TD Securities

US Rates: Repricing Risks

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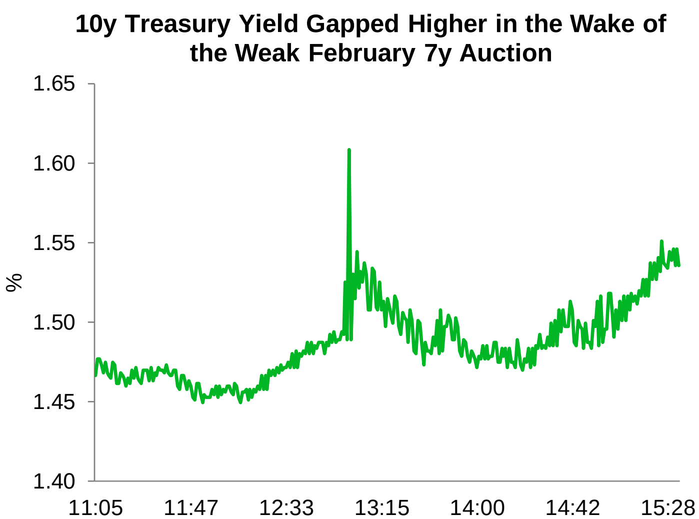
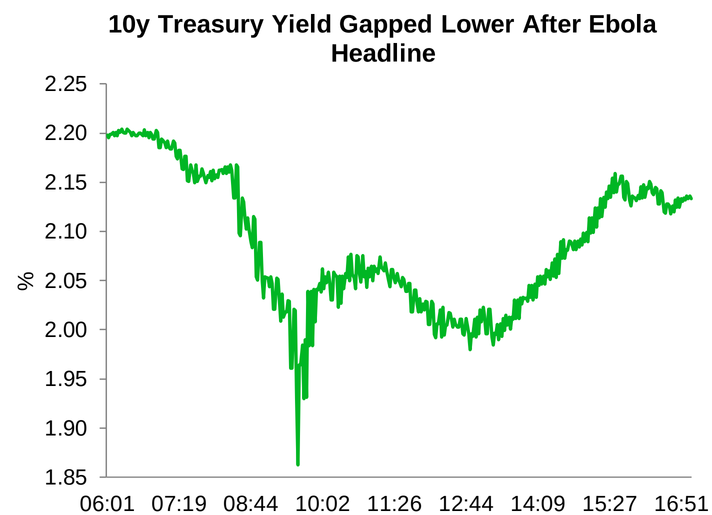
Recent Treasury Market Yield Dynamics

- **Fundamentals:** economic and COVID optimism, inflation, fiscal stimulus, Fed taper
- **Technicals:** convexity (insurance, MBS, short gamma), SLR, Japan year end, bond outflows
- **Market Functioning**
  - Feb 7y auction: Fed comments on rate rise, inflation risk, Japanese demand, SLR
  - Post auction liquidity: rates gapped higher, off the runs cheapened
- **Comparisons with other episodes**
  - Mar 2020: COVID, central bank selling, risk asset underperformance, split work
  - Oct 2014: Ebola headline
  - May 2013: Fed tapering, convexity, bond outflows
  - Aug 2011: Debt downgrade, weak 30y auction



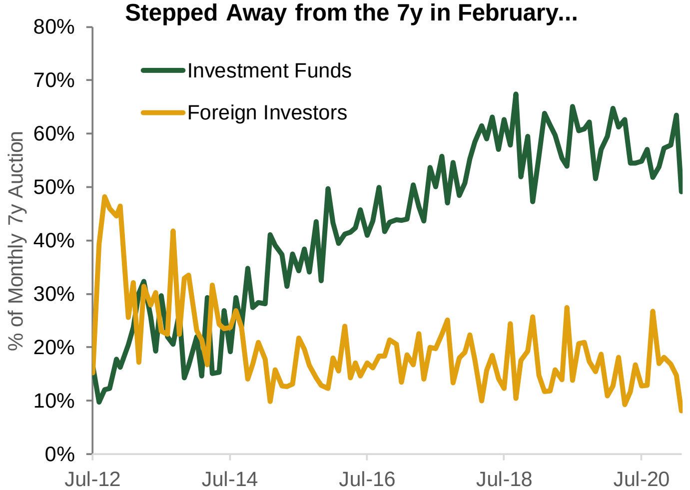
Note: 10y Treasury yield on February 25, 2021.
Source: Bloomberg, TD Securities



