Dealer Capacity and US Treasury Market Functionality

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COVID induced record foreign sales of Treasuries to US dealers

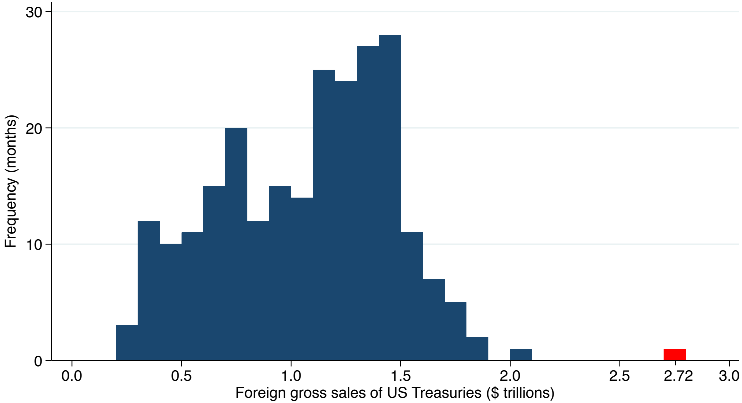
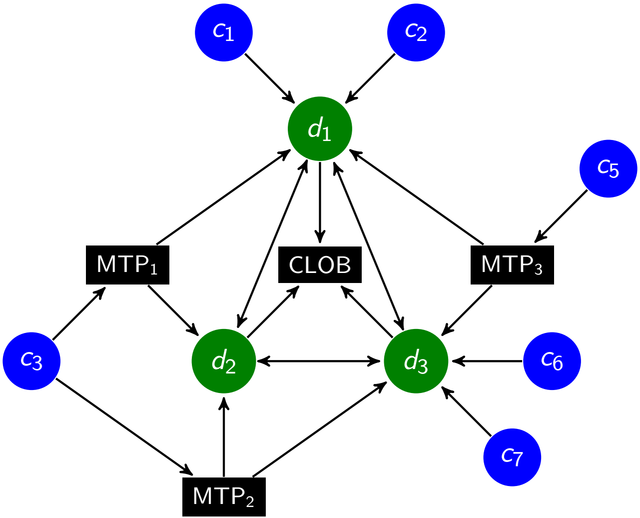
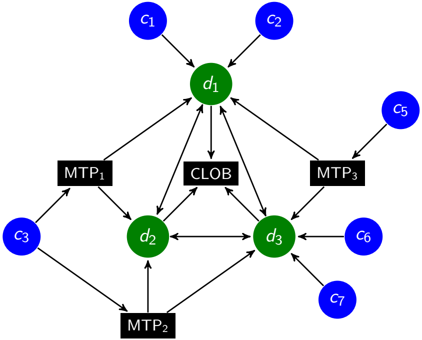


Figure: A histogram of monthly gross sales of U.S. Treasury bonds and notes by foreigners to U.S. residents, from January 2000. Data source: U.S. Department of the Treasury, Treasury International Capital System. The March 2020 observation is indicated in red.

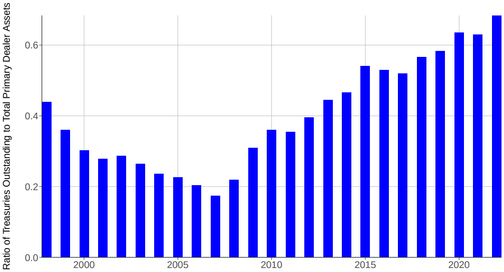
Market structure: Dealer balance sheets are used for all investor trades



Market functionality is limited by dealer intermediation capacity



(a) A schematic of bond market structure



(b) The ratio of Treasuries outstanding to primary dealer assets

Figure: *Fragmenting Markets*, Duffie (2022)

Much higher interdealer bid-offer spreads for Bunds, Gilts, and Treasuries

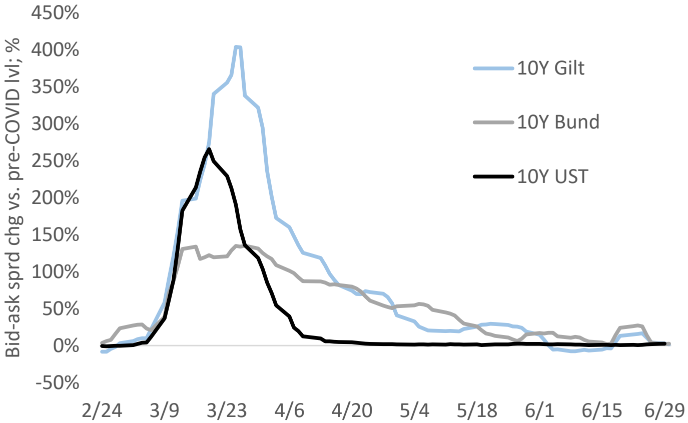


Figure: Percentage increases in bid-offer spreads in the interdealer markets for gilts, bunds, and Treasuries, from February 24. Figure source: Bank of America Securities, Data and Innovation Group.

