Navigating monetary tightening through fragile markets
A case study of the market for US Treasuries

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Based in part on work in progress with
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COVID induced record foreign gross sales of Treasuries to U.S. dealers

Typical two-tiered bond market structure
Principal trading firms initially increased their trading activity but later reacted to the volatile trading conditions and reduced their market-making activity. From March 16 to April 17, 2020, principal trading firms’ share of trading volumes on certain electronic trading platforms averaged just 45 percent, compared to an average of 57 percent from January to March 13, 2020—the date COVID-19 was declared a national emergency (see fig. 7).

**Figure**: Source: Congressional General Accounting Office, August, 2021. The underlying data source is Bloomberg Financial LP. Bloomberg.
Interdealer market depth

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.
Figure: The ratio of marketable treasuries outstanding to primary dealer assets (HoldCo). Data: FRED, 10K disclosures.
The Fed’s market-function purchases of US Treasuries

How much illiquidity should trigger official-sector purchases?

**Figure:** 21-day moving averages of $Z$-scores and their first principal component, from Duffie, Fleming, Keane, Shachar, and Van Tassel (2023).
Policies that will improve Treasury market resilience

2. The Fed’s new financing facilities for US Treasury securities (SRF and FIMA).
3. A transparent official-sector market-function purchase program.
4. Revision of bank capital regulations, especially the supplementary leverage ratio, without lowering total system capital.
5. Public TRACE reporting of Treasuries transactions, with caps or delays.
6. Lifting exemptions for Treasuries to fair-access regulation of trade platforms.
Appendix charts
Central clearing of Treasuries transactions is still limited

Figure: Data gathered by Treasury Market Practices Group (2018) imply that a firm faces FICC on about 22% of Treasury transactions.
Broad central clearing
Broad central clearing reduces settlement commitments

are $684 billion (67%) and $760 billion (69%), respectively. Moreover, the correlation across days between the level of settlement obligations under the current structure and the reduction in such obligations with market wide central clearing is 0.71.

Figure 6 – Dealers' Gross Settlement Obligations if All Trades Centrally Cleared
Source: Authors' calculations, based on FINRA TRACE data.
Note: The figure plots dealers' gross settlement obligations in U.S. Treasury securities by day under a potential structure in which all trades are centrally cleared and netted.

Figure 7 – Dealers' Gross Settlement Obligations by Market Structure
Source: Authors' calculations, based on FINRA TRACE data.
Note: The figure plots dealers' gross settlement obligations in U.S. Treasury securities by day under the current structure in which dealers' interdealer trades are centrally cleared and netted and under a potential structure in which all trades are centrally cleared and netted.

Figure: Source: Fleming and Keane, Federal Reserve Bank of New York, April 2021.
Central clearing reduces settlement fails

Figure: Settlement fails in treasury securities transactions involving primary dealers, and centrally cleared settlement fails at FICC. Data sources: Federal Reserve Bank of New York and FICC. Fleming and Keane (2021) find that “74% of fails in specific issues are effectively “daisy-chain” fails, which could be paired off and hence eliminated with increased central clearing.”
Settlements that are not next-day

Figure 2 – Trading Activity by Days to Settlement
Source: Authors' calculations, based on FINRA TRACE data.
Note: The figure plots the distribution of dealer trading volume in U.S. Treasury securities by days to settlement for the January 2, 2020 to April 30, 2020 sample period.

It's also important to note that the distribution of trading activity by days to settlement varies tremendously over time. The share of daily trading volume not for regular settlement ranges from as low as 5% to as high as 42% over our sample period, as shown in Figure 3. As expected, this share tends to increase between Treasury auction and issuance dates when there are often multiple securities trading that are both on-the-run (so they are heavily traded) and when-issued (with settlement delayed until issuance day).

Figure 3 – Share of Trading Activity Not for Regular Settlement
Source: Authors' calculations, based on FINRA TRACE data.
Note: The figure plots the share of dealer trading volume in U.S. Treasury securities not for regular (T+1) settlement by day.