Note: 10y Treasury yield on October 15, 2014.
Source: Bloomberg, TD Securities

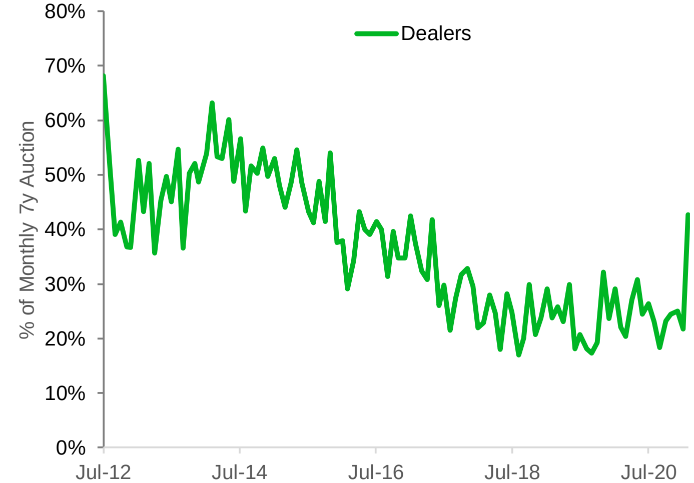
Primary Market Liquidity: Feb 7y Auction Tails

Both Investment Funds and Foreign Investors Stepped Away from the 7y in February...



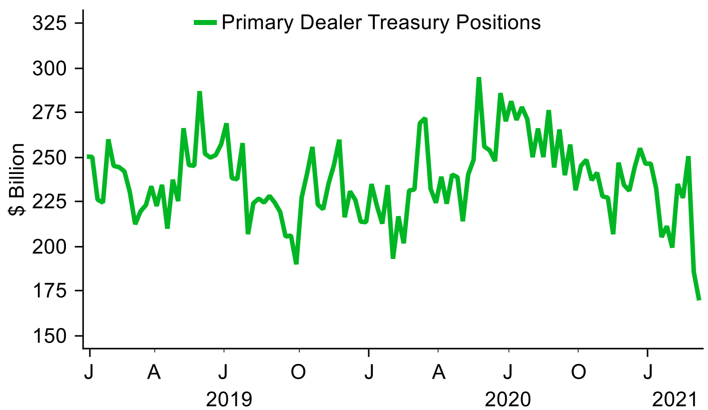
Source: Treasury, TD Securities

...Putting Pressure on Dealers to Step In



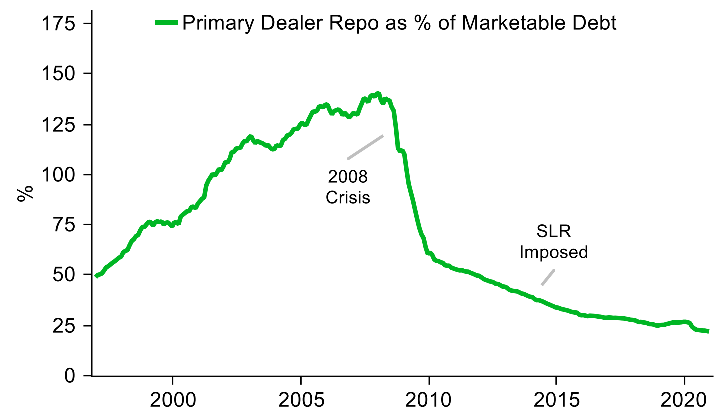
Source: Treasury, TD Securities

US Primary Dealer Inventories Have Declined at the Fastest Pace on Record in Past Two Weeks



