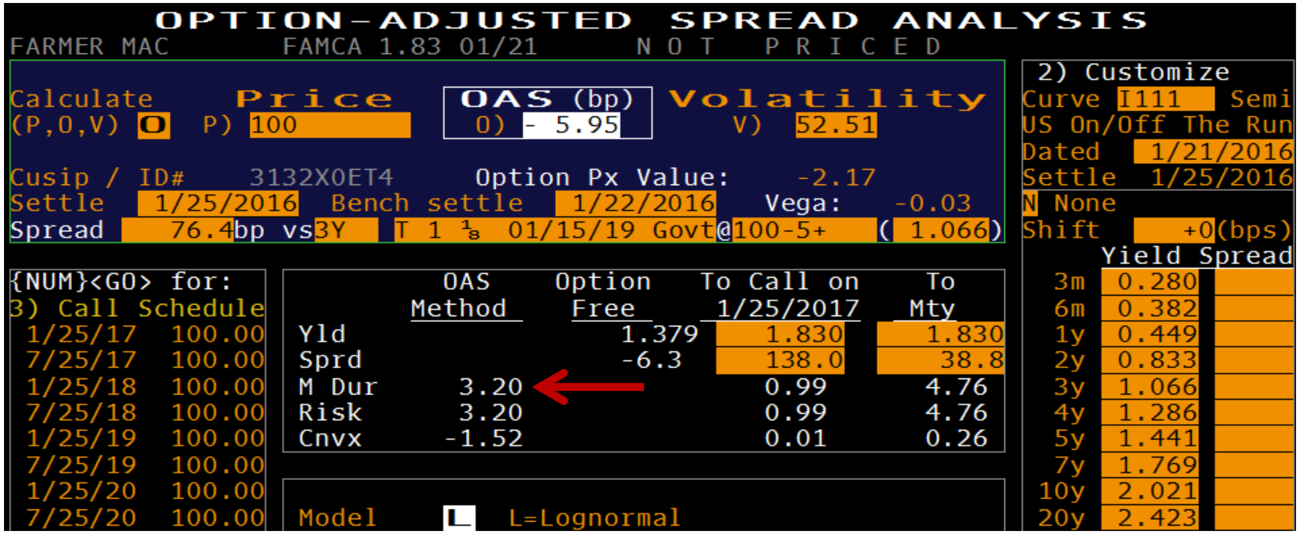
1-5 Year Agency Bullets vs. 1-5 Year Agency Callables



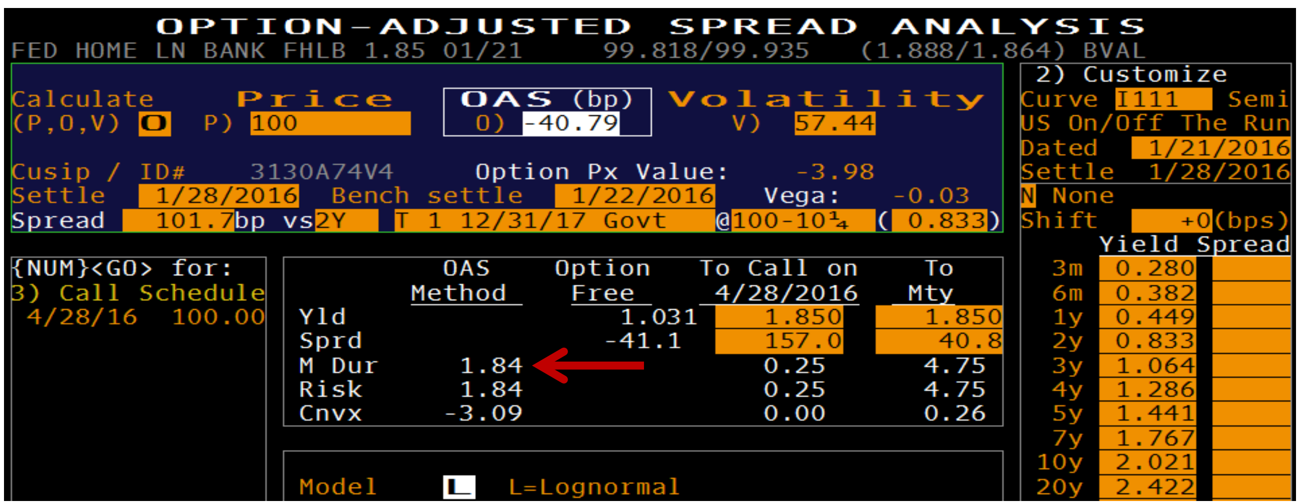
Source: Bloomberg

Duration Differentials

5Y NC 1Y
Berm



5Y NC 3M
American



Source: Bank of America Merrill Lynch

Duration Differentials – Step-Ups

5Y NC 1Yr Berm Step-Up

OPTION-ADJUSTED SPREAD ANALYSIS

FREDDIE MAC FHLMC 1 02/17/21 N O T P R I C E D

Calculate (P,O,V) O — Price P) 100 — OAS (bp) O) -35.40 — Volatility V) 53.33

Cusip / ID# 3134G8JH3 Option Px Value: -4.62

Settle 2/17/2016 Bench settle 1/22/2016 Vega: -0.03

Spread 96.2bp vs 3Y T 1 ⅛ 01/15/19 Govt @100-5+ (1.066)

