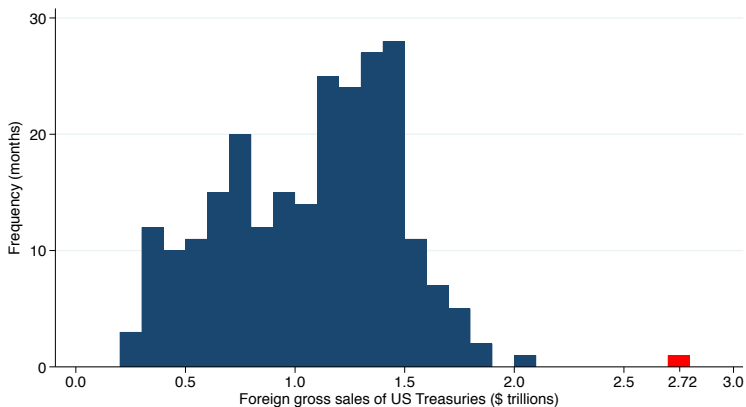# The US Treasury market:
March 2020 dysfunction and G30 policy proposals

Darrell Duffie
Graduate School of Business, Stanford University

SUERF Baffi Bocconi e-Lecture March 2022

Record foreign gross sales of Treasuries to U.S. 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.

Typical two-tiered bond market structure
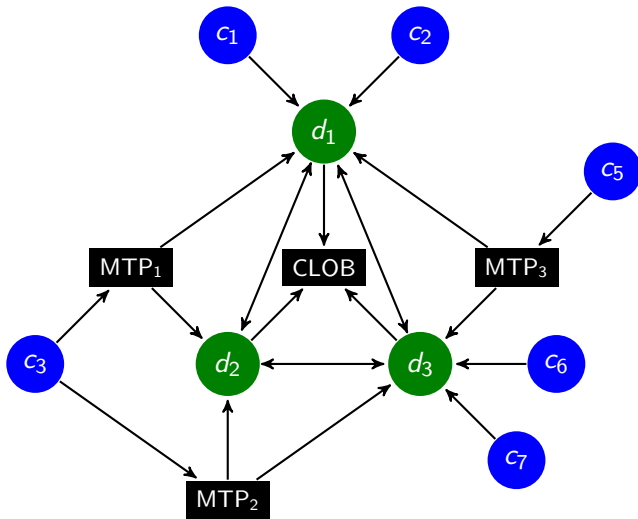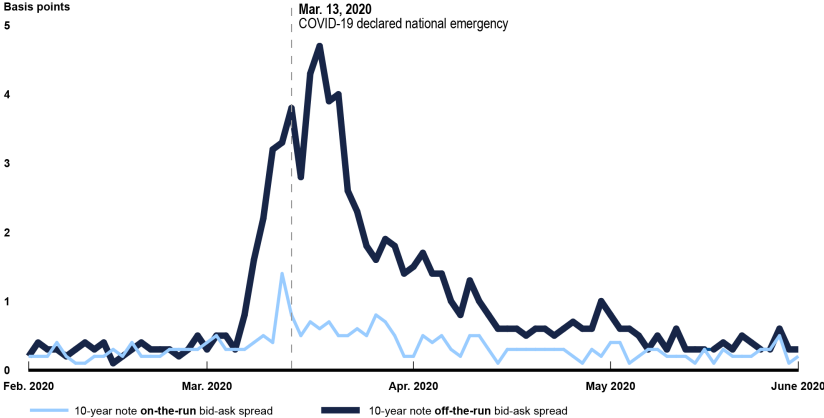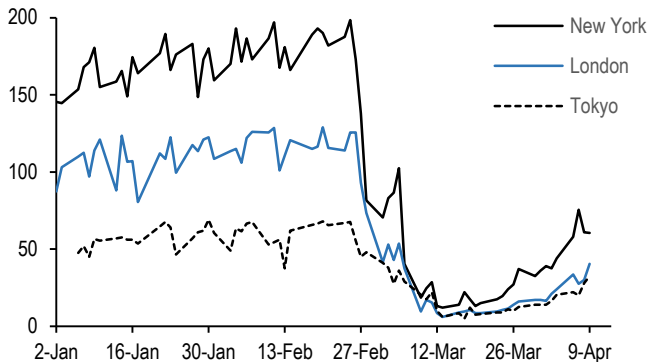
Dealer-to-customer bid-offer spreads

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.

