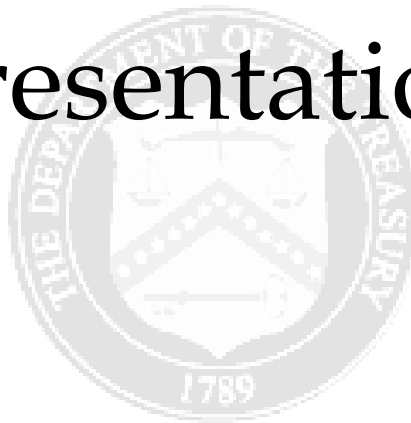


Treasury Presentation to TBAC



Office of Debt Management



Fiscal Year 2020 Q1 Report

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Section I: Executive Summary



Highlights of Treasury's February 2020 Quarterly Refunding Presentation to the Treasury Borrowing Advisory Committee (TBAC)

Receipts and Outlays

- In Q1 FY2020, overall net receipts were up \$48 billion (6%) on a calendar-adjusted basis compared to the same period last year. Increases in withheld income and FICA taxes of \$38 billion (6%), gross corporate taxes of \$13 billion (20%), and customs duties of \$4 billion (22%) were partially offset by declines in excise taxes of \$11 billion (-35%) reflecting the fact that Health Insurance Provider fees paid in October 2018 were on moratorium in calendar year 2019. Q1 FY2020 receipts were 14.8% of GDP, which is unchanged from the same period last year.
- After calendar adjustments, in Q1 FY2020 outlays were \$72 billion (7%) higher than the comparable period last year. Health and Human Services spending was \$20 billion (7%) higher due to increased Medicare and Medicaid expenditures. Social Security Administration outlays were \$15 billion (6%) higher due to increases in enrollment and in the average benefit. Department of Defense expenditures were up \$15 billion (9%). Outlays were also up \$8 billion (4%) for Department of Treasury, \$3 billion (5%) for Veterans Affairs and \$2 billion (4%) for Agriculture. Q1 FY2020 outlays were 21.4% of GDP, compared to 20.9% of GDP for the same period last year.

Projected Net Marketable Borrowing (FY2020)

- Treasury's Office of Fiscal Projections (OFP) currently forecasts a net privately-held marketable borrowing need of \$367 billion for Q2 FY2020, with an end-of-March cash balance of \$400 billion. For Q3 FY2020, OFP forecasts a net privately-held marketable borrowing need of \$-56 billion assuming end-of-June cash balance of \$400 billion. Privately-held marketable borrowing excludes rollovers (auction "add-ons") of Treasury securities held in the Federal Reserve System Open Market Account (SOMA) but includes financing required due to SOMA redemptions. Secondary market purchases of Treasury securities by SOMA do not directly change net privately-held marketable borrowing but, all else equal, when the securities mature and assuming the Fed does not redeem any maturing securities, would increase the amount of cash raised for a given privately-held auction size by increasing the SOMA "add-on" amount.

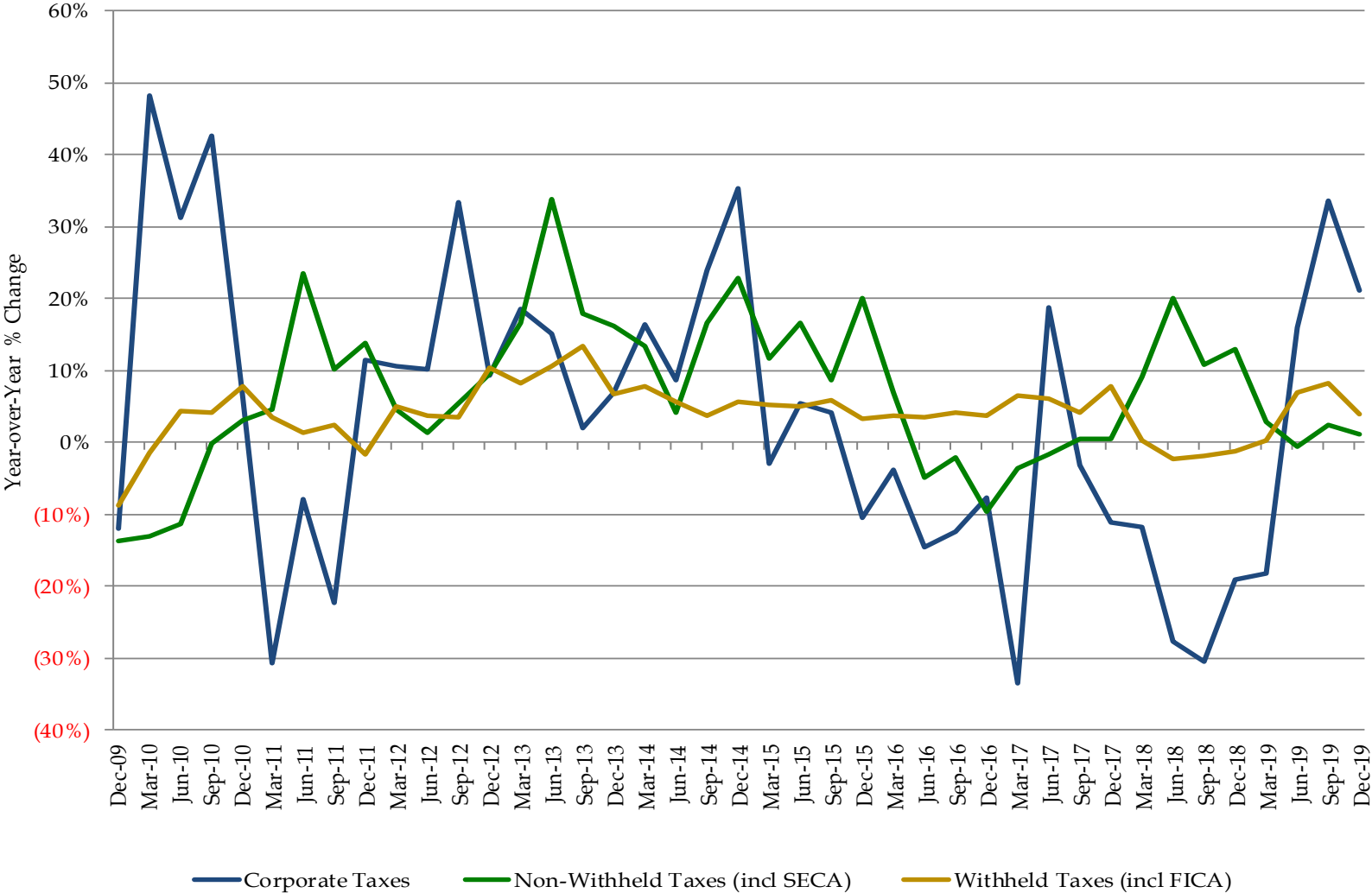
Demand for Treasury Securities

- Bid-to-cover ratios for all securities were largely stable over the last quarter.
- Foreign demand remained steady.

Section II: Fiscal

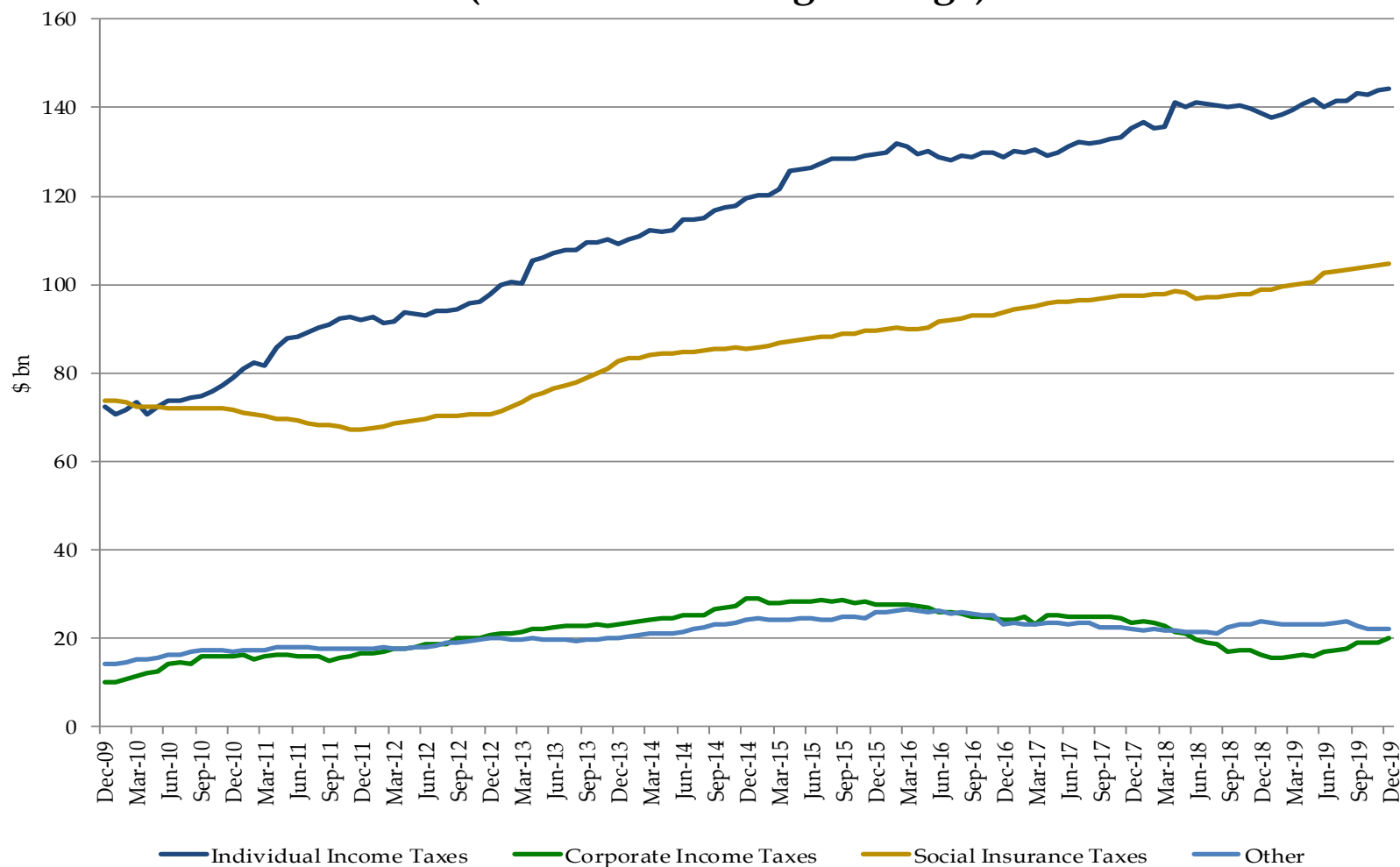


Quarterly Tax Receipts



Source: United States Department of the Treasury

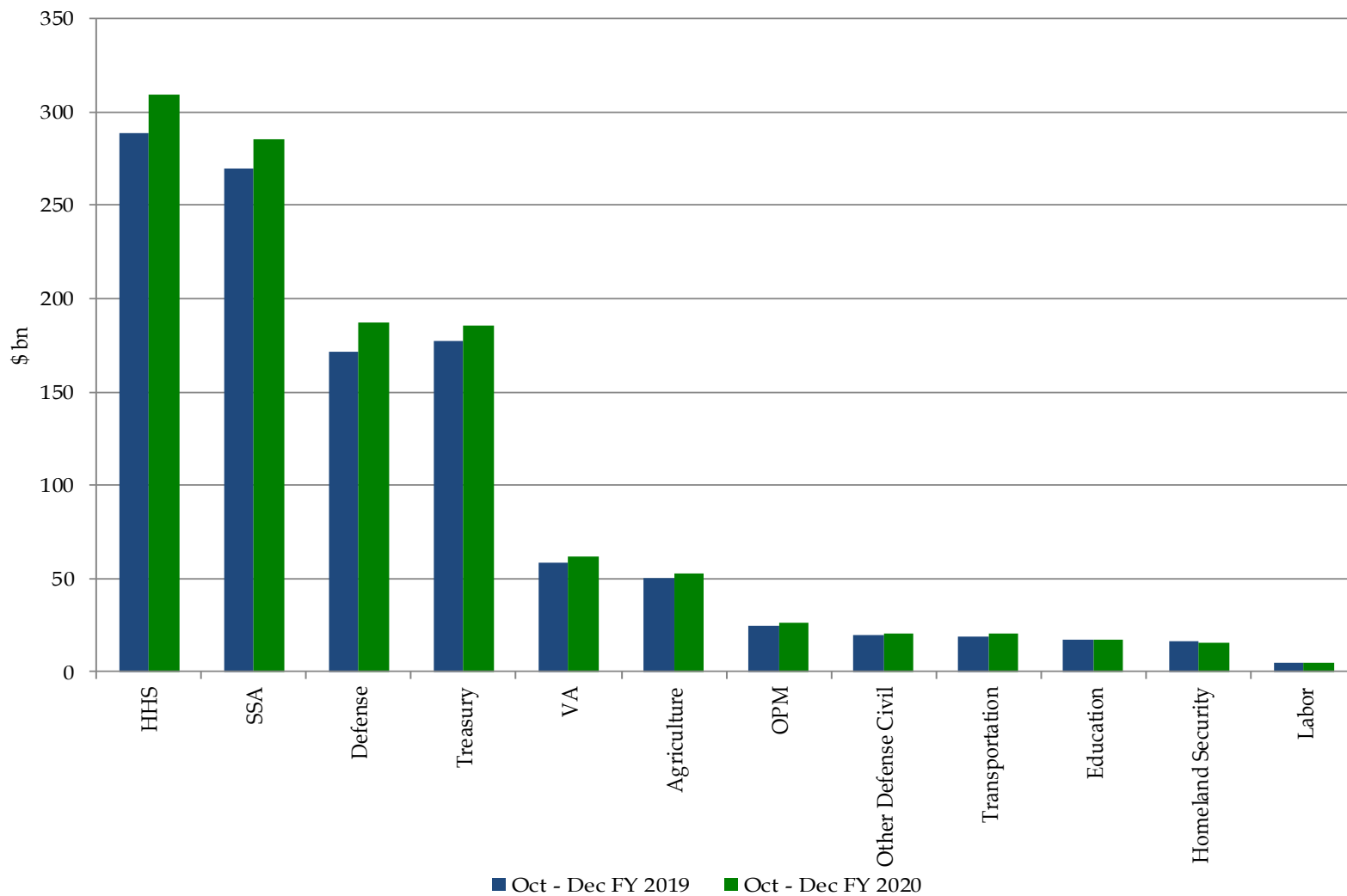
Monthly Receipt Levels (12-Month Moving Average)



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.

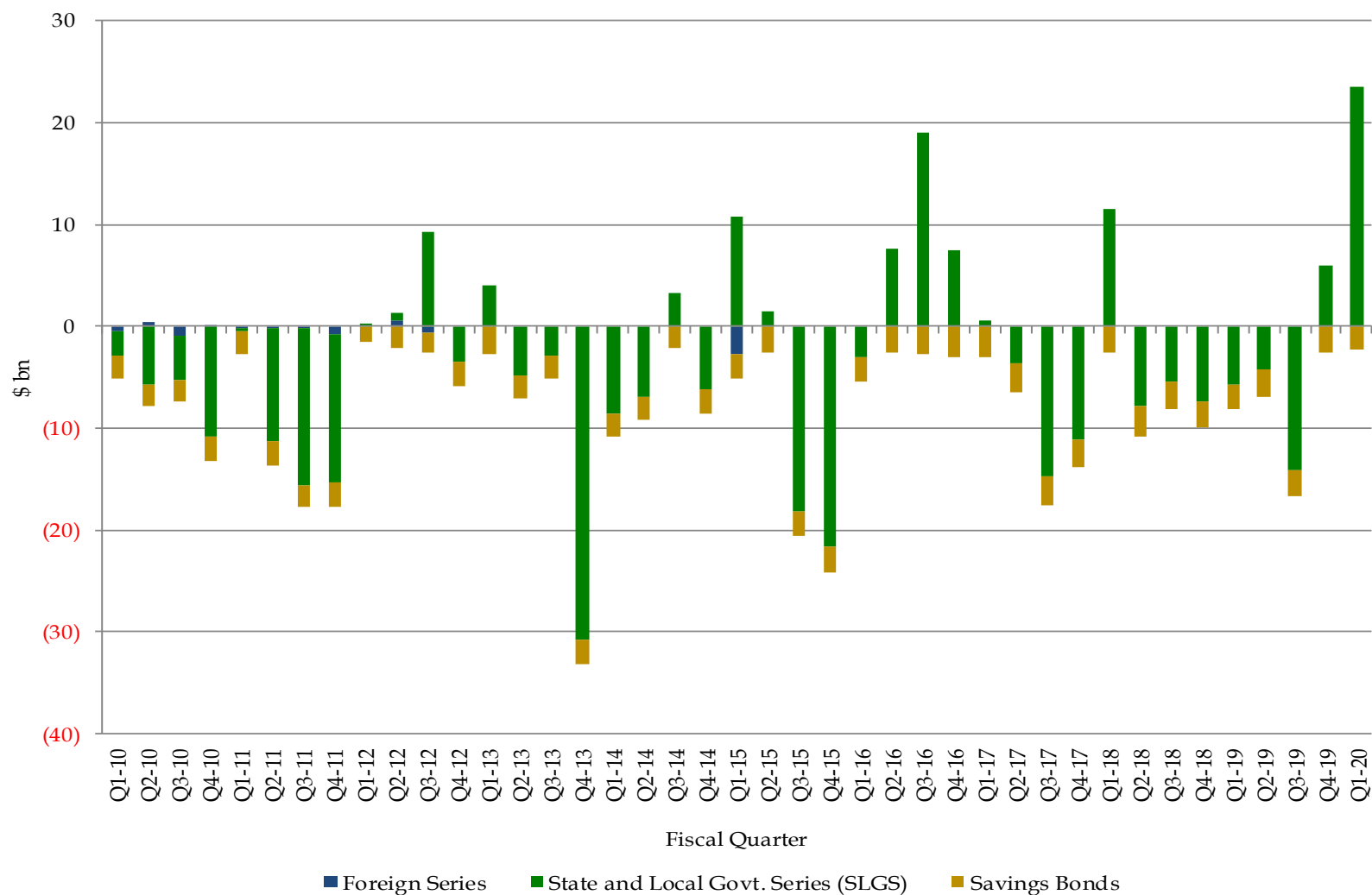
Source: United States Department of the Treasury

Largest Outlays



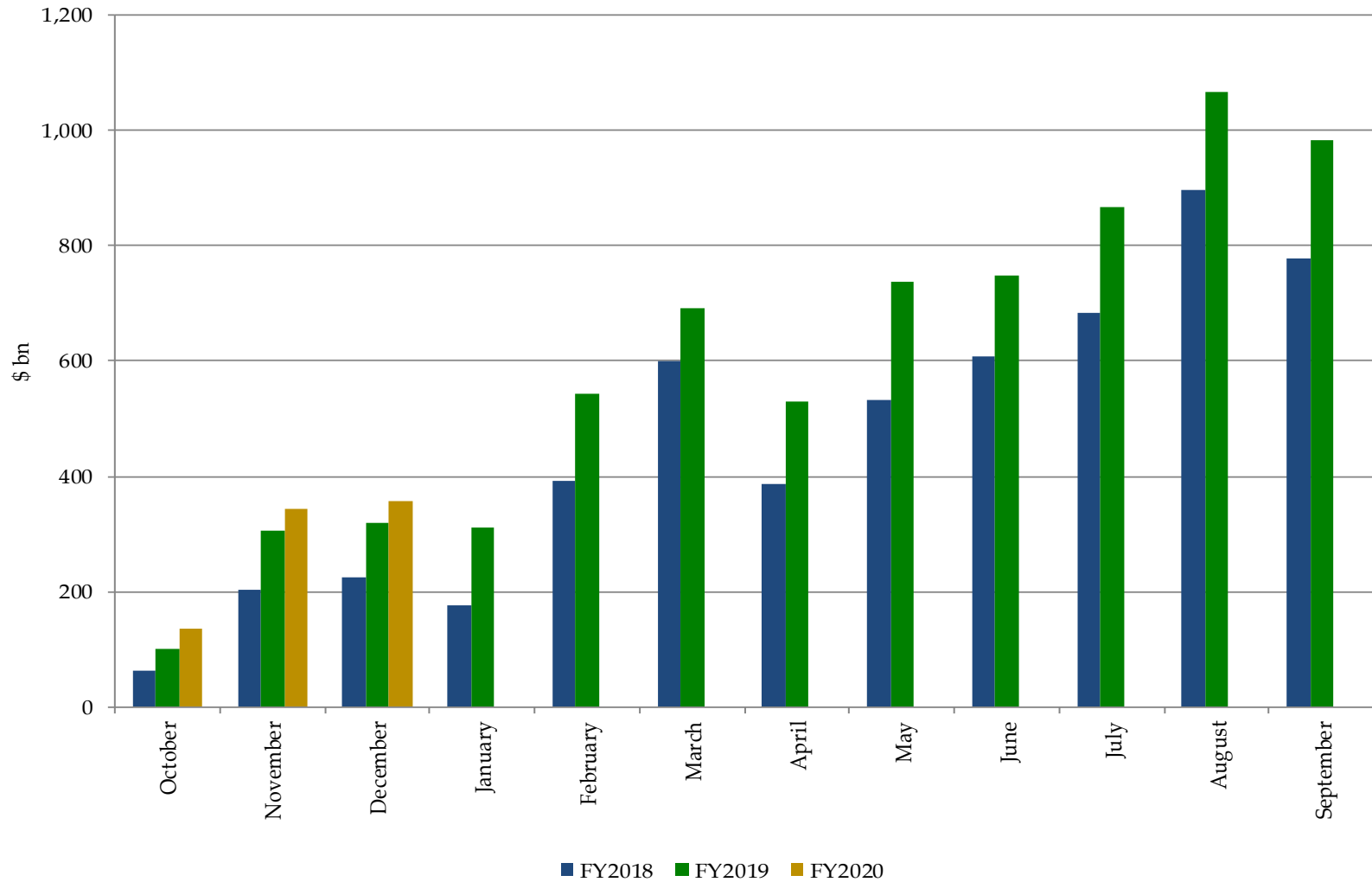
Source: United States Department of the Treasury

Treasury Net Nonmarketable Borrowing



Source: United States Department of the Treasury

Cumulative Budget Deficits by Fiscal Year



Source: United States Department of the Treasury

FY 2020-2022 Deficits and Privately-Held Net Marketable Borrowing Estimates*, in \$ billions

	Primary Dealers ¹	CBO ²	OMB ³	CBO ⁴
FY2020 Deficit Estimate	1,050	1,015	1,045	966
FY2021 Deficit Estimate	1,100	1,000	1,015	921
FY2022 Deficit Estimate	1,161	1,116	967	1,073
FY2020 Deficit Estimate Range	1,000-1,170			
FY2021 Deficit Estimate Range	1,030-1,250			
FY2022 Deficit Estimate Range	1,025-1,275			
FY2020 Privately-Held Net Marketable Borrowing Estimate	1,059	1,052	1,112	1,030
FY2021 Privately-Held Net Marketable Borrowing Estimate	1,100	1,031	1,082	978
FY2022 Privately-Held Net Marketable Borrowing Estimate	1,188	1,180	1,030	1,121
FY2020 Privately-Held Net Marketable Borrowing Range	490-1,350			
FY2021 Privately-Held Net Marketable Borrowing Range	800-1,322			
FY2022 Privately-Held Net Marketable Borrowing Range	850-1,330			
Estimates as of:	Jan-20	Jan-20	Jul-19	May-19

¹Estimates represent the medians from the primary dealer survey in January 2020.

