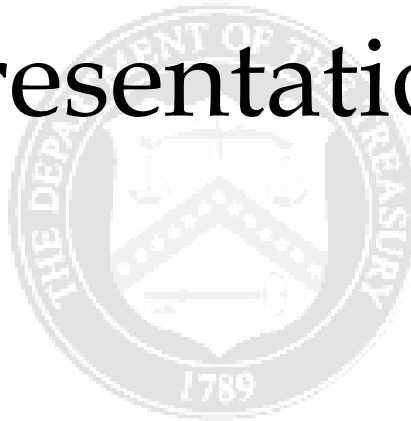


# Treasury Presentation to TBAC



# Office of Debt Management



Fiscal Year 2015 Q1 Report

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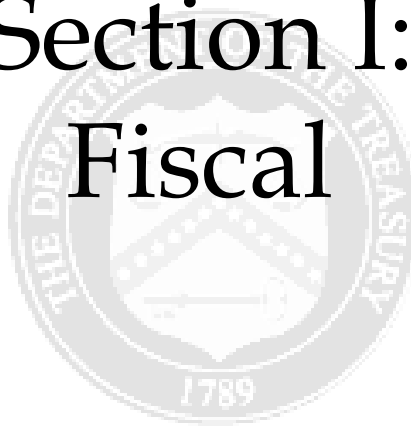
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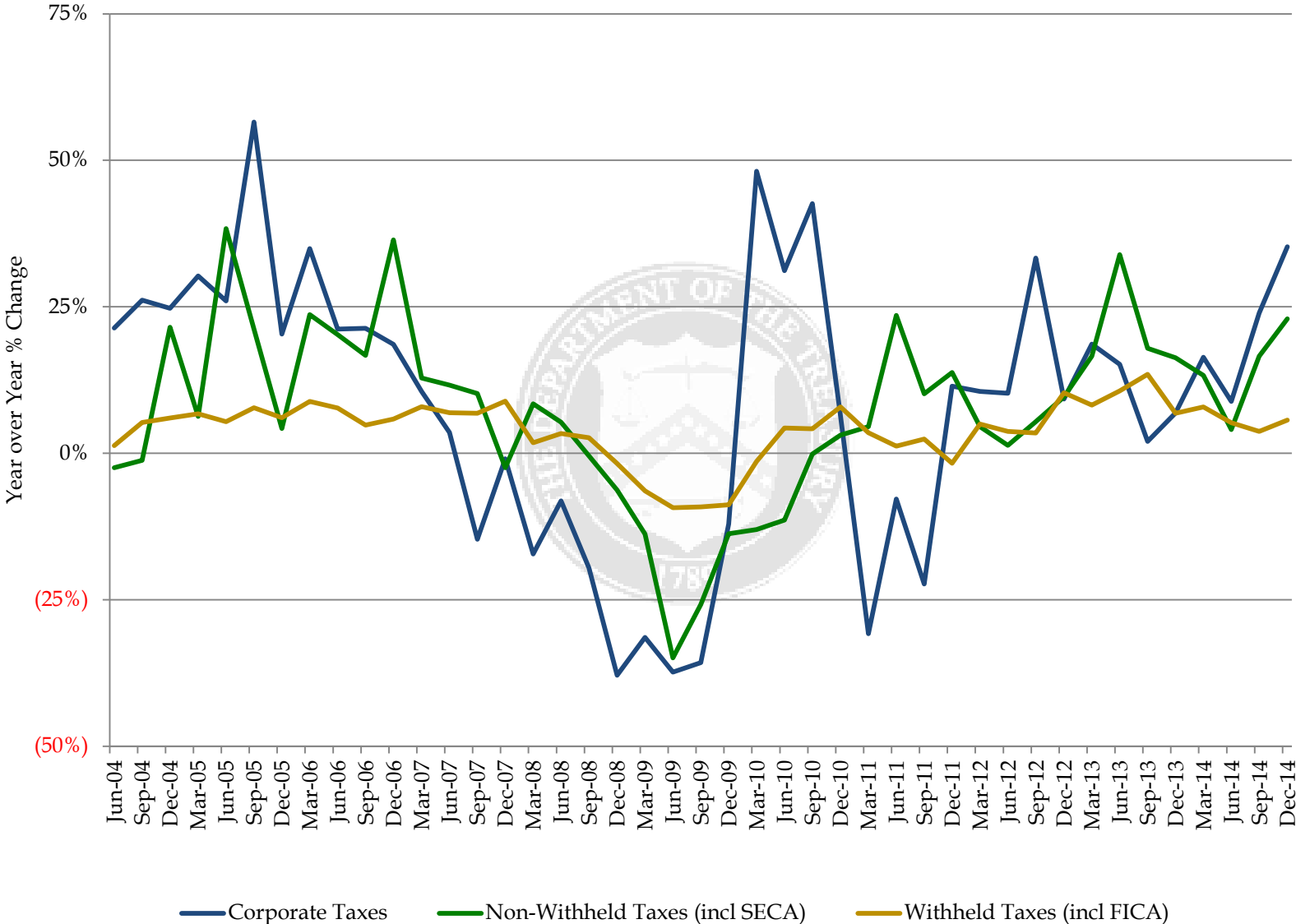
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# Section I: Fiscal

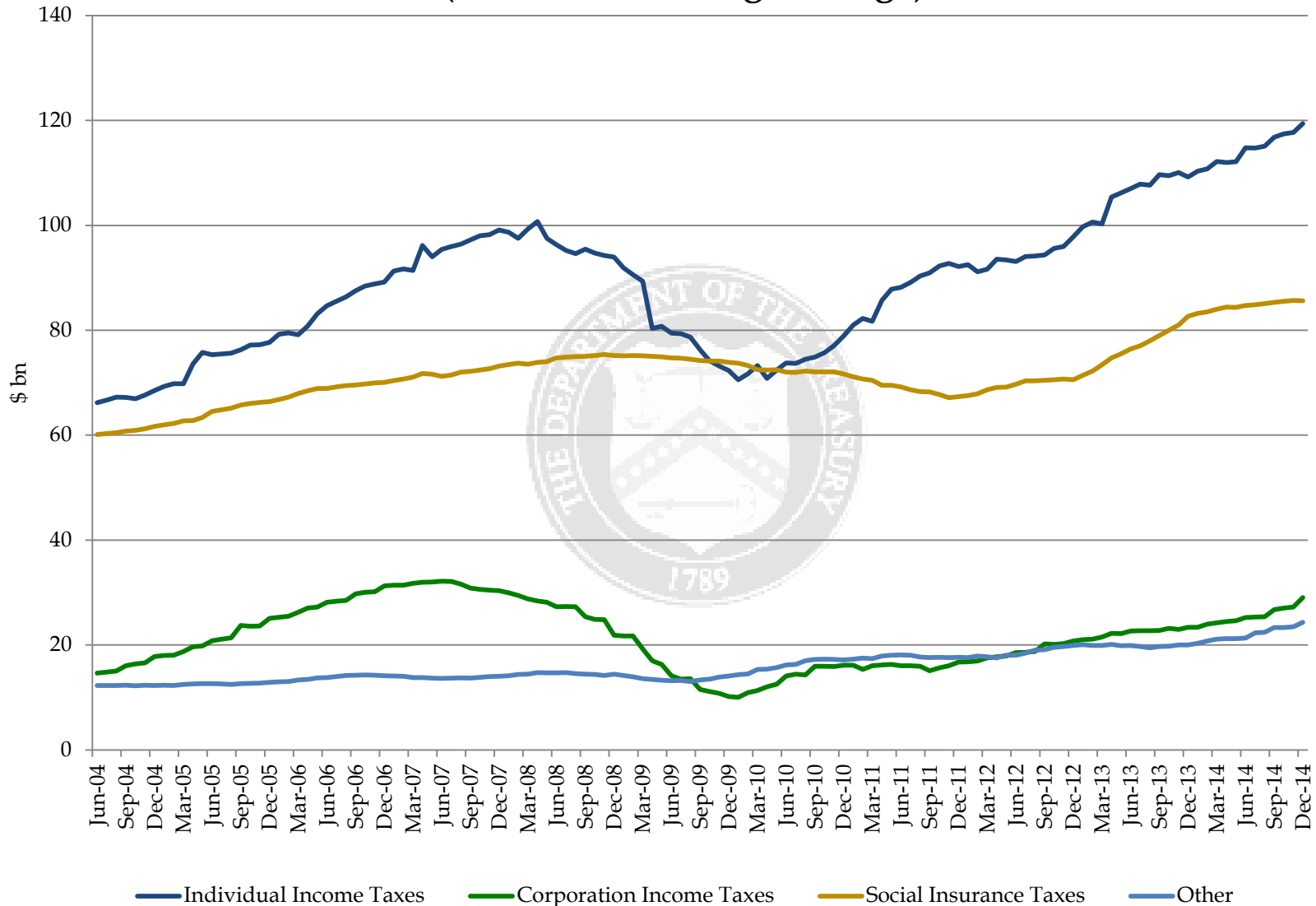


# Quarterly Tax Receipts



Source: United States Department of the Treasury

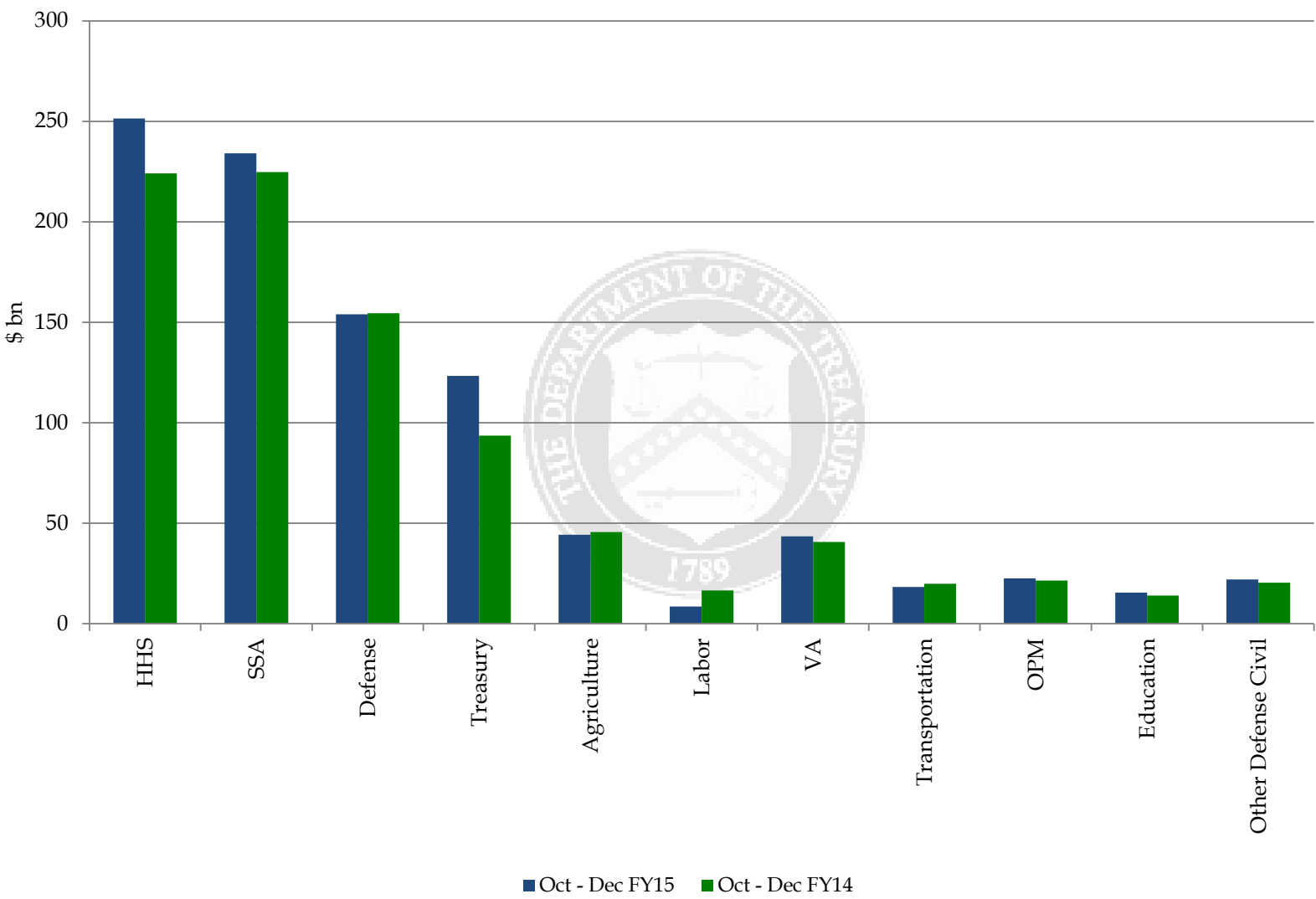
## Monthly Receipt Levels (12-Month Moving Average)



Individual Income Taxes include withheld and non-withheld. Social Insurance Taxes include FICA, SECA, RRTA, UTF deposits, FUTA and RUIA. Other includes excise taxes, estate and gift taxes, customs duties and miscellaneous receipts.

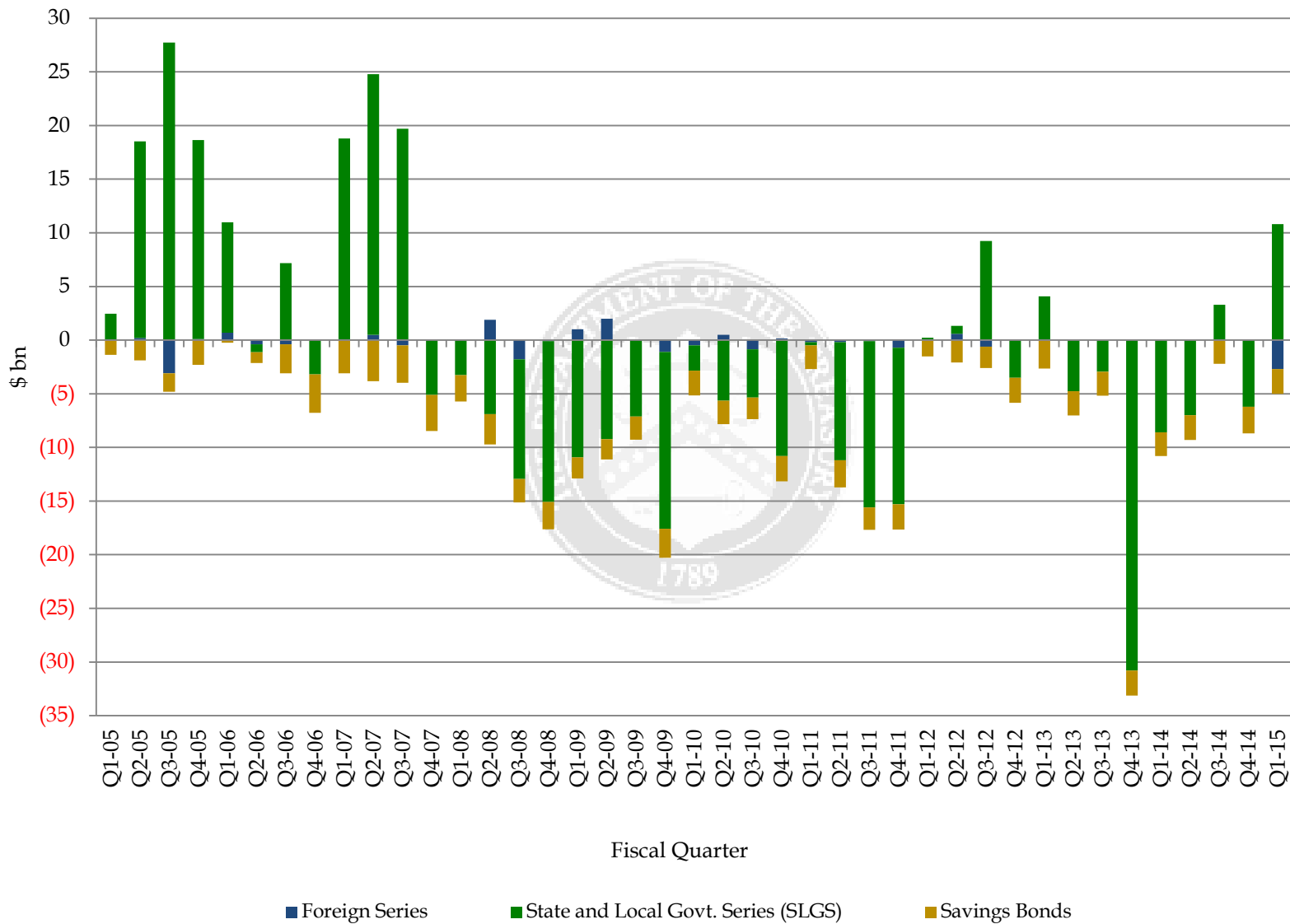
Source: United States Department of the Treasury

# Eleven Largest Outlays



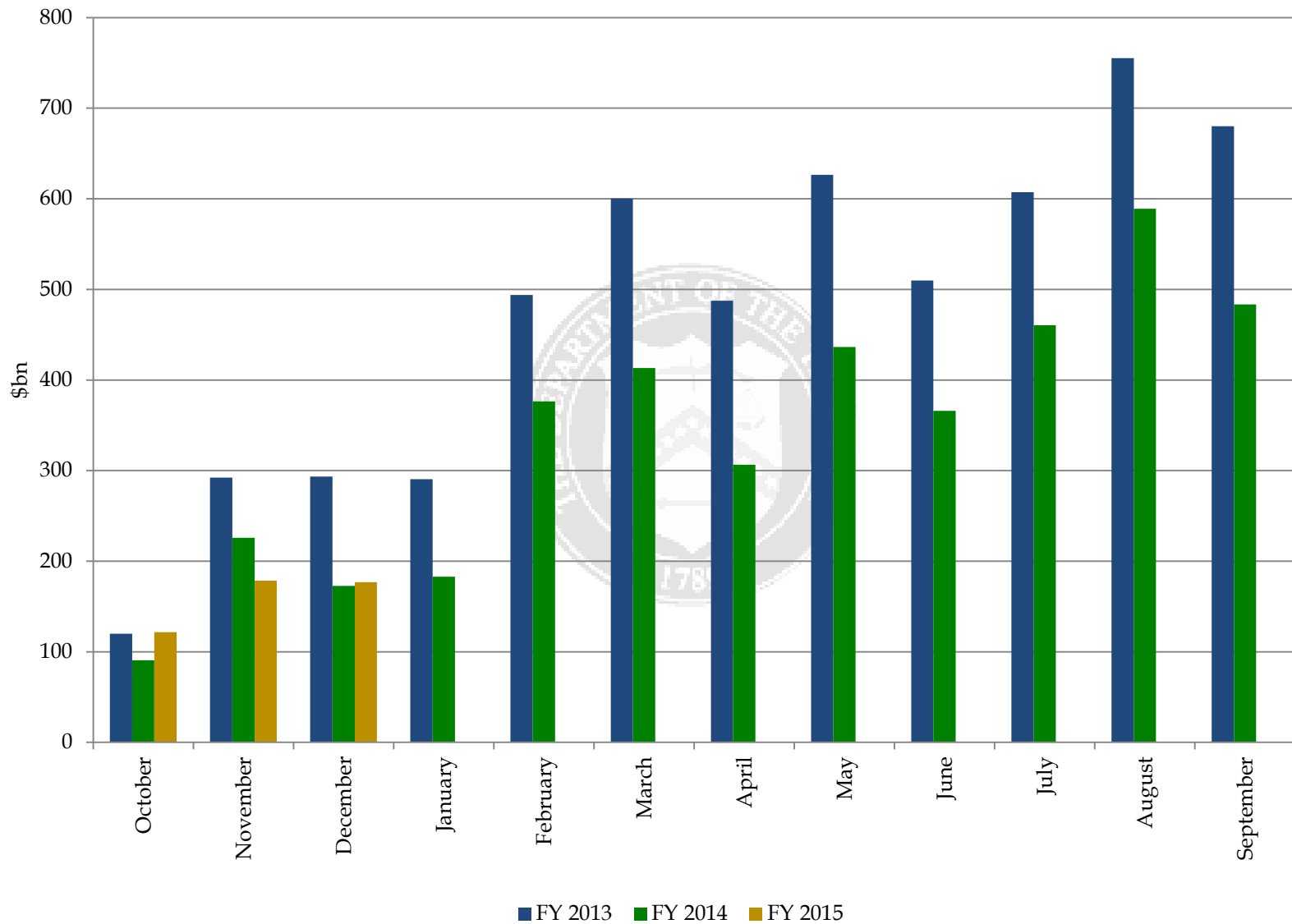
Source: United States Department of the Treasury

# Treasury Net Nonmarketable Borrowing



Source: United States Department of the Treasury

## Cumulative Budget Deficits by Fiscal Year



## FY 2015-2017 Deficits and Net Marketable Borrowing Estimates In \$ billions

	Primary Dealers <sup>1</sup>	OMB <sup>2</sup>	CBO <sup>3</sup>	OMB MSR <sup>4</sup>
FY 2015 Deficit Estimate	475	583	468	525
FY 2016 Deficit Estimate	528	474	467	525
FY 2017 Deficit Estimate	552	463	489	468
FY 2015 Deficit Range	400-550			
FY 2016 Deficit Range	375-600			
FY 2017 Deficit Range	325-700			
FY 2015 Net Marketable Borrowing Estimate	580	726	580	655
FY 2016 Net Marketable Borrowing Estimate	627	602	546	658
FY 2017 Net Marketable Borrowing Estimate	628	596	561	596
FY 2015 Net Marketable Borrowing Range	490-719			
FY 2016 Net Marketable Borrowing Range	470-915			
FY 2017 Net Marketable Borrowing Range	450-800			
Estimates as of:	Jan-15	Feb-15	Jan-15	Jul-14

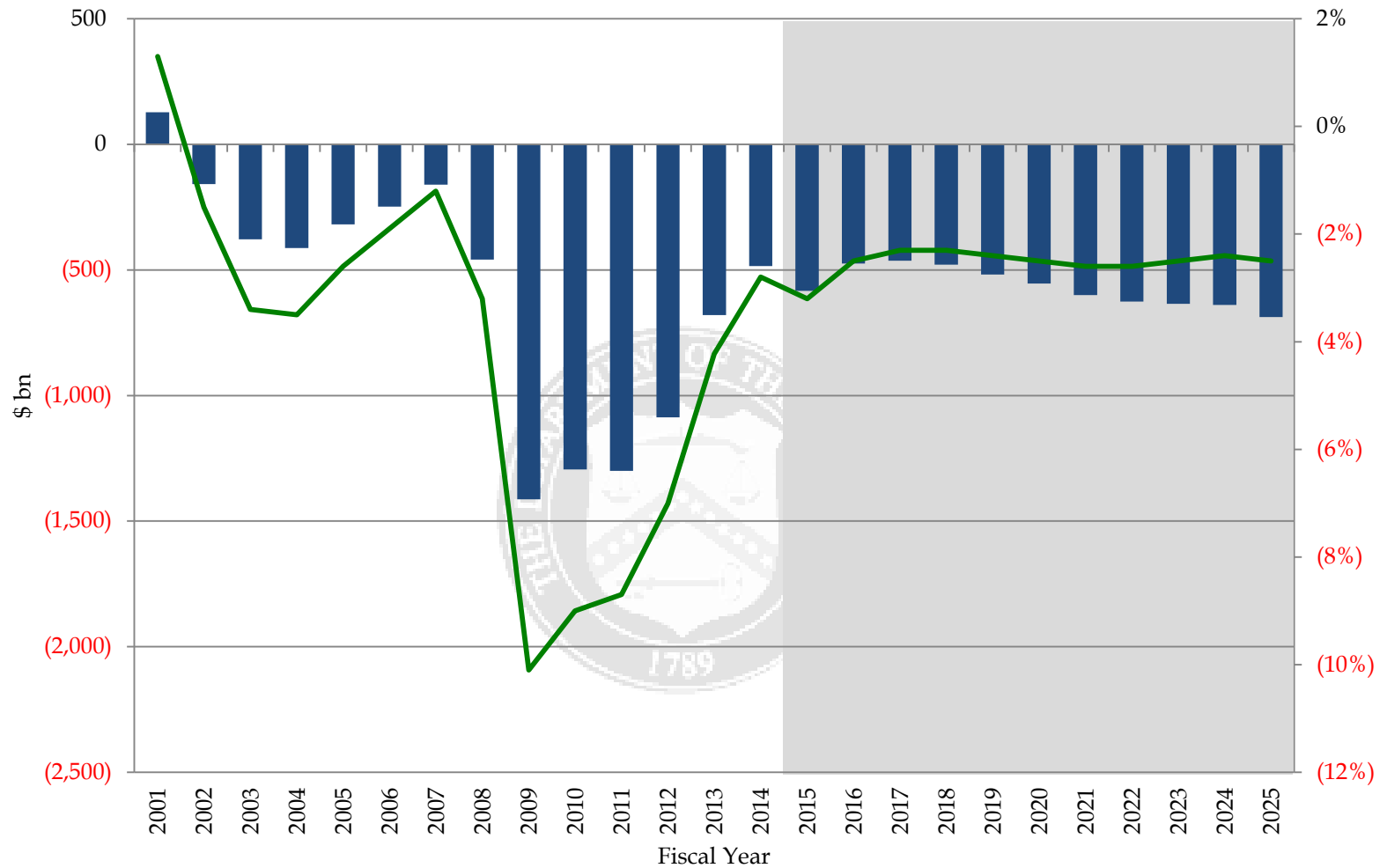
<sup>1</sup>Based on primary dealer feedback on Jan 26, 2015. Estimates above are averages.

<sup>2</sup>Table 1 of OMB's "Fiscal Year 2016 Budget of the US Government"

<sup>3</sup>Table 1 of CBO's "The Budget and Economic Outlook: 2015 to 2025"

<sup>4</sup>Table S-11 of OMB's "Fiscal Year 2015 MSR"

# Budget Surplus/Deficit



OMB's Projection
  Surplus/Deficit in \$bn (L)
  Surplus/Deficit as a % of GDP (R)

Projections are from Table S-1 of OMB's "Fiscal Year 2016 Budget of the US Government"

# Section II: Financing



## Assumptions for Financing Section (pages 13 to 19)

- Portfolio and SOMA holdings as of 12/31/2014.
- SOMA redemptions until and including June 2021. These assumptions are based on Chairman Bernanke's June 2013 press conference.
- Assumes announced issuance sizes and patterns constant for Nominal Coupons, TIPS, and FRNs as of 02/04/2015, while using an average of ~1.45 trillion of Bills outstanding consistent with Treasury's guidance of the FRN program replacing some Bills issuance.
- The principal on the TIPS securities was accreted to each projection date based on market ZCIS levels as of 12/31/2014.
- No attempt was made to match future financing needs.