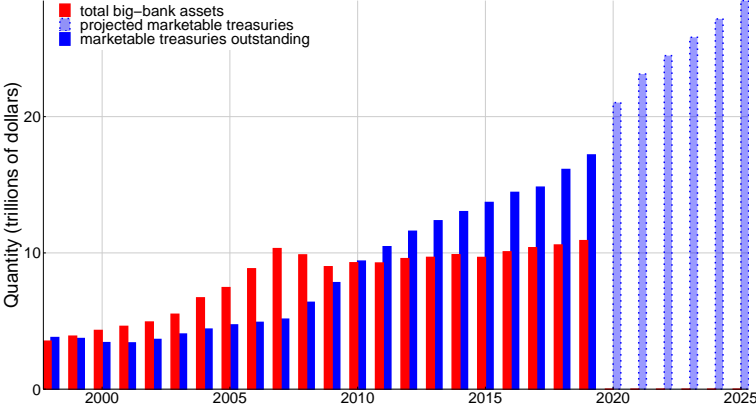# Marketable treasuries outstanding and big-bank assets

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 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.

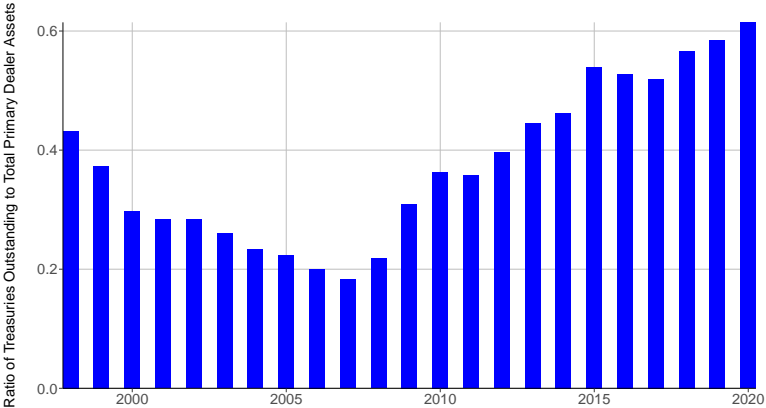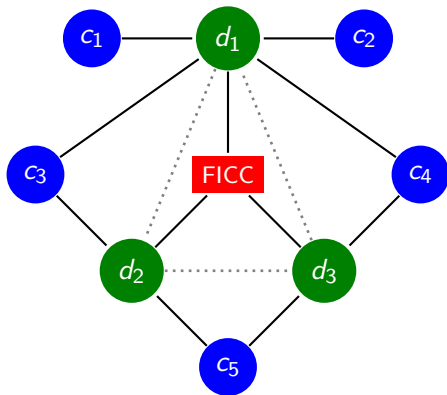# Marketable Treasuries to primary dealer assets

Figure: The ratio of marketable treasuries outstanding to primary dealer assets (HoldCo). Data: FRED, 10K disclosures. Research assistance by Renhao Jiang.
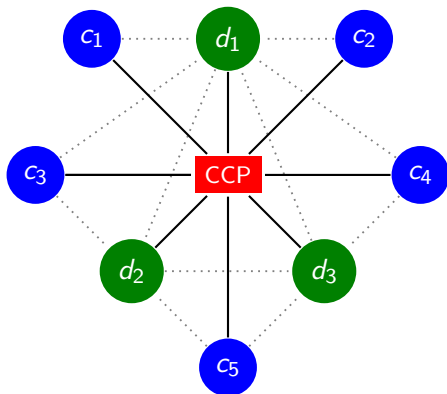
Central clearing of Treasuries transactions is still limited