2) Customize
Curve I111 Semi
US On/Off The Run
Dated 1/21/2016
Settle 2/17/2016
N None
Shift +0(bps)

	Yield	Spread
3m	0.280	
6m	0.382	
1y	0.449	
2y	0.833	
3y	1.066	
4y	1.286	
5y	1.442	

{NUM}<GO> for:
3) Call Schedule

2/17/17	100.00
2/17/18	100.00
2/17/19	100.00
2/17/20	100.00

	OAS Method	Option Free	To Call on 2/17/2017	To Mty
Yld		1.086	1.000	2.028
Sprd		-35.7	55.0	58.5
M Dur	2.60		0.99	4.78
Risk	2.60		0.99	4.78
Cnvx	-1.69		0.01	0.26

Coupon	End Date
1.000	02/17/2017
1.500	02/17/2018
2.000	02/17/2019
2.500	02/17/2020
3.250	02/17/2021

5Y NC 3M Berm Step-Up

OPTION-ADJUSTED SPREAD ANALYSIS

FREDDIE MAC FHLMC 1 ¾ 02/21 N O T P R I C E D

Calculate (P,O,V) O — Price P) 100 — OAS (bp) O) -36.25 — Volatility V) 57.42

Cusip / ID# 3134G8JE0 Option Px Value: -4.56

Settle 2/26/2016 Bench settle 1/22/2016 Vega: -0.03

Spread 118.2bp vs 2Y T 1 12/31/17 Govt @100-10¼ (0.833)

2) Customize
Curve I111 Semi
US On/Off The Run
Dated 1/21/2016
Settle 2/26/2016
N None
Shift +0(bps)

	Yield	Spread
3m	0.280	
6m	0.382	
1y	0.449	
2y	0.833	
3y	1.066	
4y	1.286	
5y	1.444	

{NUM}<GO> for:
3) Call Schedule

5/26/16	100.00
8/26/16	100.00
11/26/16	100.00
2/26/17	100.00
5/26/17	100.00

	OAS Method	Option Free	To Call on 5/26/2016	To Mty
Yld		1.079	1.750	2.015
Sprd		-36.5	147.0	57.0
M Dur	1.82		0.25	4.76
Risk	1.82		0.25	4.76
Cnvx	-3.27		0.00	0.26

Coupon	End Date
1.750	02/26/2019
2.000	02/26/2020
2.500	08/26/2020
3.250	02/26/2021

Source: Bloomberg

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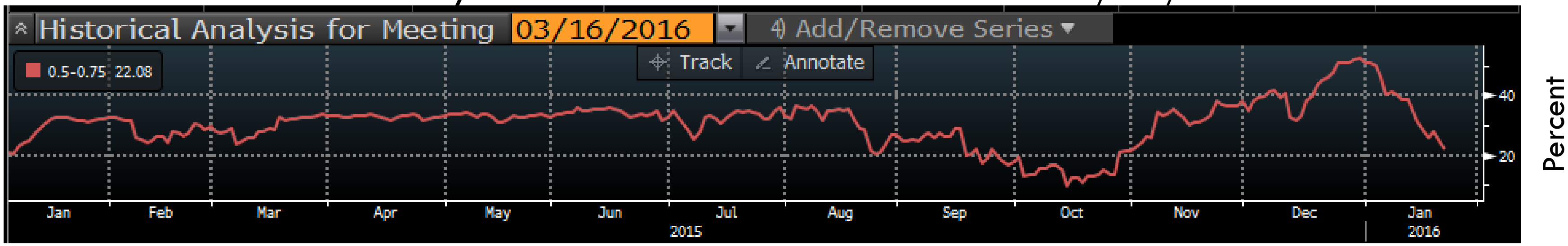
"Fade the Fed?"