## Sources of Financing in Fiscal Year 2015 Q1

October - December 2014	
Net Bill Issuance	47
Net Coupon Issuance	180
Subtotal: Net Marketable Borrowing	227
Ending Cash Balance	224
Beginning Cash Balance	158
Subtotal: Change in Cash Balance	66
Net Implied Funding for FY 2015 Q1*	161

Issuance	October - December 2014			Fiscal Year to Date		
	Bill Issuance			Gross	Maturing	Net
4-Week	489	464	25	489	464	25
13-Week	312	345	(33)	312	345	(33)
26-Week	351	299	52	351	299	52
52-Week	75	72	3	75	72	3
CMBs	0	0	0	0	0	0
Bill Subtotal	1,227	1,180	47	1,227	1,180	47

Issue	October - December 2014			Fiscal Year to Date		
	Coupon Issuance			Gross	Maturing	Net
2-Year	84	105	(21)	84	105	(21)
2-Year FRN	41	0	41	41	0	41
3-Year	78	100	(22)	78	100	(22)
5-Year	105	129	(24)	105	129	(24)
7-Year	87	0	87	87	0	87
10-Year	66	25	41	66	25	41
30-Year	42	0	42	42	0	42
5-Year TIPS	16	0	16	16	0	16
10-Year TIPS	13	0	13	13	0	13
30-Year TIPS	7	0	7	7	0	7
Coupon Subtotal	539	359	180	539	359	180

Total	1,766	1,539	227	1,766	1,539	227
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\*Assumes an end-of-December 2014 cash balance of \$224 billion versus a beginning-of-October 2014 cash balance of \$158 billion. By keeping the cash balance constant, Treasury arrives at the net implied funding number.

## Sources of Financing in Fiscal Year 2015 Q2

January - March 2015	
Assuming Constant Coupon and Average Bill Issuance Sizes as of 2/4/2015*	
Net Bill Issuance	32
Net Coupon Issuance	121
Subtotal: Net Marketable Borrowing	153
Treasury Announced Estimate: Net Marketable Borrowing**	155
Implied: Increase in FY 2015 Q2 Net Issuances	2

Issuance	January - March 2015 Bill Issuance			Fiscal Year to Date		
	Gross	Maturing	Net	Gross	Maturing	Net
4-Week	416	458	(42)	905	922	(17)
13-Week	364	312	52	676	657	19
26-Week	325	309	16	676	608	68
52-Week	72	66	6	147	138	9
CMBs	0	0	0	0	0	0
Bill Subtotal	1,177	1,145	32	2,404	2,325	79

Issue	January - March 2015 Coupon Issuance			Fiscal Year to Date		
	Gross	Maturing	Net	Gross	Maturing	Net
2-Year	78	105	(27)	162	210	(48)
2-Year FRN	41	0	41	82	0	82
3-Year	72	104	(32)	150	204	(54)
5-Year	105	129	(24)	210	258	(48)
7-Year	87	0	87	174	0	174
10-Year	66	34	32	132	60	72
30-Year	42	11	31	84	11	74
5-Year TIPS	0	0	0	16	0	16
10-Year TIPS	28	24	4	41	24	17
30-Year TIPS	9	0	9	16	0	16
Coupon Subtotal	528	407	121	1,067	765	302

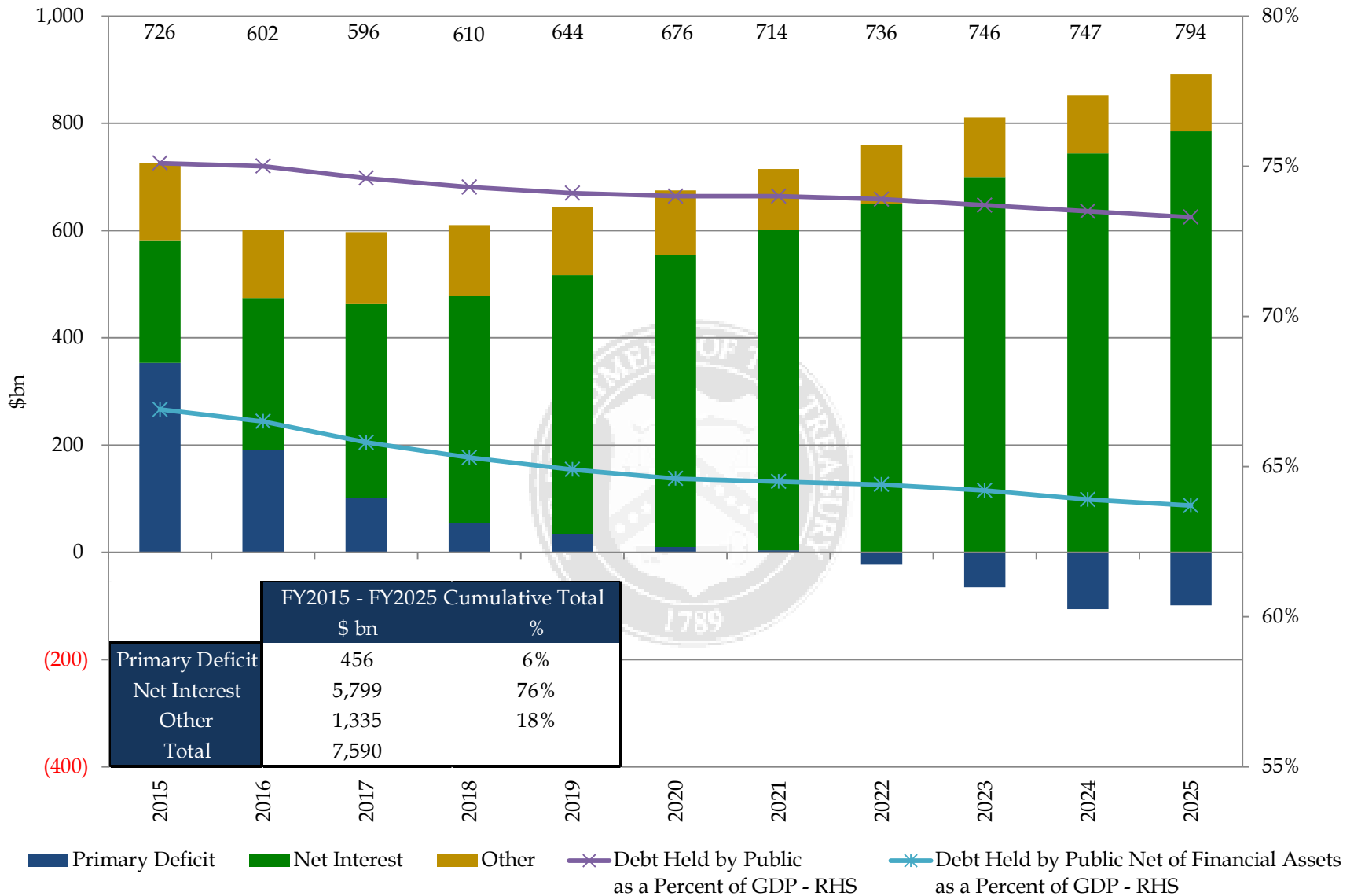
Total	1,705	1,552	153	3,471	3,090	381
-------	-------	-------	-----	-------	-------	-----

\*Keeping announced issuance sizes and patterns constant for Nominal Coupons, TIPS, and FRNs as of 02/04/2015, while using an average of ~1.45 trillion of Bills Outstanding consistent with Treasury's guidance of the FRN program replacing some Bills issuance.

\*\*Assumes an end-of-March 2015 cash balance of \$100 billion versus a beginning-of-January 2015 cash balance of \$224 billion.

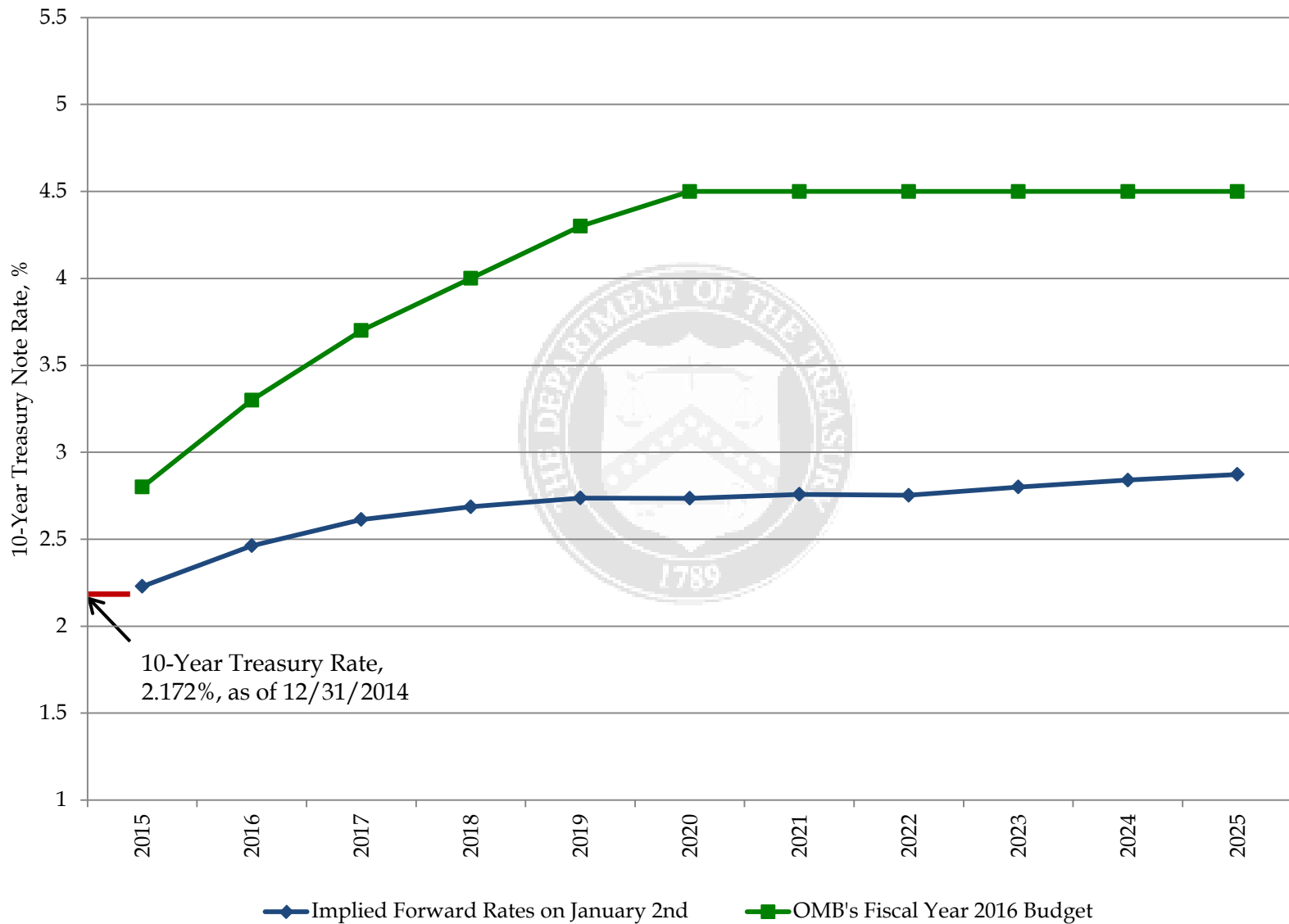
Financing Estimates released by the Treasury can be found here: <http://www.treasury.gov/resource-center/data-chart-center/quarterly-refunding/Pages/Latest.aspx>

# OMB's Projection of Borrowing from the Public



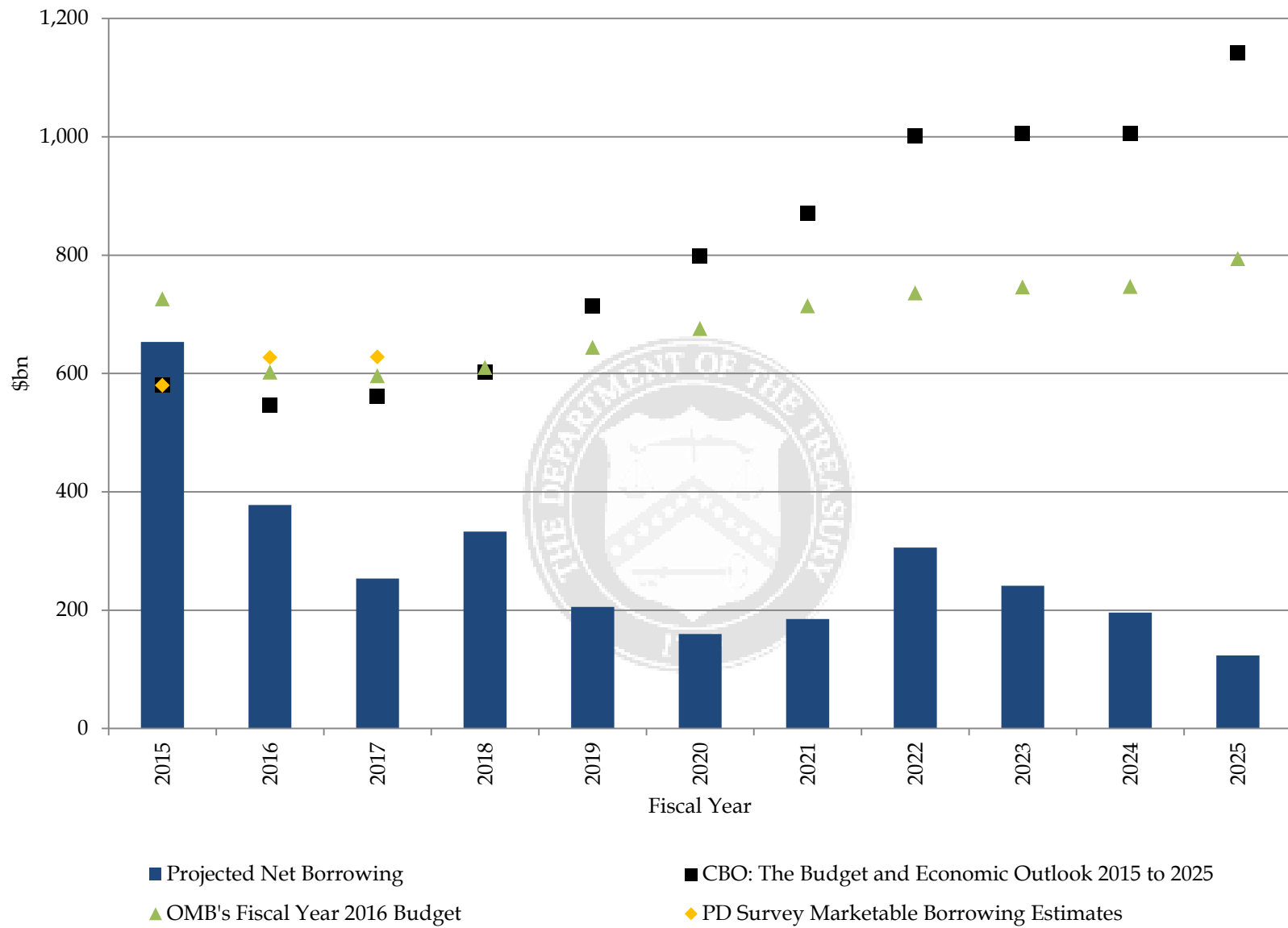
OMB's projections of net borrowing from the public are from Table S-13 of the "Fiscal Year 2016 Budget of the US Government." Data labels at the top represent the change in debt held by the public in \$ billions. "Other" represents borrowing from the public to provide direct and guaranteed loans.

## Interest Rate Assumptions: 10-Year Treasury Note



OMB's economic assumption of the 10-year Treasury Note rates are from Table S-12 of the "Fiscal Year 2016 Budget of the US Government." The forward rates are the implied 10-year Treasury Note rates on January 2<sup>nd</sup> of that year.

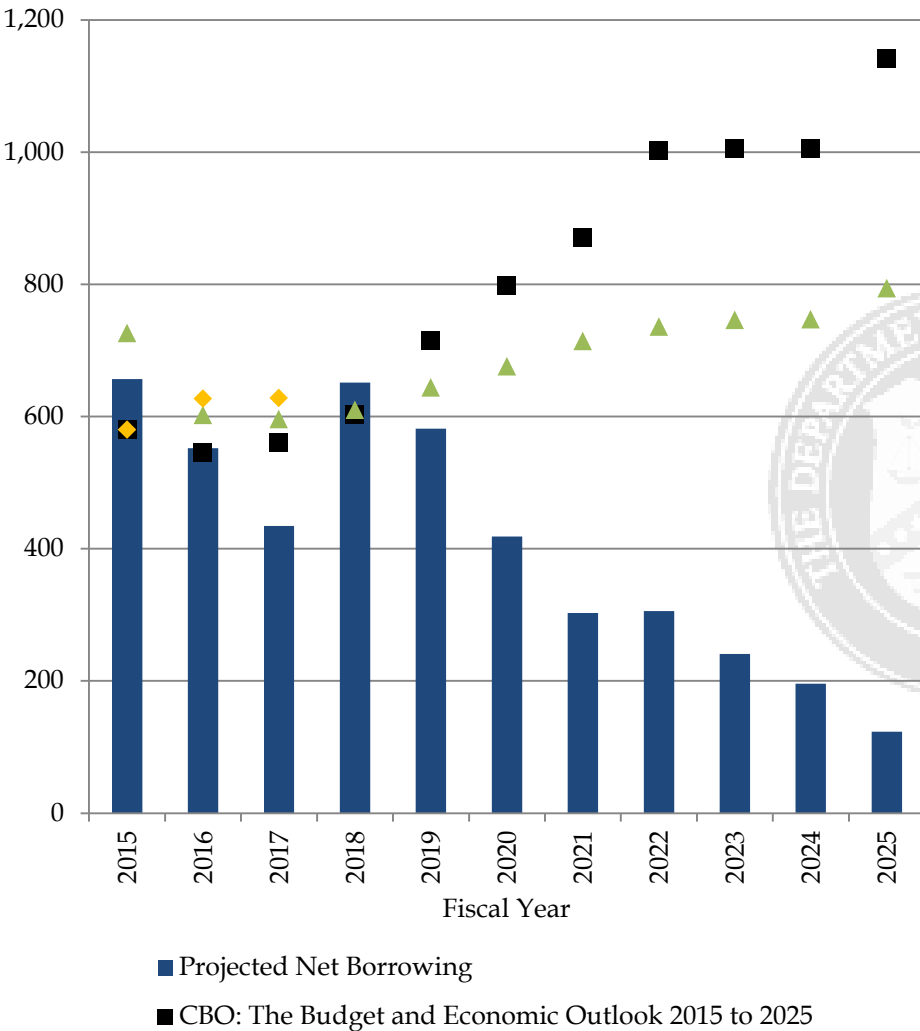
# Projected Net Borrowing Assuming Constant Future Issuance



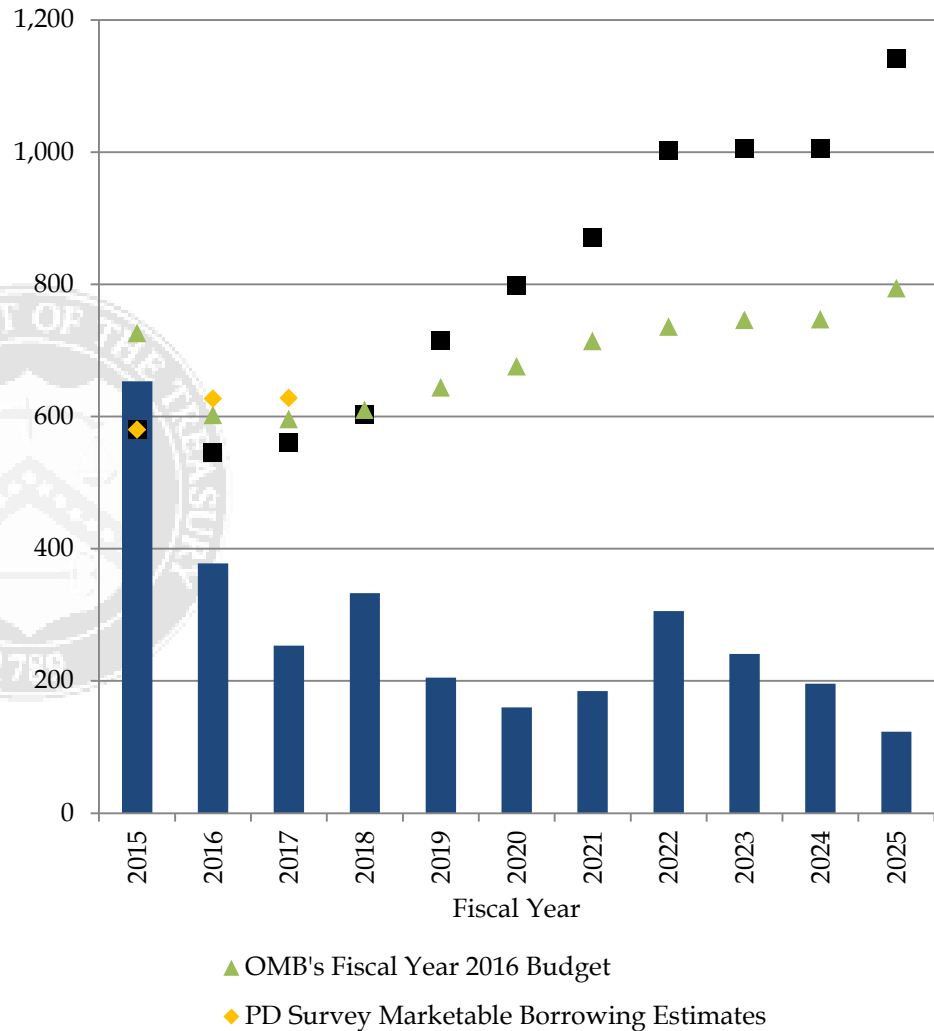
Treasury’s primary dealer survey estimates can be found on page 9. OMB’s estimates of borrowing from the public are from Table S-13 of the “Fiscal Year 2016 Budget of the US Government.” CBO’s estimates of the borrowing from the public are from Summary Table 1 of the “CBO: The Budget and Economic Outlook 2015 to 2025.” See table at the end of this section for details.

# Impact of SOMA Actions on Projected Net Borrowing Assuming Future Issuance Remains Constant

## With Fed Reinvestments (\$bn)



## Without Fed Reinvestments (\$bn)



Treasury's primary dealer survey estimates can be found on page 9. OMB's estimates of borrowing from the public are from Table S-13 of the "Fiscal Year 2016 Budget of the US Government." CBO's estimates of the borrowing from the public are from Summary Table 1 of the "CBO: The Budget and Economic Outlook 2015 to 2025." See table at the end of this section for details.

# Historical Net Marketable Borrowing and Projected Net Borrowing Assuming Future Issuance Remains Constant, \$ billions

Fiscal Year	Bills	2/3/5	7/10/30	TIPS	FRN	Historical/Projected Net Borrowing Capacity	OMB's Fiscal Year 2016 Budget	CBO: The Budget and Economic Outlook 2015 to 2025	Jan 2015 Primary Dealer Survey
2009	503	732	514	38	0	1,786			
2010	(204)	869	783	35	0	1,483			
2011	(311)	576	751	88	0	1,104			
2012	139	148	738	90	0	1,115			
2013	(86)	86	720	111	0	830			
2014	(119)	(92)	669	88	123	669			
2015	46	(283)	639	88	164	654	726	580	580
2016	(3)	(173)	442	70	41	378	602	546	627
2017	0	(73)	256	71	(0)	253	596	561	628
2018	0	29	238	66	0	333	610	602	
2019	0	35	104	67	0	205	644	714	
2020	0	(0)	119	41	0	160	676	798	
2021	0	13	156	15	0	183	714	871	
2022	0	72	231	3	0	306	736	1,002	
2023	0	44	195	3	(0)	241	746	1,005	
2024	0	2	192	1	0	196	747	1,005	
2025	0	(34)	200	(43)	(0)	124	794	1,142	

Treasury's primary dealer survey estimates can be found on page 9. OMB's estimates of borrowing from the public are from Table S-13 of the "Fiscal Year 2016 Budget of the US Government." CBO's estimates of the borrowing from the public are from Summary Table 1 of the "CBO: The Budget and Economic Outlook 2015 to 2025."

# Section III: Portfolio Metrics

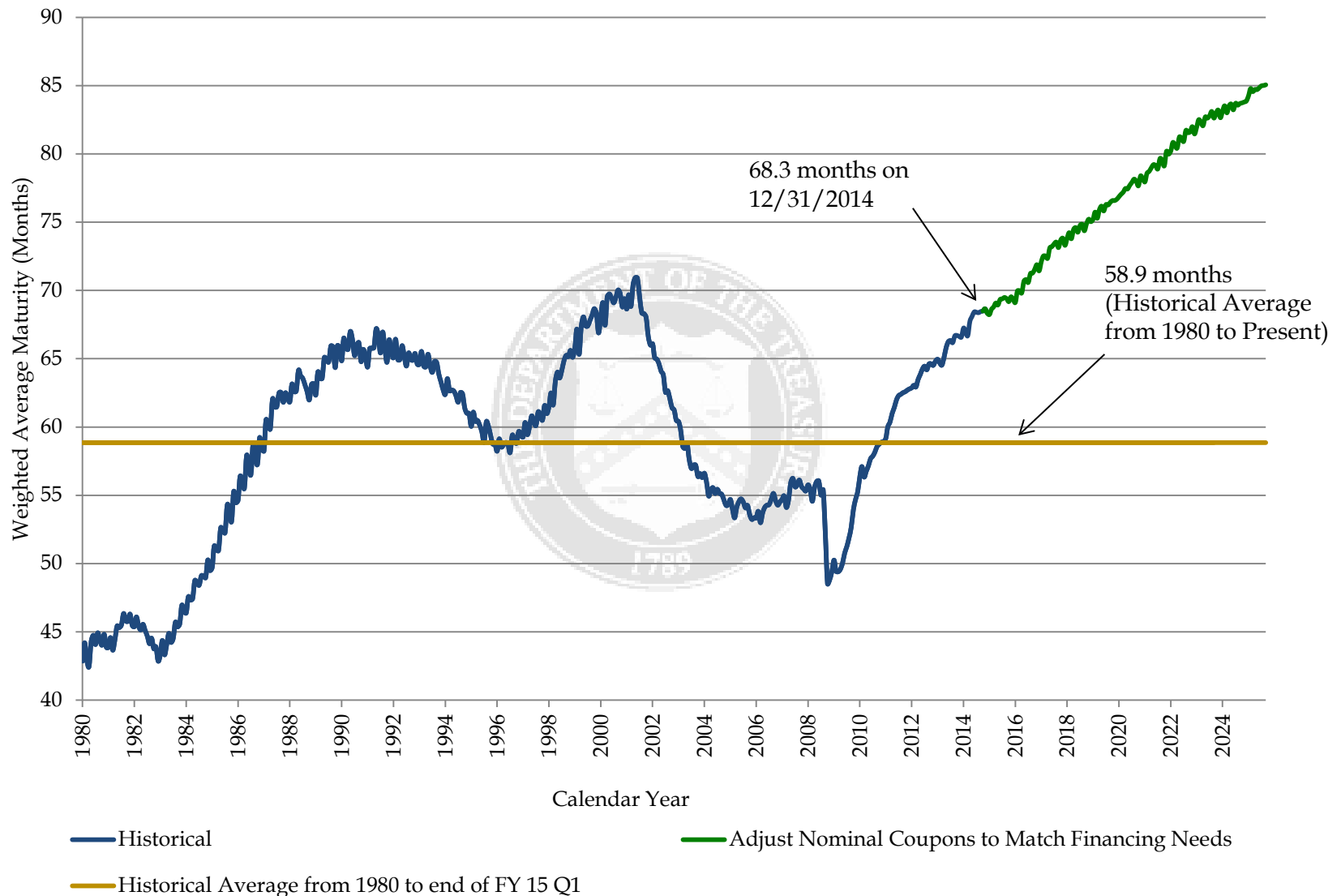
A faint, circular watermark of the University of Toronto seal is centered behind the text. The seal features a shield with a cross and four dots, surrounded by the text "THE UNIVERSITY OF TORONTO" and the year "1789".