Source: NY Fed, TD Securities

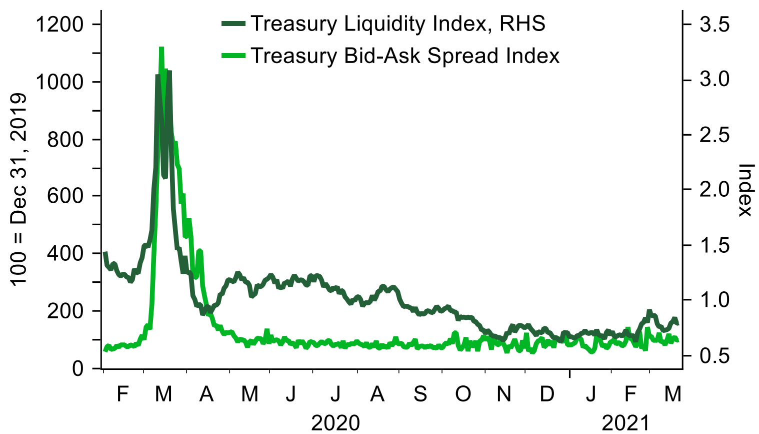
2008 Crisis and Leverage Rule Have Sharply Lowered Repo Availability



Source: Treasury, SIFMA, TD Securities

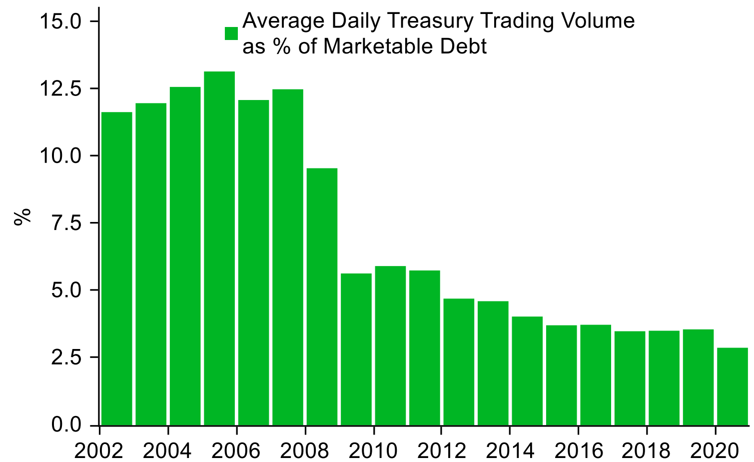
Secondary Market Liquidity: Expect Temporary Declines Following Tail Events

