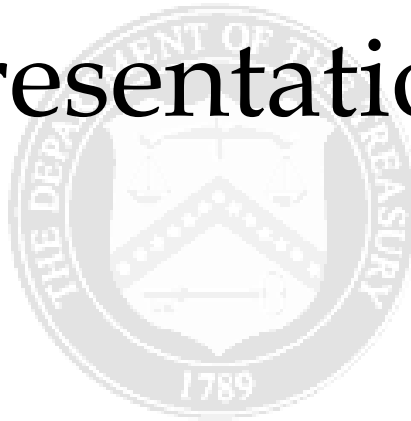


Treasury Presentation to TBAC



Office of Debt Management



Fiscal Year 2025 Q4 Report

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*All sources are from Treasury unless otherwise specified

Section I: Executive Summary



Highlights of Treasury's November 2025 Quarterly Refunding Presentation to the Treasury Borrowing Advisory Committee (TBAC)

Receipts and Outlays through Q4 FY2025*

	\$ billion	Change from same period last year (\$ billion)	Change from same period last year (%)	As % of GDP	Change from same period last year (% GDP)
Total Receipts thru Q4 FY2025	\$5,235	+\$317	6%	17.3%	0.3%
Total Outlays thru Q4 FY2025	\$7,010	+\$275	4%	23.1%	-0.2%

*After excluding the impact of the FY2023 and FY2024 tax deferrals, the growth in FY2025 receipts would have been \$415 billion or 9% higher. Also, adjusting outlays to account for calendar impacts, the growth in outlays would have been \$203 billion or only 3%.

Treasury's Projected Privately-held Net Marketable Borrowing for the Current and Next Fiscal Quarters

Treasury OFP Near Term Fiscal Projections	Privately-Held Net Marketable Borrowing (\$ billion)	Assumed End-of-Quarter Cash Balance (\$ billion)
Q1 FY2026	\$569	\$850 (Dec)
Q2 FY2026	\$578	\$850 (Mar)

Projected Privately-held Net Marketable Borrowing for the Next Three Fiscal Years from Various Sources**

Fiscal Year	Primary Dealers, Median, October 2025 (\$billion)	CBO Estimates, August 2025 (\$billion)
2026	\$2,034	\$2,286
2027	\$2,129	\$2,389
2028	\$2,120	\$2,575

**All privately-held net marketable borrowing estimates are "normalized" with details from page 18. CBO estimates have been adjusted to account for the effects of the One Big Beautiful Bill, but not other factors such as tariff revenue. Uncertainty regarding future funding needs remains relatively high, reflecting a variety of views on the path of monetary policy and the outlook for the economy.

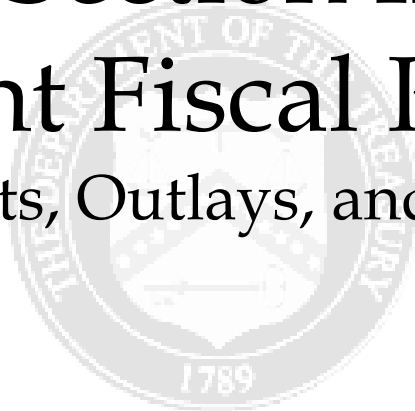
Latest Market Expectations for Treasury Financing in October 2025

- The vast majority of primary dealers expected no changes to nominal coupon or FRN issuance sizes at the November refunding.

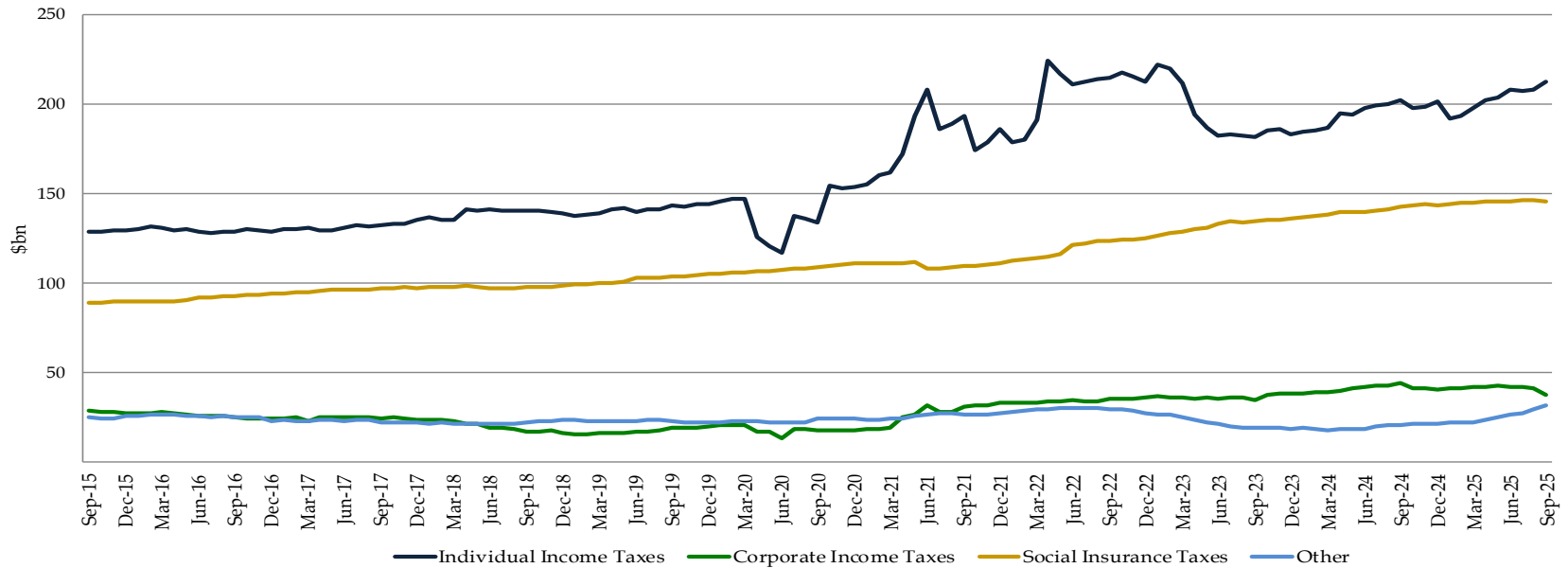
Section II:

Recent Fiscal Results

Receipts, Outlays, and Deficits



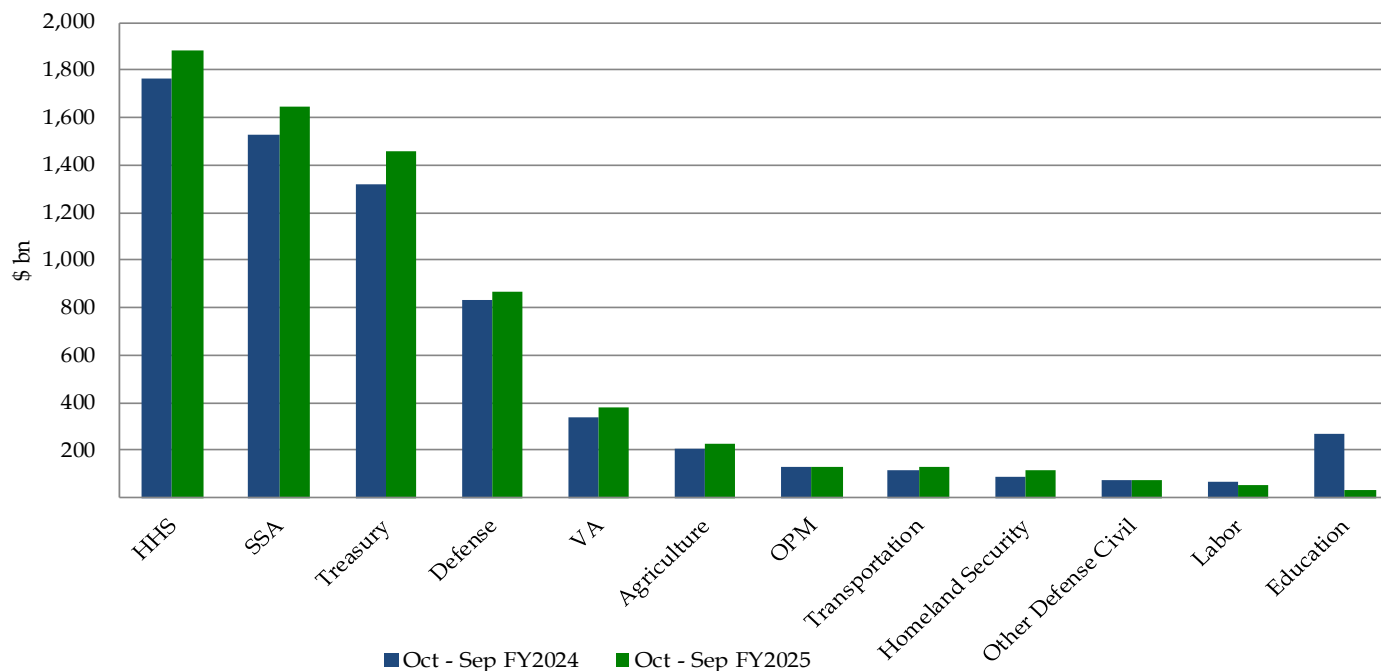
Monthly Receipt Levels (12-Month Moving Average)



Notable Receipt Category	YoY change thru Q4 FY25 (\$ billion)	YoY change thru Q4 FY25 (%)	Comments
Withheld & FICA Taxes (calendar adjusted)	+\$201	+6%	Increased due to wage and employment growth.
Customs Deposits	+\$119	+142%	Increased due to higher tariff receipts.
Non-withheld and SECA Taxes	+\$103	+10%	Increased in part due to capital gains. Would have increased \$151 billion (15%) had it not been for IRS extensions, including those in California, from FY2023 into FY2024.
Gross Corporate Taxes	-\$79	-14%	Decreased due to legislative changes to expensing and deduction provisions. Would have decreased -\$42 billion (-8%) had it not been for IRS extensions, including those in California, from FY2023 into FY2024.
Individual Refunds (negative receipt)	+\$28	+9%	Increased due to increased processing of Employee Retention Credits, this fiscal year, some of which is categorized as individual refunds.

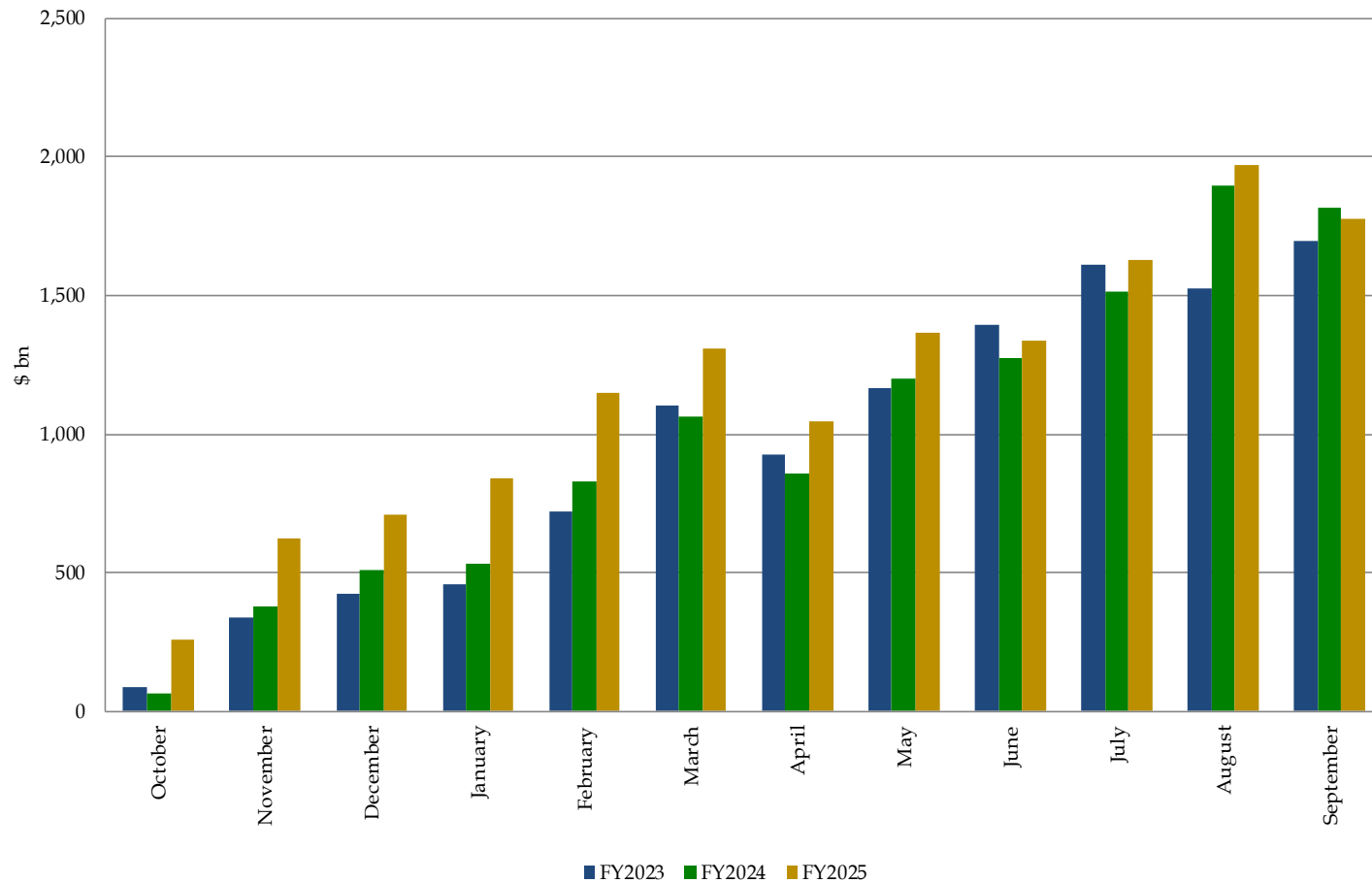
Individual Income Taxes include withheld and non-withheld. Social Insurance Taxes include FICA, SECA, RRTA, UTF deposits, FUTA and RUIA. Other includes excise taxes, estate and gift taxes, customs duties and miscellaneous receipts.

Largest Outlays



Notable Outlay Category	YoY change thru Q4 FY25 (\$ billion)	YoY change thru Q4 FY25 (%)	Comments
Department of Treasury	+\$142	+11%	Higher due to increase in gross interest on the public debt and higher IRS credits.
Social Security Administration (calendar adjusted)	+\$122	+8%	Higher due to implementation of the Social Security Fairness Act, increases from cost-of-living adjustments (COLA), and increased number of beneficiaries.
Health and Human Services (calendar adjusted)	+\$119	+7%	Higher primarily due to increase in Medicare and Medicaid spending.
Department of Veterans Affairs (calendar adjusted)	+\$39	+12%	Higher due to increased spending per person and veterans' increased use of health care facilities.
Department of Defense (calendar adjusted)	+\$38	+5%	Higher due to higher costs for operations and maintenance, personnel, procurement, and research and development.
Department of Education	-\$233	-87%	Lower mainly from downward modification to federal student loan repayment plans in OBBB, lower student aid subsidy estimates, and lower elementary & secondary education outlays.

Cumulative Budget Deficits by Fiscal Year



Section III:

Various Fiscal Forecasts

Primary Dealers, OMB, CBO



Recent Economic Forecasts

Primary Dealer Median Estimates October 2025

	<u>CY2026</u>	<u>CY2027</u>	<u>CY2028</u>
	<u>% Change from Q4 to Q4</u>		
GDP			
Real	1.8	1.8	2.0
Nominal	4.6	4.4	4.3
Inflation			
CPI Headline	3.0	2.7	2.4
CPI Core	3.1	2.9	2.5
	<u>Fourth Quarter Levels</u>		
Unemployment Rate (%)	4.4	4.4	4.3
	<u>FY2026</u>	<u>FY2027</u>	<u>FY2028</u>
Deficits (\$bil)	\$1,940	\$2,052	\$2,130

CBO Estimates August 2025

	<u>CY2026</u>	<u>CY2027</u>	<u>CY2028</u>
	<u>% Change from Q4 to Q4</u>		
GDP			
Real	2.2	1.8	1.8
Nominal	4.4	3.8	3.8
Inflation			
CPI Headline	2.4	2.2	2.2
	<u>Fourth Quarter Levels</u>		
Unemployment Rate (%)	4.2	4.4	4.4
	<u>FY2026</u>	<u>FY2027</u>	<u>FY2028</u>
Deficits (\$bil)	\$2,214	\$2,323	\$2,521

OMB Estimates September 2025

	<u>CY2026</u>	<u>CY2027</u>	<u>CY2028</u>
	<u>% Change Year over Year</u>		
GDP			
Real	3.0	3.1	3.1
Nominal	5.6	5.2	5.2
Inflation			
CPI Headline	2.3	2.3	2.1
	<u>Annual Average</u>		
Unemployment Rate (%)	3.9	3.7	3.7
	<u>FY2026</u>	<u>FY2027</u>	<u>FY2028</u>
Deficits (\$bil)	\$2,220	\$1,973	\$1,841

Note: OMB's economic assumptions and deficits are from Table 1 and Table 2 of "Mid-Session Review, Technical Supplement to the 2026 Budget," September 2025.

CBO's economic assumptions are data supplement from "CBO's September 2025 report CBO's Current View of the Economy From 2025 to 2028," September 2025. CBO's deficit projections are from Table 1 of "Effects on Deficits and the Debt of Public Law 119-21 and of Making Certain Tax Policies in the Act Permanent," August 2025.

Recent Deficit Forecasts

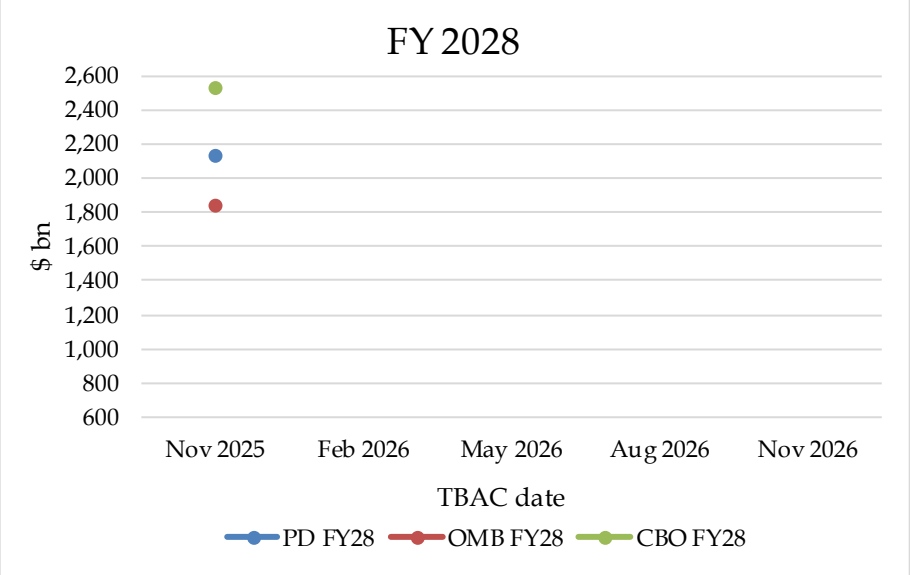
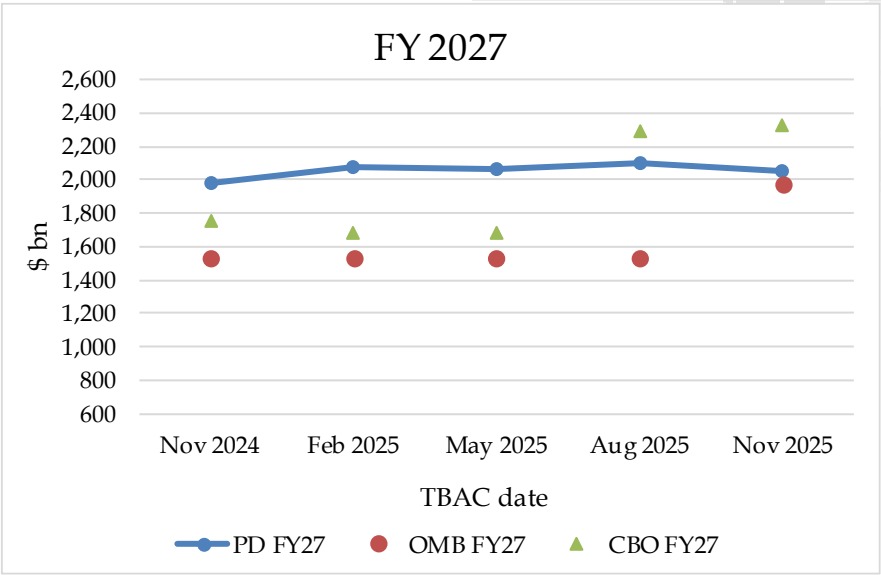
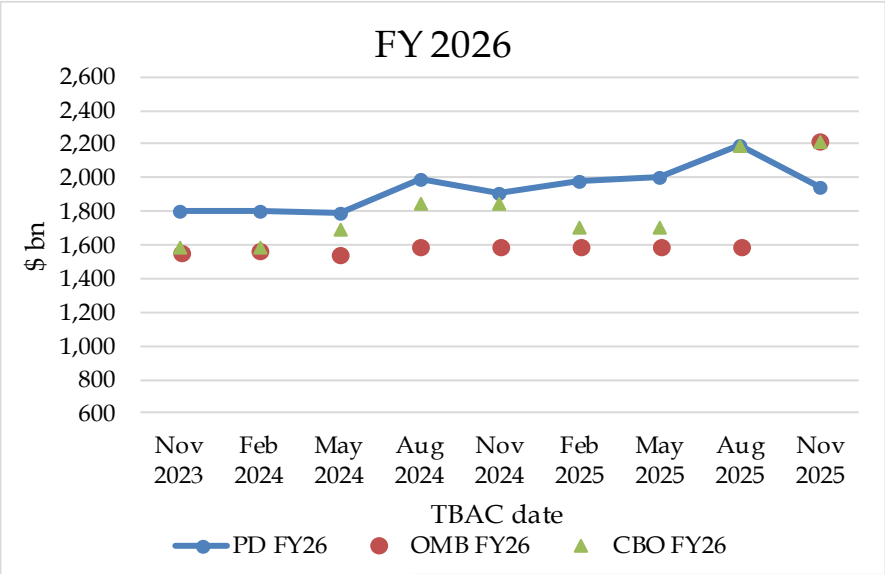
Primary dealers' median deficit estimates in October 2025 were lower relative to estimates they provided in July 2025, declining by \$106 billion in aggregate over the FY26-FY27 period.

- The latest OMB and CBO estimates in the table below are provided for reference.

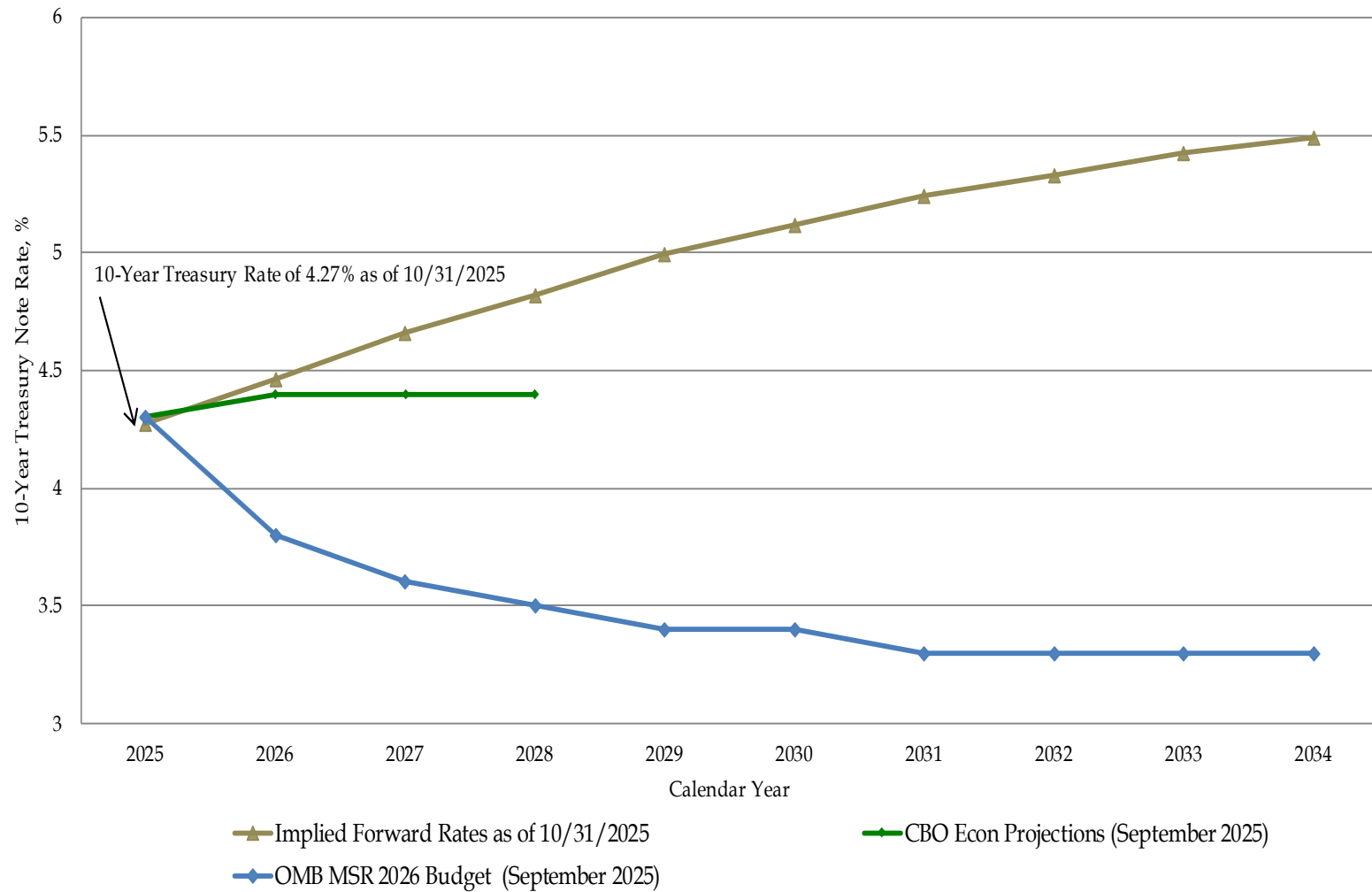
Deficit Estimates (\$ billion)	PD 25th Percentile	Primary Dealers (Median)	PD 75th Percentile	Change from Prior Quarter (Median)	OMB	CBO
FY 2026	1,880	1,940	2,020	-60	2,220	2,214
FY 2027	1,975	2,052	2,112	-46	1,973	2,323
FY 2028	2,013	2,130	2,231	NA	1,841	2,521
As of date	Oct-25	Oct-25	Oct-25		Sep-25	Aug-25

- OMB's projections are from Table 1 of "Mid-Session Review, Technical Supplement to the 2026 Budget," September 2025.
- CBO's deficit projections are from Table 1 of "Effects on Deficits and the Debt of Public Law 119-21 and of Making Certain Tax Policies in the Act Permanent," August 2025. CBO deficit estimates have been adjusted to account for the effects of the One Big Beautiful Bill, but not other factors such as tariff revenue.

Evolution of Median Primary Dealer, OMB, and CBO Deficit Estimates



Interest Rate Assumptions: 10-Year Treasury Note



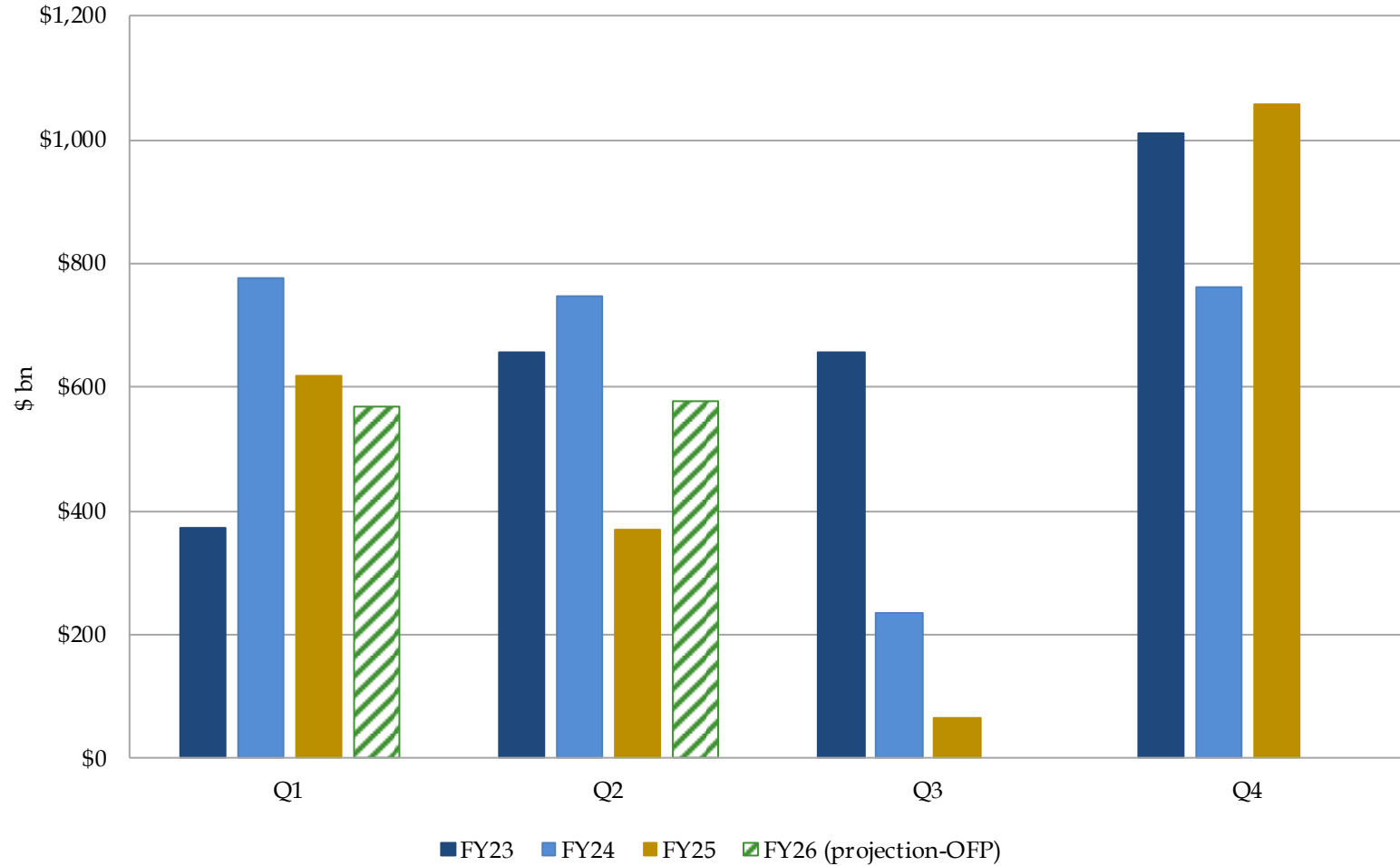
Section IV: Estimated Borrowing Needs and Financing Implications



Assumptions for Financing Section (pages 16 to 20)

- Portfolio and SOMA holdings as of 09/30/2025, unless otherwise noted (see slide 20).
- Estimates assume privately announced issuance sizes and patterns remain constant for nominal coupons, TIPS, and FRNs given the issuance sizes in effect in October 2025, while using total bills outstanding of ~\$6.40 trillion as of 09/30/2025, unless otherwise noted (see slide 20).
- The principal on the TIPS securities was accreted to each projection date based on market ZCIS levels as of 09/30/2025, unless otherwise noted (see slide 20).
- No attempt was made to account for future financing needs.
- **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 privately-held net marketable borrowing but, all else equal, when the securities mature and assuming the Fed does not redeem any maturing securities, this would increase the amount of cash raised for a given privately-held auction size by increasing the SOMA “add-on” amount. These borrowing estimates are based upon current law and do not include any assumptions for the impact of additional legislation that may be passed. Additionally, buybacks are not expected to significantly affect privately-held net marketable borrowing as new issuance replaces securities that are bought back.
- Liquidity support buybacks are assumed to be the same as actual liquidity support purchases from the previous calendar quarter. Cash management buybacks are also assumed to be the same as the most recent comparable calendar quarter. Since cash management buyback sizes vary from quarter to quarter due to changes in fiscal flows, the choice of the most recent comparable calendar quarter also varies.

Privately-Held Net Marketable Borrowing Outlook



Implied Bill Funding for the Current and Next Quarters Based on Recent Borrowing Estimates

Sources of Privately-Held Financing in FY26 Q1

October - December 2025	
Assuming Constant Coupon Issuance Sizes ¹	
Treasury Announced Net Marketable Borrowing ²	569
Net Coupon Issuance	451
Assumed Buybacks ³	49
Implied Change in Bills	167

Sources of Privately-Held Financing in FY26 Q2

January - March 2026	
Assuming Constant Coupon Issuance Sizes ¹	
Treasury Announced Net Marketable Borrowing ²	578
Net Coupon Issuance	361
Assumed Buybacks ³	54
Implied Change in Bills	271

Security	October - December 2025 Coupon Issuance			Fiscal Year-to-Date Coupon Issuance			Security	January - March 2026 Coupon Issuance			Fiscal Year-to-Date Coupon Issuance		
	Gross	Maturing	Net	Gross	Maturing	Net		Gross	Maturing	Net	Gross	Maturing	Net
2-Year FRN	86	78	8	86	78	8	2-Year FRN	86	84	2	172	162	10
2-Year	207	149	58	207	149	58	2-Year	207	181	26	414	331	83
3-Year	174	120	54	174	120	54	3-Year	174	113	61	348	233	115
5-Year	210	154	56	210	154	56	5-Year	210	163	47	420	317	103
7-Year	132	60	72	132	60	72	7-Year	132	76	56	264	135	129
10-Year	120	58	62	120	58	62	10-Year	120	48	72	240	107	133
20-Year	42	0	42	42	0	42	20-Year	42	0	42	84	0	84
30-Year	69	0	69	69	0	69	30-Year	69	6	63	138	6	132
5-Year TIPS	50	40	10	50	40	10	5-Year TIPS	0	0	0	50	40	10
10-Year TIPS	19	0	19	19	0	19	10-Year TIPS	40	37	3	59	37	22
20-Year TIPS ⁴	0	0	0	0	0	0	20-Year TIPS ⁴	0	18	(18)	0	18	(18)
30-Year TIPS	0	0	0	0	0	0	30-Year TIPS	9	0	9	9	0	9
Coupon Subtotal	1,109	658	451	1,109	658	451	Coupon Subtotal	1,089	728	361	2,198	1,386	812

¹ Keeping announced issuance sizes and patterns constant for nominal coupons, TIPS, and FRNs.

² Assumes end-of-December 2025 and end-of-March 2026 cash balances of \$850 billion and \$850 billion, respectively, versus end-of-September 2025 cash balance of \$891 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>

³ Assumed buyback amounts for liquidity support are based on the most recent actuals (Aug25 to Oct25). Assumed buyback amounts for cash management are based on actuals from the most recent comparable quarter (June25) for FY26 Q1 and actuals from the previous calendar quarter (Mar25) for FY26 Q2.

⁴ Treasury is currently not issuing 20-year TIPS.