## Assumptions for Portfolio Metrics Section (pages 22 to 27) and Appendix

- Portfolio and SOMA holdings as of 12/31/2014.
- SOMA redemptions until and including June 2021. These assumptions are based on Chairman Bernanke's June 2013 press conference.
- To match OMB's projected borrowing from the public for the next 10 years, Nominal Coupon securities (2-, 3-, 5-, 7-, 10-, and 30-year) were adjusted by the same percentage.
- The principal on the TIPS securities was accreted to each projection date based on market ZCIS levels as of 12/31/2014.
- OMB's estimates of borrowing from the public are from Table S-13 of the "Fiscal Year 2016 Budget of the US Government."

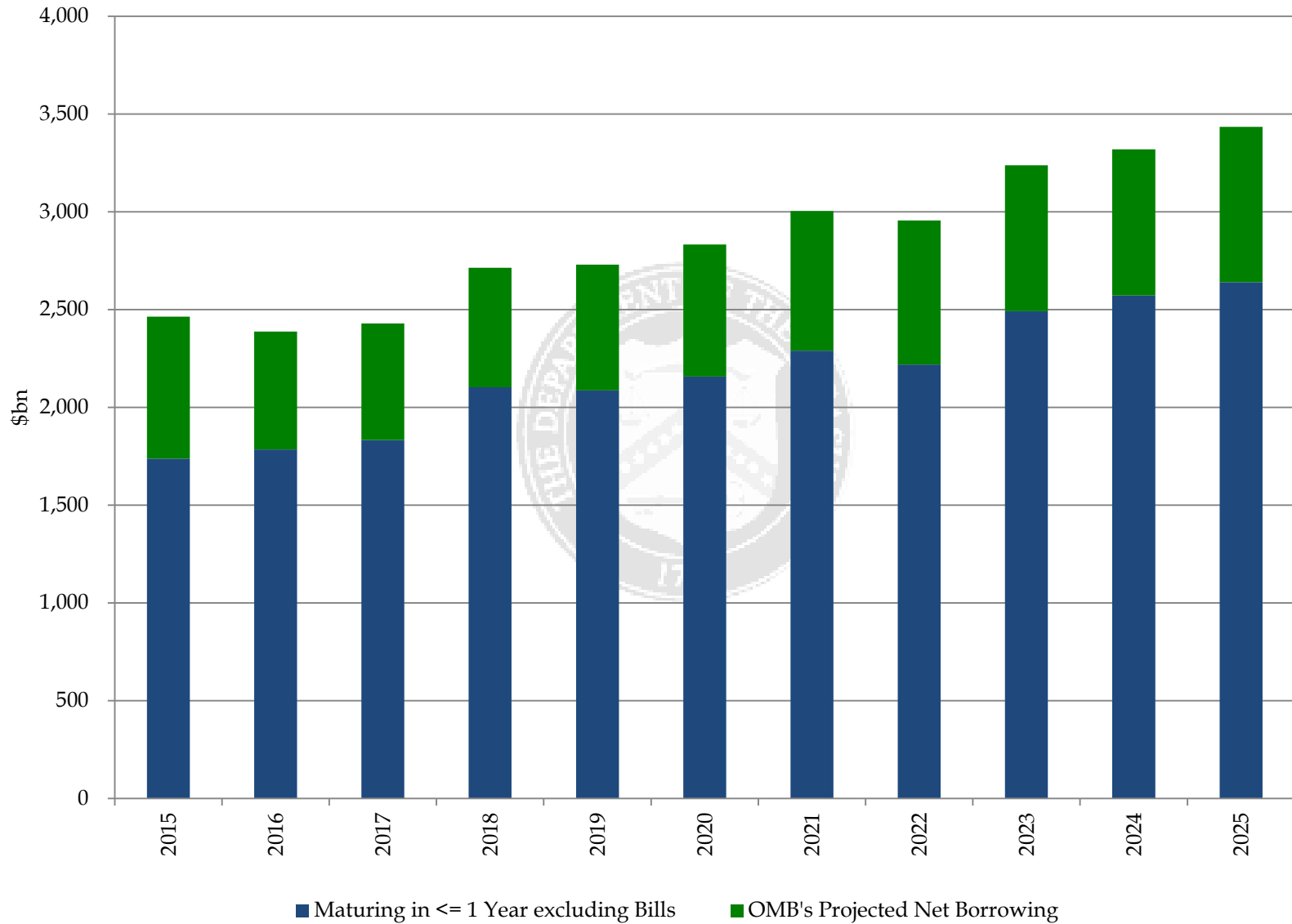


# Weighted Average Maturity of Marketable Debt Outstanding



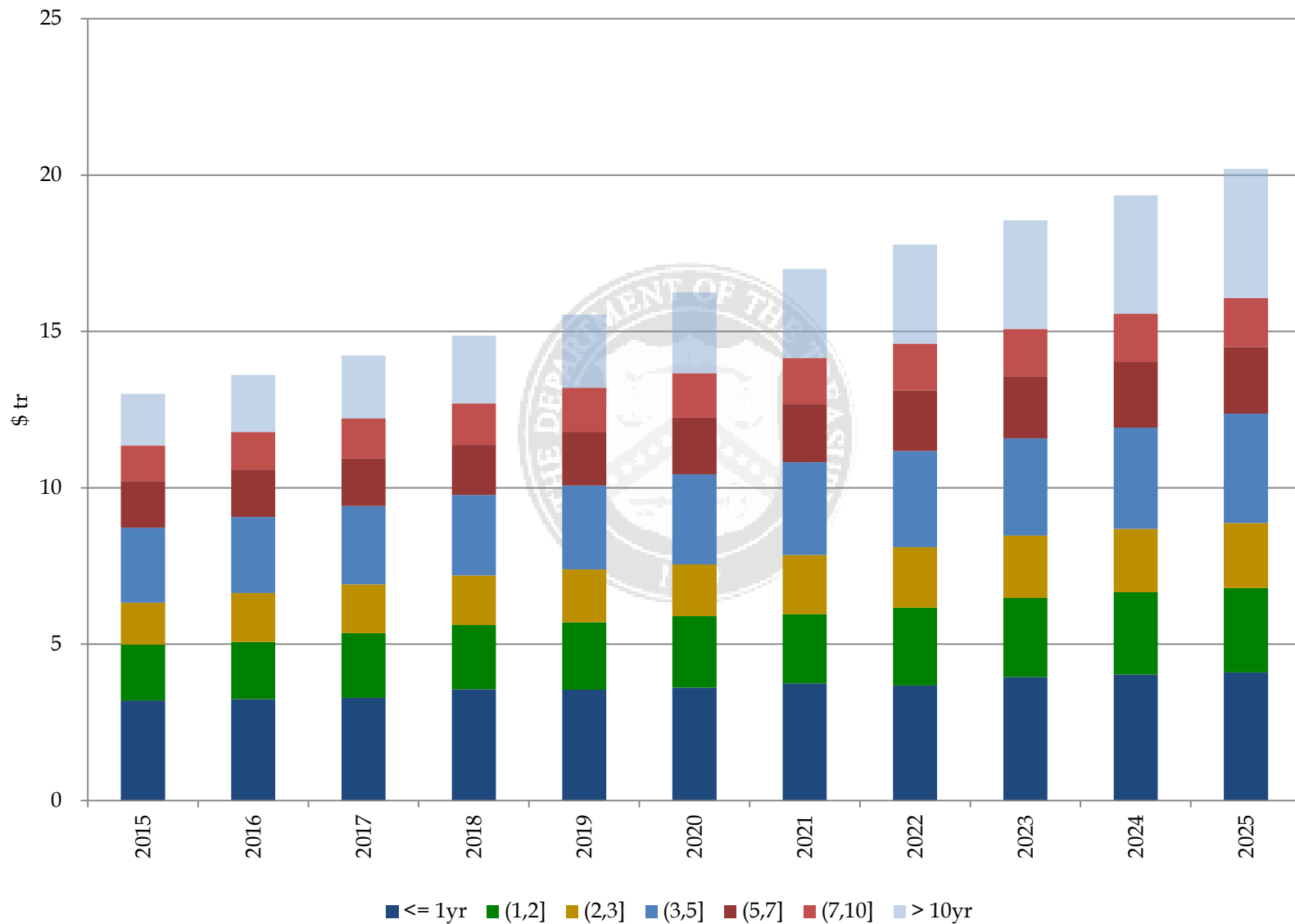
This scenario does not represent any particular course of action that Treasury is expected to follow. Instead, it is intended to demonstrate the basic trajectory of average maturity absent changes to the mix of securities issued by Treasury.

## Projected Gross Borrowing excluding Bills for Fiscal Year



This scenario does not represent any particular course of action that Treasury is expected to follow. Instead, it is intended to demonstrate the basic trajectory of average maturity absent changes to the mix of securities issued by Treasury.

## Projected Maturity Profile from end of Fiscal Year



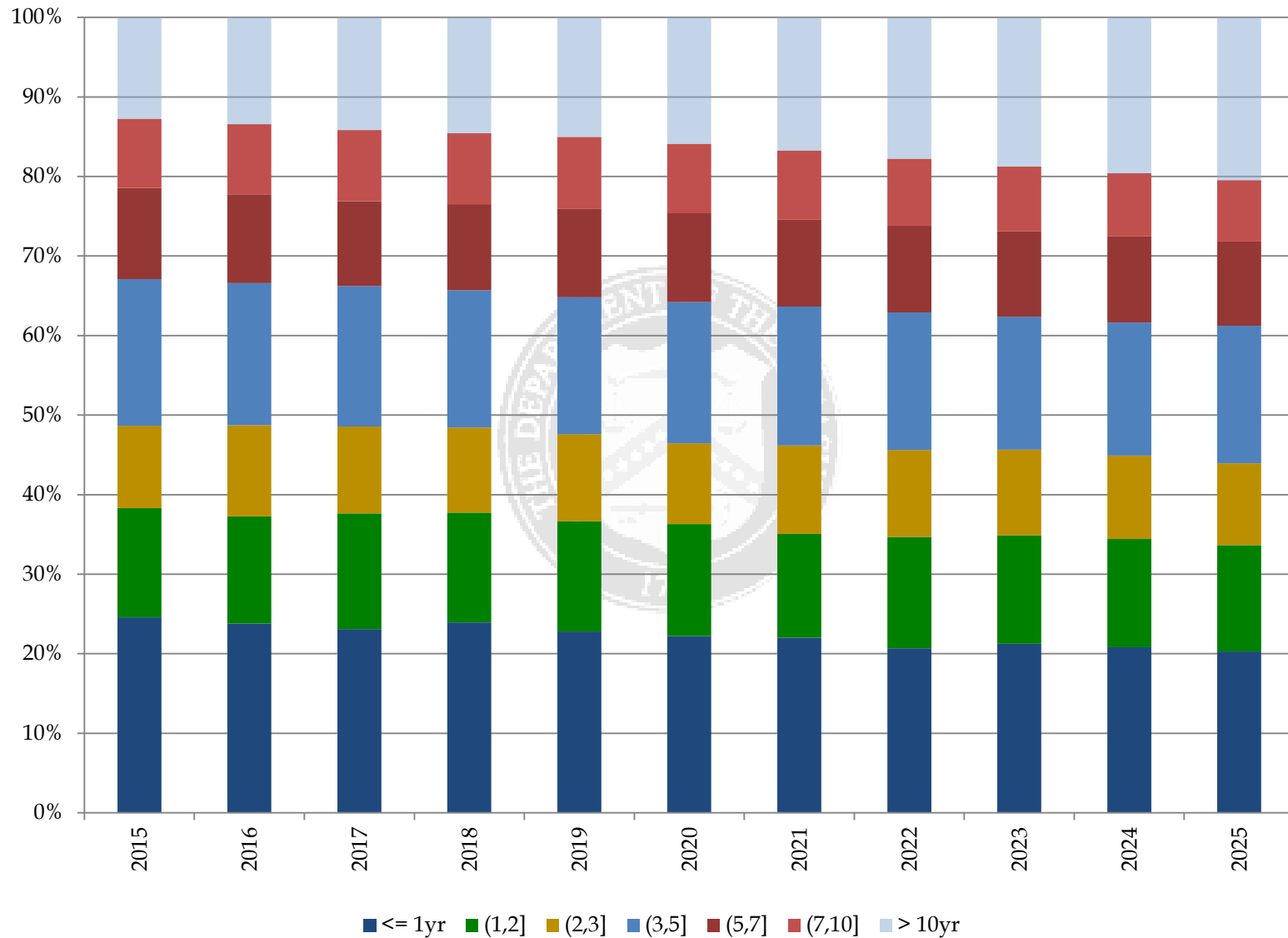
This scenario does not represent any particular course of action that Treasury is expected to follow. Instead, it is intended to demonstrate the basic trajectory of average maturity absent changes to the mix of securities issued by Treasury. See table on following page for details.

## Recent and Projected Maturity Profile, \$ billions

End of Fiscal Year	<= 1yr	(1,2]	(2,3]	(3,5]	(5,7]	(7,10]	> 10yr	Total	(0, 5]
2008	2,152	711	280	653	310	499	617	5,222	3,796
2009	2,702	774	663	962	559	643	695	6,998	5,101
2010	2,563	1,141	895	1,273	907	856	853	8,488	5,872
2011	2,620	1,334	980	1,541	1,070	1,053	1,017	9,616	6,476
2012	2,951	1,373	1,104	1,811	1,214	1,108	1,181	10,742	7,239
2013	2,939	1,523	1,242	1,965	1,454	1,136	1,331	11,590	7,669
2014	2,935	1,739	1,319	2,207	1,440	1,113	1,528	12,281	8,199
2015	3,195	1,785	1,346	2,397	1,490	1,129	1,660	13,003	8,724
2016	3,240	1,831	1,562	2,432	1,519	1,196	1,829	13,609	9,064
2017	3,287	2,071	1,552	2,513	1,518	1,275	2,015	14,230	9,422
2018	3,558	2,054	1,588	2,568	1,606	1,325	2,167	14,865	9,767
2019	3,541	2,155	1,699	2,677	1,724	1,405	2,338	15,538	10,071
2020	3,612	2,287	1,652	2,881	1,814	1,418	2,585	16,248	10,432
2021	3,744	2,217	1,888	2,971	1,861	1,468	2,849	16,998	10,820
2022	3,674	2,489	1,941	3,077	1,935	1,494	3,162	17,772	11,181
2023	3,946	2,530	1,996	3,107	1,986	1,514	3,480	18,559	11,579
2024	4,027	2,636	2,027	3,234	2,099	1,536	3,789	19,348	11,924
2025	4,095	2,701	2,079	3,494	2,135	1,559	4,134	20,197	12,369

This scenario does not represent any particular course of action that Treasury is expected to follow. Instead, it is intended to demonstrate the basic trajectory of average maturity absent changes to the mix of securities issued by Treasury. Portfolio Composition by original issuance type and term can be found in the appendix (Page 43).

## Projected Maturity Profile from end of Fiscal Year



This scenario does not represent any particular course of action that Treasury is expected to follow. Instead, it is intended to demonstrate the basic trajectory of average maturity absent changes to the mix of securities issued by Treasury. See table on following page for details

## Recent and Projected Maturity Profile

End of Fiscal Year	<= 1yr	(1,2]	(2,3]	(3,5]	(5,7]	(7,10]	> 10yr	(0, 3]	(0, 5]
2008	41.2%	13.6%	5.4%	12.5%	5.9%	9.6%	11.8%	60.2%	72.7%
2009	38.6%	11.1%	9.5%	13.7%	8.0%	9.2%	9.9%	59.1%	72.9%
2010	30.2%	13.4%	10.5%	15.0%	10.7%	10.1%	10.0%	54.2%	69.2%
2011	27.2%	13.9%	10.2%	16.0%	11.1%	10.9%	10.6%	51.3%	67.3%
2012	27.5%	12.8%	10.3%	16.9%	11.3%	10.3%	11.0%	50.5%	67.4%
2013	25.4%	13.1%	10.7%	17.0%	12.5%	9.8%	11.5%	49.2%	66.2%
2014	23.9%	14.2%	10.7%	18.0%	11.7%	9.1%	12.4%	48.8%	66.8%
2015	24.6%	13.7%	10.4%	18.4%	11.5%	8.7%	12.8%	48.7%	67.1%
2016	23.8%	13.5%	11.5%	17.9%	11.2%	8.8%	13.4%	48.7%	66.6%
2017	23.1%	14.6%	10.9%	17.7%	10.7%	9.0%	14.2%	48.6%	66.2%
2018	23.9%	13.8%	10.7%	17.3%	10.8%	8.9%	14.6%	48.4%	65.7%
2019	22.8%	13.9%	10.9%	17.2%	11.1%	9.0%	15.0%	47.6%	64.8%
2020	22.2%	14.1%	10.2%	17.7%	11.2%	8.7%	15.9%	46.5%	64.2%
2021	22.0%	13.0%	11.1%	17.5%	10.9%	8.6%	16.8%	46.2%	63.7%
2022	20.7%	14.0%	10.9%	17.3%	10.9%	8.4%	17.8%	45.6%	62.9%
2023	21.3%	13.6%	10.8%	16.7%	10.7%	8.2%	18.8%	45.6%	62.4%
2024	20.8%	13.6%	10.5%	16.7%	10.8%	7.9%	19.6%	44.9%	61.6%
2025	20.3%	13.4%	10.3%	17.3%	10.6%	7.7%	20.5%	43.9%	61.2%

This scenario does not represent any particular course of action that Treasury is expected to follow. Instead, it is intended to demonstrate the basic trajectory of average maturity absent changes to the mix of securities issued by Treasury. Portfolio composition by original issuance type and term can be found in the appendix (Page 43).

# Section IV: Demand



## Summary Statistics for Fiscal Year 2015 Q1 Auctions

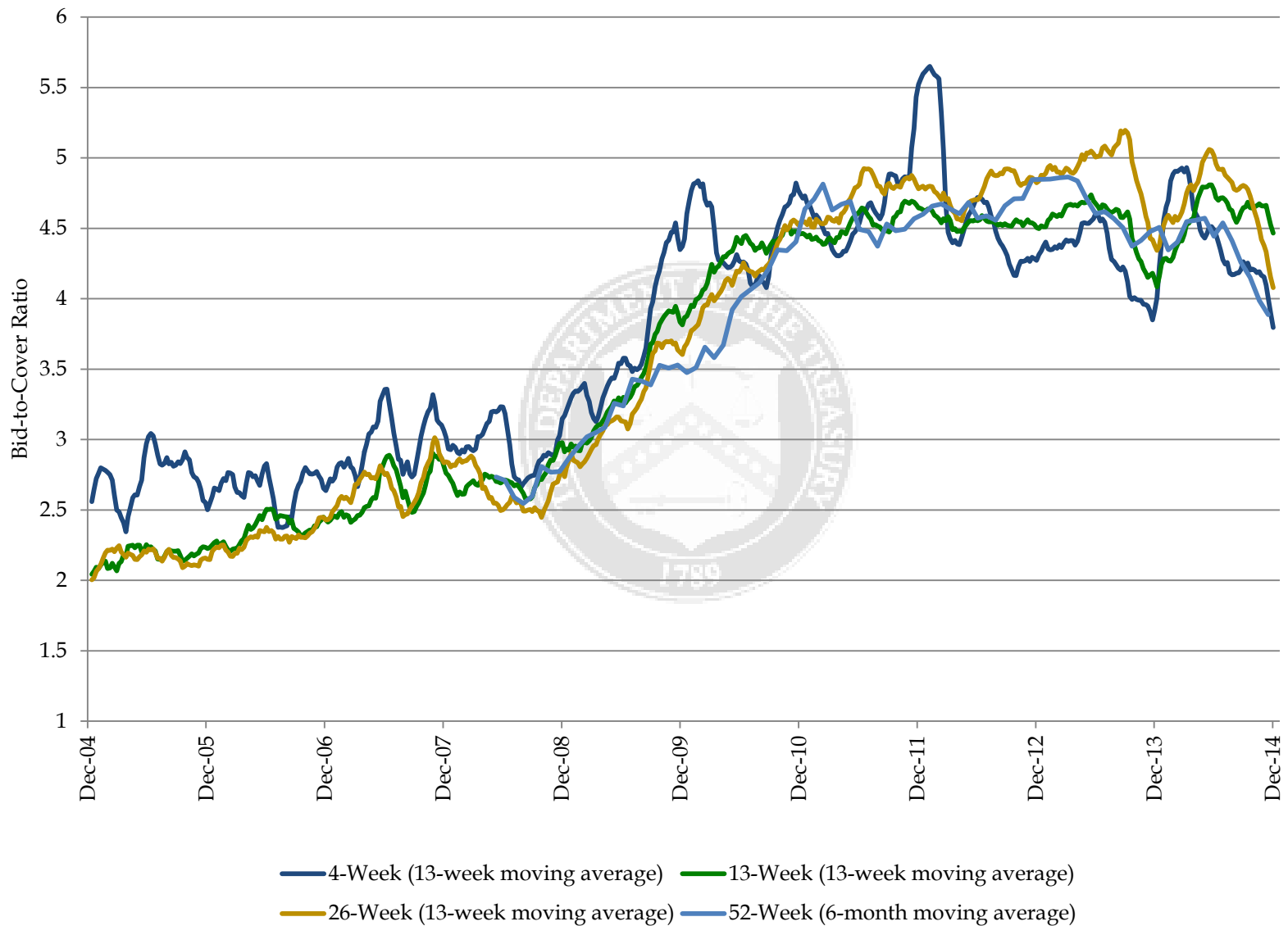
Security Type	Term	Stop Out Rate (%)*	Bid-to-Cover Ratio*	Competitive Awards (\$ bn)	% Primary Dealer*	% Direct*	% Indirect*	Non-Competitive Awards (\$ bn)	SOMA Add Ons (\$ bn)	10-Yr Equivalent (\$ bn)**
Bill	4-Week	0.029	3.8	483.3	73.0%	4.4%	22.7%	3.2	0.0	4.6
Bill	13-Week	0.026	4.5	303.4	69.1%	6.1%	24.8%	5.1	0.0	9.2
Bill	26-Week	0.076	4.0	339.9	58.1%	5.9%	36.0%	4.3	0.0	13.9
Bill	52-Week	0.150	3.6	74.3	71.2%	4.7%	24.1%	0.4	0.0	6.8
Bill	CMBs	0.000	0.0	0.0	0.0%	0.0%	0.0%	0.0	0.0	0.0
Coupon	2-Year	0.553	3.3	83.2	48.3%	15.7%	36.1%	0.5	0.0	17.4
Coupon	3-Year	1.018	3.3	77.5	47.3%	14.3%	38.4%	0.2	0.0	24.5
Coupon	5-Year	1.634	2.6	104.9	33.6%	9.2%	57.2%	0.1	0.0	55.3
Coupon	7-Year	2.034	2.5	87.0	37.6%	11.4%	51.1%	0.0	0.0	62.8
Coupon	10-Year	2.322	2.7	65.9	43.3%	9.2%	47.5%	0.1	0.0	66.2
Coupon	30-Year	3.011	2.5	42.0	34.2%	19.4%	46.4%	0.0	0.0	93.9
TIPS	5-Year	0.395	2.4	16.0	30.0%	5.2%	64.8%	0.0	0.0	7.8
TIPS	10-Year	0.497	2.6	13.0	29.5%	8.1%	62.4%	0.0	0.0	14.0
TIPS	30-Year	0.985	2.3	7.0	31.0%	4.5%	64.5%	0.0	0.0	19.7
FRN	2-Year FRN	0.076	3.5	41.0	54.1%	4.6%	41.3%	0.0	0.0	0.4

Total Bills	0.049	4.0	1,201.0	67.7%	5.3%	27.1%	13.0	0.0	34.4
Total Coupons	1.634	2.8	460.4	40.7%	12.6%	46.7%	1.0	0.1	320.2
Total TIPS	0.546	2.4	35.9	30.0%	6.1%	63.9%	0.1	0.0	41.5
Total FRN	0.076	3.5	41.0	54.1%	4.6%	41.3%	0.0	0.0	0.4

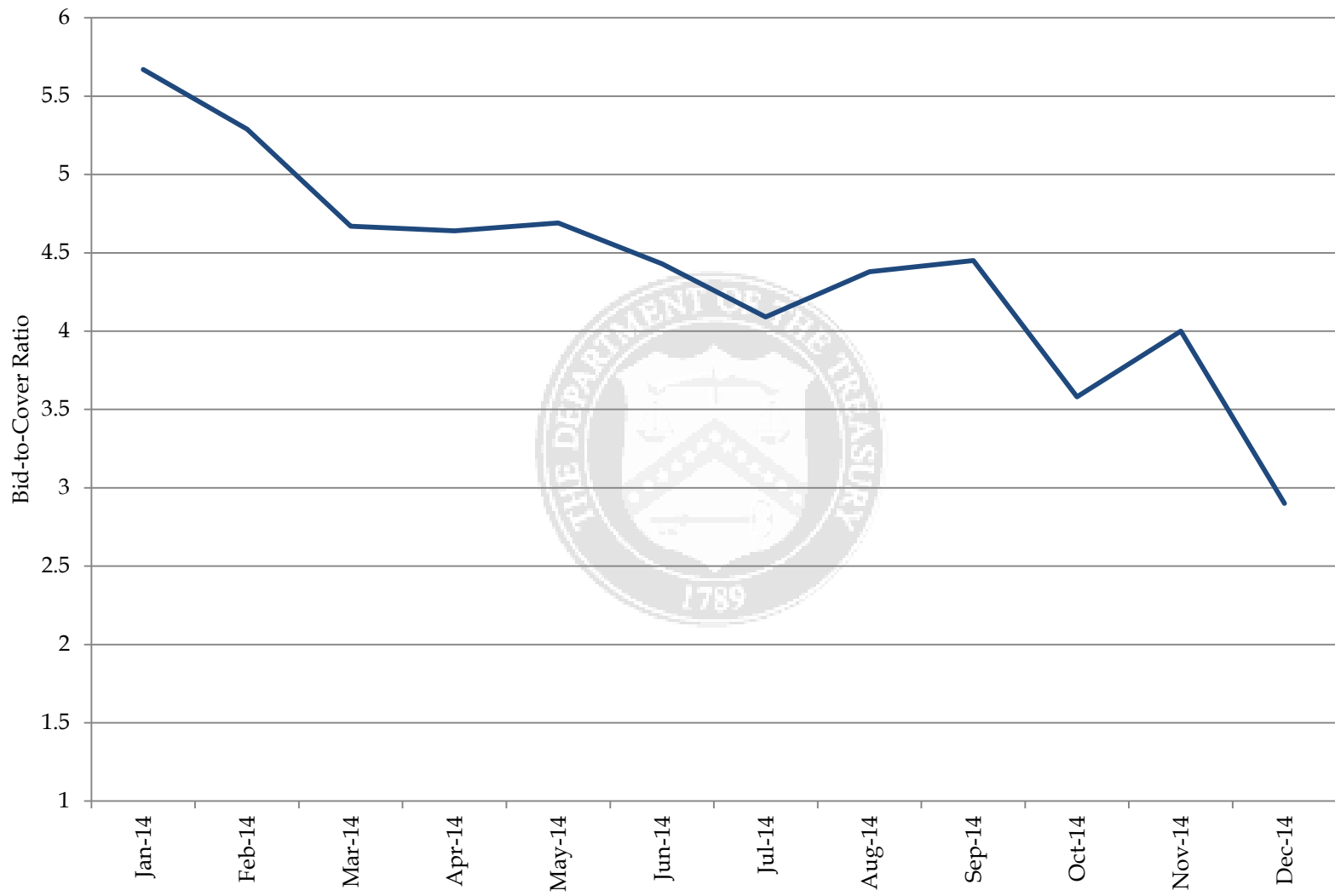
\*Weighted averages of Competitive Awards.