Market Liquidity Deteriorated, But Did Not Reach March 2020 Levels



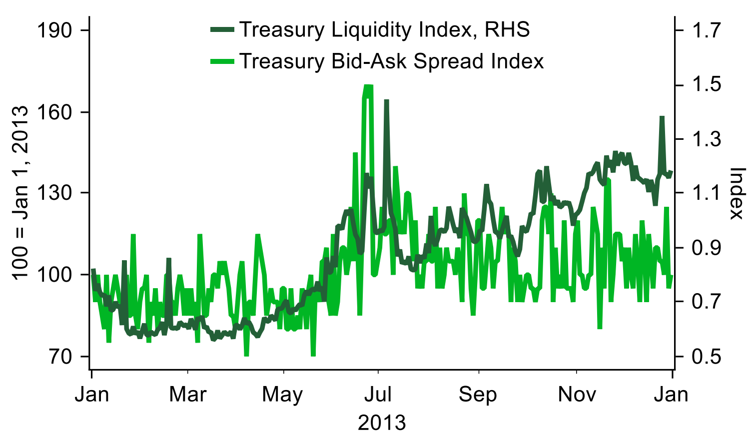
Source: Bloomberg, TD Securities

Treasury Market Turnover On the Decline



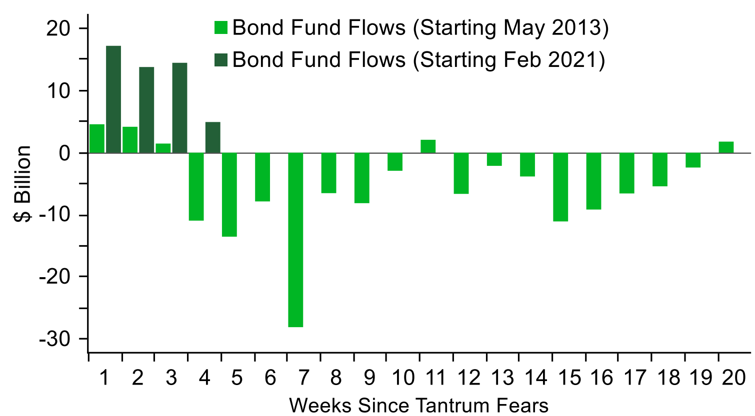
Source: SIFMA, Treasury, TD Securities

Liquidity Deteriorated in 2013 Taper Tantrum as Bid-Ask and On-the-Run/Off-the-Run Spreads Widened



Source: Bloomberg, TD Securities

2013 Taper Tantrum Was Accompanied by a Sharp Outflow from Bond Funds



Note: Represents weekly bond fund flows after 2013 taper tantrum and today.
Source: ICI, TD Securities

Duration Supply Is Rising, Even Without Any More Coupon Increases

Markets Will Face a Significant Amount of Duration Supply in 2021 and 2022

Year	FY2019	FY2020	FY2021	FY2022
Deficit	984	3132	3600	2300
Funding Need	1247	4013	2600	2300
Net Coupon Issuance	1110	1361	2721	2719
Net Bills	137	2652	-121	-419
10y Equiv Supply	1863	2271	3419	3473
10y Equiv Fed Buying	0	1322	640	600

Note: All figures in billions. Forecast for FY2021 assumes another $1.9tn fiscal package. Lower funding need for FY2021 due to overfunding in FY2020. Future issuance and QE based on TD Securities projections.

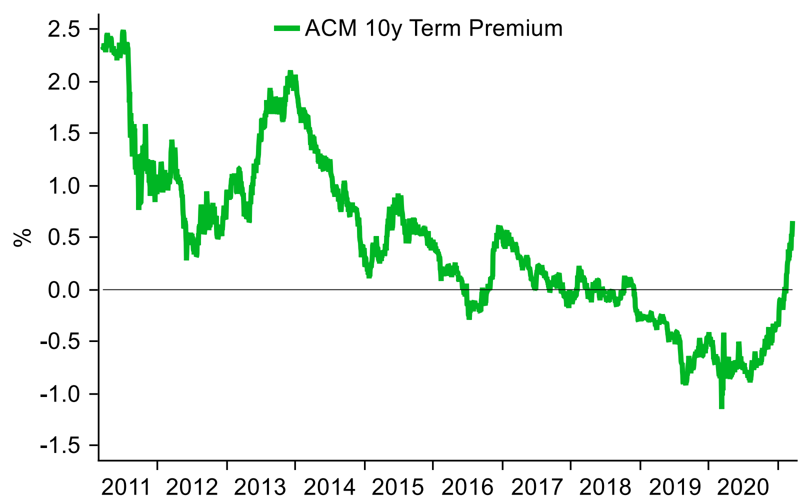
Source: NY Fed, Treasury, TD Securities

Market Expecting an H1 2022 Taper, But We Expect Buying to Continue for Longer

Dealer Projections for Fed Purchases								
Sector	H1 20*	H2 20*	H1 21	H2 21	H1 22	H2 22	H1 23	H1 23
UST	1884	476	480	480	330	140	0	0
MBS	599	221	240	240	150	38	0	0
TD Securities Forecast								
Sector	H1 20*	H2 20*	H1 21	H2 21	H1 22	H2 22	H1 23	H1 23
UST	1884	476	480	480	480	480	250	100
MBS	599	221	240	240	240	240	100	50

Note: Fed Survey of Primary Dealers conducted January 13- 19, 2021. H1/H2 2020 are actual net purchases. MBS purchases include commitments to buy.
Source: Federal Reserve, TD Securities

10yr Term Premium Estimate Rise to 2017 Levels



Source: New York Fed, TD Securities

Who is the Marginal Buyer of Treasuries?