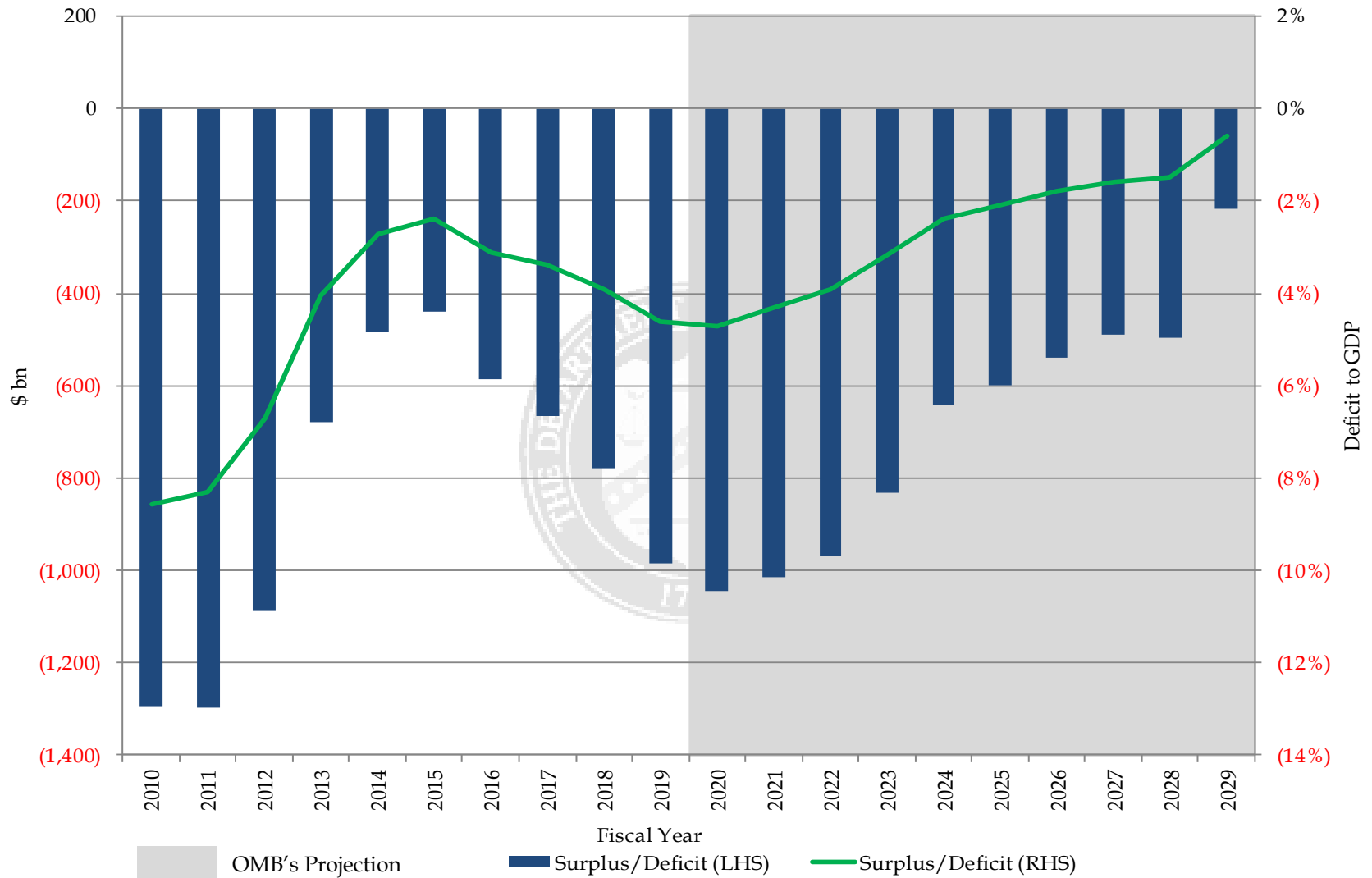
²Table 1-1 of CBO's "The Budget And Economic Outlook: 2020 to 2030," January 2020 (current law).

³Table S-11 of OMB's "A Budget for a Better America, Fiscal Year 2020, Mid-Session Review," July 2019.

⁴Table 2 of CBO's "An Analysis of the President's 2020 Budget," May 2019.

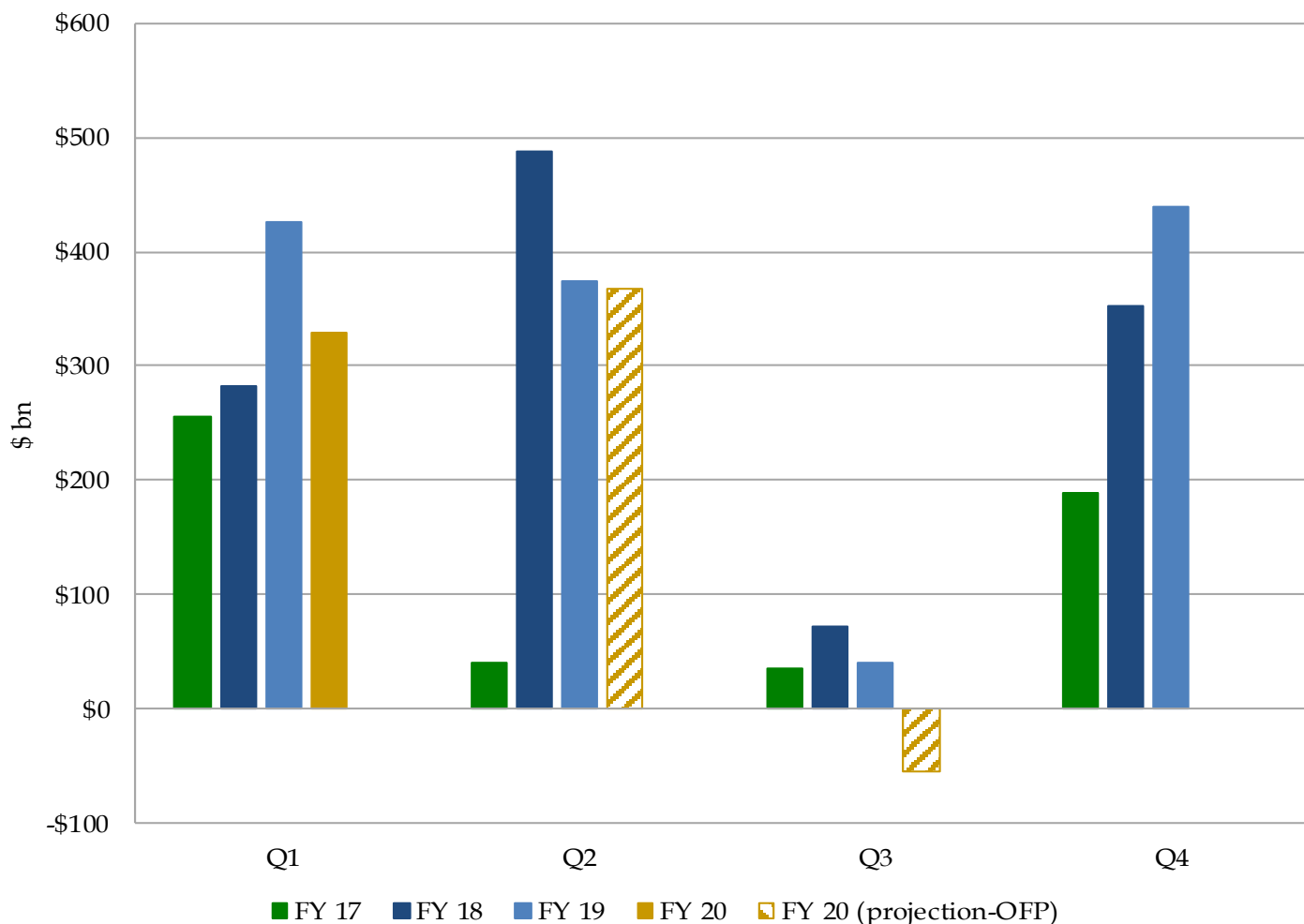
*Privately-held marketable borrowing excludes rollovers (auction "add-ons") of Treasury securities held in the Federal Reserve's System Open Market Account (SOMA) but includes financing required due to SOMA redemptions. Secondary market purchases of Treasury securities by SOMA do not directly change net privately-held marketable borrowing but, all else equal, when the securities mature and assuming the Fed does not redeem any maturing securities, would increase the amount of cash raised for a given privately-held auction size by increasing the SOMA "add-on" amount.

Budget Surplus/Deficit



Projections are from Table S-11 of OMB's "A Budget for a Better America, Fiscal Year 2020, Mid-Session Review," July 2019.

Privately-Held Net Marketable Borrowing Outlook*



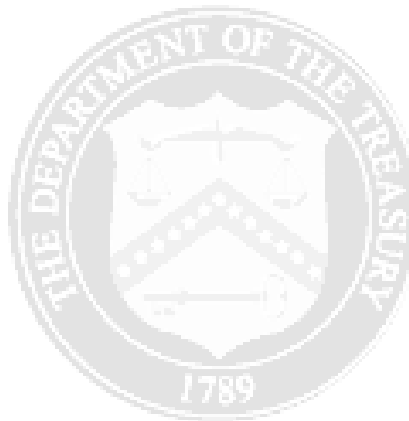
* Privately-held marketable borrowing excludes rollovers (auction “add-ons”) of Treasury securities held in the Federal Reserve System Open Market Account (SOMA) but includes financing required due to SOMA redemptions. Secondary market purchases of Treasury securities by SOMA do not directly change net privately-held marketable borrowing but, all else equal, when the securities mature and assuming the Fed does not redeem any maturing securities, would increase the amount of cash raised for a given privately-held auction size by increasing the SOMA “add-on” amount.

Section III: Financing



Assumptions for Financing Section (pages 16 to 21)

- Portfolio and SOMA holdings as of 12/31/2019.
- Estimates assume private announced issuance sizes and patterns remain constant for nominal coupons, TIPS, and FRNs given changes made at the November 2019 refunding, while using total bills outstanding of ~\$2.42 trillion.
- The principal on the TIPS securities was accreted to each projection date based on market ZCIS levels as of 12/31/2019.
- No attempt was made to account for future financing needs.



Sources of Privately-Held Financing in FY20 Q1*

October - December 2019	
Net Bill Issuance	40
Net Coupon Issuance	290
Subtotal: Net Marketable Borrowing	330
Ending Cash Balance	404
Beginning Cash Balance	382
Subtotal: Change in Cash Balance	21
Net Implied Funding for FY20 Q1**	309

Security	October - December 2019 Bill Issuance			Fiscal Year-to-Date Bill Issuance		
	Gross	Maturing	Net	Gross	Maturing	Net
4-Week	660	714	(54)	660	714	(54)
8-Week	535	539	(4)	535	539	(4)
13-Week	573	529	44	573	529	44
26-Week	519	469	50	519	469	50
52-Week	82	78	4	82	78	4
CMBs	15	15	0	15	15	0
Bill Subtotal	2,384	2,344	40	2,384	2,344	40

Security	October - December 2019 Coupon Issuance			Fiscal Year-to-Date Coupon Issuance		
	Gross	Maturing	Net	Gross	Maturing	Net
2-Year FRN	56	41	15	56	41	15
2-Year	120	50	70	120	50	70
3-Year	114	72	42	114	72	42
5-Year	123	131	(8)	123	131	(8)
7-Year	96	58	38	96	58	38
10-Year	75	37	38	75	37	38
30-Year	51	0	51	51	0	51
5-Year TIPS	32	0	32	32	0	32
10-Year TIPS	12	0	12	12	0	12
30-Year TIPS	0	0	0	0	0	0
Coupon Subtotal	679	389	290	679	389	290

Total	3,063	2,733	330	3,063	2,733	330
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*Privately-held marketable borrowing excludes rollovers (auction “add-ons”) of Treasury securities held in the Federal Reserve System Open Market Account (SOMA) but includes financing required due to SOMA redemptions. Secondary market purchases of Treasury securities by SOMA do not directly change net privately-held marketable borrowing but, all else equal, when the securities mature and assuming the Fed does not redeem any maturing securities, would increase the amount of cash raised for a given privately-held auction size by increasing the SOMA “add-on” amount.

**An end-of-December 2019 cash balance of \$404 billion versus a beginning-of-October 2019 cash balance of \$382 billion. By keeping the cash balance constant, Treasury arrives at the net implied funding number.

Sources of Privately-Held Financing in FY20 Q2*

January - March 2020	
Assuming Constant Coupon Issuance Sizes**	
Treasury Announced Net Marketable Borrowing***	367
Net Coupon Issuance	236
Implied Change in Bills	131

Security	January - March 2020 Coupon Issuance			Fiscal Year-to-Date Coupon Issuance		
	Gross	Maturing^	Net	Gross	Maturing	Net
2-Year FRN	56	45	11	112	86	26
2-Year	120	83	37	240	134	106
3-Year	114	72	42	228	144	84
5-Year	123	105	18	246	235	11
7-Year	96	60	36	192	118	74
10-Year	75	44	31	150	80	70
30-Year	51	3	48	102	3	99
5-Year TIPS	0	0	0	32	0	32
10-Year TIPS	26	21	5	38	21	17
30-Year TIPS	8	0	8	8	0	8
Coupon Subtotal	669	433	236	1,348	822	526

* Privately-held marketable borrowing excludes rollovers (auction “add-ons”) of Treasury securities held in the Federal Reserve System Open Market Account (SOMA) but includes financing required due to SOMA redemptions. Secondary market purchases of Treasury securities by SOMA do not directly change net privately-held marketable borrowing but, all else equal, when the securities mature and assuming the Fed does not redeem any maturing securities, would increase the amount of cash raised for a given privately-held auction size by increasing the SOMA “add-on” amount.

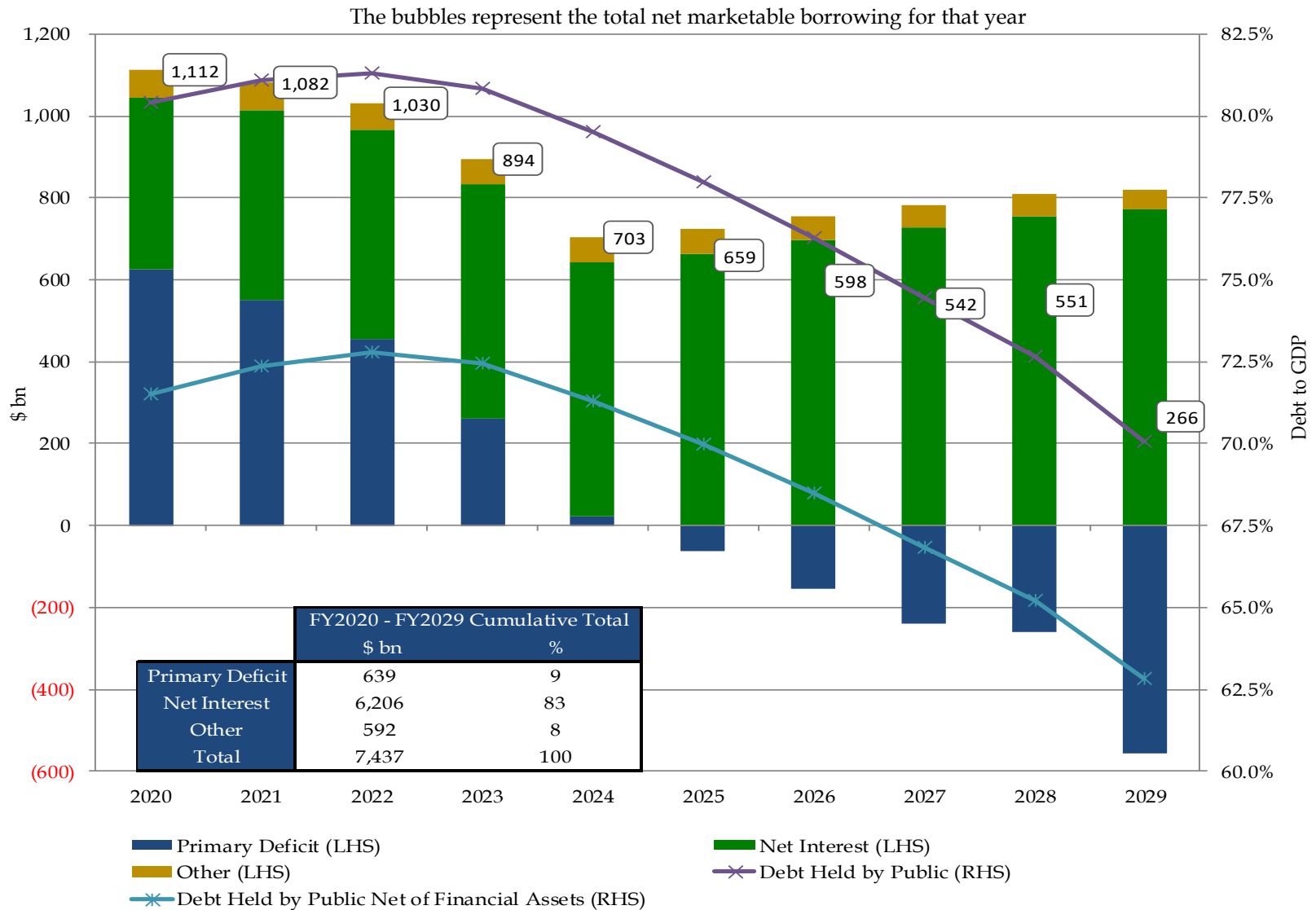
** Keeping announced issuance sizes and patterns constant for nominal coupons, TIPS, and FRNs based on changes made at the November 2019 refunding.

*** Assumes an end-of-March 2020 cash balance of \$400 billion versus a beginning-of-January 2020 cash balance of \$404 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>

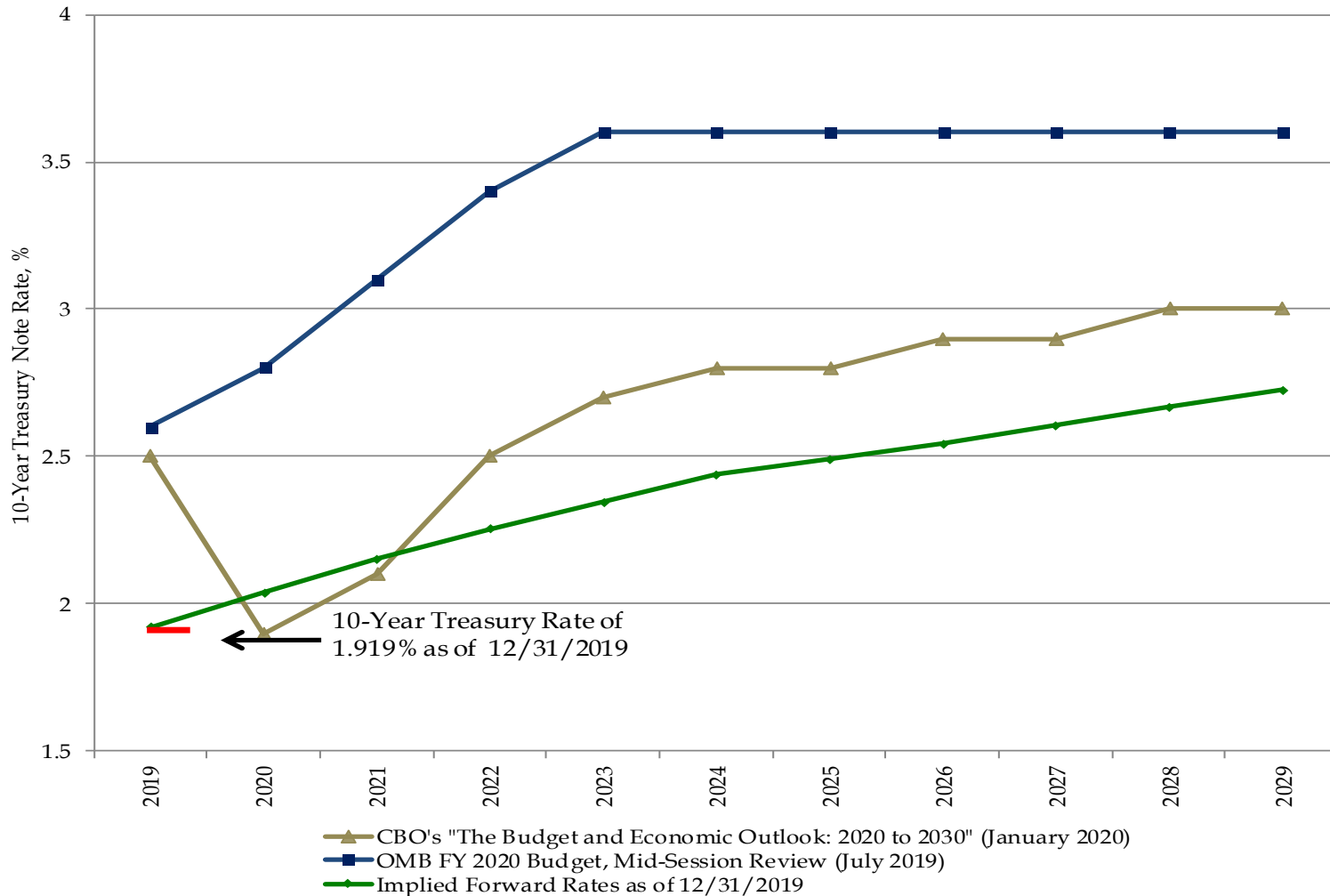
^ Maturing amounts could change based on future Federal Reserve purchases.

OMB's Projection of Borrowing from the Public



OMB's projections of the change in debt held by the public (borrowing) are from Table S-11 of "A Budget for a Better America, Fiscal Year 2020 Mid-Session Review," July 2019. "Other" represents borrowing from the public to provide direct and guaranteed loans.

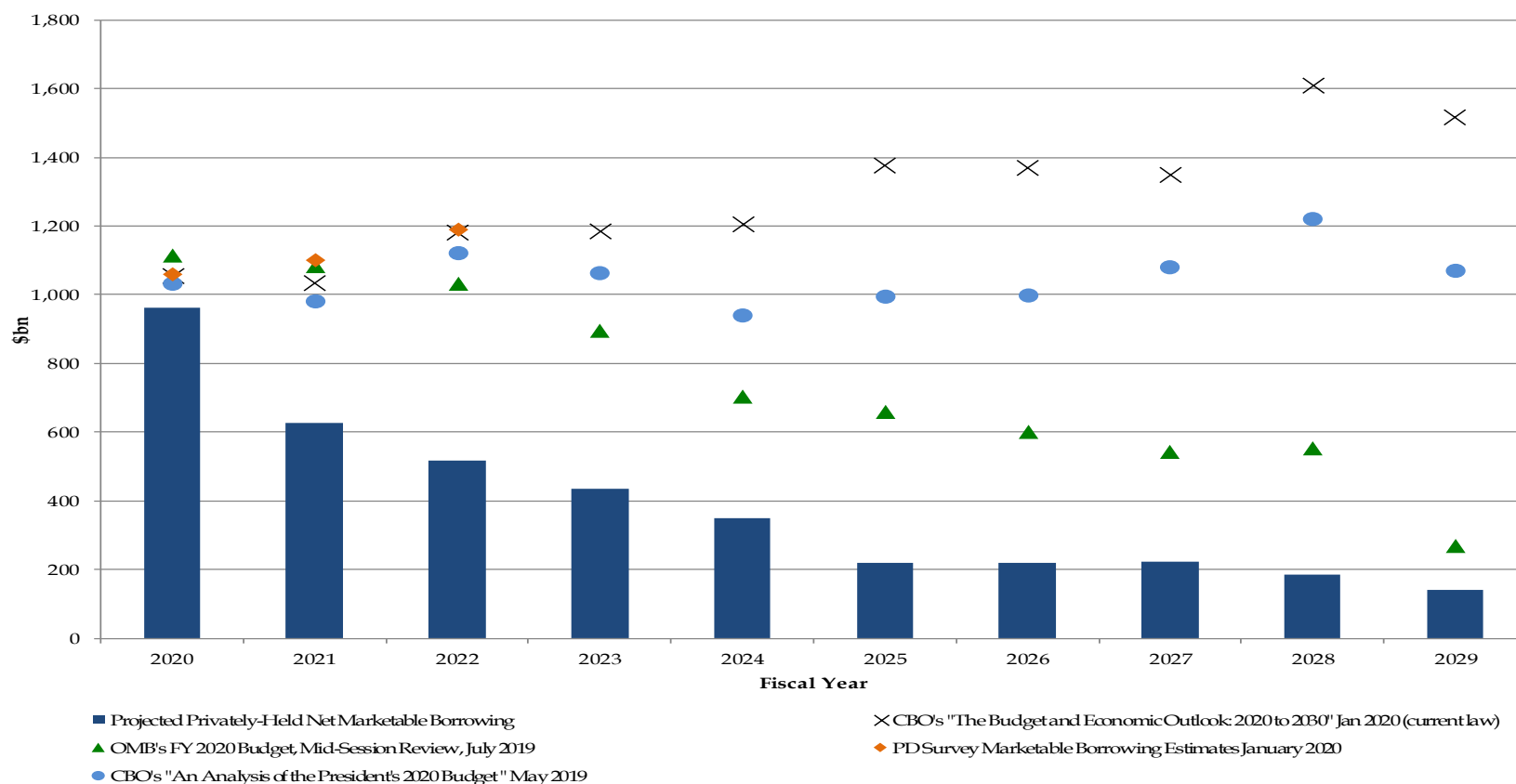
Interest Rate Assumptions: 10-Year Treasury Note



OMB's economic assumption of the 10-Year Treasury note rates reflect the calendar year average from Table 3 of OMB's "A Budget for a Better America, Fiscal Year 2020, Mid-Session Review," July 2019. CBO's economic assumption 10-Year Treasury note rates reflect the fiscal year average from Table B-2 of CBO's "The Budget and Economic Outlook: 2020 to 2030," January 2020. The forward rates are the implied 10-Year Treasury note rates on December 31, 2019.