Longer-Term Privately-Held Net Marketable Borrowing Estimates and SOMA Redemption Assumptions

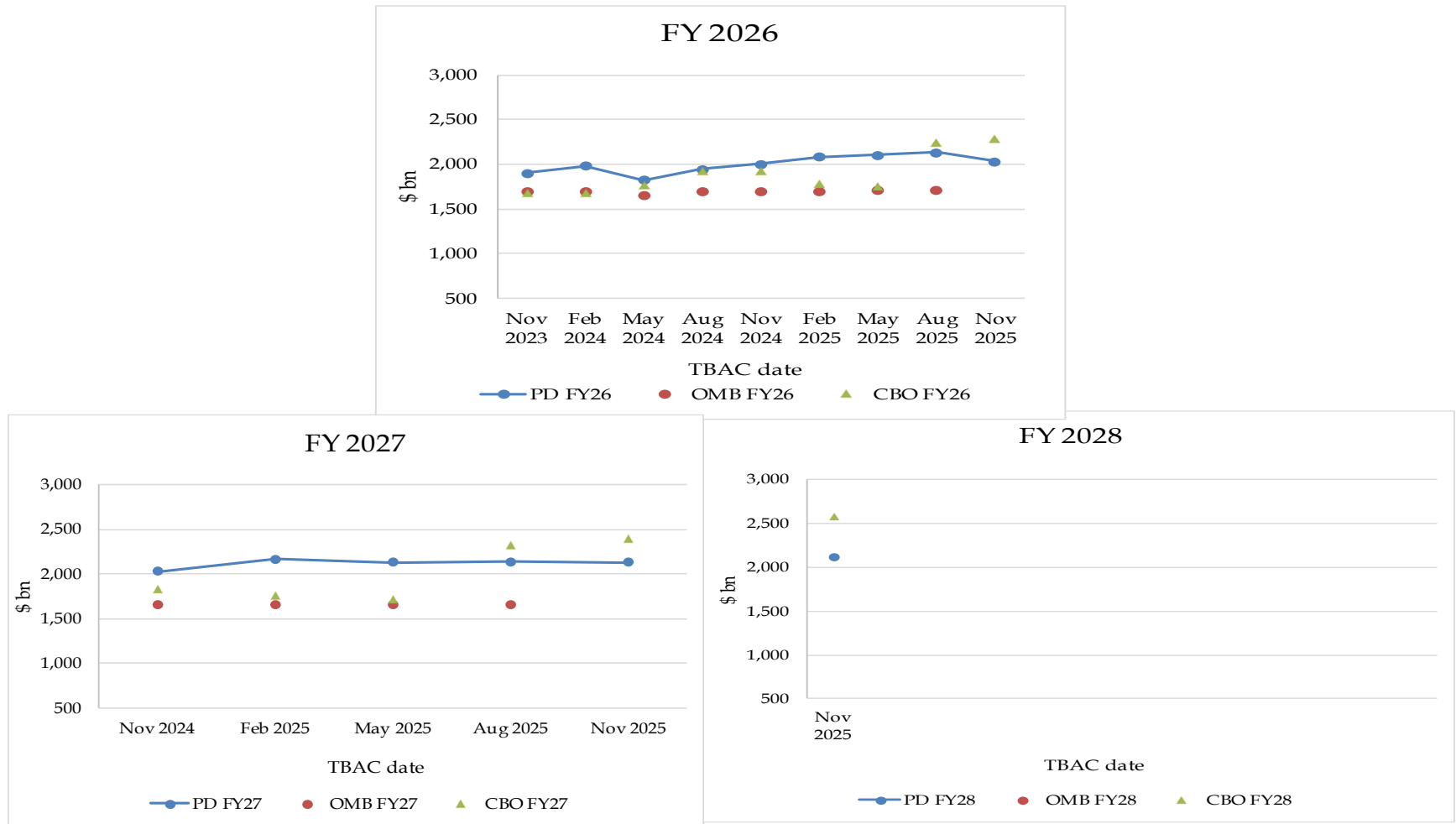
FY 2026-2028 Deficits and Privately-Held Net Marketable Borrowing Estimates, in \$ billions

	Primary Dealer			OMB	CBO
	25th	Median	75th		
FY 2026 Deficit	1,880	1,940	2,020	2,220	2,214
FY 2027 Deficit	1,975	2,052	2,112	1,973	2,323
FY 2028 Deficit	2,013	2,130	2,231	1,841	2,521
FY 2026 SOMA Redemption	5	5	15		
FY 2027 SOMA Redemption	0	0	0		
FY 2028 SOMA Redemption	0	0	0		
FY 2026 Privately-Held Net Marketable Borrowing*	1,850	2,034	2,140		2,286
FY 2027 Privately-Held Net Marketable Borrowing*	1,950	2,129	2,191		2,389
FY 2028 Privately-Held Net Marketable Borrowing*	2,000	2,120	2,267		2,575

Estimates as of:	Oct-25	Sep-25	Aug-25
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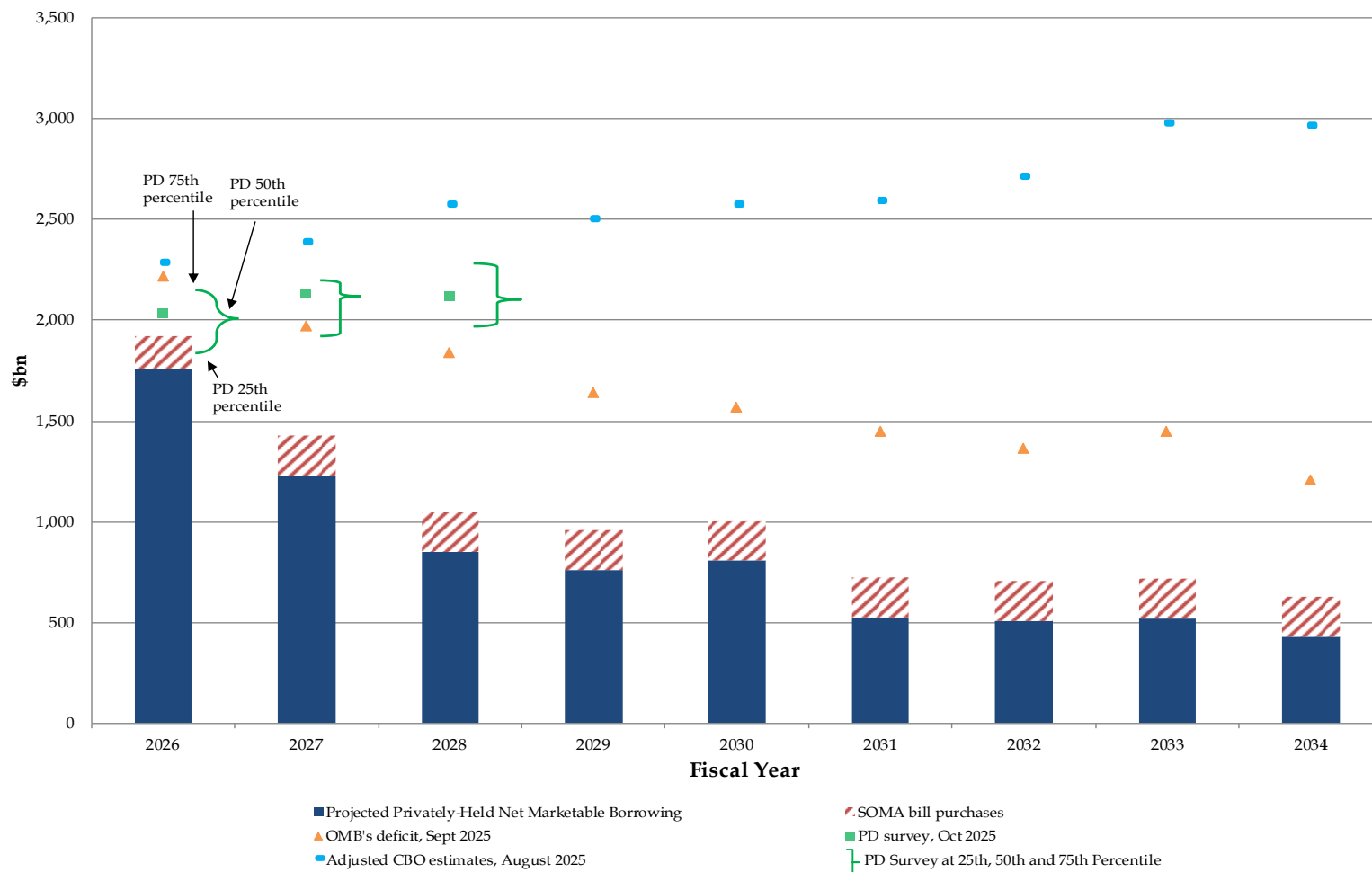
- * All privately-held net marketable borrowing estimates are “normalized” using:
- 1) the median Primary Dealer’s estimates for SOMA redemptions, and
 - 2) assumed Fiscal Year 2026 cash balance of \$850 billion, held constant in out years.
- OMB’s deficit projections are from Table 1 of “Mid-Session Review, Technical Supplement to the 2026 Budget,” September 2025. OMB’s borrowing estimates are not available for the November 2025 refunding.
 - CBO’s deficit projections are from Table 1 of “Effects on Deficits and the Debt of Public Law 119-21 and of Making Certain Tax Policies in the Act Permanent,” August 2025. CBO deficit estimates have been adjusted to account for the effects of the One Big Beautiful Bill, but not other factors such as tariff revenue. CBO’s total borrowing projections are derived by applying the same changes from deficit to the CBO’s January 2025 total borrowing estimates.

Evolution of Median Primary Dealer, OMB, and CBO Privately-Held Net Marketable Borrowing Estimates*



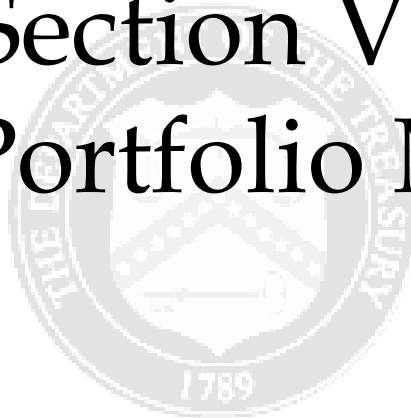
* Note that CBO's deficit projections are from Table 1 of "Effects on Deficits and the Debt of Public Law 119-21 and of Making Certain Tax Policies in the Act Permanent," August 2025. CBO deficit estimates have been adjusted to account for the effects of the One Big Beautiful Bill, but not other factors such as tariff revenue. CBO's total borrowing projections are derived by applying the same changes from deficit to the CBO's January 2025 total borrowing estimates. In addition, CBO privately-held net marketable borrowing estimates are calculated by adjusting their respective deficit estimates using dealer's median SOMA redemption estimates. Furthermore, all the PD, CBO privately-held marketable borrowing estimates are normalized with the same cash balance changes. See slide 18 for details. OMB's borrowing estimates are not available for the November 2025 refunding.

Projected Privately-Held Net Marketable Borrowing



*Treasury's latest primary dealer survey median/interquartile range estimates can be found on page 18. CBO borrowing estimates are derived by adjusting its January 2025 total borrowing estimates with the same changes in deficit sourced from Table 1 of "Effects on Deficits and the Debt of Public Law 119-21 and of Making Certain Tax Policies in the Act Permanent," August 2025. CBO deficit estimates have been adjusted to account for the effects of the One Big Beautiful Bill, but not other factors such as tariff revenue. CBO borrowing estimates from FY26 to FY28 are normalized to privately-held net marketable borrowing after adding PD survey median SOMA redemption assumptions for FY26/27/28. In addition, all privately-held net marketable borrowing estimates are normalized with a cash balance assumption of \$850 billion. OMB's deficit projections are from Table 1 of "Mid-Session Review, Technical Supplement to the 2026 Budget," September 2025. OMB's borrowing estimates are not available for the November 2025 refunding. SOMA bill purchases are estimated based on recent MBS principal payments.

Section V: Select Portfolio Metrics



Note: Several of the portfolio metrics charts that follow include three years of projections.

These projections are hypothetical and are meant for illustrative purposes only. The projections contained in these charts should not be interpreted as representing any future policy decisions regarding Treasury financing.

Projections illustrate how various portfolio metrics could evolve under three hypothetical financing scenarios. The scenarios were chosen to illustrate a potential range of portfolio metric outcomes based on hypothetical issuance choices.

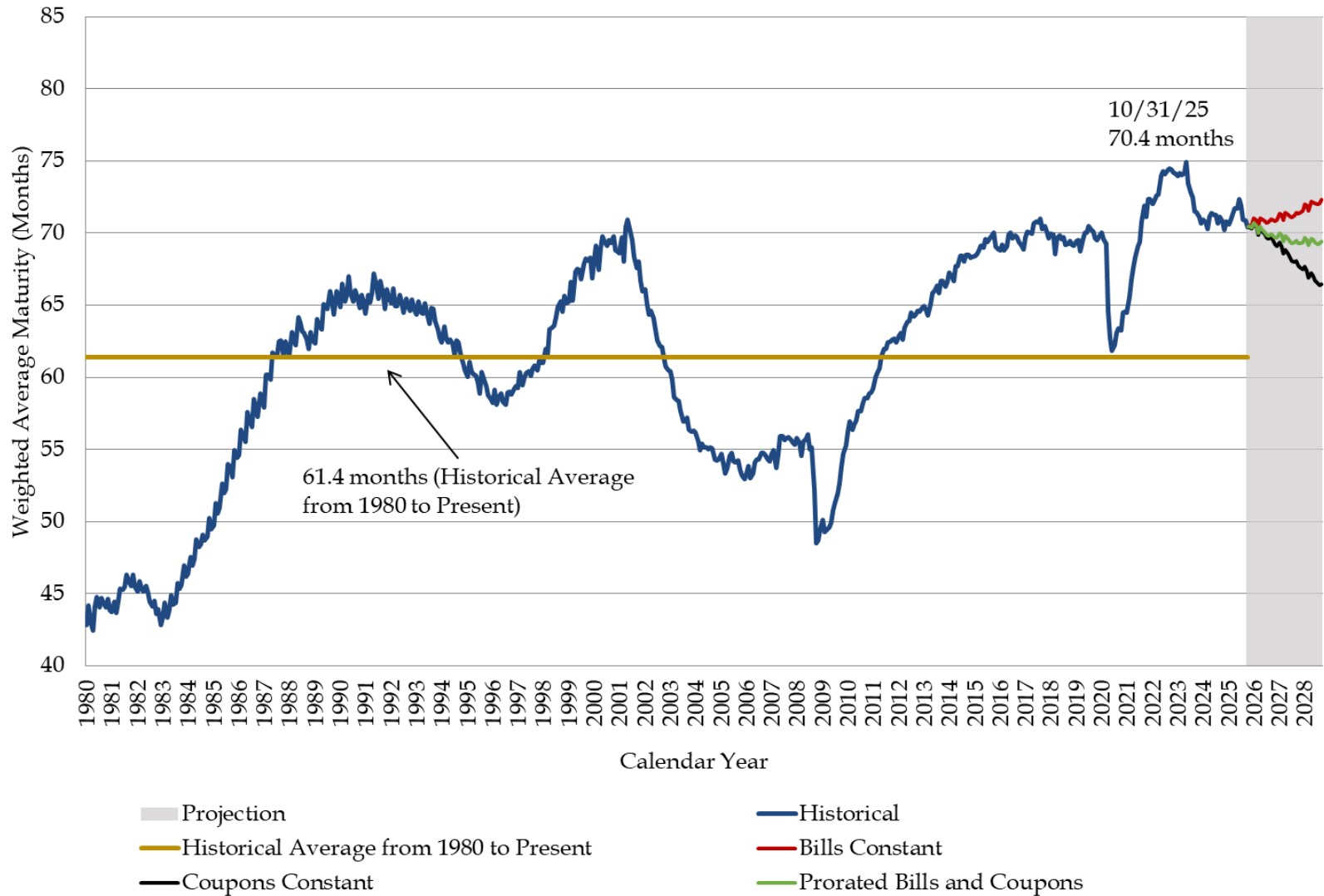
The scenarios are:

- 1) ***“Coupons Constant”***: Treasury maintains **coupon, FRN, and TIPS auction sizes constant** as of October 2025 and addresses any changes in financing needs by only increasing or decreasing T-bill auction sizes;
- 2) ***“Bills Constant”***: Treasury maintains **T-bills aggregate supply constant** at \$6.6 trillion as of 10/31/2025 and increases or decreases coupon, FRN, and TIPS auction sizes in response to financing needs in a manner that maintains current issuance proportions going forward;
- 3) ***“Prorated Bills and Coupons”***: Treasury maintains **T-bills share constant** at 22.0% as of 10/31/2025 and addresses any changes in financing needs by pro rata increasing or decreasing coupon, FRN, and TIPS auction sizes.

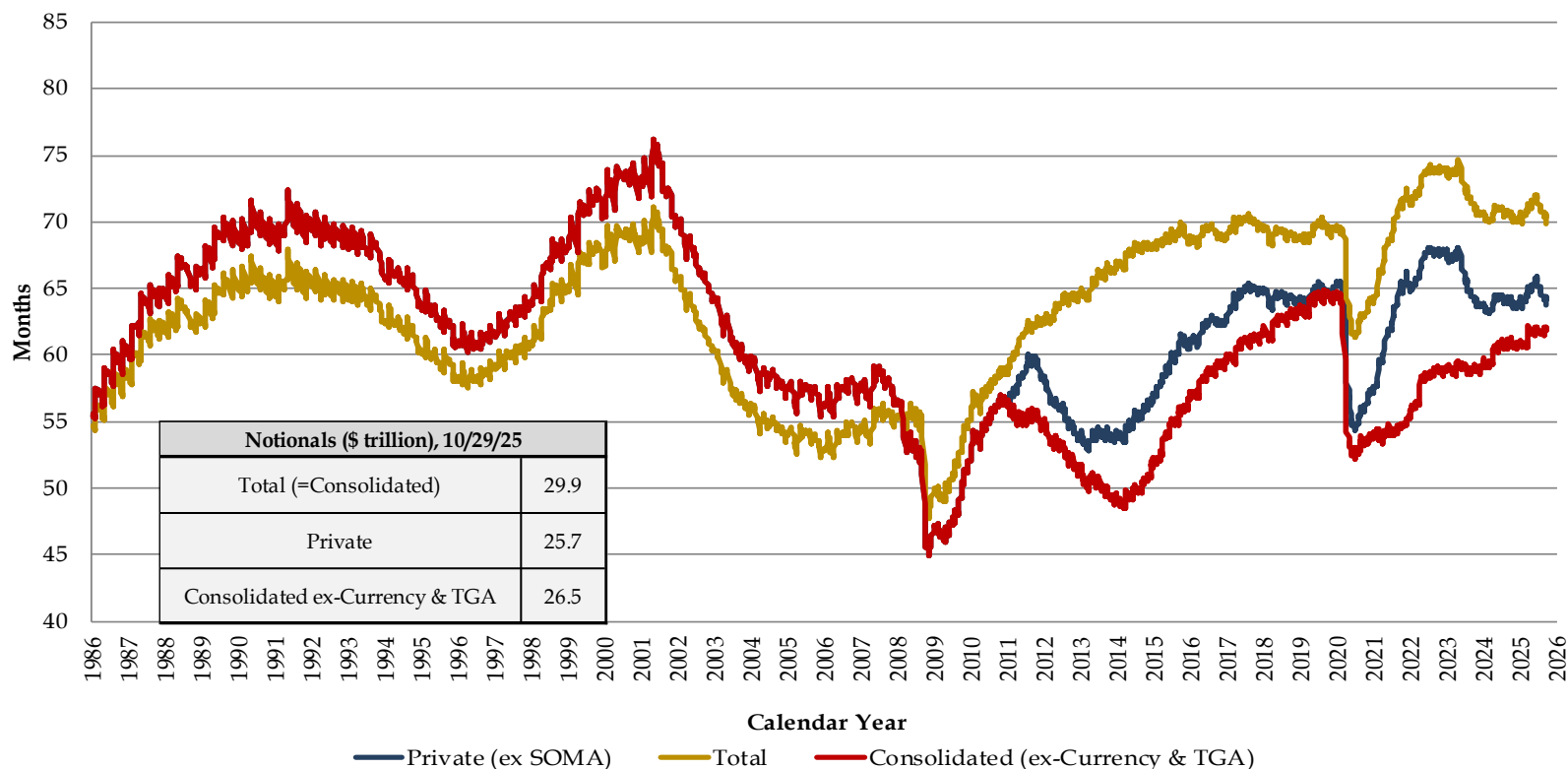
Privately-held net marketable borrowing needs used in the projections section of these charts are proxied using median primary dealer estimates for FY26, FY27 & FY28 (see page 18).

Buybacks are included in these projections using the same assumptions as Section IV.

Weighted Average Maturity of Marketable Debt Outstanding



Consolidated WANRR Calculation*

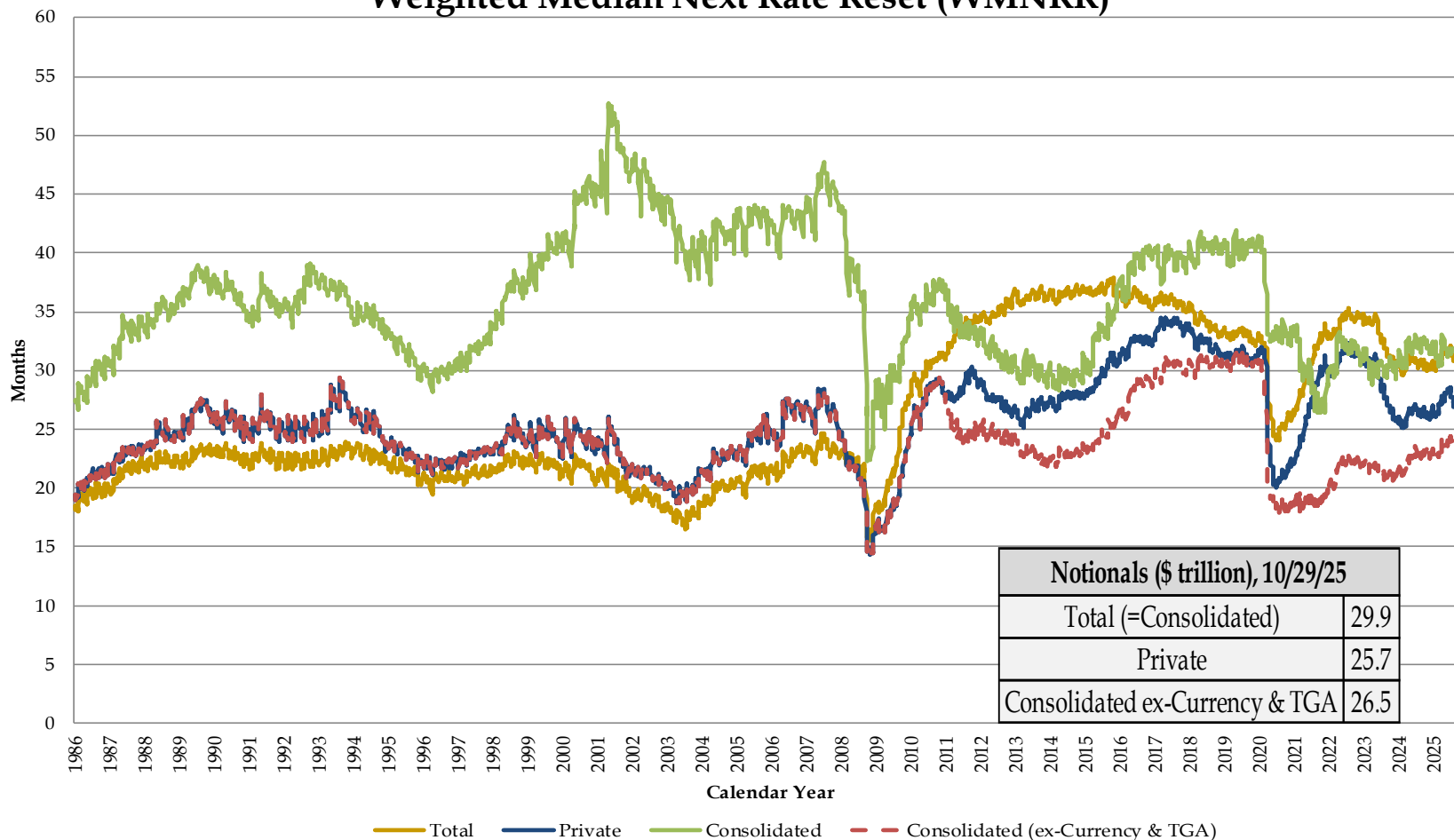


* Weighted Average Next Rate Reset (WANRR) is a “Weighted Average Maturity” metric that attempts to adjust for the floating rate aspect of some Treasury debt. The WANRR is the average time until the outstanding debt’s interest rate is set to a new interest rate. For bills and fixed rate notes and bonds, the next rate reset is equal to the maturity date.

In contrast, for floating rate obligations, the time between the next rate reset date or maturity date is examined and the shorter period is used in the calculation.

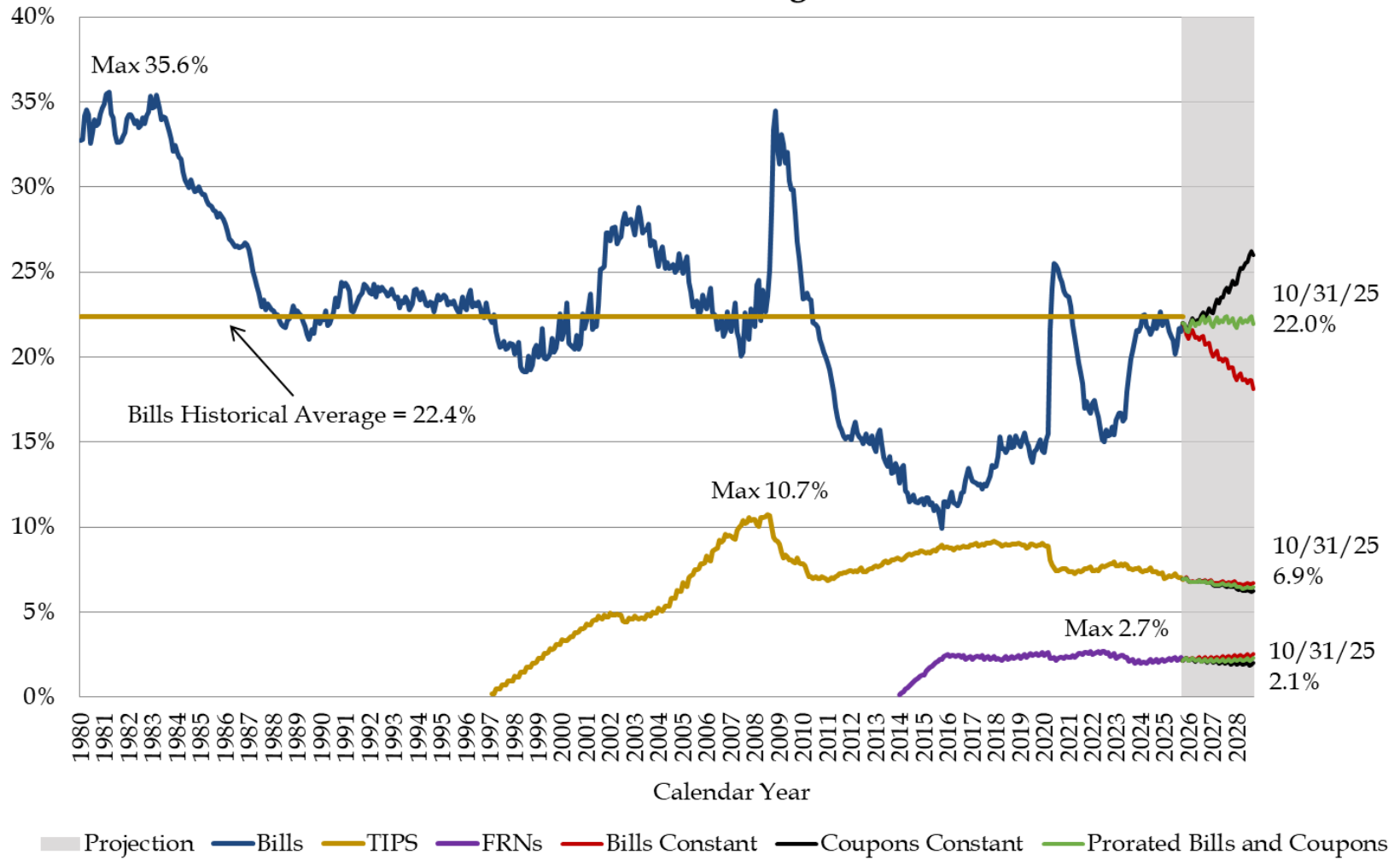
The consolidated outstanding debt is defined as the private amount plus SOMA Treasury securities holdings less currency in circulation and the size of the Treasury General Account (TGA). In this calculation, SOMA Treasury holdings greater than the sum of the level of currency in circulation and the size of the TGA is treated as if it has a daily rate reset.

Weighted Median Next Rate Reset (WMNRR)*

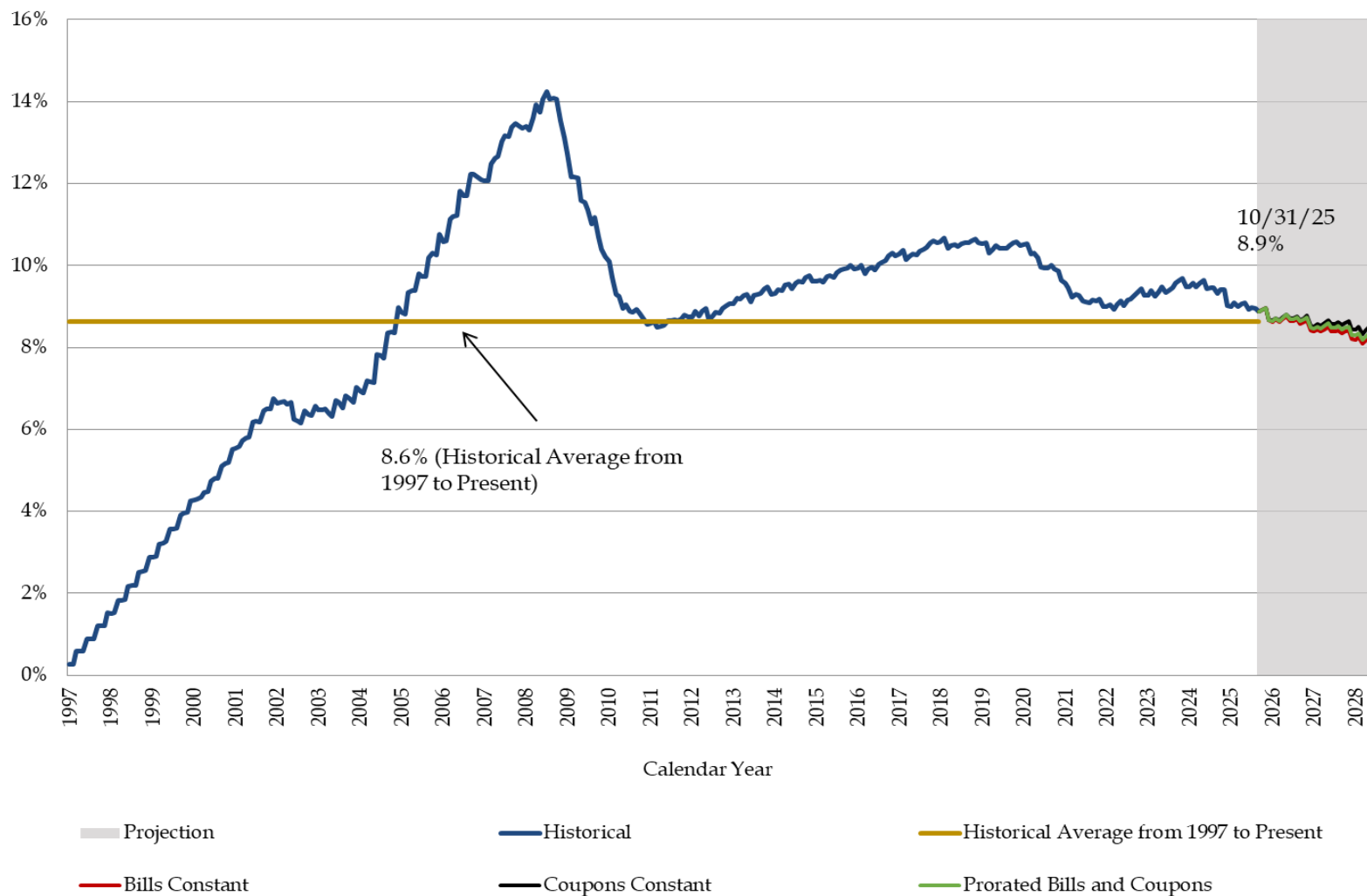


*Weighted Median Next Rate Reset (WMNRR) of the Treasury portfolio (Total or Private) is the time, in months, by which half the portfolio by current-face is scheduled to mature (or be subject to rate-reset for FRNs). In most cases no existing tenor/coupon-date will demarcate exactly 50% of cumulative-notional; as such, linear interpolation between two nearest tenors is used. WMNRR of the Consolidated portfolio is calculated in the same manner, but with SOMA Treasury holdings netted-out, against combined non-interest-bearing liabilities of currency in circulation & the size of the TGA (treated as having a de facto infinite next-reset date) and the remainder, as applicable, against reserve balances and RRP (considered to have a one-day next-reset). WMNRR Consolidated (ex-Currency & TGA) reflects the WMNRR of the consolidated portfolio but excluding that portion of SOMA Treasury holdings implicitly financed by the currency in circulation and the size of the TGA; this is equivalent to Privately-held Treasuries outstanding + SOMA Treasury holdings, less Currency & TGA balance.

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



TIPS Outstanding as a Percentage of Total Coupon Bearing Securities



Measures of Treasury Bill Supply

Total Bills Outstanding/Nominal GDP



Total Bills Outstanding/Commercial Bank Deposits



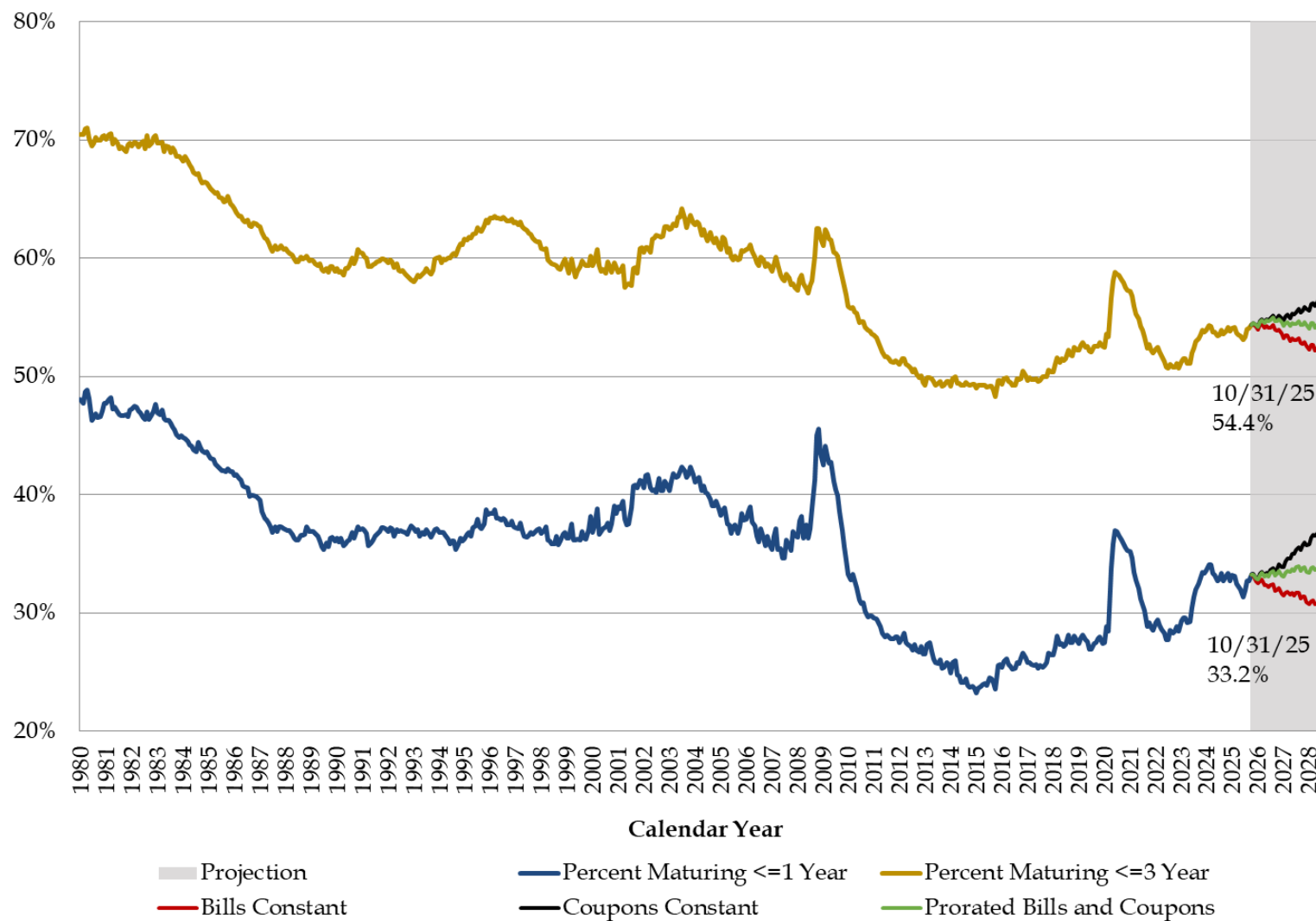
Total Bills Outstanding/Total MMF AUM



Total Bills Outstanding/Federal Reserve Liabilities ex. TGA



Treasury Maturity Profile

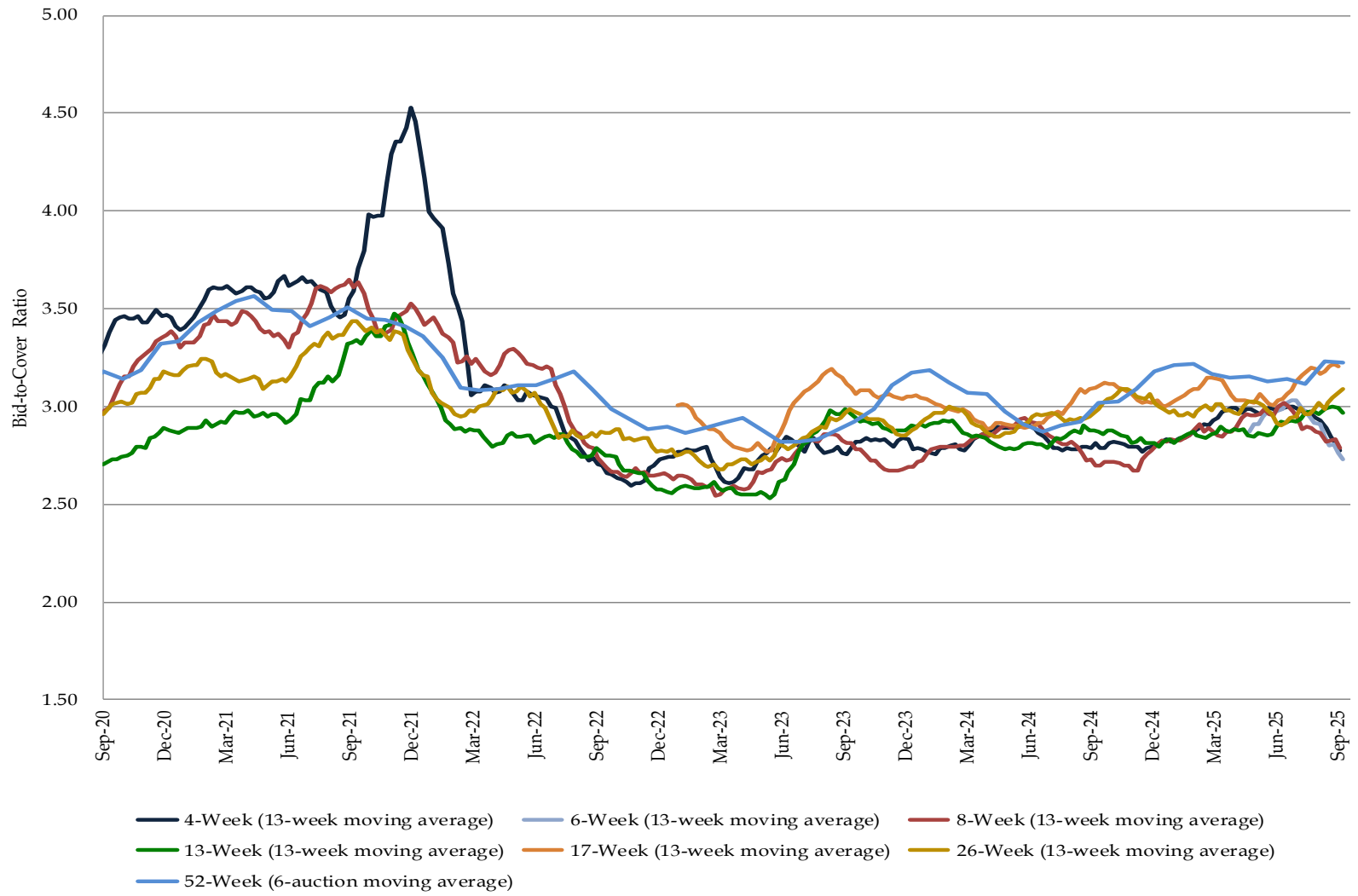


Section VI:

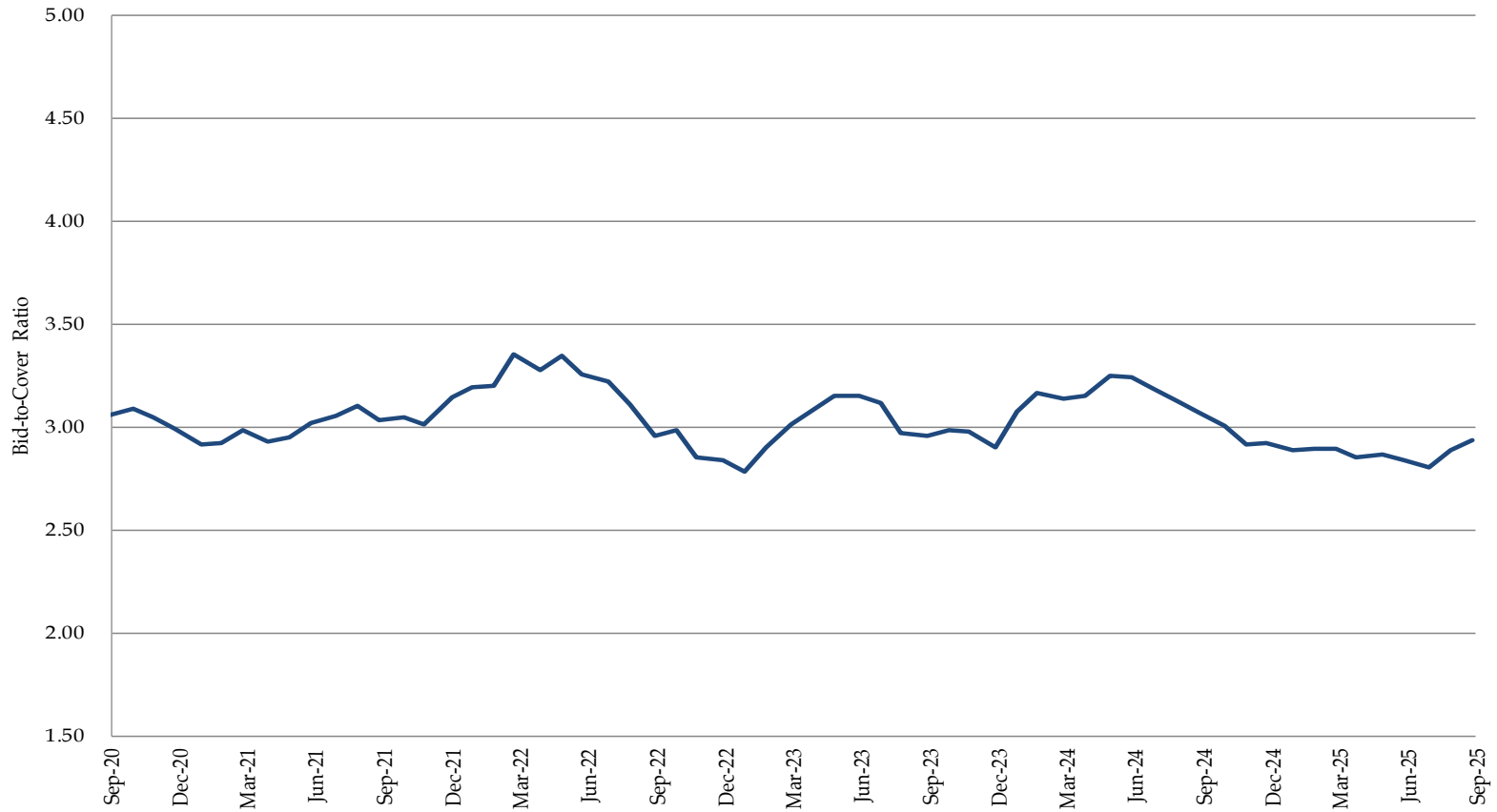
Select Demand Metrics

Bid-to-Cover Data, Investor Class Data,
Direct & Primary Dealer Awards, and Foreign Demand

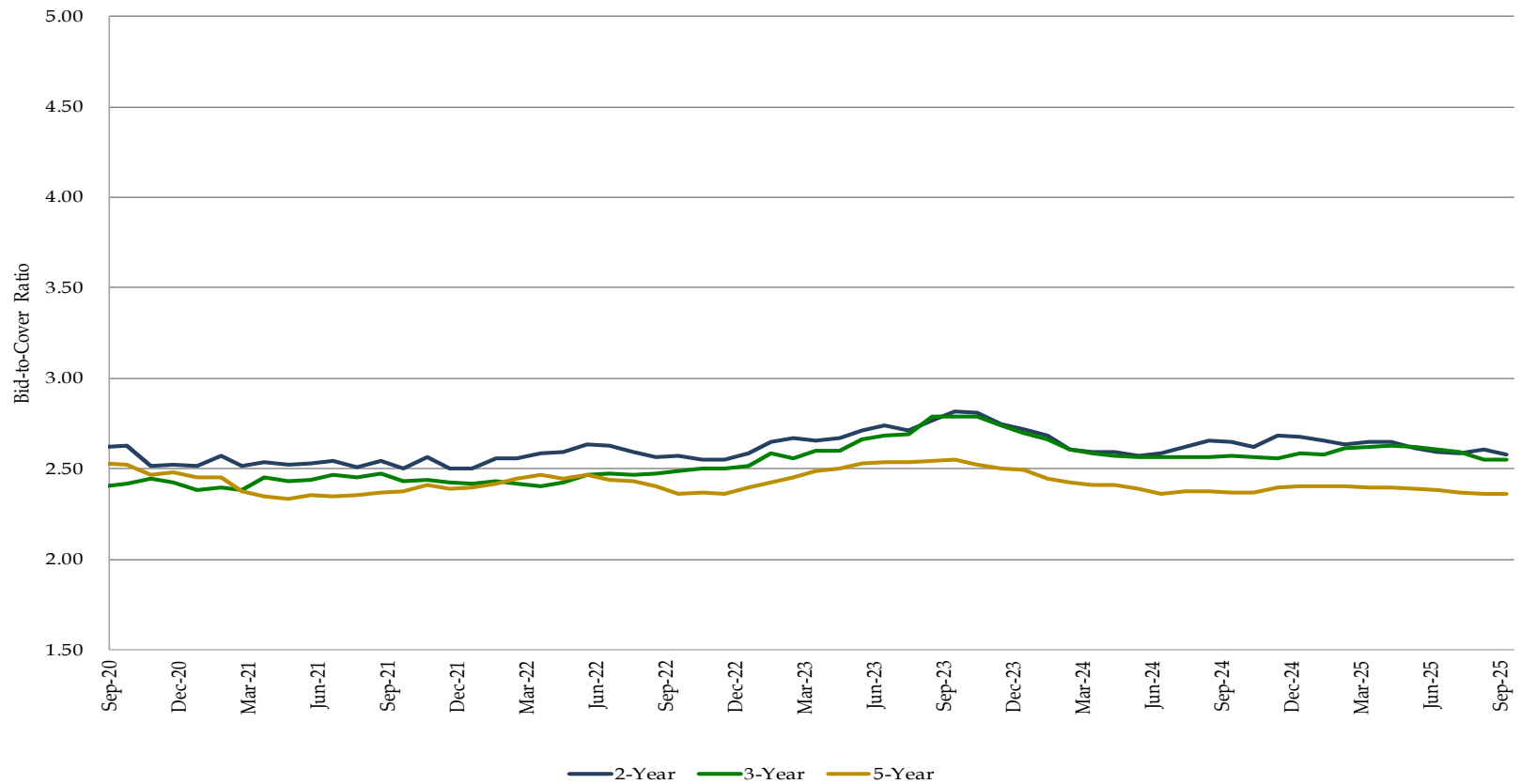
Bid-to-Cover Ratios for Treasury Bills



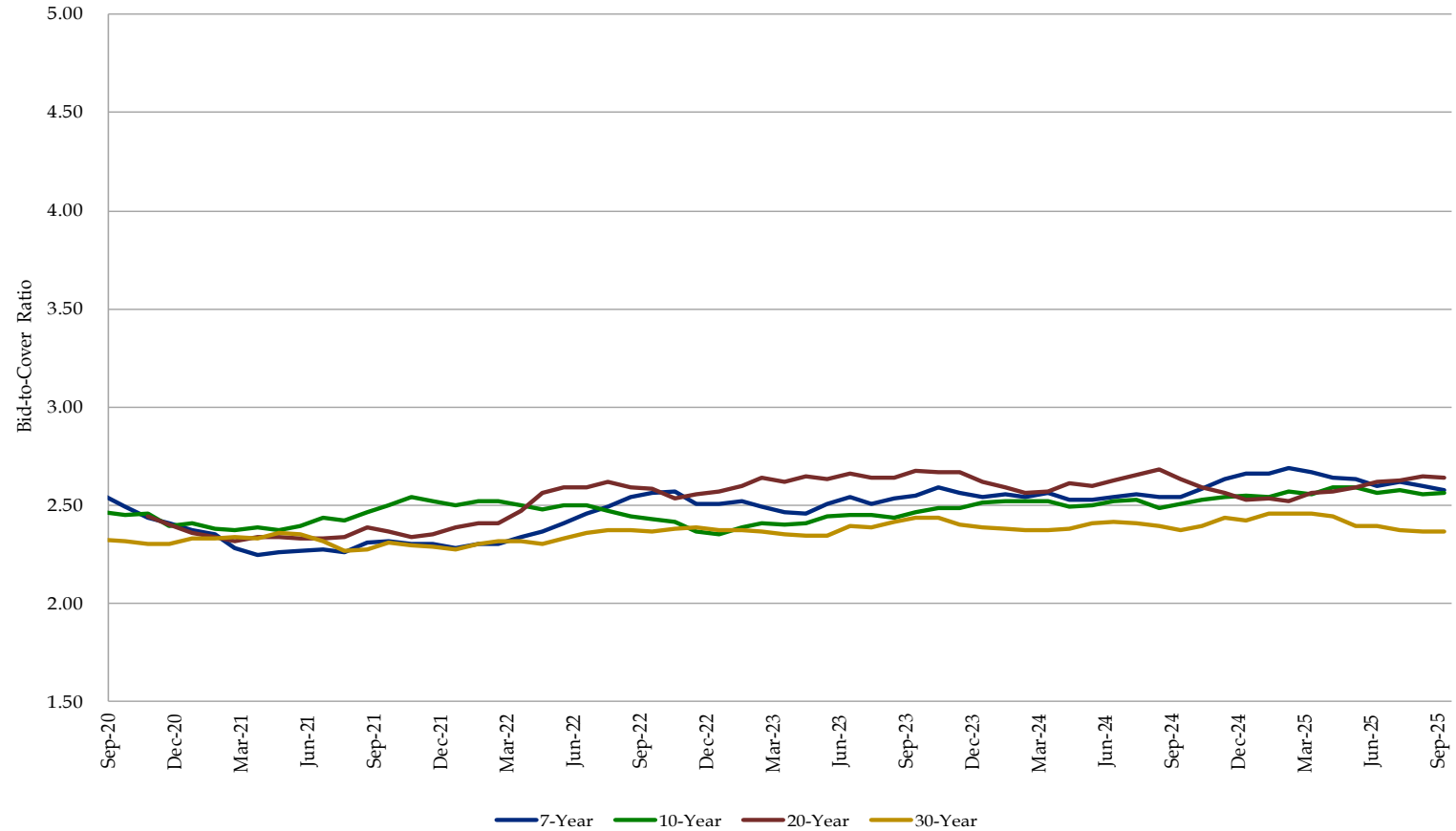
Bid-to-Cover Ratios for FRNs (6-Month Moving Average)



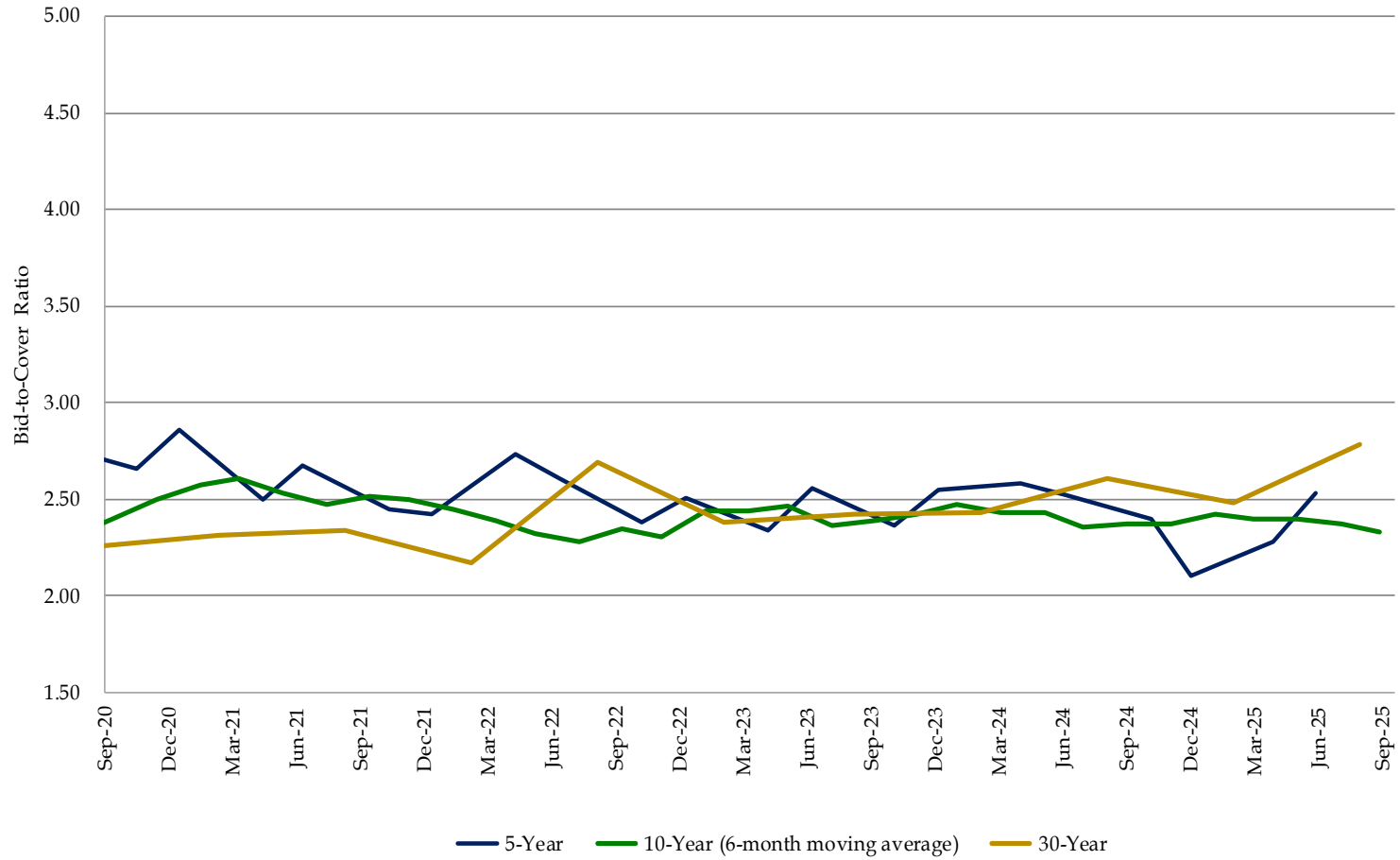
Bid-to-Cover Ratios for 2-, 3-, and 5-Year Nominal Securities (6-Month Moving Average)



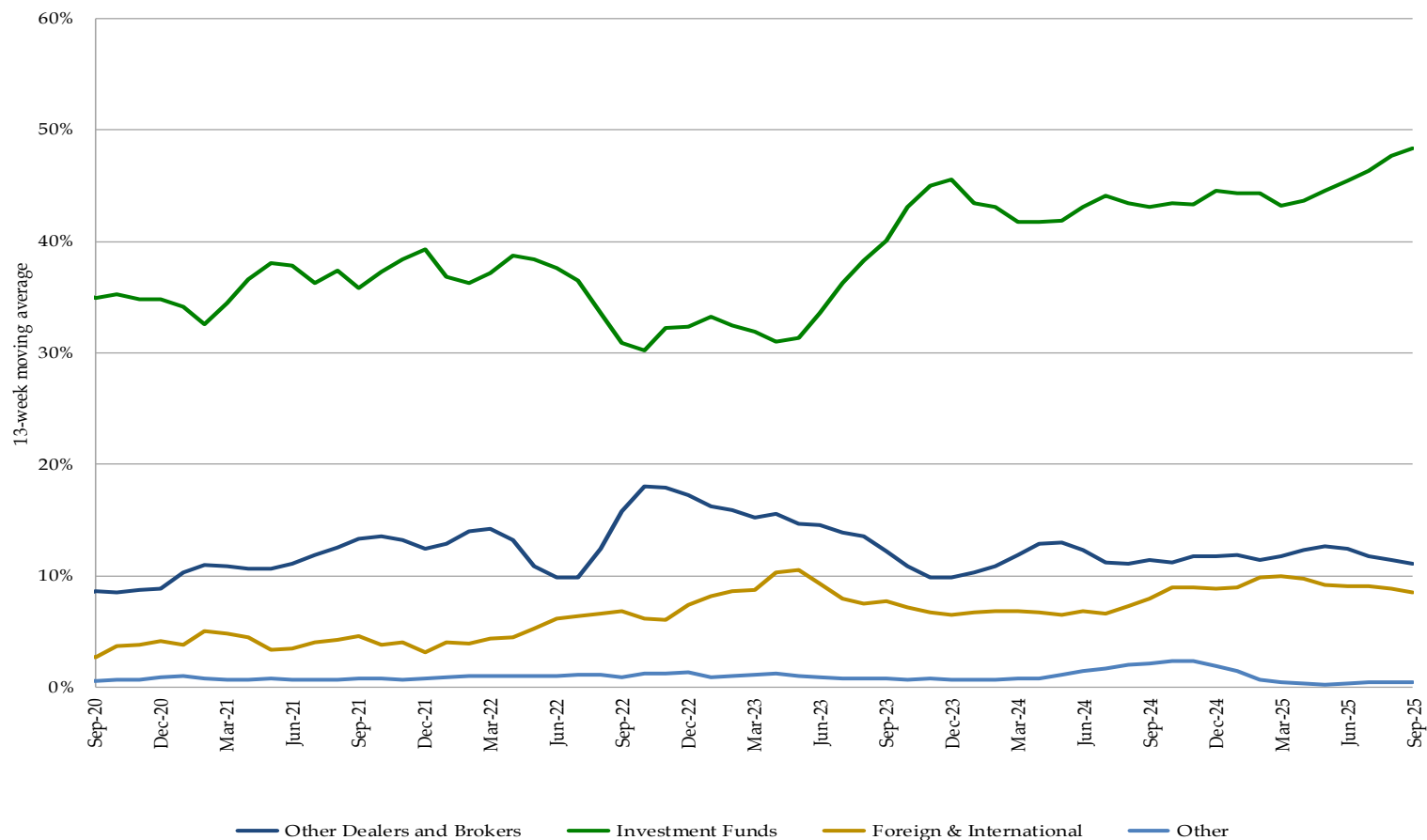
Bid-to-Cover Ratios for 7-, 10-, 20-, and 30-Year Nominal Securities (6-Month Moving Average)



Bid-to-Cover Ratios for TIPS

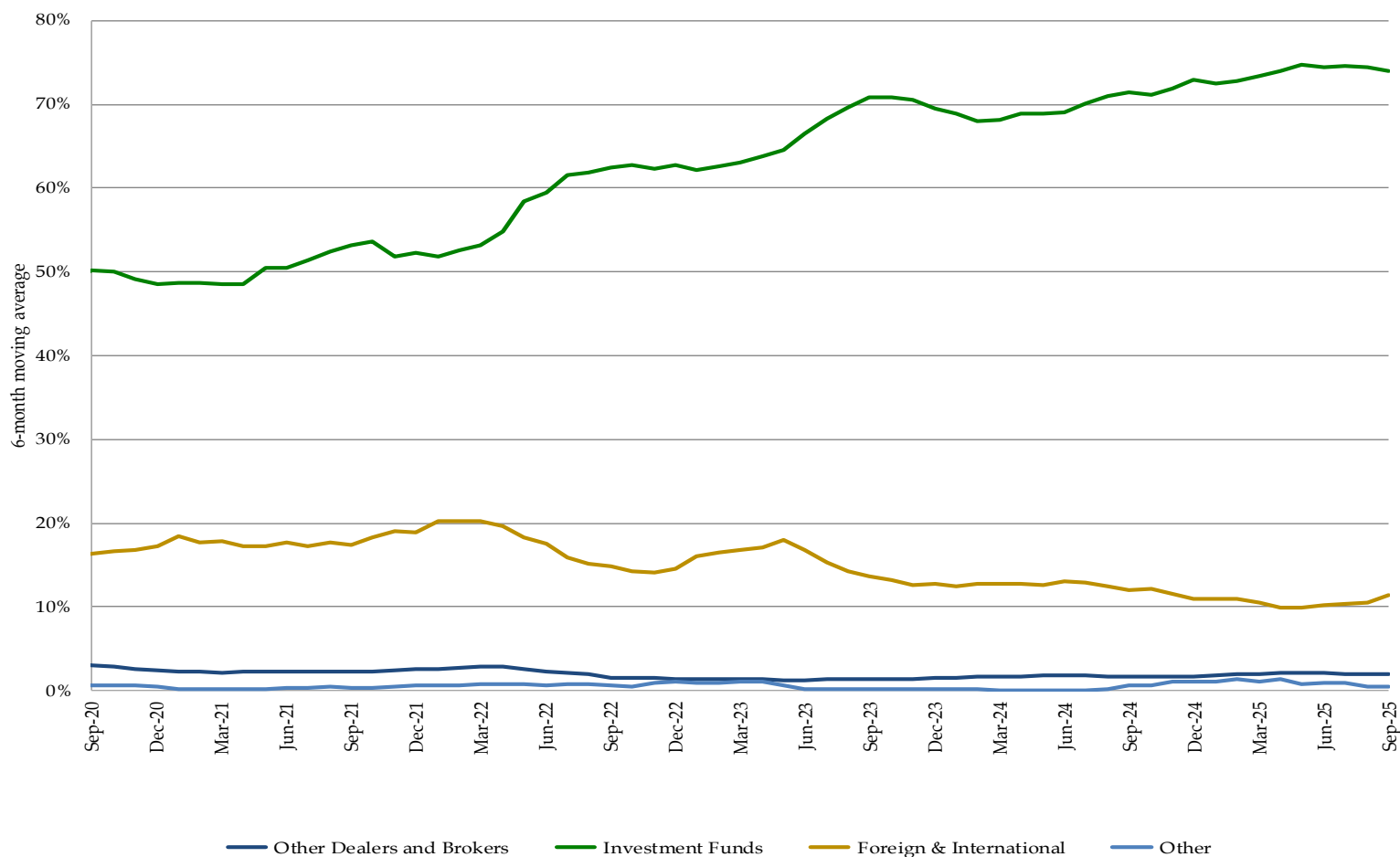


Percent Awarded in Bill Auctions by Investor Class (13-Week Moving Average)



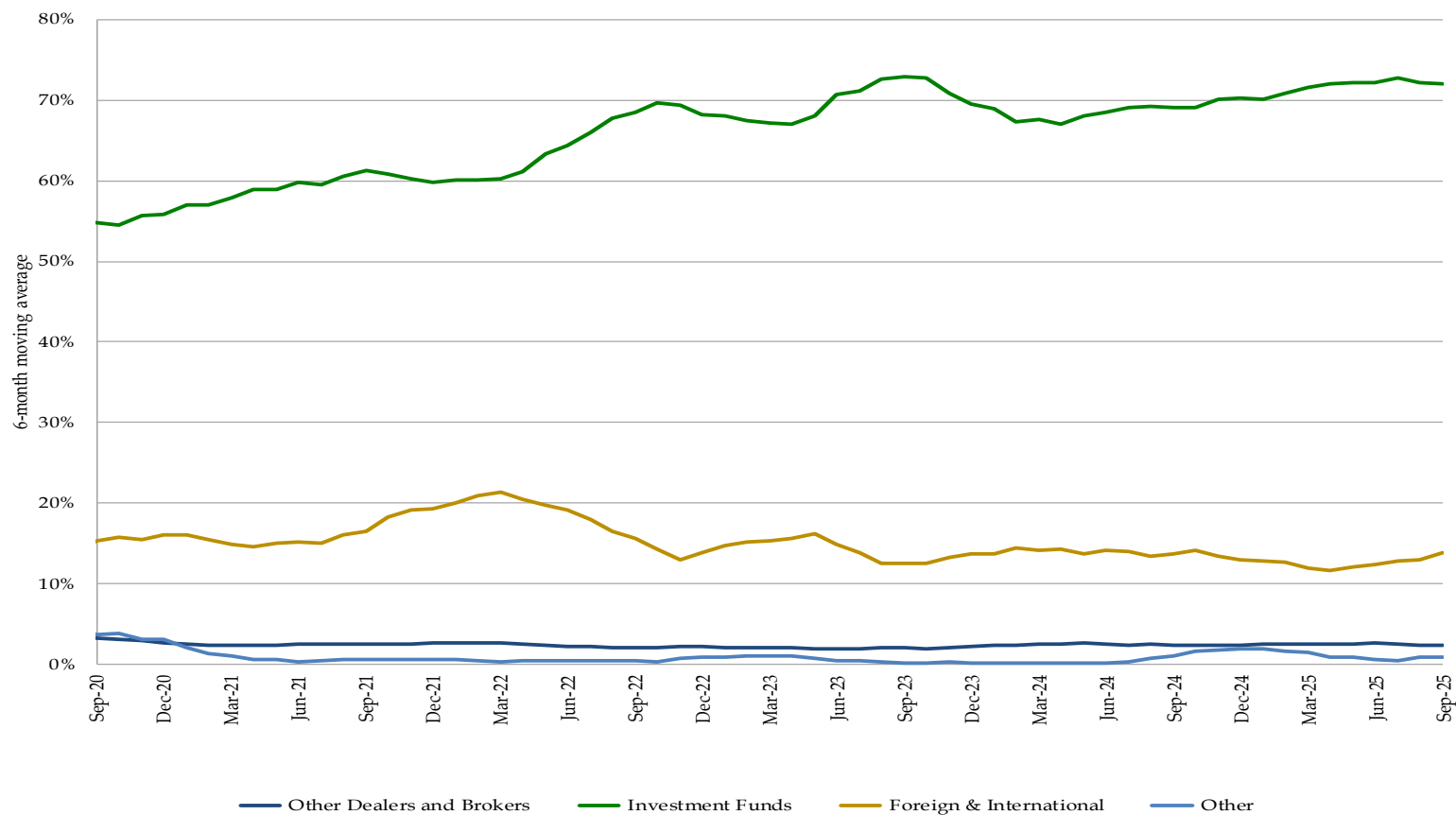
Excludes SOMA add-ons. The “Other” category includes categories that are each less than 5%, which include Depository Institutions, Individuals, Pension and Insurance.

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



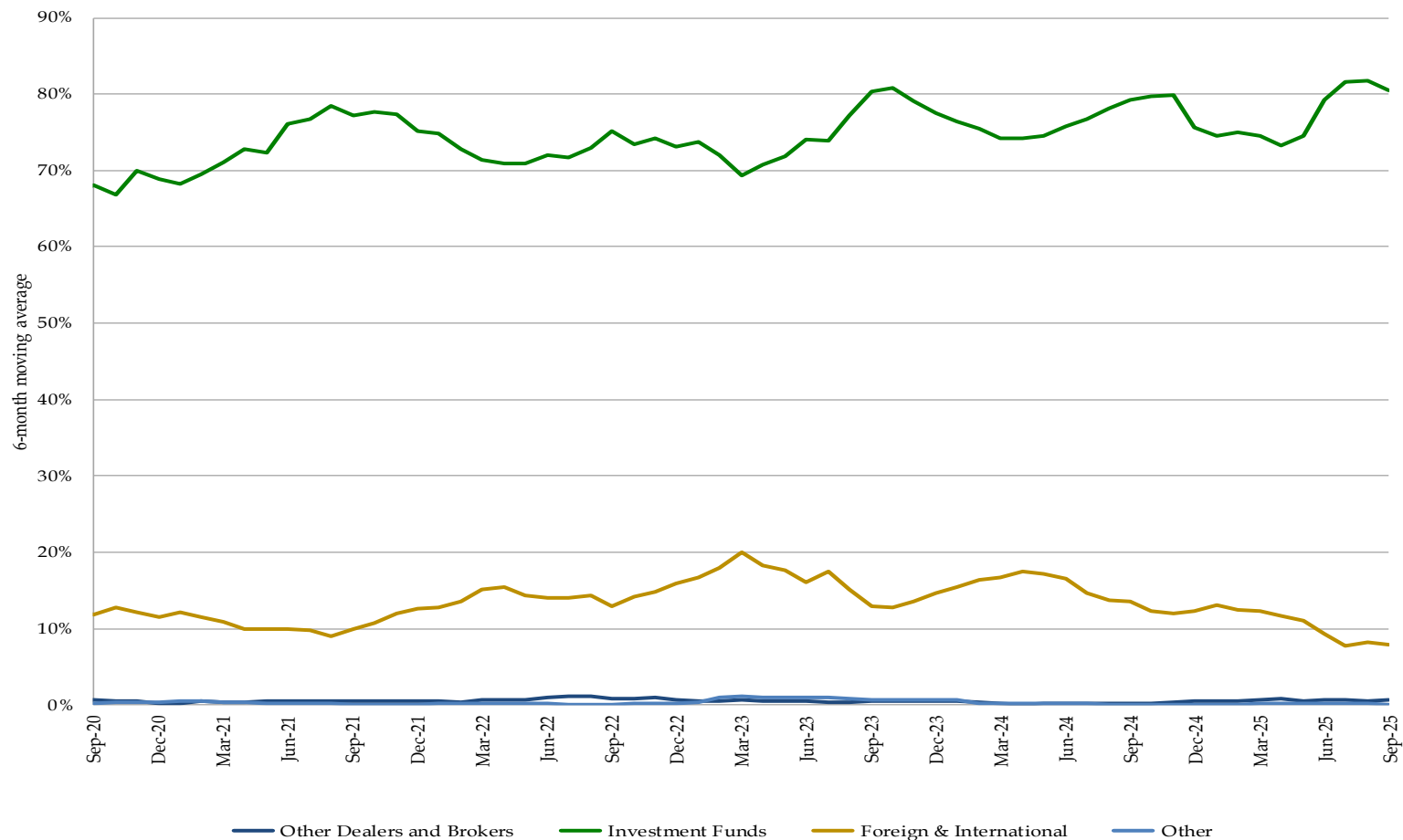
Excludes SOMA add-ons. The “Other” category includes categories that are each less than 5%, which include Depository Institutions, Individuals, Pension and Insurance.

Percent Awarded in 7-, 10-, 20-, 30-Year Nominal Security Auctions by Investor Class (6-Month Moving Average)



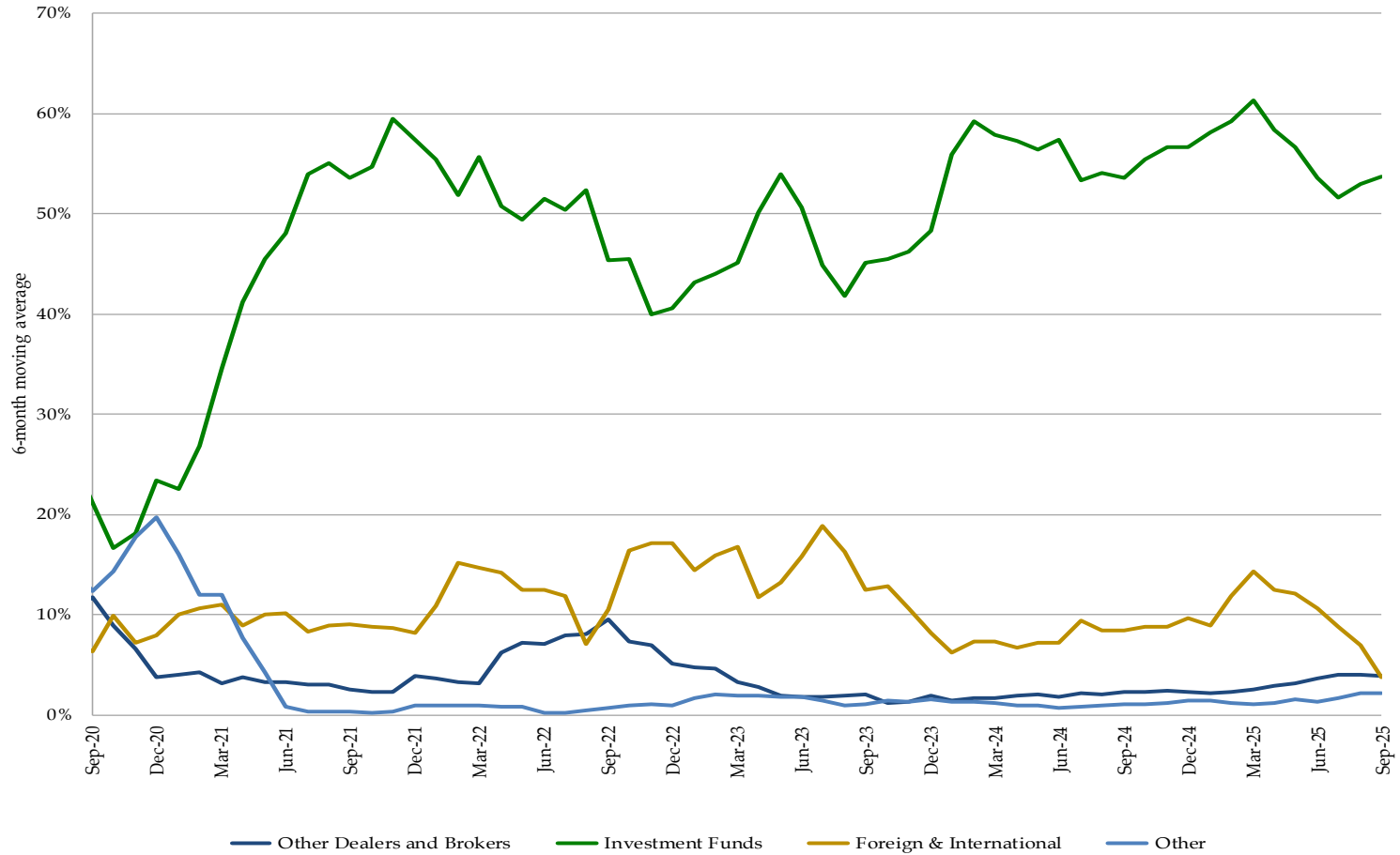
Excludes SOMA add-ons. The “Other” category includes categories that are each less than 5%, which include Depository Institutions, Individuals, Pension and Insurance.

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



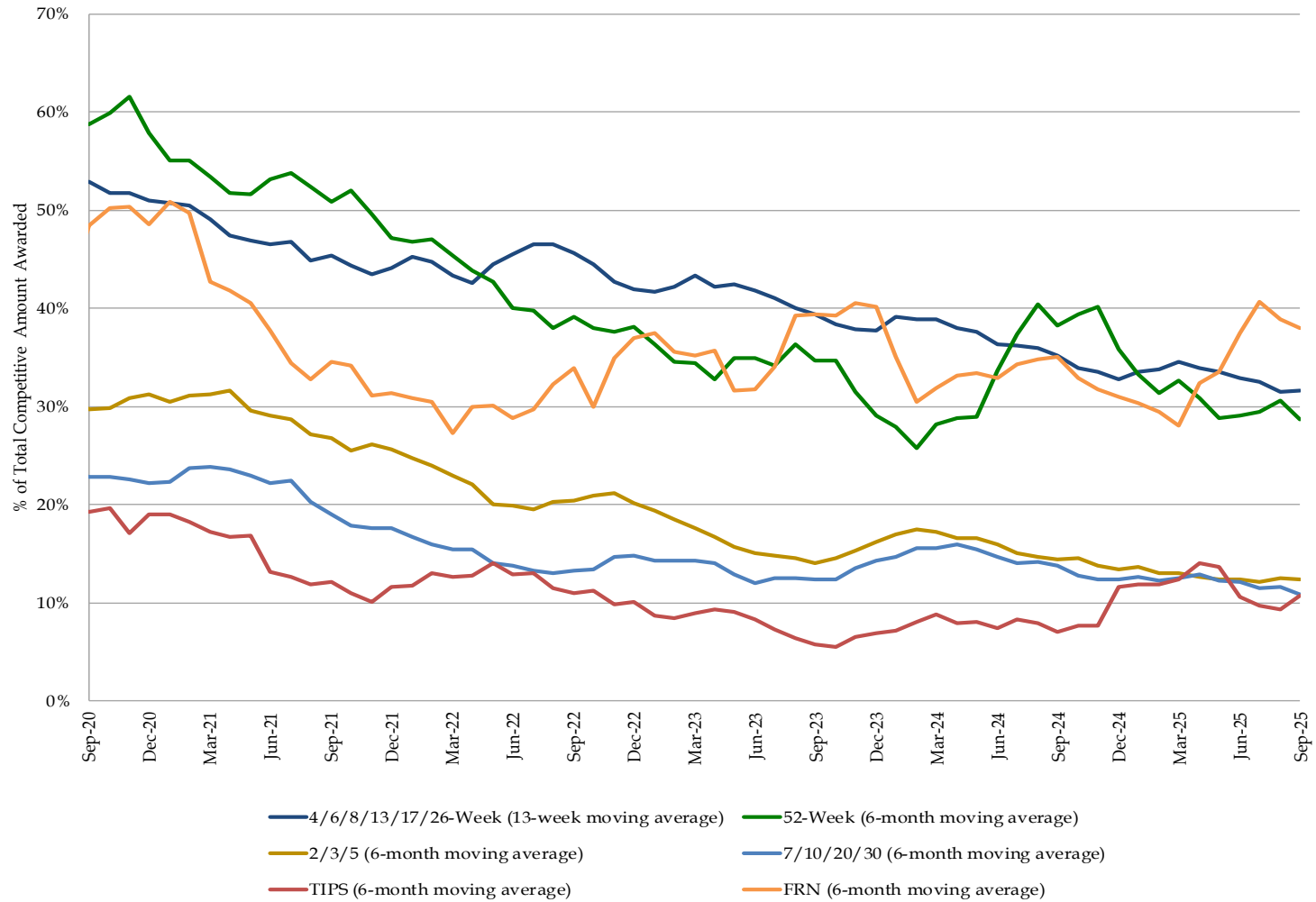
Excludes SOMA add-ons. The "Other" category includes categories that are each less than 5%, which include Depository Institutions, Individuals, Pension and Insurance.