Fed and Banks Were the Marginal Buyers Post COVID									
	2015	2016	2017	2018	2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020
Total	724	843	447	1411	1177	500	2852	530	700
Marketable	688	711	554	1132	1063	487	2751	473	606
Notes & Bonds	632	409	419	746	987	246	331	524	671
Treasury Bills	54	305	137	387	77	241	2422	-51	-65
Nonmarketable	36	132	-107	280	114	13	101	57	94
Federal Reserve	-60	-35	-8	-295	203	1217	1050	248	162
Foreign	-12	-143	208	59	421	259	97	24	1
Banks	34	117	-38	121	143	15	209	83	17
Broker Dealers	9	29	22	132	-47	29	-4	-52	-27
Households	298	75	10	554	327	-434	41	0	184
US Savings Sec.	-4	-6	-5	-5	-4	-1	0	-1	-2
Mutual Funds	144	78	187	56	165	-197	93	47	23
Money Market Funds	53	312	-95	171	163	231	1082	-75	-19
State and Local Govt	34	61	18	11	81	48	117	40	29
Insurance Companies	0	24	44	-17	8	44	8	15	2
Govt Retirement Funds	67	144	-14	388	86	-11	-70	115	111
Private Pension Funds	-18	17	47	21	49	43	13	11	9
Nonfinancial Business	0	5	36	-16	-2	26	17	-12	-3
Other*	32	17	22	97	144	44	71	25	-11

Source: Federal Reserve, TD Securities

* Other includes closed-end funds, ETFs, GSEs, ABS issuers, & holding companies.

Appendix: Taper Tantrum or Recovery Optimism

Recent Move: A Perfect Storm

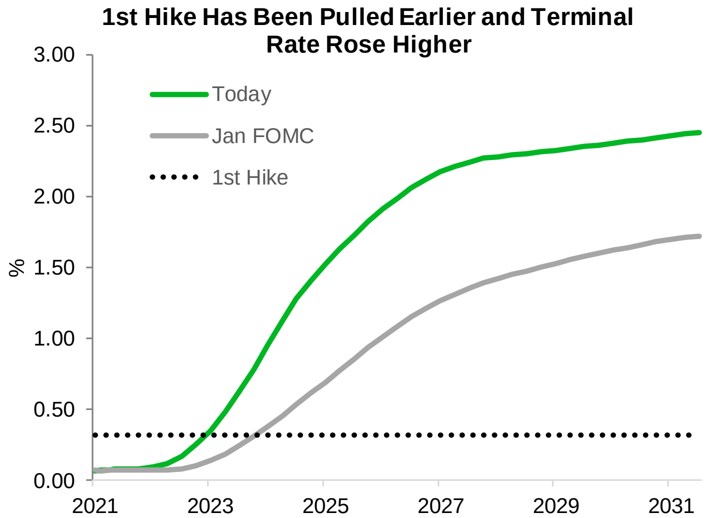
- **Economic Optimism:** Drop in COVID cases, vaccine rollout, fiscal stimulus but questions remain on the post COVID normal and recovery in inflation and an inclusive labor recovery
- **Fed Exit:** Market is priced for tapering by year end 2021 and hiking by 1Q 2023
- **Convexity:** Exacerbated sell-off (mortgage, insurance, short gamma)
- **SLR:** Concerns about expiration and impact on bank demand and Treasury market functioning
- **Death of 60:40:** Lower "hedge value" in risk off episodes