\*\*Approximated using prices at settlement and includes both Competitive and Non-Competitive Awards. For TIPS' 10-year equivalent, a constant auction BEI is used as the inflation assumption.

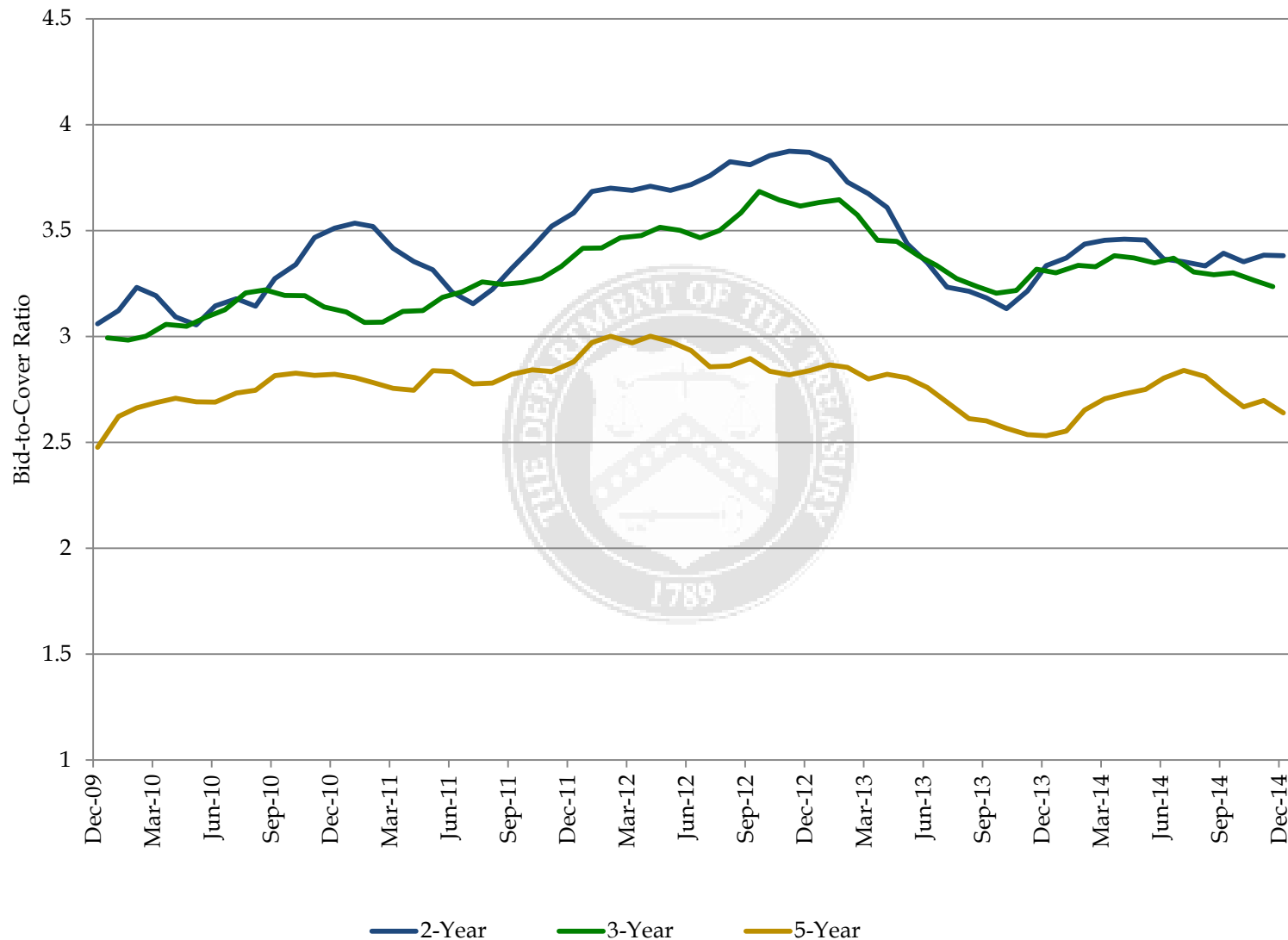
## Bid-to-Cover Ratios for Treasury Bills



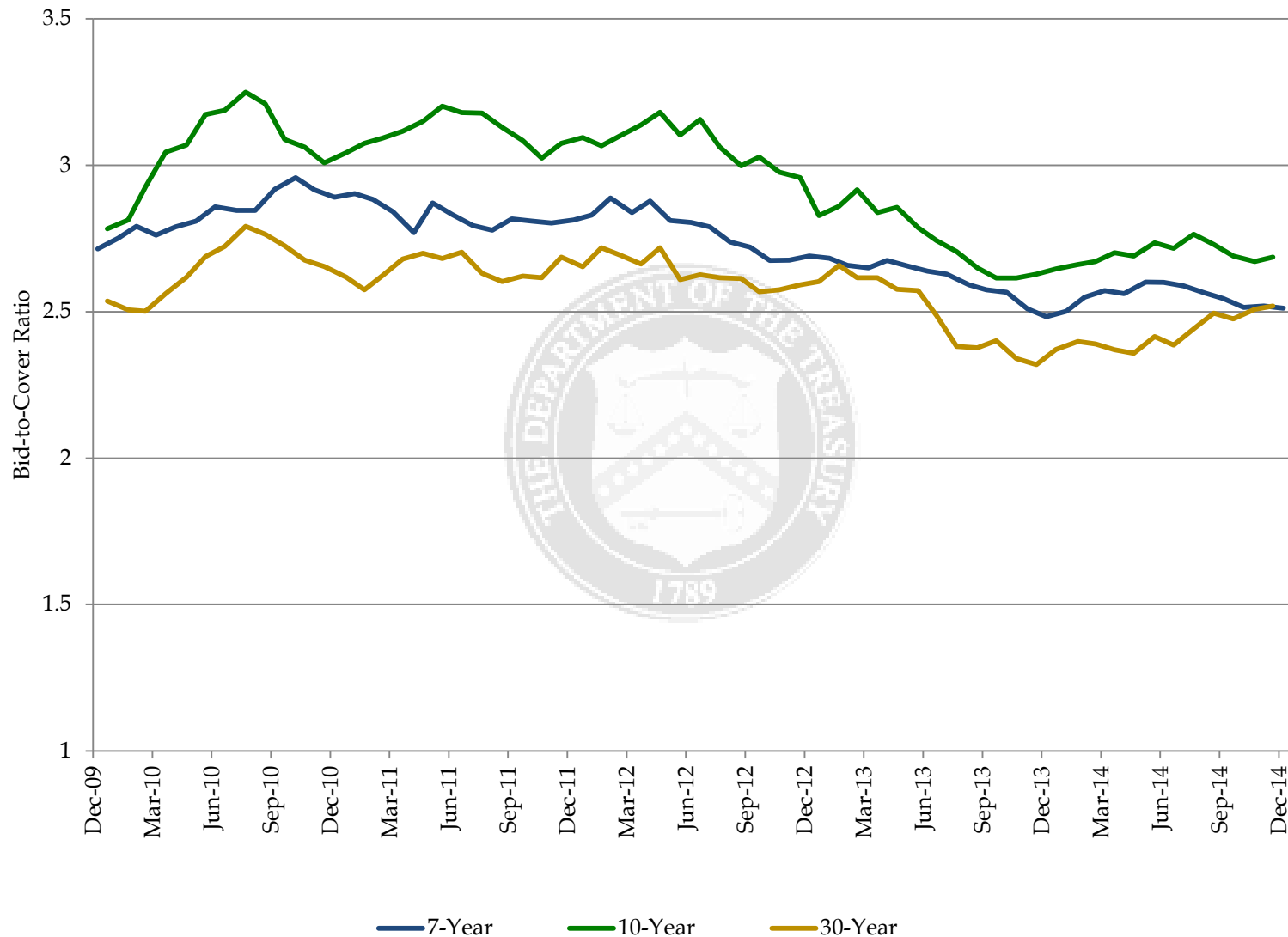
## Bid-to-Cover Ratios for FRNs



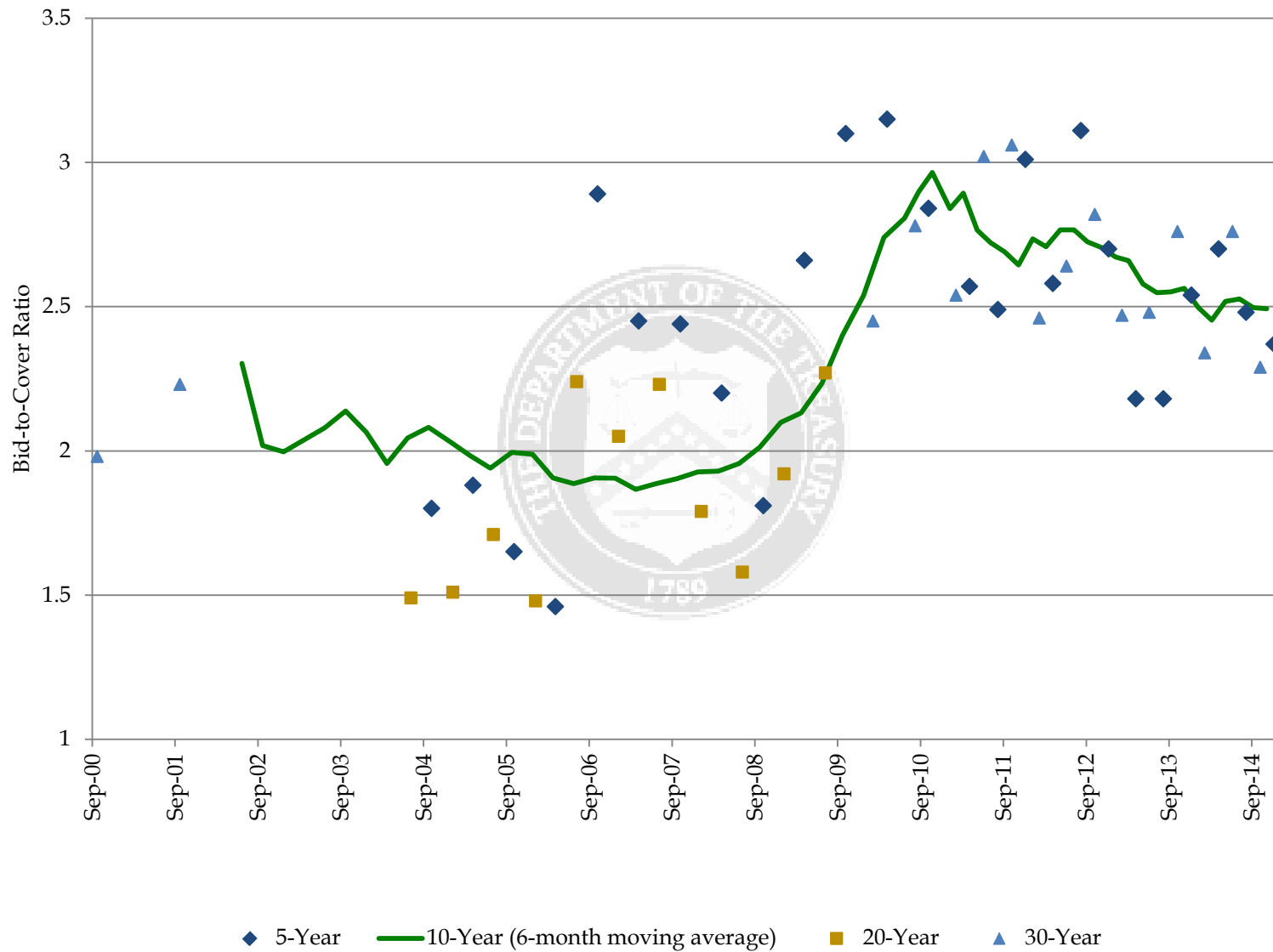
## Bid-to-Cover Ratios for 2-, 3-, and 5-Year Nominal Securities (6-Month Moving Average)



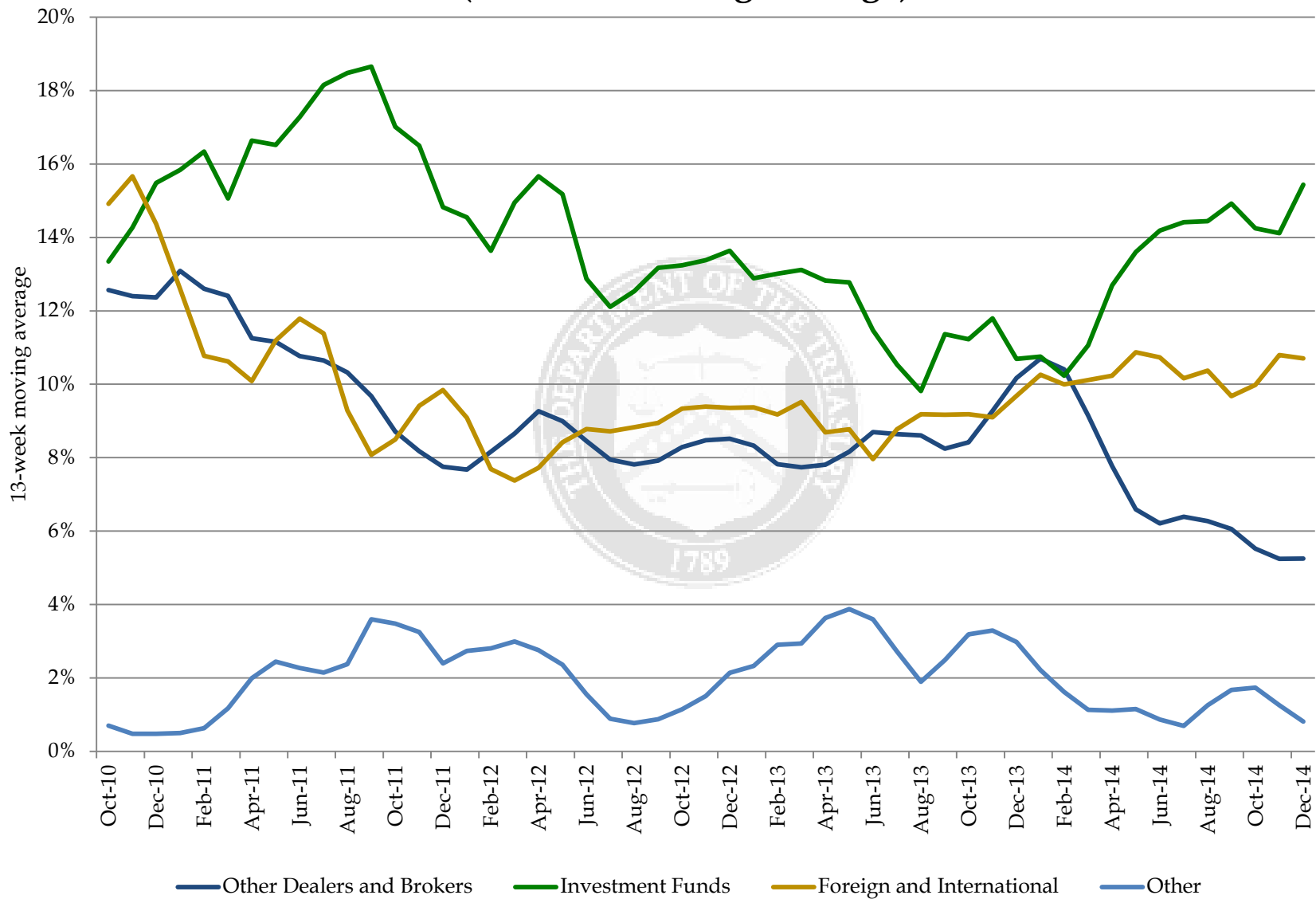
## Bid-to-Cover Ratios for 7-, 10-, and 30-Year Nominal Securities (6-Month Moving Average)



## Bid-to-Cover Ratios for TIPS

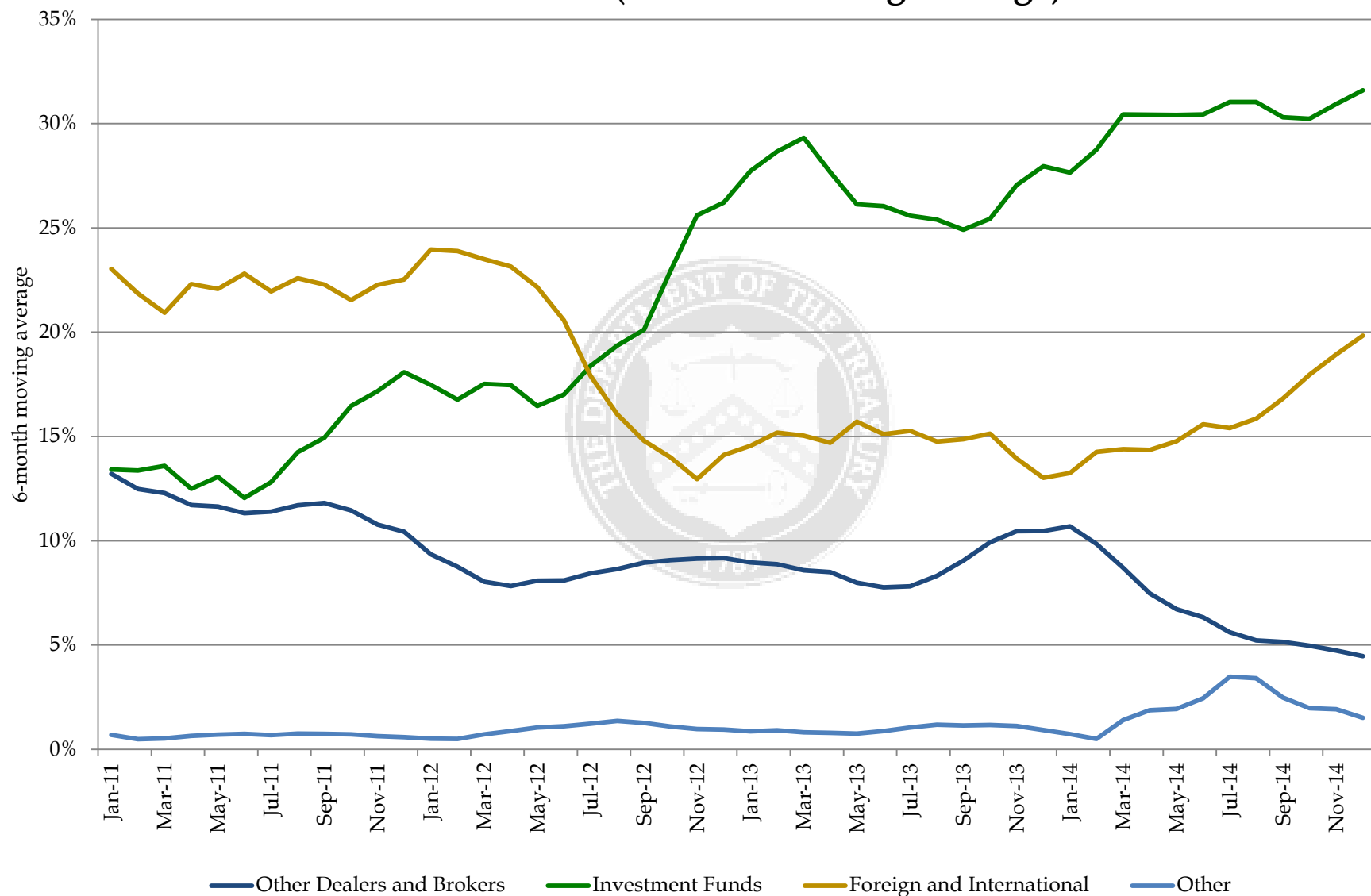


## Percent Awarded in Bill Auctions by Investor Class (3-Month Moving Average)



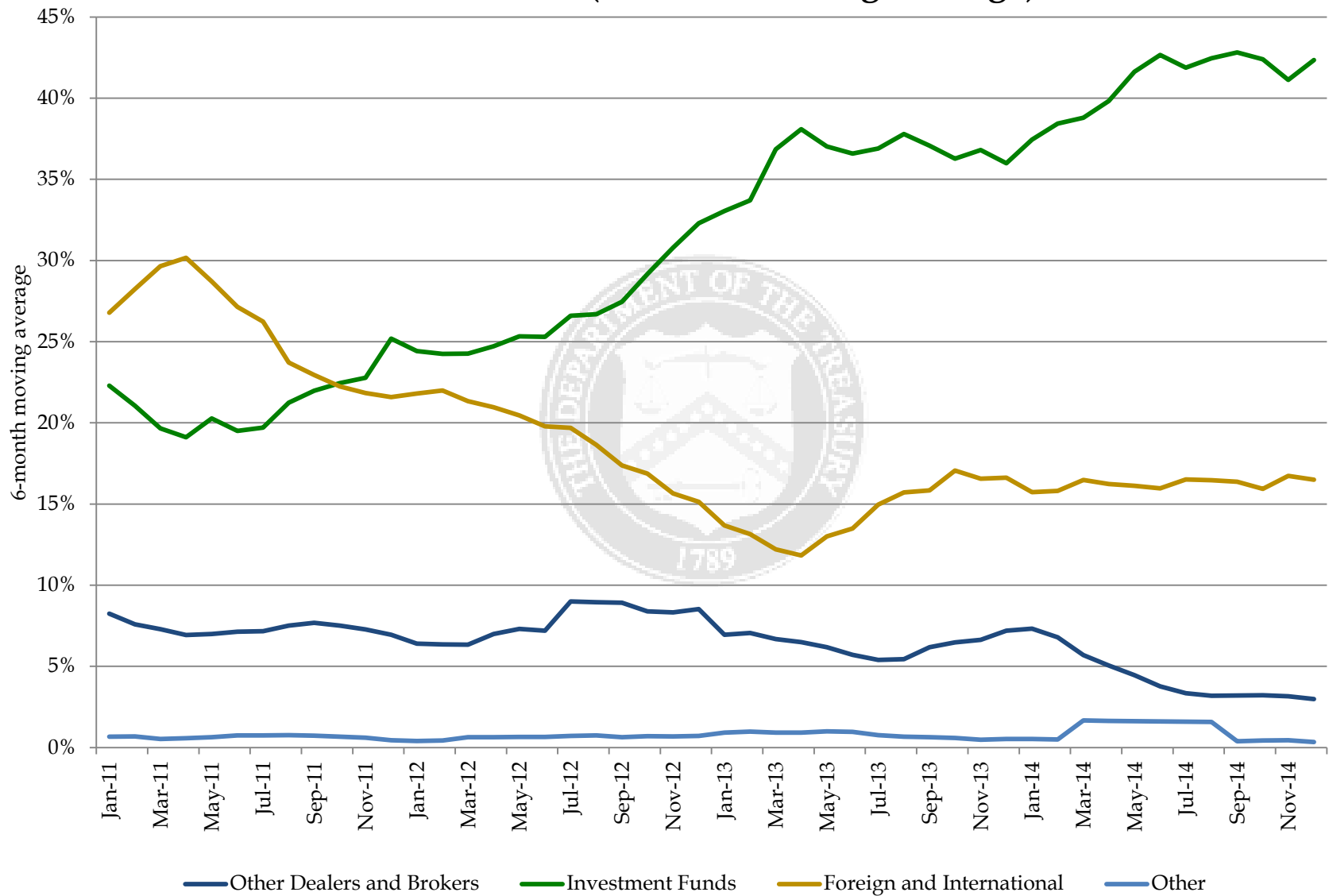
Excludes SOMA add-ons. The "Other" category includes categories that are each less than 2%, which include Depository Institutions, Individuals, Pension and Insurance.