Projected Privately-Held Net Marketable Borrowing

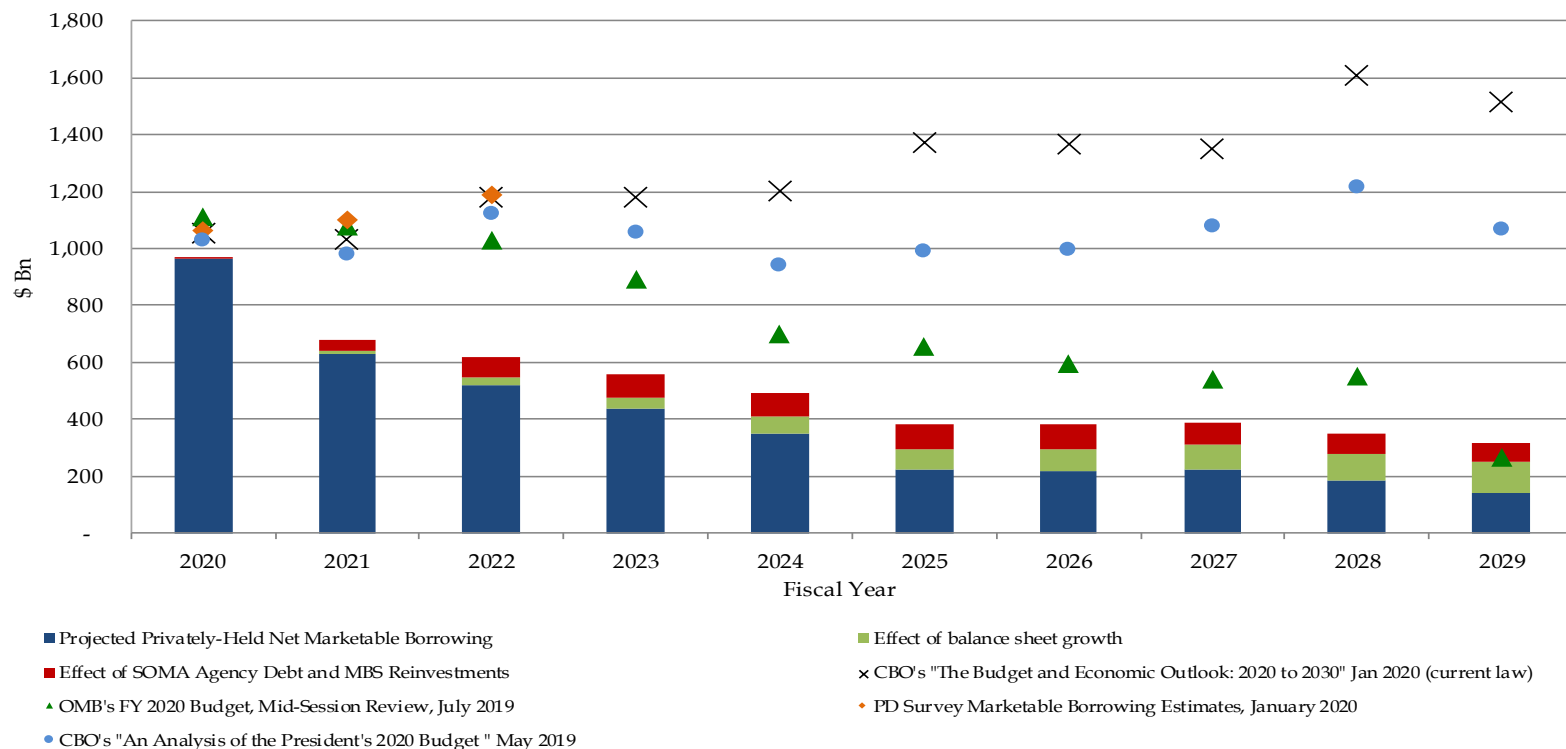
Assuming Private Coupon Issuance & Total Bills Outstanding Remain Constant*



Treasury's latest primary dealer survey estimates can be found on page 11. OMB's projections of the change in debt held by the public are from Table S-11 of "A Budget for a Better America, Fiscal Year 2020, Mid-Session Review," July 2019. CBO's current law budget projections of the change in debt held by the public are from 1-1 of CBO's "The Budget and Economic Outlook: 2020 to 2030," January 2020. CBO's budget projections of the change in debt held by the public are from Table 2 of "An Analysis of the President's 2020 Budget," May 2019. See table in the appendix section for details.

* Privately-held net marketable borrowing excludes rollovers (auction "add-ons") of Treasury securities held in the Federal Reserve System Open Market Account (SOMA) but includes financing required due to SOMA redemptions. No adjustments are made for open-market outright purchases.

Estimate of the Effect of SOMA Purchases* on Projected Privately-Held Net Marketable Borrowing** Assuming Private Coupon Issuance & Total Bills Outstanding Remain Constant



Treasury's latest primary dealer survey estimates can be found on page 11. OMB's projections of the change in debt held by the public are from Table S-11 of "A Budget for a Better America, Fiscal Year 2020, Mid-Session Review," July 2019. CBO's current law budget projections of the change in debt held by the public are from Table 1-1 of CBO's "The Budget and Economic Outlook: 2020 to 2030," January 2020. CBO's budget projections of the change in debt held by the public are from Table 2 of "An Analysis of the President's 2020 Budget," May 2019.

* The principal payments from agency debt and agency MBS up to a maximum amount of \$20 billion per month will be reinvested in Treasury securities through secondary market purchases that roughly match the maturity composition of Treasury securities outstanding [1]. The currency portion of the Fed's balance sheet is assumed to grow at the historical annual rate and assumed to be offset by Treasury securities purchases in the same manner consistent with the MBS principal payments. Secondary market purchases of Treasury securities by SOMA do not directly change net privately-held marketable borrowing but, all else equal, when the securities mature and assuming the Fed does not redeem any maturing securities, would increase the amount of cash raised for a given privately-held auction size by increasing the SOMA "add-on" amount.

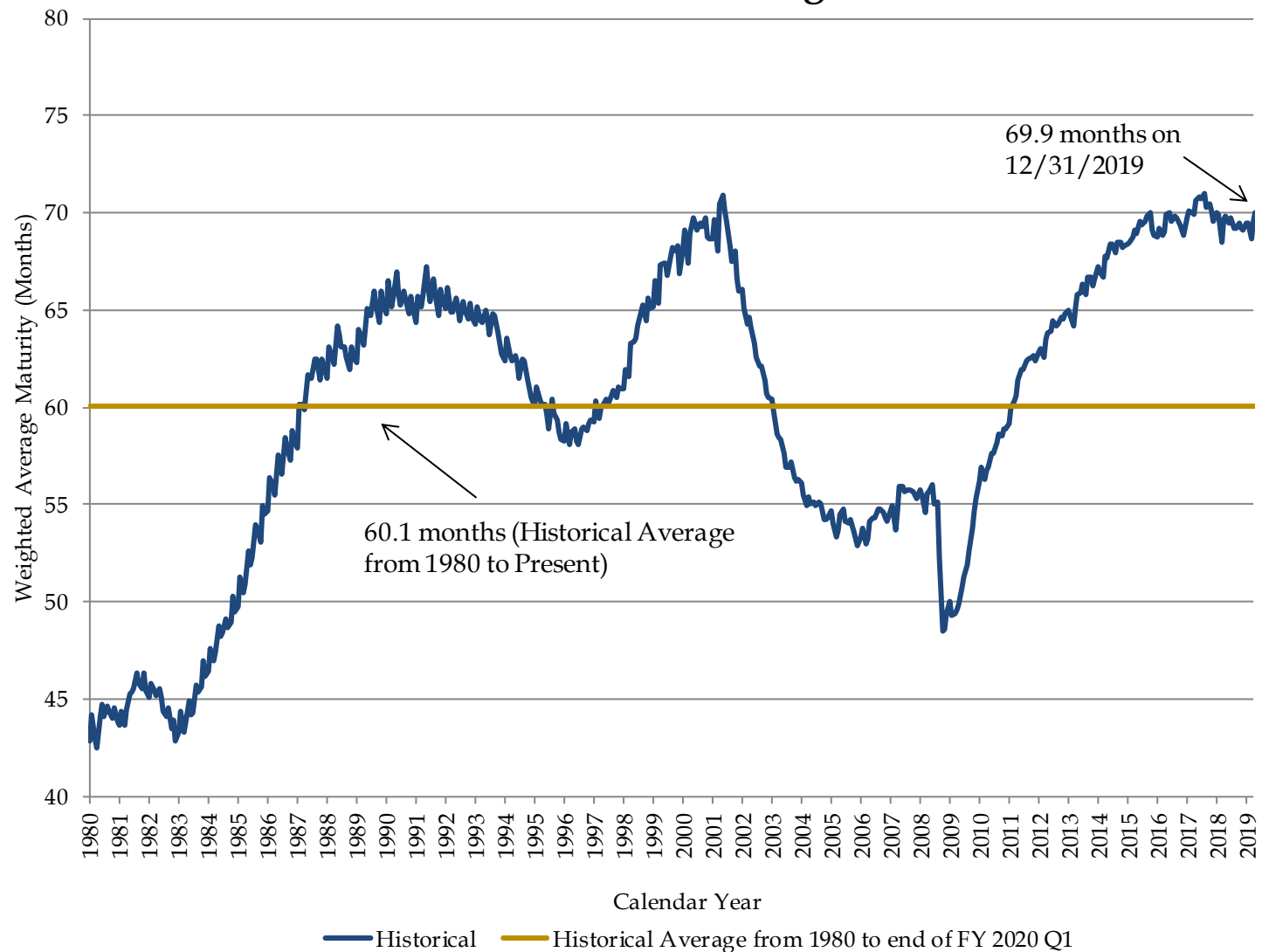
** Privately-held net marketable borrowing excludes rollovers (auction "add-ons") of Treasury securities held in the Federal Reserve System Open Market Account (SOMA) but includes financing required due to SOMA redemptions.

[1] https://www.newyorkfed.org/markets/opolicy/operating_policy_190731

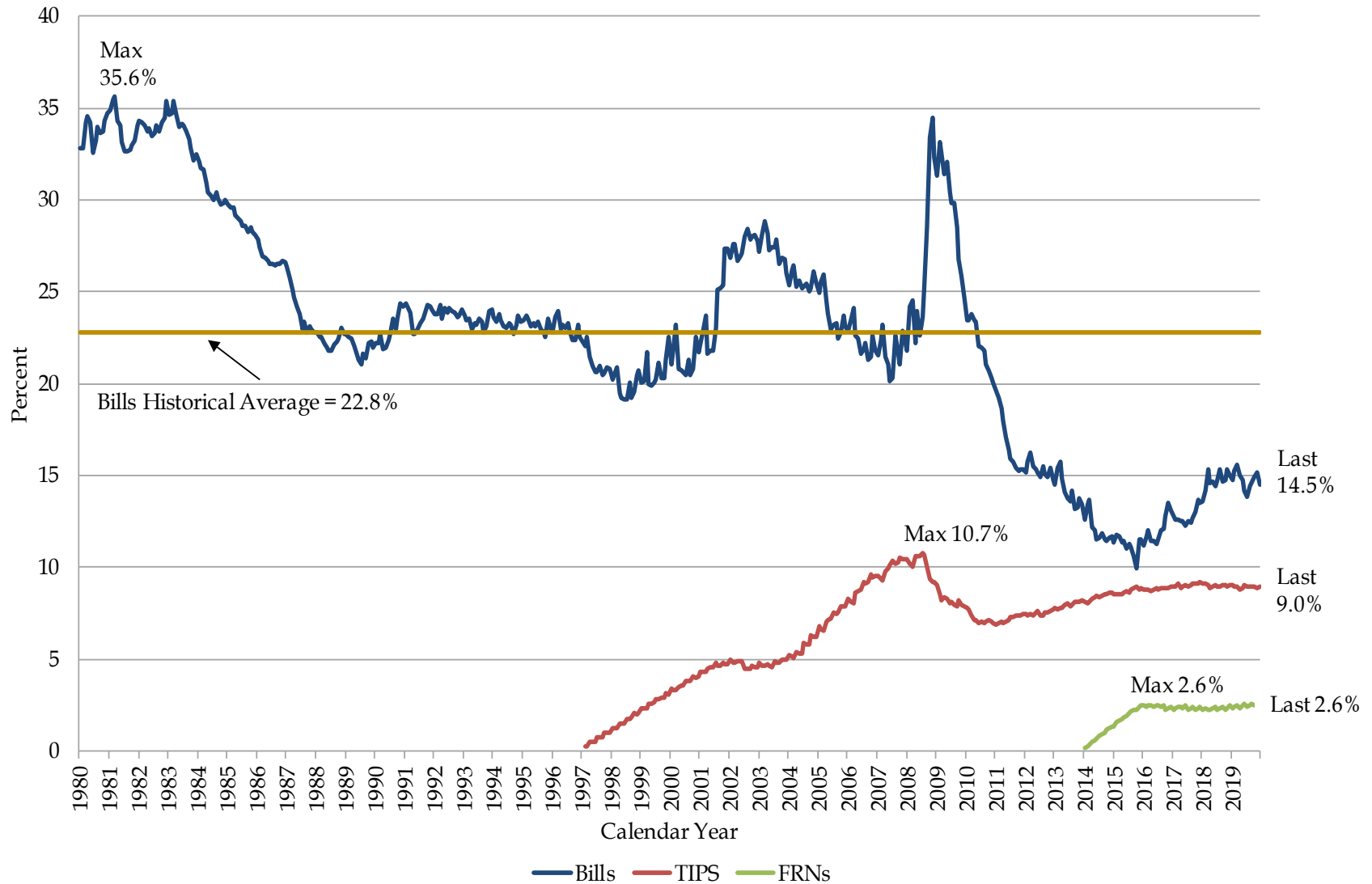
Section IV: Portfolio Metrics



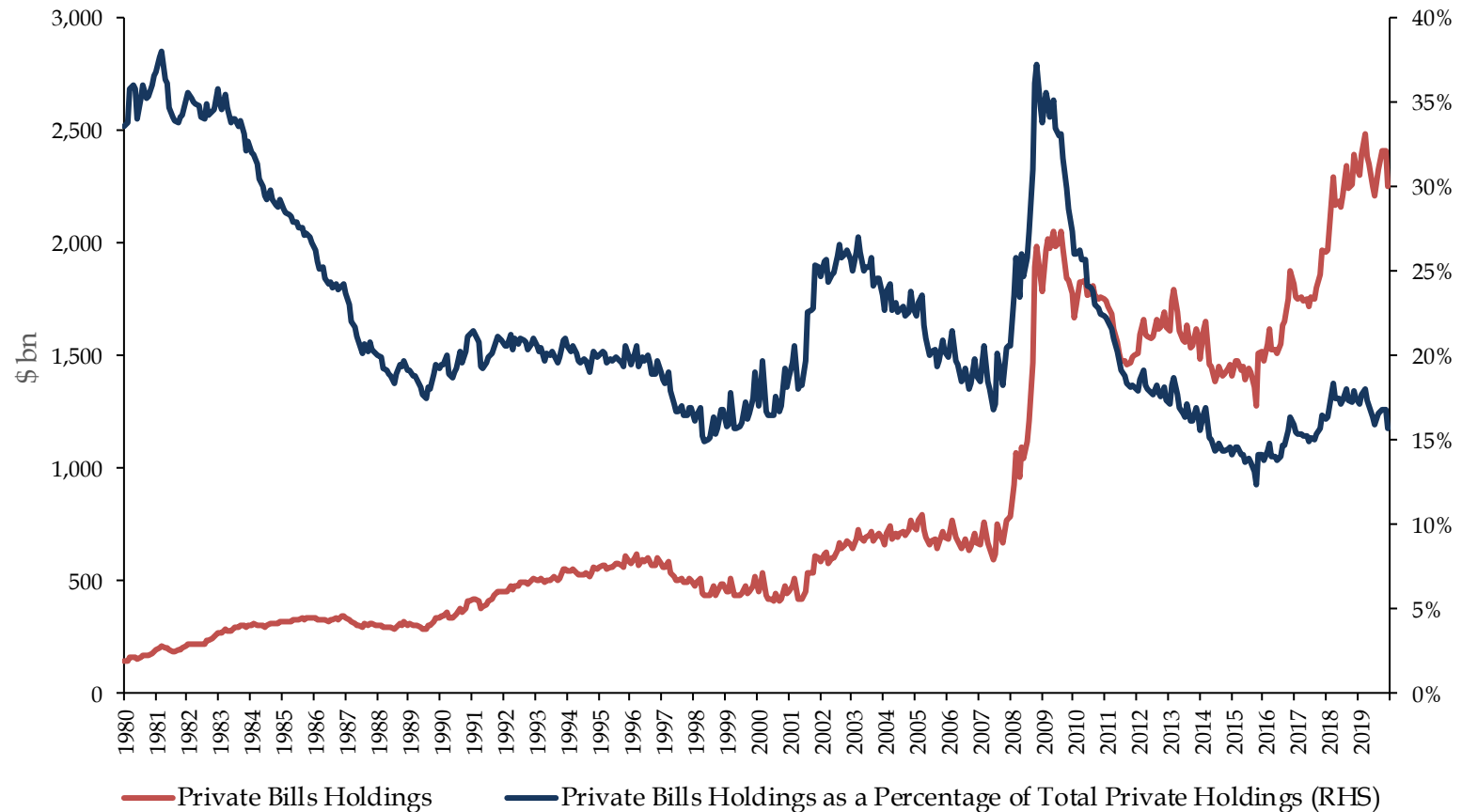
Historical Weighted Average Maturity of Marketable Debt Outstanding



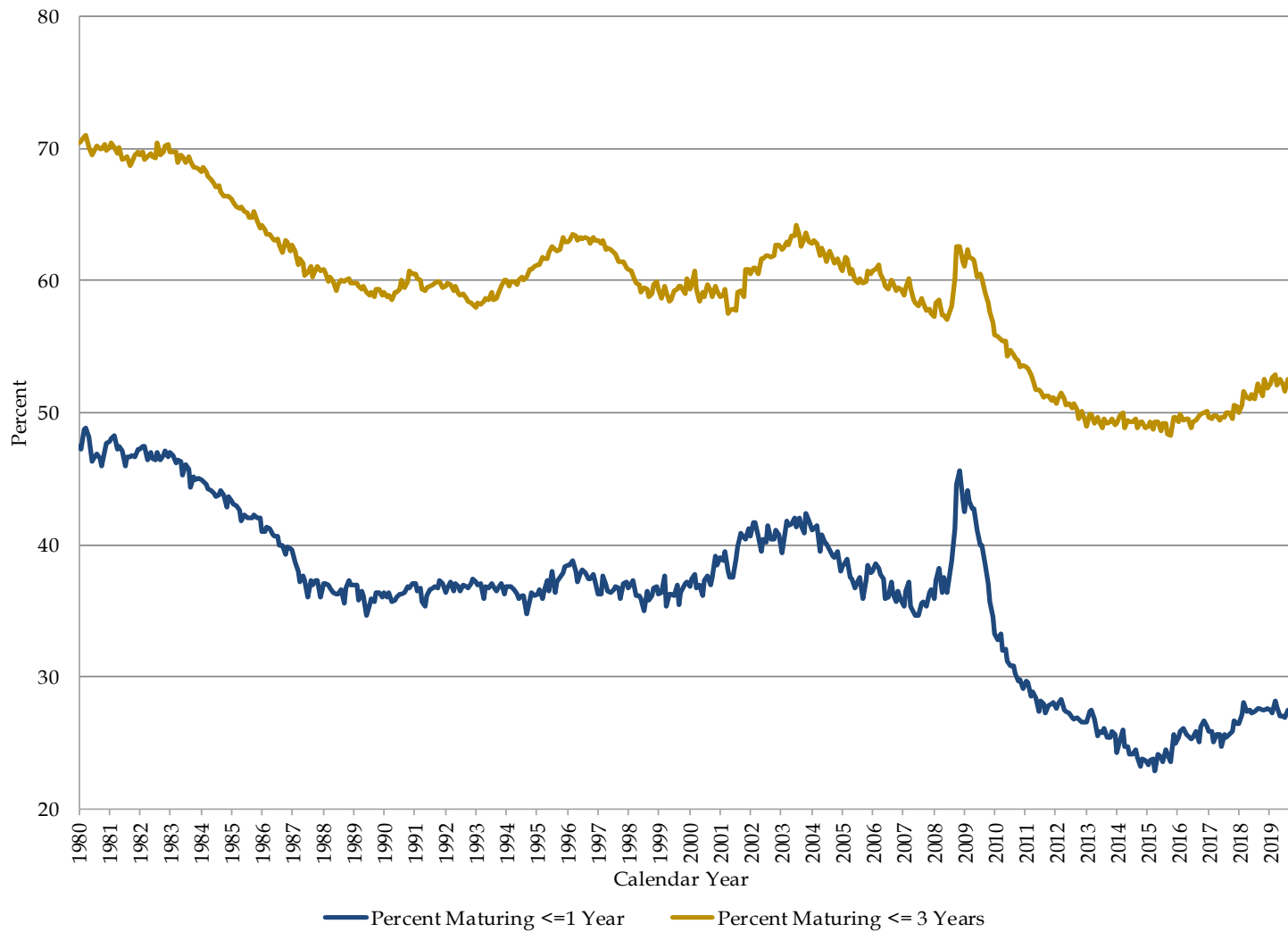
Bills, TIPS & FRNs Outstanding as a Percent of Marketable Debt Outstanding



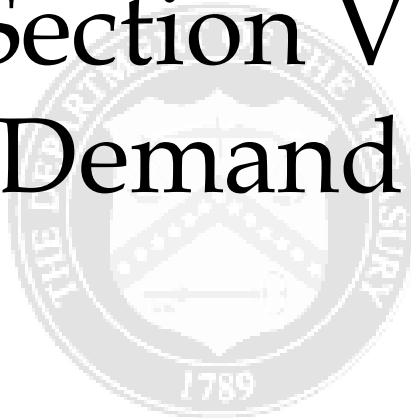
Private Bills Holdings as a Percentage of Total Private Holdings



