Treasury Market Dysfunction and the Role of the Central Bank*

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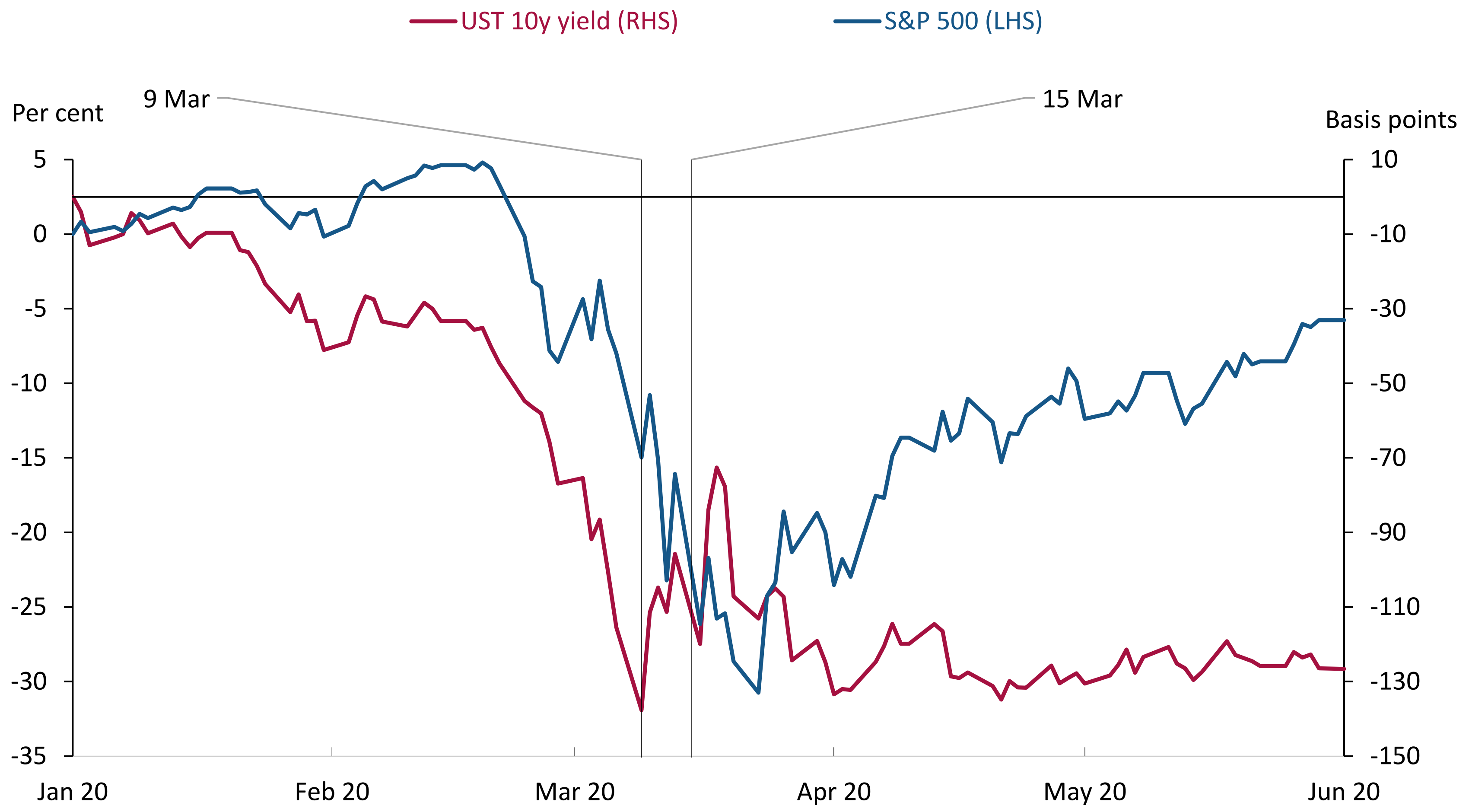
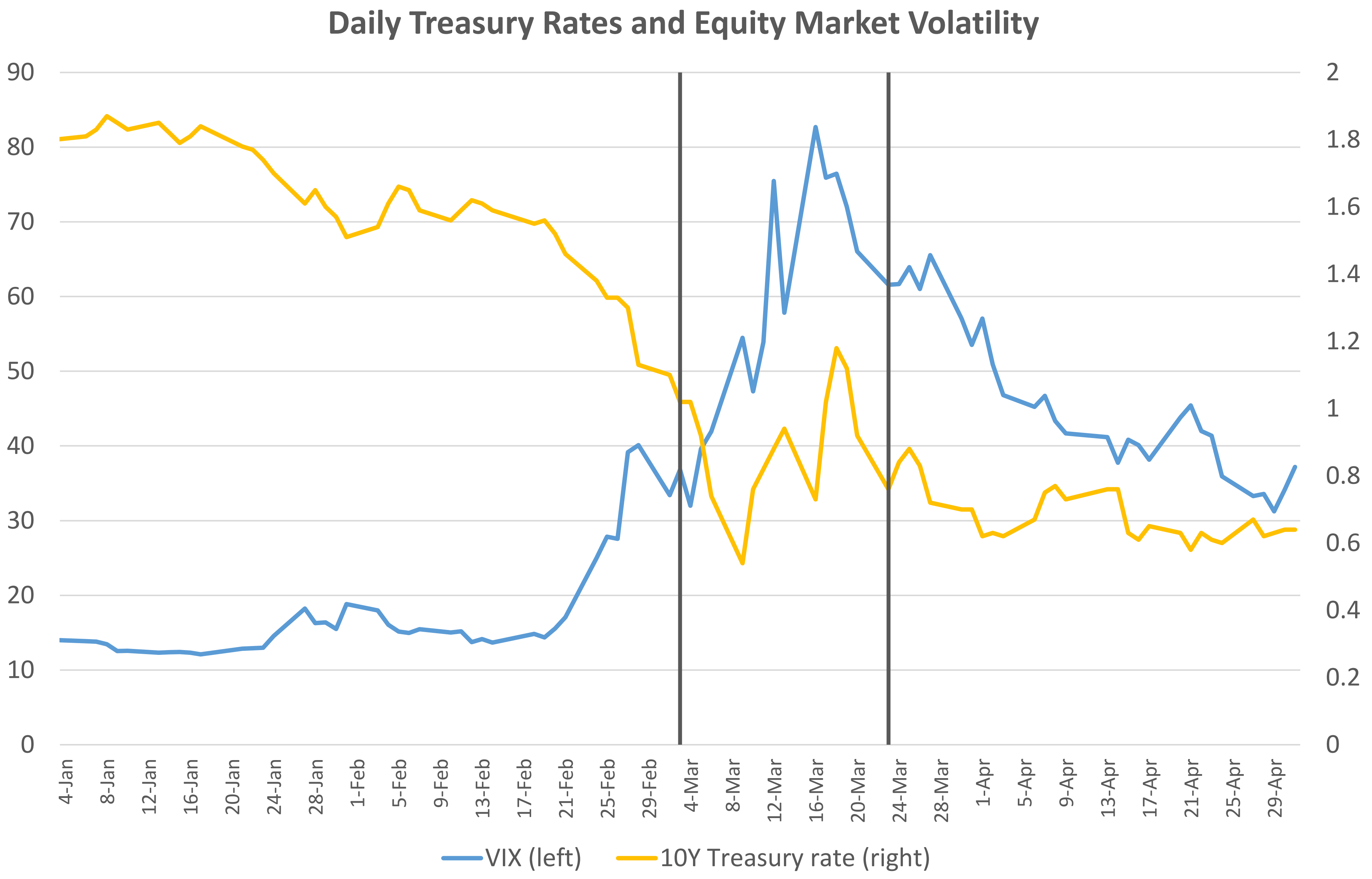
Outline