## Percent Awarded in 2-, 3-, 5-Year Nominal Security Auctions by Investor Class (6-Month Moving Average)



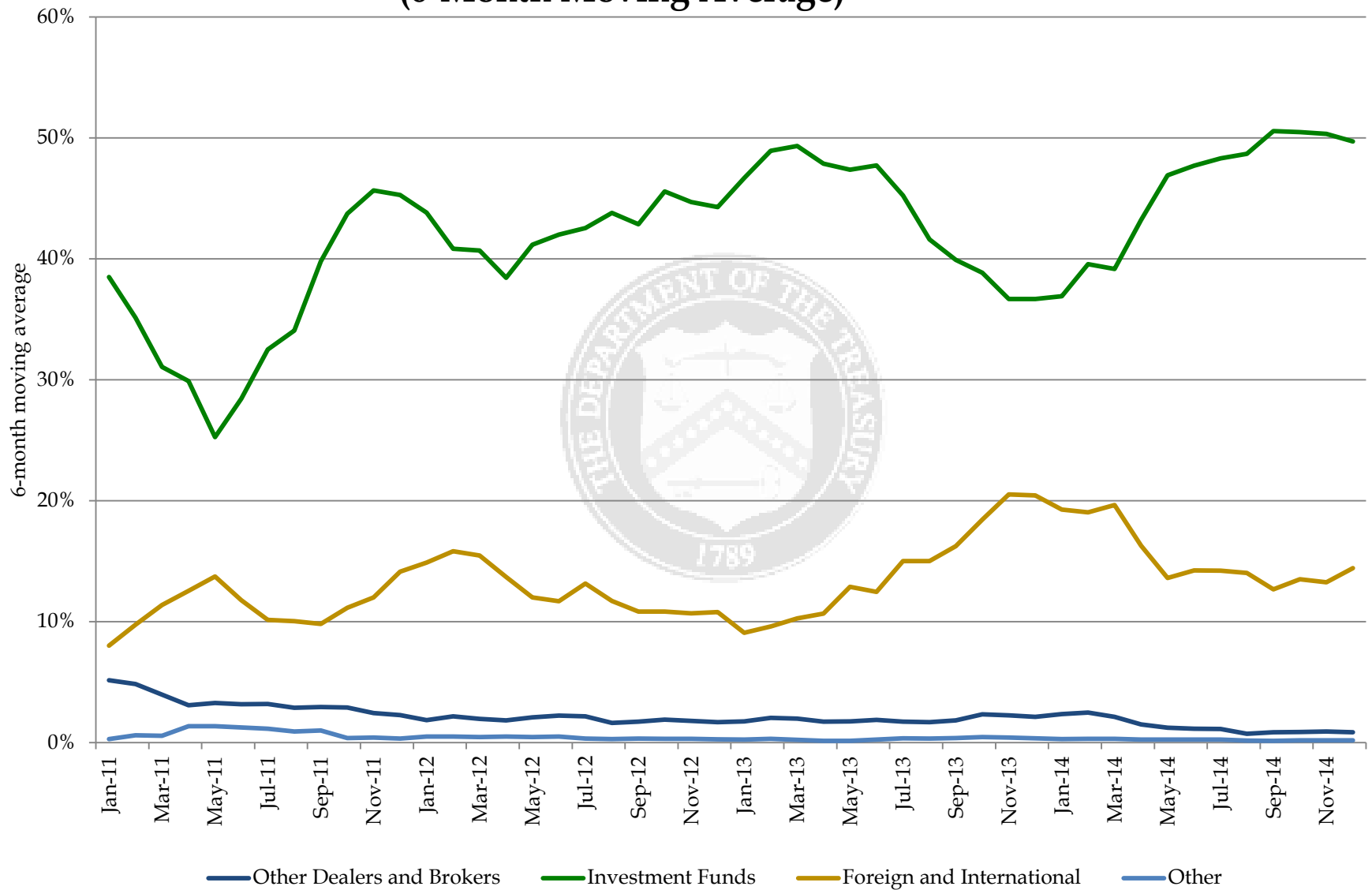
Excludes SOMA add-ons. The "Other" category includes categories that are each less than 2%, which include Depository Institutions, Individuals, Pension and Insurance.

## Percent Awarded in 7-, 10-, 30-Year Nominal Security Auctions by Investor Class (6-Month Moving Average)

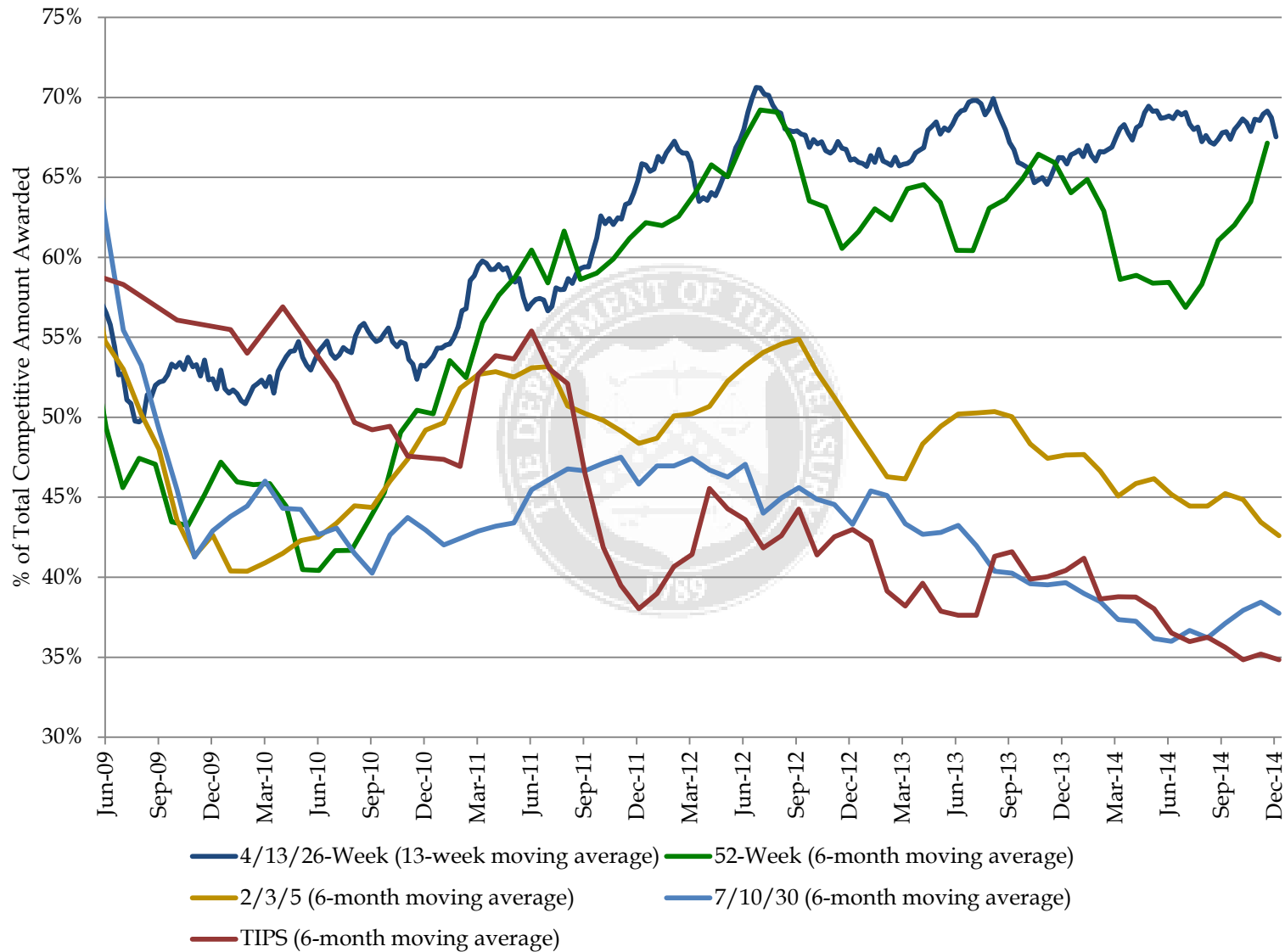


Excludes SOMA add-ons. The "Other" category includes categories that are each less than 2%, which include Depository Institutions, Individuals, Pension and Insurance.

## Percent Awarded in TIPS Auctions by Investor Class (6-Month Moving Average)

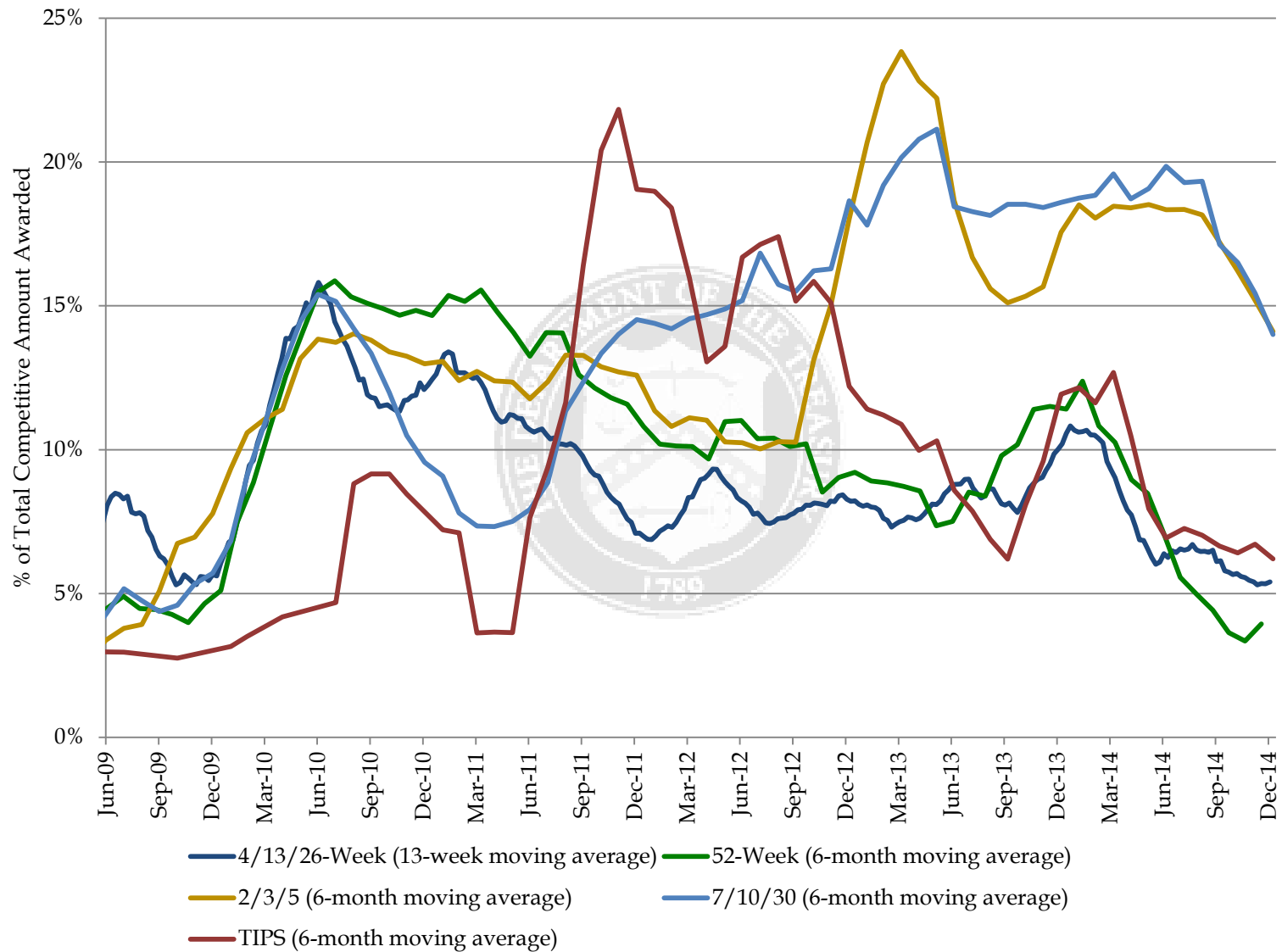


## Primary Dealer Awards at Auction



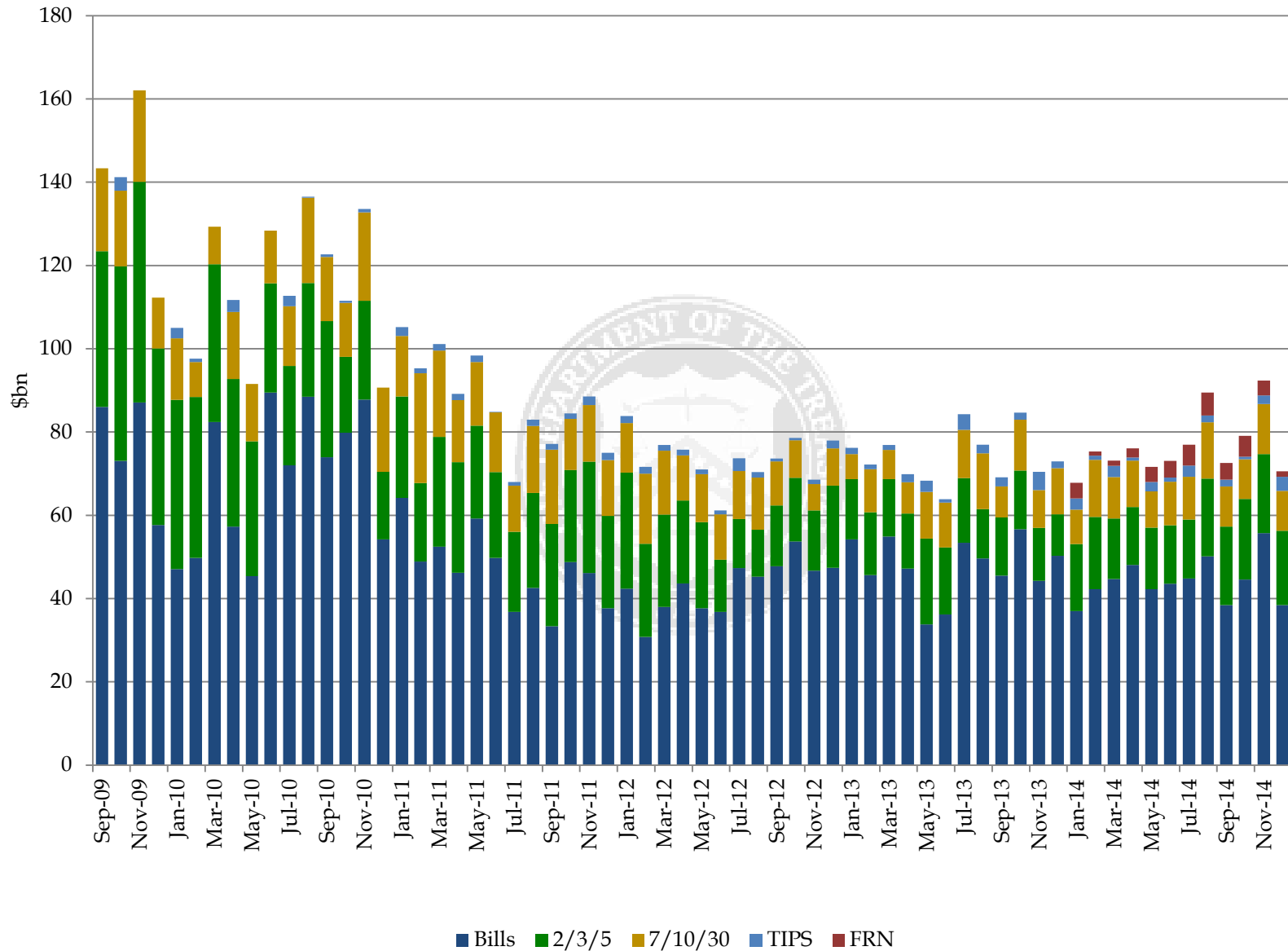
Excludes SOMA add-ons.

## Direct Bidder Awards at Auction



Excludes SOMA add-ons.

## Total Foreign Awards of Treasuries at Auction, \$ Billion

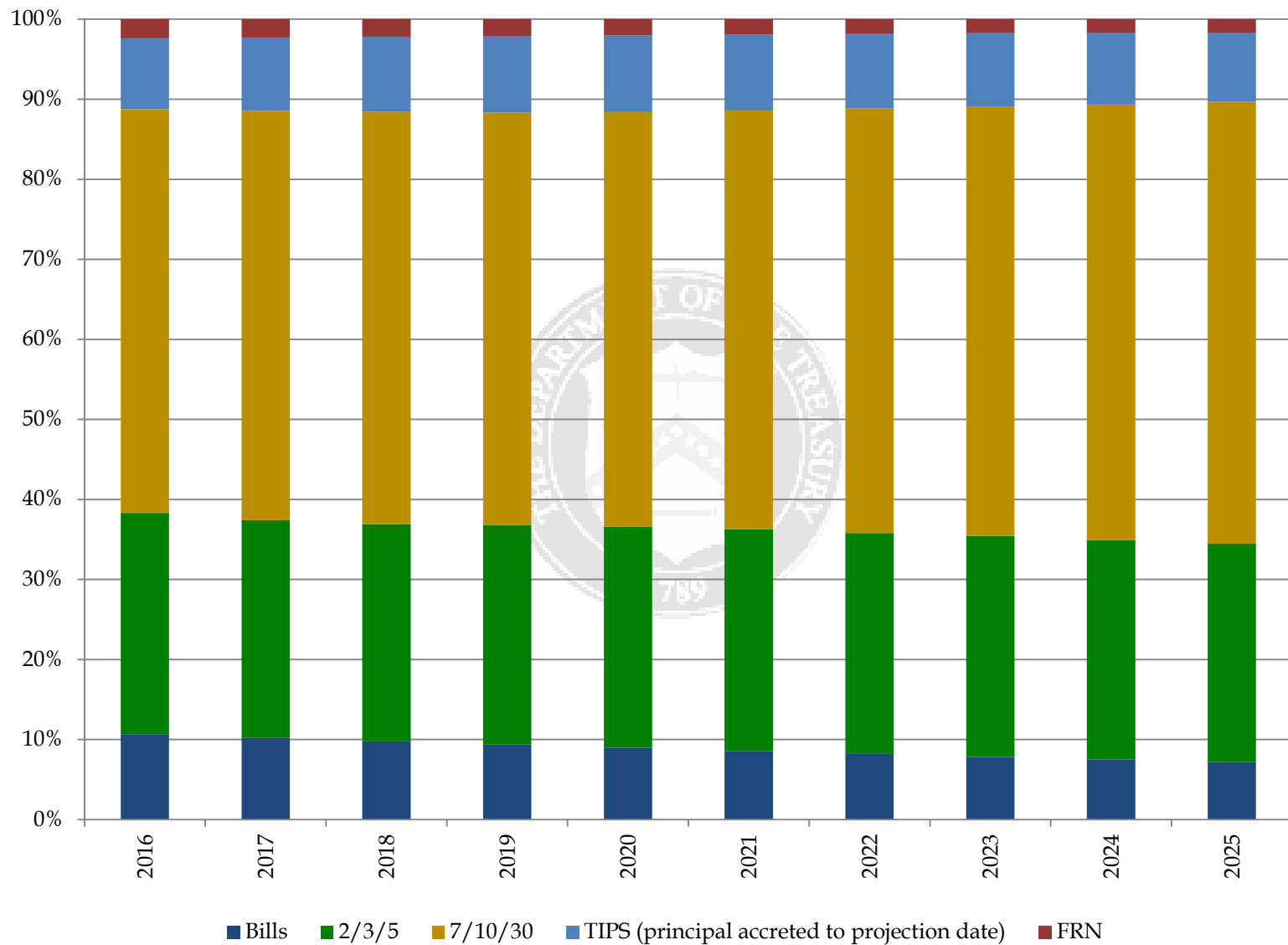


Foreign includes both private sector and official institutions.

# Appendix

The seal of the U.S. Department of the Treasury is visible in the background, centered behind the word "Appendix". It is a circular emblem with a shield in the center. The shield features a chevron with stars above it and a key below it. The outer ring of the seal contains the text "THE DEPARTMENT OF THE TREASURY" at the top and "1789" at the bottom.

## Projected Portfolio Composition by Issuance Type, Percent



This scenario does not represent any particular course of action that Treasury is expected to follow. Instead, it is intended to demonstrate the basic trajectory of average maturity absent changes to the mix of securities issued by Treasury. See table on following page for details

## Recent and Projected Portfolio Composition by Issuance Type

End of Fiscal Year	Bills	2-, 3-, 5-Year Nominal Coupons	7-, 10-, 30-Year Nominal Coupons	Total Nominal Coupons	TIPS (principal accreted to projection date)	FRN
2008	28.5%	34.5%	26.9%	61.4%	10.0%	0.0%
2009	28.5%	36.2%	27.4%	63.6%	7.9%	0.0%
2010	21.1%	40.1%	31.8%	71.9%	7.0%	0.0%
2011	15.4%	41.4%	35.9%	77.3%	7.3%	0.0%
2012	15.0%	38.4%	39.0%	77.4%	7.5%	0.0%
2013	13.2%	35.8%	43.0%	78.7%	8.1%	0.0%
2014	11.6%	33.3%	46.5%	79.8%	8.6%	0.0%
2015	11.2%	29.3%	48.6%	77.9%	8.7%	2.2%
2016	10.7%	27.6%	50.4%	78.1%	8.8%	2.4%
2017	10.2%	27.2%	51.2%	78.4%	9.1%	2.3%
2018	9.8%	27.1%	51.5%	78.7%	9.3%	2.2%
2019	9.4%	27.4%	51.5%	79.0%	9.6%	2.1%
2020	8.9%	27.6%	51.8%	79.4%	9.6%	2.0%
2021	8.6%	27.7%	52.3%	80.0%	9.5%	1.9%
2022	8.2%	27.6%	53.1%	80.7%	9.3%	1.8%
2023	7.8%	27.6%	53.7%	81.3%	9.1%	1.8%
2024	7.5%	27.4%	54.4%	81.8%	9.0%	1.7%
2025	7.2%	27.2%	55.3%	82.5%	8.6%	1.7%

This scenario does not represent any particular course of action that Treasury is expected to follow. Instead, it is intended to demonstrate the basic trajectory of average maturity absent changes to the mix of securities issued by Treasury.

Issue	Settle Date	Stop Out Rate (%)*	Bid-to-Cover Ratio*	Competitive Awards (\$ bn)	Bills			Non-Competitive Awards (\$ bn)	SOMA Add Ons (\$ bn)	10-Yr Equivalent (\$ bn)**
					Primary Dealer*	% Direct*	% Indirect*			
4-Week	10/9/2014	0.010	4.56	31.77	63.3%	4.0%	32.7%	0.23	0.00	0.30
4-Week	10/16/2014	0.015	3.68	32.74	85.8%	3.7%	10.5%	0.26	0.00	0.30
4-Week	10/23/2014	0.030	4.02	33.76	80.8%	3.6%	15.6%	0.24	0.00	0.32
4-Week	10/30/2014	0.020	4.02	33.21	74.6%	7.6%	17.8%	0.22	0.00	0.33
4-Week	11/6/2014	0.035	4.02	35.74	76.4%	5.7%	17.8%	0.26	0.00	0.34
4-Week	11/13/2014	0.045	3.84	39.73	70.7%	5.3%	24.0%	0.27	0.00	0.37
4-Week	11/20/2014	0.035	3.51	39.75	77.7%	4.8%	17.5%	0.25	0.00	0.37
4-Week	11/28/2014	0.060	3.65	38.77	77.1%	4.1%	18.9%	0.23	0.00	0.38
4-Week	12/4/2014	0.030	3.75	49.73	65.9%	3.1%	31.0%	0.27	0.00	0.48
4-Week	12/11/2014	0.040	3.52	49.72	73.0%	4.9%	22.1%	0.28	0.00	0.46
4-Week	12/18/2014	0.020	3.28	39.75	75.4%	4.0%	20.6%	0.25	0.00	0.37
4-Week	12/26/2014	0.010	3.74	29.77	66.5%	3.7%	29.8%	0.23	0.00	0.28
4-Week	1/2/2015	0.015	3.67	28.89	60.0%	2.3%	37.7%	0.24	0.00	0.28
13-Week	10/9/2014	0.015	5.05	23.54	75.7%	4.2%	20.1%	0.41	0.00	0.71
13-Week	10/16/2014	0.010	4.33	23.50	75.2%	5.4%	19.5%	0.40	0.00	0.70
13-Week	10/23/2014	0.020	4.60	23.60	73.1%	3.9%	22.9%	0.40	0.00	0.71
13-Week	10/30/2014	0.020	4.83	22.84	68.7%	4.0%	27.2%	0.37	0.00	0.71
13-Week	11/6/2014	0.020	4.67	23.56	70.0%	6.0%	24.0%	0.35	0.00	0.72
13-Week	11/13/2014	0.025	4.65	23.49	51.5%	3.6%	44.9%	0.41	0.00	0.72
13-Week	11/20/2014	0.025	4.50	23.49	61.9%	4.5%	33.6%	0.41	0.00	0.69
13-Week	11/28/2014	0.020	4.28	22.67	79.8%	9.3%	10.9%	0.39	0.00	0.70
13-Week	12/4/2014	0.025	4.67	23.45	71.4%	4.5%	24.1%	0.35	0.00	0.70
13-Week	12/11/2014	0.025	4.51	23.57	62.6%	6.4%	31.0%	0.43	0.00	0.70
13-Week	12/18/2014	0.035	3.98	23.51	79.0%	9.7%	11.3%	0.39	0.00	0.70
13-Week	12/26/2014	0.055	3.83	23.50	59.5%	9.7%	30.8%	0.40	0.00	0.70
13-Week	1/2/2015	0.040	3.94	22.64	70.3%	8.5%	21.2%	0.37	0.00	0.70
26-Week	10/9/2014	0.040	4.62	23.17	60.4%	6.7%	32.9%	0.36	0.00	0.57
26-Week	10/16/2014	0.040	4.32	26.18	54.1%	4.9%	41.0%	0.34	0.00	0.70
26-Week	10/23/2014	0.050	3.91	29.34	68.9%	8.9%	22.3%	0.31	0.00	0.85
26-Week	10/30/2014	0.055	4.03	28.74	59.5%	4.9%	35.6%	0.28	0.00	1.75
26-Week	11/6/2014	0.060	4.19	29.21	47.6%	3.4%	48.9%	0.32	0.00	0.99
26-Week	11/13/2014	0.060	3.83	27.19	57.8%	5.6%	36.6%	0.34	0.00	0.99
26-Week	11/20/2014	0.070	3.83	27.36	63.4%	5.1%	31.5%	0.36	0.00	1.02
26-Week	11/28/2014	0.070	4.03	26.66	48.5%	5.1%	46.4%	0.35	0.00	1.60
26-Week	12/4/2014	0.075	4.21	25.33	61.5%	7.0%	31.5%	0.29	0.00	1.06
26-Week	12/11/2014	0.090	4.20	25.35	56.9%	4.0%	39.1%	0.38	0.00	1.12
26-Week	12/18/2014	0.110	3.81	25.37	64.3%	3.0%	32.8%	0.35	0.00	1.18
26-Week	12/26/2014	0.155	3.74	23.28	53.6%	8.9%	37.5%	0.34	0.00	1.38
26-Week	1/2/2015	0.130	3.94	22.73	66.3%	6.6%	27.1%	0.28	0.00	1.20
52-Week	10/16/2014	0.100	3.86	24.77	68.1%	3.2%	28.7%	0.15	0.00	2.08
52-Week	11/13/2014	0.140	3.59	24.80	67.5%	3.9%	28.6%	0.12	0.00	2.33
52-Week	12/11/2014	0.210	3.44	24.77	78.1%	7.1%	14.8%	0.16	0.00	2.48

\*Weighted averages of Competitive Awards.