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

Broad central clearing
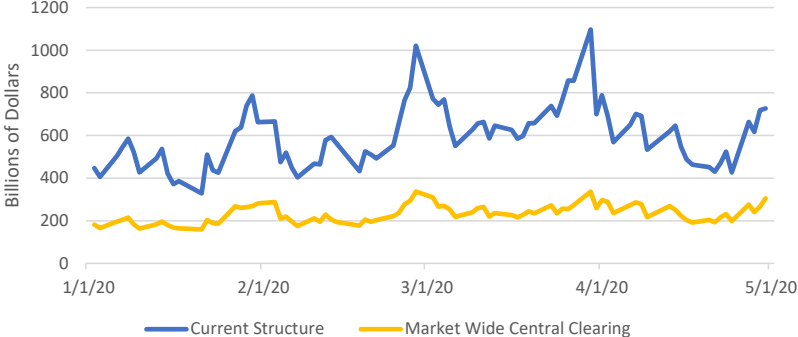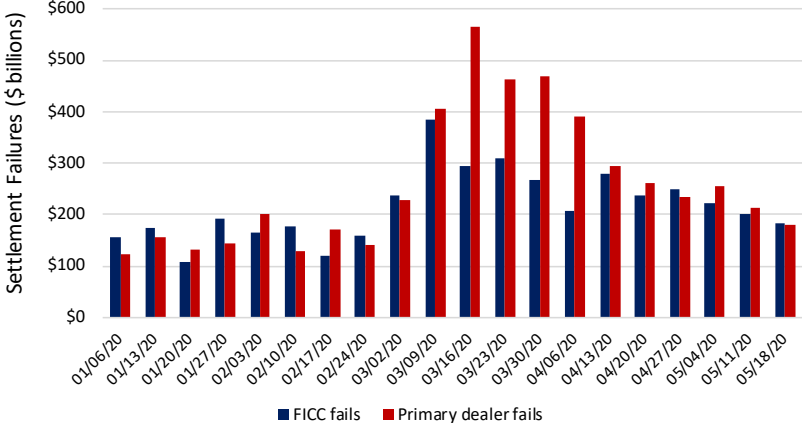
Broad central clearing reduces settlement commitments

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.

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."

Selected G30 reform proposals

1. A cost-benefit analysis of a broad central-clearing mandate.

2. The Fed's Standing Repo Facility for U.S. Treasury securities.

3. A review of the design, operation, and regulation of the Fixed Income Clearing Corporation.

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

5. Public TRACE reporting of all Treasuries transactions.

6. Expansion of fair-access regulations to all significant trading platforms for Treasury securities.
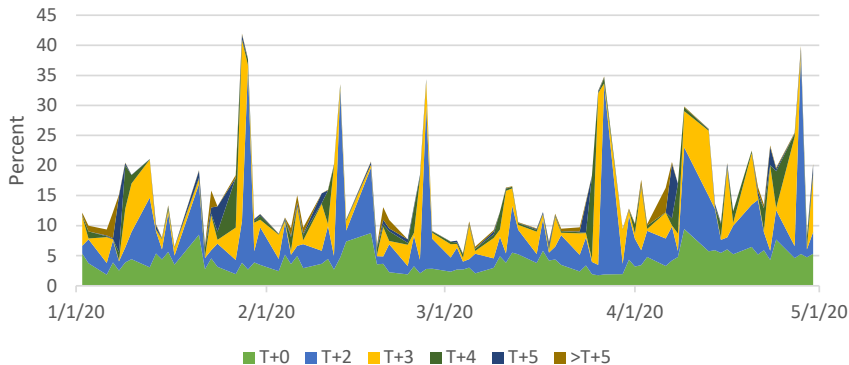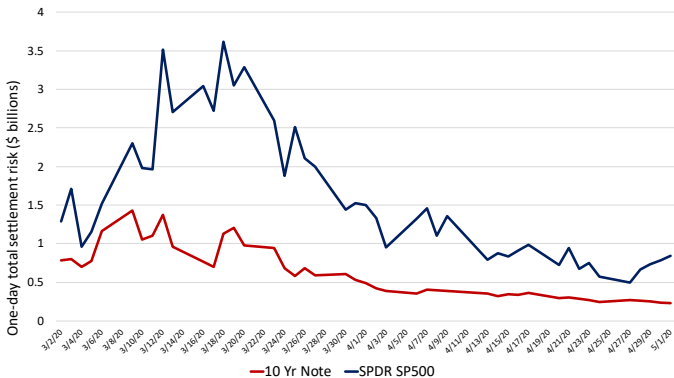
Appendix charts

Settlements that are not next-day

Figure: Source: Fleming and Keane, Federal Reserve Bank of New York, April 2021.