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



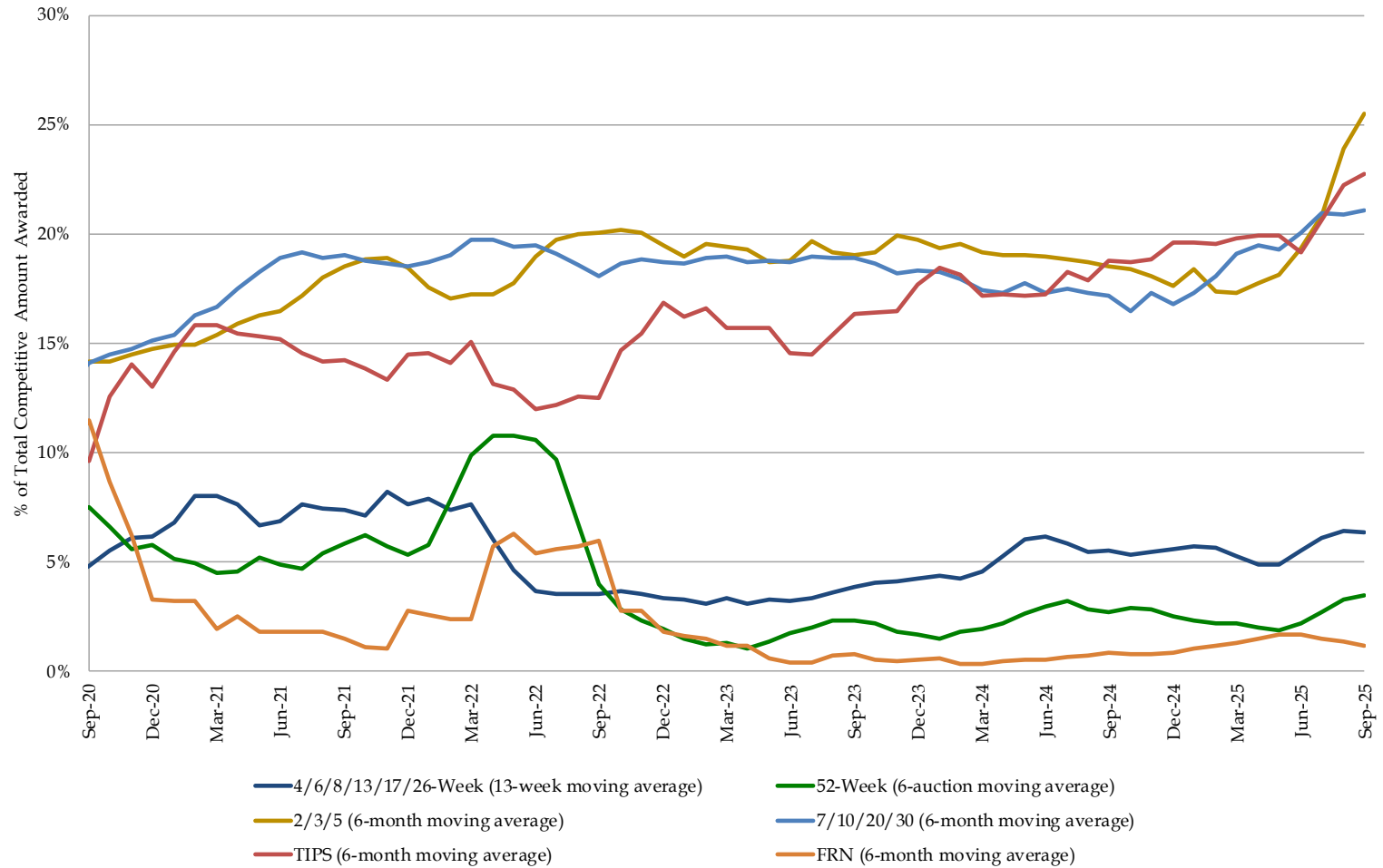
Excludes SOMA add-ons. The "Other" category includes categories that are each less than 5%, which include Depository Institutions, Individuals, Pension and Insurance.

Primary Dealer Awards at Auction



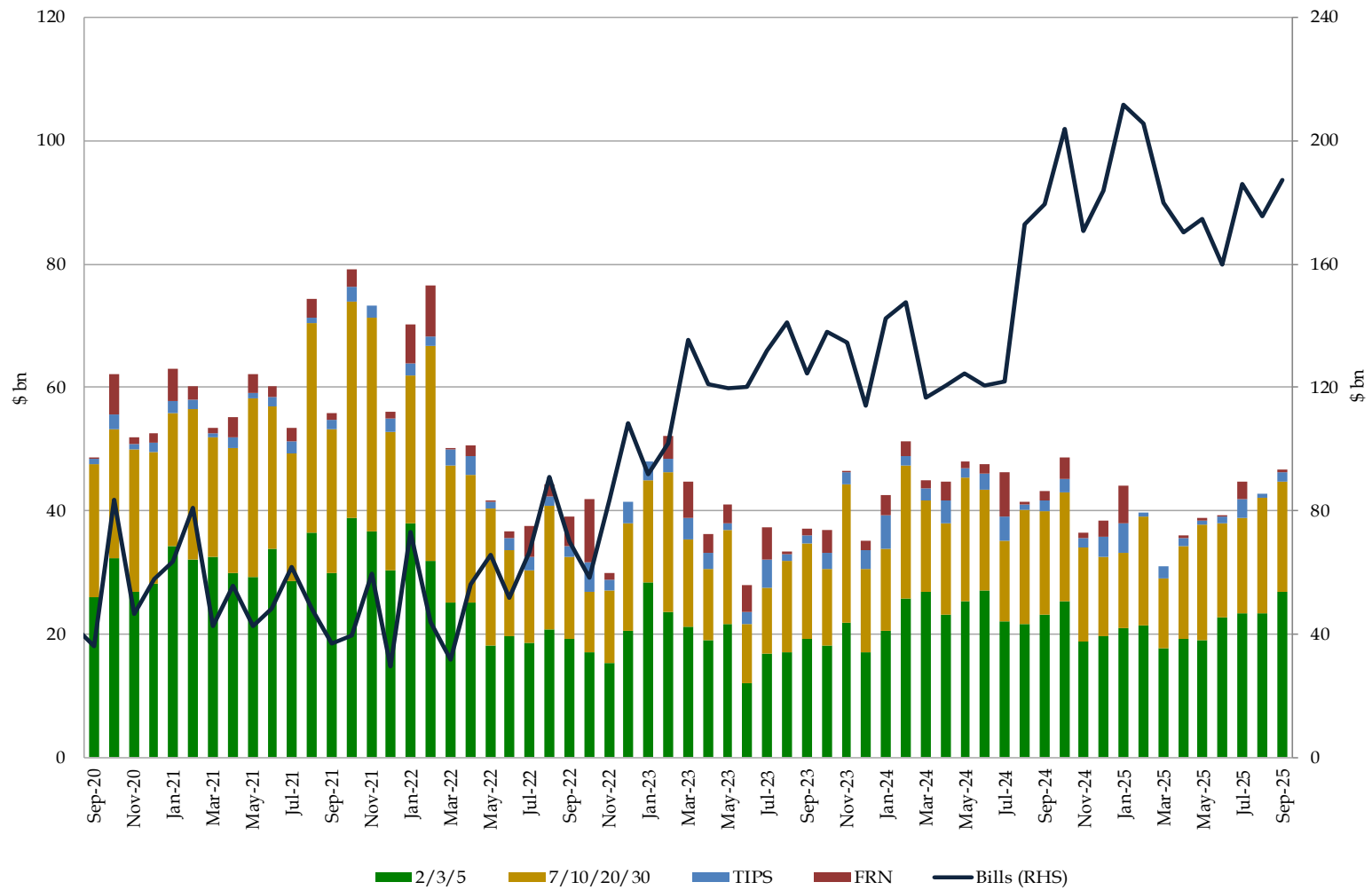
Competitive Amount Awarded excludes SOMA add-ons.

Direct Bidder Awards at Auction



Competitive Amount Awarded excludes SOMA add-ons.

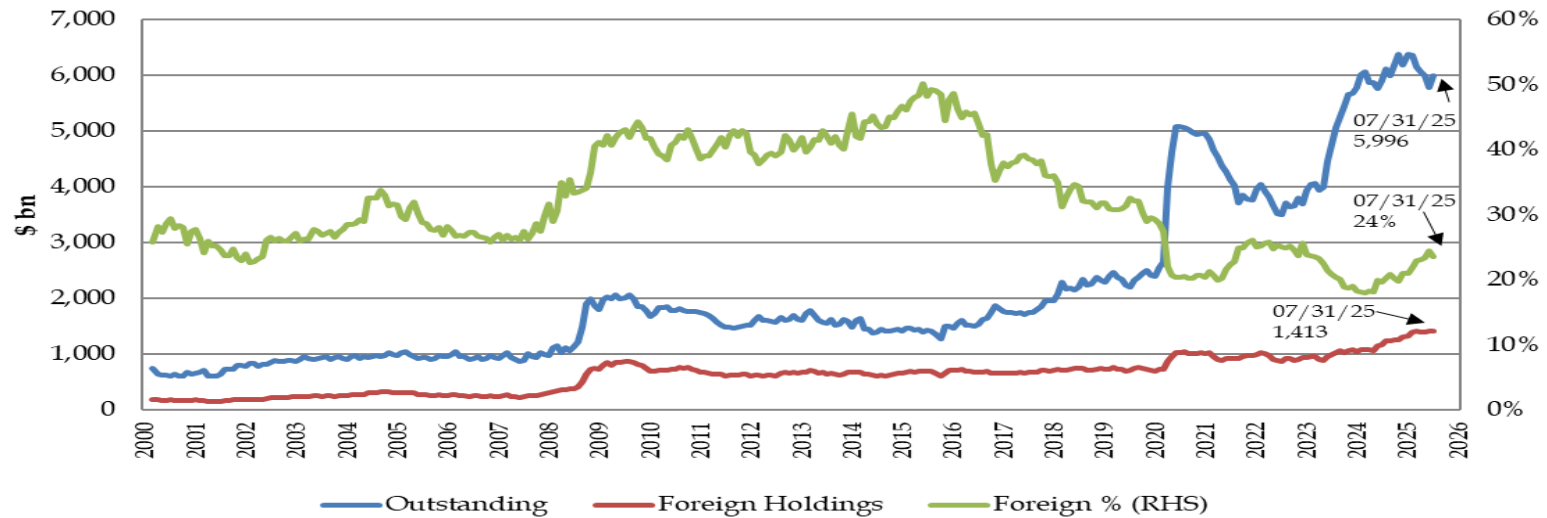
Total Foreign Awards of Treasuries at Auction, \$ billions



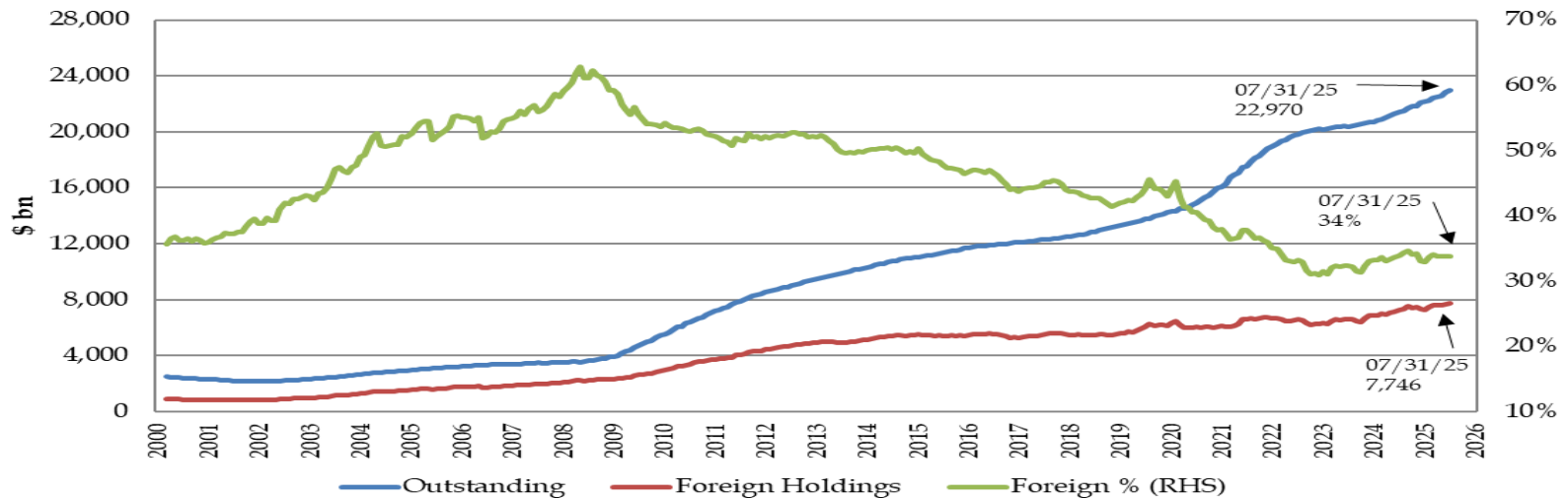
Foreign includes both private sector and official institutions.

Total Foreign Holdings

Bills



Nominal Coupons, TIPS, and FRNs



Source: Treasury International Capital (TIC) System as of July 2025.

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.

Section VII:

Review of Treasury Buyback Results

CUSIP Concentration, Offer to Maximum Purchase Ratio,
Buyback Amount, Buyback-Eligible and Purchased CUSIPs, etc.

The following applies to slides 47 to 55:

- The top left chart shows the total par amount purchased in each liquidity support buyback operation relative to the maximum purchase amount.
- Different colors within each bar correspond to the CUSIP-level purchase amounts.
- The top right chart shows the “offer to max” ratio for each liquidity support buyback.
- The “offer to max” ratio is the ratio of the total par amount offered (red bar) in a buyback operation to Treasury’s maximum purchase amount (blue bar).
- The bottom left chart shows the count of eligible (red) and purchased (blue) CUSIPs for each liquidity support buyback operation as well as the ratio of purchased to eligible securities.
- Prior to August 2024, Treasury limited the buyback eligible population to at most 20 CUSIPs.

Summary of Treasury Buyback Results

Treasury Buyback Results from 7/24/25 to 10/28/25 (Current Refunding Quarter) ¹								
Operation Type	Maturity Sector	Operation Size	Total Number of Operations	Total Par Amount Offered (\$BN)	Total Purchase Maximum (\$BN)	Total Par Amount Purchased (\$BN) ²	Offer to Maximum	Buyback Ratio
Formula	A	B	C	D = A * B	E	F = C / D	G = E / D	
Cash Management	1Mo to 2Y	N/A	N/A			N/A		
Liquidity Support	1Mo to 2Y	\$4 BN	1	\$28.7	\$4.0	\$4.0	7.2	1.0
	2Y to 3Y		1	\$8.6	\$4.0	\$1.9	2.2	0.5
	3Y to 5Y		1	\$11.8	\$4.0	\$2.9	2.9	0.7
	5Y to 7Y		1	\$6.7	\$4.0	\$1.4	1.7	0.3
	7Y to 10Y		1	\$10.4	\$4.0	\$0.2	2.6	0.0
	10Y to 20Y	\$2 BN	4	\$96.6	\$8.0	\$8.0	12.1	1.0
	20Y to 30Y		4	\$87.4	\$8.0	\$8.0	10.9	1.0
	Short TIPS ³	\$750 MM	2	\$12.3	\$1.5	\$1.5	8.2	1.0
	Long TIPS ³	\$500 MM	1	\$1.6	\$0.5	\$0.5	3.3	1.0
Total			16	\$264.2	\$38.0	\$28.4	5.7	0.7

Treasury Buyback Results from 5/29/24 to 10/28/25 (All Buybacks)								
Operation Type	Maturity Sector	Total Number of Operations	Total Par Amount Offered (\$BN)	Total Purchase Maximum (\$BN)	Total Par Amount Purchased (\$BN) ²	Offer to Maximum (Min Avg Max)		
Formula	A	B	C	D = A / B	E = C / B			
Cash Management	1Mo to 2Y	16	\$339.8	\$122.0	\$112.7	1.4	2.9	5.2
Liquidity Support	1Mo to 2Y	6	\$171.6	\$22.0	\$22.0	6.9	7.8	9.2
	2Y to 3Y	6	\$51.1	\$22.0	\$14.0	1.8	2.5	4.4
	3Y to 5Y	6	\$69.7	\$22.0	\$19.7	2.4	3.1	3.7
	5Y to 7Y	6	\$37.0	\$22.0	\$9.6	1.0	1.8	3.2
	7Y to 10Y	6	\$29.5	\$22.0	\$2.9	0.8	1.4	2.6
	10Y to 20Y	12	\$207.2	\$24.0	\$24.0	3.2	8.6	15.0
	20Y to 30Y	13	\$180.6	\$26.0	\$26.0	1.9	6.9	12.7
	Short TIPS ³	11	\$36.0	\$6.0	\$5.3	1.7	5.8	8.7
	Long TIPS ³	9	\$12.2	\$4.5	\$3.1	1.5	2.7	4.1
Total		91	\$1,134.6	\$292.5	\$239.3			

- Treasury bought back about \$28 BN of securities for liquidity support purposes in the current refunding quarter and has repurchased about \$239 BN of securities in total since the buyback program launched in May 2024.
- Treasury has continued to see the highest offer supply in the 10Y to 20Y and 20Y to 30Y sectors with a combined total of \$184 BN of par amount offered this refunding quarter.

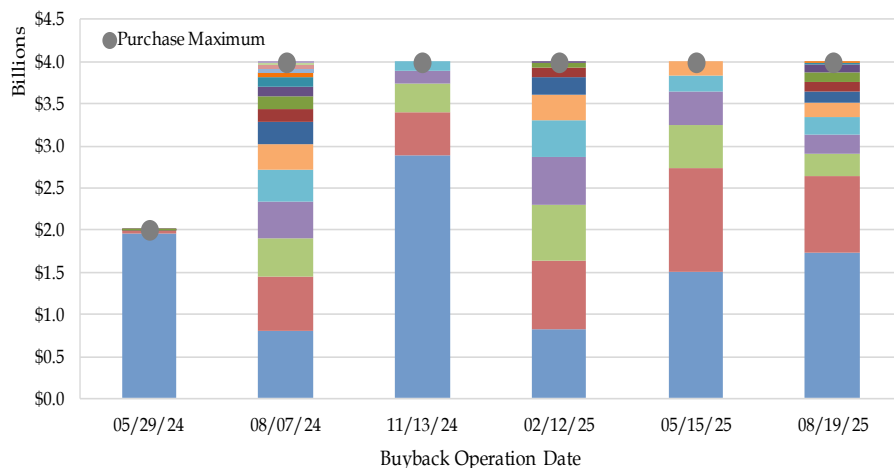
(1) Data as of 10/28/25. Liquidity support buybacks for 10Y to 20Y Nominal Coupons and 10Y to 30Y TIPS are scheduled for 11/5/25 and 11/13/25, respectively.

(2) Original par amount.

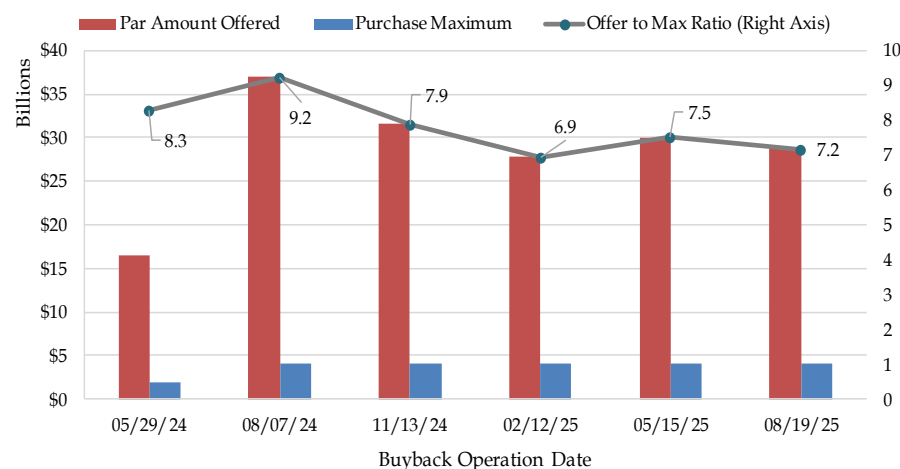
(3) The Short TIPS & Long TIPS buckets were previously 1Y-7.5Y & 7.5Y-30Y, respectively, but were changed to 1Y-10Y & 10Y-30Y in August 2025.

Liquidity Support Buybacks – Nominal Coupons 1Mo to 2Y

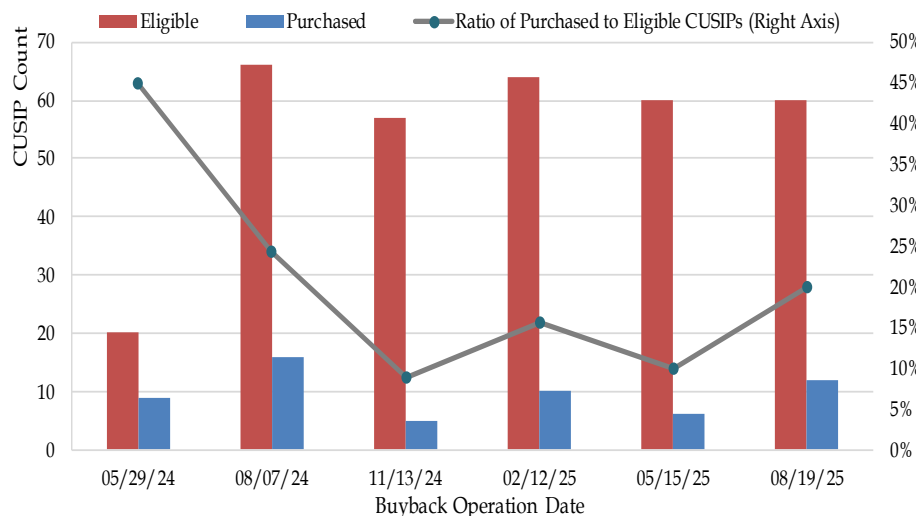
Amount Purchased by CUSIP in Liquidity Support Buybacks
- Nominal Coupons 1Mo to 2Y



Offer to Purchase Maximum Ratio for Liquidity Support Buybacks
- Nominal Coupons 1Mo to 2Y



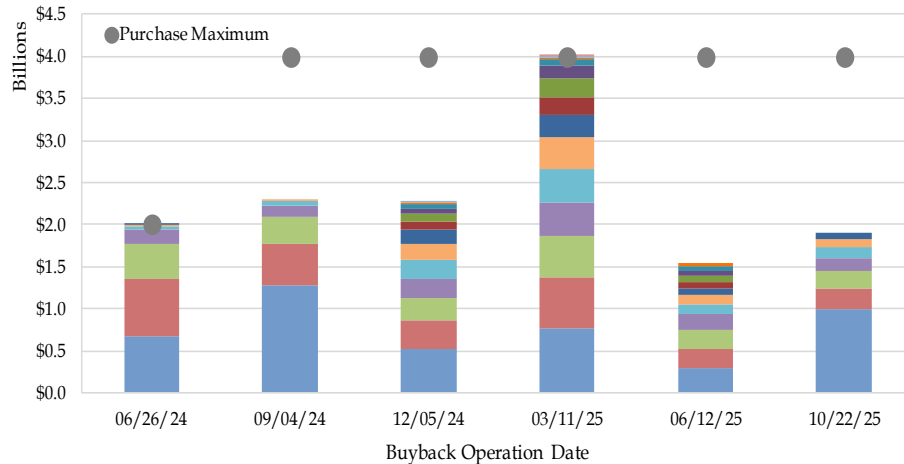
Eligible and Purchased CUSIP Counts for Liquidity Support Buybacks
- Nominal Coupons 1Mo to 2Y



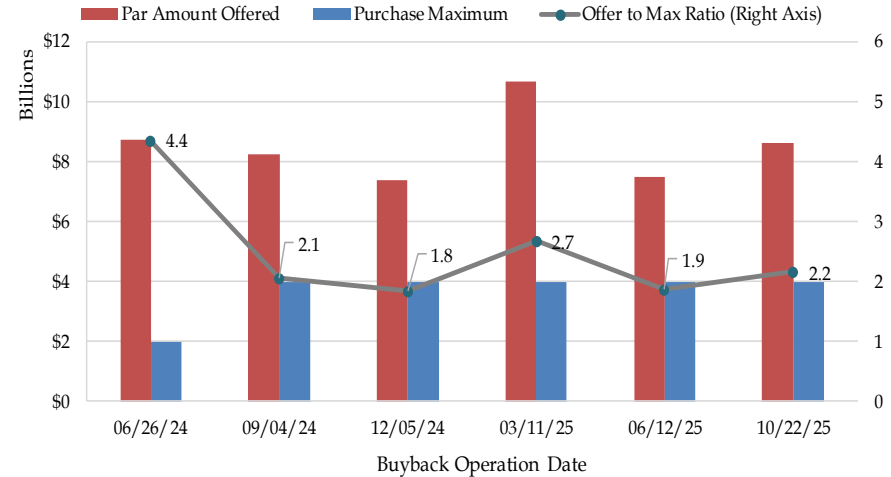
- Treasury has consistently bought back the maximum par amount in liquidity support buybacks in the 1Mo to 2Y maturity sector (top left).
- Buyback operations in this sector have been consistently oversubscribed with high offer to purchase maximum ratios (top right).

Liquidity Support Buybacks – Nominal Coupons 2Y to 3Y

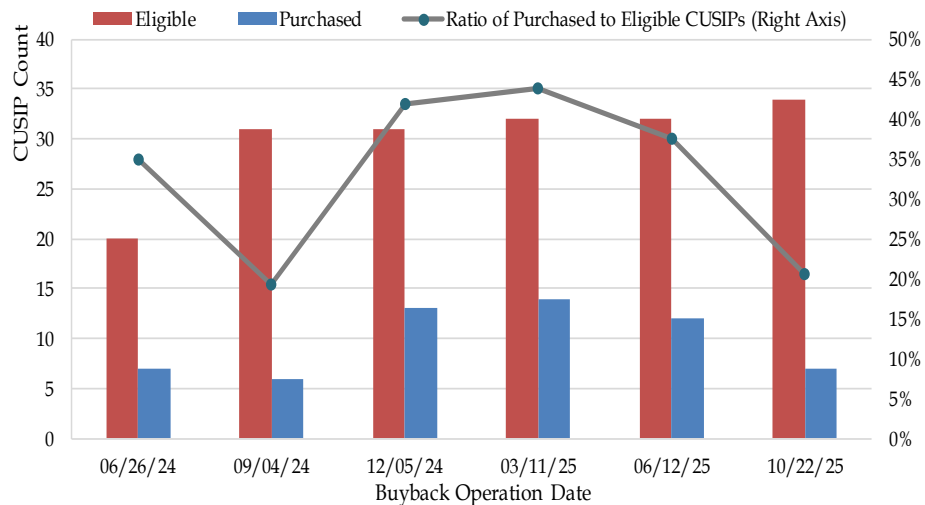
Amount Purchased by CUSIP in Liquidity Support Buybacks
- Nominal Coupons 2Y to 3Y



Offer to Purchase Maximum Ratio for Liquidity Support Buybacks
- Nominal Coupons 2Y to 3Y

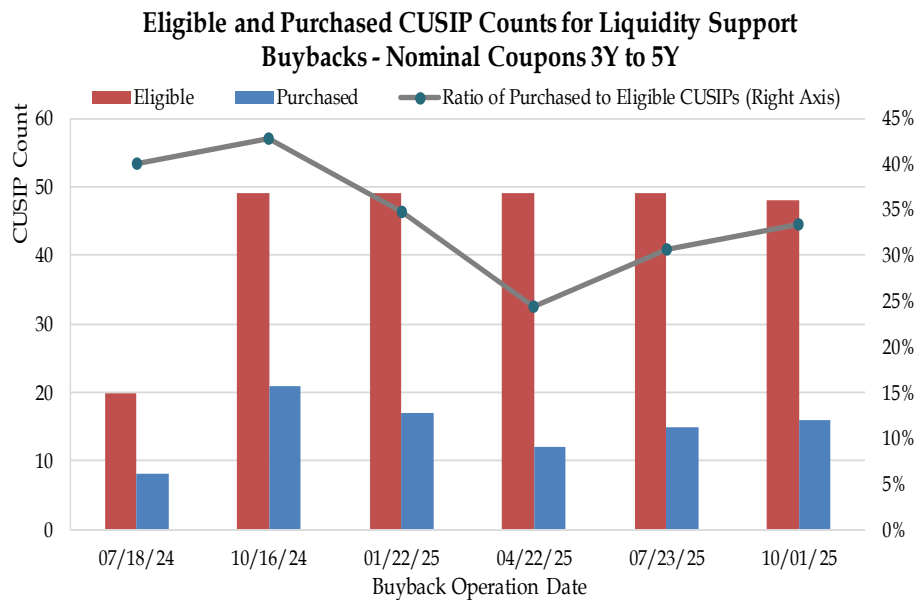
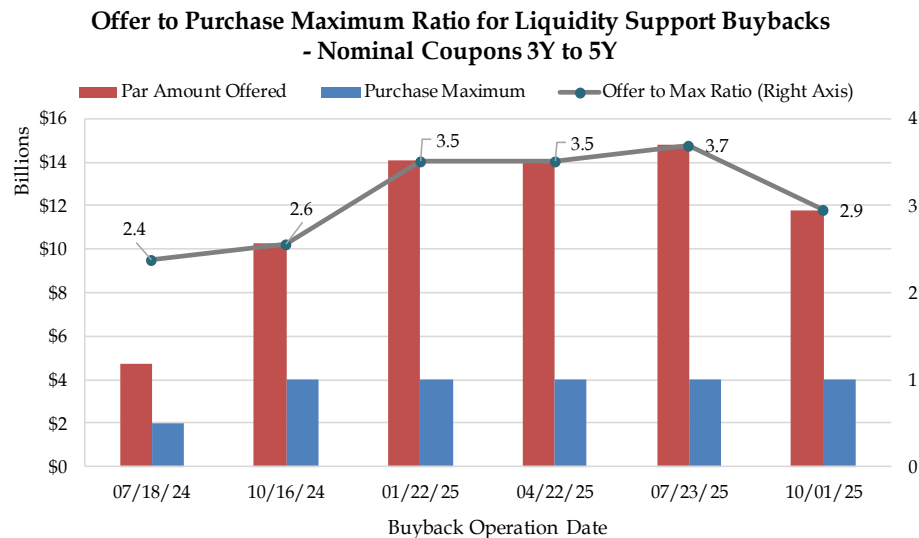
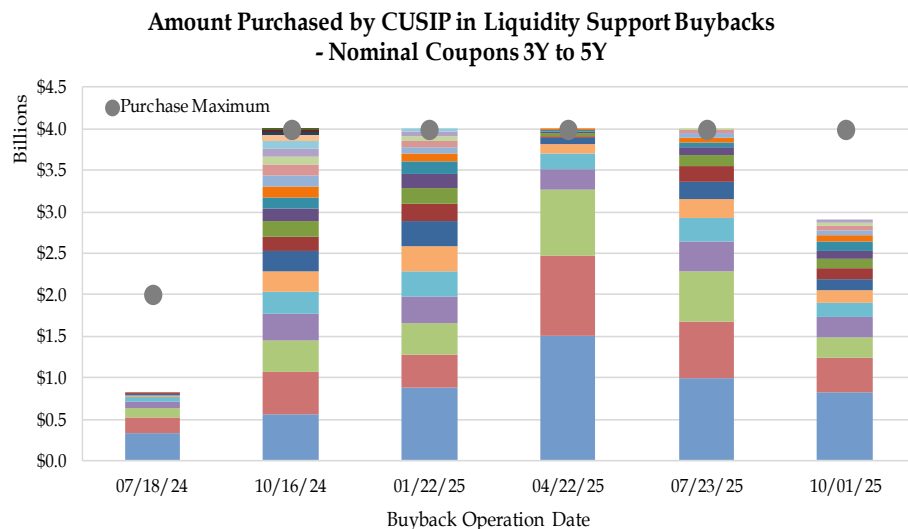


Eligible and Purchased CUSIP Counts for Liquidity Support
Buybacks - Nominal Coupons 2Y to 3Y



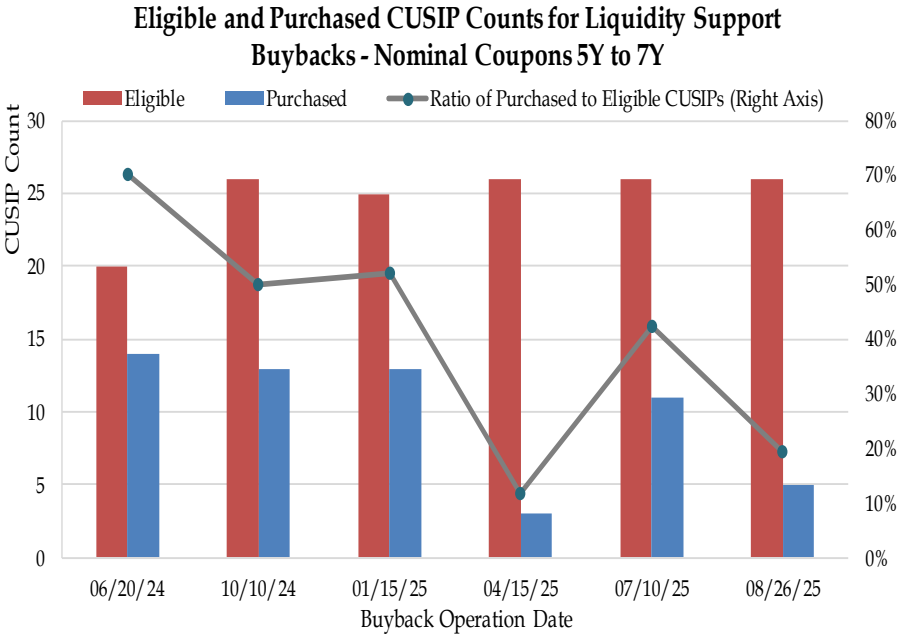
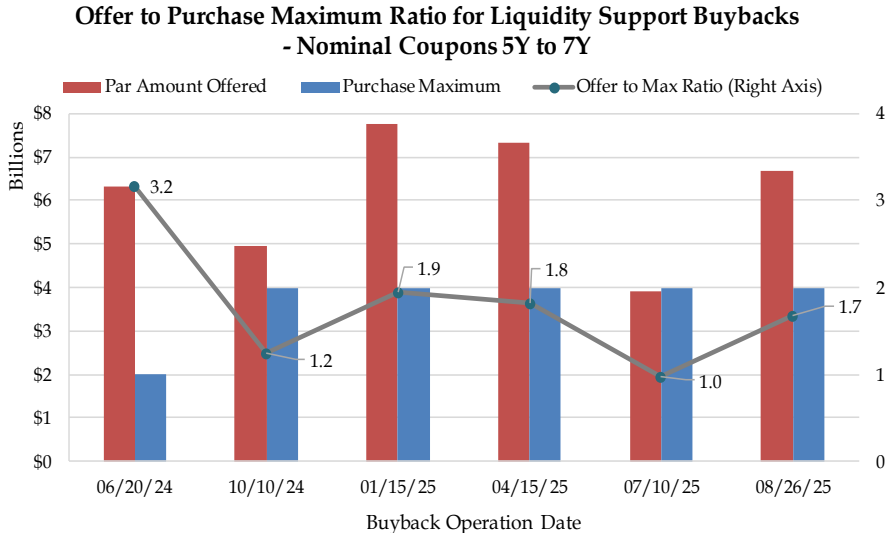
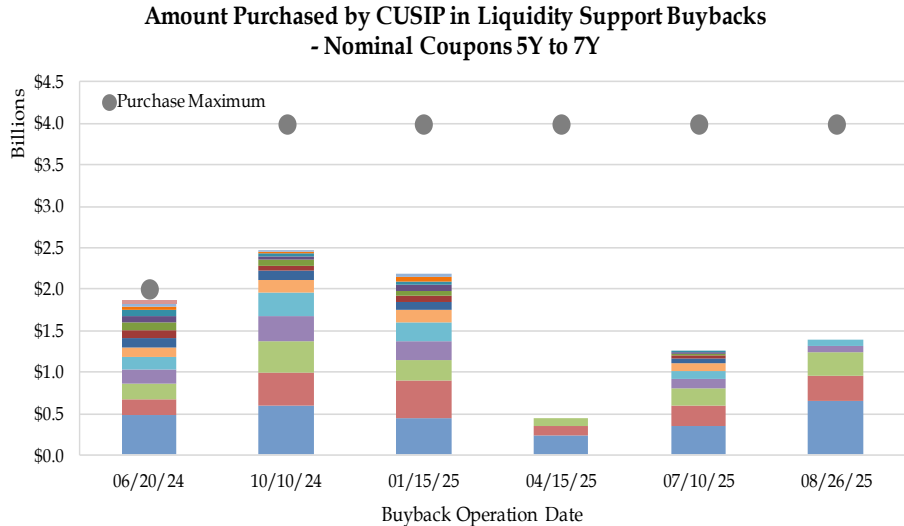
- Treasury has consistently bought back less than the maximum par amount in this maturity sector except for the operation on 3/11/25 (top left).
- This quarter, Treasury bought back close to half of the \$4 billion maximum par amount in the 2Y to 3Y sector on 10/22/25.

Liquidity Support Buybacks – Nominal Coupons 3Y to 5Y



- This quarter, Treasury bought back less than the \$4 billion maximum par amount in the 3Y to 5Y sector on 10/1/25. Treasury bought back the \$4 billion maximum par amount in this sector for the previous four consecutive quarters (top left).

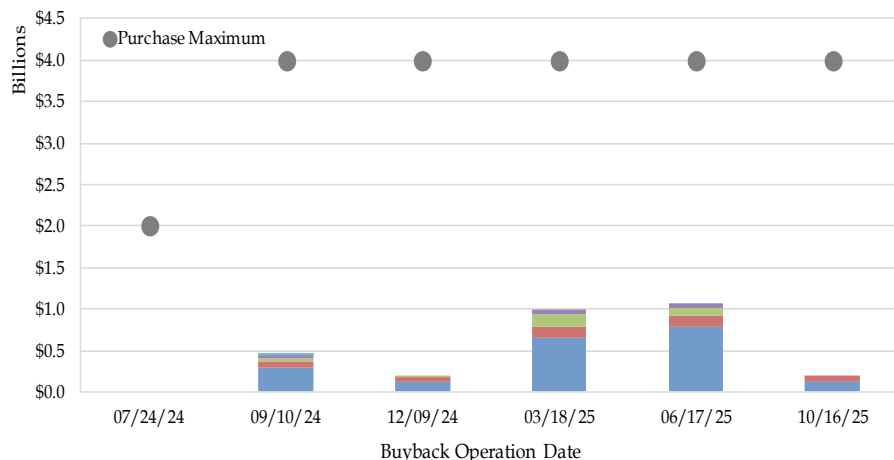
Liquidity Support Buybacks – Nominal Coupons 5Y to 7Y



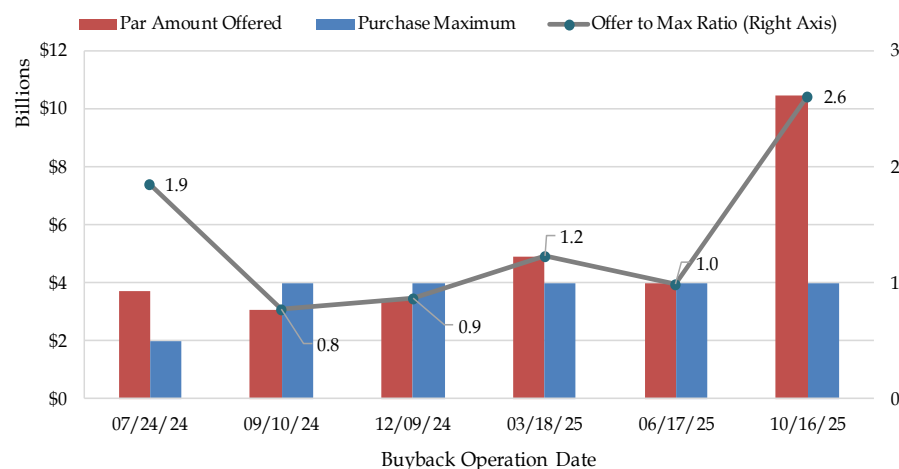
- Treasury has never purchased the maximum par amount in this sector.
- Treasury purchased slightly more this quarter than last quarter in this sector.