Treasury Maturity Profile History



Section V: Demand



Summary Statistics for Fiscal Year 2020 Q1 Auctions

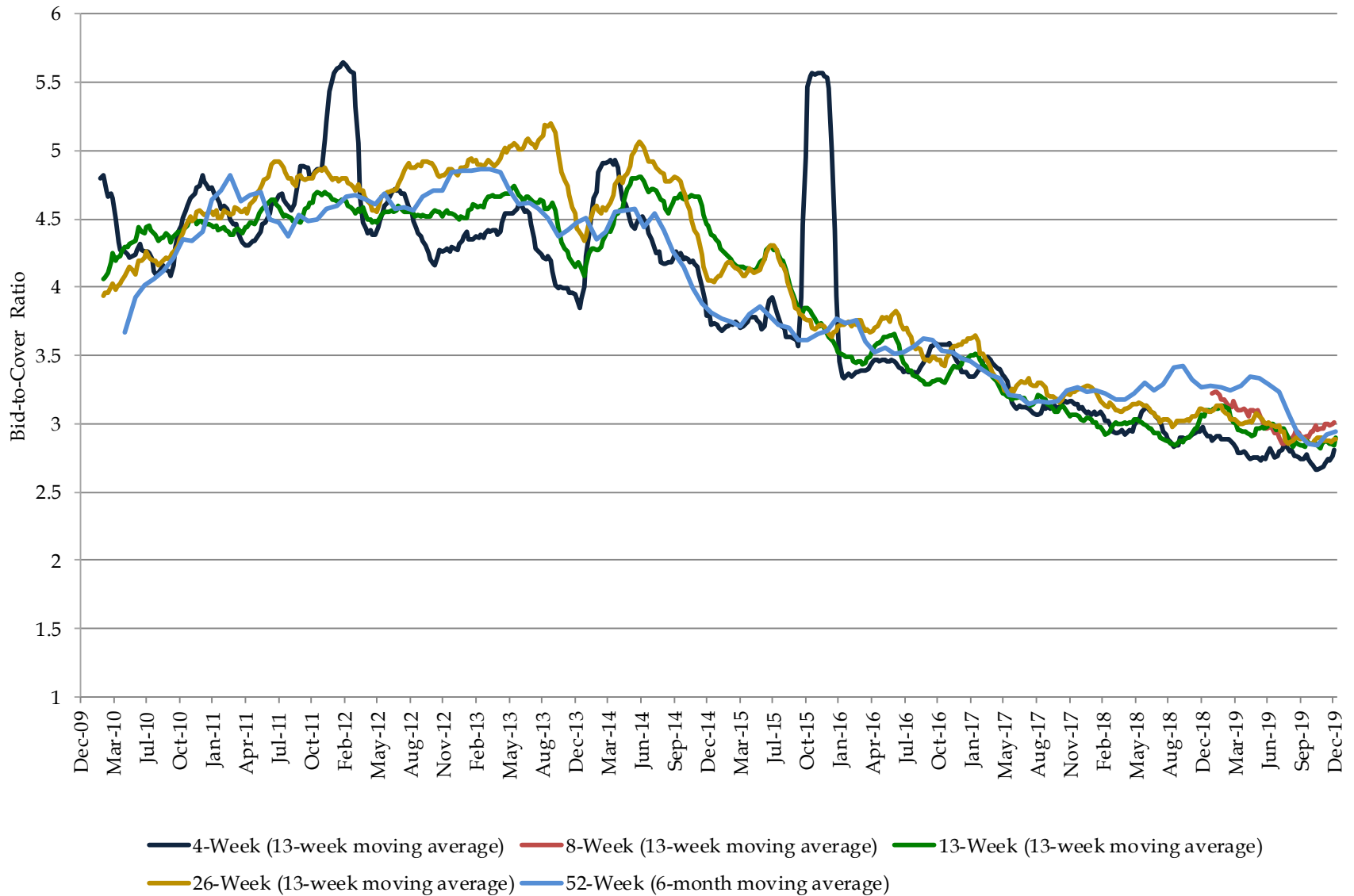
Security Type	Term	Stop Out Rate (%)*	Bid-to-Cover Ratio*	Competitive Awards (\$bn)	% Primary Dealer*	% Direct*	% Indirect*	Non-Competitive Awards (\$bn)	SOMA "Add-Ons" (\$bn)	10-Year Equivalent (\$bn)**
Bill	4-Week	1.609	2.8	591.4	51.5	4.0	44.5	23.6	9.4	5.3
Bill	8-Week	1.590	3.0	488.7	48.2	2.7	49.1	6.3	8.7	8.5
Bill	13-Week	1.574	2.9	553.0	45.9	3.5	50.6	17.0	1.9	15.6
Bill	26-Week	1.578	2.9	498.4	53.1	2.9	43.9	14.6	1.7	28.2
Bill	52-Week	1.561	3.0	106.4	56.1	3.8	40.1	1.6	0.0	11.8
Bill	CMB	1.540	3.6	15.0	79.7	3.0	17.3	0.0	0.0	0.1
Coupon	2-Year	1.616	2.5	119.4	28.9	21.5	49.6	0.6	11.1	28.4
Coupon	3-Year	1.558	2.5	113.7	31.4	19.2	49.4	0.3	18.0	42.7
Coupon	5-Year	1.638	2.5	122.9	22.0	13.7	64.3	0.1	11.4	71.1
Coupon	7-Year	1.737	2.5	96.0	19.2	16.0	64.8	0.0	8.9	76.3
Coupon	10-Year	1.749	2.5	75.0	25.3	14.7	59.9	0.0	12.8	88.5
Coupon	30-Year	2.310	2.3	51.0	19.8	20.1	60.2	0.0	9.0	142.8
TIPS	5-Year	0.038	2.7	31.9	13.5	24.6	61.9	0.1	3.2	19.0
TIPS	10-Year	0.149	2.4	12.0	15.4	25.8	58.8	0.0	0.0	12.5
FRN	2-Year	0.268	3.1	56.0	58.7	0.9	40.4	0.0	2.1	0.0

Total Bills	1.587	2.9	2,253.0	50.2	3.3	46.5	63.0	21.7	69.5
Total Coupons	1.708	2.5	577.9	25.0	17.5	57.5	1.1	71.2	449.9
Total TIPS	0.068	2.6	43.9	14.0	24.9	61.1	0.1	3.2	31.5
Total FRN	0.268	3.1	56.0	58.7	0.9	40.4	0.0	2.1	0.0

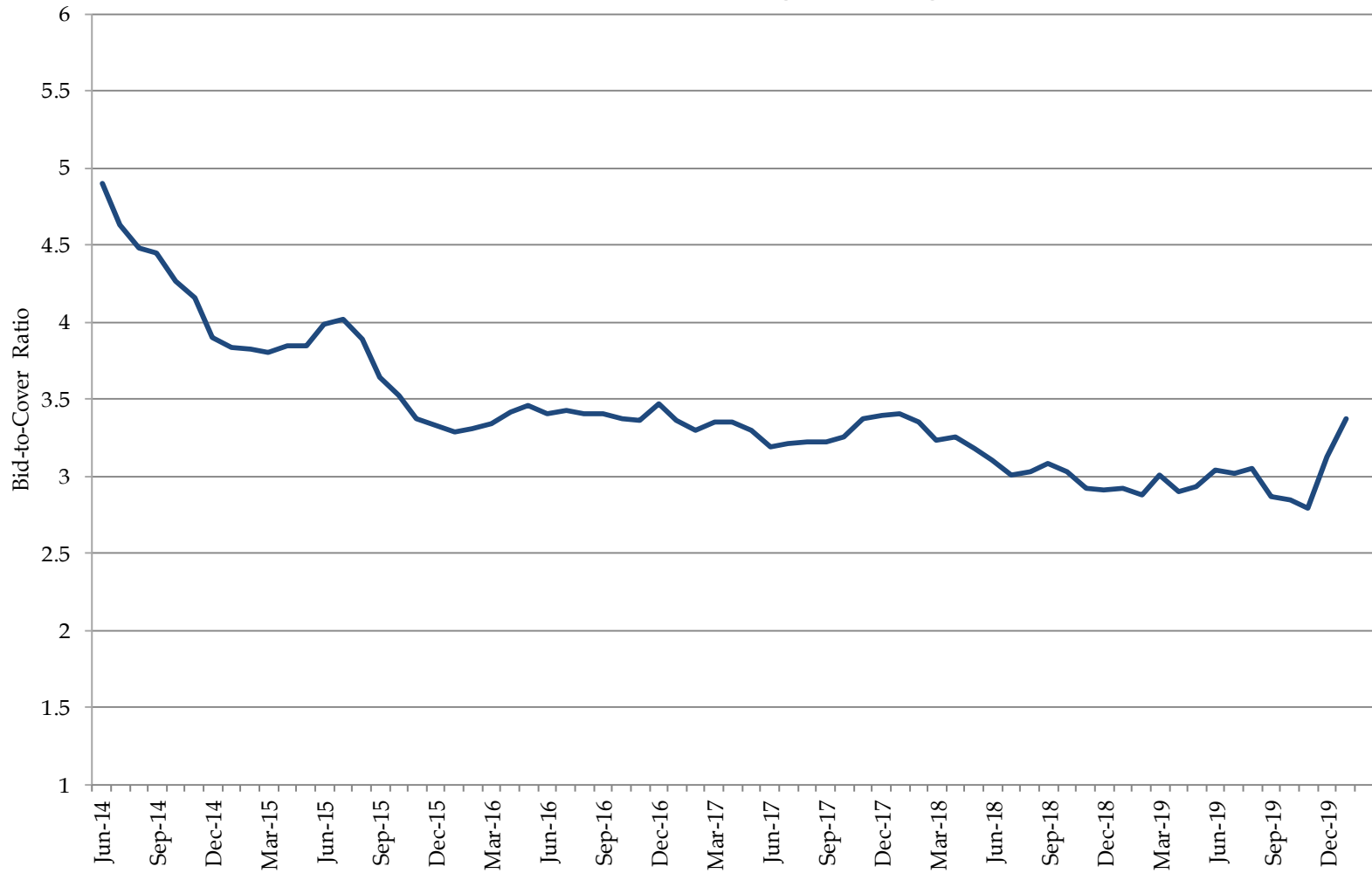
*Weighted averages of Competitive Awards. FRNs are reported on discount margin basis.

**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.

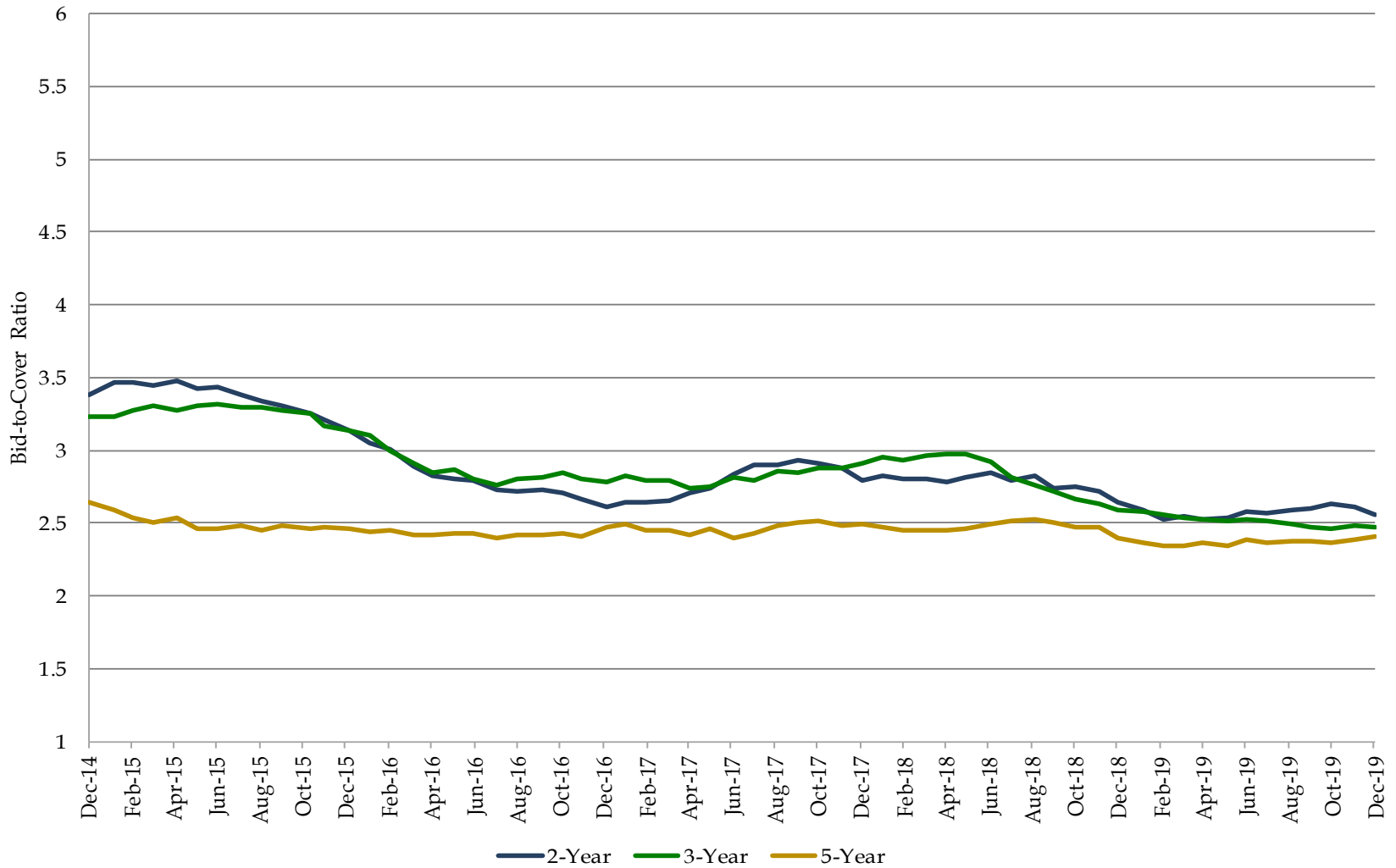
Bid-to-Cover Ratios for Treasury Bills



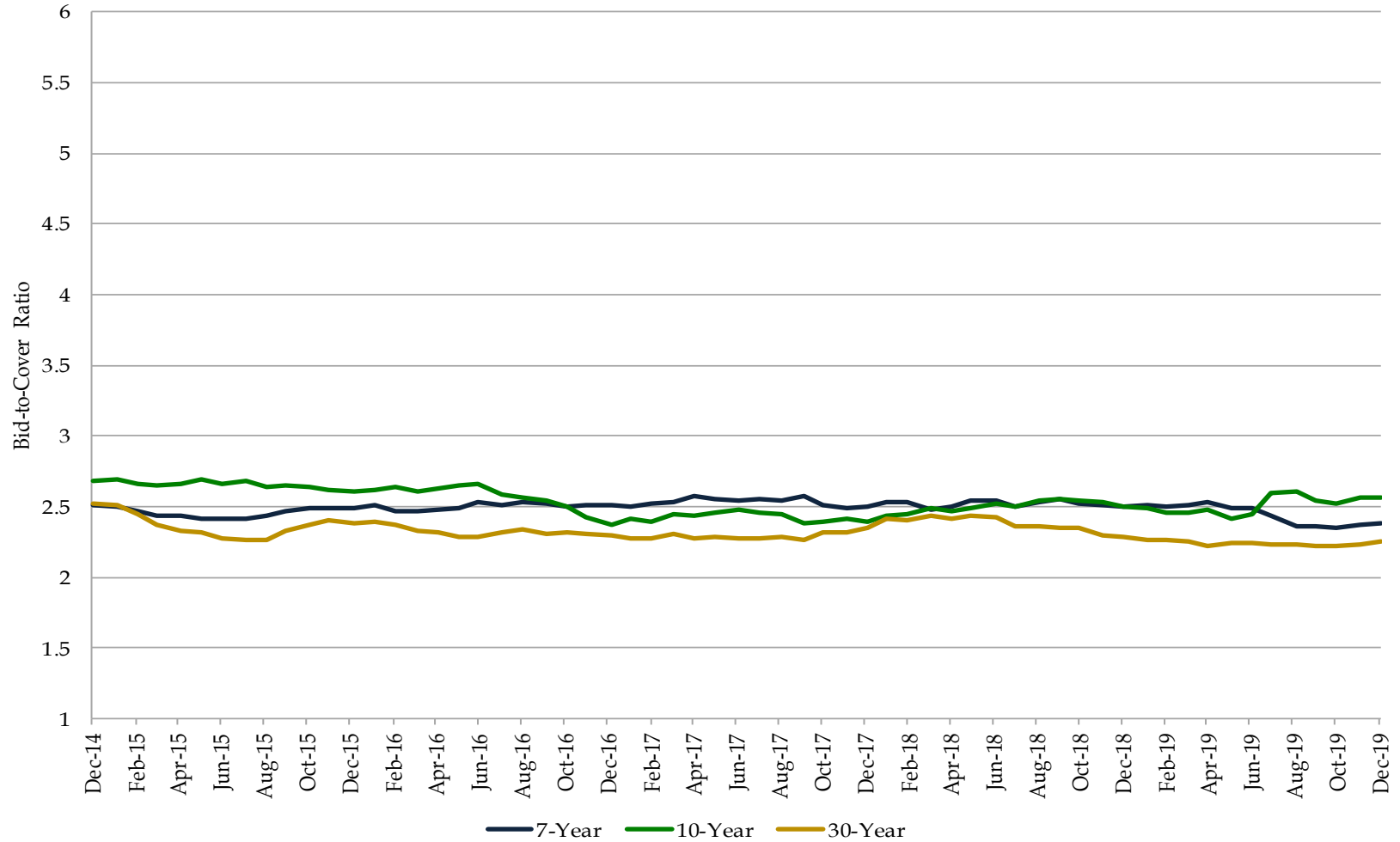
Bid-to-Cover Ratios for FRNs (6-Month Moving Average)



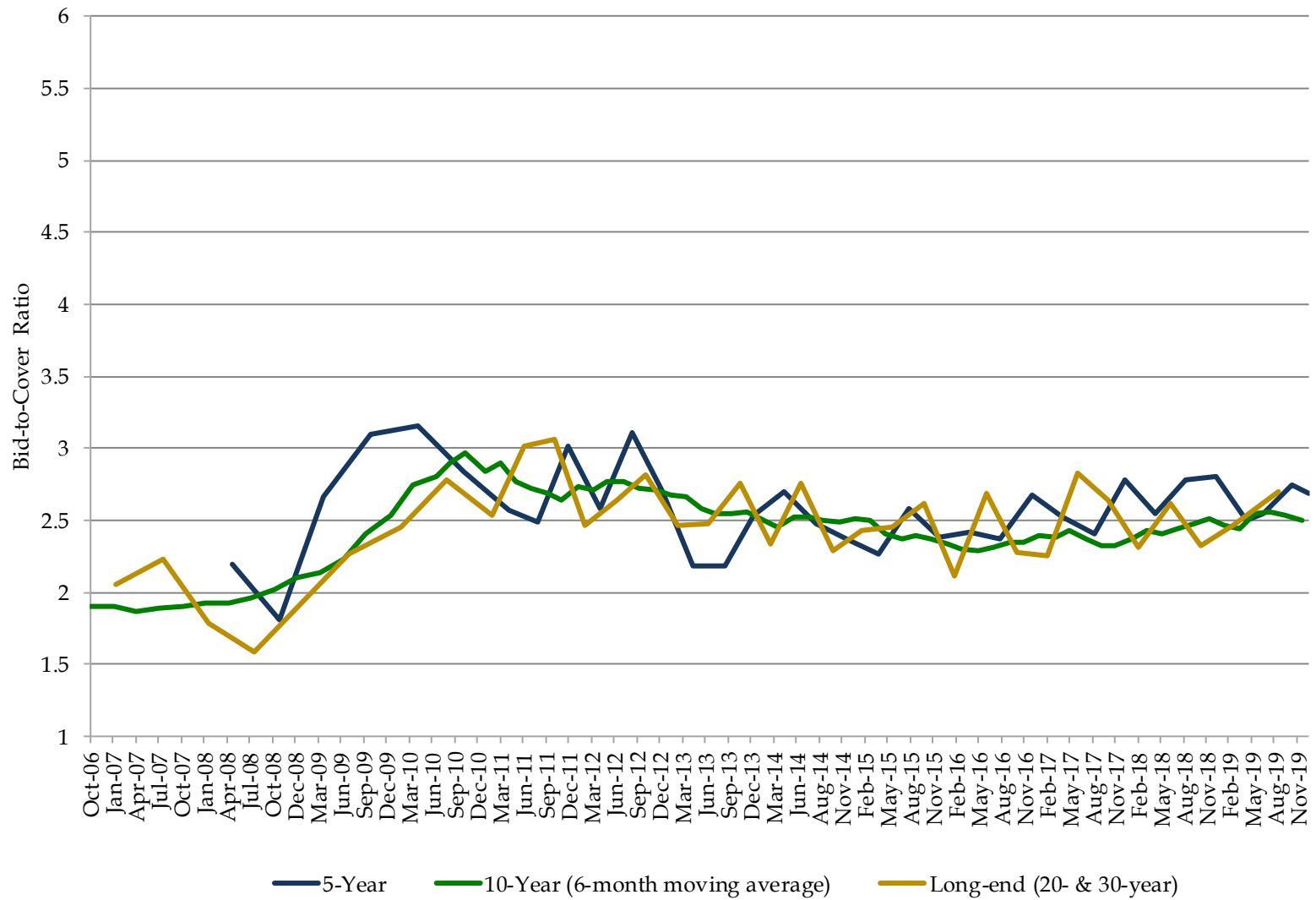
Bid-to-Cover Ratios for 2-, 3-, and 5-Year Nominal Securities (6-Month Moving Average)



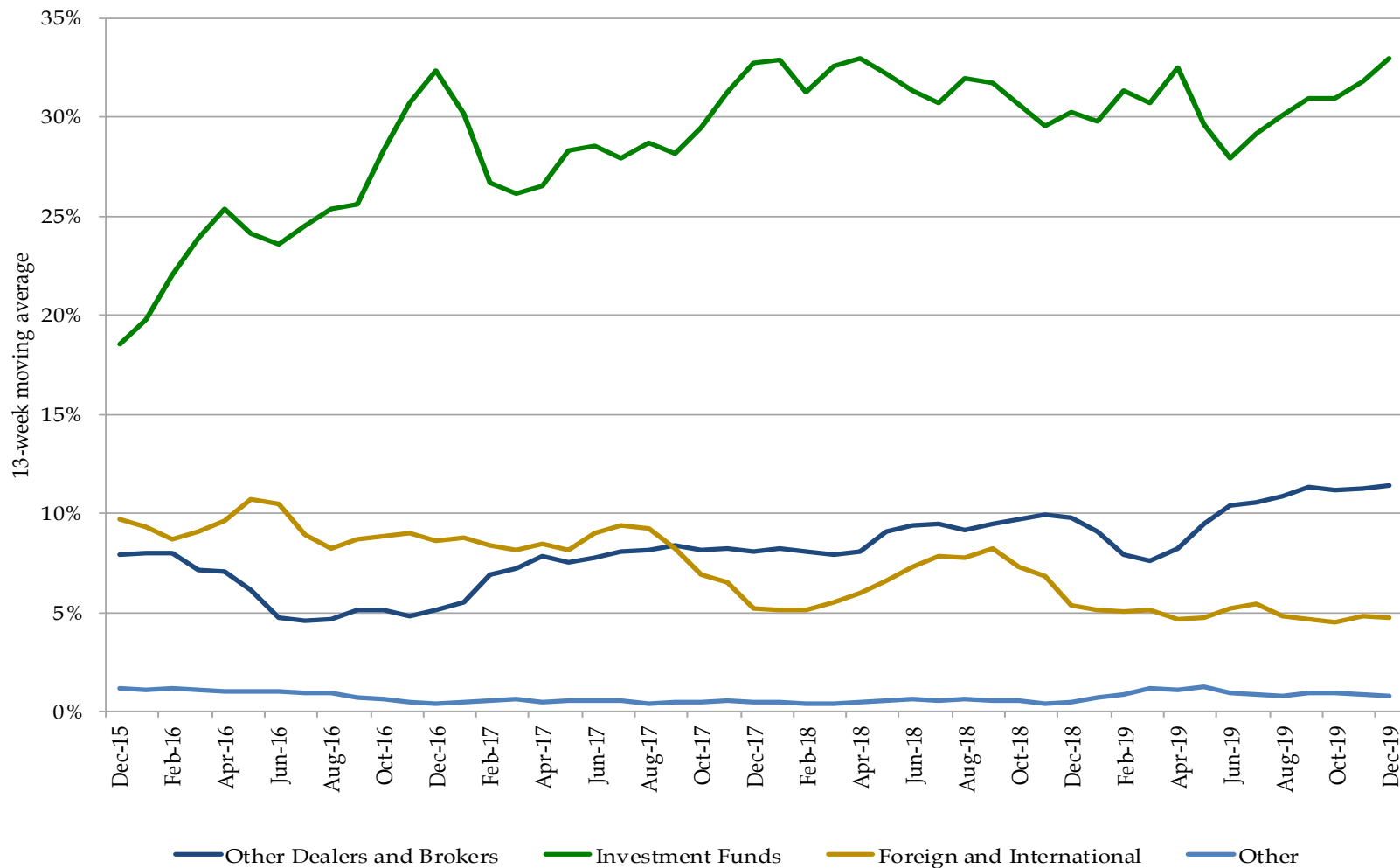
Bid-to-Cover Ratios for 7-, 10-, and 30-Year Nominal Securities (6-Month Moving Average)