One-day settlement risk: SPDR SP500 versus 10-year note

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.
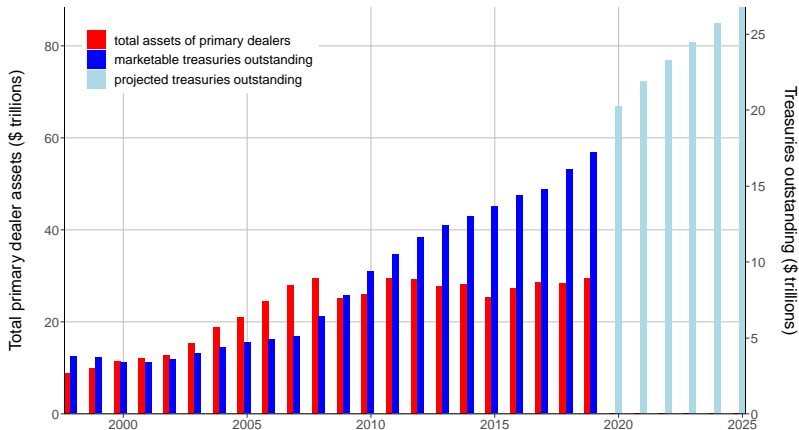
# Treasuries will overwhelm dealer balance sheet space
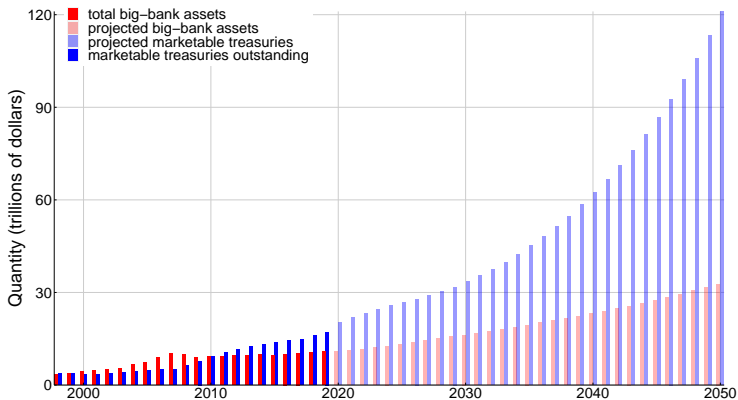
Figure: Marketable treasuries outstanding, including projections from 2020 by the Congressional Budget Office. Total assets of the holding companies of Goldman Sachs, Morgan Stanley, Merrill Lynch, Lehman Brothers, Bear Stearns, Bank of America, JP Morgan Chase, Citigroup, and Wells Fargo. Data: FRED, CRFB, 10K disclosures. Post-2019 balance sheets projected to grow at CBO predicted GDP growth rates. Data sources: FRED, CBO, and Federal Reserve Bank of New York.

# 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.

# Fed purchases of Treasuries during the Covid Crisis
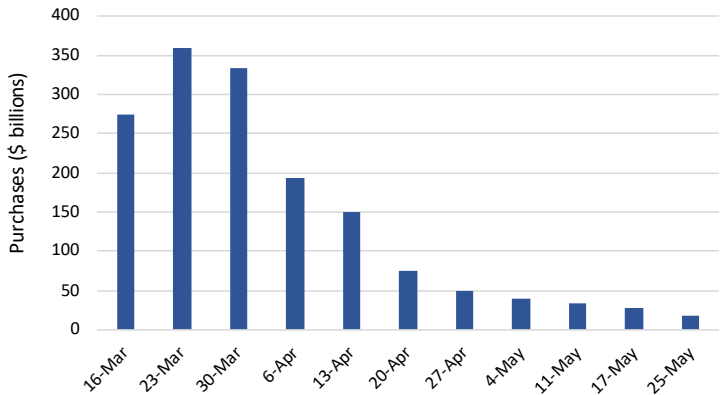
Figure: The Fed's purchases of treasuries, March 16 to May 25, 2020. Data source: Federal Reserve Bank of New York.

