Dealer Capacity and US Treasury Market Functionality

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Views expressed are not necessarily those of the Federal Reserve Bank of New York or the Federal Reserve System.
COVID induced record foreign sales of Treasuries to US dealers

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.
US Treasury interdealer market depth virtually disappeared

![Graph showing market depth over time]

**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

We estimate that ECB programmes will have close to €980bn of net purchasing power by the end of June 2021, assuming full utilization of remaining purchasing power in all programmes and an APP net target of €20bn/month.

Between March and September, PEPP purchases accounted for 70% of total Eurosystem net purchases, with 66% of September purchases conducted in PEPP.

The summer decline in the weekly pace of PEPP purchases persisted through September, with the average pace of purchases over the past four weeks at €14.8bn. At the current pace, the ECB is likely to utilise between €750bn and €800bn of the €1,350bn PEPP envelope in 2020.

Exhibit 1: APP/PEPP – split by programme

Exhibit 2: Eurosystem holdings by jurisdiction

Exhibit 3: Weekly PEPP and PSPP purchases

Exhibit 4: PEPP and PSPP purchases by country in Aug-Sep

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

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 Index: First PC Explains 61% of variation
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 Tassell (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

<table>
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<tr>
<th>99-percentile UST illiquidity Z-score</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
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<td>average swaption-implied vol.</td>
<td>1.91***</td>
<td>0.97***</td>
<td>1.18***</td>
<td>1.24***</td>
<td>1.18***</td>
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<td></td>
<td>(0.43)</td>
<td>(0.27)</td>
<td>(0.26)</td>
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<td>residuals of dealer gross position</td>
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<td>residuals of dealer abs. net position</td>
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<td>0.58***</td>
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<td>residuals of dealer gross D2C volume</td>
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<td>residuals of dealer net D2C volume</td>
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<td>0.43***</td>
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<td>pseudo-$R^2$</td>
<td>0.56</td>
<td>0.71</td>
<td>0.68</td>
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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


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 volatilities 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.


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.