Bid-to-Cover Ratios for TIPS

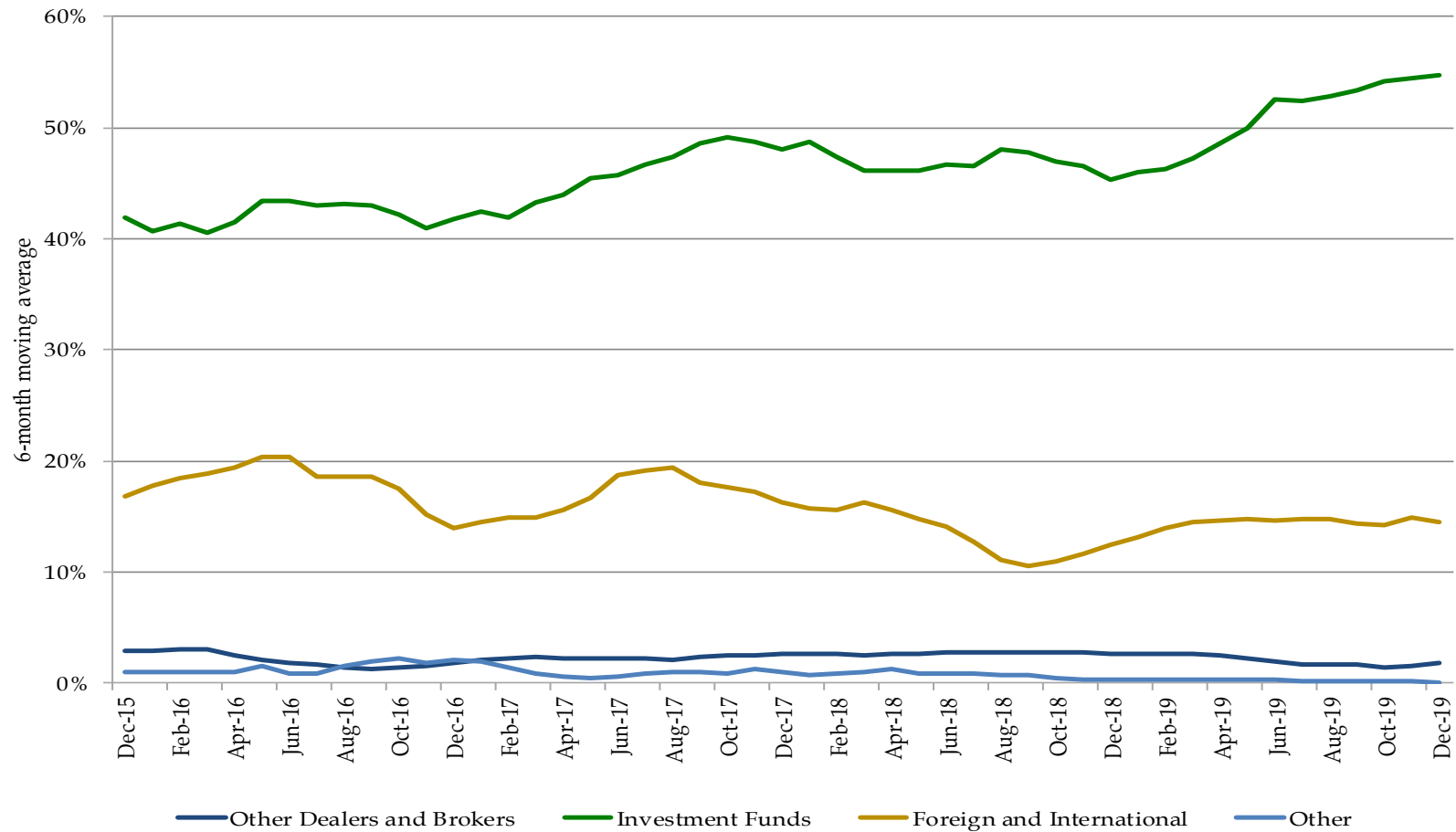


Percent Awarded in Bill Auctions by Investor Class (13-Week Moving Average)



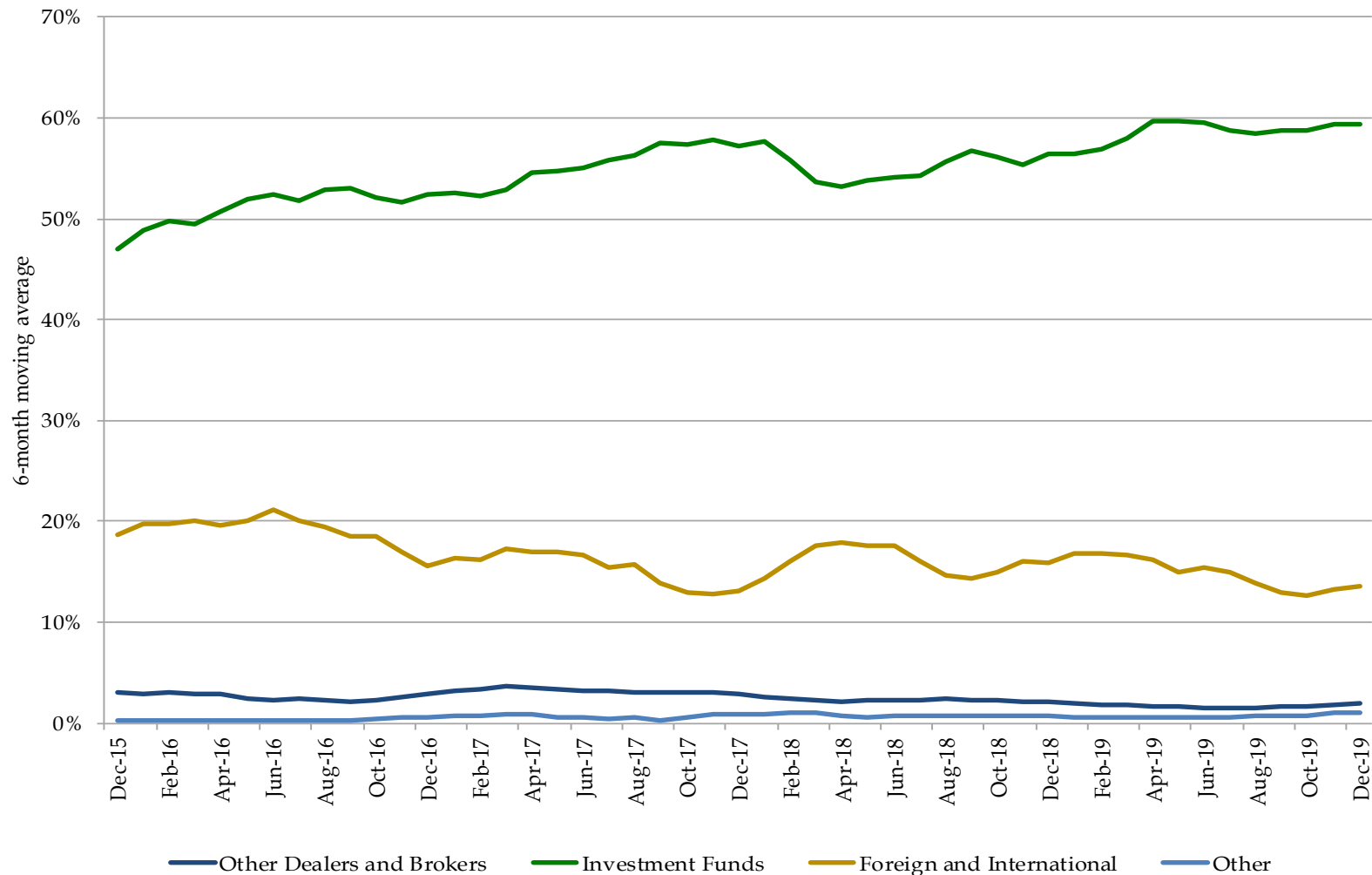
Excludes SOMA add-ons. The "Other" category includes categories that are each less than 5%, which include Depository Institutions, Individuals, Pension and Insurance.

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



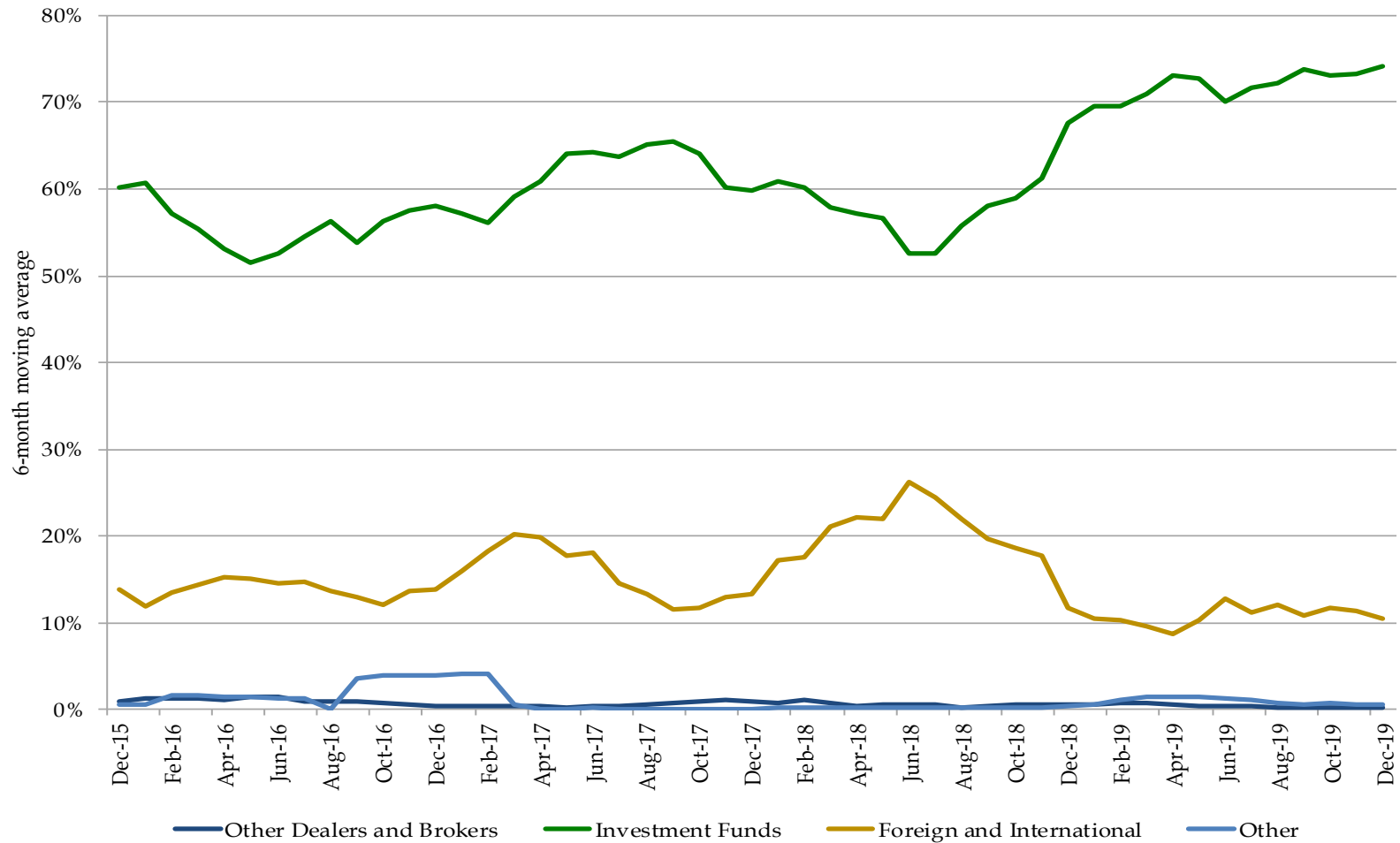
Excludes SOMA add-ons. The "Other" category includes categories that are each less than 5%, which include Depository Institutions, Individuals, Pension and Insurance.

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



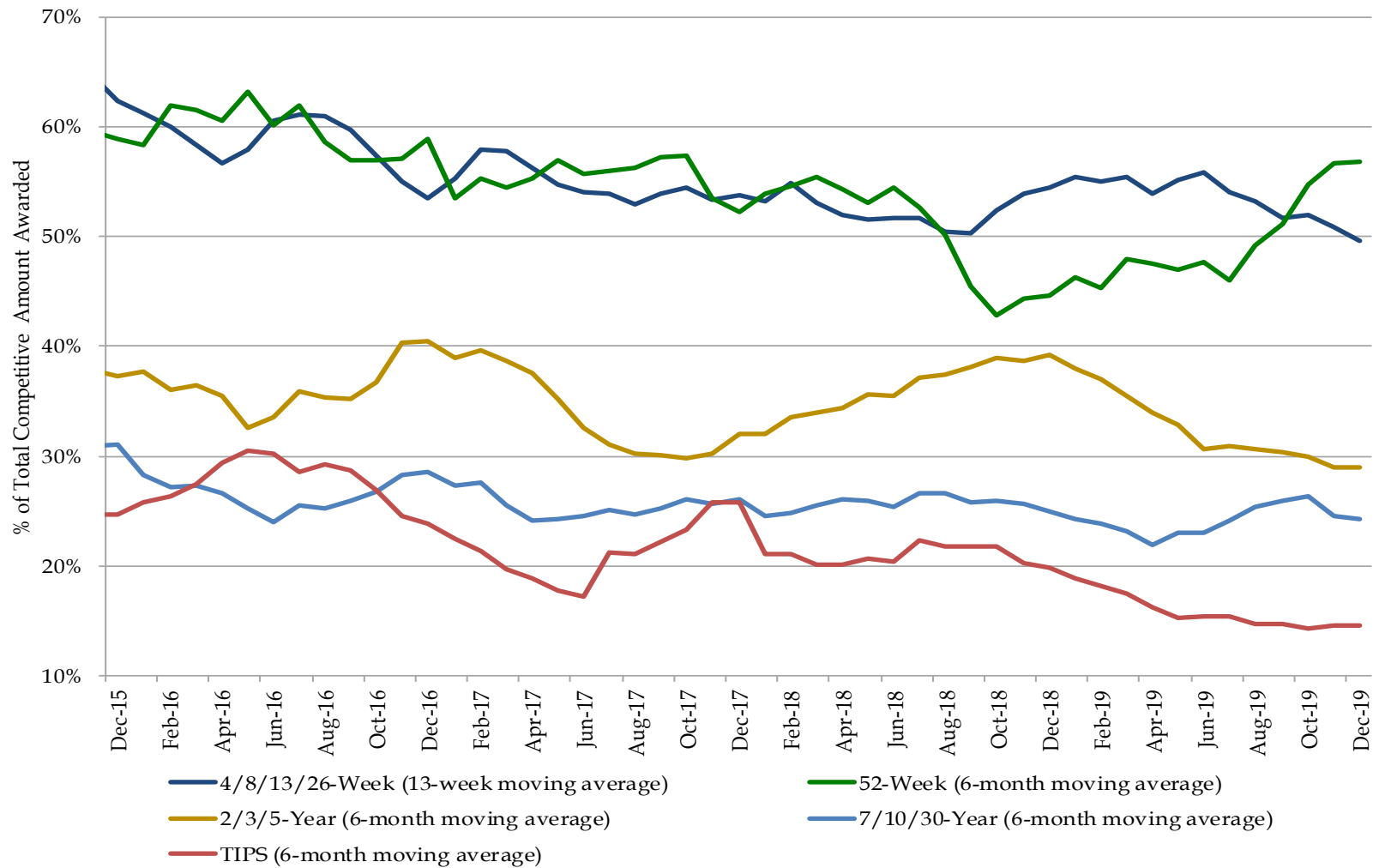
Excludes SOMA add-ons. The "Other" category includes categories that are each less than 5%, which include Depository Institutions, Individuals, Pension and Insurance.

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



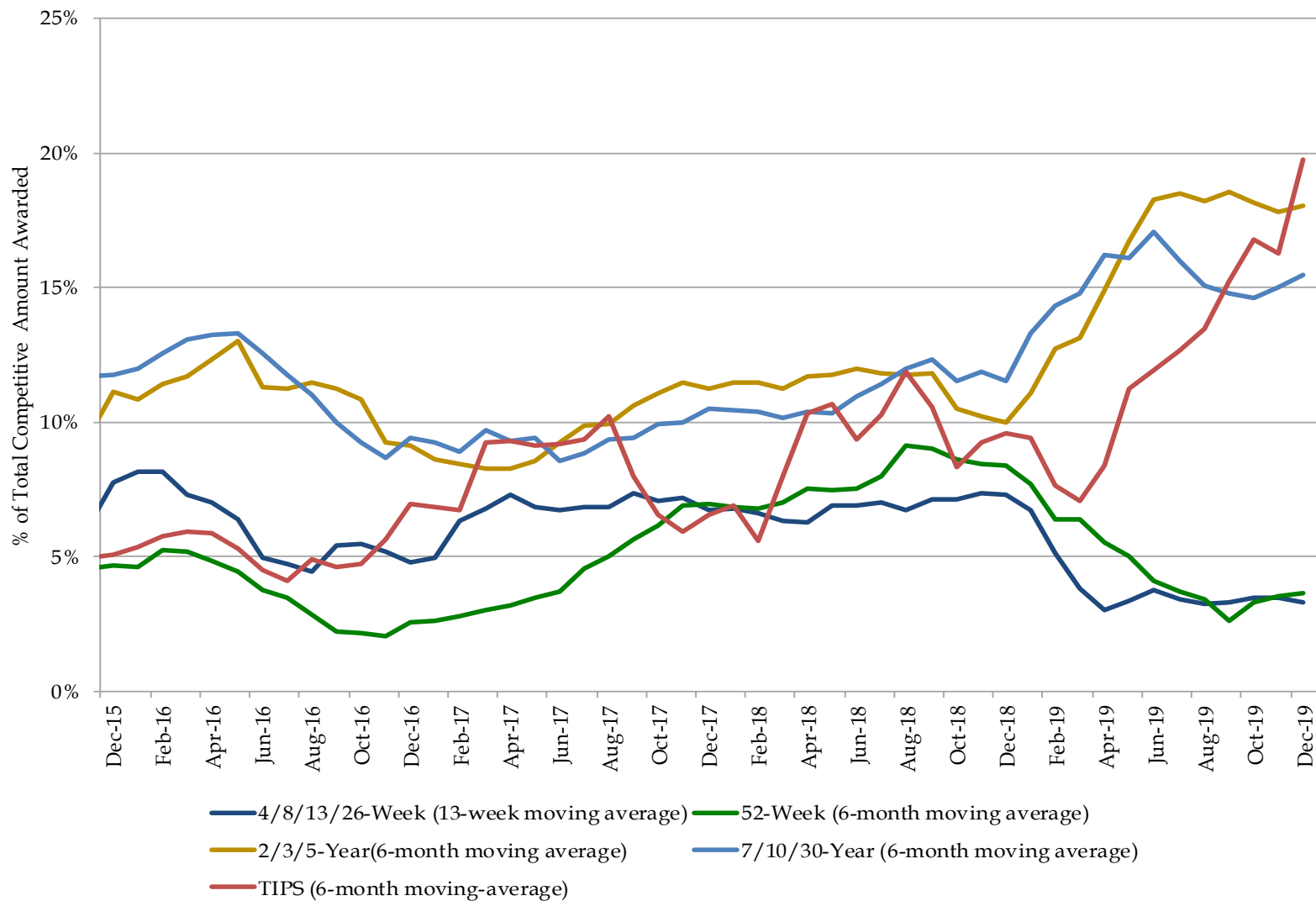
Excludes SOMA add-ons. The "Other" category includes categories that are each less than 5%, which include Depository Institutions, Individuals, Pension and Insurance.

Primary Dealer Awards at Auction



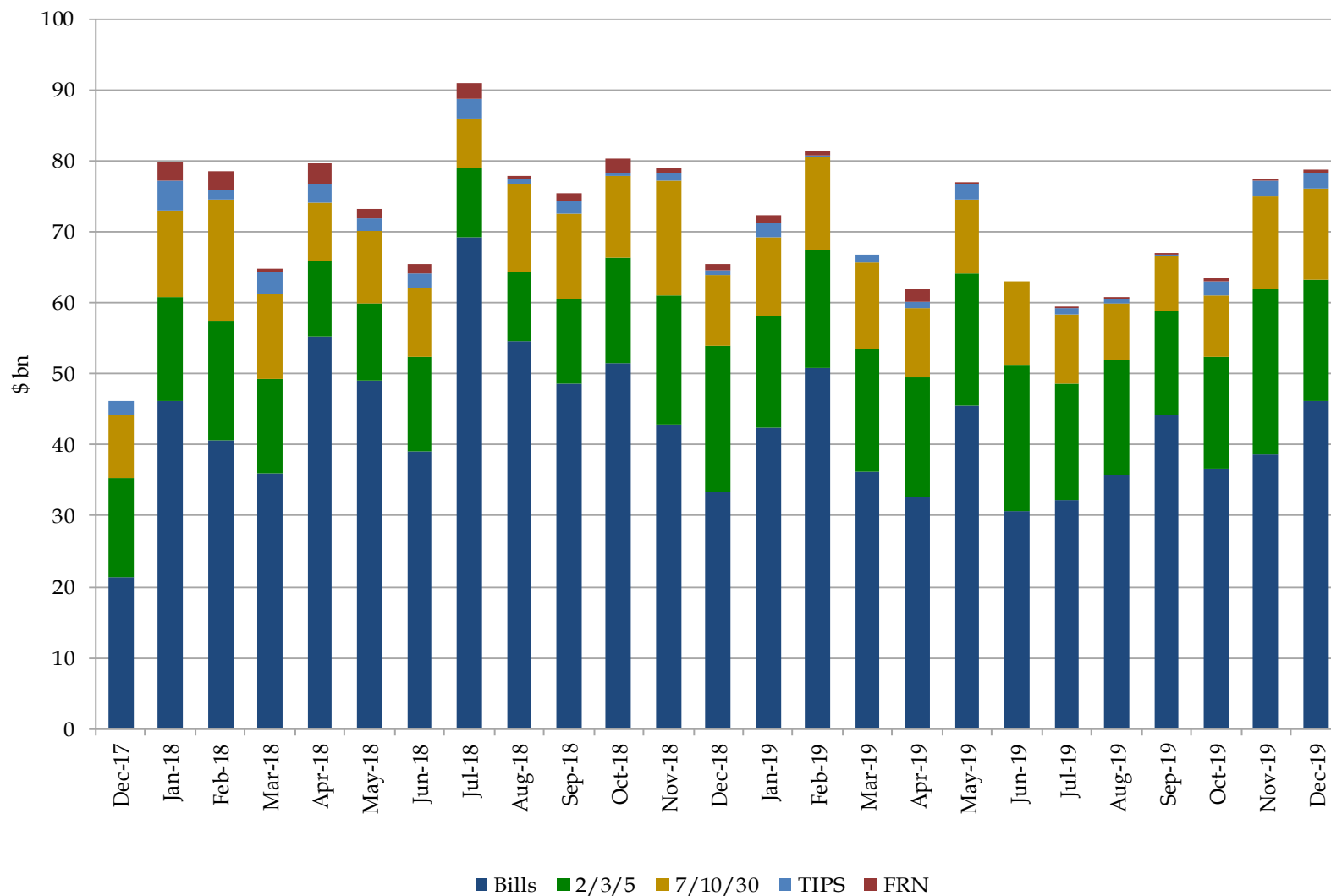
Competitive Amount Awarded excludes SOMA add-ons.

Direct Bidder Awards at Auction



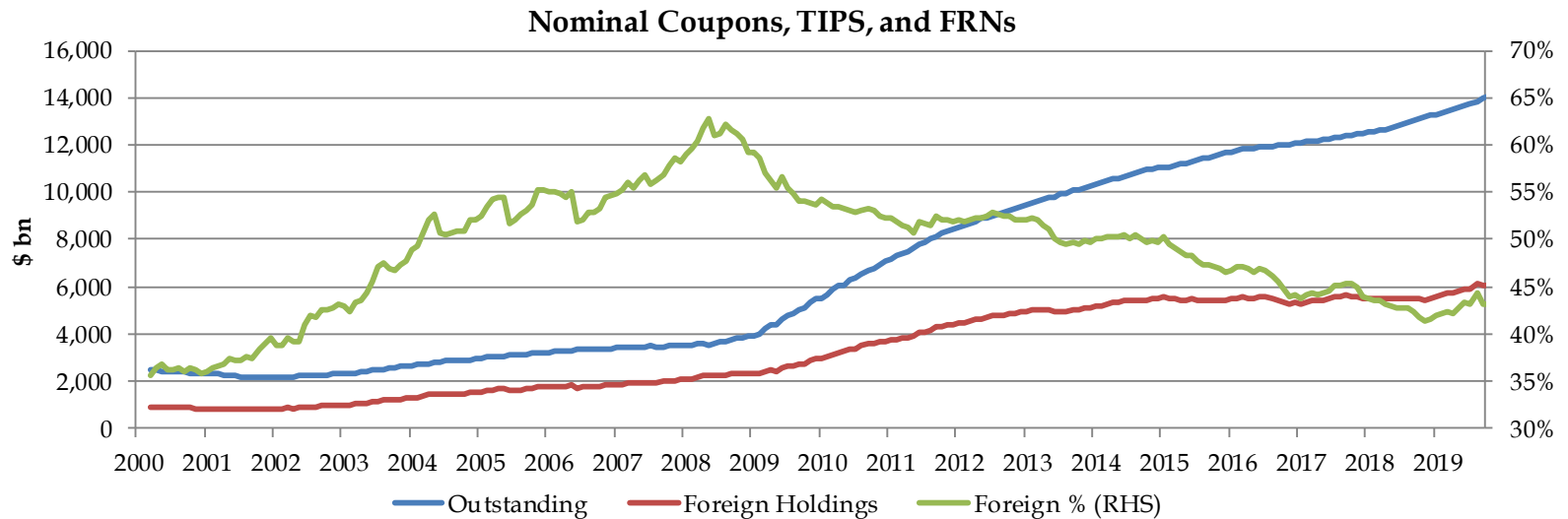
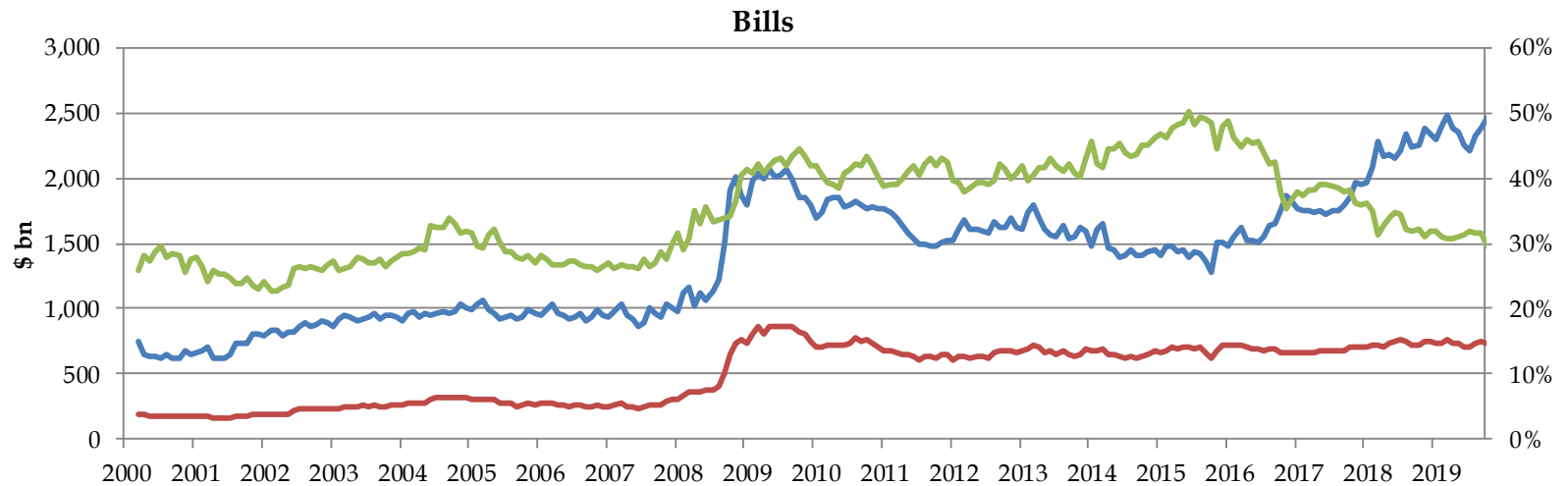
Competitive Amount Awarded excludes SOMA add-ons.