Liquidity Support Buybacks – Nominal Coupons 7Y to 10Y

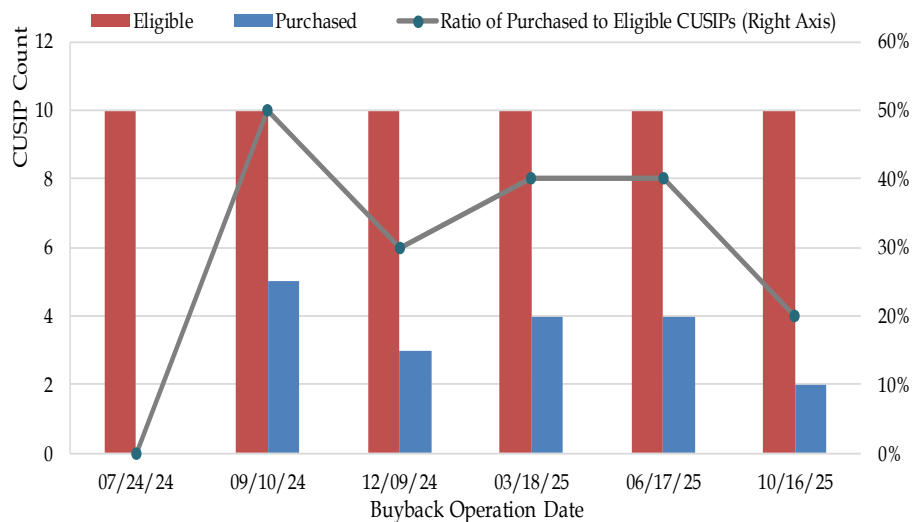
Amount Purchased by CUSIP in Liquidity Support Buybacks
- Nominal Coupons 7Y to 10Y



Offer to Purchase Maximum Ratio for Liquidity Support Buybacks
- Nominal Coupons 7Y to 10Y



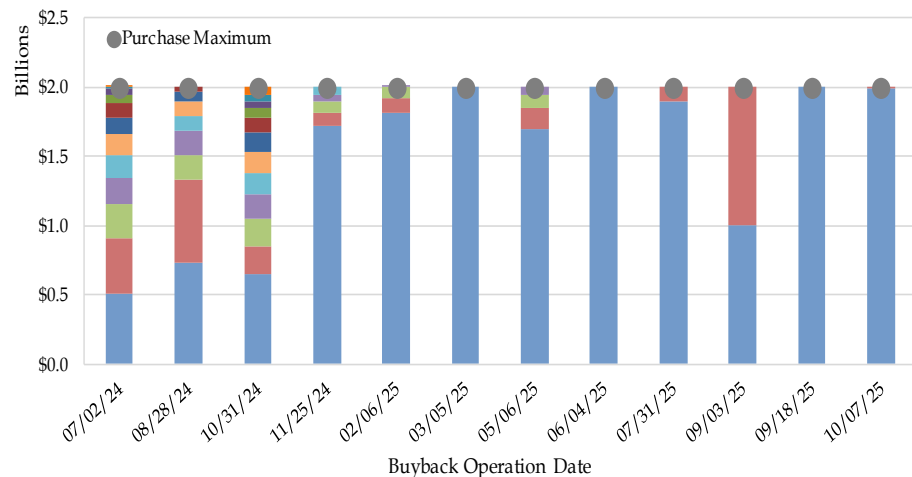
Eligible and Purchased CUSIP Counts for Liquidity Support
Buybacks - Nominal Coupons 7Y to 10Y



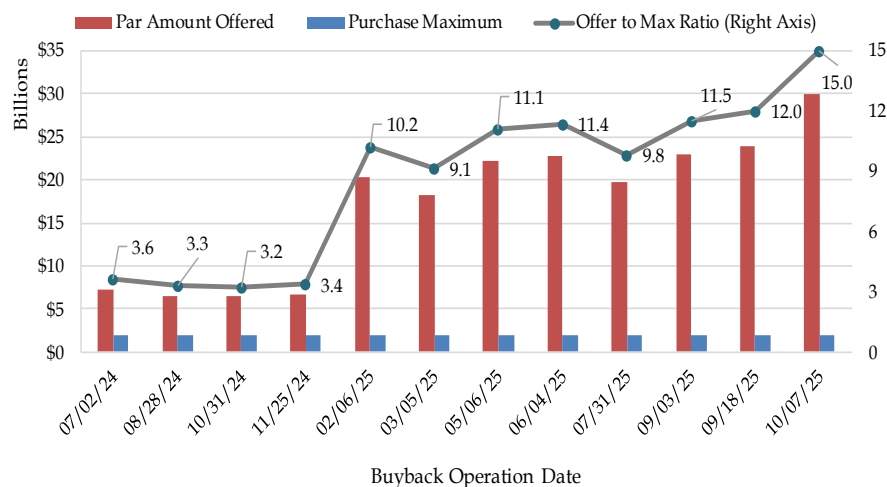
- On 10/16/25, Treasury purchased \$192 million of the \$4 billion purchase maximum in the 7Y to 10Y maturity sector (top left).
- The offer to max ratio for the 10/16/25 buyback was 2.6, which was the highest since inception.
- Treasury continues to buy back significantly less than the maximum purchase amount in the 7Y to 10Y sector.

Liquidity Support Buybacks – Nominal Coupons 10Y to 20Y

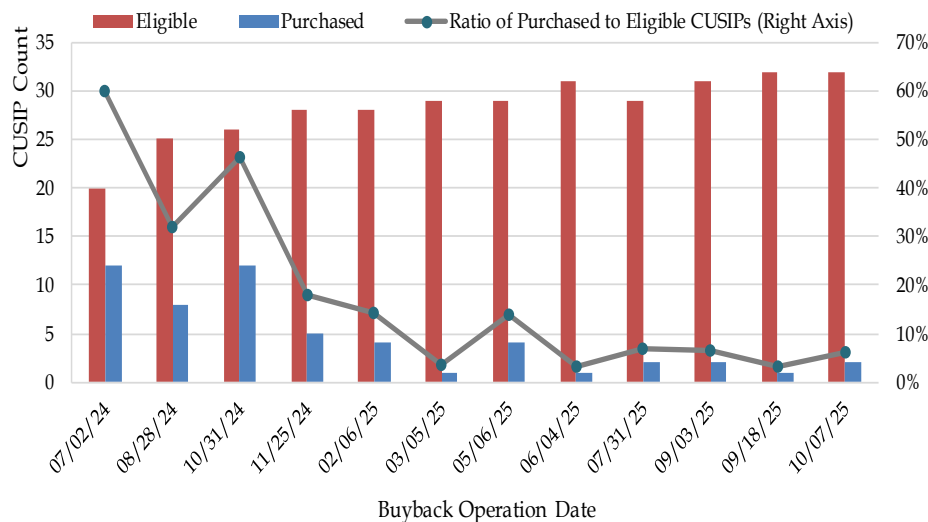
**Amount Purchased by CUSIP in Liquidity Support Buybacks
- Nominal Coupons 10Y to 20Y**



**Offer to Purchase Maximum Ratio for Liquidity Support Buybacks
- Nominal Coupons 10Y to 20Y**



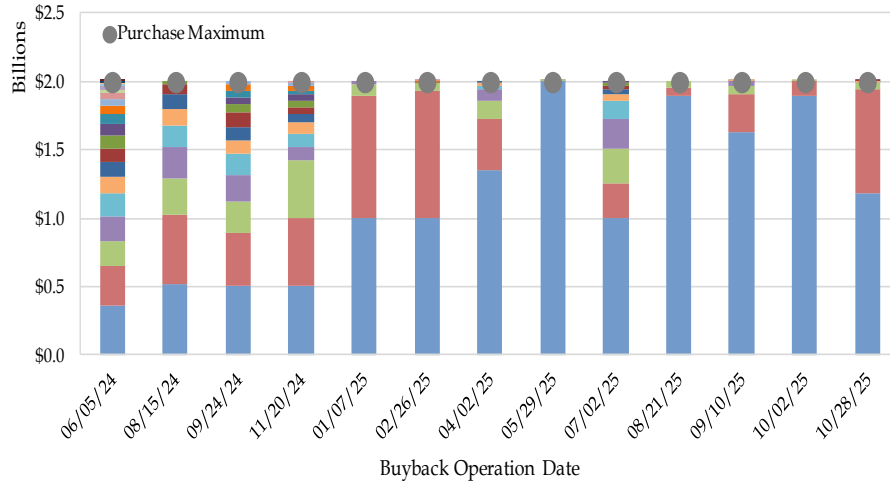
**Eligible and Purchased CUSIP Counts for Liquidity Support
Buybacks - Nominal Coupons 10Y to 20Y**



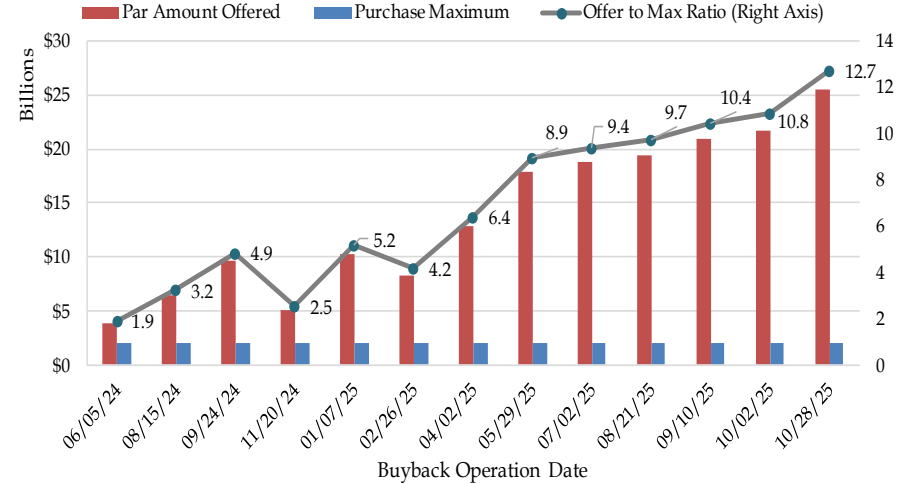
- Treasury doubled the frequency of operations in the 10Y to 20Y sector at the August 2025 refunding and continues to buy back the maximum par amount in the sector.
- Recent Treasury purchases in this sector have been concentrated in one or two securities (top left).
- Offer to max ratios in the 10Y to 20Y sector continue to increase over time (top right).

Liquidity Support Buybacks – Nominal Coupons 20Y to 30Y

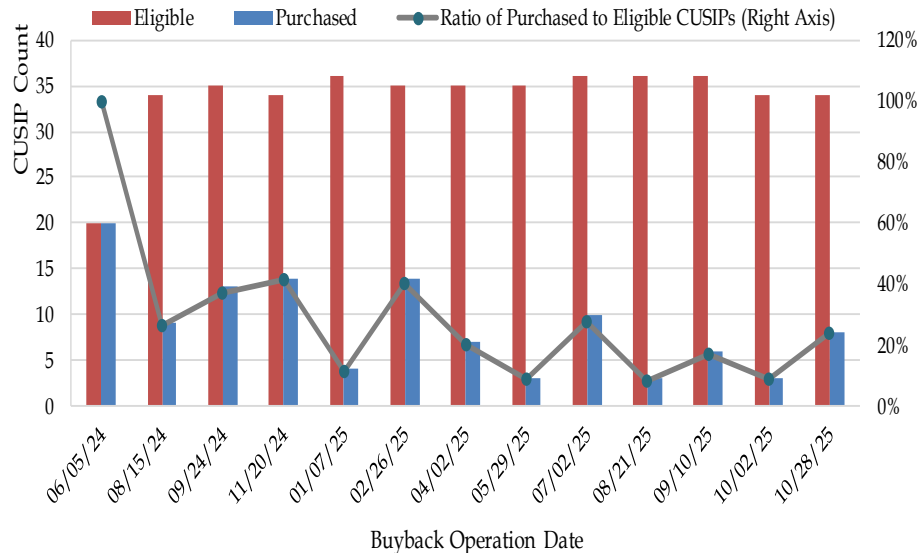
Amount Purchased by CUSIP in Liquidity Support Buybacks
- Nominal Coupons 20Y to 30Y



Offer to Purchase Maximum Ratio for Liquidity Support Buybacks
- Nominal Coupons 20Y to 30Y



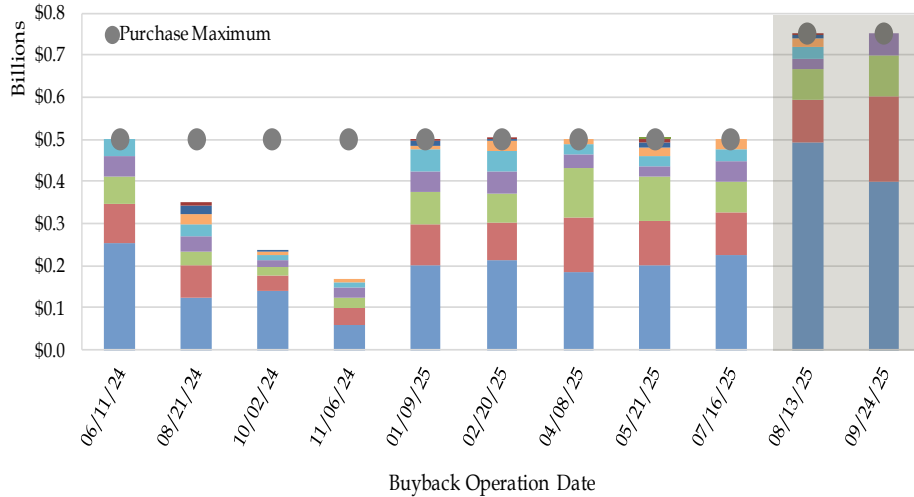
Eligible and Purchased CUSIP Counts for Liquidity Support
Buybacks - Nominal Coupons 20Y to 30Y



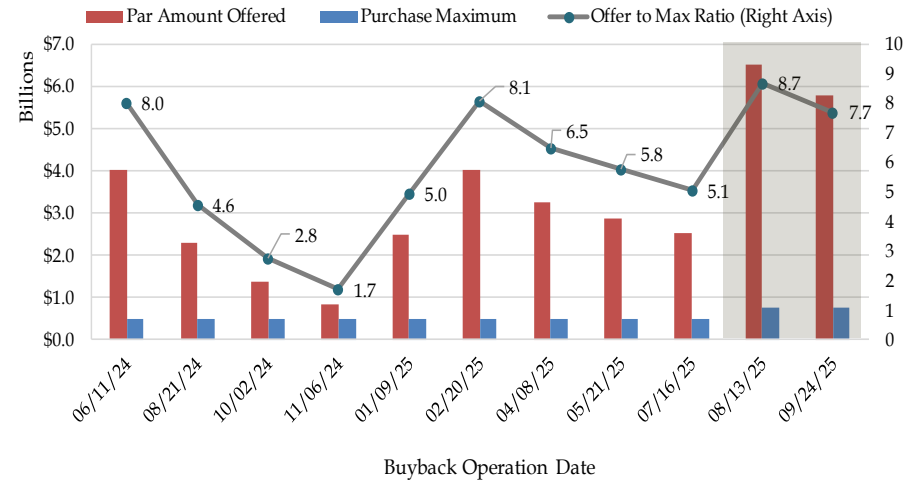
- Treasury also doubled the frequency of operations in the 20Y to 30Y sector at the August 2025 refunding and continues to buy back the maximum par amount in the sector.
- Offer to max ratios in the 20Y to 30Y sector continue to increase over time (top right).

Liquidity Support Buybacks – TIPS Short Tenors

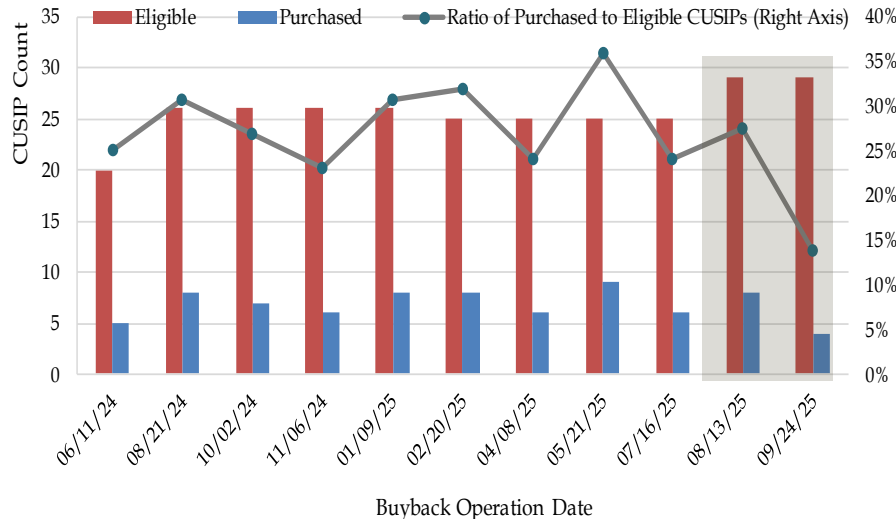
Amount Purchased by CUSIP in Liquidity Support Buybacks
- TIPS Short Tenors



Offer to Purchase Maximum Ratio for Liquidity Support Buybacks
- TIPS Short Tenors



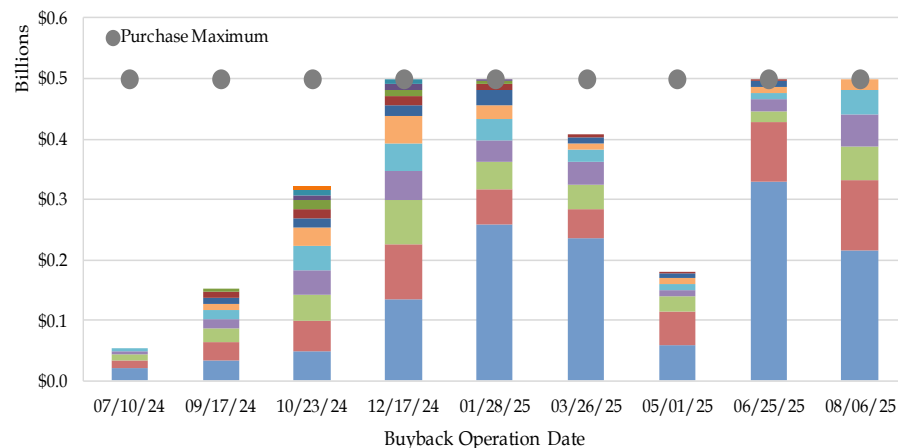
Eligible and Purchased CUSIP Counts for Liquidity Support
Buybacks - TIPS Short Tenors



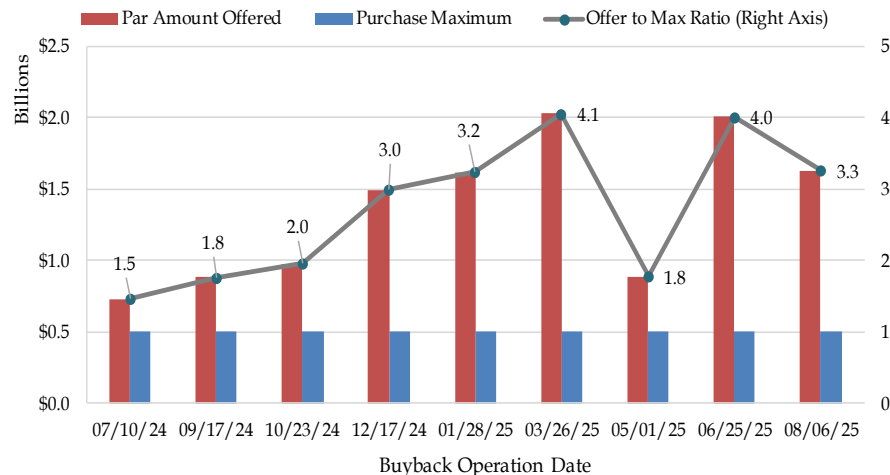
- At the August 2025 refunding, Treasury announced that it would adjust the TIPS buyback buckets by introducing a 1Y to 10Y TIPS buyback bucket to replace the existing 1Y to 7.5Y TIPS bucket. Treasury also increased max operation size for the short-end TIPS bucket from \$500 to \$750 million. The shaded area represents the operations in the new 1Y to 10Y TIPS bucket.
- Treasury has continued to buy back the maximum par amount in short-end TIPS operations.

Liquidity Support Buybacks -TIPS Long Tenors

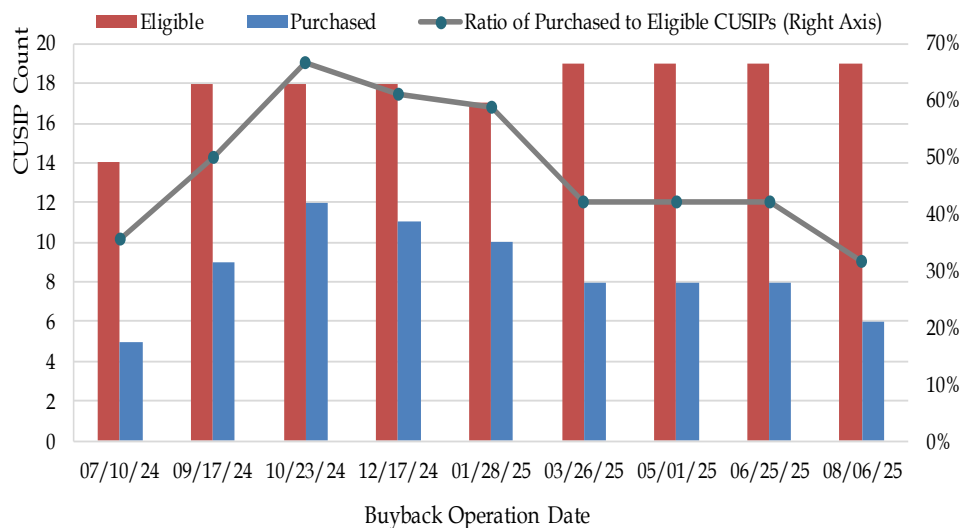
Amount Purchased by CUSIP in Liquidity Support Buybacks
- TIPS Long Tenors



Offer to Purchase Maximum Ratio for Liquidity Support Buybacks
- TIPS Long Tenors

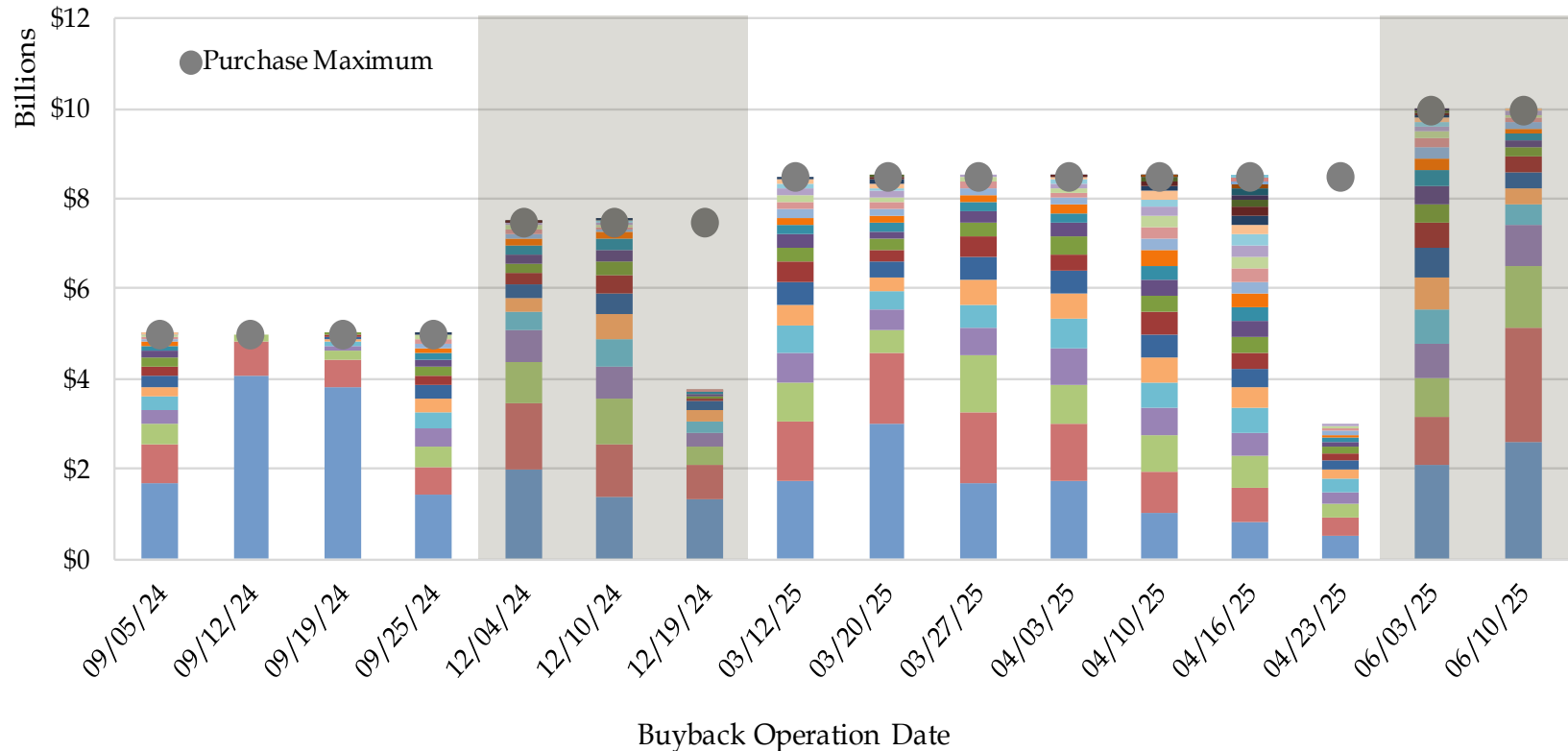


Eligible and Purchased CUSIP Counts for Liquidity Support
Buybacks - TIPS Long Tenors



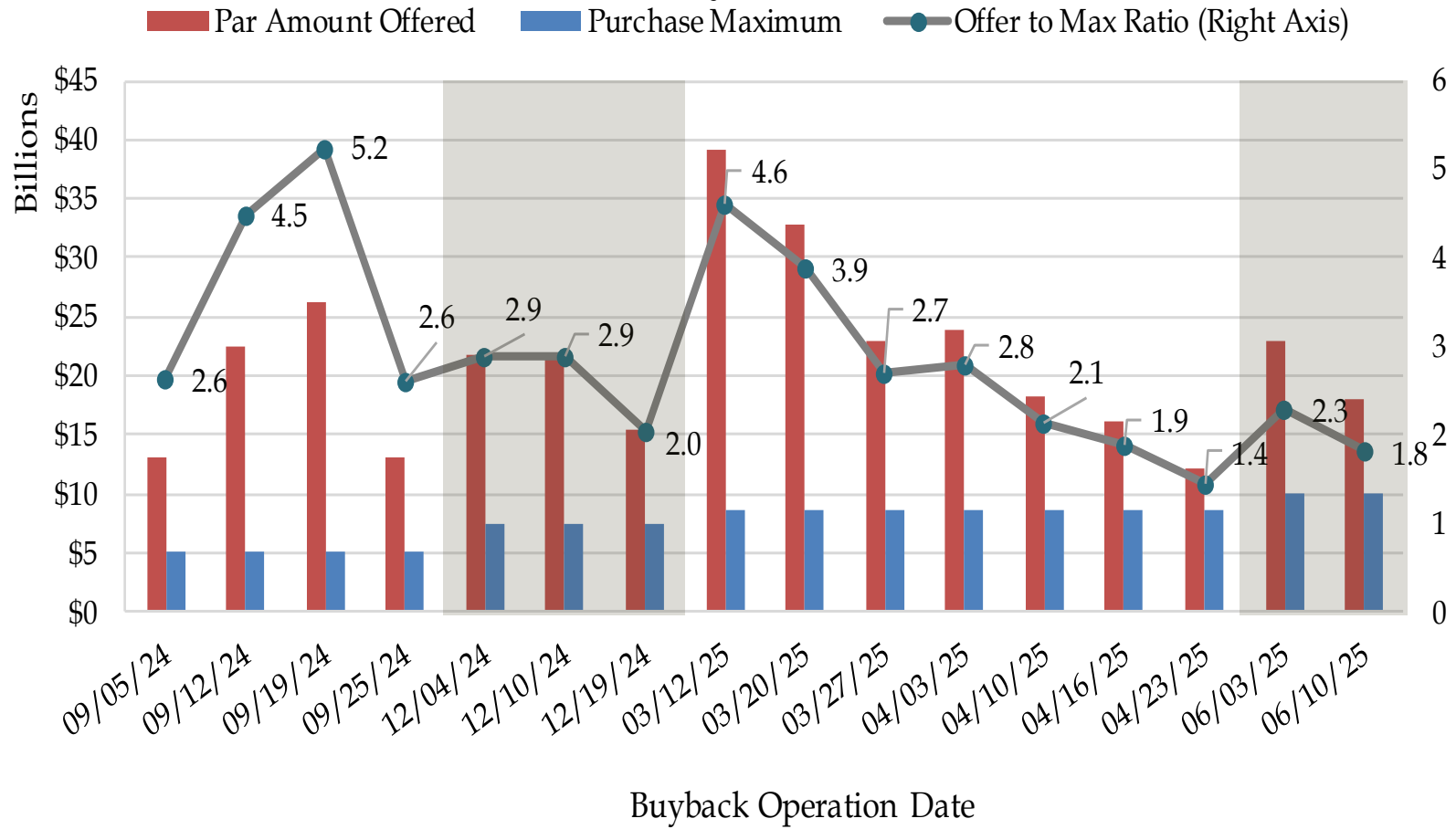
- At the August 2025 refunding, Treasury announced that it would adjust the TIPS buyback buckets by introducing a 10Y to 30Y TIPS buyback bucket to replace the existing 7.5Y to 30Y TIPS bucket. Treasury also reduced the frequency of long-end TIPS buybacks while maintaining the \$500 million per operation maximum.
- The first long-end TIPS operation after modification will be on November 12, 2025.

Amount Purchased by CUSIP in Cash Management Buybacks

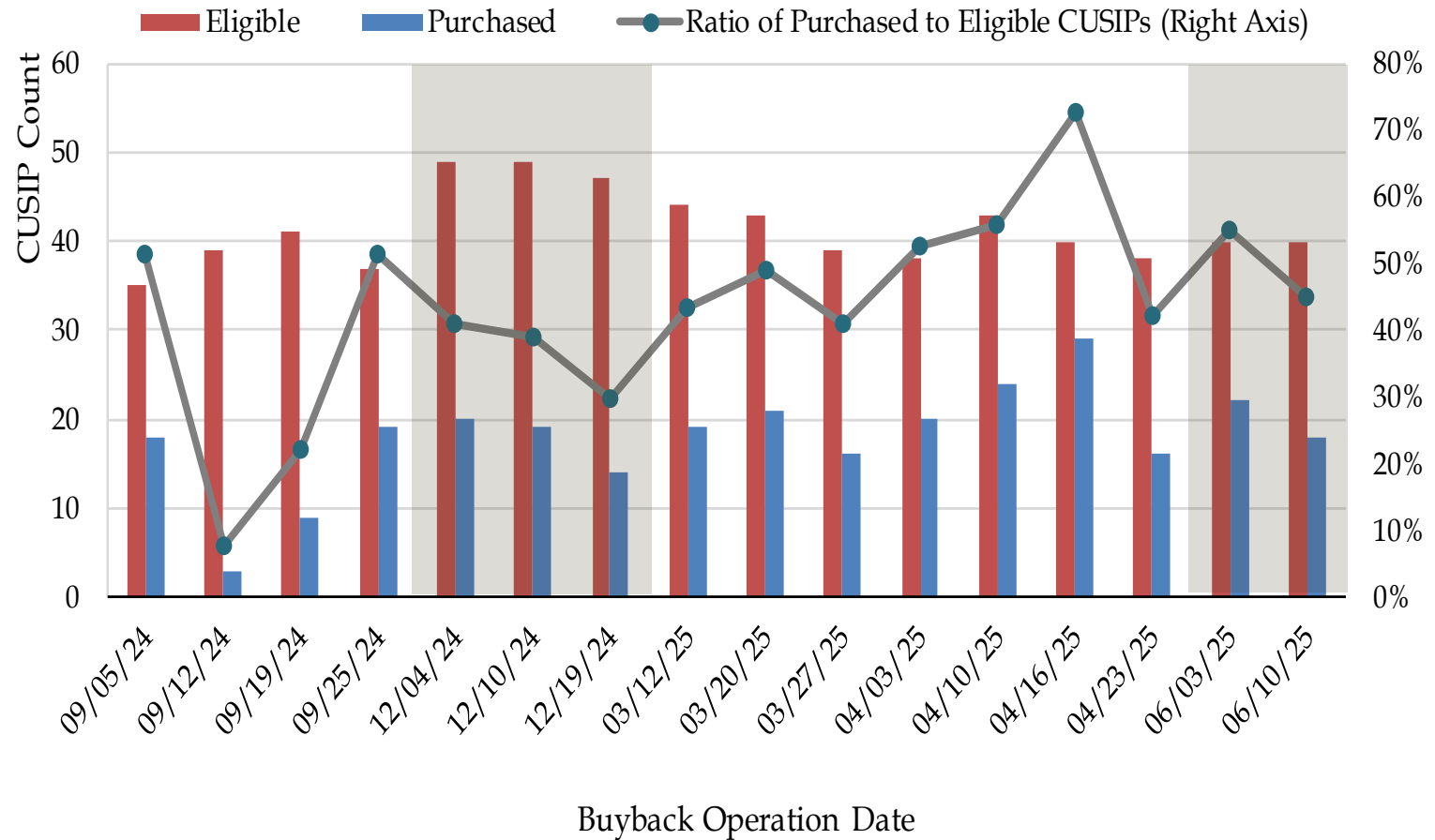


- For the last quarter, Treasury did not conduct any cash management buybacks in light of the ongoing cash balance rebuild. Cash management buybacks are expected to resume in December.
- The charts related to all cash management buybacks are from the last refunding.
- All cash management buybacks occur in the 1Mo to 2Y maturity sector.