\*\*Approximated using prices at settlement and includes both Competitive and Non-Competitive Awards.

Issue	Settle Date	Stop Out Rate (%)*	Bid-to-Cover Ratio*	Nominal Coupons				Non-Competitive Awards (\$ bn)	SOMA Add Ons (\$ bn)	10-Yr Equivalent (\$ bn)**
				Competitive Awards (\$ bn)	% Primary Dealer*	% Direct*	% Indirect*			
2-Year FRN	10/31/2014	0.053	3.58	14.98	50.1%	3.3%	46.6%	0.02	0.00	0.02
2-Year FRN	11/28/2014	0.068	4.00	12.99	42.8%	5.4%	51.8%	0.01	0.00	0.24
2-Year FRN	12/26/2014	0.110	2.90	12.99	70.1%	5.2%	24.7%	0.01	0.00	0.14
2-Year	10/31/2014	0.425	3.11	28.73	47.2%	16.2%	36.7%	0.17	0.00	5.89
2-Year	12/1/2014	0.542	3.71	27.75	48.0%	16.2%	35.8%	0.15	0.00	5.80
2-Year	12/31/2014	0.703	3.21	26.76	49.8%	14.5%	35.7%	0.14	0.00	5.88
3-Year	10/15/2014	0.994	3.42	26.84	47.0%	17.4%	35.5%	0.06	0.00	8.30
3-Year	11/17/2014	0.998	3.18	25.84	47.1%	15.2%	37.7%	0.06	0.03	8.34
3-Year	12/15/2014	1.066	3.24	24.83	47.7%	10.1%	42.2%	0.07	0.00	8.03
5-Year	10/31/2014	1.567	2.36	34.94	41.7%	10.5%	47.8%	0.06	0.00	18.46
5-Year	12/1/2014	1.595	2.91	34.95	25.1%	9.9%	65.0%	0.05	0.00	18.32
5-Year	12/31/2014	1.739	2.39	34.96	33.9%	7.3%	58.7%	0.04	0.00	18.75
7-Year	10/31/2014	2.018	2.42	28.99	38.0%	15.4%	46.6%	0.01	0.00	21.01
7-Year	12/1/2014	1.960	2.63	28.98	37.1%	12.8%	50.0%	0.02	0.00	20.84
7-Year	12/31/2014	2.125	2.39	28.99	37.6%	5.9%	56.5%	0.01	0.00	21.12
10-Year	10/15/2014	2.381	2.52	20.98	49.0%	6.6%	44.4%	0.02	0.00	20.99
10-Year	11/17/2014	2.365	2.52	23.93	42.0%	13.4%	44.7%	0.05	0.03	24.30
10-Year	12/15/2014	2.214	2.97	20.96	39.3%	6.9%	53.8%	0.04	0.00	20.99
30-Year	10/15/2014	3.074	2.40	12.99	32.2%	21.5%	46.2%	0.00	0.00	28.78
30-Year	11/17/2014	3.092	2.29	15.98	42.5%	13.8%	43.8%	0.01	0.02	36.06
30-Year	12/15/2014	2.848	2.76	12.99	25.9%	24.3%	49.8%	0.01	0.00	29.09

Issue	Settle Date	Stop Out Rate (%)*	Bid-to-Cover Ratio*	TIPS				Non-Competitive Awards (\$ bn)	SOMA Add Ons (\$ bn)	10-Yr Equivalent (\$ bn)**
				Competitive Awards (\$ bn)	% Primary Dealer*	% Direct*	% Indirect*			
5-Year	12/31/2014	0.395	2.37	15.96	30.0%	5.2%	64.8%	0.04	0.00	7.83
10-Year	11/28/2014	0.497	2.57	12.99	29.5%	8.1%	62.4%	0.01	0.00	14.00
30-Year	10/31/2014	0.985	2.29	6.98	31.0%	4.5%	64.5%	0.02	0.00	19.72

\*Weighted averages of Competitive Awards.

\*\*Approximated using prices at settlement and includes both Competitive and Non-Competitive Awards. For TIPS' 10-Year Equivalent, a constant auction BEI is used as the inflation assumption.

# Treasury Borrowing Advisory Committee Presentation

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- *WAM and the Debt Portfolio*
  - *Historically, Treasury has used the Weighted Average Maturity (WAM) of the debt portfolio as a simple proxy for the portfolio's structure, cost and risk. Since the 2008/09 financial crisis, Treasury has extended the WAM from 49 months to 68 months and the WAM is now at levels approaching multi-decade highs.*
  - *WAM, however, is just one metric and, as with all simple proxies, WAM does not fully capture several important characteristics of the Treasury portfolio. We would like the Committee to comment on WAM as a metric for measuring the debt portfolio. What other metrics should Treasury monitor and publish with respect to the Treasury portfolio? Please discuss.*

# WAM is approaching multi-decade highs

- The weighted average maturity (WAM) of outstanding Treasury debt has risen significantly from the lows of 49 months and is now approaching multi-decade highs
- Is WAM an accurate measure of Treasury's costs and risks?

## Pros

- A single summary indicator of Treasury's risks
- A simple, easy to communicate, metric

## Cons

- May overstate /understate shifts in roll-over risk
- Does not capture the concentration of roll-over risk
- Not a sufficient statistic to capture the ex-ante cost of issuing debt
- Does not capture the “completeness” of the market

Weighted average maturity of the outstanding Treasury debt has risen to close to 30y highs

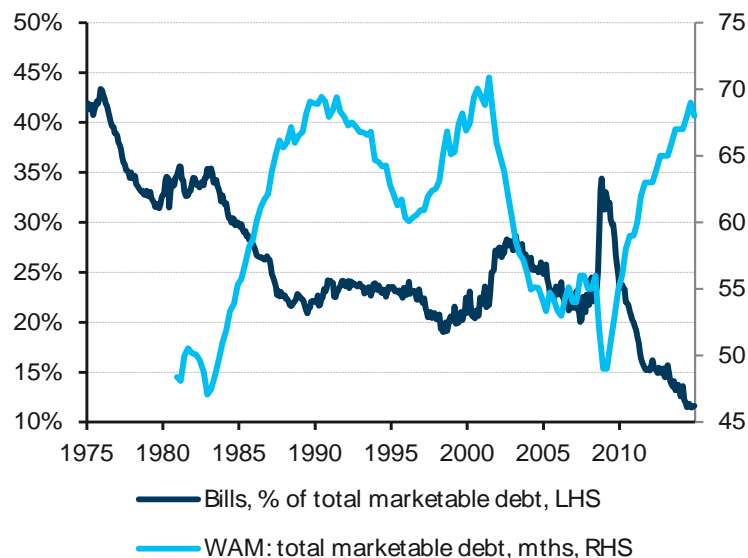


Source: Haver Analytics, US Treasury

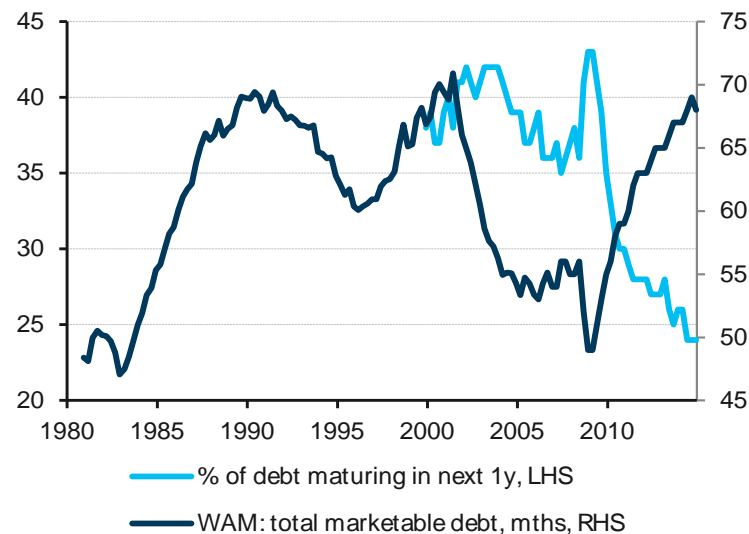
# Is WAM a good measure of Treasury's roll-over risk?

- WAM is a proxy for measuring roll-over risk. Higher WAM typically implies lower roll-over risk
- However, changes in WAM may overstate or understate the shifts in the degree of roll-over risk
- **Alternate Metric: % of outstanding debt maturing over the next year (T-bills and <1y)**
- Average maturity has risen from the lows but only back to the levels seen in 1990 and 2000. However T-bills, as a % of outstanding debt and % debt maturing in the next one year are much lower
- **Extension of WAM is actually understating the reduction in the near term roll-over risk**

Bills, as % of total debt, are at much lower levels even as WAM has increased to near record highs



Debt maturing in 1y, as % of total debt, is at much lower level, even as WAM has increased to highs

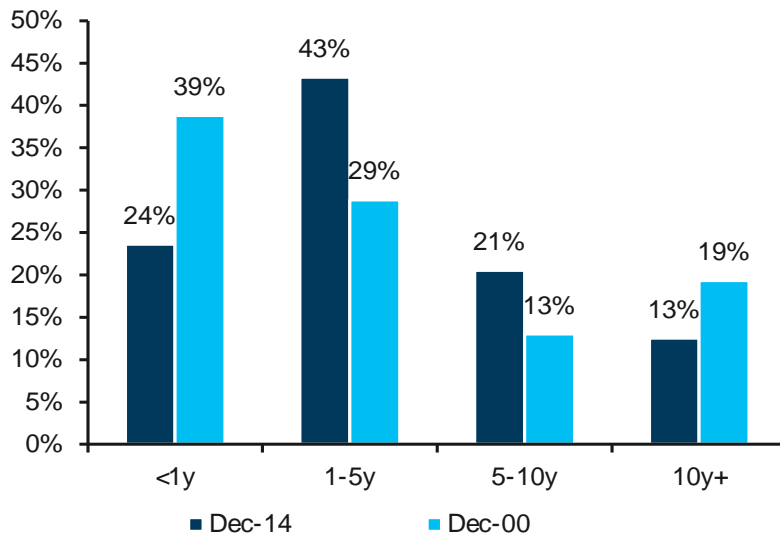


Source: Haver Analytics, US Treasury

# Why is the rise in WAM understating the reduction in near term roll over risk?

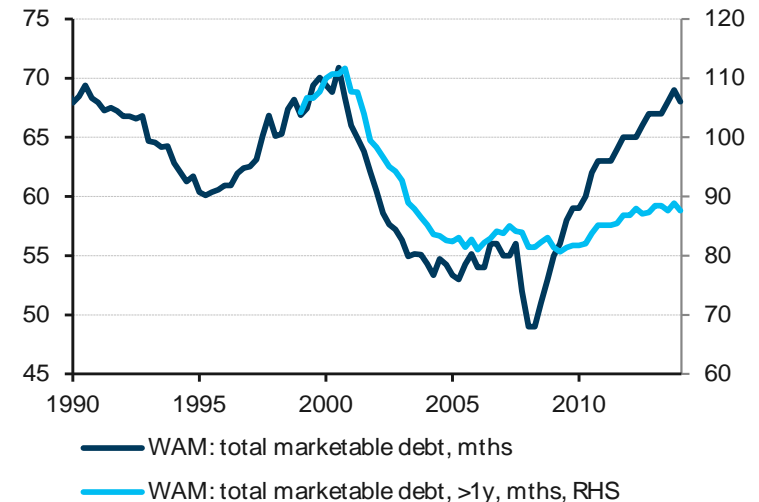
- The reason why the increase in WAM so far has understated the reduction in near term roll-over risk is because the Treasury universe is still relatively front loaded
- As compared with Dec-2000, when WAM was at similar levels, % maturing at in 1-5y is greater and % maturing in 10y+ is lower
- WAM of the Treasury universe, maturing in >1 years, is well below the historical highs

**% Debt maturing in <1y is well below 2000 levels but it has mainly gone up in the 1-5y sector**



Source: Haver Analytics, US Treasury

**WAM of the Treasury universe >1y is well below historical highs**



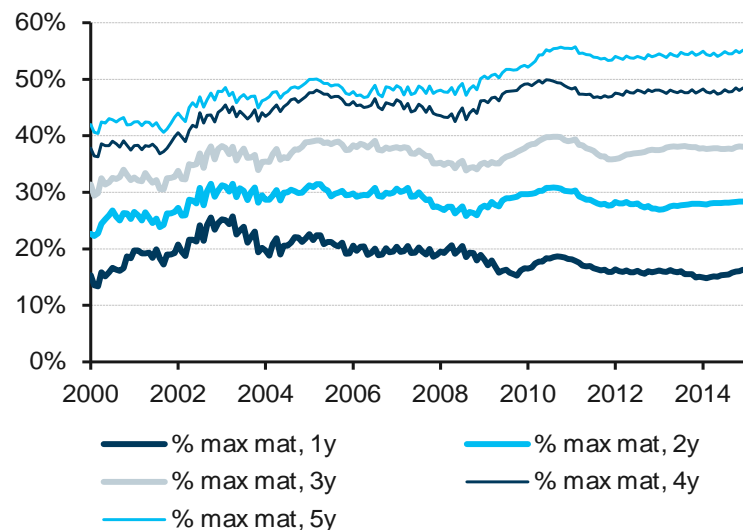
# WAM does not capture concentration of roll-over risk

- WAM is silent about the distribution of outstanding debt. As seen earlier, roughly similar WAMs can correspond to different distributions
- **Alternate Metric: highest % maturing in any period of x years (beyond the first year\*)**
- For instance, currently the highest % maturing in any 5y period (beyond the first year) is 55%. In 2000, that was 40%. Same is the case with periods of other lengths
- **Concentrated roll-over risk has risen even as near term roll over risk has fallen**

Debt maturing in 1-5y, as % of total debt, has increased, suggesting shifting of rollover risk from 1<sup>st</sup> year



Highest % maturing in any given window has not fallen even as near term roll over risk has



Note: \* The rhs figure reflects max maturing excluding the first year as the first year is already captured by metrics focused on near term roll over risks.  
Source: Haver Analytics, US Treasury

# Distribution of Outstanding Debt: A global perspective

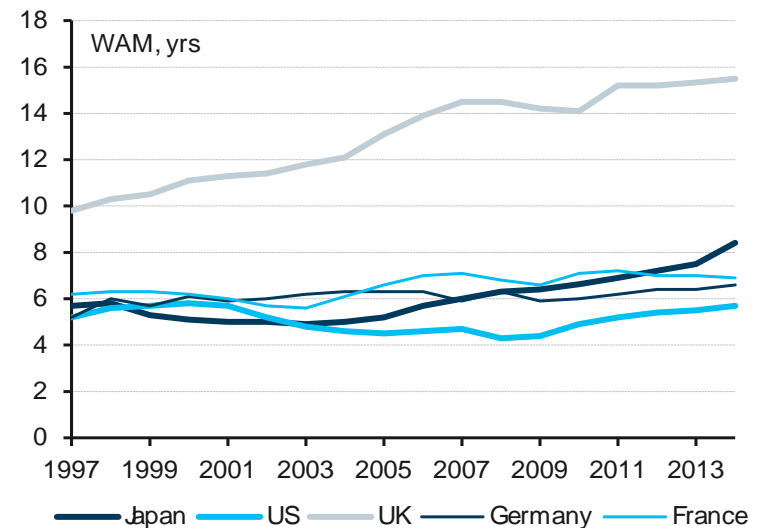
- WAM is high in a historical context but is low in a global context.
- Near term roll over risk is higher than other major government bond issuers.

## Treasury's roll-over risk is still high in a global context

	WAM (yrs)	% of debt maturing			
		<1y	1-5y	5-10y	10y+
US	5.7	24%	43%	21%	13%
Germany	6.6	14%	41%	29%	16%
France	6.9	19%	34%	26%	20%
Japan	8.4	9%	40%	26%	25%
UK	15.5	10%	24%	20%	46%

Source: US Treasury, MOF Japan, Bloomberg

## WAM of US Treasury debt is at the lower end of the range for major issuers



# Is WAM a good proxy for cost of issuing debt?

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**Treasury's Primary Goal:** to finance government borrowing needs at the lowest cost over time

**Methodology:** issue debt in a regular and predictable pattern, provide transparency in our decision-making process, and seek continuous improvements in the auction process

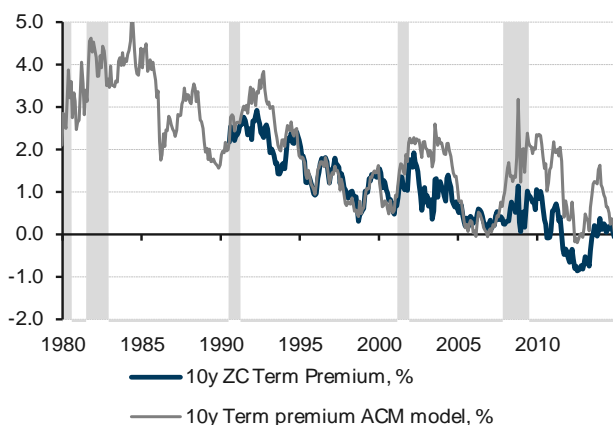
How to measure the cost of issuing debt?

- Treasury yields = Expectations of the path of short rates + Term premium
- Term premium = compensation demanded by investors for taking duration risk
- **Hence, term premium can be thought of as Treasury's ex-ante cost of issuing fixed rate debt vs T-bills /FRNs**
- Increasing WAM typically comes at a cost as term premium is usually significantly positive
- As a result, there usually exists a trade-off between reducing roll-over risk (via issuing long term debt) and reducing cost (via issuing short term debt).
- However, this does not always have to be the case

# Term premium is well below pre-crisis levels, perhaps negative

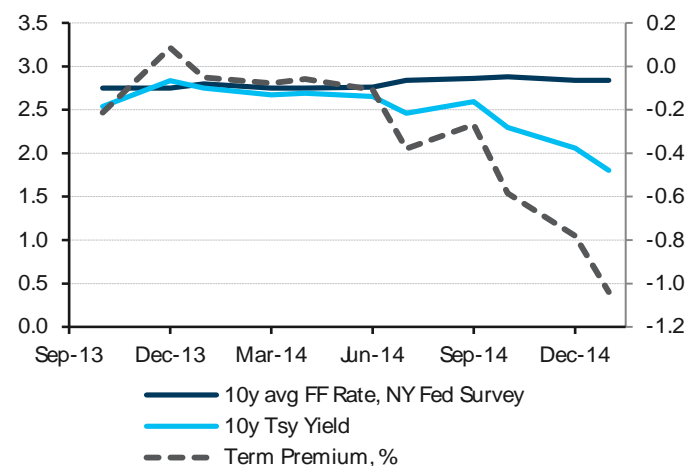
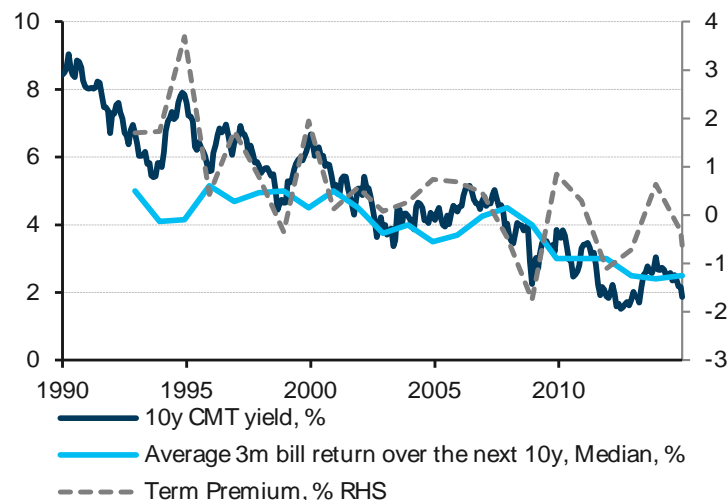
- How does one measure term premia?
  - Survey based measures: Difference between current 10y yields and the expected average of 3M T-bills/FF rate over the next 10y years
    - Survey of professional forecasters (top right)
    - NY Fed Survey of primary dealers / market participants (bottom right)
  - Term structure models (bottom left)
    - Kim and Wright (2005)
    - Adrian, Crump and Moench (2013)
- Both methodologies suggest term premium is currently very low, perhaps negative. Hence, even though WAM is at historically high levels, ex-ante cost of issuing term debt is well below pre-crisis levels

## Models based measures also show term premium is currently negative



Source: Haver Analytics, New York Fed, US Treasury

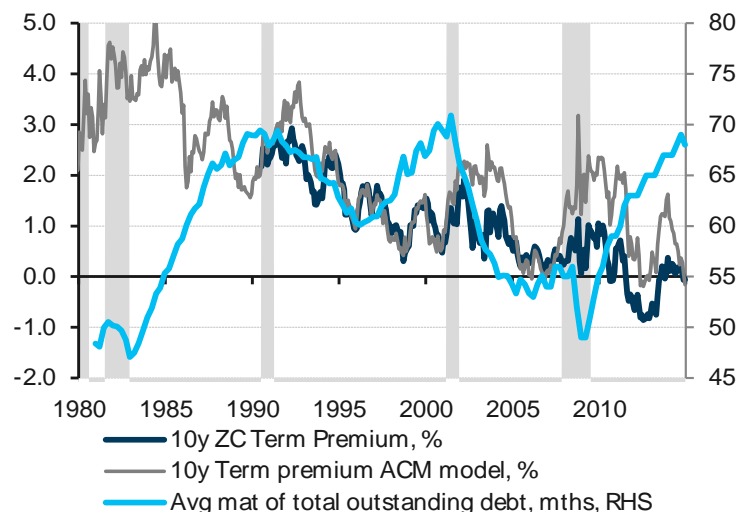
## Survey based measures show term premium is currently negative



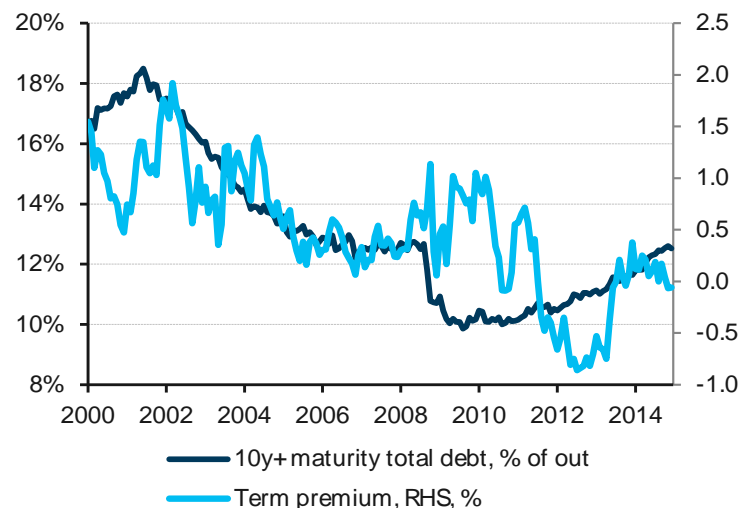
# WAM is at the highs but ex-ante costs are quite low

- WAM is close to the historical highs but ex-ante cost of issuing term debt is perhaps negative (given that term premium is arguably negative)
- % maturing in the long end is low in a historical context. More room for issuing longer dated debt

WAM is at the highs, but ex-ante cost of debt issuance is well below pre-crisis lows



Scope for long end universe to expand

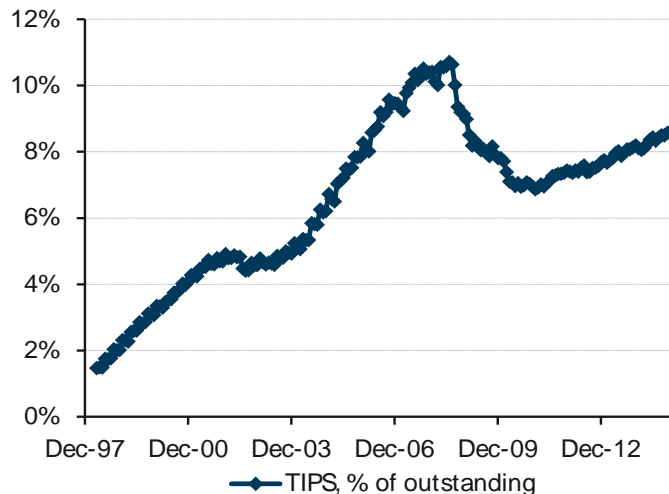


Source: Haver Analytics, US Treasury

# Measuring ex-ante cost of issuing Nominals vs TIPS

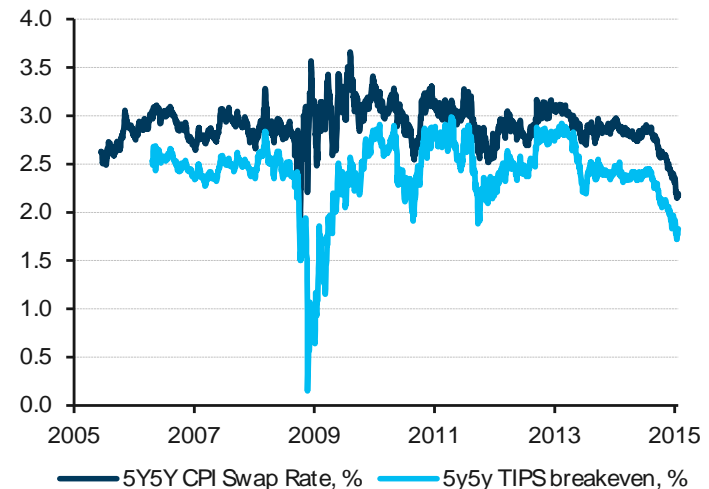
- With the share of TIPS in the outstanding universe having risen, nominal term premium also does not fully capture the trade-off the Treasury faces
- Ex-ante cost of issuing Nominal Treasuries vs TIPS: Inflation Risk Premium – Liquidity Premium
- Inflation risk premium = Compensation demanded by investors for taking inflation risk
- Liquidity Premium = What investors are willing to pay to own a more liquid security (Nominals)
- Hence ex-ante cost in issuing nominal Treasuries vs TIPS are higher when inflation risk premium is higher and perceived liquidity premium is lower