Total Foreign Awards of Treasuries at Auction, \$ billions



Foreign includes both private sector and official institutions.

Total Foreign Holdings



Source: Treasury International Capital (TIC) System.

For more information on foreign participation data, including more details about the TIC data shown here, please refer to Treasury Presentation to TBAC “Brief Overview of Key Data Sources on Foreign Participation in the U.S. Treasury Securities Market” at the Treasury February 2019 Refunding.

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 words "THE DEPARTMENT OF THE TREASURY" are inscribed around the top half of the circle, and the year "1789" is at the bottom.

Projected Privately-Held Net Marketable Borrowing Assuming Private Coupon Issuance & Total Bills Outstanding Remain Constant

Fiscal Year	Bills	2/3/5	7/10/30	TIPS	FRN	Historical/Projected Net Borrowing Capacity	OMB's FY 2020 Mid-Session Review	CBO's "The Budget and Economic Outlook: 2020 to 2030"	Primary Dealer Survey
2015	(53)	(282)	642	88	164	558			
2016	289	(107)	515	58	41	795			
2017	155	(66)	378	51	(0)	519			
2018	438	197	493	45	23	1,196			
2019	137	498	534	51	59	1,280			
2020	40	359	482	46	37	963	1,112	1,052	1,059
2021	0	284	315	27	2	628	1,082	1,031	1,100
2022	0	94	409	14	1	519	1,030	1,180	1,188
2023	0	176	248	11	0	436	894	1,182	
2024	0	89	238	24	0	351	703	1,205	
2025	0	(0)	264	(43)	0	221	659	1,374	
2026	0	0	242	(24)	0	218	598	1,369	
2027	0	0	242	(19)	0	223	542	1,349	
2028	0	0	221	(37)	0	184	551	1,607	
2029	0	0	187	(44)	0	142	266	1,515	

Projections reflect only SOMA rollovers at auction of principal payments of Treasury securities. No adjustments are made for open-market outright purchases and subsequent rollovers.

Privately-held marketable borrowing excludes rollovers (auction "add-ons") of Treasury securities held in the Federal Reserve System Open Market Account (SOMA) but includes financing required due to SOMA redemptions.

Treasury's latest primary dealer survey estimates can be found on page 11. OMB's projections of the change in debt held by the public are from Table S-11 of "A Budget for a Better America, Fiscal Year 2020, Mid-Session Review," July 2019. CBO's baseline budget projections of the change in debt held by the public are from Table 1-1 of CBO's "The Budget and Economic Outlook: 2020 to 2030," January 2020.

Bills										
Issue	Settle Date	Stop Out Rate (%)*	Bid-to-Cover Ratio*	Competitive Awards (\$bn)	% Primary Dealer*	% Direct*	% Indirect*	Non-Competitive Awards (\$bn)	SOMA "Add Ons" (\$bn)	10-Year Equivalent (\$bn)**
4-Week	10/8/2019	1.750	2.90	42.4	56.5	2.7	40.8	2.6	0.1	0.4
4-Week	10/15/2019	1.720	2.62	48.4	58.3	2.5	39.3	1.6	0.0	0.4
4-Week	10/22/2019	1.720	2.50	53.5	58.2	3.0	38.8	1.5	0.0	0.5
4-Week	10/29/2019	1.710	2.75	53.3	46.6	6.8	46.6	1.7	0.0	0.5
4-Week	11/5/2019	1.570	2.83	53.3	56.4	2.4	41.2	1.7	0.0	0.5
4-Week	11/12/2019	1.535	2.65	53.3	50.9	3.7	45.5	1.7	0.0	0.5
4-Week	11/19/2019	1.565	2.52	53.3	66.6	5.5	27.9	1.7	0.0	0.5
4-Week	11/26/2019	1.550	2.82	48.5	47.0	3.0	50.0	1.5	0.0	0.4
4-Week	12/3/2019	1.620	2.73	43.4	51.6	4.4	44.0	1.6	0.6	0.4
4-Week	12/10/2019	1.500	3.16	38.3	42.7	0.9	56.4	1.7	0.1	0.3
4-Week	12/17/2019	1.540	2.59	38.5	42.0	11.5	46.6	1.5	4.3	0.4
4-Week	12/24/2019	1.510	3.19	32.5	36.1	3.1	60.7	2.5	2.0	0.3
4-Week	12/31/2019	1.555	3.31	32.6	44.4	1.7	53.9	2.4	2.3	0.3
8-Week	10/8/2019	1.710	2.86	38.8	60.0	3.4	36.6	1.2	0.0	0.7
8-Week	10/15/2019	1.685	2.88	39.7	54.7	2.7	42.5	0.3	0.0	0.7
8-Week	10/22/2019	1.665	2.99	39.8	48.6	2.7	48.7	0.2	0.0	0.7
8-Week	10/29/2019	1.680	2.85	39.8	54.1	3.6	42.3	0.2	0.0	0.7
8-Week	11/5/2019	1.560	3.21	39.8	40.2	1.5	58.3	0.2	0.0	0.7
8-Week	11/12/2019	1.530	2.81	39.6	54.1	2.8	43.2	0.4	0.0	0.7
8-Week	11/19/2019	1.520	3.20	39.6	38.6	1.7	59.7	0.4	0.0	0.7
8-Week	11/26/2019	1.540	2.89	39.8	48.8	3.0	48.2	0.2	0.0	0.7
8-Week	12/3/2019	1.570	3.53	34.8	46.7	1.9	51.4	0.2	0.5	0.6
8-Week	12/10/2019	1.520	3.18	34.7	44.1	2.8	53.1	0.3	0.1	0.6
8-Week	12/17/2019	1.540	2.69	34.7	43.4	2.6	53.9	0.3	3.8	0.7
8-Week	12/24/2019	1.555	2.78	33.7	49.7	4.3	46.0	1.3	2.0	0.6
8-Week	12/31/2019	1.565	3.24	33.8	42.1	1.6	56.3	1.2	2.3	0.6

*Weighted averages of competitive awards.

**Approximated using prices at settlement and includes both competitive and non-competitive awards.

Bills										
Issue	Settle Date	Stop Out Rate (%)*	Bid-to-Cover Ratio*	Competitive Awards (\$bn)	% Primary Dealer*	% Direct*	% Indirect*	Non-Competitive Awards (\$bn)	SOMA "Add Ons" (\$bn)	10-Year Equivalent (\$bn)**
13-Week	10/10/2019	1.680	3.16	43.9	37.5	2.3	60.2	1.1	0.0	1.2
13-Week	10/17/2019	1.640	2.58	43.9	58.8	5.3	35.9	1.1	0.0	1.2
13-Week	10/24/2019	1.630	3.01	44.0	31.6	3.4	65.0	1.0	0.0	1.2
13-Week	10/31/2019	1.620	3.10	43.9	37.8	2.1	60.0	1.1	0.0	1.2
13-Week	11/7/2019	1.520	2.63	43.8	55.3	3.9	40.8	1.2	0.0	1.2
13-Week	11/14/2019	1.565	2.70	43.7	64.8	3.6	31.6	1.3	1.0	1.3
13-Week	11/21/2019	1.540	3.01	43.9	44.4	4.4	51.2	1.1	0.0	1.2
13-Week	11/29/2019	1.560	2.89	43.9	46.9	2.2	50.9	1.1	0.0	1.2
13-Week	12/5/2019	1.560	3.03	41.1	41.5	2.7	55.8	0.9	0.0	1.1
13-Week	12/12/2019	1.520	2.77	40.8	56.7	6.8	36.4	1.2	0.0	1.1
13-Week	12/19/2019	1.540	2.70	40.0	43.3	4.0	52.7	2.0	0.0	1.1
13-Week	12/26/2019	1.555	2.94	40.0	37.9	1.5	60.6	2.0	0.8	1.2
13-Week	1/2/2020	1.520	3.21	40.1	39.7	2.8	57.6	1.9	0.0	1.2
26-Week	10/10/2019	1.690	2.52	41.0	76.2	2.4	21.4	1.0	0.0	2.3
26-Week	10/17/2019	1.620	3.15	40.9	39.6	7.4	53.1	1.1	0.0	2.3
26-Week	10/24/2019	1.600	2.73	41.0	49.3	2.8	47.9	1.0	0.0	2.3
26-Week	10/31/2019	1.610	3.23	41.0	41.5	1.5	57.0	1.0	0.0	2.3
26-Week	11/7/2019	1.535	2.69	41.2	57.5	2.7	39.8	0.8	0.0	2.3
26-Week	11/14/2019	1.550	2.99	40.3	41.8	2.5	55.7	1.7	1.0	2.4
26-Week	11/21/2019	1.540	2.89	41.3	44.9	2.4	52.7	0.7	0.0	2.3
26-Week	11/29/2019	1.580	2.73	38.3	64.4	2.7	32.8	0.7	0.0	2.1
26-Week	12/5/2019	1.565	3.11	35.3	46.3	1.4	52.3	0.7	0.0	2.0
26-Week	12/12/2019	1.520	2.98	35.1	46.8	4.0	49.2	0.9	0.0	2.0
26-Week	12/19/2019	1.550	2.63	34.3	69.0	3.7	27.4	1.7	0.0	2.0
26-Week	12/26/2019	1.570	3.03	34.4	47.9	2.2	49.9	1.6	0.7	2.0
26-Week	1/2/2020	1.560	2.81	34.4	68.3	2.6	29.1	1.6	0.0	2.0
52-Week	10/10/2019	1.600	2.98	27.6	55.7	6.0	38.3	0.4	0.0	3.0
52-Week	11/7/2019	1.565	2.84	27.6	59.7	4.6	35.7	0.4	0.0	3.1
52-Week	12/5/2019	1.525	3.39	25.6	39.2	2.6	58.2	0.4	0.0	2.8
52-Week	1/2/2020	1.550	2.95	25.6	69.5	1.8	28.6	0.4	0.0	2.9
CMB	11/26/2019	1.540	3.63	15.0	79.7	3.0	17.3	0.0	0.0	0.1

*Weighted averages of competitive awards.

**Approximated using prices at settlement and includes both competitive and non-competitive awards.

Nominal Coupons										
Issue	Settle Date	Stop Out Rate (%)*	Bid-to-Cover Ratio*	Competitive Awards (\$bn)	% Primary Dealer*	% Direct*	% Indirect*	Non-Competitive Awards (\$bn)	SOMA "Add Ons" (\$bn)	10-Year Equivalent (\$bn)**
2-Year	10/31/2019	1.594	2.70	39.9	31.2	14.0	54.8	0.1	4.2	9.6
2-Year	12/2/2019	1.601	2.63	39.8	23.1	29.1	47.8	0.2	3.2	9.3
2-Year	12/31/2019	1.653	2.30	39.7	32.2	21.5	46.3	0.3	3.8	9.5
3-Year	10/15/2019	1.413	2.43	38.0	37.3	16.9	45.8	0.0	0.0	12.3
3-Year	11/15/2019	1.630	2.60	37.9	29.7	16.9	53.3	0.1	18.0	18.2
3-Year	12/16/2019	1.632	2.56	37.8	27.1	23.8	49.1	0.2	0.0	12.2
5-Year	10/31/2019	1.570	2.41	41.0	22.8	11.5	65.7	0.0	4.3	24.1
5-Year	12/2/2019	1.587	2.50	41.0	21.6	13.5	64.8	0.0	3.3	23.3
5-Year	12/31/2019	1.756	2.49	41.0	21.5	16.1	62.4	0.0	3.9	23.7
7-Year	10/31/2019	1.657	2.46	32.0	20.1	14.5	65.4	0.0	3.3	25.9
7-Year	12/2/2019	1.719	2.44	32.0	20.3	10.1	69.6	0.0	2.5	25.0
7-Year	12/31/2019	1.835	2.47	32.0	17.1	23.4	59.4	0.0	3.0	25.5
10-Year	10/15/2019	1.590	2.43	24.0	28.7	12.8	58.5	0.0	0.0	24.0
10-Year	11/15/2019	1.809	2.49	27.0	23.1	12.4	64.5	0.0	12.8	40.6
10-Year	12/16/2019	1.842	2.43	24.0	24.5	19.4	56.1	0.0	0.0	24.0
30-Year	10/15/2019	2.170	2.25	16.0	22.9	18.5	58.5	0.0	0.0	38.3
30-Year	11/15/2019	2.430	2.23	19.0	20.7	20.5	58.8	0.0	9.0	66.7
30-Year	12/16/2019	2.307	2.46	16.0	15.5	21.1	63.4	0.0	0.0	37.8
2-Year FRN	10/31/2019	0.300	2.58	20.0	52.2	1.2	46.6	0.0	2.1	0.0
2-Year FRN	11/29/2019	0.240	2.50	18.0	78.4	0.7	21.0	0.0	0.0	0.0
2-Year FRN	12/27/2019	0.260	4.17	18.0	46.3	0.8	52.9	0.0	0.0	0.0

TIPS										
Issue	Settle Date	Stop Out Rate (%)*	Bid-to-Cover Ratio*	Competitive Awards (\$bn)	% Primary Dealer*	% Direct*	% Indirect*	Non-Competitive Awards (\$bn)	SOMA "Add Ons" (\$bn)	10-Year Equivalent (\$bn)**
5-Year TIPS	10/31/2019	0.054	2.75	17.0	13.8	18.2	67.9	0.0	1.8	10.3
5-Year TIPS	12/31/2019	0.020	2.69	15.0	13.1	31.8	55.1	0.0	1.4	8.7
10-Year TIPS	11/29/2019	0.149	2.40	12.0	15.4	25.8	58.8	0.0	0.0	12.5

*Weighted averages of competitive awards. FRNs are reported on discount margin basis.

**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.

Office of Debt Management



Current State of the Treasury Bill Market

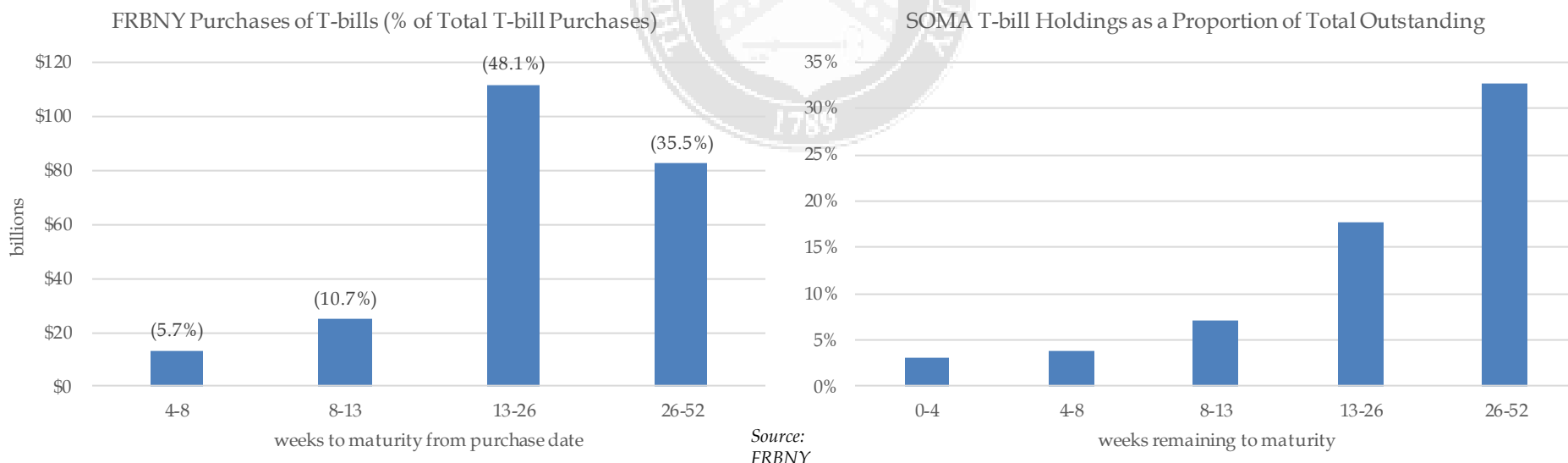
February 2020

Executive Summary

- ▶ Through 28 January 2020, reserve management purchases of Treasury bills by the Federal Reserve Bank of New York (FRBNY) totaled \$217.5 billion, or \$232.5 billion if including Treasury bill purchases relating to mortgage backed securities (MBS) reinvestment
 - ▶ To date, these purchases have been skewed toward longer-dated securities with more than 3-months remaining to maturity
- ▶ Treasury bills have richened in recent months, but its relationship with matched-maturity overnight indexed swaps (OIS) remains within the historical range
- ▶ Treasury bill trading volumes have remained robust during the FRBNY's purchases
- ▶ Per the most recently published results of the FRBNY primary dealer survey, the median expectation is for reserve management purchases of Treasury bills to continue through June 2020 and exceed \$400 billion in aggregate (since mid-October 2019) ¹
 - ▶ By the time reserve management purchases conclude, this may result in the supply of privately-held Treasury bills declining to its lowest absolute level since October 2017

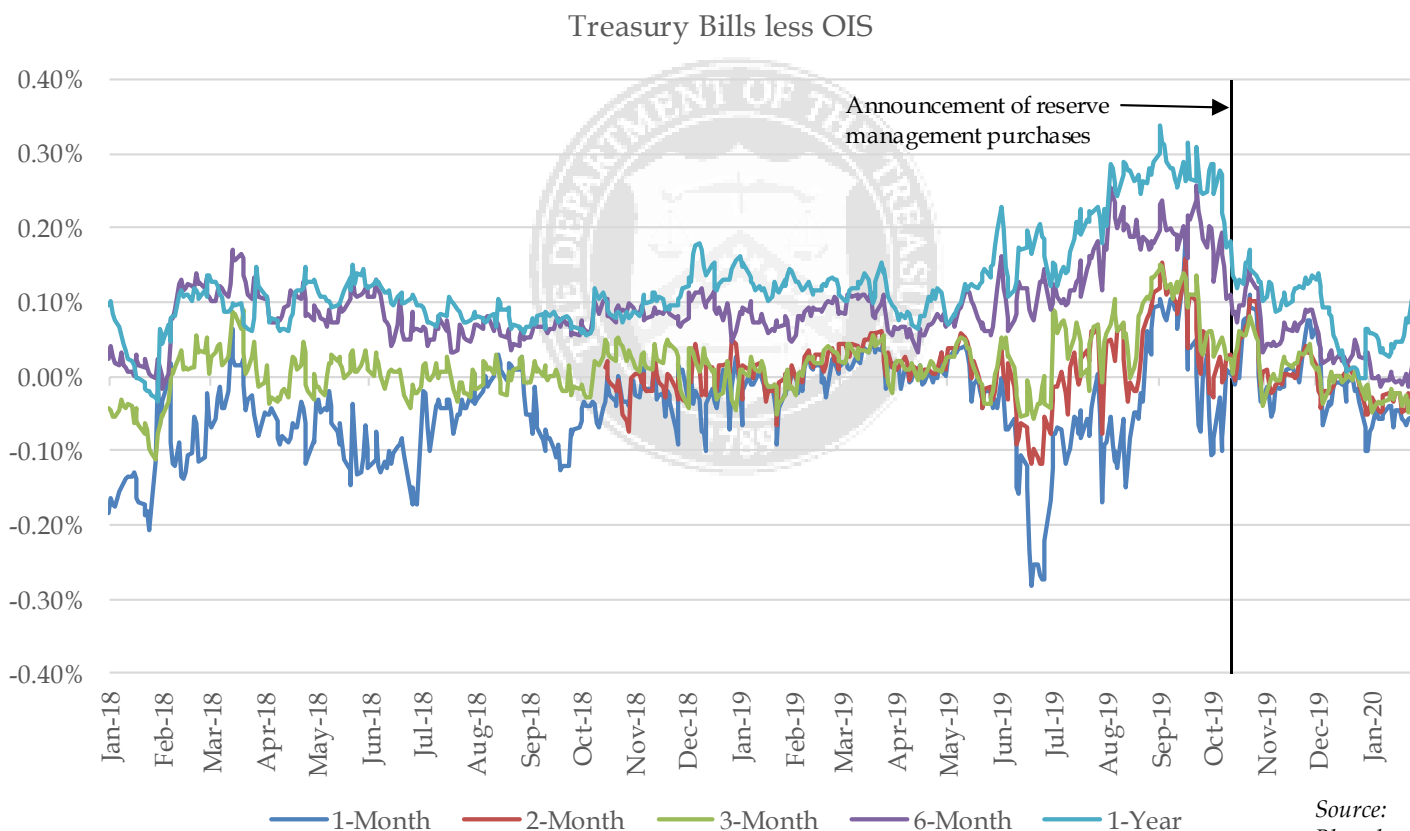
Federal Reserve SOMA Purchases of Treasury Bills

- ▶ The FRBNY began reserve management purchases of Treasury bills on 15 October 2019, at a pace of \$60 billion per month ²
 - ▶ As of 28 January 2020, reserve management purchases of Treasury bills totaled \$217.5 billion (\$232.5 billion if including Treasury bill purchases relating to MBS reinvestment)
- ▶ To date, FRBNY purchases of Treasury bills have been skewed toward longer-dated maturities:
 - ▶ *Note:* on 14 January 2020, FRBNY modified its purchase limits for Treasury bills which may result in a shift in tenor allocation