Covid explosion of US Treasury dealer-to-customer bid-offer spreads

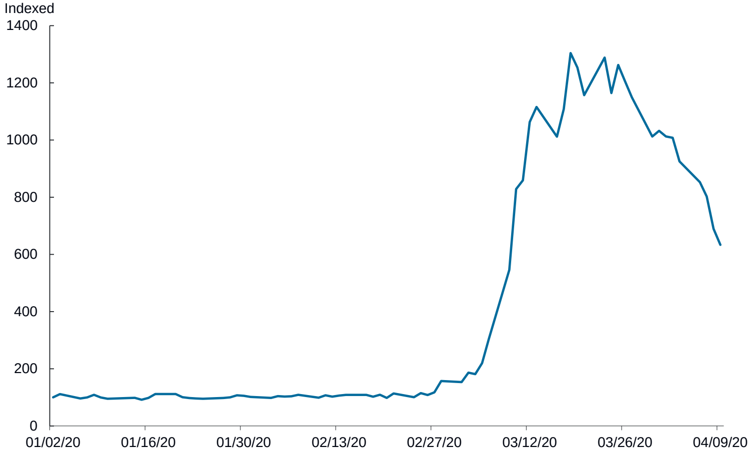


Figure: US Treasury bid-offer spreads, indexed to 100 at January 2, 2020. Source: Lorie Logan, Federal Reserve Bank of New York, Speech of April 14, 2020. Data source: Bloomberg dealer bid and offer prices in the dealer-to-customer market.

US Treasury interdealer market depth virtually disappeared

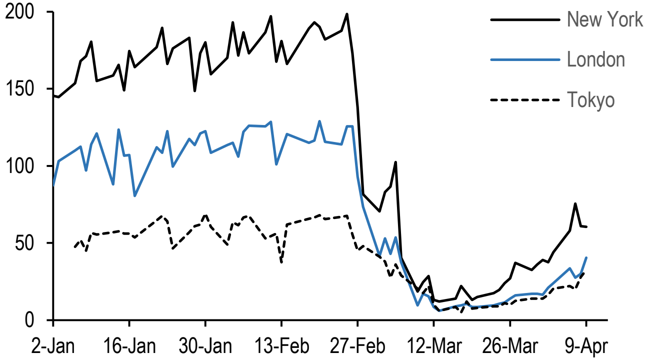
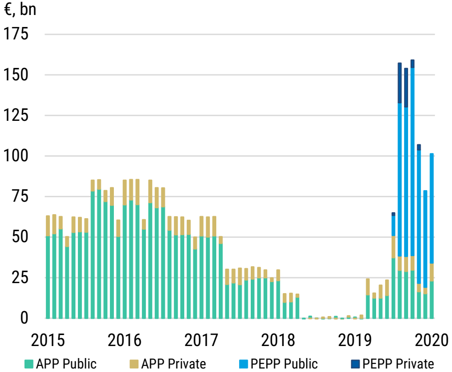
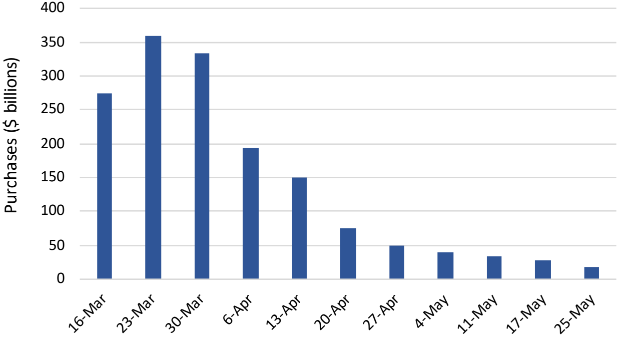


Figure: Treasury market depth on Brokertec, in millions of dollars. The market depth shown is the average of the largest three amounts bid or offered on Brokertec's interdealer central limit order book market (New York, London, and Tokyo, respectively) for on-the-run 10-year U.S. treasuries between 8:30am and 10:30am EST. The figure was obtained from JP Morgan, US Fixed Income Strategy, Joshua Younger and Henry St. John, April 2, 2020.

Central banks rescued government securities markets with huge purchases



(a) ECB purchases of government securities. Source: Morgan Stanley Research.



(b) Federal Reserve purchases of US Treasuries. Source: Duffie (2022).

When should illiquidity should trigger central-bank purchases?