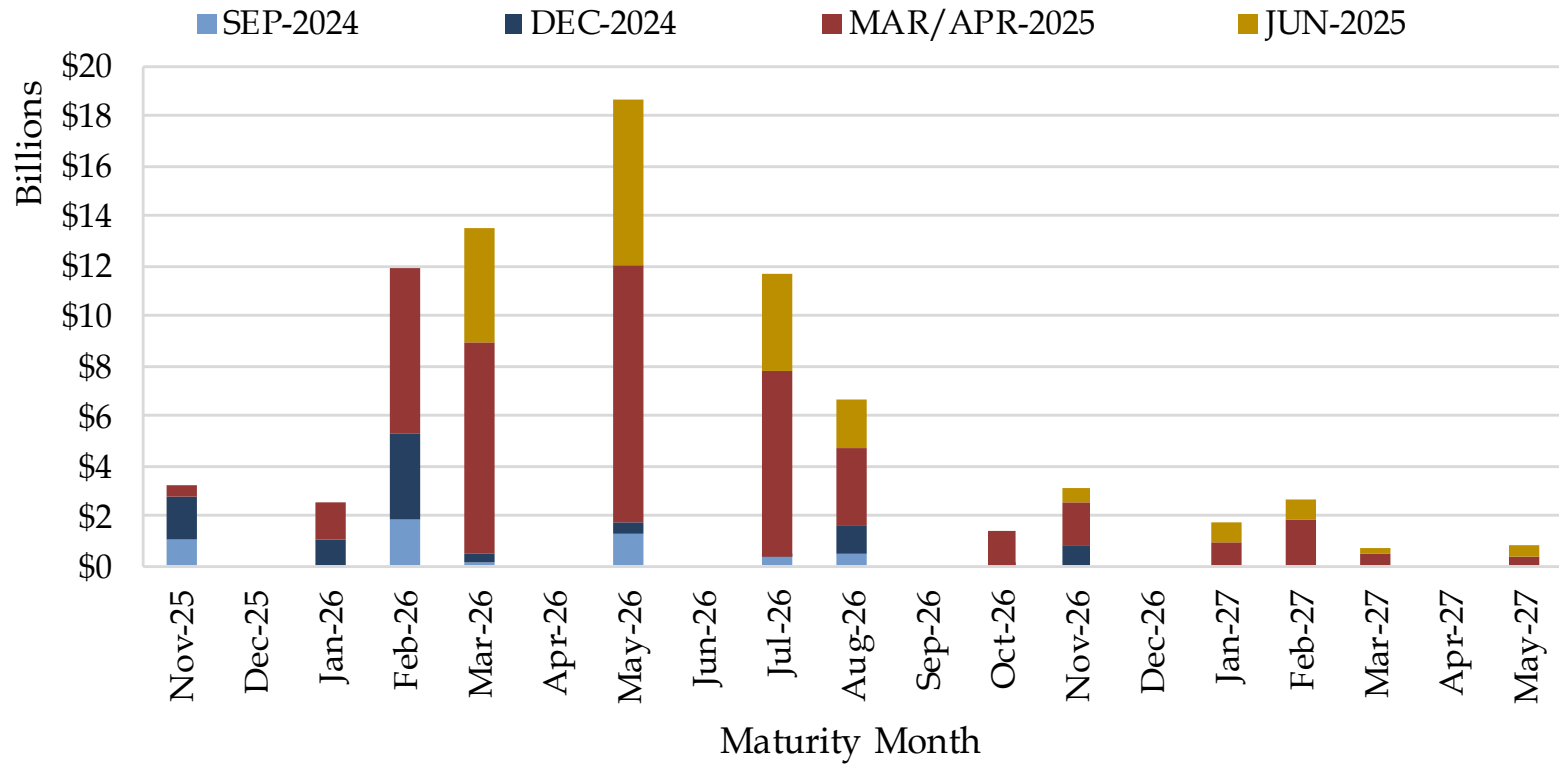
Offer to Purchase Maximum Ratio for Cash Management Buybacks



Eligible and Purchased CUSIP Counts for Cash Management Buybacks



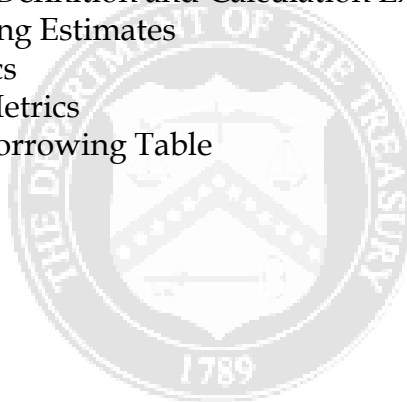
Maturity Composition of Cash Management Buybacks



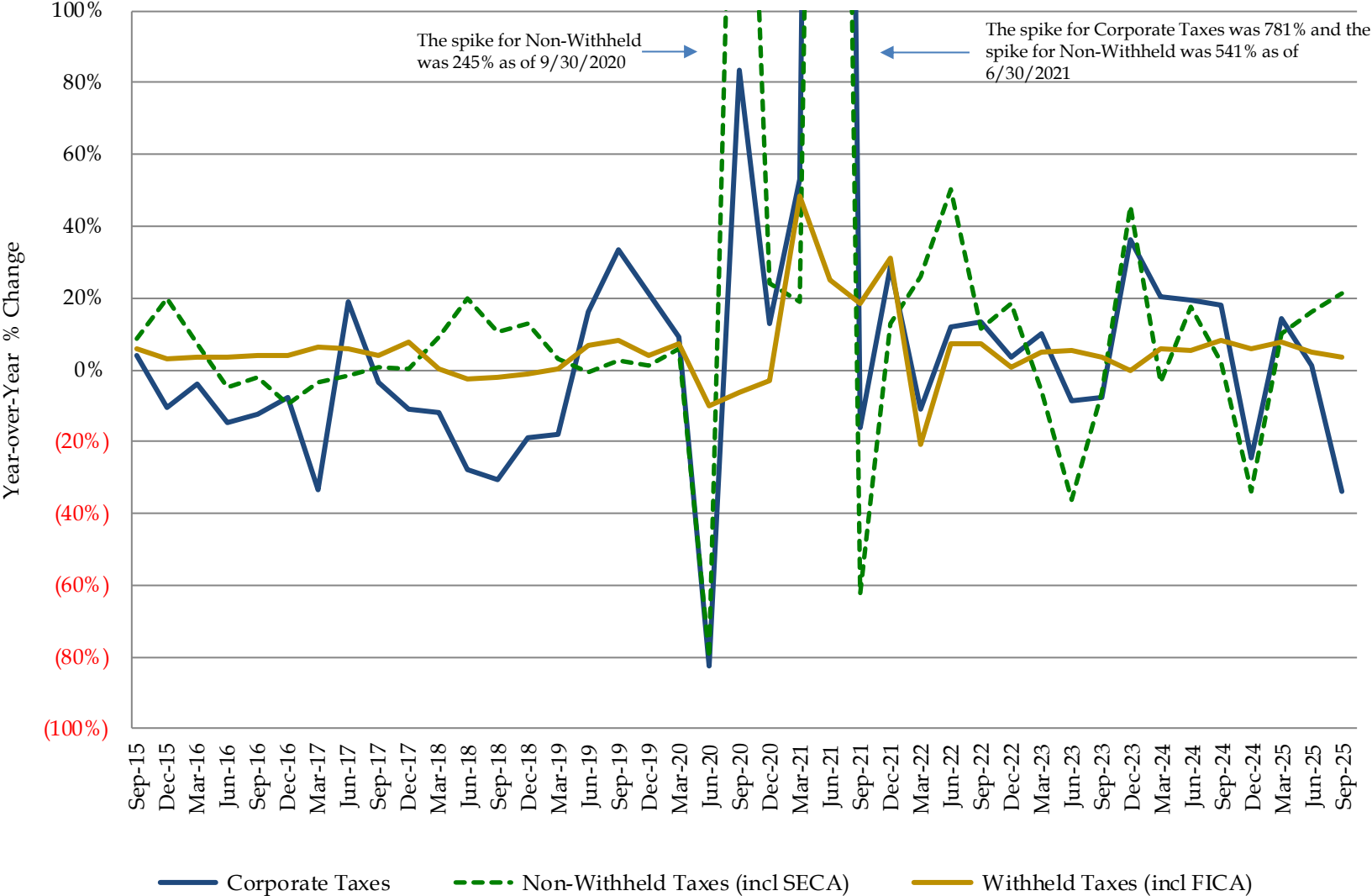
VIII. Appendix

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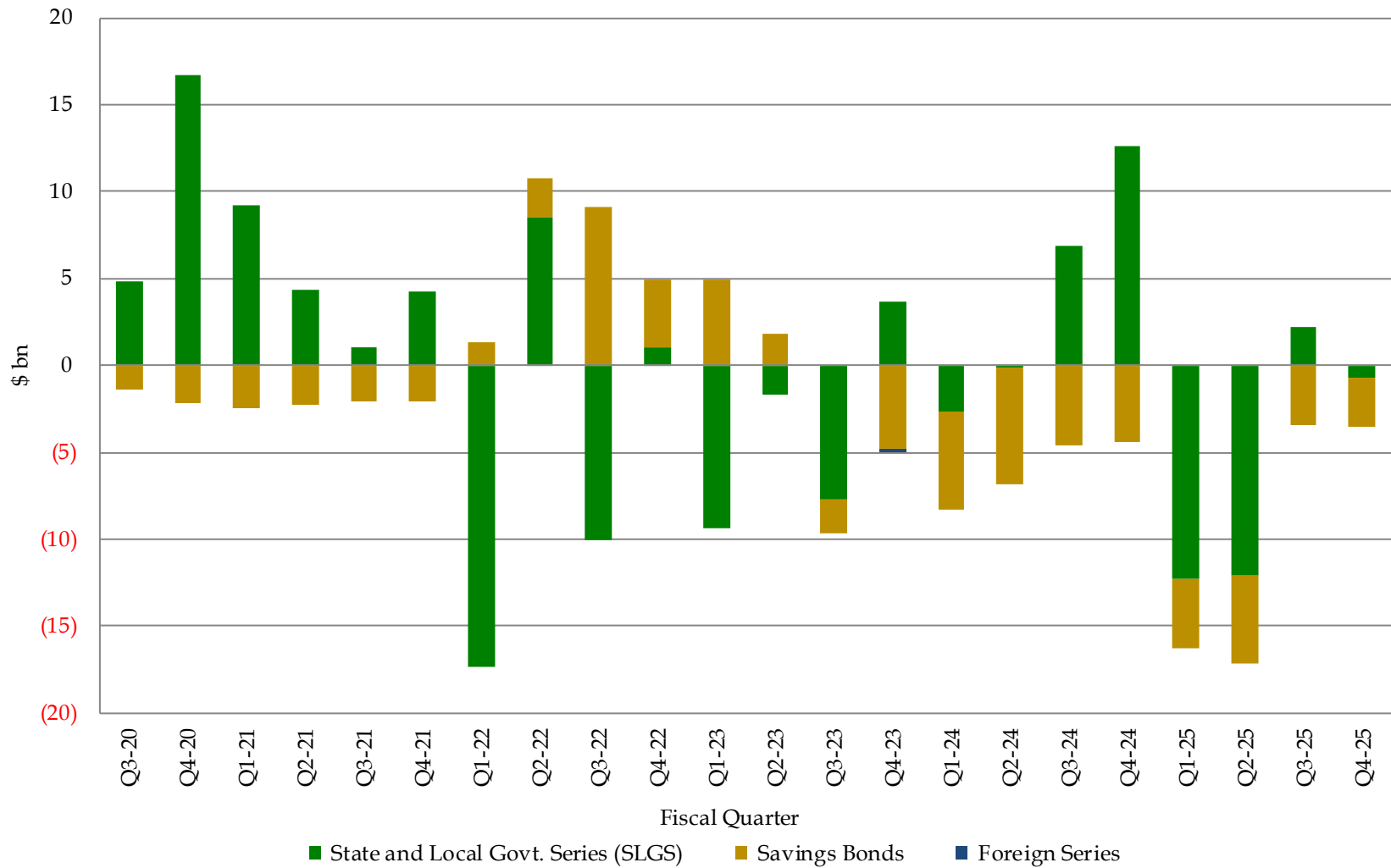
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Quarterly Tax Receipts



Treasury Net Nonmarketable Borrowing



Budget Surplus/Deficit*



- OMB projections are using estimates from Table 1 of “Mid-Session Review, Technical Supplement to the 2026 Budget,” September 2025.
- CBO's deficit projections are from Table 1 of “Effects on Deficits and the Debt of Public Law 119-21 and of Making Certain Tax Policies in the Act Permanent,” August 2025.

Sources of Privately-Held Financing in FY25 Q4

July - September 2025	
Net Bill Issuance	613
Net Coupon Issuance	470
Subtotal: Net Marketable Borrowing	1,083
Buyback	26
Ending Cash Balance	891
Beginning Cash Balance	457
Subtotal: Change in Cash Balance	434
Net Implied Funding for FY25 Q4*	624

1

Security	July - September 2025 Bill Issuance			Fiscal Year-to-Date Bill Issuance		
	Gross	Maturing	Net	Gross	Maturing	Net
4-Week	1,275	1,145	130	4,599	4,524	75
6-Week	1,010	865	145	2,300	1,790	510
8-Week	1,095	945	150	4,190	4,185	5
13-Week	1,063	988	75	4,150	4,072	78
17-Week	908	840	68	3,328	3,260	68
26-Week	947	914	33	3,681	3,670	11
52-Week	150	138	12	630	590	40
6-Week CMB	0	0	0	1,620	2,015	(395)
CMBs	120	120	0	270	270	0
Bill Subtotal	6,568	5,955	613	24,768	24,375	392

Security	July - September 2025 Coupon Issuance			Fiscal Year-to-Date Coupon Issuance		
	Gross	Maturing	Net	Gross	Maturing	Net
2-Year FRN	86	72	14	344	276	68
2-Year	207	126	81	828	503	325
3-Year	174	121	53	696	570	126
5-Year	210	137	73	840	458	382
7-Year	132	65	67	528	267	261
10-Year	120	49	71	480	212	268
20-Year	42	0	42	168	0	168
30-Year	69	3	66	276	10	266
5-Year TIPS	0	0	0	94	71	23
10-Year TIPS	40	45	(5)	113	85	28
20-Year TIPS**	0	0	0	0	27	(27)
30-Year TIPS	8	0	8	17	0	17
Coupon Subtotal	1,088	618	470	4,384	2,479	1,904
Buyback		26			185	

Total	7,656	6,598	1,083	29,151	27,040	2,297
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* By adjusting the change in cash balance, Treasury arrives at the net implied funding number.

** Treasury is currently not issuing 20-year TIPS.

Privately-Held Net Marketable Borrowing Definition and Calculation Example

FY 2022 Actual Deficits and Privately-Held Net Marketable Borrowing, in \$ billions

	FY 2022 Actual
FY 2022 Deficit	1,375
FY 2022 + Change in Cash Balance	421
FY 2022 + Other Means of Financing (e.g. Direct Loans)	-125
FY 2022 = Total Net Marketable Borrowing	1,671
FY 2022 + SOMA Redemption	150
FY 2022 = Privately-Held Net Marketable Borrowing	1,821

- Actual deficits are sourced from the Monthly Treasury Statement.
- Actual change in cash balance is sourced from the Daily Treasury Statement. Change in cash balance = cash balance of Sept 30, 2022 - cash balance of Sept 30, 2021
- Other Means of Financing include cash flows associated with federal credit programs, such as those related to student loans and loans to small businesses.
- Privately-Held Net Marketable Borrowing = Total Net Marketable Borrowing + SOMA Redemption
- SOMA redemption is the amount that the Federal Reserve redeems securities that Treasury has to replace with privately-held marketable borrowing. Actual SOMA redemptions amounts is from the Sources and Uses Reconciliation Table.
- Actual Privately-Held Net Marketable Borrowing is from the Sources and Uses Reconciliation Table.

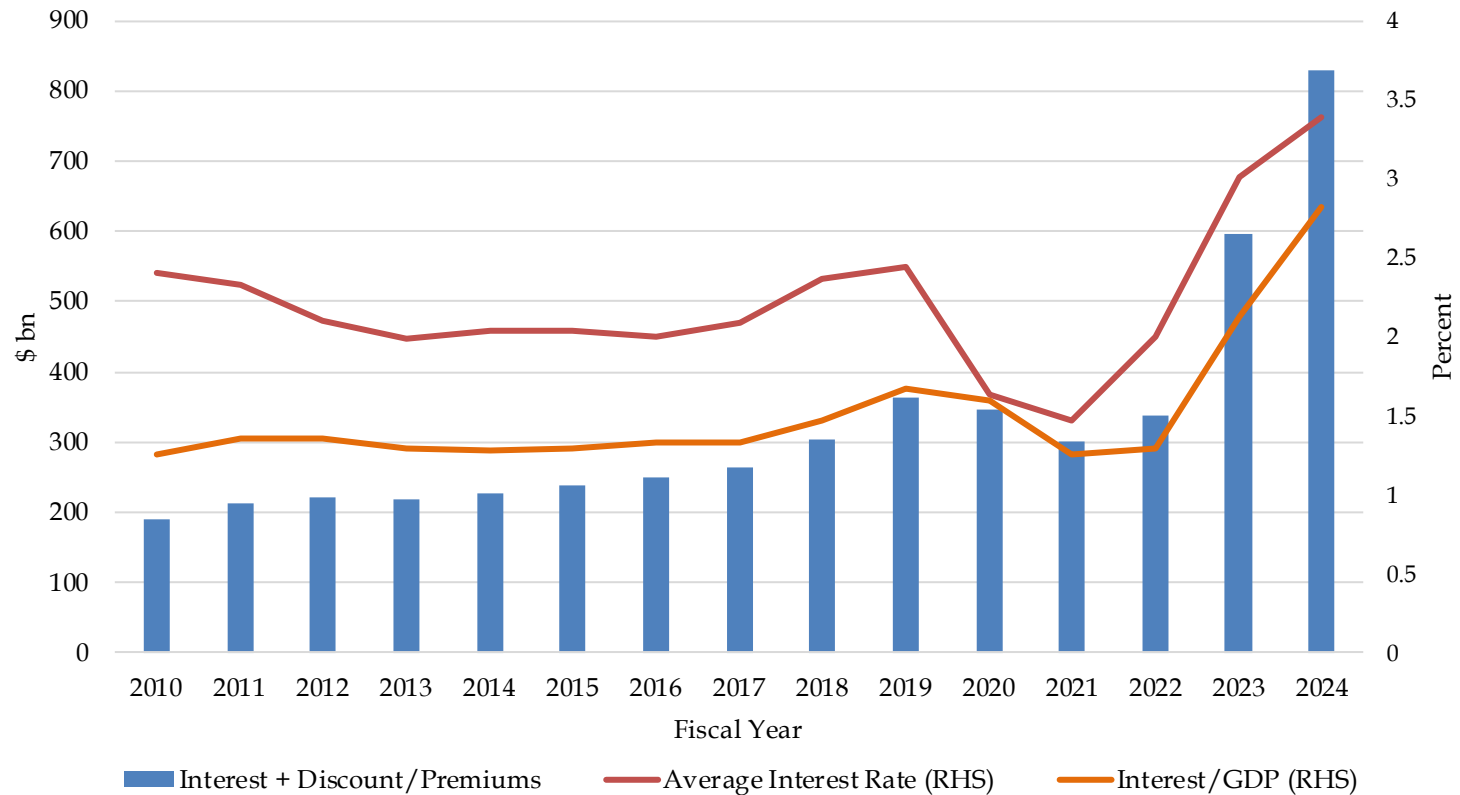
FY 2026-2028 Deficits and Privately-Held Net Marketable Borrowing Estimates, in \$ billions

	Primary Dealer			OMB	CBO
	25th	Median	75th		
FY 2026 Deficit	1,880	1,940	2,020	2,220	2,214
FY 2027 Deficit	1,975	2,052	2,112	1,973	2,323
FY 2028 Deficit	2,013	2,130	2,231	1,841	2,521
FY 2026 Change in Cash Balance	-41	-41	-41		
FY 2027 Change in Cash Balance	0	0	0		
FY 2028 Change in Cash Balance	0	0	0		
FY 2026 Total Net Marketable Borrowing					2,281
FY 2027 Total Net Marketable Borrowing					2,389
FY 2028 Total Net Marketable Borrowing					2,575
FY 2026 SOMA Redemption	5	5	15		
FY 2027 SOMA Redemption	0	0	0		
FY 2028 SOMA Redemption	0	0	0		
FY 2026 Privately-Held Net Marketable Borrowing*	1,850	2,034	2,140		2,286
FY 2027 Privately-Held Net Marketable Borrowing*	1,950	2,129	2,191		2,389
FY 2028 Privately-Held Net Marketable Borrowing*	2,000	2,120	2,267		2,575

Estimates as of:	Oct-25	Sep-25	Aug-25
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- * All privately-held net marketable borrowing estimates are “normalized” using:
 - 1) the median Primary Dealer’s estimates for SOMA redemptions, and
 - 2) assumed Fiscal Year 2026 cash balance of \$850 billion, held constant in out years.
- OMB’s deficit projections are from Table 1 of “Mid-Session Review, Technical Supplement to the 2026 Budget,” September 2025. OMB’s borrowing estimates are not available for the November 2025 refunding.
- CBO’s deficit projections are from Table 1 of “Effects on Deficits and the Debt of Public Law 119-21 and of Making Certain Tax Policies in the Act Permanent,” August 2025. CBO deficit estimates have been adjusted to account for the effects of the One Big Beautiful Bill, but not other factors such as tariff revenue. CBO’s total borrowing projections are derived by applying the same changes from deficit to the CBO’s January 2025 total borrowing estimates.

Historical Marketable Treasury Debt Service Cost

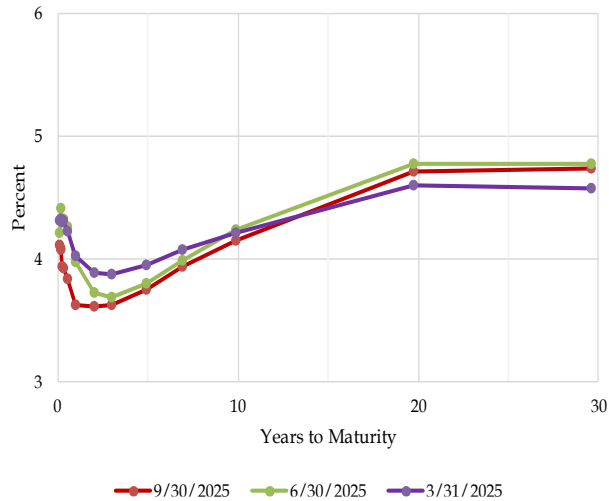


Source: <https://fiscaldata.treasury.gov/datasets>

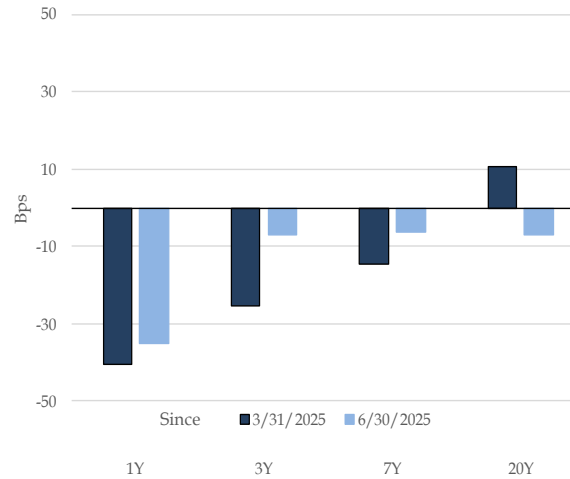
The average interest rates for total marketable debt do not include the Treasury Inflation-Indexed Securities and the Treasury Floating Rate Notes. However, they include securities from Federal Financing Bank. The average interest rates in the chart are as of corresponding fiscal year-end-dates.

Various Historical Treasury Interest Rate Metrics

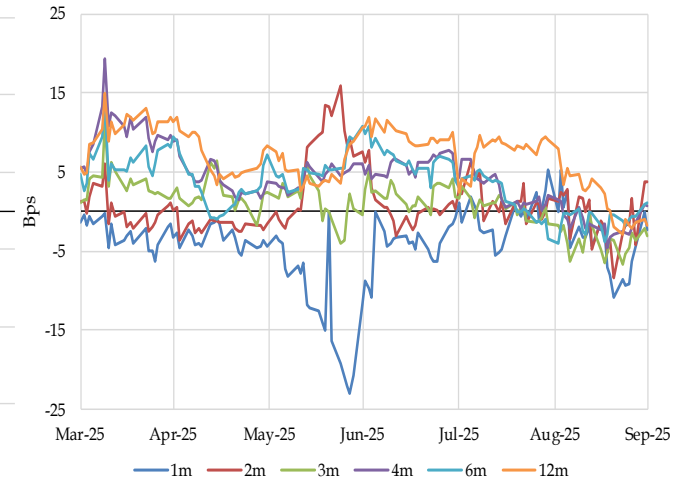
**Treasury Nominal Yield Curve
as of specified dates**



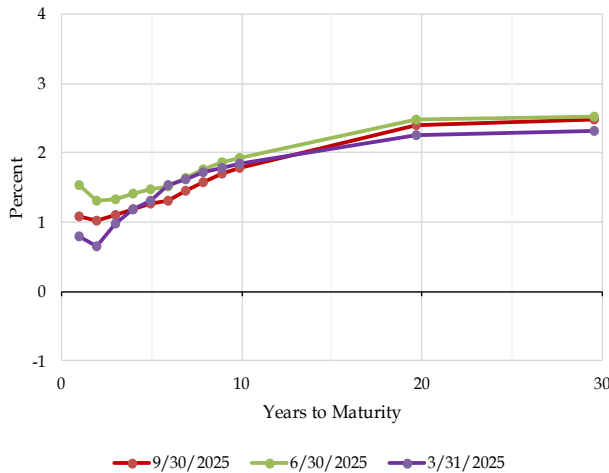
**Nominal Yield Changes in Selected Tenors
Through the end of 09/30/25**



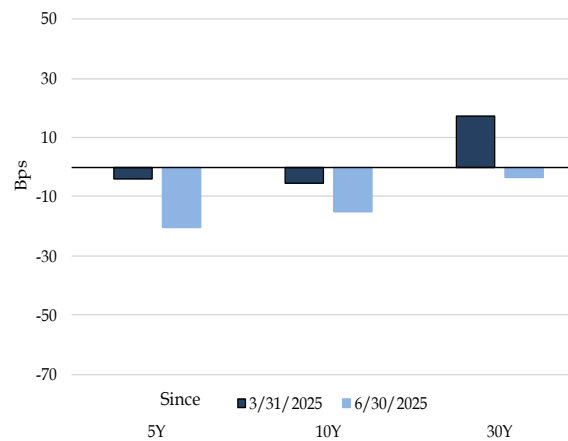
Bills-SOFR OIS spreads



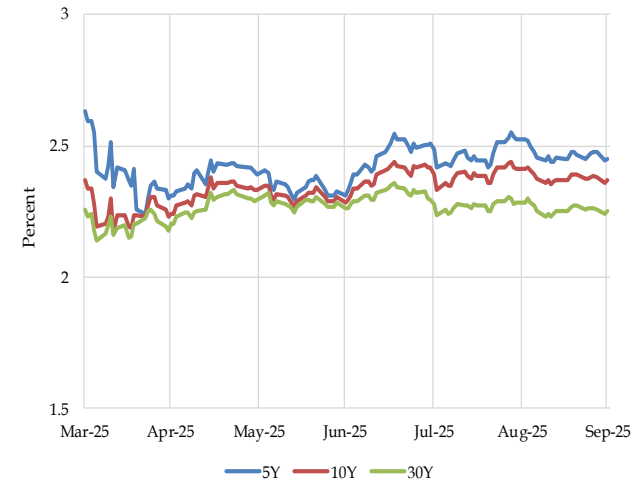
**Treasury Real Yield Curve
as of specified dates**



**Real Yield Changes in Selected Tenors
Through the end of 09/30/25**



Breakevens



**Projected Privately-Held Net Marketable Borrowing
Assuming Private Coupon Issuance & Net Privately-Held Bills
Outstanding Remain Constant as of 10/31/2025***

Fiscal Year	Bills	2/3/5	7/10/20/30	TIPS	FRN	Historical/Projected Net Borrowing Capacity
2021	(1,315)	1,260	1,328	55	92	1,420
2022	(53)	744	1,027	61	42	1,821
2023	1,689	319	680	50	(38)	2,699
2024	789	737	902	87	52	2,567
2025	394	832	963	41	68	2,298
2026	362	513	969	70	10	1,924
2027	198	337	843	52	0	1,430
2028	198	297	523	30	0	1,048
2029	198	85	647	30	0	960
2030	198	70	703	36	0	1,007
2031	198	0	509	19	0	726
2032	198	0	509	(4)	0	703
2033	198	0	519	2	0	720
2034	198	0	438	(9)	0	627
2035	198	0	444	(25)	0	617
2036	198	0	449	(27)	0	619

*SOMA bill purchases are estimated on recent MBS principal payments.

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	7/8/2025	4.240	3.26	49.2	18.6	2.8	78.6	5.8	0.2	0.5
4-Week	7/15/2025	4.235	3.08	74.1	20.8	5.1	74.2	5.9	0.3	0.8
4-Week	7/22/2025	4.230	2.91	84.1	18.6	4.7	76.7	5.9	0.3	0.9
4-Week	7/29/2025	4.245	2.69	89.2	29.1	2.9	68.0	5.8	0.3	0.9
4-Week	8/5/2025	4.290	2.63	89.1	29.4	3.1	67.4	5.9	0.3	0.9
4-Week	8/12/2025	4.300	2.82	91.9	32.1	3.4	64.4	8.1	0.3	1.0
4-Week	8/19/2025	4.280	2.67	91.8	34.3	4.0	61.7	8.2	0.3	1.0
4-Week	8/26/2025	4.300	2.61	91.6	32.5	4.9	62.6	8.4	0.3	0.9
4-Week	9/2/2025	4.245	2.68	91.4	31.8	5.8	62.4	8.6	0.3	0.9
4-Week	9/9/2025	4.175	2.78	93.5	33.1	6.2	60.7	6.5	0.3	0.9
4-Week	9/16/2025	4.060	2.64	93.6	31.4	4.8	63.8	6.4	0.3	0.9
4-Week	9/23/2025	4.040	2.71	93.7	32.5	6.9	60.6	6.3	0.3	0.9
4-Week	9/30/2025	4.080	2.61	93.5	38.2	5.8	56.0	6.5	0.3	0.9
6-Week	7/3/2025	4.340	2.97	48.7	41.1	8.4	50.5	1.3	3.4	0.8
6-Week	7/10/2025	4.265	3.27	48.8	34.7	6.4	58.9	1.2	2.9	0.7
6-Week	7/17/2025	4.260	2.92	68.9	31.6	3.9	64.5	1.1	2.9	1.0
6-Week	7/24/2025	4.260	2.85	78.9	31.6	2.9	65.5	1.1	3.1	1.2
6-Week	7/31/2025	4.270	2.66	79.1	38.9	5.5	55.5	0.9	4.8	1.2
6-Week	8/7/2025	4.300	2.60	83.9	37.4	3.9	58.8	1.1	4.7	1.3
6-Week	8/14/2025	4.265	2.40	83.6	56.6	4.7	38.7	1.4	5.8	1.3
6-Week	8/21/2025	4.245	2.57	83.6	47.7	5.7	46.6	1.4	4.0	1.2
6-Week	8/28/2025	4.210	2.93	83.7	29.0	6.9	64.1	1.3	3.7	1.2
6-Week	9/4/2025	4.190	2.64	83.8	36.2	5.5	58.3	1.2	1.7	1.2
6-Week	9/11/2025	4.090	2.73	83.7	37.2	5.7	57.1	1.3	2.8	1.2
6-Week	9/18/2025	4.040	2.82	83.5	35.7	4.9	59.4	1.5	2.4	1.2
6-Week	9/25/2025	4.010	2.51	83.5	49.3	5.5	45.2	1.5	3.5	1.2
6-Week	10/2/2025	4.020	2.58	83.4	40.5	5.8	53.7	1.6	4.9	1.3
8-Week	7/8/2025	4.300	3.10	42.9	41.7	6.2	52.1	2.1	0.2	0.9
8-Week	7/15/2025	4.275	2.86	68.1	40.3	7.2	52.5	1.9	0.2	1.3
8-Week	7/22/2025	4.270	2.60	78.1	42.8	4.8	52.5	1.9	0.2	1.5
8-Week	7/29/2025	4.265	2.63	81.3	33.1	7.0	59.9	3.7	0.2	1.6
8-Week	8/5/2025	4.290	2.52	83.3	41.8	5.3	52.9	1.7	0.2	1.6
8-Week	8/12/2025	4.235	3.16	83.4	24.7	3.8	71.5	1.6	0.2	1.6
8-Week	8/19/2025	4.185	2.72	83.4	41.2	4.6	54.2	1.6	0.2	1.6
8-Week	8/26/2025	4.220	2.71	83.4	27.7	5.7	66.7	1.6	0.2	1.6
8-Week	9/2/2025	4.145	2.92	83.3	31.8	4.6	63.5	1.7	0.2	1.6
8-Week	9/9/2025	4.100	2.79	83.4	38.7	7.0	54.3	1.6	0.2	1.6
8-Week	9/16/2025	4.000	2.81	83.4	28.5	5.6	65.9	1.6	0.2	1.6
8-Week	9/23/2025	3.965	2.76	83.7	34.2	7.5	58.3	1.3	0.2	1.6
8-Week	9/30/2025	4.000	2.65	83.7	33.2	6.1	60.8	1.3	0.2	1.6

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

Bills (cont.)										
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	7/10/2025	4.255	2.75	79.9	29.4	6.1	64.5	2.1	4.7	2.7
13-Week	7/17/2025	4.245	3.10	79.3	32.2	5.9	61.9	2.7	3.3	2.6
13-Week	7/24/2025	4.240	2.98	79.6	31.2	6.7	62.1	2.4	3.2	2.6
13-Week	7/31/2025	4.235	3.21	79.7	22.2	5.9	72.0	2.3	4.9	2.7
13-Week	8/7/2025	4.165	3.17	79.8	23.7	7.2	69.1	2.2	4.6	2.7
13-Week	8/14/2025	4.150	2.64	79.8	36.7	5.6	57.7	2.2	5.6	2.7
13-Week	8/21/2025	4.130	2.70	79.8	31.7	8.5	59.8	2.2	3.9	2.6
13-Week	8/28/2025	4.100	3.07	79.9	28.9	7.1	64.0	2.1	3.6	2.6
13-Week	9/4/2025	4.045	2.96	79.8	28.0	7.2	64.7	2.2	1.7	2.5
13-Week	9/11/2025	3.940	2.81	79.7	36.5	8.3	55.2	2.3	2.7	2.6
13-Week	9/18/2025	3.905	3.11	79.6	29.1	6.6	64.3	2.4	2.3	2.6
13-Week	9/25/2025	3.860	3.33	80.0	19.4	6.4	74.2	2.0	3.4	2.6
13-Week	10/2/2025	3.860	2.74	80.2	34.2	7.0	58.8	1.8	4.7	2.7
17-Week	7/8/2025	4.185	3.04	64.5	33.2	6.4	60.5	0.5	0.3	2.6
17-Week	7/15/2025	4.230	3.03	64.5	34.1	5.6	60.3	0.5	0.2	2.6
17-Week	7/22/2025	4.230	3.02	64.3	37.7	6.2	56.1	0.7	0.2	2.6
17-Week	7/29/2025	4.225	3.55	64.4	25.5	9.0	65.5	0.6	0.2	2.6
17-Week	8/5/2025	4.210	3.45	64.4	24.4	5.5	70.1	0.6	0.2	2.6
17-Week	8/12/2025	4.105	3.31	64.4	26.4	5.7	68.0	0.6	0.2	2.6
17-Week	8/19/2025	4.050	3.50	64.4	28.7	5.3	66.0	0.6	0.2	2.6
17-Week	8/26/2025	4.050	3.14	64.5	32.6	6.4	60.9	0.5	0.2	2.6
17-Week	9/2/2025	4.020	3.00	64.5	26.1	5.0	68.9	0.5	0.2	2.6
17-Week	9/9/2025	3.965	3.34	64.4	30.8	5.7	63.5	0.6	0.2	2.6
17-Week	9/16/2025	3.850	3.26	64.4	30.9	5.5	63.6	0.6	0.2	2.6
17-Week	9/23/2025	3.815	3.06	64.5	32.1	7.2	60.7	0.5	0.2	2.6
17-Week	9/30/2025	3.805	2.93	64.5	28.6	6.1	65.3	0.5	0.2	2.6

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

Bills (cont.)										
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)*
26-Week	7/10/2025	4.145	3.00	71.1	24.0	11.7	64.3	1.9	4.2	4.7
26-Week	7/17/2025	4.125	3.10	70.7	23.8	10.6	65.6	2.3	3.0	4.7
26-Week	7/24/2025	4.115	3.06	70.7	27.3	11.0	61.6	2.3	2.8	4.7
26-Week	7/31/2025	4.120	3.36	70.7	21.3	9.6	69.1	2.3	4.4	4.8
26-Week	8/7/2025	3.980	3.14	71.0	16.3	9.1	74.6	2.0	4.1	4.8
26-Week	8/14/2025	3.970	3.21	71.1	19.6	8.5	71.9	1.9	5.0	4.8
26-Week	8/21/2025	3.945	2.95	71.1	23.7	10.2	66.1	1.9	3.4	4.6
26-Week	8/28/2025	3.915	3.36	71.1	16.4	14.2	69.5	1.9	3.2	4.6
26-Week	9/4/2025	3.880	2.70	71.2	34.3	11.0	54.7	1.8	1.5	4.5
26-Week	9/11/2025	3.730	3.17	71.0	22.6	9.6	67.8	2.0	2.4	4.6
26-Week	9/18/2025	3.715	3.09	71.4	26.1	6.9	67.0	1.6	2.1	4.6
26-Week	9/25/2025	3.705	3.01	71.6	24.5	10.1	65.4	1.4	3.0	4.6
26-Week	10/2/2025	3.715	3.00	71.5	25.4	8.4	66.3	1.5	4.2	4.7
52-Week	7/10/2025	3.925	3.23	48.8	31.9	4.9	63.2	1.2	2.9	6.5
52-Week	8/7/2025	3.760	2.85	48.9	38.6	4.8	56.6	1.1	2.8	6.5
52-Week	9/4/2025	3.660	3.82	49.0	15.5	2.3	82.2	1.0	1.0	6.2
52-Week	10/2/2025	3.540	2.92	49.2	40.5	4.3	55.2	0.8	2.9	6.5
CMB	7/8/2025	4.285	2.90	59.9	34.9	4.5	60.7	0.1	0.0	1.6

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

Nominal Coupons & FRNs										
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	7/31/2025	3.920	2.62	68.4	10.3	34.4	55.3	0.6	4.7	17.8
2-Year	9/2/2025	3.641	2.69	68.4	9.7	33.2	57.1	0.6	8.3	18.3
2-Year	9/30/2025	3.571	2.51	68.7	11.5	30.8	57.7	0.3	3.8	17.4
3-Year	7/15/2025	3.891	2.51	57.8	16.5	29.4	54.1	0.2	6.9	22.9
3-Year	8/15/2025	3.669	2.53	57.8	17.9	28.1	54.0	0.2	19.7	27.6
3-Year	9/15/2025	3.485	2.73	57.8	8.4	17.4	74.2	0.2	0.0	20.4
5-Year	7/31/2025	3.983	2.31	69.9	12.2	29.5	58.3	0.1	4.8	42.5
5-Year	9/2/2025	3.724	2.36	69.9	8.8	30.7	60.5	0.1	8.4	44.2
5-Year	9/30/2025	3.710	2.34	69.9	11.9	28.6	59.4	0.1	3.9	41.8
7-Year	7/31/2025	4.092	2.79	43.9	4.1	33.7	62.3	0.1	3.0	35.8
7-Year	9/2/2025	3.925	2.49	43.9	9.8	12.8	77.4	0.1	5.3	37.2
7-Year	9/30/2025	3.953	2.40	43.9	12.0	31.6	56.4	0.1	2.4	35.2
10-Year	7/15/2025	4.362	2.61	38.9	10.9	23.7	65.4	0.1	4.6	43.5
10-Year	8/15/2025	4.255	2.35	41.9	16.2	19.6	64.2	0.1	14.3	57.2
10-Year	9/15/2025	4.033	2.65	38.9	4.2	12.7	83.1	0.1	0.0	39.0
20-Year	7/31/2025	4.935	2.79	12.9	10.7	21.9	67.4	0.1	0.9	21.7
20-Year	9/2/2025	4.876	2.54	15.8	12.9	26.5	60.6	0.2	1.9	27.7
20-Year	9/30/2025	4.613	2.74	12.9	7.6	27.9	64.6	0.1	0.7	21.4
30-Year	7/15/2025	4.889	2.38	22.0	12.8	27.4	59.8	0.0	2.6	47.3
30-Year	8/15/2025	4.813	2.27	25.0	17.5	23.0	59.5	0.0	8.5	65.0
30-Year	9/15/2025	4.651	2.38	22.0	10.0	28.0	62.0	0.0	0.0	42.8
2-Year FRN	7/31/2025	0.159	2.81	30.0	39.4	0.8	59.7	0.0	2.0	0.1
2-Year FRN	8/29/2025	0.195	3.22	28.0	21.4	0.7	77.9	0.0	0.0	0.0
2-Year FRN	9/26/2025	0.200	3.15	28.0	28.9	0.9	70.2	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)**
10-Year TIPS	7/31/2025	1.985	2.41	20.9	5.4	32.0	62.7	0.1	1.4	25.3
10-Year TIPS	9/30/2025	1.734	2.20	19.0	17.8	26.1	56.1	0.0	1.0	22.0
30-Year TIPS	8/29/2025	2.650	2.78	8.0	4.5	25.1	70.4	0.0	0.0	20.2

*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.

Considerations for Optimal Debt Issuance

Treasury Borrowing Advisory Committee

November 2025

Optimal Debt Model: Please present on updated results from the TBAC's Optimal Debt issuance model. How has the optimal issuance strategy changed in recent years and what have been the drivers of that change? What advantages and limitations to the model are most relevant to consider in the current environment? Please elaborate. Are there other approaches or models that Treasury should also consider for thinking about optimal debt issuance? Should Treasury consider other metrics for measuring rollover risk, volatility, liquidity, and term premium. What metrics are most useful and why?

Executive Summary (1/2)

- Treasury's goal is to fund the government at the lowest cost over time. Part of achieving this goal is choosing an issuance mix of securities that minimizes expected costs and volatility.
 - This goal is also served by maintaining the depth, liquidity, and predictability of the Treasury market.
 - Treasury's issuance mix should also consider other interests of the taxpayer, like providing useful products to investors, maintaining liquid benchmark rates, and keeping "dry powder" to be able to borrow quickly during an economic shock.
- To help Treasury achieve this goal, TBAC created the Optimal Debt Model as one input to inform the choice of issuance mix. The Model assesses the impacts of issuance strategies by simulating evolutions of the economy and fiscal flows. The resulting assessments of expected costs can be considered alongside other factors (e.g., demand, liquidity, and refinancing needs) in making issuance decisions.
- We refreshed the Model using recent economic & market conditions and fiscal estimates, which include the impacts of the OBBB and expected tariff revenue. We chose to rely on dealer deficit estimates (from July 2025) rather than CBO estimates to ensure that we were incorporating proper estimates of tariff revenue.
- Relative to 2019, the expected level and volatility of debt service costs have increased significantly, though the change since 2023 is more incremental.
 - Term premium has expanded considerably since 2019.
 - Debt levels and deficits have increased substantially since 2019. In 2025, new policy measures in the OBBB increased expected primary deficits but expected tariff revenue offsets much of those increases.
 - Current issuance mix is near the efficient frontier of debt service costs vs volatility. Treasury's move toward a higher share of debt in T-bills has somewhat reduced expected costs but increased volatility.