Share of TIPS in the outstanding universe has increased over the last few years



Source: Haver Analytics, US Treasury

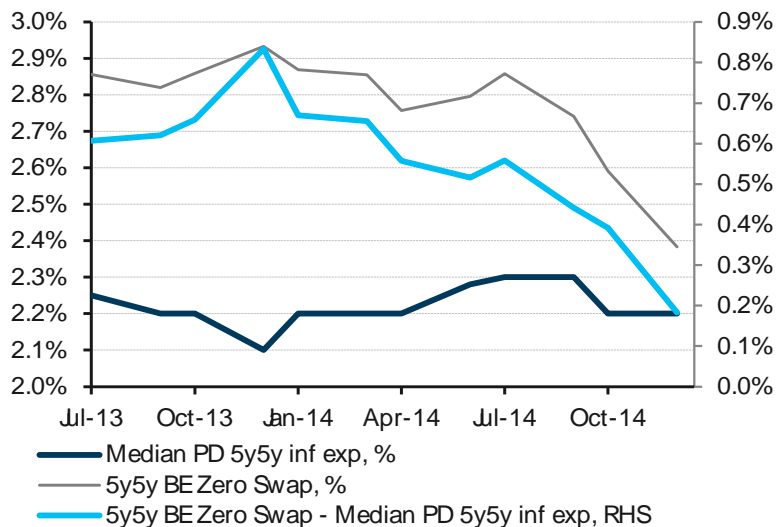
TIPS breakevens have tightened sharply over the last few months. CPI Swap rates at lows



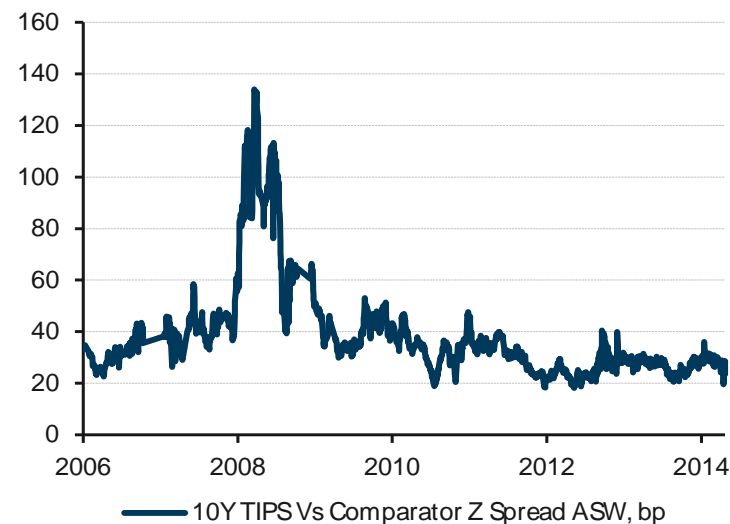
# Ex-ante cost of issuing Nominals vs TIPS has declined

- Measuring Inflation risk premium using the difference between market and survey based measures
- 5y5y inflation swap rates have fallen over the last few months. However, the NY Fed survey of primary dealers show 5y5y inflation expectation have remained stable. This suggests that inflation risk premium has compressed.
- Measuring Liquidity premium: Asset swap differential between TIPS and nominal Treasuries. Excluding the 2008 crisis, the differential has remained in the 20-40bp range at the 10y tenor (TIPS being cheaper than Nominals)
- This suggests that ex-ante cost of issuing nominal Treasuries vs TIPS has fallen over the last few months as

**Survey based measures of medium term inflation expectations have remained unchanged**



**TIPS trade at a discount to nominal Treasuries on Asset Swap**

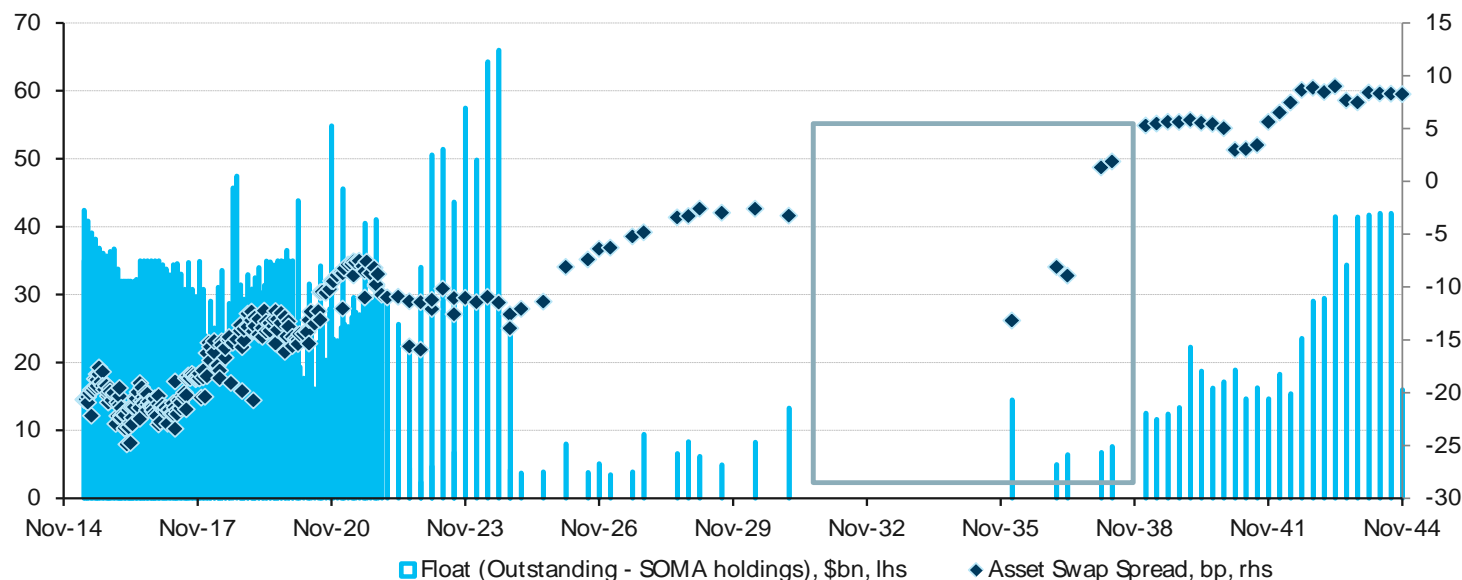


Source: Haver Analytics, New York Fed

# Measuring the “completeness” of the market

- WAM does not say anything about idiosyncrasies of the distribution of the outstanding debt
- There are no nominal Treasuries maturing between Feb 2031 and Feb 2036. Further, the total amount outstanding between Feb 36 and May 38 (both included) is \$112bn of which \$72bn is held by the Fed. Hence, the total float available to investors in this sector is very small
- Feb 2036 are trading significantly rich on the curve as they are likely to be the CTD in the US Futures contract for many years. This richness has spilled over to nearby issues as well.
- At current auction schedule, it will be a while before new 10y securities issued by the Treasury start filling the gap. The Treasury may consider issuing securities in this sector to iron out such dislocations.

**Outstanding debt is unevenly distributed with no bonds maturing between 2031 and 2036**

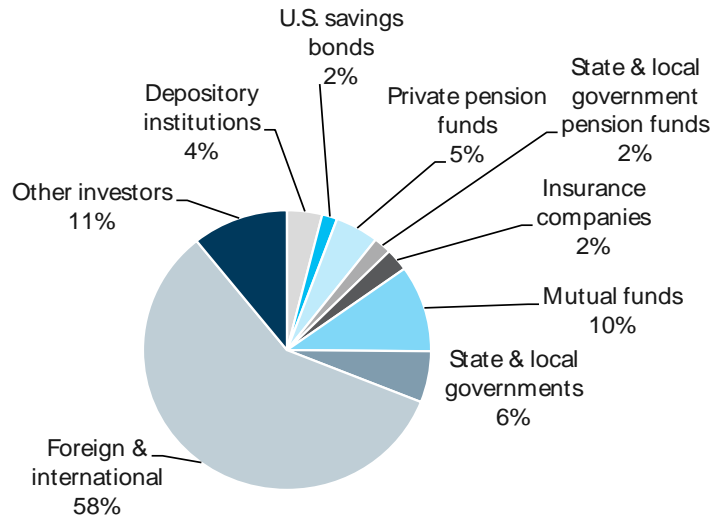


As of Jan 26. Source: New York Fed, US Treasury

# Measuring the Ownership concentration risk

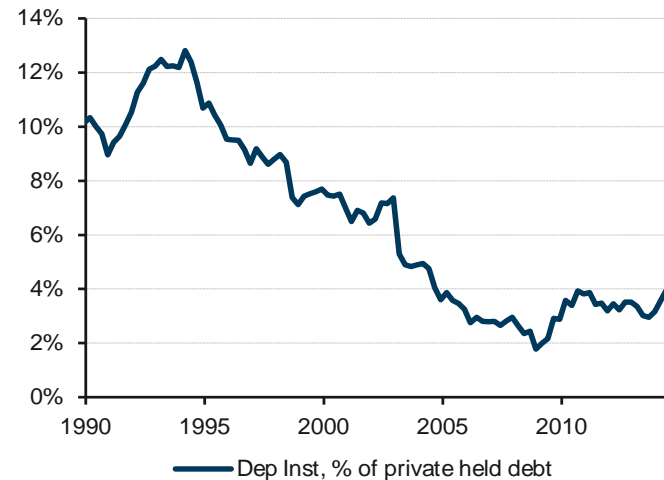
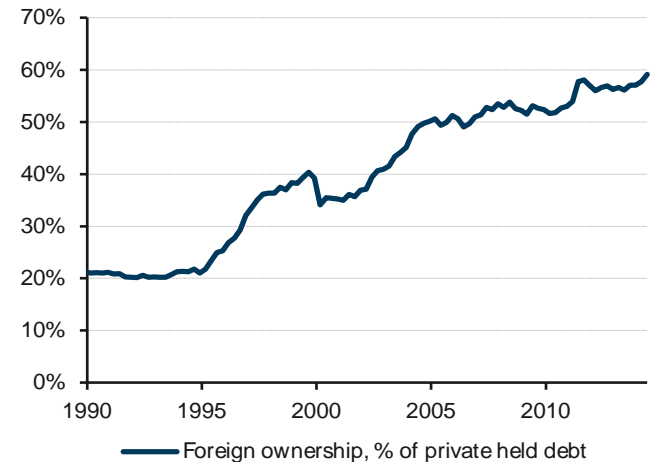
- WAM , obviously, does not say anything about the ownership structure of the outstanding debt
- Foreign investors hold almost 60% of privately held Treasury debt.
- In contrast depository institutions hold just 4%
- The Treasury may consider ways to diversify the investor base.

## Breakdown of ownership of privately held Treasury debt



As of Q3 14. Source: Haver Analytics, US Treasury

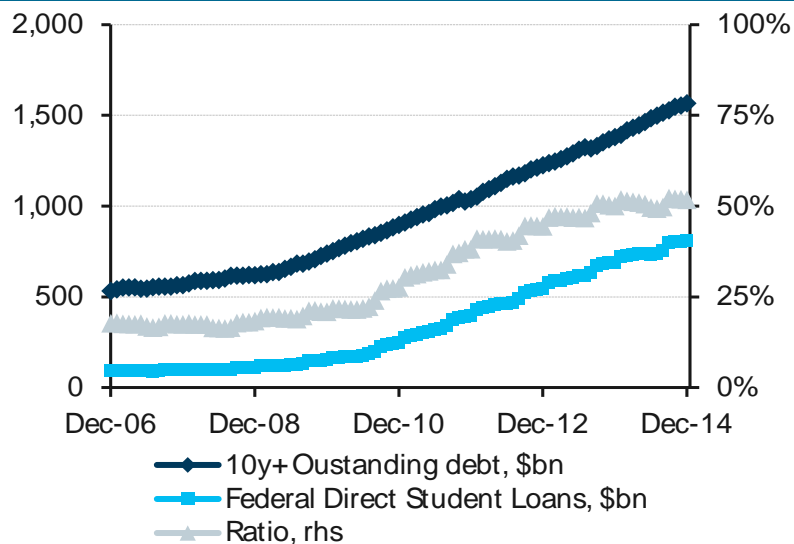
## Foreign investors hold ~60% of privately held Treasury debt and Depository Institutions only 4%



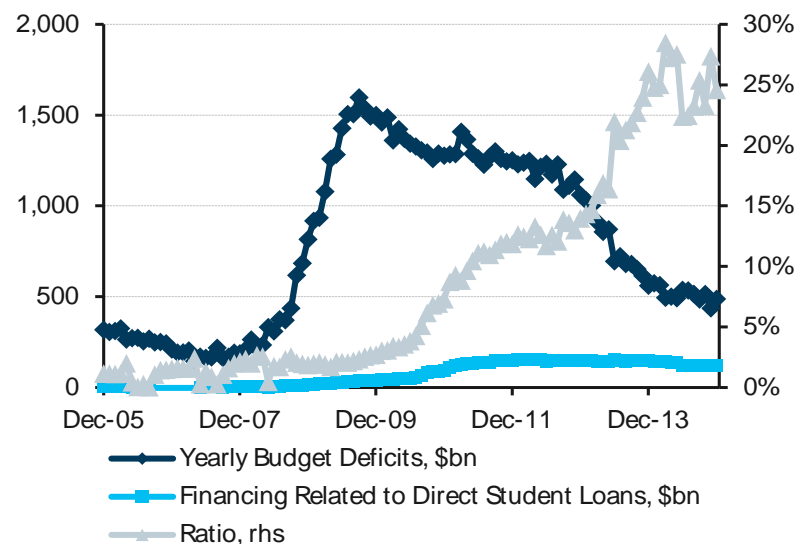
# Government ownership of financial assets has risen substantially from pre-crisis levels

- Government's holdings of financial assets have increased substantially since the crisis. For instance, direct student loans on government balance sheet are almost \$0.8trn (equivalent to roughly 50% of outstanding 10y+ debt).
- Further, funding needs related to acquiring financial assets, mainly direct student loans, are increasingly becoming a significant share of overall borrowing needs (equivalent to 25% of budget deficits in 2014)
- According to OMB, direct loan accounts are expected to increase by another \$1trillion or so over the next decade.
- Other financial assets include operating cash balance (2014 average: \$83bn) and GSE preferred stock (\$140bn)
- Should the portfolio be considered net of financial assets?

Direct student loans on government balance sheet equate to roughly 50% of outstanding 10y+ debt



Financing needs related to direct student loans have average ~25% of deficits recently

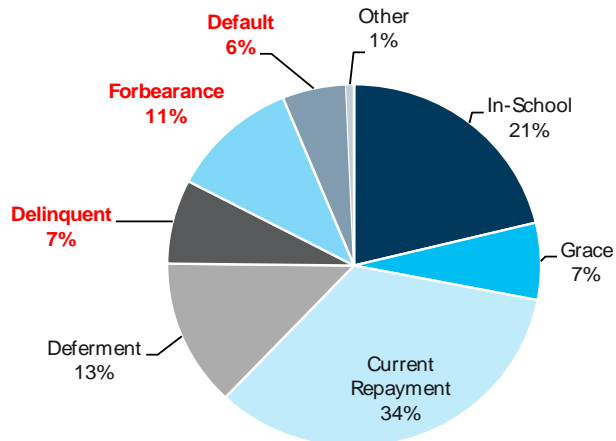


Source: OMB, Haver Analytics, Federal Reserve, US Treasury

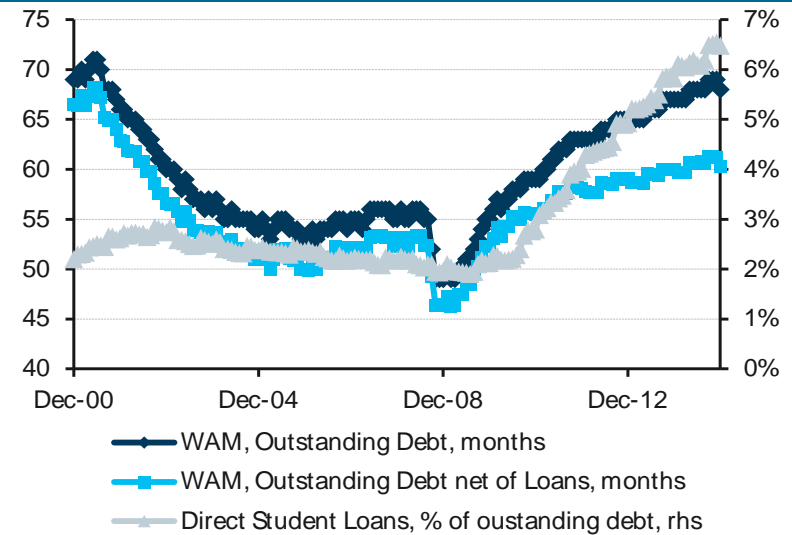
# Should the portfolio be considered net of financial assets?

- Credit / Liquidity / Cash flow profile of the asset should be taken into account before netting.
- Direct student loans are not liquid and ~25% are either in forbearance, delinquent or in default. Further they are long dated assets with an uncertain cash flow profile
- Asset liability management approach should be favored. Options range from issuing structures with embedded optionality to a mix of existing coupon maturities to match the cash flow profile of student loans. The former allows for more accurately matching the cash flow risk and the latter does not require any new form of issuance.
- Scope for further rise in WAM given the increase in holdings of long dated assets

**Roughly 25% of direct student loans are either in forbearance, delinquent or in default**



**WAM of debt net of student loans has risen to a lesser extent**



Note: WAM of student loans assumed to be 15 years for the rhs figure for illustrative purposes. Source: Department of Education, US Treasury

# Recommendations on Debt Management

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## Communication

**The Treasury could publish a base case forecast of issuance trends over a certain period (say 1y)**

- **WAM of issuance**
- **% to be issued in different buckets / instruments**
- **Actual issue sizes**

Each option entails a trade-off between guidance and flexibility

## Measurement Metrics

**The Treasury could publish current and a base case forecast (x years out) (where applicable)**

### **1. Roll-over risk:**

- % of debt outstanding maturing in the near term
- % of debt outstanding maturing within a x-year window at any point in time

### **2. Range of ex-ante measures of cost of issuing various forms of debt**

- % issuance in a given sector\* Term premium at that tenor
- % issuance in TIPS \* (Nominal Liquidity premium – Inflation Risk Premium)

### **3. Completeness of Market:**

- Lowest float maturing in a certain window (say 5y / 10y)
- Measure of aggregate dislocations (RMSE) of securities by sector

### **4. Various measures of WAM**

- Outstanding debt / Coupon Universe
- Consolidated Debt / Debt Net of Fin. Assets (after accounting for Fair Value and Maturity)

# References

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- <http://libertystreeteconomics.newyorkfed.org/2014/05/treasury-term-premia-1961-present.html>
- [http://www.newyorkfed.org/markets/primarydealer\\_survey\\_questions.html](http://www.newyorkfed.org/markets/primarydealer_survey_questions.html)
- <http://www.imf.org/external/pubs/ft/tnm/2012/tnm1202.pdf>
- [http://www.brookings.edu/~media/research/files/papers/2014/09/30\\_government\\_debt\\_management\\_zlb/30\\_government\\_debt\\_management\\_zlb.pdf](http://www.brookings.edu/~media/research/files/papers/2014/09/30_government_debt_management_zlb/30_government_debt_management_zlb.pdf)
- <http://www.imf.org/external/np/mfd/pdebt/2003/eng/am/120903.pdf>
- [http://www.bis.org/publ/bppdf/bispap65l\\_rh.pdf](http://www.bis.org/publ/bppdf/bispap65l_rh.pdf)
- [http://www.nao.org.uk/wp-content/uploads/2012/11/debt\\_management\\_office.pdf](http://www.nao.org.uk/wp-content/uploads/2012/11/debt_management_office.pdf)
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- [http://www.bundesbank.de/Navigation/EN/Service/Federal\\_securities/federal\\_securities.html](http://www.bundesbank.de/Navigation/EN/Service/Federal_securities/federal_securities.html)
- [http://www.aft.gouv.fr/rubriques/the-french-financial-markets\\_111\\_Ing3.html](http://www.aft.gouv.fr/rubriques/the-french-financial-markets_111_Ing3.html)

# Buybacks as a Tool for Debt Management

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February 2015

## TBAC Charge

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In the early 2000s, Treasury used buybacks as a tool to enhance the liquidity of its benchmark issuance during a time of budgetary surpluses. We would like the Committee to comment on the use of buybacks during a time of budgetary deficits, and whether such a tool could be used to assist Treasury in managing the maturity structure of debt portfolios, secondary market liquidity, and cash.

## Treasury Experience with Buybacks from 2000 to 2002

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- Treasury bought back \$67.5 billion of outstanding bonds from March 2000 to April 2002
  - Involved 45 reverse auction operations
- Buyback program was implemented in response to shrinking financing needs
  - Federal budget turned to a surplus in 1998
  - CBO forecasted increases in surplus going forward from that point
- Treasury had reduced its new debt issuance substantially
  - TBAC in 1999 argued that “individual issues are now near a minimum size that would allow sufficient liquidity to maintain benchmark status”
- Buyback program ended once funding needs began to increase

## Buybacks as Part of Debt Management

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- The budget deficit (primary deficit plus interest expenses) has to be met by changes in the amount of outstanding Treasury debt (or changes in cash balance)
- Those changes determined by:
  - Change in outstanding debt = Net debt issuance – Debt buybacks, or**
  - Change in outstanding debt = Gross debt issuance – Maturing debt – Debt buybacks**
- With buybacks set at zero, any variation in the Treasury's funding need (the change in outstanding debt plus maturing debt) has to be met by changing gross debt issuance
  - But Treasury has emphasized the importance of regular and predictable issuance
- Treasury could consider running a program of regular buybacks with the ability to adjust the size over time (for purposes discussed in following slides)

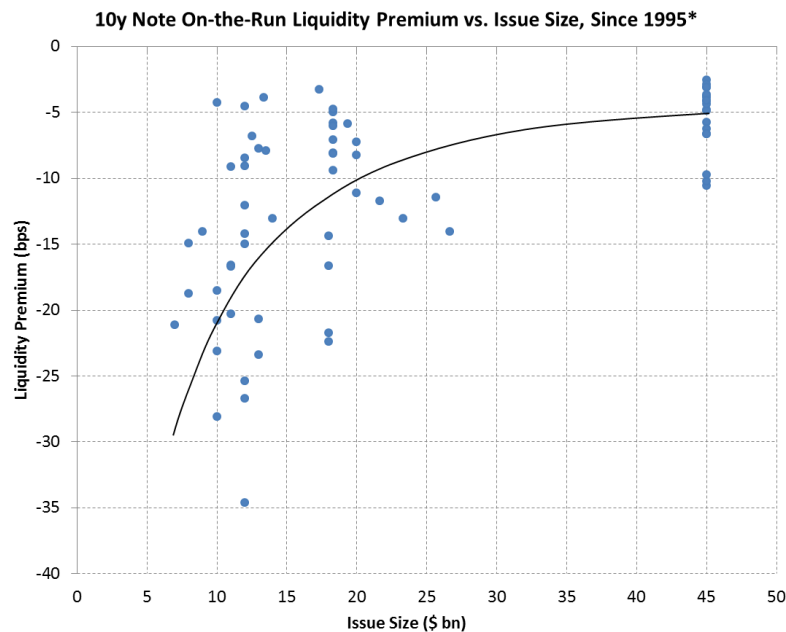
## Buybacks Could Serve Several Purposes

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- **Enhance liquidity of Treasury securities**
  - Allow larger on-the-run issue sizes
  - Create liquidity for off-the-run issues
- **Smooth gross issuance of debt over time**
  - Maintain sizes of coupon issues during periods of temporary overfunding
- **Reduce short-run variation in Treasury bill issuance or cash balance**
  - Provide another tool for managing seasonal fluctuations in funding needs
- **Reduce maturity peaks in outstanding debt**
  - Allow pre-funding of large maturity dates to lower refinancing risk
- **Allow more efficient changes to Treasury debt profile**
  - Achieve faster adjustments to debt profile (e.g., WAM) over time

# Buybacks Could Allow Larger On-the-Run Issues

- On-the-run Treasury securities provide liquidity that is highly valued by market participants
- Buybacks allow Treasury to separate on-the-run issue sizes from its funding needs
  - Treasury can optimize the size of these issues, rather than having it imposed by budget needs
- However, it is unclear that current sizes are not sufficiently large

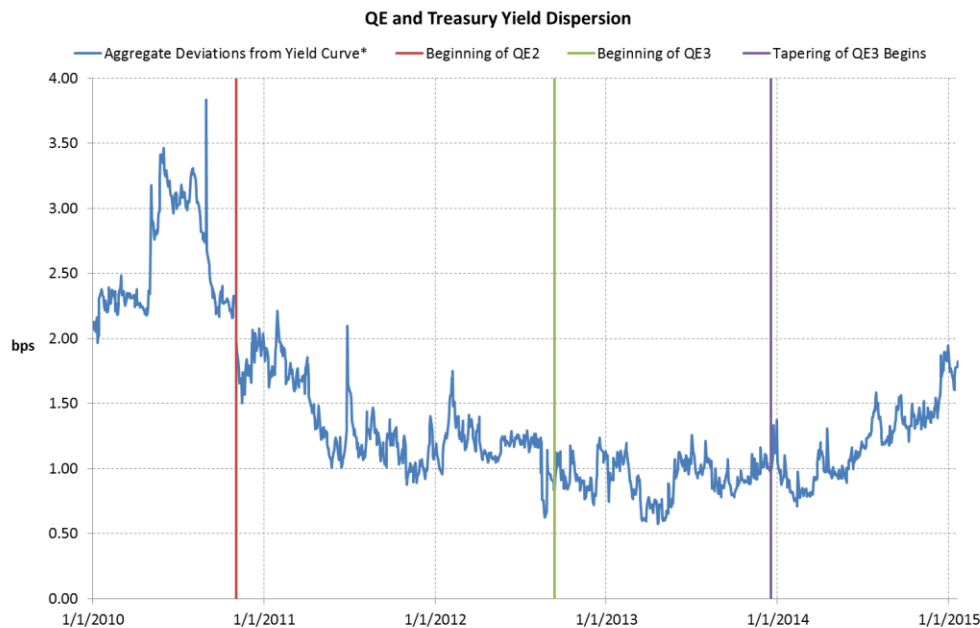


\* Sample period excludes 8/2007 - 2/2010. Liquidity premium is calculated as the average deviation of the note's yield from a smoothed off-the-run Treasury yield curve over the note's first 3 months. Issue size is also calculated as an average over the note's first 3 months (incorporating re-openings). Source: J.P. Morgan

- The liquidity premium on on-the-run issues has been related to their size
- On-the-run debt was scarce in the early 2000s and commanded a high premium
- Issue sizes have now reached levels at which the average liquidity premium is smaller and perhaps less sensitive to size