Treasury Bills vs Matched-Maturity OIS

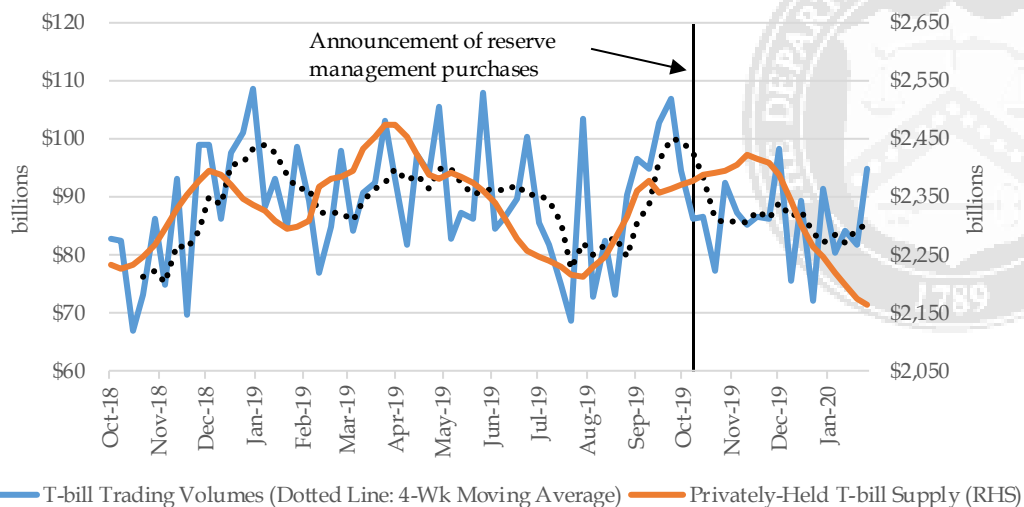
- ▶ During Q4 CY2019, Treasury bills broadly outperformed matched-maturity OIS --- particularly in the 6-month and 1-year sectors:
- ▶ Although Treasury bills have richened in recent months, its relationship with OIS has remained within the historical range:



Source:
Bloomberg

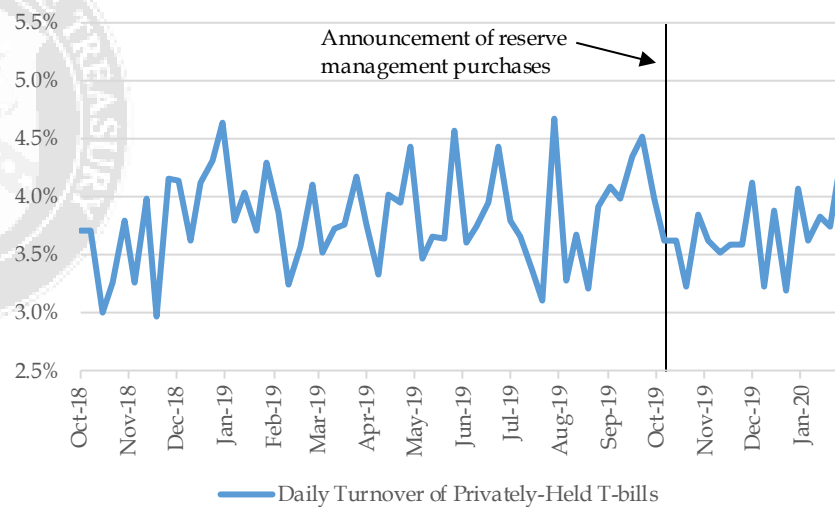
Treasury Bill Market Trading Volumes

- ▶ Treasury bill trading volumes have remained robust during the Federal Reserve SOMA purchases:
 - ▶ Since mid-October 2019, approximately \$86 billion has transacted daily in Treasury bills. This compares to an average of \$89 billion over the preceding year
 - ▶ Since mid-October 2019, approximately 3.7% of privately-held Treasury bill supply has transacted daily. This compares to an average of 3.8% over the preceding year



Note: Figures are daily averages based on weekly totals

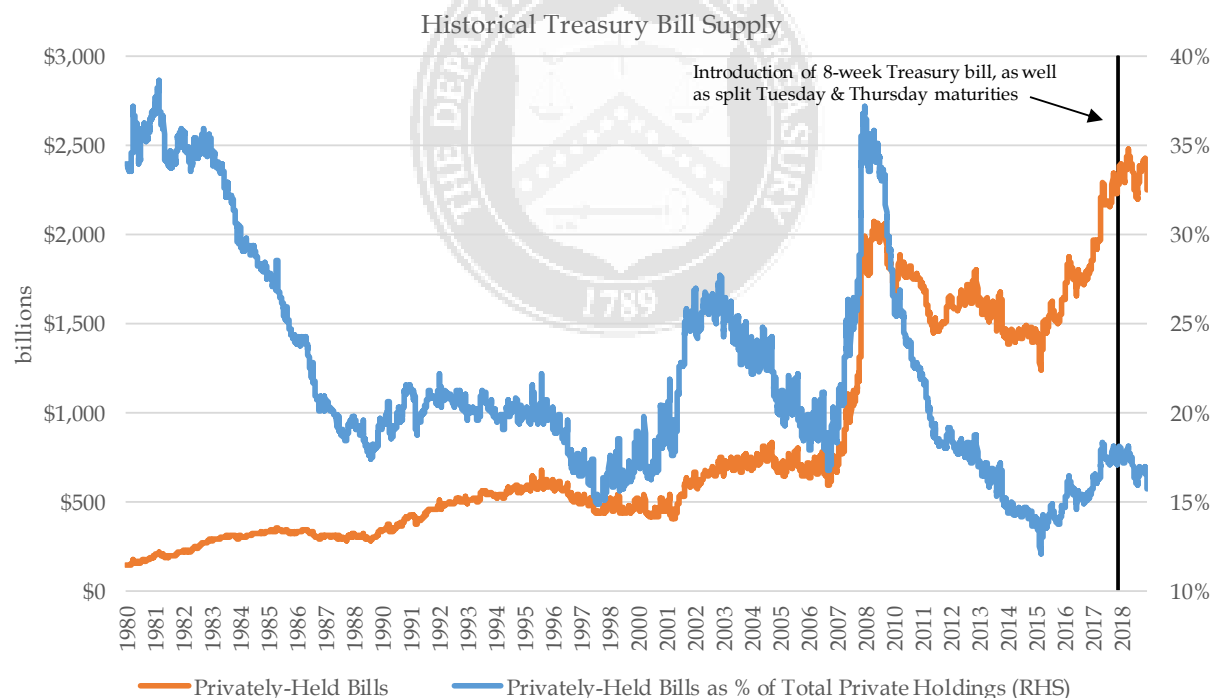
Source:
TRACE



Source:
TRACE

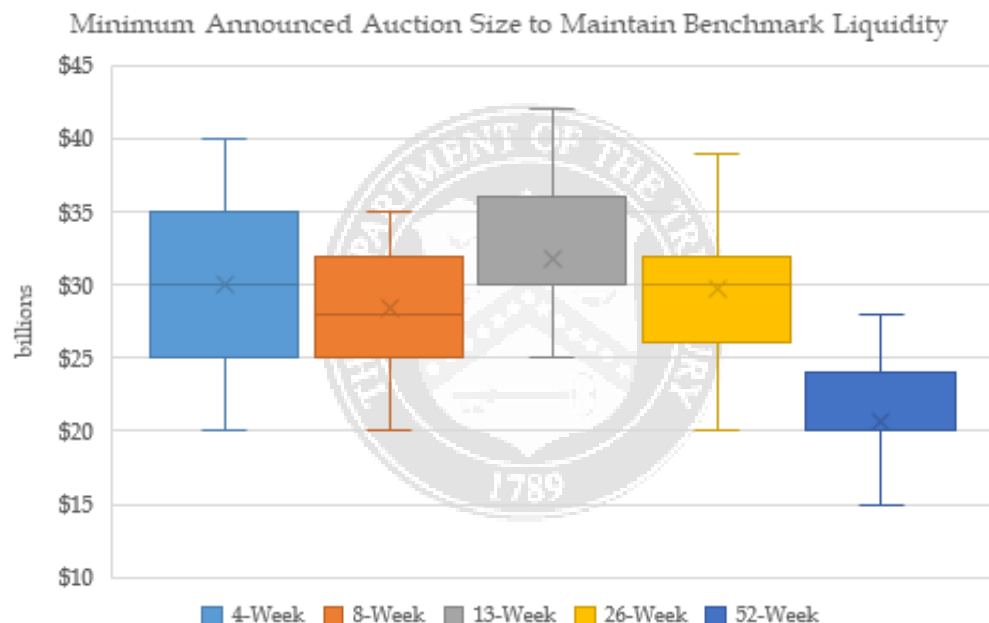
Looking Ahead

- ▶ Per the most recently published results of the FRBNY primary dealer survey, the median expectation is for reserve management purchases of Treasury bills to continue through June 2020 and exceed \$400 billion in aggregate (since mid-October 2019)
- ▶ Given current fiscal projections and assuming unchanged coupon auction sizes, this could result in the supply of privately-held Treasury bills declining to the mid-\$1.8 trillion range by end-June 2020 (or 12.9% of total private Treasury holdings), which would be the lowest absolute level since October 2017³



Looking Ahead, continued

- ▶ In January 2020, Treasury asked the primary dealer community for feedback regarding the minimum announced T-bill auction size that would maintain benchmark liquidity:⁴



- ▶ Upon annualizing these minimum recommended auction sizes, the middle-50% of primary dealer responses imply that a minimum of \$1,678-\$1,925 billion of privately-held T-bill supply is necessary to maintain benchmark liquidity (median response: \$1,782 billion)

Implications of the SOMA Portfolio for Treasury Debt Management

Treasury Borrowing Advisory Committee

February 4, 2020

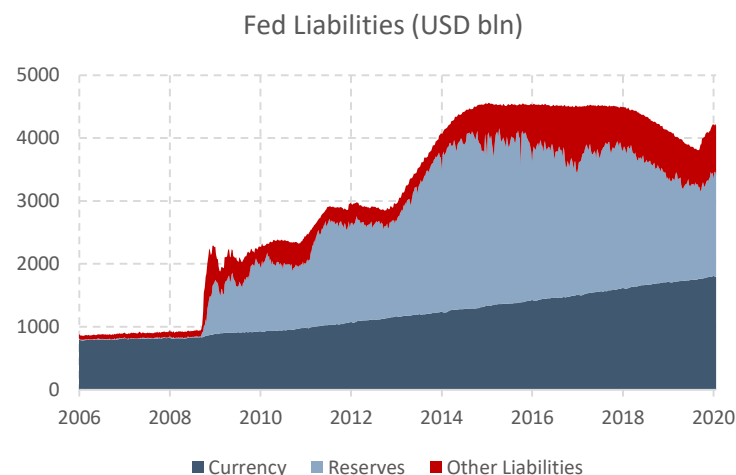
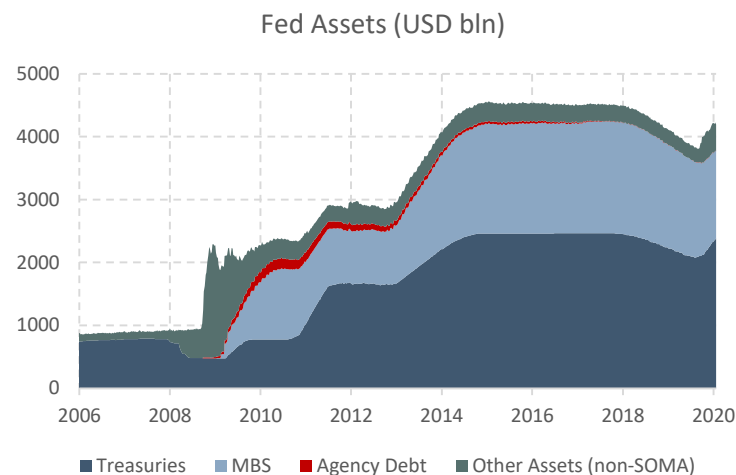
TBAC Charge

Long-run Composition of Treasury Securities in the Federal Reserve SOMA Portfolio

At its April/May 2019 meeting, the FOMC discussed two potential options for the long-run composition of Treasury securities in the Federal Reserve's SOMA portfolio: (1) a portfolio roughly proportional to Treasury securities outstanding, and (2) a portfolio focused on shorter maturity securities, such as Treasury bills and other securities with less than 3 years to maturity. Recognizing that the FOMC has not yet made a decision on this subject, Treasury would like the TBAC to begin thinking about how, if at all, these potential paths for the SOMA portfolio should affect Treasury's long-term issuance strategy.

History of the SOMA Portfolio

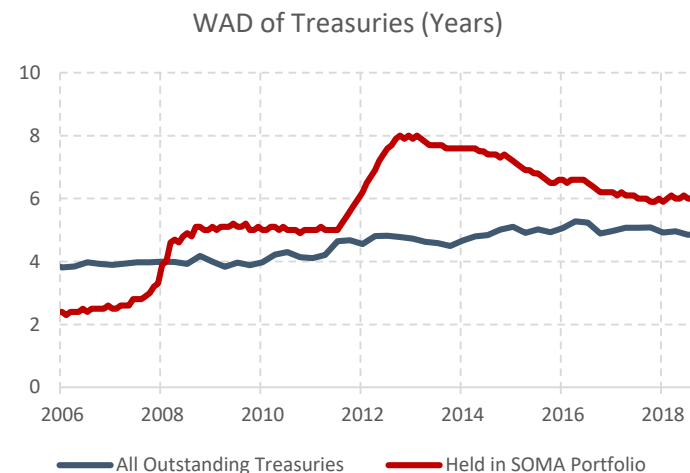
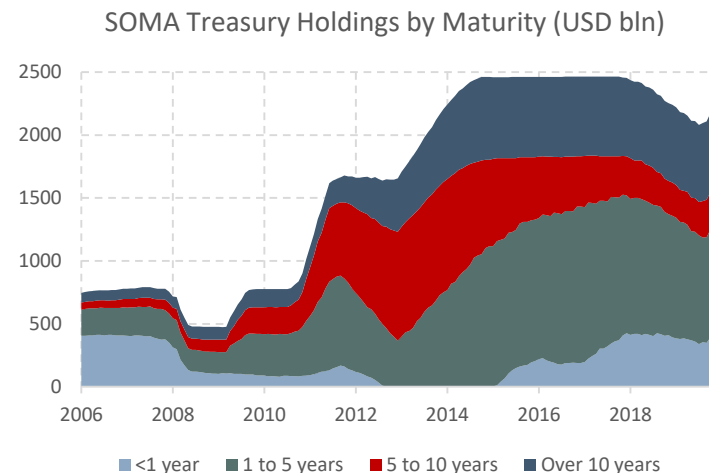
- The System Open Market Account (SOMA) is the portfolio of assets held by the Federal Reserve System obtained through open market operations.
- These assets were purchased in order to create various liabilities on the Federal Reserve's balance sheet—most importantly, currency held by the public and reserves held by banks.
- In the years leading up to the global financial crisis, nearly all SOMA holdings were in Treasury securities.
- Large-scale asset purchase programs launched in response to the crisis (often referred to as quantitative easing, or “QE”) caused sizable increases in SOMA holdings of Treasuries and agency MBS.
- These increases resulted in an expansion of bank reserves and other liabilities, while currency also grew at a robust pace over this period.



Source: Federal Reserve Board of Governors (FRB)

Maturity Structure of the SOMA Portfolio

- The SOMA portfolio has had maturity characteristics that differ from the total outstanding Treasury debt.
- The average duration of the SOMA portfolio before the financial crisis was shorter than the average duration of outstanding Treasury debt.
 - Indeed, about 2/3 of the assets held by SOMA at that time matured within a year, and the average duration of the portfolio was just over 2 years.
- The weighted average duration (WAD) of the SOMA portfolio increased substantially during the Fed's QE programs, as those programs sought to remove duration from the market.



Source: FRB, Federal Reserve Bank of New York (FRBNY), authors' calculations

The Effects of the SOMA Portfolio on the Treasury

- The Treasury and the Federal Reserve are independent entities operating with different mandates. However, decisions that the Fed makes about the SOMA portfolio could affect the Treasury's fiscal outcomes and its debt management decisions.
- The interest that the Fed earns on its holdings of Treasury securities is remitted to the Treasury, which means that those interest payments net out for the Treasury. However, the interest that the Fed pays on the liabilities created from those holdings reduces the Fed's remittances.
- Based on that observation, it can be useful to focus on a consolidated balance sheet that includes both the Treasury and the Fed when considering some issues about the appropriate structure of the debt.
- A portion of SOMA holdings (that against currency liabilities) can be thought of as translating Treasury debt into debt financed at a 0% interest rate cost to the Treasury.
- Most of the remaining SOMA holdings can be thought of as translating Treasury debt into floating-rate notes (FRNs) that are tied to the overnight interest rates set by the Fed (most importantly, the interest rate paid on excess reserves, or the IOER rate).

A Stylized Consolidated Balance Sheet

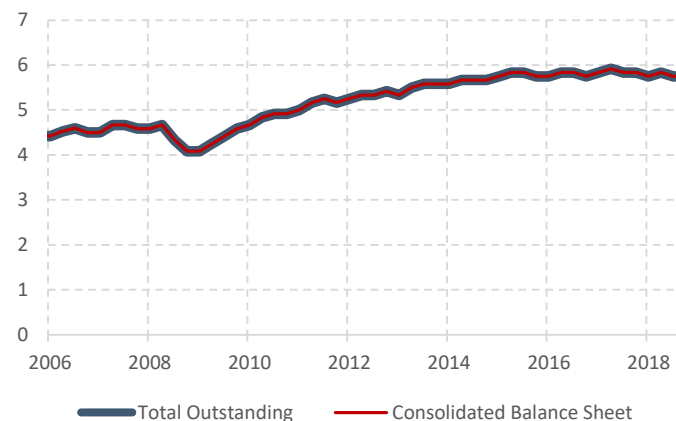
Treasury		+	Fed		=	Consolidated	
Assets	Liabilities		Assets	Liabilities		Assets	Liabilities
+ TGA	- Treasuries		+ Treasuries	- Currency		+ MBS	- Privately-held
			+ MBS	- Reserves		+ Other	Treasuries
			+ Other	- RRP			- Currency
				- TGA			- Reserves
				- Other			- RRP
							- Other

- Only those Treasuries that are privately-held (that is, held outside the SOMA) appear on the liability side of the consolidated balance sheet.
- Fed liabilities now appear alongside privately-held Treasuries on the liability side of the consolidated balance sheet. Some of these liabilities, including reserves and RRP, pay overnight interest rates set by the Fed.

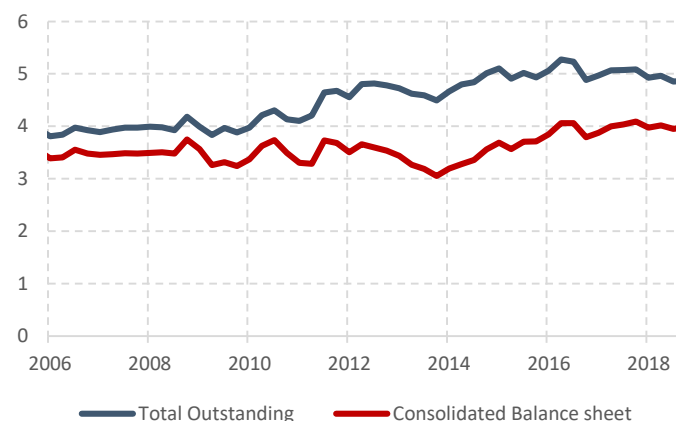
Debt Metrics for the Consolidated Balance Sheet

- Most measures that have been used to describe the structure of Treasury debt consider all outstanding securities, including those held in SOMA. One could also compute those statistics for the consolidated balance sheet.
- The reported weighted-average maturity (WAM) of the debt is unaffected by taking the SOMA portfolio into consideration.
- However, the weighted-average duration (WAD) of the debt is much shorter for the consolidated balance sheet.
- In effect, the SOMA brings outstanding Treasury debt towards a duration structure that would have occurred had the Treasury issued FRNs indexed to the IOER rate.

WAM of Treasuries Outstanding (Years)



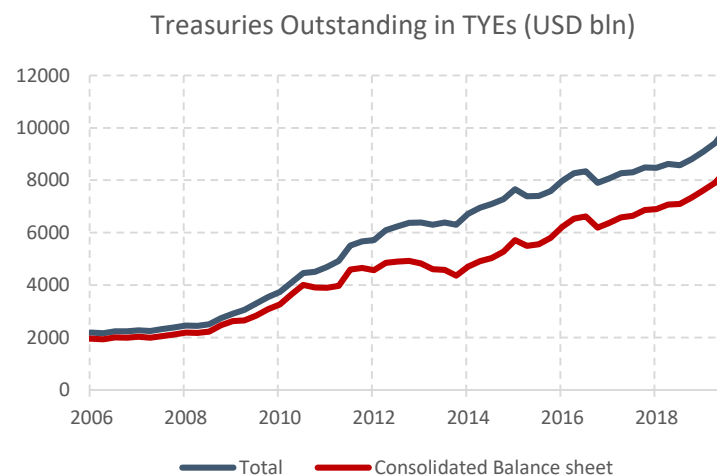
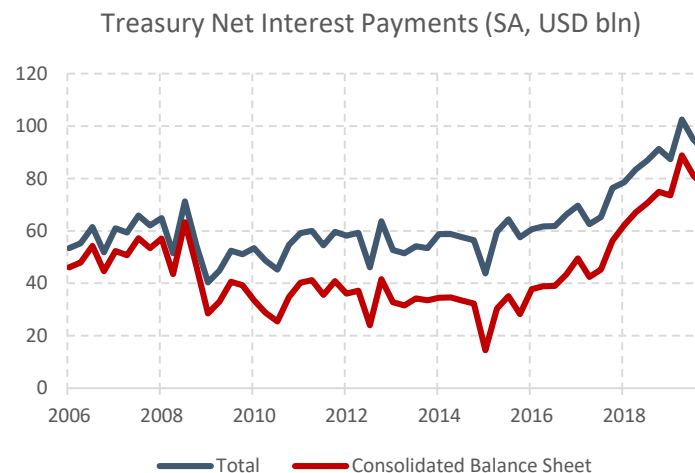
WAD of Treasuries Outstanding (Years)



Source: FRBNY, U.S. Treasury, authors' calculations

Debt Metrics for the Consolidated Balance Sheet

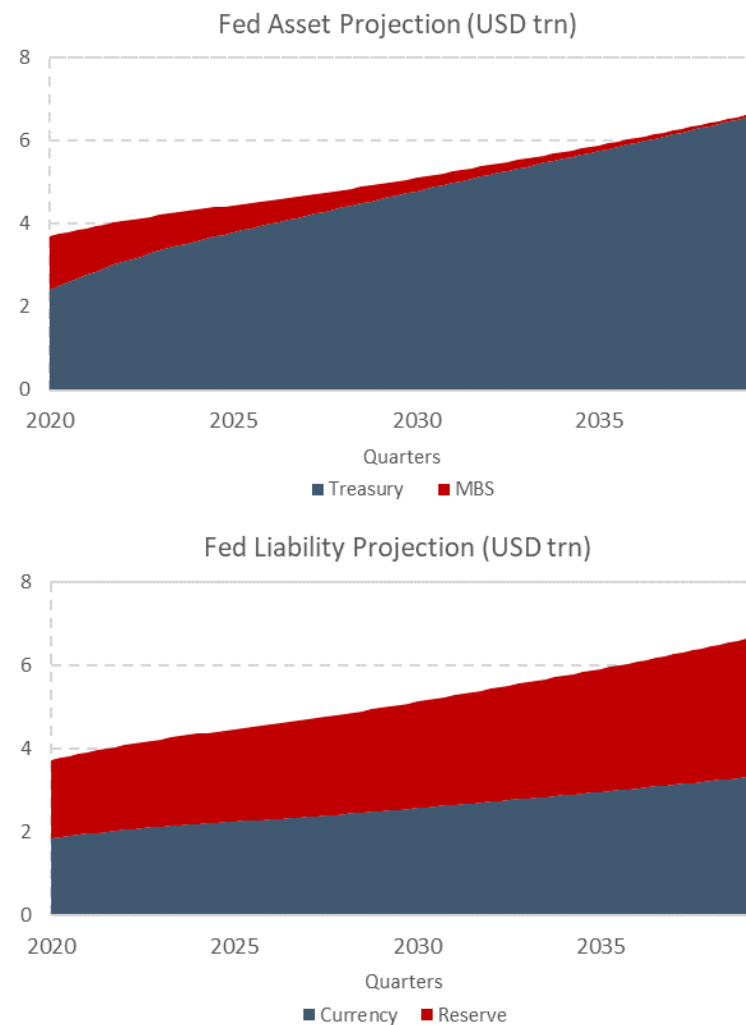
- Realized interest payments on the debt have been lower for the consolidated balance sheet, reflecting that some of the Treasury debt is replaced by currency, and that some of it is effectively replaced by FRNs.
- Indeed, since 2006, the SOMA portfolio has effectively reduced Treasury's debt payments by nearly \$1 trillion, on net.
- The total amount of duration supplied by Treasury debt (measured by ten-year equivalents, or TYE) is notably lower with the SOMA adjustment.
- Overall, from a consolidated balance sheet viewpoint, adjusting for the SOMA portfolio has meaningful effects on the structure of outstanding debt.