Executive Summary (2/2)

- It is important to consider the optimal issuance strategy under a range of plausible macro scenarios, so we added alternatives to the “middle-of-the-road” scenario to the Model.
- Looking across potential macroeconomic environments, Treasury’s current issuance mix is well-positioned to balance a low cost of debt with low volatility in a productivity boom. However, especially in adverse scenarios, and to some extent in the baseline scenario, a move out of bills and increases in shorter-maturity coupon issuance would decrease volatility without much increase in expected cost.
- Term premium is a key input to the Model and debt management choices. A notable increase in the supply and decrease in the demand for global long-dated sovereign debt has put upward pressure on term premium.
 - An optimal debt management strategy needs to consider the evolving supply/demand balance at different points on the curve while maintaining regular & predictable issuance patterns.
 - A limitation of the Model is the inability to distinguish the strength or fluctuations of demand across the curve.
- Given higher expected debt service costs, we re-assessed 2018 TBAC work on a dynamic issuance strategy that gradually shifts issuance mix in response to economic conditions. We think that some degree of response to observed term premium shifts could lower costs while remaining consistent with “regular and predictable” principles of debt management. More work needs to be done on designing and assessing such a strategy.

Summary of Model Refresh for 2025

- Debt levels have increased from ~75% GDP to ~94% GDP since 2019.
- The 5yr projection of primary deficits has increased by 1.3% GDP since 2019, with an increase of 0.4% GDP since 2023.*
- Inflation has fallen considerably since 2023 but remains above 2019 levels.
- Since 2019, the projected cost of debt has increased by 1.4% GDP, and the volatility of costs has increased by 0.3% GDP.
- Model uses a single model of economic and fiscal relationships – work in this presentation (shown on subsequent pages) contemplates a range of possible outcomes.

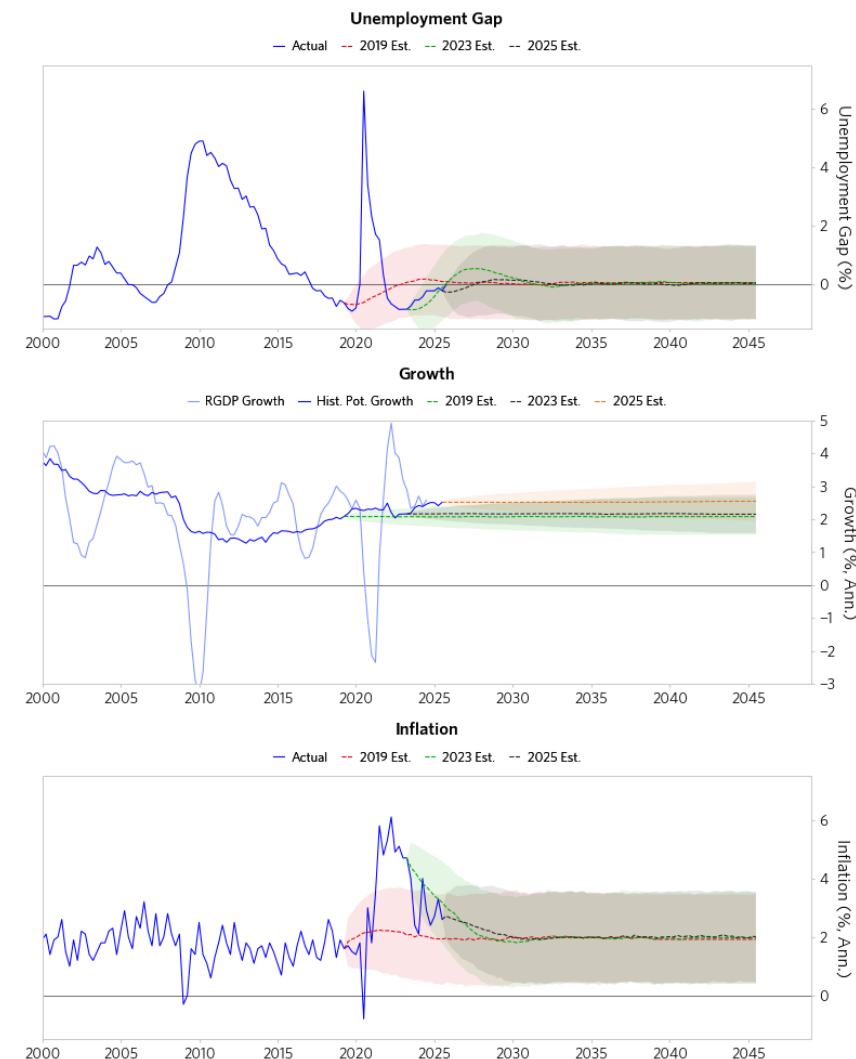
Model As Of	2019	2023	2025
Debt (%GDP)	75%	89%	94%
Primary Deficit (Next 5y Avg)	-2.1%	-3.0%	-3.4%
Trend Growth	2.1%	2.2%	2.5%
Inflation	1.6%	4.7%	2.6%
Annual Debt Service Cost**	3.1%	4.1%	4.5%
Volatility of Debt Service Cost**	0.7%	0.8%	1.0%

* For 2025, we chose to use dealer estimates as of July 2025 rather than the CBO estimates typically used in the Optimal Debt Model. See Appendix slide 29 for details.

** Debt service cost and volatility are calculated from interest costs over the 20-year horizon across 3,000 Model simulations using Treasury's recent actual issuance mix.

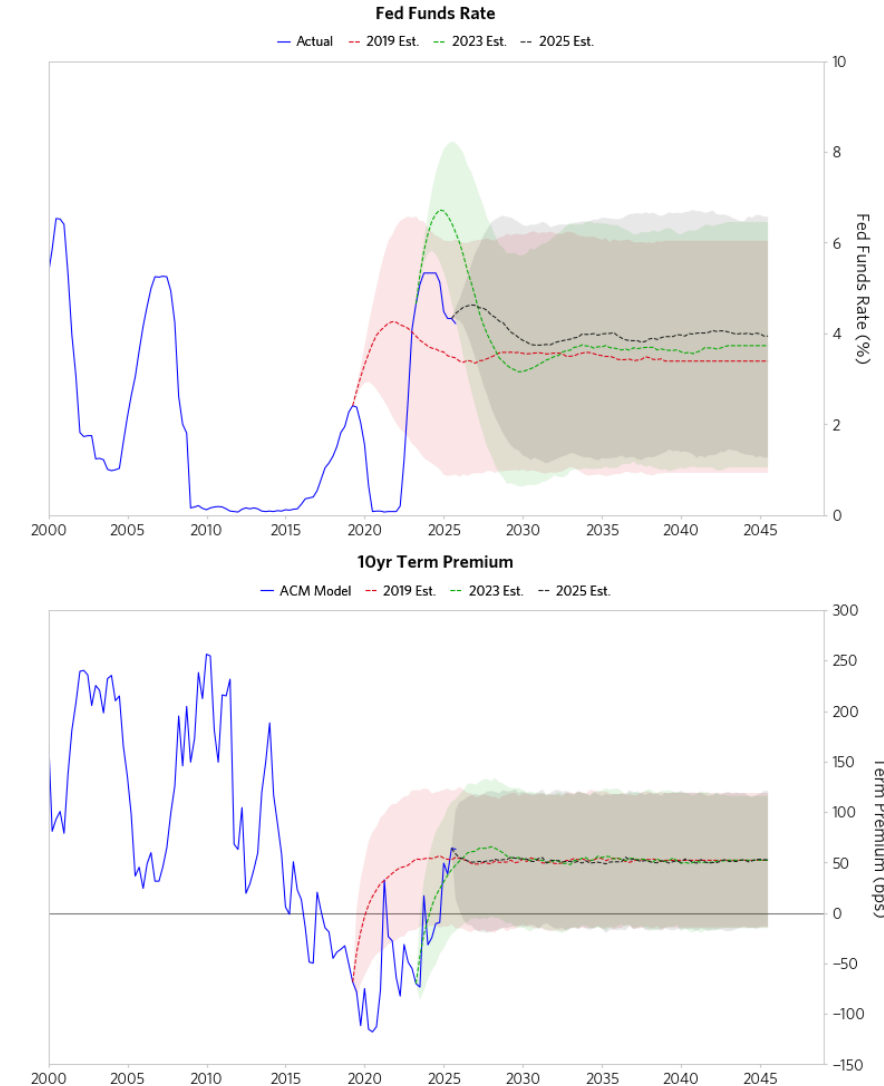
Model Inputs and Assumptions: Macro Conditions

- Optimal Debt Model runs 3,000 simulations of key macroeconomic, fiscal, and market variables.
- Inputs start at current observed levels, then evolve via random shocks and basic assumed relationships, (e.g., higher rates slow growth, that reduces inflation with a lag, and so on).
- Model makes assumptions of linkages that are typical of recent decades in US economy, e.g., that the Fed can successfully manage inflation to 2% by adjusting policy rates.
- Charts at right and on subsequent pages show some key inputs as of 2019, 2023, and 2025 model updates, with colored bands reflecting 15th to 85th percentile range of simulated outcomes.



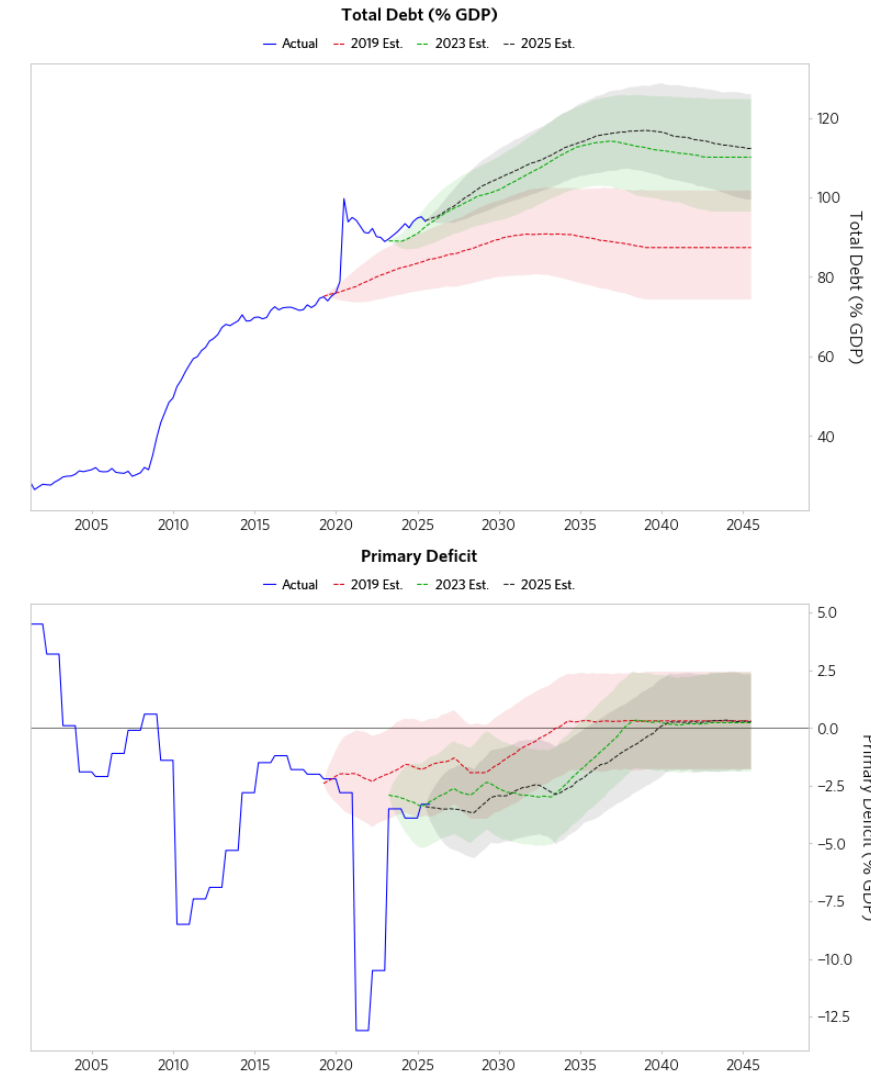
Model Inputs and Assumptions: Rates

- Fed Funds in Model:
 - Evolves following basic inertial Taylor Rule in response to economic shocks.
 - Is anchored to a neutral real rate that is 0.5% below potential growth.
- Term premium in Model:
 - Starts at current level of ACM term premium model.
 - Evolves with influence of macroeconomic conditions (e.g., inflation expectations) and random shocks.
 - Tends toward ~0.5% at the 10yr point and ~0.0% at the 2yr point. Note that this is not far from current levels in popular ACM model.
- Model does not reflect impact of issuance decisions on term premium level.
- Fed Funds rate + appropriate term premium are used to determine interest rates (and coupon rates at issuance) for different Treasury securities.



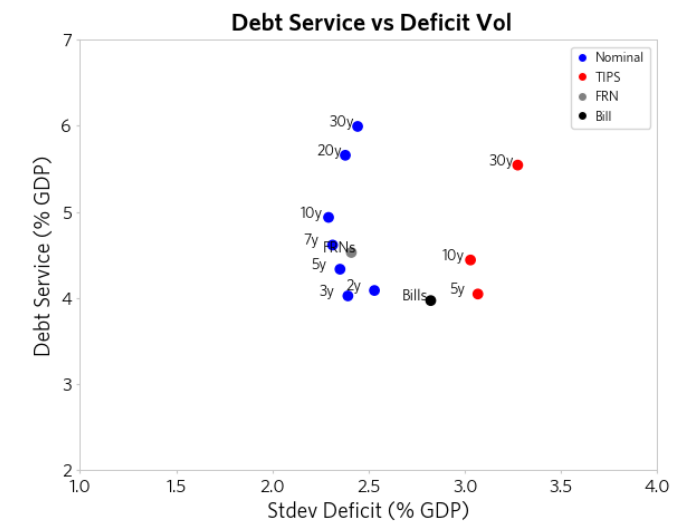
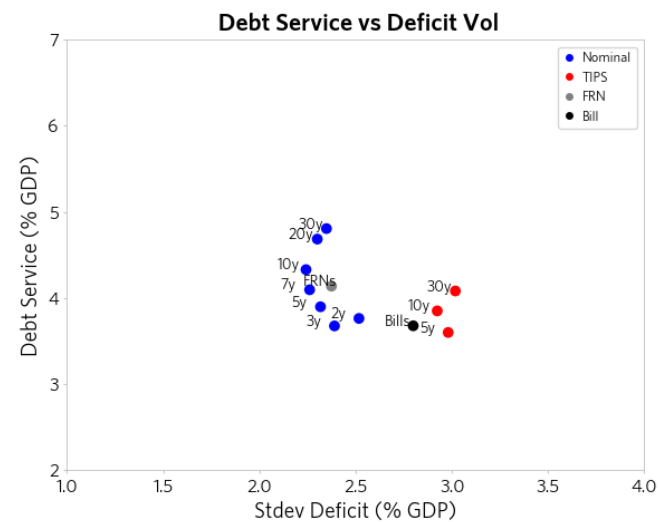
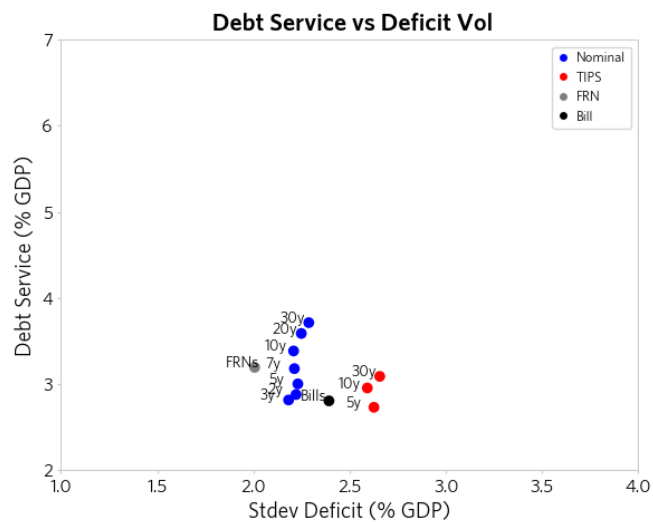
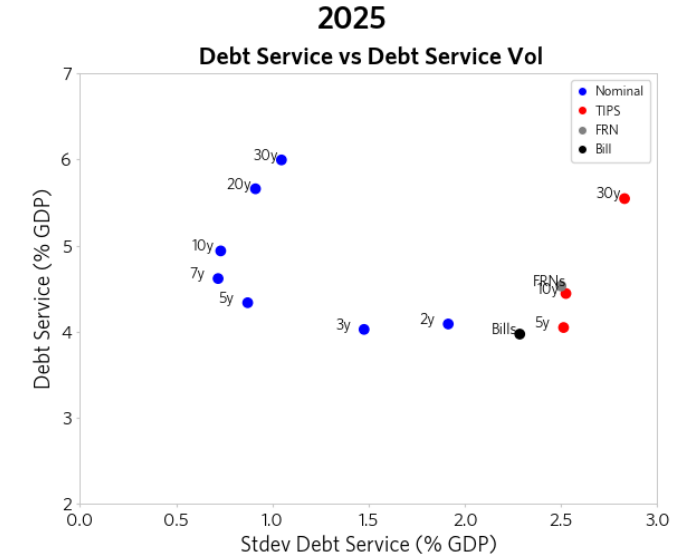
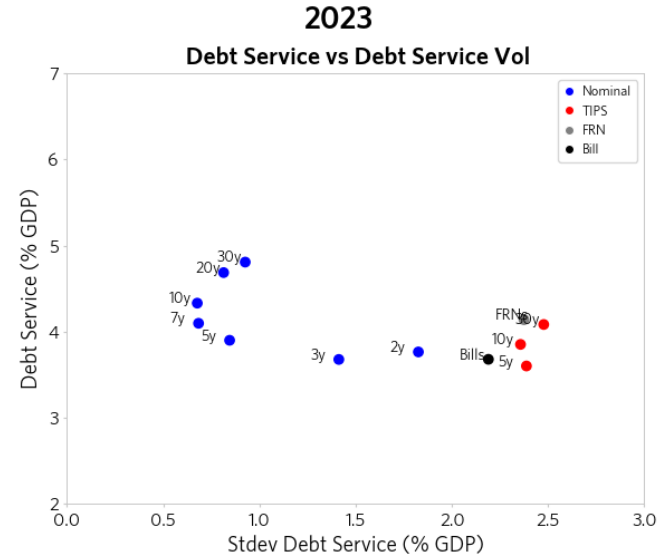
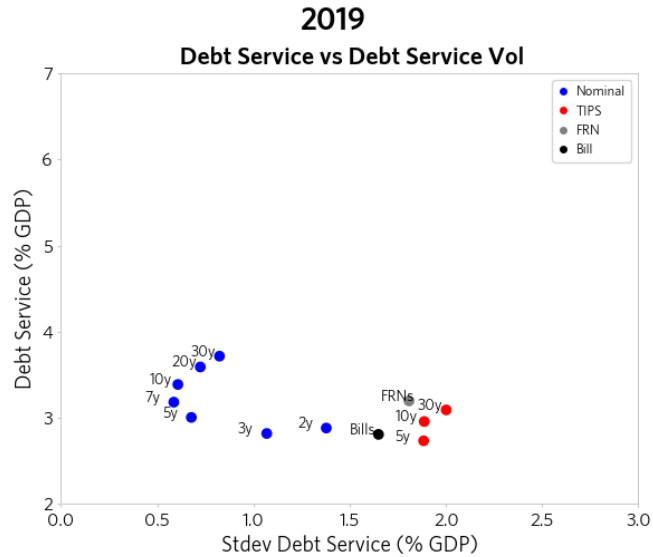
Model Inputs and Assumptions: Fiscal Conditions

- Model uses projections for primary deficits for next 10 years, then assumes a consolidation to 0% primary deficit by year 15.
 - Typically, the Model sources CBO for these projections. For this update, we chose to use primary dealer estimates (through 2027) to reflect expected tariff revenue that is important to consider but is not reflected in currently available CBO estimates. We extended these with available CBO estimates for out years.*
- Deficits are funded via specified issuance mixes. The model does not consider elasticity of demand at different points on the curve, i.e., it would allow for arbitrary amounts of securities to be issued in a single product without a penalty on the interest rate paid.
- The model then runs through simulations of key fiscal variables (amounts of different securities outstanding, coupon rates, interest burden, debt levels)
- Charts at right show “baseline” scenarios for 2019, 2023, and today, using conditions and Treasury’s issuance mix on each date.
 - For today’s model, debt levels peak around 120% GDP. This is lower than CBO’s projections due to the Model’s assumed consolidation to 0% primary deficit.
 - Slide 12 shows model outputs if primary deficit remains elevated.



* See Appendix slide 29 for further discussion.

Model Outputs: Debt Service Cost and Volatility if Full Issuance Needs Met with Individual Treasury Products



Efficient Frontier of Debt Issuance Mixes

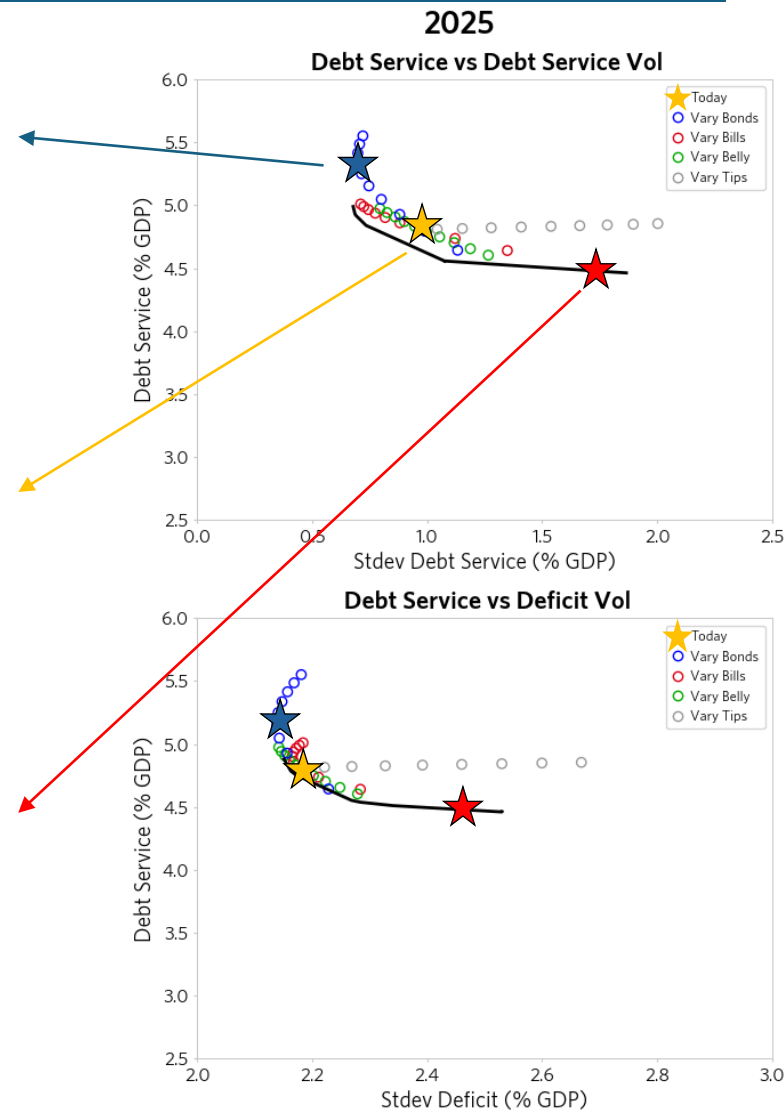
- The “efficient frontier” shows issuance strategies that produce lowest expected debt service cost for each level of debt service volatility (top chart) or overall deficit volatility (lower chart).
- Costs vs. the frontier are a useful reference for the costs of an issuance strategy, but strictly optimizing for being on the frontier misses important considerations not reflected in the model (e.g., not overissuing in a single product).
- Tradeoff between level and volatility of debt cost (i.e., risk tolerance) is core policy choice of debt manager and may vary over time.
- Current issuance mix is close to the efficient frontier. Annotations show several indicative issuance mixes (including Treasury’s current mix).

Sample Issuance Mixes
(corresponding to stars on chart)

“More Bonds”	Gross Issuance Share	Long-Run Level Share
Bills	62%	19%
Short Maturity*	9%	23%
Long Maturity*	27%	55%
TIPS	2%	4%

“Today”	Gross Issuance Share	Long-Run Level Share
Bills	62%	36%
Short Maturity*	27%	42%
Long Maturity*	9%	16%
TIPS	2%	6%

“More Bills”	Gross Issuance Share	Long-Run Level Share
Bills	91%	68%
Short Maturity*	5%	14%
Long Maturity*	2%	8%
TIPS	2%	10%

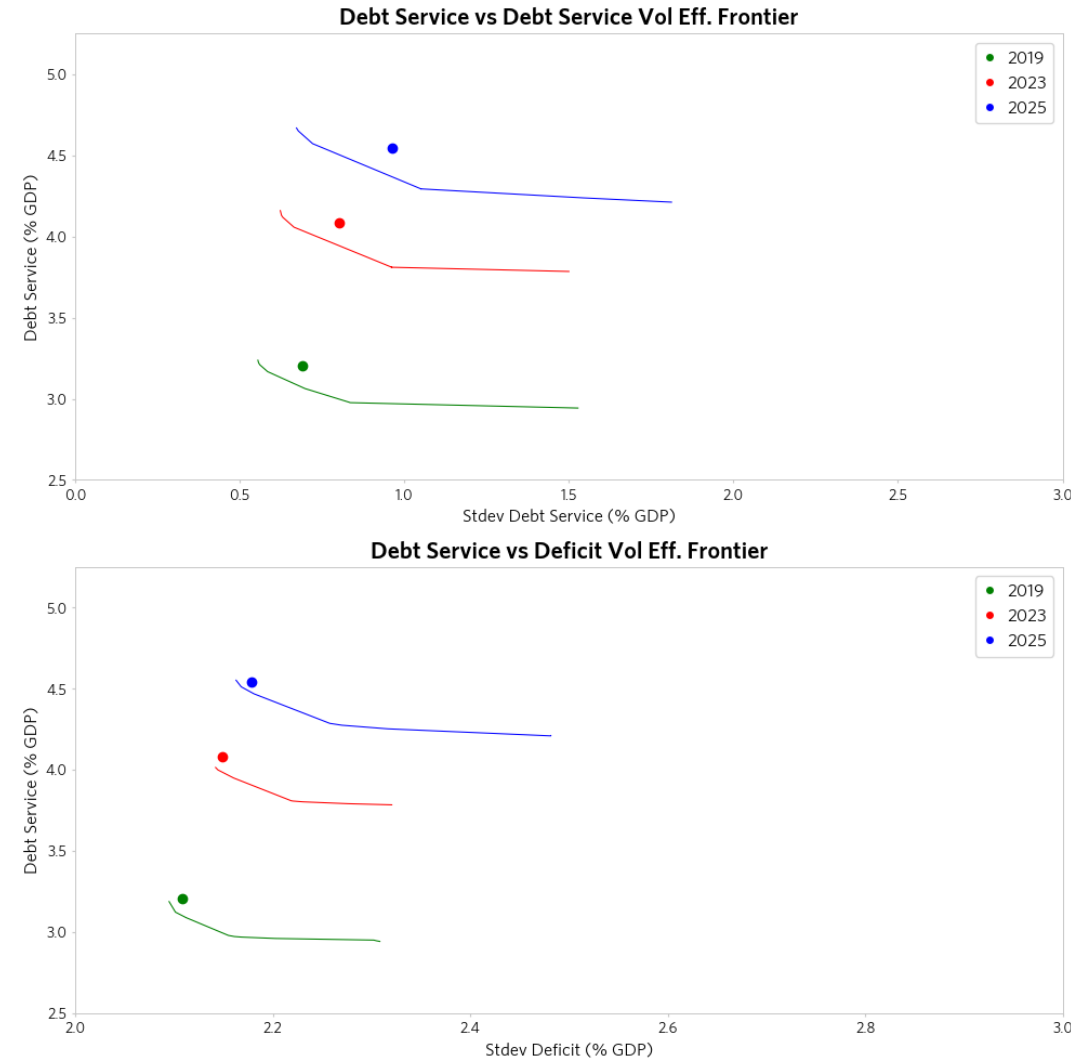


* Short maturities are nominal coupons of 2-, 3-, 5-, and 7-year maturities; long are 10-, 20-, and 30-year. Bills are modeled as issued once per year (regardless of tenor) as a simplifying assumption. “Long-Run Level Share” is the median forecasted composition of debt outstanding after 20 years.

Sources: Treasury, outputs of TBAC Optimal Debt Model

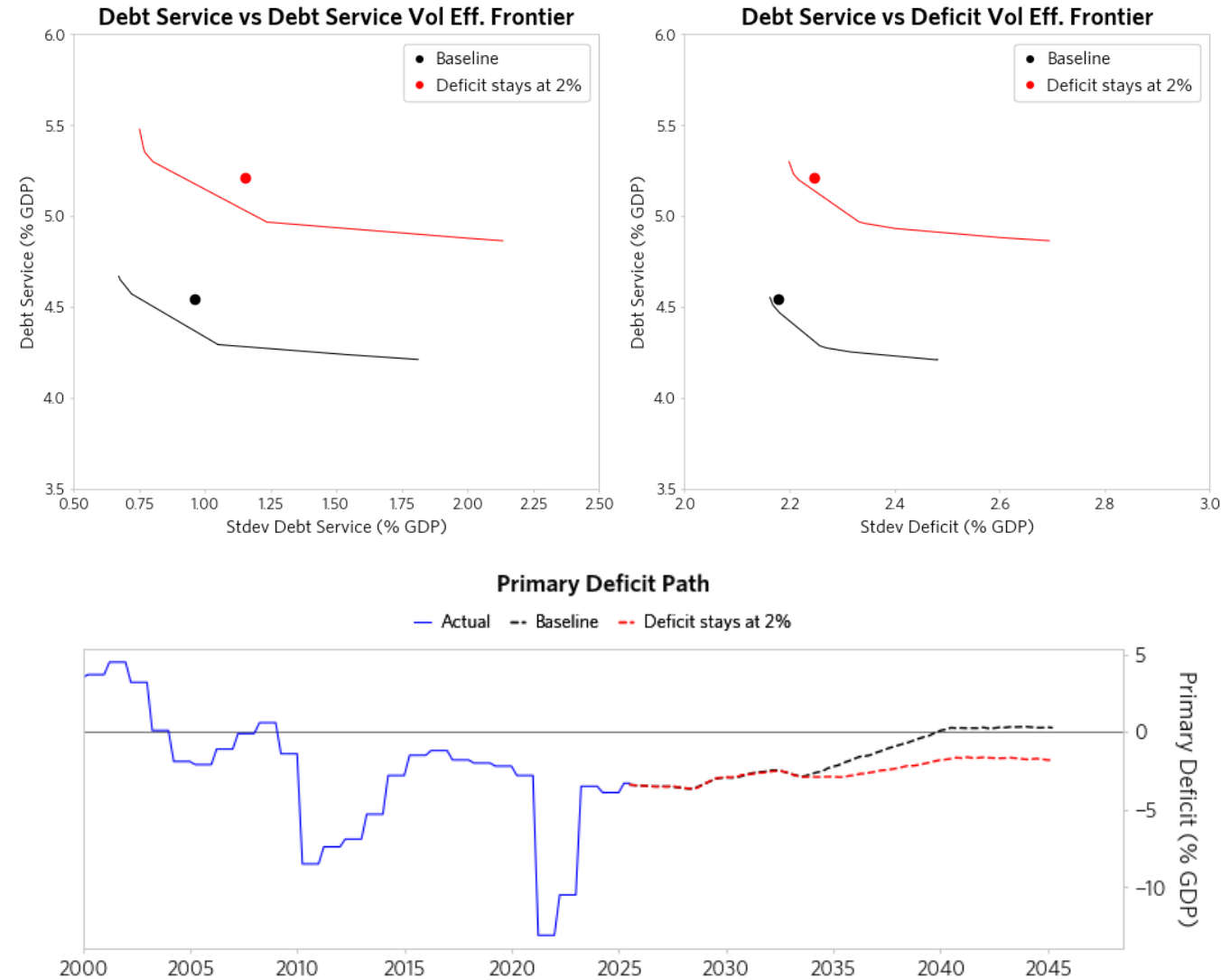
Efficient Frontier Evolution over Recent Years

- Since 2019, modeled costs and volatility of issuance have increased considerably. The primary drivers are increases in debt levels, deficit projections, and term premium.
- Treasury's historical issuance mix for each year is reflected with the dots.
- Between 2019 and 2025, Treasury's issuance mix shifted toward a strategy consistent with somewhat lower expected costs and reasonably higher volatility, (i.e., toward the right and a bit down). This was driven by nominal coupon auction sizes remaining fixed after early 2024.
- Appendix slide 30 includes more details of these charts with different issuance kernel shifts.



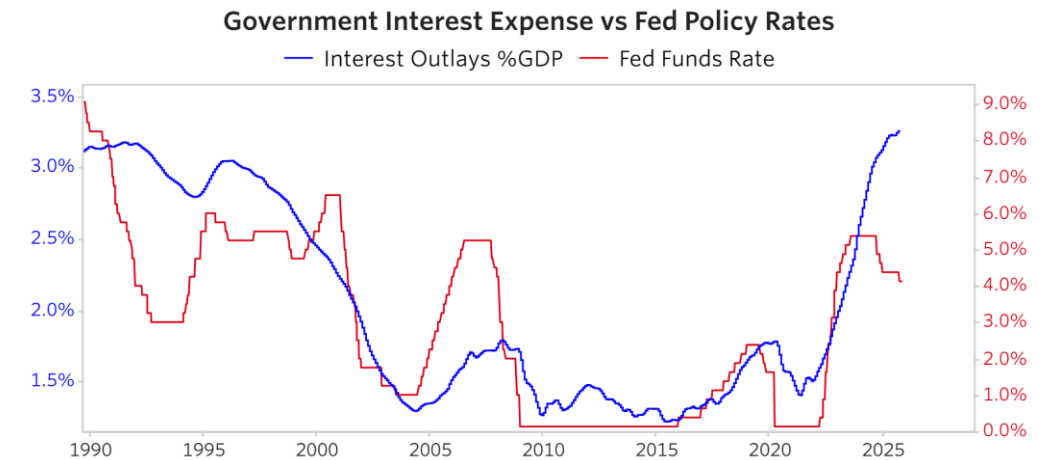
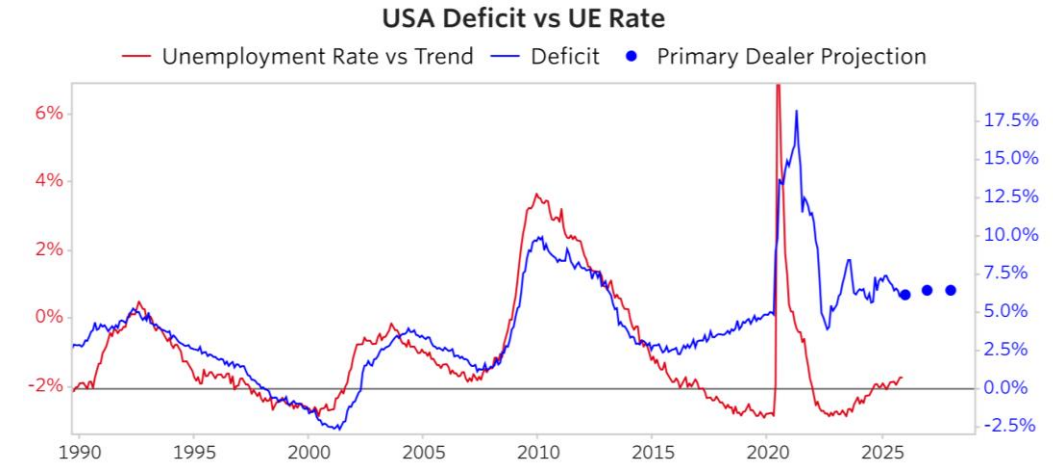
Alternative Assumption Around Primary Deficit Consolidation

- The model assumes that the primary deficit begins consolidating in year 10 and falls to 0% GDP by year 15. Of course there is considerable policy uncertainty 10+ years forward, but this assumption is notably more optimistic than CBO's assessment of current policy.
- We additionally tested the baseline against a case where the primary deficit stabilizes at 2% after 10 years. This is closer to the CBO's 2045 deficit projection of 1.8% as of March 2025.
- In this case, debt service cost increases by 0.9% GDP and debt service volatility increases by 0.25% GDP relative to the baseline.



Evolution of Macroeconomy and Fiscal Borrowing Needs, Range of Outcomes

- As shown on prior slides, fiscal dynamics have significantly increased expected debt service costs since 2019:
 - Recent years have featured high deficits and government borrowing, especially relative to low unemployment rates.
 - CBO and dealer projections are above 5% GDP in the coming years.
 - Elevated government support of economy has required restrictive rates to keep inflation under control, adding to interest burden on debt.
- Higher debt levels make interest paid on the debt a more significant consideration for fiscal projections.
- There is a considerable range around expected economic outcomes and fiscal deficits given rapid policy evolution (e.g., tariffs, international trade deals, shifts in global supply chains).
- Robust modeling of deficit requires considering range of outcomes, as shown on subsequent pages.