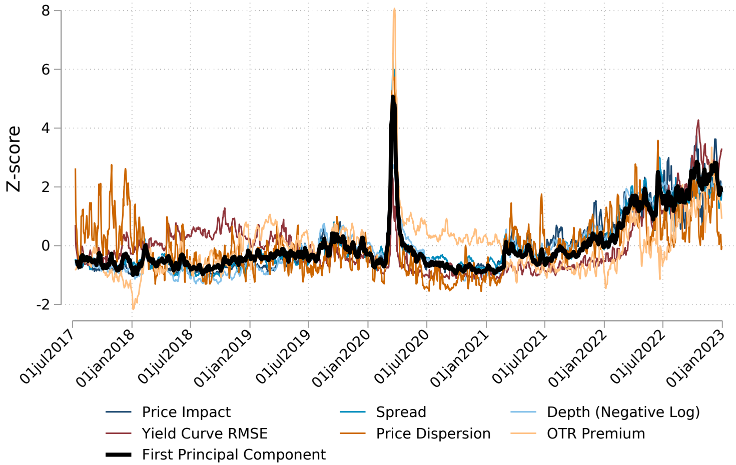
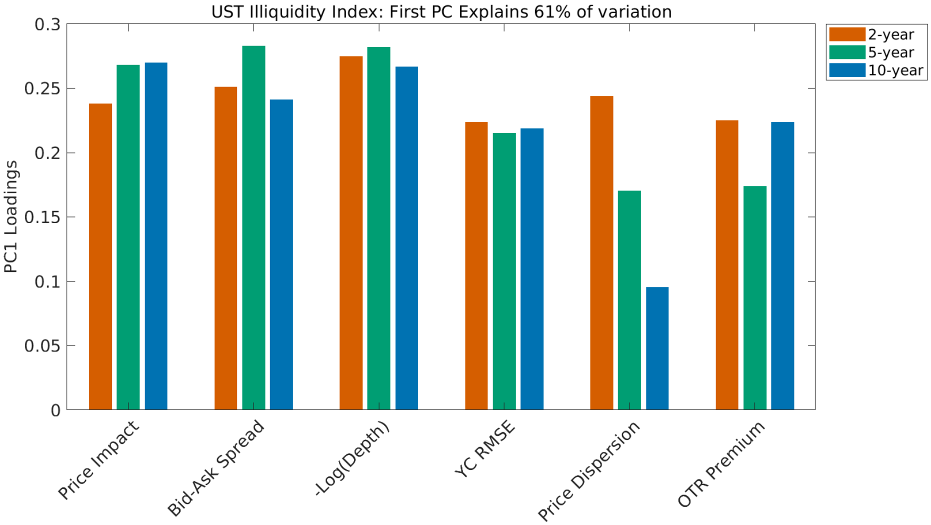


Figure: 5-day moving averages of Z-scores of six illiquidity metrics for the 5-year Treasury market, and their first principal component. Duffie, Fleming, Keane, Nelson, Shachar, and Van Tassel (2023).

The first principal component of Treasury market illiquidity



UST illiquidity is normally well explained by yield volatility, but not at the extreme levels of March 2020.

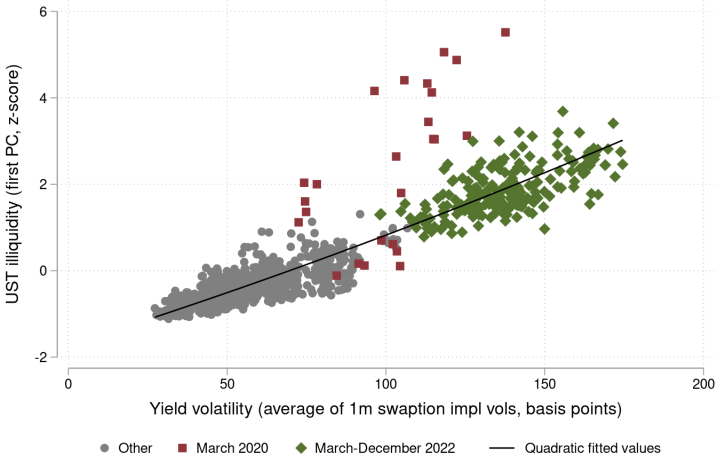


Figure: UST illiquidity is the first PC of 18 illiquidity metrics across 2-year, 5-year, and 10-year sectors.