Total Treasury market trade volumes
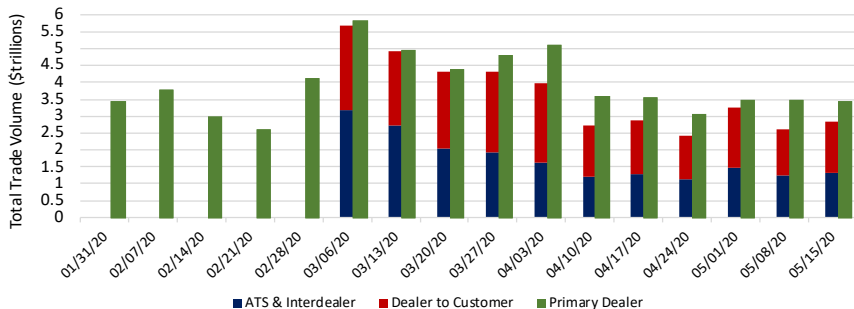
Figure: Total treasury market volumes, dealer-to-customer and interdealer (including ATS), for weeks ending on the indicated dates, and primary dealer volumes (which double counts trades between primary dealers). Data sources: FRBNY and TRACE (FINRA).

Financing of primary-dealer treasury inventories
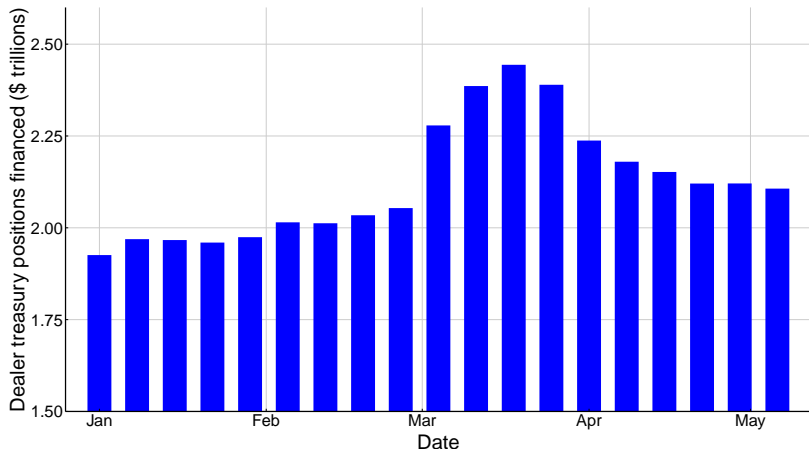
Figure: Total of all treasury positions for which primary dealers received financing with repurchase agreements and securities lending, January to May, 2020. Data source: Federal Reserve Bank of New York.

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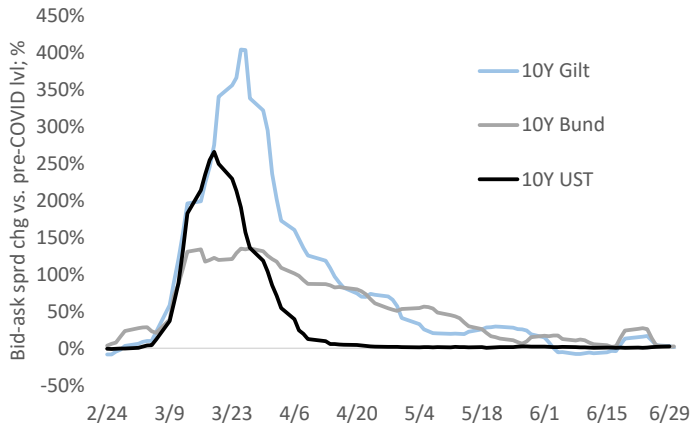
Figure: Percentage increases in bid-offer spreads in the interdealer markets for gilts, bunds, and Treasuries, from February 24. Figure source: Bank of America Securities, Data and Innovation Group.