Debt Model Should Consider Various Macroeconomic Scenarios

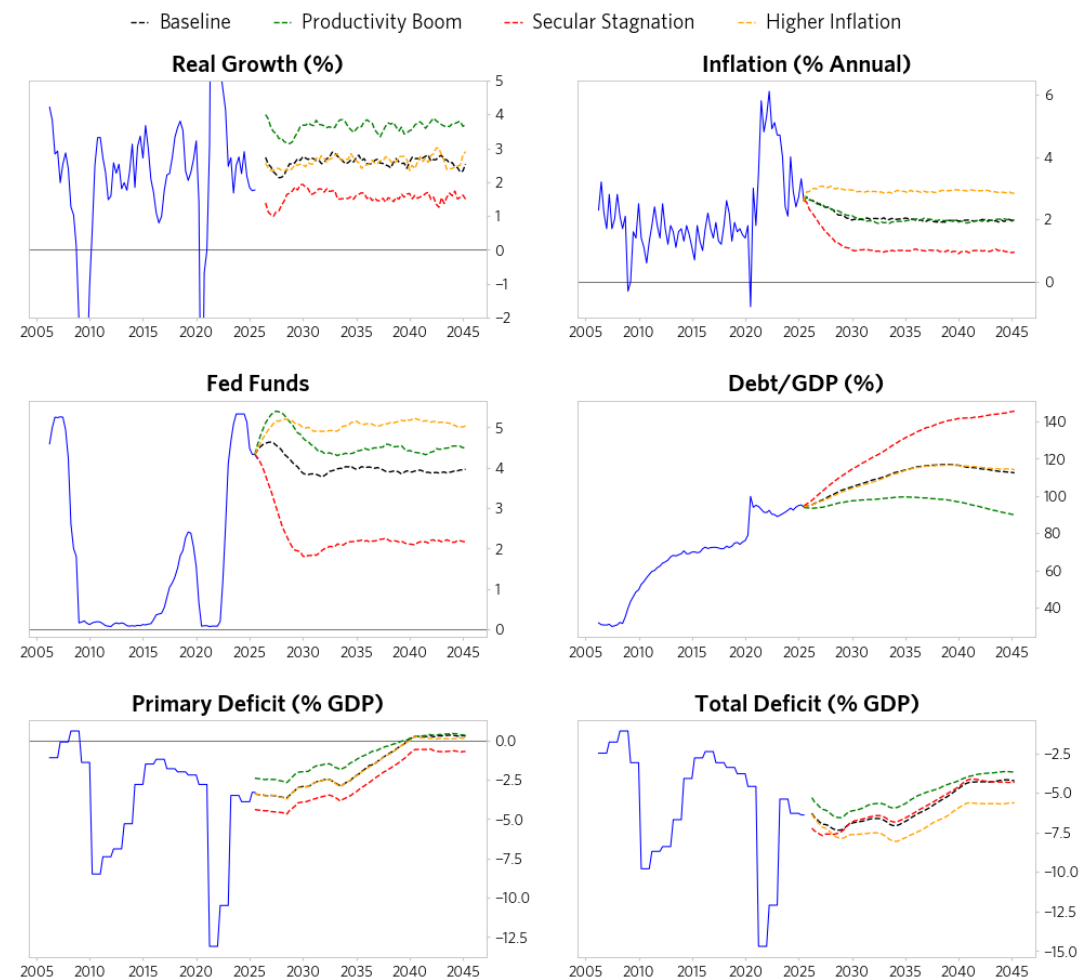
- The Model uses a single model of growth and fiscal scenarios that embeds key assumptions, like:
 - Reverting toward long-term historical growth patterns.
 - Keeping the deficit at current level, then consolidating toward 0% primary deficit.
 - Inflation can be managed to 2% with Fed policy.
- We looked at how the Model responds to several potential plausible macroeconomic scenarios:
 - 1) Productivity Boom – Surge in non-inflationary growth, lower deficits.
 - 2) Secular Stagnation – Extended period of low growth and low inflation, higher deficits.
 - 3) Higher Inflation – Persistent, above-target inflation.

	Baseline	Productivity Boom	Secular Stagnation	Higher Inflation
Potential Growth	2.5%	3.5%	1.5%	2.5%
R-Star	2.0%	2.5%	1.5%	2.0%
Primary Deficit (next 10yrs)	3.0%	2.0%	4.0% (with 1% terminal)	3.0%
Inflation	2.0%	2.0%	1.0%	3.0%

Values reflect rounded averages over model horizon

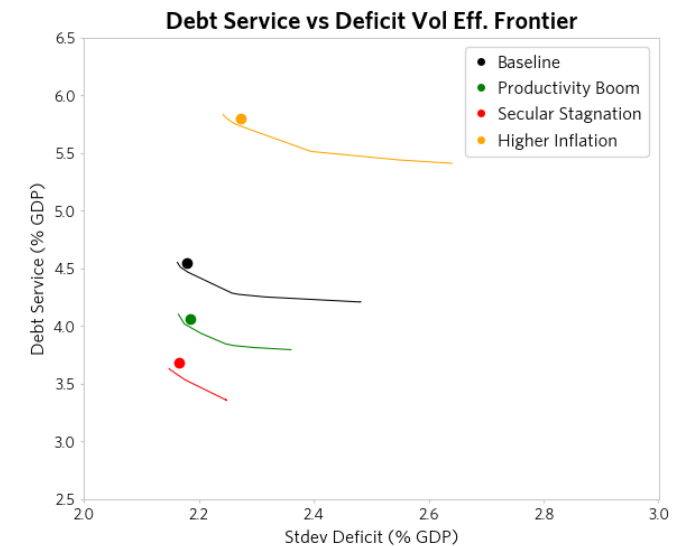
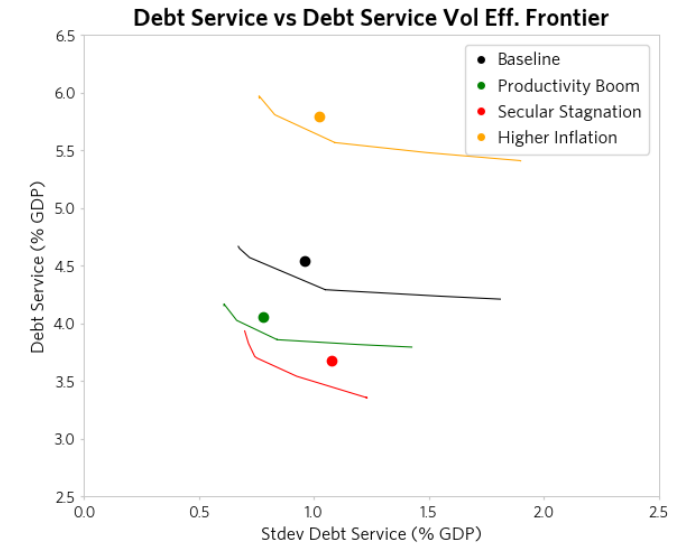
Detail on Macroeconomic Scenarios

- Charts illustrate key model inputs and simulations under different economic scenarios. Forward lines indicate median simulated case; 15-85 percentile bands omitted for readability.
- More detail on scenarios:
 - Productivity Boom:** Sustained real growth above the current trend, with no inflationary impact and slightly higher R^* & policy rates. Debt/GDP growth limited, with GDP expanding quickly and strong economy supporting government revenues.
 - Secular Stagnation:** Persistently low growth and inflation, e.g. due to demographic shifts, that does not pick up in response to easy policy. R^* somewhat lower. Debt/GDP soars and the deficit widens, with structurally higher unemployment and poor growth.
 - Higher Inflation:** Inflation moves for exogenous reasons, e.g. due to deglobalization or sustained shift in expectations. No structural change to growth conditions. Higher nominal (but not real) rise in Fed Funds rate raises interest costs, though inflation helps eat through existing debts.



Model Outputs for Macroeconomic Scenario Analysis

- Each macroeconomic scenario was run through the Optimal Debt Model, starting with today's conditions but evolving with the specified scenario. Treasury's current gross issuance mix was used in each of the macro scenarios.
- Looking at the results:
 - Model suggests higher debt service burdens in inflationary scenario due to higher rates to manage inflation.
 - Productivity boom scenario lowers debt levels and deficits to produce lower costs.
 - Lower debt service burdens are also achieved in secular stagnation scenario due to high debt levels being offset by very low rates. This is a similar outcome to Japan's over the past few decades.
- Current issuance mix is close to efficient frontier in productivity boom scenario.
- In other scenarios, and especially a secular stagnation, today's issuance mix is less risk-averse. The model suggests that a decrease in bill issuance, an increase in belly issuance, and a decrease in bonds lowers volatility for not much cost increase in other scenarios*.

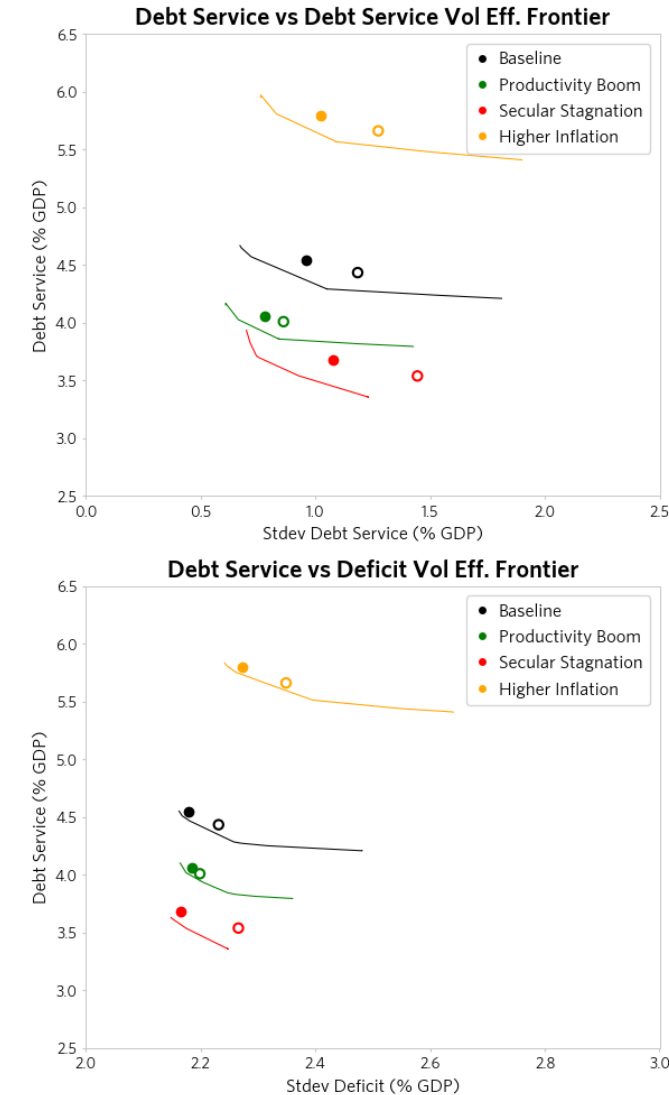


* See Appendix slide 30 for illustration of how different issuance shifts would change this picture.

Source: outputs of TBAC Optimal Debt Model

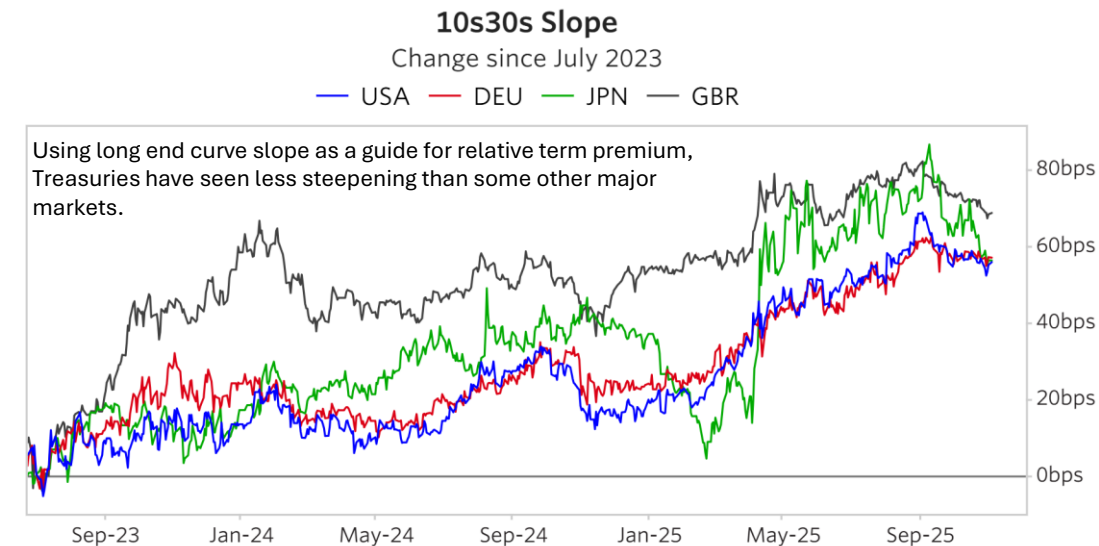
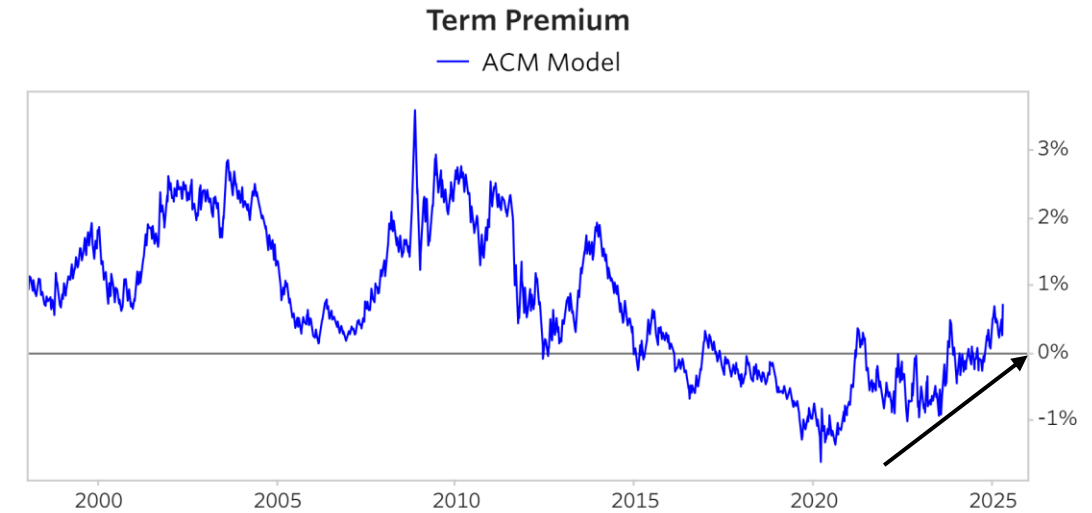
Macroeconomic Scenario Analysis with Slower Growing Auction Sizes

- These charts are repeats of the prior page but with hollow dots added to reflect an issuance scenario where coupon auction sizes are indexed to (grow with) GDP.
- When auction sizes only grow with GDP, higher deficit scenarios (e.g., secular stagnation, and to some extent the baseline) automatically rotate toward higher bill shares.
- In those scenarios, keeping auction sizes fixed results in much higher deficit volatility without appreciable debt cost savings.
- These cases also produce bill shares that grow to be considerably larger than TBAC's recommended longer-term level of around 20%.



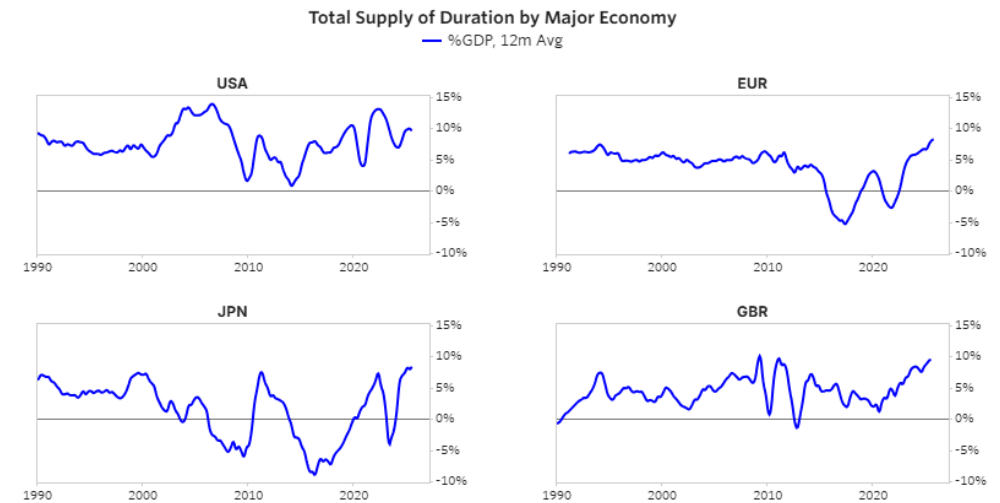
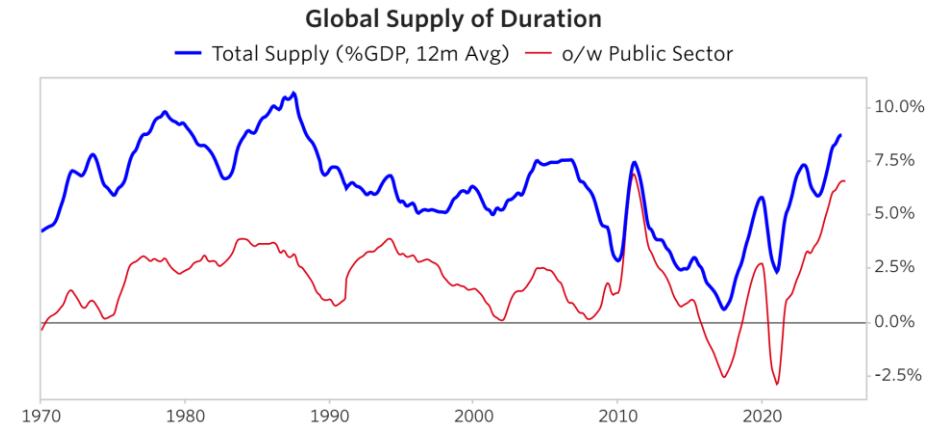
Rising Term Premiums Have Increased Costs and Are Not Well Included in Model

- Since 2020, term premia have expanded globally, from very compressed levels to levels above the past decade. US term premium has risen by somewhat less than other major economies. Note that term premium is unobservable and can only be estimated via a variety of models (which offer different reads).
- This rise, which has brought term premium levels close to the assumed long-run level in the Model, has contributed to higher debt service costs.
- Term premiums have been and will likely continue to be pressured by:
 - Higher global long duration debt supply (see next slide for further discussion).
 - Structural changes in demand (e.g., decreasing pension demand for long duration debt).
- The Optimal Debt Model does not model feedback from issuance choices to interest rates/term premium. It also does not model for structural changes in demand for different Treasury products due to shifting business models of market participants.



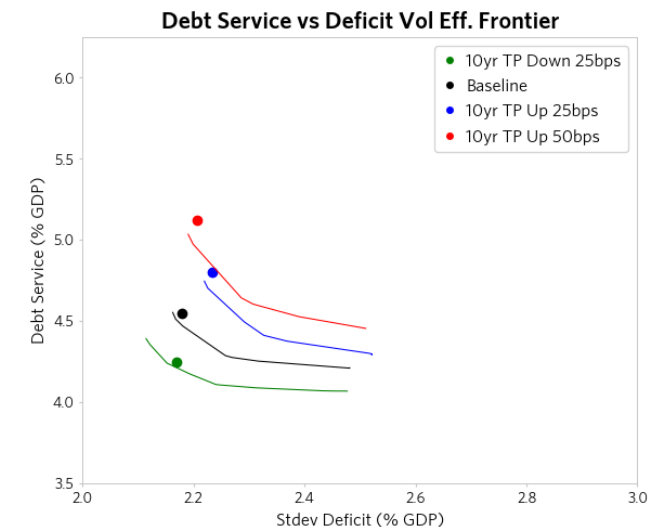
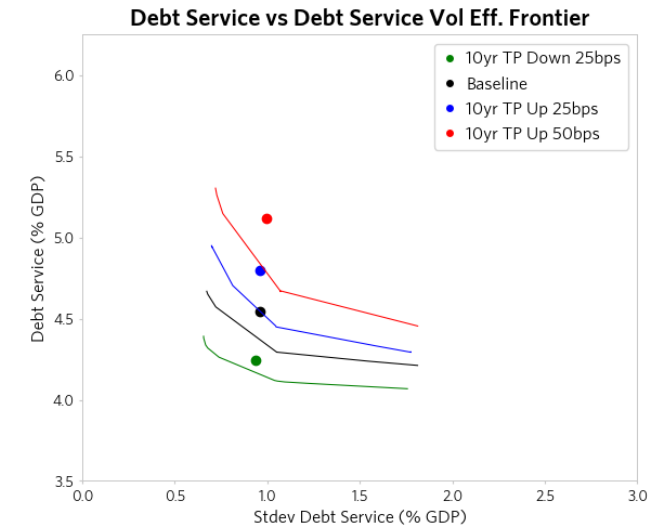
Global Supply Pressures on Long Maturity Debt

- Globally, supply of long maturity debt has increased. Measures shown include both private and public sector debt.
- Key dynamics include rising public sector deficits and ongoing central bank QT, which are especially pronounced outside the US.
- Because investors view developed market debt as relatively substitutable with currency hedging, global supply dynamics can transmit meaningfully to the US bond market.
- US supply has been roughly stable while supply in other major economies has risen substantially; this has been a material driver of US long-end outperformance

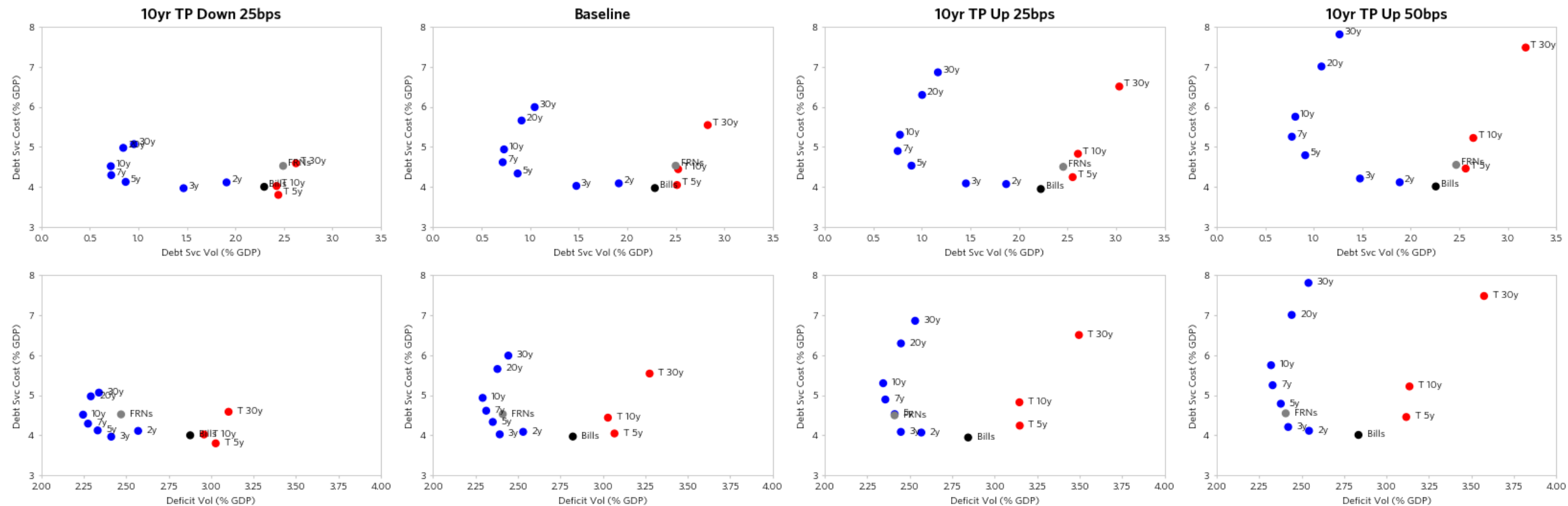


Sensitivity of the Model to Term Premium

- Term premiums have recently risen to longer-term assumed levels in Optimal Debt Model. Given the potential durability of elevated global debt supply, it is important to consider the impact of further structural increases to term premium from here.
- As expected, increases in term premiums push up expected debt costs, especially for mixes that include more long maturity instruments (see next page for single security cost/volatility detail).



Sensitivity of the Model to Sustained Term Premium Shifts



A Dynamic Issuance Strategy

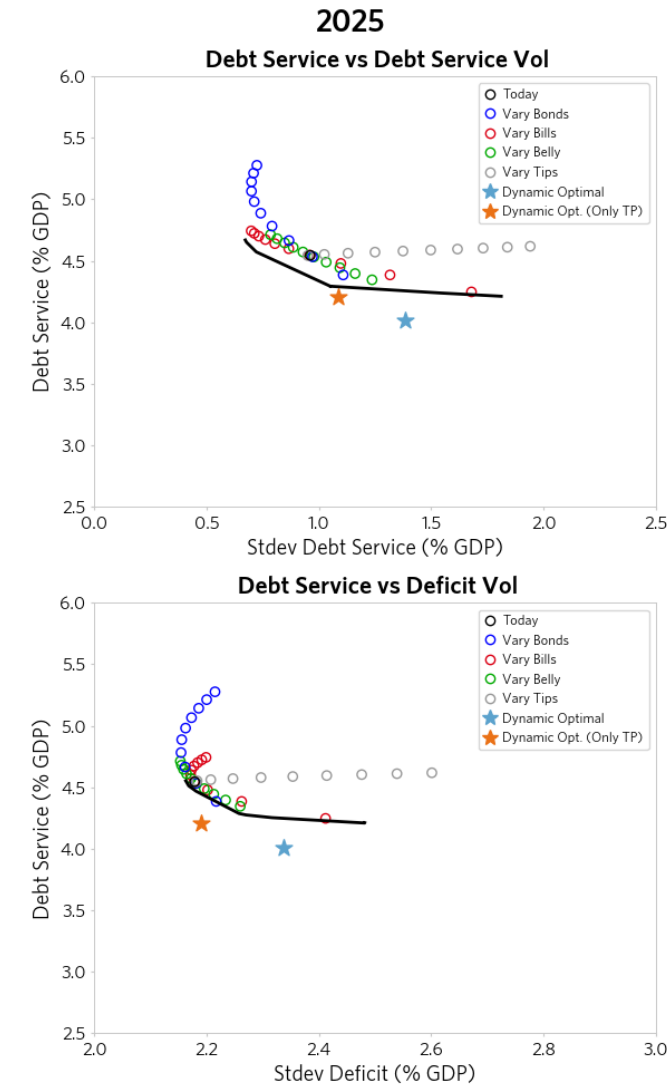
- Prior TBAC work¹ studied a “dynamic issuance strategy” that shifts issuance mix in response to market conditions.
 - Original work tested dynamically responding to 1) term premium, 2) deficit size, 3) level of 2yr real rate.
- Modeling suggests that a dynamic strategy can achieve Treasury costs below the efficient frontier of static issuance mixes and could support goal of financing the government at the lowest cost over time.
- Shifting the issuance mix is not inconsistent with being regular and predictable, and Treasury has historically varied the relative issuance shares of different securities. The key is to move in appropriately sized steps and communicate with the market to allow for smooth digestion of supply.
- In terms of what variables to respond to:
 - Responding to shifts in term premium is more compelling as term premiums are influenced in some degree by Treasury’s choices.
 - Responding to factors like the level of 2yr real rates and the size of the deficit entails Treasury taking a view on variables outside its control, like Fed policy choices or legislation. This puts Treasury in competition with market participants in forming views that are better than consensus.
- More work needs to be done on calibrating and assessing a dynamic issuance strategy, including:
 - Choosing measures to respond to.
 - Analytically sizing the costs of fluctuating issuance patterns and calibrating response function in light of those costs.
 - Working through the varying costs/benefits at different levels of debt outstanding, deficit, and other key fiscal variables.
 - Understanding investor response to a dynamic issuance strategy.
 - How to incorporate other goals, like maintaining enough room to quickly issue bills as a “shock absorber” for unexpected financing needs.

¹ [TBAC Charge Q4, 2017: “Debt Issuance Optimization Models”](#)

Source: outputs of TBAC Optimal Debt Model

Modeled Savings of a Dynamic Issuance Strategy

- Using a dynamic issuance strategy that reacts to term premium reduces costs relative to the baseline and moves them below the efficient frontier of static issuance mixes (orange stars).
- We also ran tests that are dynamic on all three variables (term premium, real 2yr rates, and deficit levels) laid out in prior TBAC work. These produce additional cost savings but an increase in volatility of debt service costs (blue stars).
- Dynamic issuance strategies assume that market conditions mean-revert over time.
 - For conditions like term premium where Treasury's activities are part of the price-forming process, a measured reaction by Treasury can create mean reversion.
 - For exogenous factors, like short-term interest rates, a bet on mean reversion requires more careful assessment of the risks (see, for example, betting on mean reversion of policy rates in externally sensitive emerging economies).



Additional Debt Models and Metrics: Term Premium

- Term premium models exist that attempt to model the term premium directly (e.g., ACM, KW) and via comparisons across market securities (e.g. Treasuries vs swaps, curve butterflies). As noted, these are only indirect models and often disagree with one another.
- As discussed, the Optimal Debt Model treats term premium exogenously, assuming arbitrary amounts of inelastic demand for individual securities.
- A useful perspective for Treasury could be a quantitative assessment of the outcomes of its issuance activity across the curve and in specific sectors. The shaded box below suggests design considerations for such an assessment.
- This assessment could be useful :
 - To give quantitative feedback on Treasury's choices.
 - To build the impact of issuance mix choices into the Optimal Debt Model, accounting for one of its deficiencies.*
 - To calibrate a dynamic response function, as discussed on slide 22.
 - To measure structural shifts in strength of demand in different sectors.

Sample Design Considerations for a Market Impact Assessment

- Core goal is to measure the impact of marginal issuance choices on interest rates / term premiums.
- Challenge of the exercise is distinguishing signal from noise in market data
- Possible approach involves adjusting for known sources of rate market volatility (e.g., moves in oil prices, surprises in economic statistics, moves in other global rate markets) to isolate moves that are idiosyncratic to Treasury market and caused by shifts in supply and demand.
- Those moves can then be compared to normalized measures of Treasury supply and aggregated across time.
- Can include a full curve assessment or local assessment of the effect of supply in a sector.

Additional Debt Models and Metrics: Rollover Risk

- Treasury faces the continuous need of refinancing large amounts of maturing debt, and an inability to do so, or a sharp increase in the interest rate required by investors, would severely impact the government's borrowing costs.
- Treasury and TBAC regularly review various measures of portfolio rollover risk, such as % of debt maturing in <2 years, bill share, and the WAM & WANRR of the portfolio.
- The IMF recently published a working paper on a measure of “Debt-at-Risk,” which quantifies the potential increase in debt levels and debt service costs in a stressed, adverse scenario, e.g., one where economic growth is very weak and financial stress is high. This approach inherently focuses on tail risk and non-linear risks. Such an approach would require more study to assess its usefulness to Treasury.

Additional Debt Models and Metrics: Volatility and Liquidity

- Treasury is negatively affected by an increase in rate volatility and a decrease in liquidity. The effects are both direct, via an increased probability of adverse auction results, and indirectly via a variety of factors including increased risk premiums demanded by investors and heightened systemic risk.
- The most useful external, market-based measure of uncertainty is implied volatility.
- Many measures of liquidity exist, and a combination is useful to assess market conditions. These measures include bid-ask spreads, order book depth, the price impact of secondary market trades, on- and off-the-run trading volumes, yield spreads between on- and off-the-run securities, and Treasury yield curve fitted error.
- TBAC has covered these measures in past charges, e.g. [TBAC Charge, Q2 2020](#), as have many external commentators, e.g., [Liberty Street Economics](#).

Potential Enhancements to Optimal Debt Model

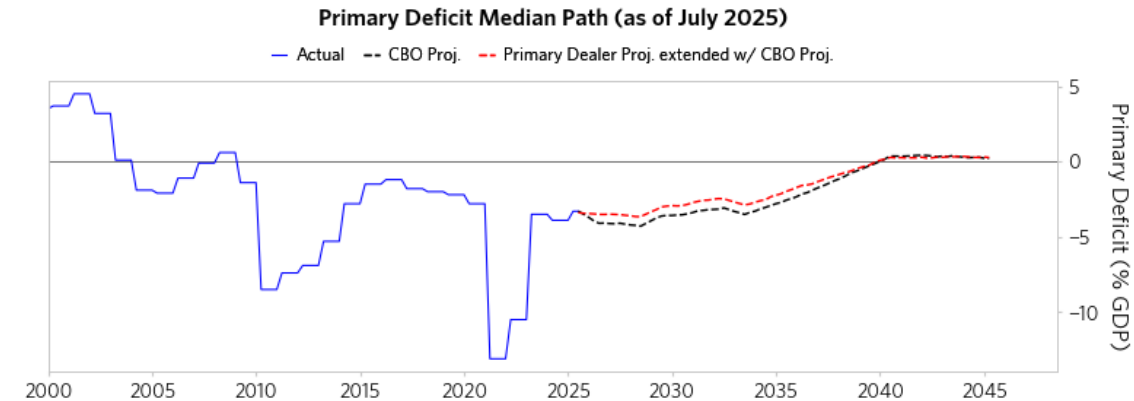
- The Optimal Debt Model is a useful framework for assessing issuance choices, but as with any model it has its limitations. Improvements could help to improve the quality and usefulness of its projections.
- Policy features not included in model:
 - SOMA dynamics, e.g. the effect of Fed remitting profits to Treasury.
 - Buyback operations, which Treasury reintroduced in recent years.
- The model's view on future fiscal conditions is limited in its range of possibilities and the timeframe considered (20 years). The model could model alternative futures (e.g., via random shocks) that simulate legislative or geopolitically driven changes to government tax/spending policy. A longer time horizon would also allow for proper modelling of the fiscal impact of longer-term securities.
- The exogenous treatment of term premiums could be refined to better reflect market dynamics that are increasingly important at higher levels of debt outstanding. Feedback from issuance to term premium, both in individual securities and across the curve, would help build in more realistic constraints around the issuance mix.

Conclusions

- The refreshed Optimal Debt Model projects that higher debt levels, larger deficits and expanded term premium have structurally increased both the cost and volatility of deficit and debt service. The increase in term premium has been driven by a variety of factors, including significant increases in global long-term sovereign debt supply.
- Looking across potential macroeconomic environments, Treasury's current issuance mix is well-positioned to balance a low cost of debt with low volatility in a productivity boom. However, especially in adverse scenarios, and to some extent in the baseline scenario, a move out of bills and increases in shorter-maturity coupon issuance would decrease volatility without much increase in expected cost.
- TBAC has, in the past, studied dynamic issuance strategies that shift the issuance mix in response to market conditions. A strategy that responds to moves in term premium could improve Treasury's cost profile and remain consistent with "regular and predictable" debt management principles. Such a strategy needs further work to design its parameters, assess its impact, and consider market participants' reactions to its implementation.
- We discussed a variety of potential Optimal Debt Model improvements and supplemental models and metrics around term premium, liquidity, volatility, and rollover risk that could help inform debt management choices. In particular, any tools that help assess the impact on term premiums from Treasury's choices and structural changes in other players' behaviors could help Treasury achieve its goal of funding the government at the lowest cost over time.

Appendix: Dealers' Deficit Estimates vs CBO Projections

- Optimal Debt Model typically uses CBO estimates. While comprehensive, they are limited to considering current law.
 - The CBO's full set of estimates from January and update in July do not adequately include the impact of tariff revenue.
 - A CBO August update included a 10-year estimate of \$4tn in tariff revenues but did not include the deficit accounting of secondary effects (e.g., offsets of lower taxes or other macroeconomic impacts).
- For this model refresh, we used dealers' median deficit projections (from surveys included in the Q3 refunding materials) to account for the full deficit impact of expected tariff collection.
 - Dealers project for deficits roughly \$200bn lower in FY '26 and FY '27 than the CBO's July projection
- We extended the dealer projections beyond their 3-year forecast window using arithmetic changes of the CBO's deficit and interest projections. This method preserved the level-shift impact of tariff revenues in out years.

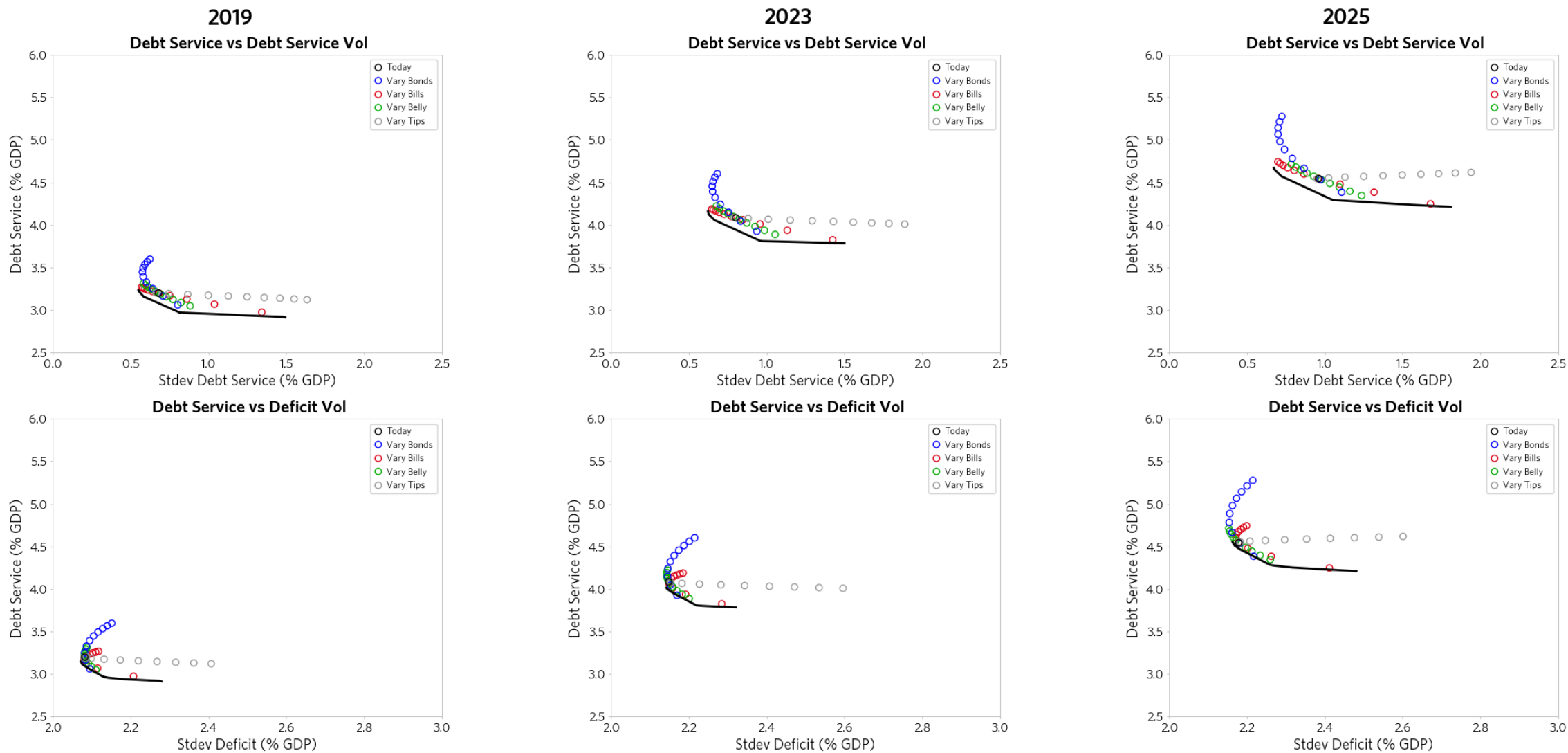


Deficit Estimates (\$ billion)	PD 25th Percentile	Primary Dealers (Median)	PD 75th Percentile	CBO
FY 2025	1800	1848	1900	1844
FY 2026	1940	2000	2125	2200
FY 2027	2043	2098	2108	2289
As of date	Jul-25	Jul-25	Jul-25	Jul-25

* [Treasury's Presentation to TBAC, Q3 2025](#)

Source: outputs of TBAC Optimal Debt Model

Appendix: Issuance Kernels by Model As-Of Year



Appendix: Kernel Variations in Macroeconomic Scenarios

- These charts illustrate how debt cost and volatility move with different issuance choices across the different scenarios discussed on slides 14-17.