Historical Taper Tantrum Comparison

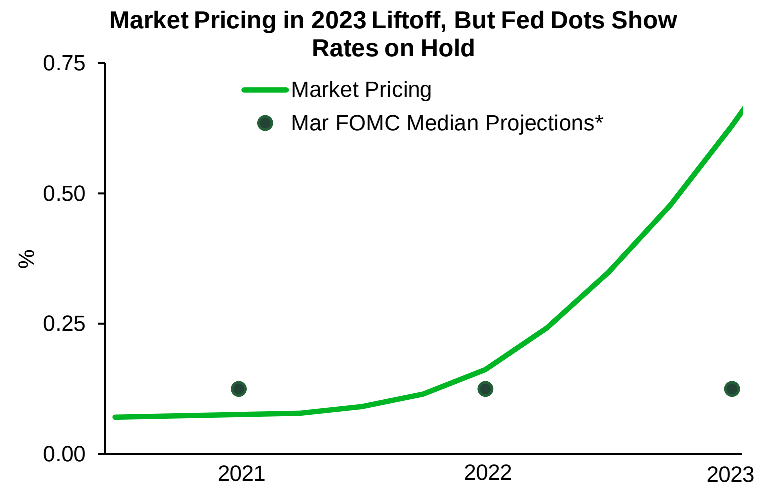
	Month to 1st Hike	2y1y OIS	5y1y OIS	10y UST	10y Real	10y BE	10y swap spread	UST 5s30s	UST 5s10s30s	SPX	DXY	Bund 10yr
Pre Bernanke (May13)	24	0.56	2.29	1.93	-0.40	2.29	13.50	233	-11	1659	84	1.38
Peak Tantrum (Sep13)	17	1.74	3.74	2.99	0.91	2.08	19.00	203	25	1655	83	2.04
May13 - Sep13 Chg	**-7**	**117**	**145**	**106**	**131**	**-21**	**6**	**-30**	**36**	**0%**	**-1%**	**66**
2021 Feb	35	0.22	1.34	1.08	-1.01	2.09	4.75	143	-12	3774	91	-0.52
Current	24	0.63	2.24	1.72	-0.59	2.31	2.25	155	12	3913	92	-0.30
Feb21 - Current	**-12**	**41**	**90**	**64**	**43**	**22**	**-3**	**12**	**25**	**4%**	**1%**	**22**

Source: Bloomberg, TD Securities

Fed Hikes Get Dragged In With Taper Fears



Note: 1m OIS forwards are used for the analysis.
Source: Bloomberg, TD Securities



Note: Market pricing uses Eurodollar futures, adjusting for Libor-FF basis, and EFFR vs target basis. Assumes zero term premium. FOMC median projections from Mar 2020.
Source: Bloomberg, TD Securities

In The Last Cycle, The Fed Terminal Rate Was Too High Relative To The Market

History	Months To 1st Hike	Market Terminal Rate	Fed Long Term Target Rate	5yr UST
6/20/2012	30	1.8	4.3	0.8
12/12/2012	30	1.7	4.0	0.7
6/19/2013	18	2.6	4.0	1.2
12/18/2013	20	3.2	4.0	1.5
6/18/2014	12	2.7	3.8	1.7
12/17/2014	8	2.2	3.8	1.6
6/17/2015	6	2.1	3.8	1.6
Now				
3/19/2021	25	1.9	2.5	0.8

Note: Terminal rate is the 3y forward 1m OIS forward rate after 1st hike.
Source: Bloomberg, Federal Reserve, TD Securities

2013 Taper Tantrum Versus Today

Reasons for a Bigger Market Reaction

- Much higher duration supply now
- Market microstructure results in bifurcated liquidity conditions
  - SLR/GSIB constraints on primary dealers
  - Higher share of PTFs

Reasons for a Smaller Market Reaction

- Communicated well in advance
- Gradual taper
- Hike timing is anchored by FAIT
- Lower r*

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