Probability of a March 2016 Rate Hike as of 1/21/16



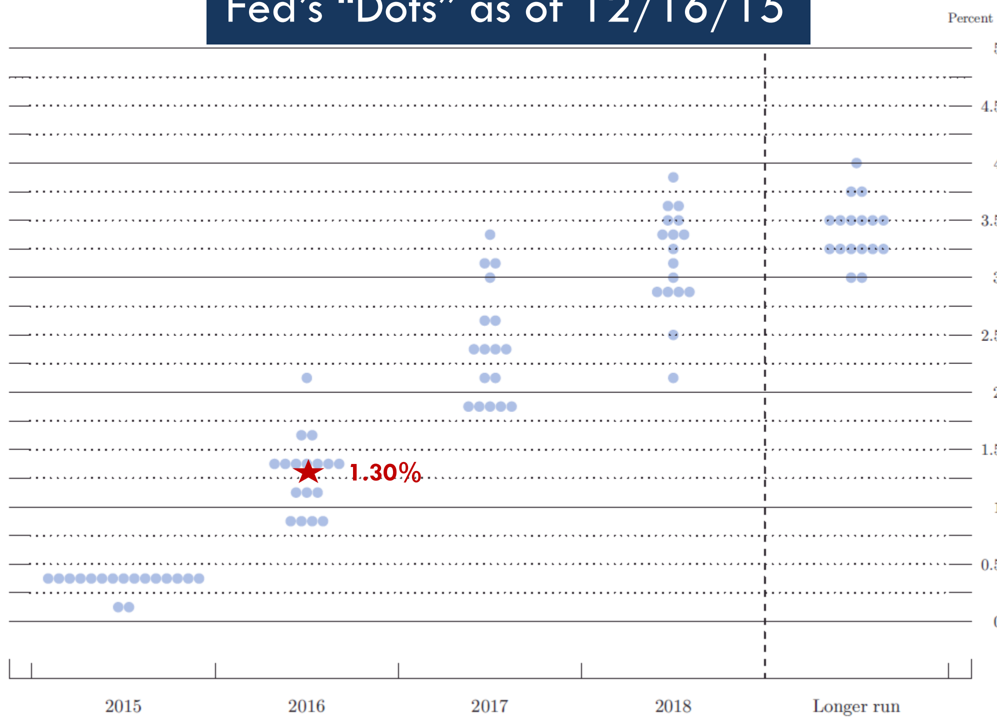
Fed Funds Futures

as of 1/21/16

	Description	Last
21)	Jan16	.3375
22)	Feb16	.355
23)	Mar16	.385
24)	Apr16	.415
25)	May16	.435
26)	Jun16	.460
27)	Jul16	.485
28)	Aug16	.500
29)	Sep16	.510
30)	Oct16	.540
31)	Nov16	.570
32)	Dec16	.605
33)	Jan17	.625
34)	Feb17	.660

Next Hike = .625%
Mid Range of .50% to .75%

Fed's "Dots" as of 12/16/15



Source: Bloomberg

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MAIN STREET ADVISORS
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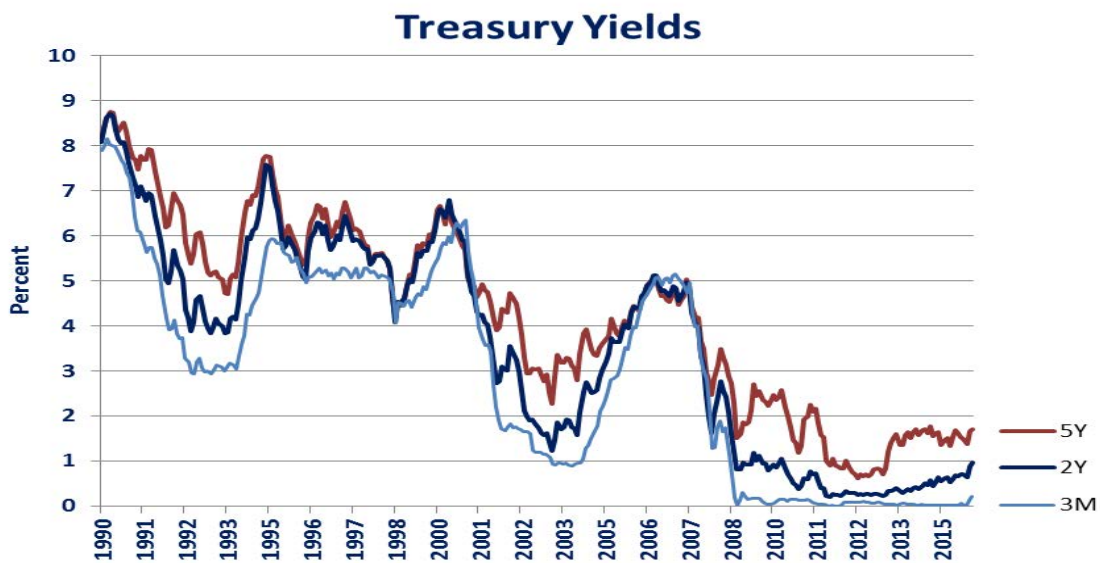
Duration Sweet Spot