Estimated US Treasury market dealer capacity utilization

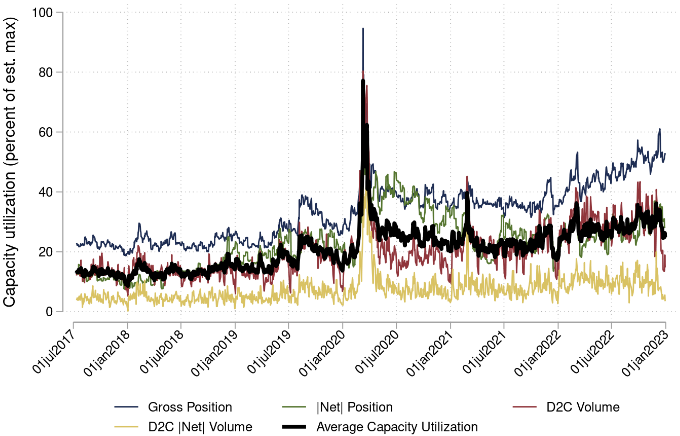


Figure: Dealer capacity utilization is the ratio of the current level of the intermediation measure to the sample record high measure. The capacity utilization of primary dealers as a group is the weighted average of the dealers' utilizations. Duffie, Fleming, Keane, Nelson, Shachar, and Van Tassel (2023).

The component of UST illiquidity not explained by yield volatility is high when utilization of dealer intermediation capacity is high

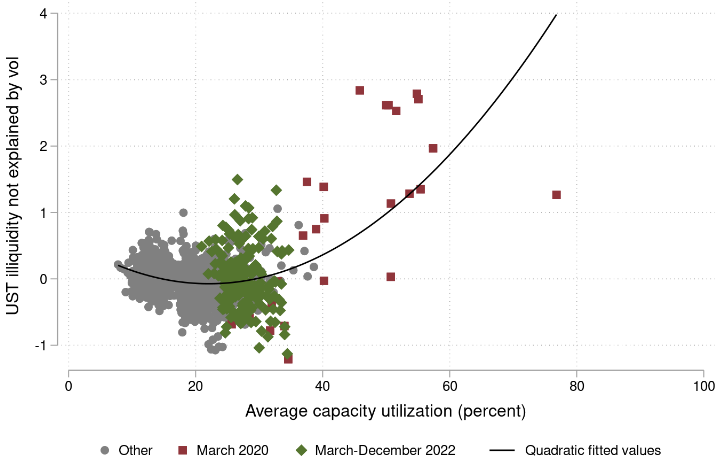


Figure: Duffie, Fleming, Keane, Nelson, Shachar, and Van Tassel (2023).

High-quantile Treasury market illiquidity is explained by yield volatility and dealer capacity utilization

99-percentile UST illiquidity Z-score	(1)	(2)	(3)	(4)	(5)
average swaption-implied vol.	1.91^{***}	0.97^{***}	1.18^{***}	1.24^{***}	1.18^{***}
	(0.43)	(0.27)	(0.26)	(0.15)	(0.09)
residuals of dealer gross position		0.63^{***}			
		(0.23)			
residuals of dealer abs. net position			0.58^{***}		
			(0.22)		
residuals of dealer gross D2C volume				0.42^{***}	
				(0.15)	
residuals of dealer net D2C volume					0.43^{***}
					(0.13)
pseudo-R^2	0.56	0.71	0.68	0.72	0.77

1331 observations. Constants were included but not reported. $^{***}p < 0.01$.
Residuals are dealer capacity utilization measures regressed on swaption-implied yield volatility.

Policies for improving US Treasury market resilience

1. Transparent official-sector market-function purchase programs (Duffie and Keane, 2023).

2. Broader central-clearing mandates (proposed by SEC).

3. The Fed's new financing facilities for US Treasury securities (SRF and FIMA).

4. Public post-trade reporting of Treasuries transactions (TRACE).

5. Lifting exemptions for Treasuries to fair-access regulation of trade platforms.

6. Revision of bank capital regulations, especially the supplementary leverage ratio, without lowering total system capital.

Appendix

Estimating dealer capacity utilization

- Dealer level net and gross positions in UST, agency MBS, and corporate bonds, from FR2004.
- Dealer purchases and sales from customers over the past three business days, from TRACE.
- Risk adjustment is based on maturity-level swaption-implied volatilties and security-level DV01s.
- The capacity of a dealer for a given activity is estimated, based on revealed preference, as the sample maximum (implying a downward bias).
- The capacity utilization of a dealer is the ratio of its current activity metric normalized by its estimated maximum.
- The collective capacity utilization of dealers is the weighted average of utilization across dealers, using capacity weights.

Market function purchase programs

Based on a 2023 NY Fed Staff Report by Darrell Duffie and Frank Keane

1. Purchase only when lending is insufficient to quell market dysfunction.
2. Distinguish between market function purchases and QE, to improve the effectiveness of both.
3. Transparency can mitigate moral hazard by causing investors to pay at issuance for the implied liquidity put.
4. Monitor dealer balance-sheet capacity utilization for signs of stress.
5. Adapt reverse-auction design to settings of market dysfunction. Consider a "delivery-choice" auction design.
6. Consider harnessing buybacks by the fiscal authority, to mitigate potential concerns over monetary policy communication and central bank independence.