Source: FRB, FRBNY, U.S. Treasury, authors' calculations

The Effects of SOMA Holdings Going Forward

- We can assess how the SOMA portfolio might influence the expected cost and interest rate risk facing the Treasury going forward by using the model developed for previous TBAC charges.
- The model has been modified to track the size and composition of SOMA holdings over time and to account for Fed remittances to the Treasury.
- In the model, we assume that the Fed's balance sheet grows over time due to increases in both currency outstanding and its non-currency liabilities. The growth rate of these components approaches nominal GDP growth in the long run.
- We also embed a mortgage prepayment structure within the model to account for MBS runoff. We assume no new investment in MBS.

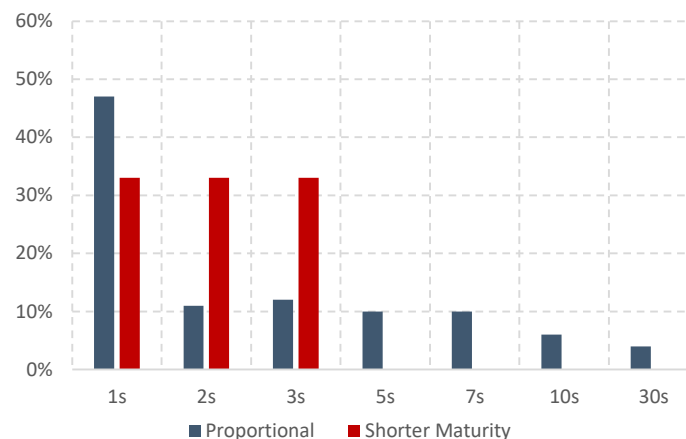


Source: authors' calculations

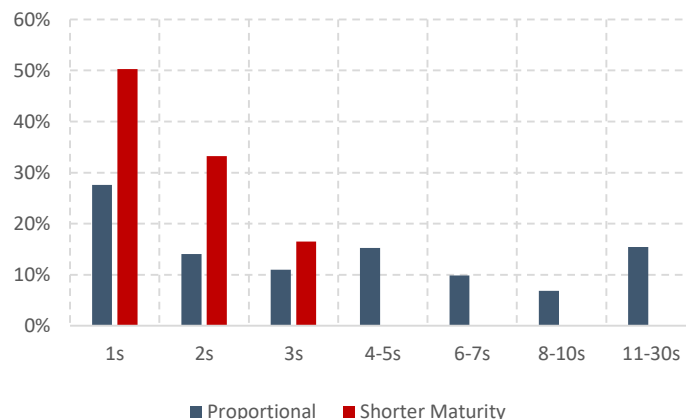
Potential Maturity Structures for the SOMA Portfolio

- In addition to the overall growth of the SOMA portfolio, the Fed will have to decide on the desired maturity composition of the portfolio over the longer-run.
- The Fed can alter the maturity composition of SOMA through reinvestment of its maturing holdings and through the reserve-management purchases that are needed to increase the SOMA over time.
- We consider the two options discussed in the April/May 2019 FOMC minutes:
 - Proportional: the maturity composition of the target SOMA portfolio would be similar to currently outstanding Treasury securities
 - Shorter maturity: the target SOMA portfolio would contain only securities with maturities of three years or less

Assumed Purchase Shares for SOMA



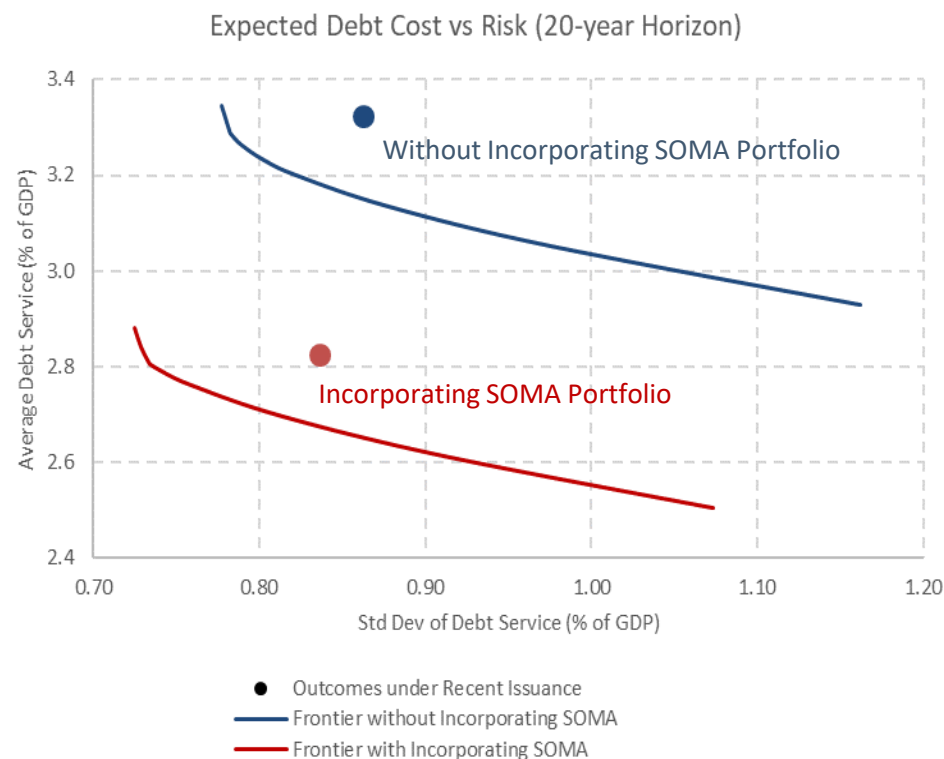
Resulting Portfolio Shares in 20 Years



Source: authors' calculations

Effects of SOMA on the Expected Cost/Risk Trade-Off

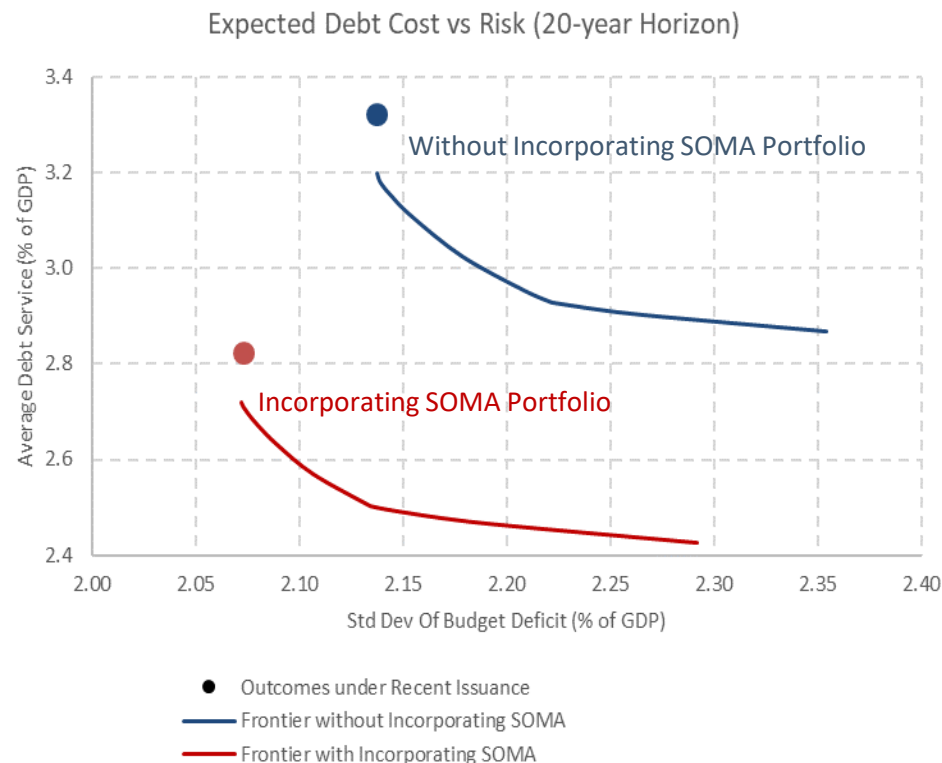
- The model produces an efficiency frontier for the trade-off between the expected cost and risk that the Treasury could achieve under different issuance strategies.
- Incorporating the SOMA portfolio into the analysis (under the proportional approach) results in a meaningful downward shift in the frontier, as well as in the outcome that Treasury achieves under recent issuance patterns.
- These shifts reflect the beneficial effects of issuing currency at a stable 0% cost. In addition, SOMA holdings replicate FRNs that avoid paying the term premium (which over time becomes modestly positive in the model).
- The variation in funding cost decreases slightly, as the stabilizing effect of currency outweighs the variability that comes from having SOMA holdings that replicate FRNs.



Source: authors' calculations

Effects of SOMA on the Expected Cost/Risk Trade-Off

- The previous slide measured risk based on variation in debt service costs. It may be more appropriate to measure risk by variation in the budget deficit.
- The outcome for Treasury under recent issuance patterns again shifts down notably once we take the SOMA portfolio into account.
- In addition, the variation in the budget deficit goes down notably, in part because of the favorable correlation properties between short-term interest rates and funding needs.
- For a plausible range of risk preferences, the effects of the SOMA portfolio make it optimal for the Treasury to issue fewer bills and more intermediate-term securities relative to the case in which it does not consider the SOMA.



Source: authors' calculations

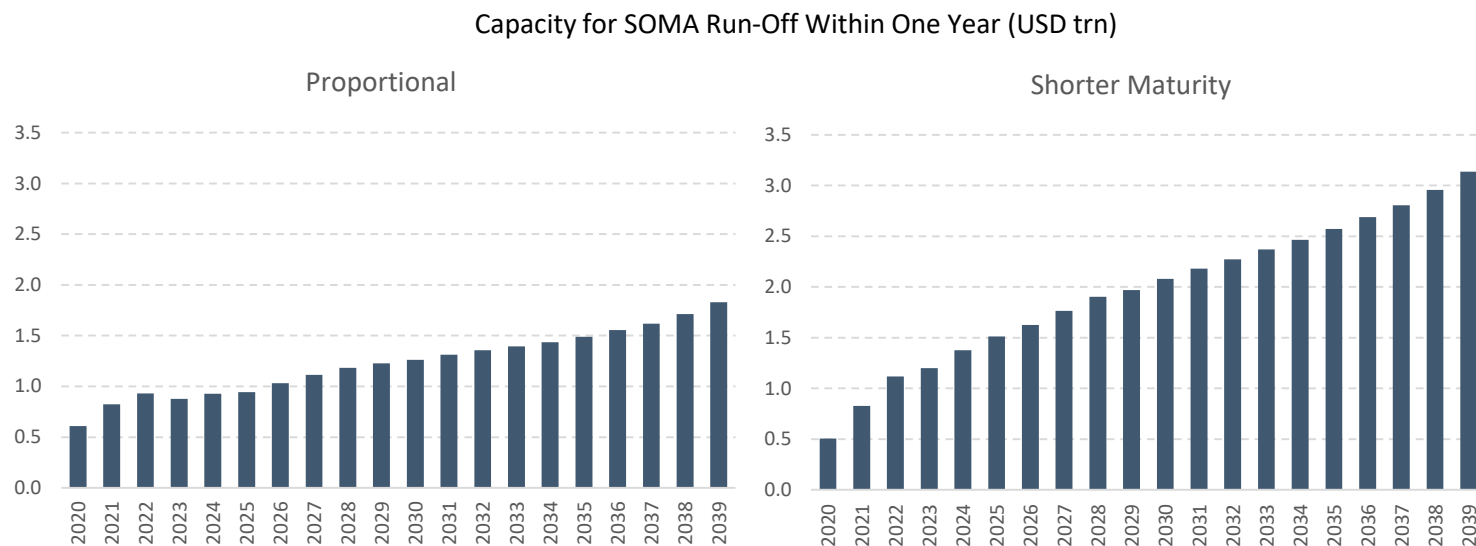
The Effects of Different SOMA Maturity Structures

- The above results assumed that SOMA followed the proportional strategy. We want to consider the implications if it had instead chosen to follow the shorter-maturity strategy.
- To develop intuition on how the SOMA maturity structure affects the Treasury, we begin with a case in which we assume that there is no possibility that the Fed will run-off its SOMA holdings or engage in additional QE.
- In those circumstances, Treasury should be indifferent to the maturity structure of SOMA holdings, because all of those holdings effectively become FRNs and hence have the same interest rate risk regardless of maturity.
 - The shape of the frontiers and the outcome under recent issuance patterns are identical under the two maturity approaches for the SOMA portfolio.
- Thus, under this hypothetical situation, the Treasury should alter its issuance and continue to allow the Fed to add-on to announced auction sizes in order to supply the Fed with whatever amount of securities it chooses at each maturity, keeping the supply of its debt to the private sector unaffected by the SOMA decisions.
- However, one reason for the Fed to shift to shorter maturities is to give it flexibility to run-off its Treasury holdings, and hence the possibility of SOMA run-off should be an important consideration for the Treasury.

How Should Treasury Consider Potential SOMA Run-Off?

- If the Fed were to run off its SOMA Treasury holdings, that would raise near-term funding needs for Treasury. Thus, there is some “run-off risk” for Treasury to take into consideration.
- SOMA run-off could force the Treasury into increasing its issuance at an uncomfortable pace or spreading its issuance out across maturities in a manner that is inefficient over time.
 - In theory, if Treasury could issue debt at the short end in place of SOMA run-off, that would keep the cost/risk structure of consolidated liabilities largely unchanged.
 - In practice, rapid increases in issuance at any particular maturity or even across all maturities can put pressure on market prices and cause unfavorable outcomes for debt management.
- Note that a Maturity Extension Program (MEP) in which the Fed sells front-end Treasury securities raises similar issues.
 - These sales would increase the financing need for Treasury with the same timing as if the Fed had decided to run off those securities at maturity.
 - However, a MEP is more likely to be launched when the economy is weak and rates are low, perhaps mitigating concerns about having to issue more debt in response.

Run-off Capacity under the Two SOMA Options

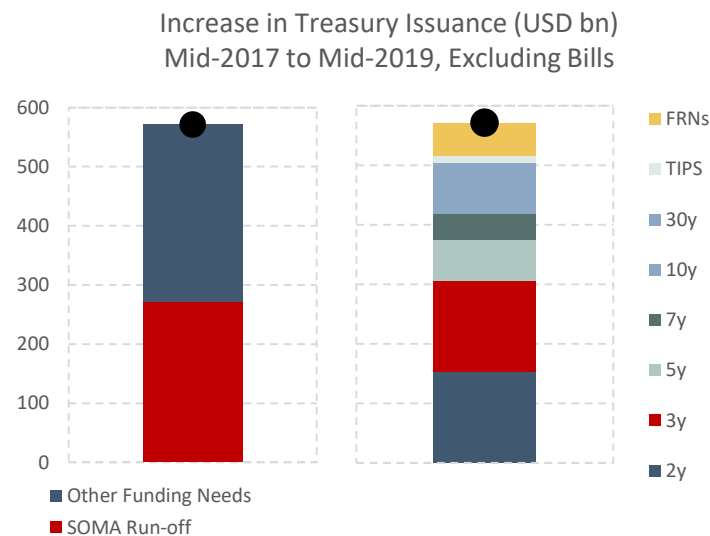
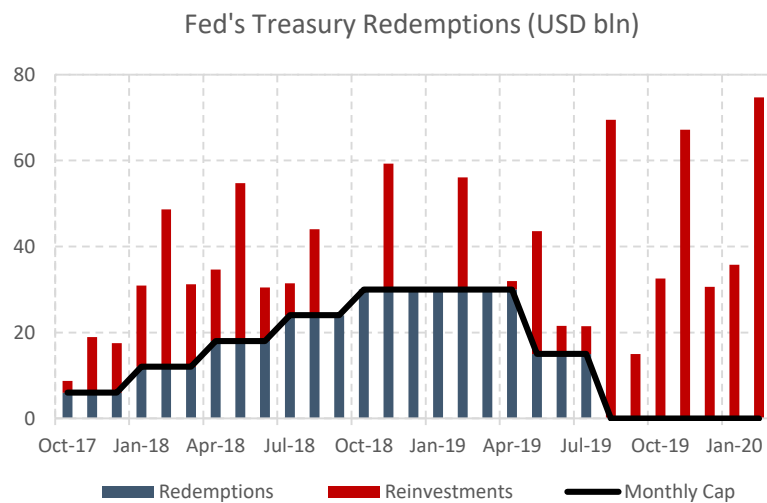


Source: authors' calculations

- The capacity for run-off of the Fed's portfolio, especially under the shorter-maturity SOMA option, could surpass the additional near-term funding that the Treasury is able to efficiently achieve.
- Thus, an important consideration for debt management would be whether the Fed would impose run-off caps or take other steps to make the debt management implications manageable.

The Run-off of SOMA Assets in 2017-2019

- The Fed implemented a run-off of its SOMA assets from 2017 to 2019, which substantially boosted Treasury funding needs over that period (at a time when they were rising for other reasons).
- The debt management adjustment that occurred went relatively smoothly in part because those funding needs were gradual and known well in advance, allowing the Treasury to maintain a regular and predictable approach.
- The caps that the Federal Reserve imposed on the decline in its asset holdings each month were important for achieving that outcome.



Source: U.S. Treasury, Bloomberg, FRB, authors' calculations

How Should Treasury Adjust for Potential SOMA Run-Off?

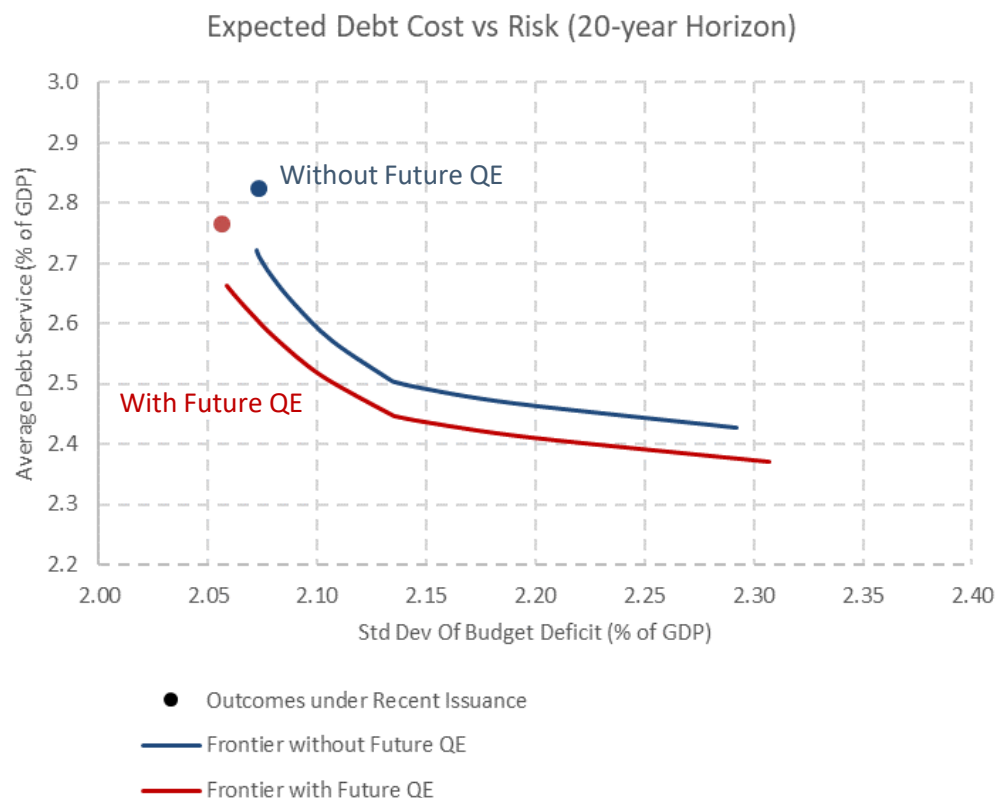
- The above results show that the potential run-off of SOMA holdings raises challenges for debt management, even if the Fed takes steps to make the outcome more manageable.
 - The challenges are potentially more acute for the shorter-maturity SOMA portfolio.
- However, shifting issuance of privately-held Treasuries into longer maturities to offset the shorter-maturity SOMA portfolio would not mitigate the challenges presented by Fed run-off and would involve costs.
 - The Treasury would face the same run-off risk from SOMA regardless of whether the debt it had issued to the private sector was shorter- or longer-term.
 - Because private investors would not necessarily be trying to reduce Treasury holdings at the same time as the Fed were running off its holdings, little is gained by pushing private investors into longer maturities.
 - Issuing more longer-duration instruments to the private sector would result in a less favorable cost/risk outcome for Treasury.
- Thus, the conclusion that the Treasury should largely supply the maturities that the Fed wants to hold in SOMA over the longer run still holds.

How Should Treasury Incorporate Future QE?

- Debt management decisions and QE can both affect economy through changing the supply of duration to the market.
- We assume that the Fed is the “last mover,” in that monetary policy is allowed to change the maturity structure of outstanding debt for economic purposes.
 - This assumption accounts for the fact that the Treasury's objectives extend beyond debt management, in directions that should be consistent with the Fed's objectives.
- Even though we argued that the Treasury should be willing to shift debt supply to meet the desired longer-run shifts in the maturity structure of the SOMA portfolio, we believe that the same logic should not be applied to SOMA adjustments related to QE policy.
- Models such as ours could be used to measure whether the temporary maturity transformation of privately-held debt from QE has substantial cost to the debt management objective.
- In a future QE scenario, Treasury would have to consider various additional factors (such as the fiscal situation, near-term borrowing needs, risk tolerance, and market functioning) when making issuance decisions.

The Debt Management Impact of Future QE

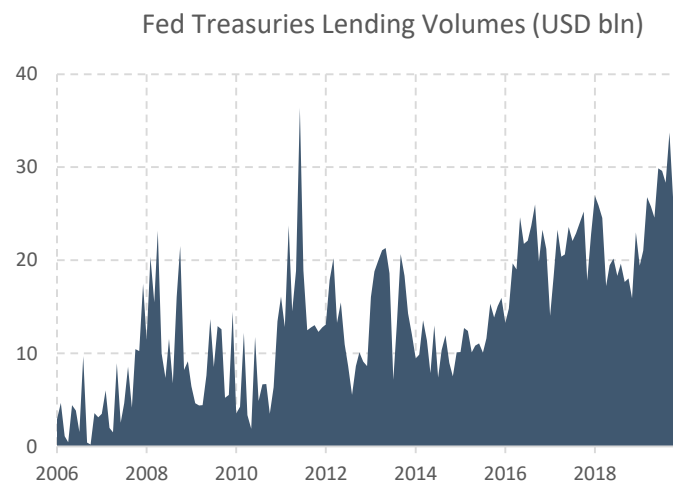
- As a first pass at this issue, we present results that allow the possibility of future QE, but without incorporating its effects on term premiums or the economy.
- Specifically, we incorporate QE through a reaction function where SOMA holdings are proportional to the amount by which the Fed would like to lower the short rate below the zero bound.
- The likelihood of QE improves the debt management trade-off that the Treasury faces. This result arises because it reduces the expected amount of long-end debt, which the model sees as more costly.



Source: authors' calculations

Potential Secondary Market Implications of SOMA Options

- In addition to the above issues raised for debt management, we consider a broader set of potential implications for activity in the Treasury market.
- As noted above, if the Treasury were to increase its issuance of particular maturities rapidly in response to SOMA run-off, it could put pressure on market prices for those securities and result in market inefficiencies.
- If the Treasury were to reduce private-sector issuance of shorter maturities to offset a SOMA portfolio shift in that direction, it could create scarcity of those securities.
 - This outcome could richen bills and lower repo rates, limiting the supply of money-like assets and potentially incentivizing private efforts to create substitutes.
- A decision by the Fed to shift the maturity of SOMA holdings would also limit the amount of securities that the Federal Reserve has available for its securities lending program.



Source: FRB

Conclusions

- The SOMA portfolio has important effects on the characteristics of outstanding debt, effectively shifting its structure towards having some liabilities at a fixed 0% rate and others tied to the overnight rate set by the Fed (primarily the IOER rate).
 - It has, in effect, reduced the interest cost of the debt historically and, under the debt management model used here, is expected to provide similar benefits going forward.
- A shift in SOMA towards shorter maturities would create funding risk for Treasury, in that the scope for the Fed to run-off holdings would be substantial.
 - An important consideration is whether the Fed would make the portfolio run-off smooth and predictable in order to make the debt management implications manageable.
- Treasury should be willing to supply the maturities that the Fed wants to hold in SOMA over the longer run, in order to leave the structure of debt to the private sector largely unchanged.
 - Adjusting the maturity structure of debt to offset the shift in SOMA maturity would not mitigate the risk of run-off, and it would push the Treasury away from the optimal maturity structure for privately-held debt.
- Shifts in the maturity structure of debt arising from QE generally should not be offset by debt management changes. Nevertheless, Treasury would need to carefully consider the circumstances and debt management needs surrounding any future QE scenario.