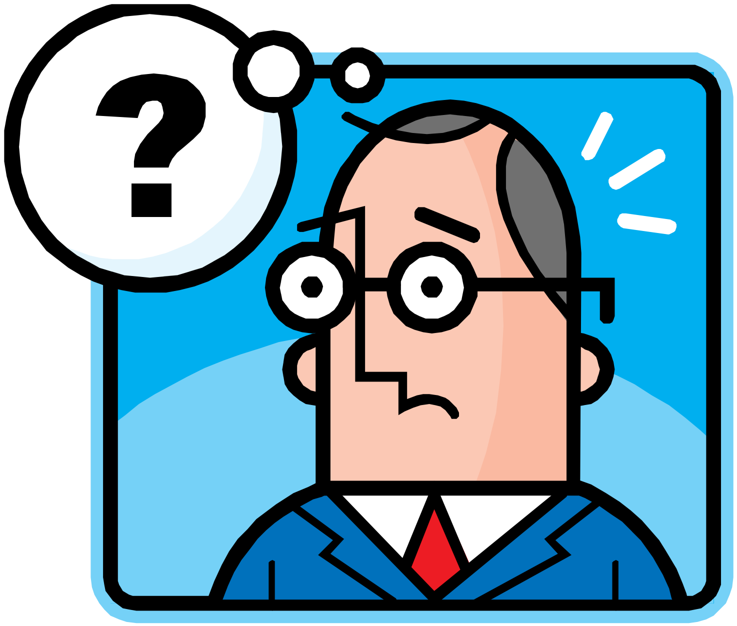
Benchmark Treasury Modified Sharp Ratio Analysis
1/31/1990 to 12/31/2015

	Maturity	Avg Yield	Avg Duration	Modified Sharp Ratio	% Return of 30Yr / % 30Yr Risk
	3 Mon T-Bill	3.00	0.24		56% / 2%
	6 Mon T-Bill	3.13	0.48	0.283	58% / 3%
	1 Yr T-Bill	3.27	0.97	0.279	61% / 6%
Sweet Spot	2 Yr T-Note	3.60	1.90	0.316	67% / 12%
	3 Yr T-Note	3.84	2.85	0.294	72% / 19%
	5 Yr T-Note	4.27	4.45	0.285	80% / 29%
	10 Yr T-Note	4.85	7.96	0.233	90% / 52%
	30 Yr T-Bond	5.36	15.35	0.154	100% / 100%

(3.60 – 3.00) / 1.90 = .316 3.60/5.36 = 67% 1.90/15.35 = 12%

Source: Bloomberg

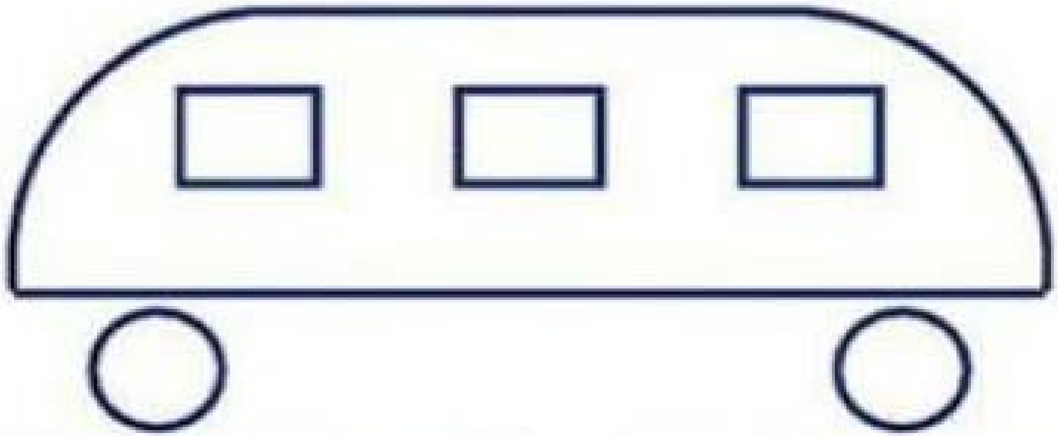
Final Questions or Comments



Source: FTN Financial

Which way the bus is going?

Right or left?



This question was asked to children of preschool, in the USA, with the same picture.

90% of them responded that the bus was going to the left.

When asked "Why?" they said "Because you can't see the door to get on the bus"

How do you feel now? | I know, me too.