Yield Curve Noise and Volatility
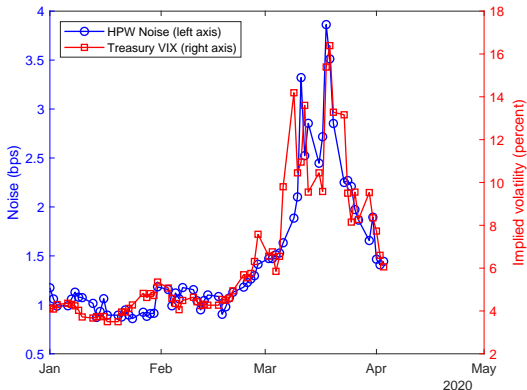
Figure: Implied volatility of the 10-year treasury note and the Hu-Pan-Wang measure of yield curve noise, in basis points. The implied volatility measure is from CBOE TYVIX data, based on options on the 10-year treasury note. The Hu-Pan-Wang (2013) noise measure of treasury market illiquidity is the 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.

Eurosystem Pandemic Purchase Program
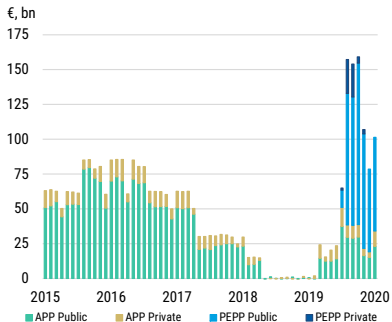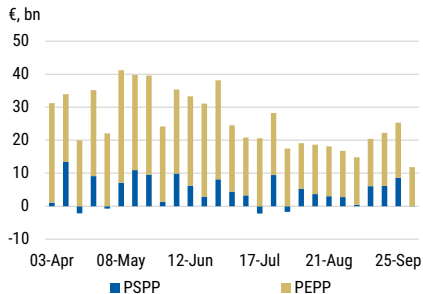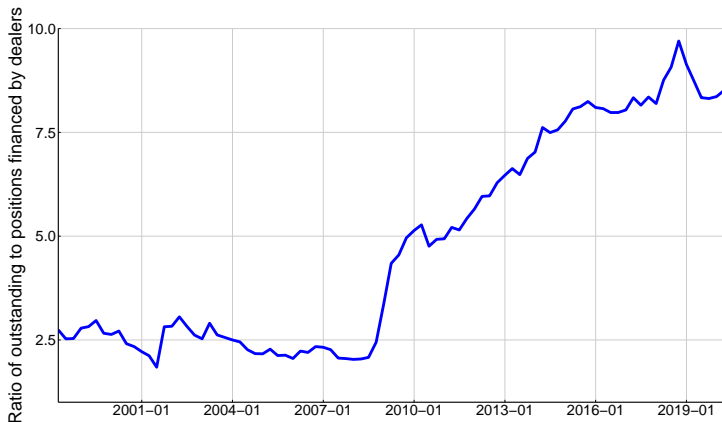

(a) Figure source: Morgan Stanley Research.

(b) Figure source: Morgan Stanley Research.

Growth of marketable Treasuries relative to dealer positions

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.

Cash-futures basis
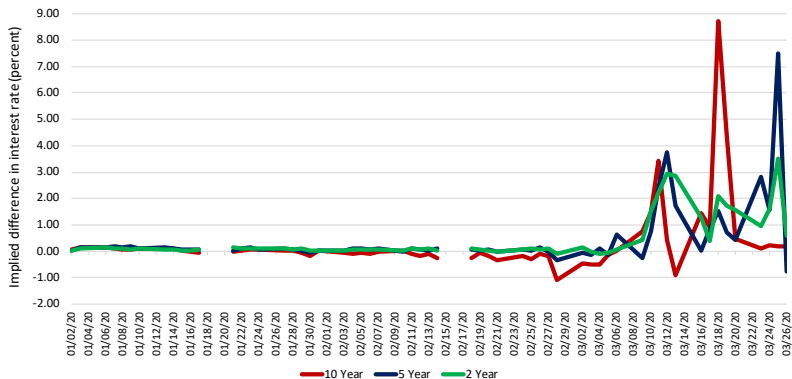
Figure: The difference, in percent, between (a) the repo rate implied by selling treasury futures, purchasing the cheapest-to-deliver underlying treasury note, and closing the futures contract at maturity by delivering the treasury note, and (b) the actual market general-collateral one-month repo rate. 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