# Buybacks Could Improve Liquidity of Off-the-Run Issues

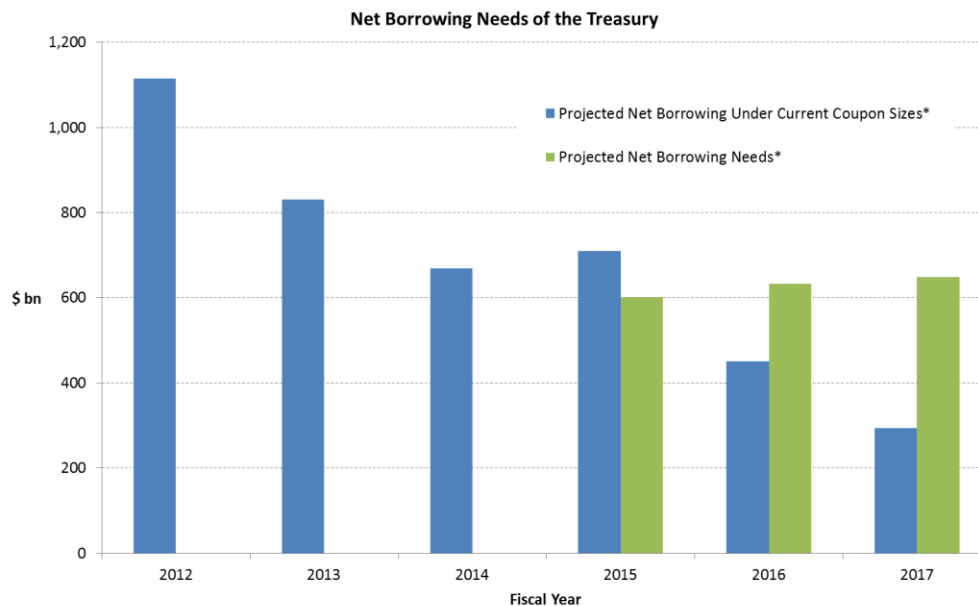
- Regular buybacks offer liquidity events for off-the-run Treasury securities
  - Help guard against individual issues becoming very illiquid or idiosyncratically cheap
  - Could be particularly helpful during periods of market dysfunction or stress
- Similar effects were observed during the Fed's asset purchase programs
- Any reduction of illiquidity discount should also benefit newly issued Treasury securities



- Fed purchases led to a reduction in the dispersion of Treasury yields
- This pattern occurred because the Fed purchased less liquid, off-the-run issues
- Dispersion began to increase again as Fed purchases diminished

## Buybacks Could Span Temporary Periods of Overfunding

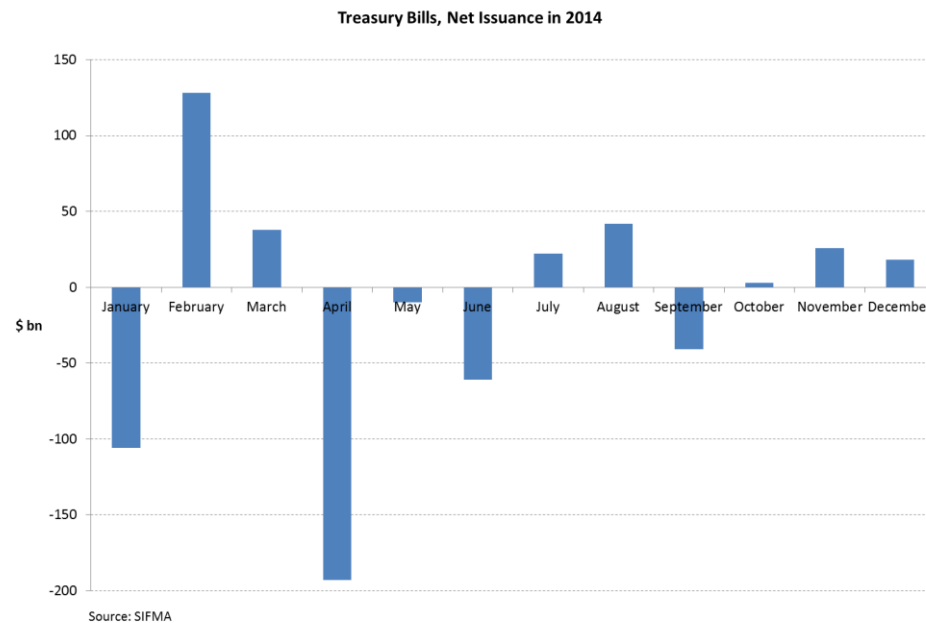
- Buybacks could be used to maintain consistent issue sizes for coupon securities during periods of overfunding
  - Approach might be appealing if issue sizes would have to increase again beyond the overfunded period
- The potential for overfunding in 2014-2015 provided an example



- Treasury cut coupon sizes in recent years given falling funding needs
- It cut 2s and 3s further last year to address overfunding in 2014-2015
- However, Treasury is expected to be underfunded in 2016 and beyond with the current issue sizes
- An alternative approach would have left issue sizes unchanged in 2014 and conducted a buyback program of \$40 to 50 billion last year

# Buybacks Could Dampen Swings in Bill Issuance/Cash Balances

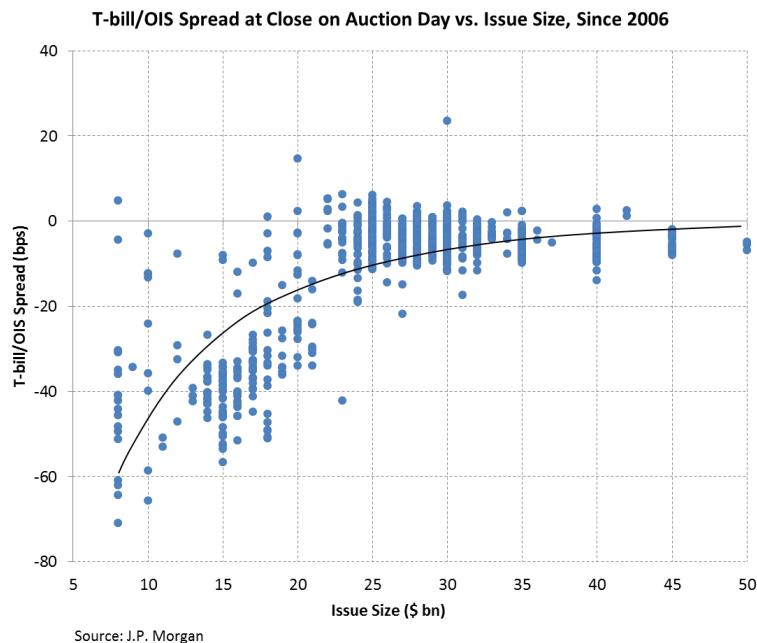
- Treasury faces considerable variation in funding needs at a higher frequency
  - This variation is largely due to timing mismatch of revenues and expenditures
- Historically, much of this variation has been met through large fluctuations in bill issuance
  - Also produces short-term swings in Treasury cash balances when bills cannot be cut sufficiently
- Buybacks could be used to dampen these seasonal swings in bill issuance/cash balances



- Issuance of bills varies over a wide range over the year
- Treasury could keep a steadier, larger amount of outstanding bills on average
- It would then use buybacks to reduce the excess funding realized at times

# Buybacks Could Dampen Swings in Bill Issuance/Cash Balances

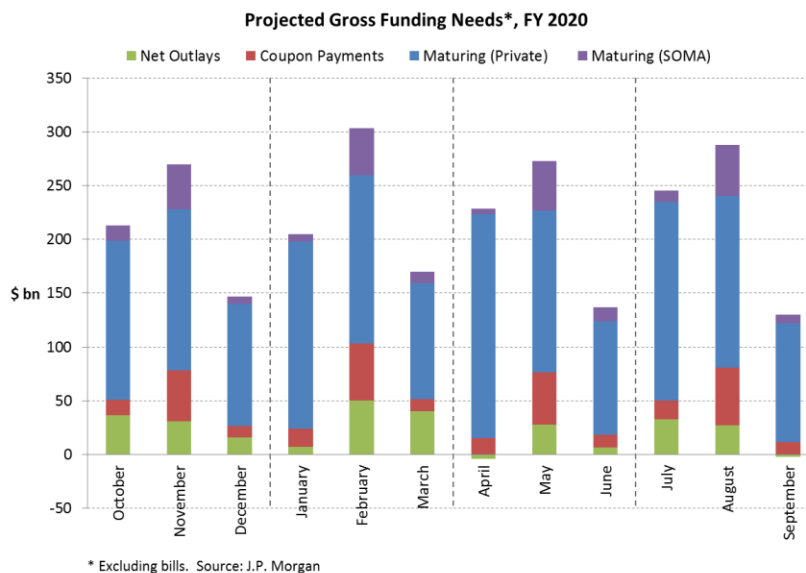
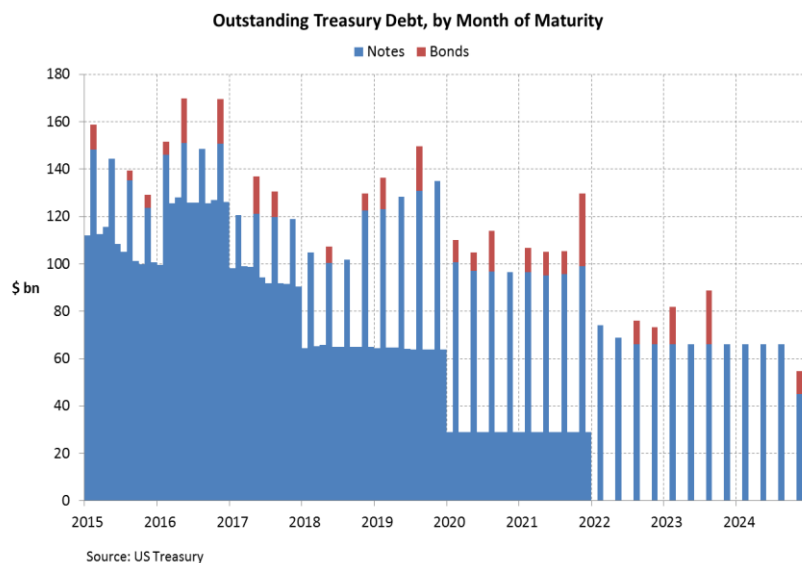
- However, there are limits on the scope of using buybacks for this purpose
  - Buybacks would be much smaller than the variation in bills
  - Operations would have to focus on issues with very short remaining maturities
- To date, there has been little apparent cost due to the variation in bill issuance
  - Important issue is whether this will remain the case going forward



- Bills have served as a very efficient shock absorber
- Treasury has been able to vary bill size with little apparent cost (relationship does not appear to be convex)
- However, that has taken place in a high liquidity, low rate environment

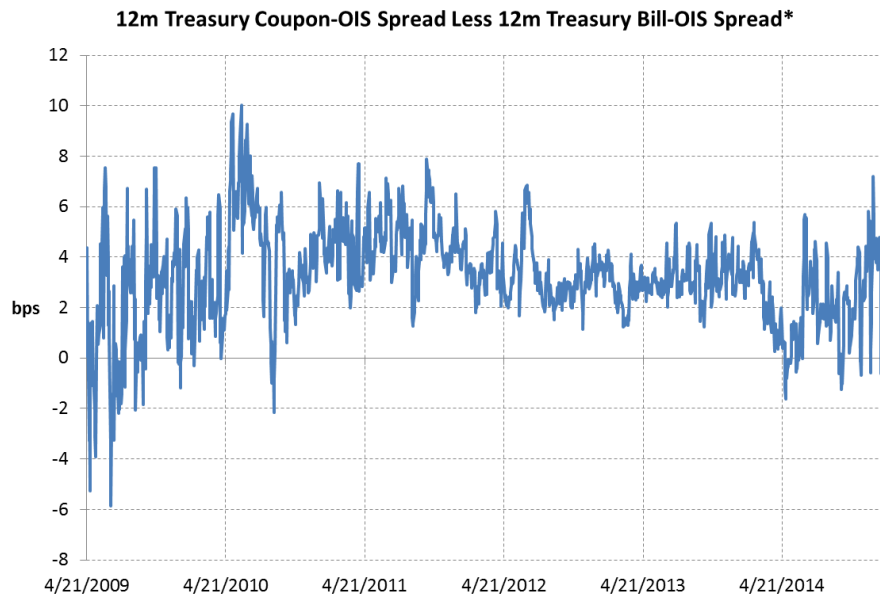
# Buybacks Could Reduce Maturity Peaks in Outstanding Debt

- Treasury faces an uneven profile of maturing debt
  - Mid-quarter months are projected to have large amounts of maturing debt
  - This pattern owes in part to the regular re-opening of 10- and 30-year securities
  - There is also some unevenness of maturities across different years
- This pattern creates considerable variation in gross funding needs
  - This variation could result in increased rollover risk
  - Makes it more challenging to smooth gross coupon issuance (need to use bills more extensively)
  - Requires larger cash balance to guard against operational disruptions



# Buybacks Could Reduce Maturity Peaks in Outstanding Debt

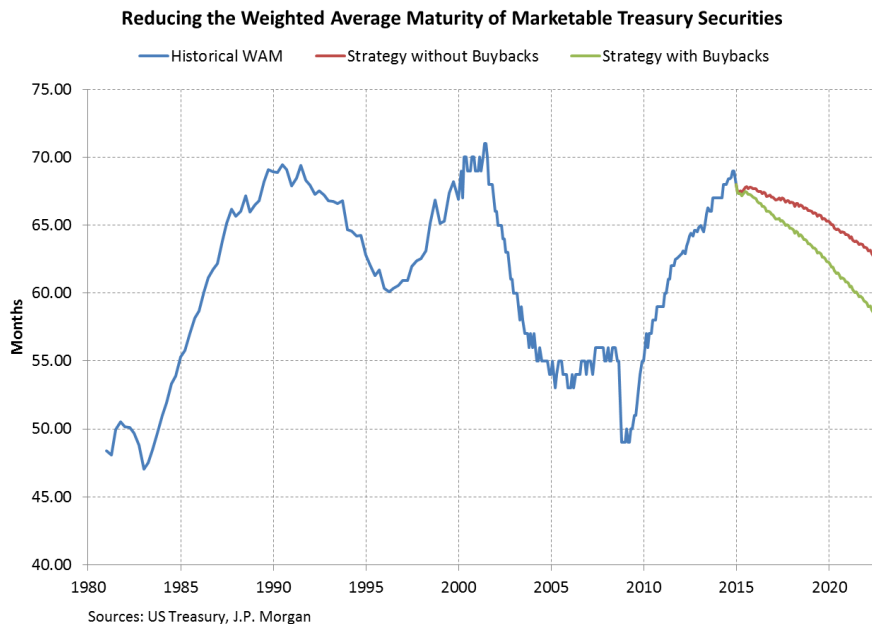
- Buybacks could reduce the amount of debt maturing on peak dates
- One approach would be to purchase coupon securities as they approach maturity
  - Allows the Treasury to essentially pre-fund the maturing debt
  - Treasury could also smooth maturity profile farther in advance if consistent with other objectives
- Short-dated coupons might be attractive to purchase



- Short-dated coupons trade cheap relative to bills
- This pattern makes them more attractive to purchase
- Many other debt managers focus buyback programs on short-dated coupon securities

# Buybacks Could Allow More Efficient Changes to Debt Profile

- Treasury should have the flexibility to alter broad characteristics of its debt over time
  - For example, implementing any decisions to change the WAM or the proportion of bills
- Buybacks could make the implementation of these changes quicker and more efficient
  - Especially if Treasury were reluctant to change new issue sizes abruptly



- As an illustrative example, consider an effort to return WAM to its historical average
- This adjustment could be achieved by adjusting issuance without using buybacks
- However, the adjustment would occur quite slowly if Treasury were reluctant to make large changes to issue sizes
- A buyback program of \$100 billion per year would accelerate the adjustment to the WAM

## Concerns about a Buyback Program

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- Costs of operating on both sides of the market
  - Pay bid-offer spread, plus additional concessions at auctions and at buyback operations
  - Costs presumably increase with size of operations, perhaps limiting the overall program size
  - However, Treasury would be capturing more liquidity premium, mitigating this concern
  - It would be important for the Treasury to monitor such costs if it were to implement buybacks
- Discomfort with Treasury interfering in market functioning
  - Some may worry about the market functioning consequences of additional Treasury activity
  - However, net supply would basically remain on same path that it would without buybacks; Treasury would just be achieving that path in a more effective manner
  - Buybacks could improve market functioning by creating more liquid instruments
- Accounting issue with buying premium bonds
  - Premiums on purchased securities count as current expenditures, so they would increase the reported budget deficit
  - However, the premium is just the market price for reducing future excess interest payments
  - This issue could interact with the debt limit, since the limit is measured on par debt

# International Experience with Debt Buybacks

- Many countries conduct either debt buybacks or debt exchange programs
- A recent OECD survey indicated that 29 of the 33 countries surveyed had used such programs
  - Some countries conduct buybacks on regular basis, while others conduct them on an ad-hoc basis

Table 1: Use of exchanges and buybacks in OECD countries

		Bond Exchange	Bond Buyback			Bond Exchange	Bond Buyback
1	Australia	●	●	18	Japan	●	●
2	Austria	●	●	19	Korea	NA	NA
3	Belgium	●	●	20	Luxembourg	●	●
4	Canada	●	●	21	Mexico	●	●
5	Chile	●	●	22	Netherlands	●	●
6	Czech Rep.	●	●	23	New Zealand	●	●
7	Denmark	●	●	24	Norway	●	●
8	Estonia	●	●	25	Poland	●	●
9	Finland	●	●	26	Portugal	●	●
10	France	●	●	27	Slovak Rep.	●	●
11	Germany	●	●	28	Slovenia	●	●
12	Greece	●	●	29	Spain	●	●
13	Hungary	●	●	30	Sweden	●	●
14	Iceland	●	●	31	Switzerland	●	●
15	Ireland	●	●	32	Turkey	●	●
16	Israel	●	●	33	UK	●	●
17	Italy	●	●	34	USA	●	●

● : Conducts buyback/switches

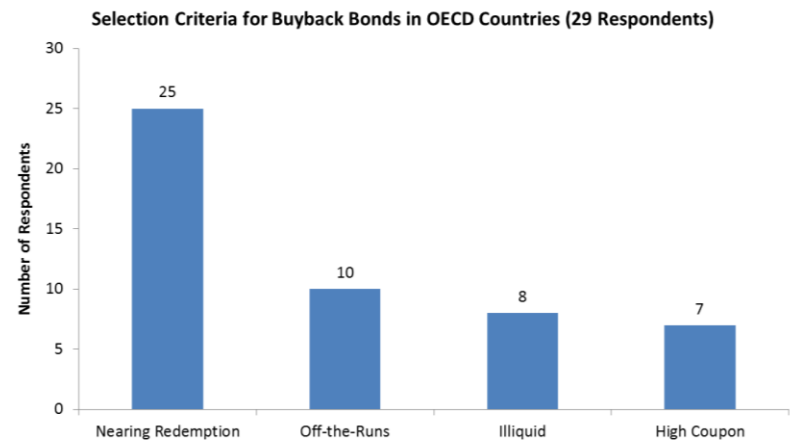
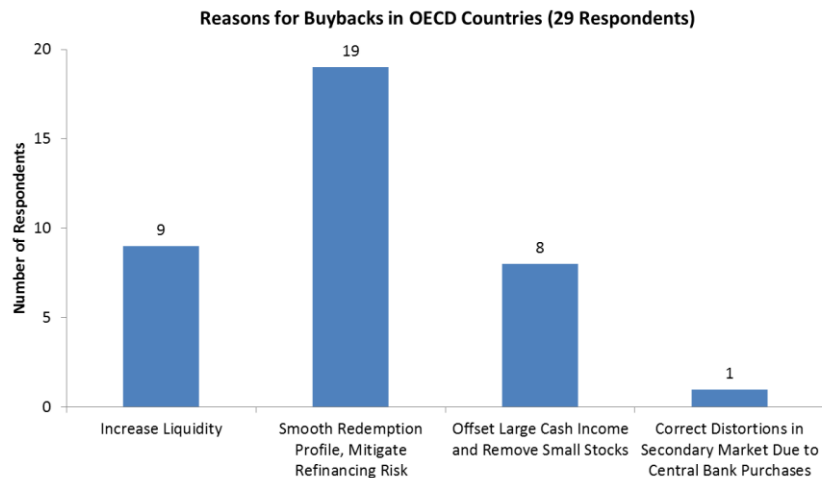
● : Do not conduct

NA : Not Available

Source: 2012 Survey on Buyback and Switches by OECD WPDM, as reported in *OECD Working Papers on Sovereign Borrowing and Public Debt Management*, No. 5.

# International Experience with Debt Buybacks

- Buyback operations are usually targeted at securities that are approaching maturity
- Most respondents said that the purpose was “to smooth the redemption profile” or “to mitigate refinancing risk”



Source: 2012 Survey on Buyback and Switches by OECD WPDM

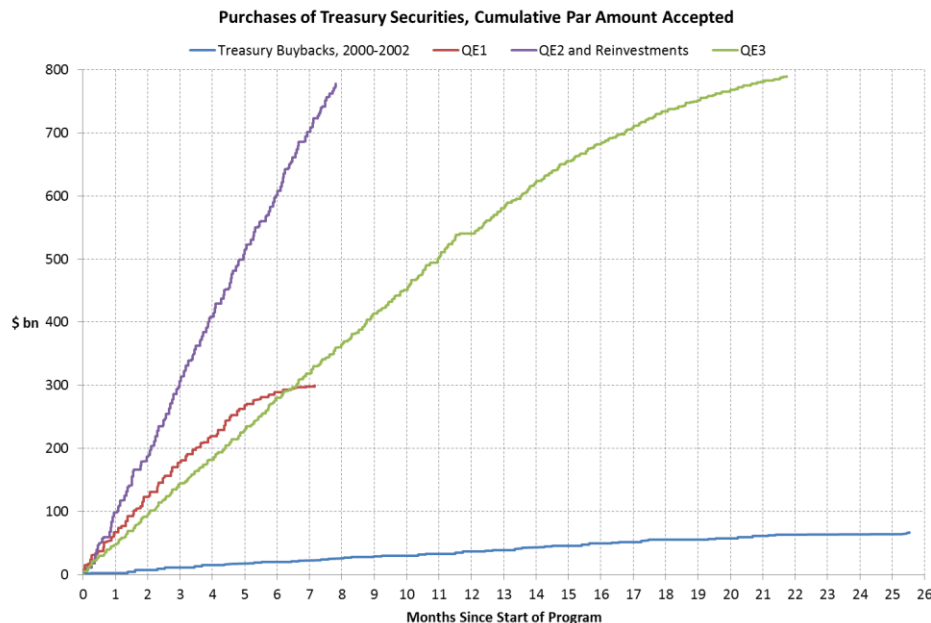
# The Implementation of Buybacks

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- Operational experience from Fed asset purchases
  - Have operational infrastructure and experienced staff for implementation
  - Can rely on the past experience of Treasury and Fed to guide operational details
- Initial thoughts on operational procedures
  - Conduct buybacks as reverse auctions over defined set of securities
  - Accept offers based on cheapness relative to other similar Treasury securities
  - Place ownership limits on individual CUSIPs
  - Exclude particular issues as needed
  - Exclude STRIPS
- Aim for some degree of “regular and predictable” activity for buybacks
  - Likely to be some benefit from regular presence in the market
  - But also want the flexibility to adjust sizes and composition over time, given some of the objectives noted above
  - Adjustments should not be so abrupt to create meaningful uncertainty about gross issuance

# Capacity for Treasury Buybacks

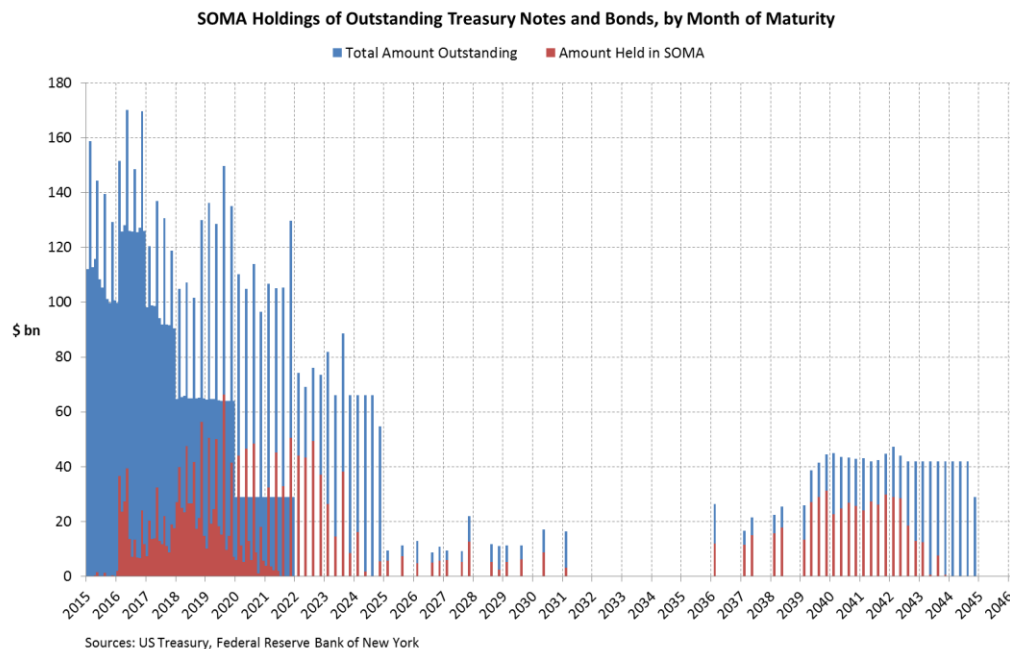
- Buybacks would proceed at a much slower pace than the Fed's purchases in recent years
  - Fed's programs bought at a rapid pace, reflecting their intention to influence financial conditions
  - Buybacks would instead be focused on the objectives described above
- Purchases of up to \$100 billion per year could likely be achieved with little difficulty



- Fed programs bought at a pace as high as \$100 billion per month
- Buyback program would be at a fraction of the pace of Fed purchases
- Nevertheless, the Fed's programs showed that sizable purchases can be achieved without notable detriment to market functioning

# Capacity for Treasury Buybacks

- Some capacity for buybacks has been used up by the Fed's purchase programs
  - The extent of the Fed's holdings varies across different maturity regions
- Still considerable room for a buyback program across a wide range of maturities



- Fed owns a meaningful share of some segments of the market (such as bonds that have aged significantly)
- Fed ownership is limited at shorter maturities

## Concluding Thoughts on Buybacks

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- Buyback program is operationally feasible and provides benefits discussed above
- Potential structure of buyback program
  - Start with a program of modest size, conducted as a regular set of operations
  - Size of purchases would vary through the year to achieve the objectives above
  - Focus a considerable portion of purchases on securities with relatively short remaining maturities
  - But also consider some amount of purchases across the curve
  - If program proves useful, could move towards larger sizes and greater variation
- Arguments in favor:
  - Build the flexibility to smooth maturity peaks and manage variation in bills/cash balances
  - Enhance the liquidity of off-the-run issues
  - Help implement any decisions on the desired structure of outstanding debt
- Arguments against:
  - No clear need to raise on-the-run issue sizes at this time
  - As outlook swings towards underfunding, buybacks will exacerbate need to raise issue sizes
  - Bills are currently serving as an effective tool for addressing short-run variation in funding needs