Figure: Source: Fleming and Keane, Federal Reserve Bank of New York, April 2021.
Figure: Estimated market-total one-day gross settlement risk, on-the-run 10-year U.S. treasury notes and SPDR SP 500 ETF. One-day gross settlement risk is estimated as the dollar market value of the volume of trade multiplied by the option-implied standard deviation of daily returns. Treasuries trades normally settle in one day (T+1), whereas exchange-traded equities such as the SPDR SP500 ETF settle in two days (T+2). Underlying data sources: FINRA, U.S. Treasury Department, CBOE, NYSE-Arca.
Treasuries will overwhelm dealer balance sheet space

Treasuries outstanding and primary dealer HoldCo assets

Figure: Marketable treasuries outstanding, including projections from 2020 from deficit of Committee for a Responsible Federal Budget, April 13, 2020. Total assets of the holding companies of primary dealers in the U.S. Treasury market (preliminary estimates). Data: FRED, FRBNY, CRFB, public filings.
Figure: Marketable treasuries outstanding, including projections from 2020 from deficit of Committee for a Responsible Federal Budget, April 13, 2020. Total assets of the holding companies of Goldman Sachs, Morgan Stanley, Merrill Lynch, Lehman Brothers, Bear Stearns, Bank of America, JP Morgan Chase, Citigroup, and Wells Fargo. Data: FRED, CRFB, 10K disclosures.
Figure: Total treasury market volumes, dealer-to-customer and interdealer (including ATS), for weeks ending on the indicated dates, and primary dealer volumes (which double counts trades between primary dealers). Data sources: FRBNY and TRACE (FINRA).
Financing of primary-dealer treasury inventories

Figure: Total of all treasury positions for which primary dealers received financing with repurchase agreements and securities lending, January to May, 2020. Data source: Federal Reserve Bank of New York.
Bid-Offer Spreads: Gilts, Bunds, 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.
Central clearing reduces daisy-chain fails

Fleming and Keane (2021):

- “74% of fails in specific issues are effectively “daisy-chain” fails, which could be paired off and hence eliminated with increased central clearing.”

- “the percentage of fails that pair off tends to be higher when fails are higher and in issues where they are higher.”

- “It follows that expanded central clearing not only reduces the balance sheet resources needed for intermediation overall through reduced settlement fails, but that the benefits are greatest when they are most needed and for the securities for which they are most needed.”
Figure: Implied volatility of the 10-year treasury note and the Hu-Pan-Wang measure of yield curve noise, in basis points. The implied volatility measure is from CBOE TYVIX data, based on options on the 10-year treasury note. The Hu-Pan-Wang (2013) noise measure of treasury market illiquidity is the square root of the mean squared error (RMSE) obtained when fitting the prices of treasury securities to a smooth model of the yield curve. Figure source: Professor Jun Pan.
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.

The summer decline in the weekly pace of PEPP purchases persisted through June. Between March and September, PEPP purchases accounted for 70% of total Eurosystem Pandemic Purchase Program (PEPP) purchases by country in August.

Source: ECB, Haver Analytics, Morgan Stanley Research.
Figure: The ratio of the stock of outstanding marketable treasuries to the total of treasury positions for which primary dealers received financing with repurchase agreements and securities lending. Data sources: FRED and Federal Reserve Bank of New York.
Figure: The difference, in percent, between (a) the repo rate implied by selling treasury futures, purchasing the cheapest-to-deliver underlying treasury note, and closing the futures contract at maturity by delivering the treasury note, and (b) the actual market general-collateral one-month repo rate. The data shown in the figure were provided to the author by Andreas Schrimpf, Hyun Song Shin, and Vladyslav Sushko, from Graph 3 of their paper Leverage and Margin Spirals in Fixed Income Markets During the Covid-19 Crisis, BIS Bulletin, Number 2, April 2, 2020.
Segmentation in USD Money Markets

Figure: Typical active choices of selected money-market cash investors. Arrows indicate the direction of cash investment.