- The increasing fragility of Treasury markets
- A model of the sources of the fragility
- Supporting evidence for the model
- Policy option for addressing fragility

March 2020 Dash for Cash





Daily Treasury Rates and Equity Market Volatility
90
80
70
60
50
40
30
20
10
0
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
4-Jan 8-Jan 12-Jan 16-Jan 20-Jan 24-Jan 28-Jan 1-Feb 5-Feb 9-Feb 13-Feb 17-Feb 21-Feb 25-Feb 29-Feb 4-Mar 8-Mar 12-Mar 16-Mar 20-Mar 24-Mar 28-Mar 1-Apr 5-Apr 9-Apr 13-Apr 17-Apr 21-Apr 25-Apr 29-Apr
VIX (left)
10Y Treasury rate (right)

Treasury basis trade

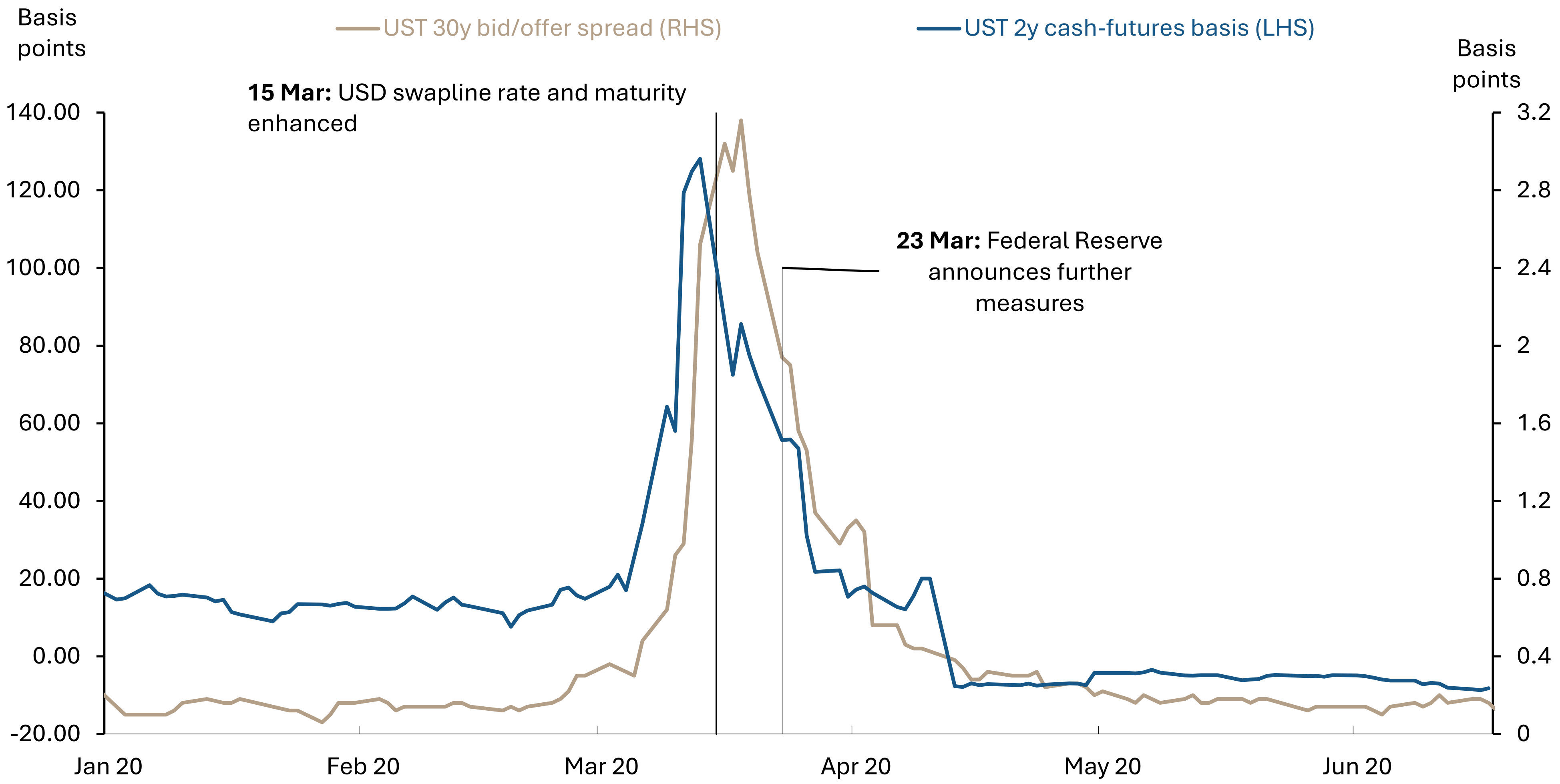
- **Buy** a US Treasury security (financed with repo)
- **Short** (sell) that same security in the futures market
- Close the futures contract with the security you own
- Nets a profit whenever the repo rate deviates from futures price
- https://www.cmegroup.com/education/files/understanding-treasury-futures.pdf

Table 10. Hedge fund selling

Total long Treasury exposure is from hedge fund Form PF reporting to the Securities and Exchange Commission, extracted from Figure 61 in Office of Financial Research (2020). Long and short positions in Treasury note and bond futures are from the CFTC's Commitment of Traders reports. To estimate net Treasury purchases from holdings changes I assume a return equal to that on the Bloomberg Barclays Treasury Indices for Treasury securities with >1 year remaining maturity (8.2% for 2020Q1).

$B	2019Q4	2020Q1
Total long Treasury exposure	1297	1164
Long positions in Treasury note/bond futures	306	275
Estimated Treasury holdings	991	889
Estimated net purchase of Treasuries		**-183**
Short positions in Treasury note/bond futures	746	618
Change in short positions in Treasury note/bond futures		-127

Market dysfunction

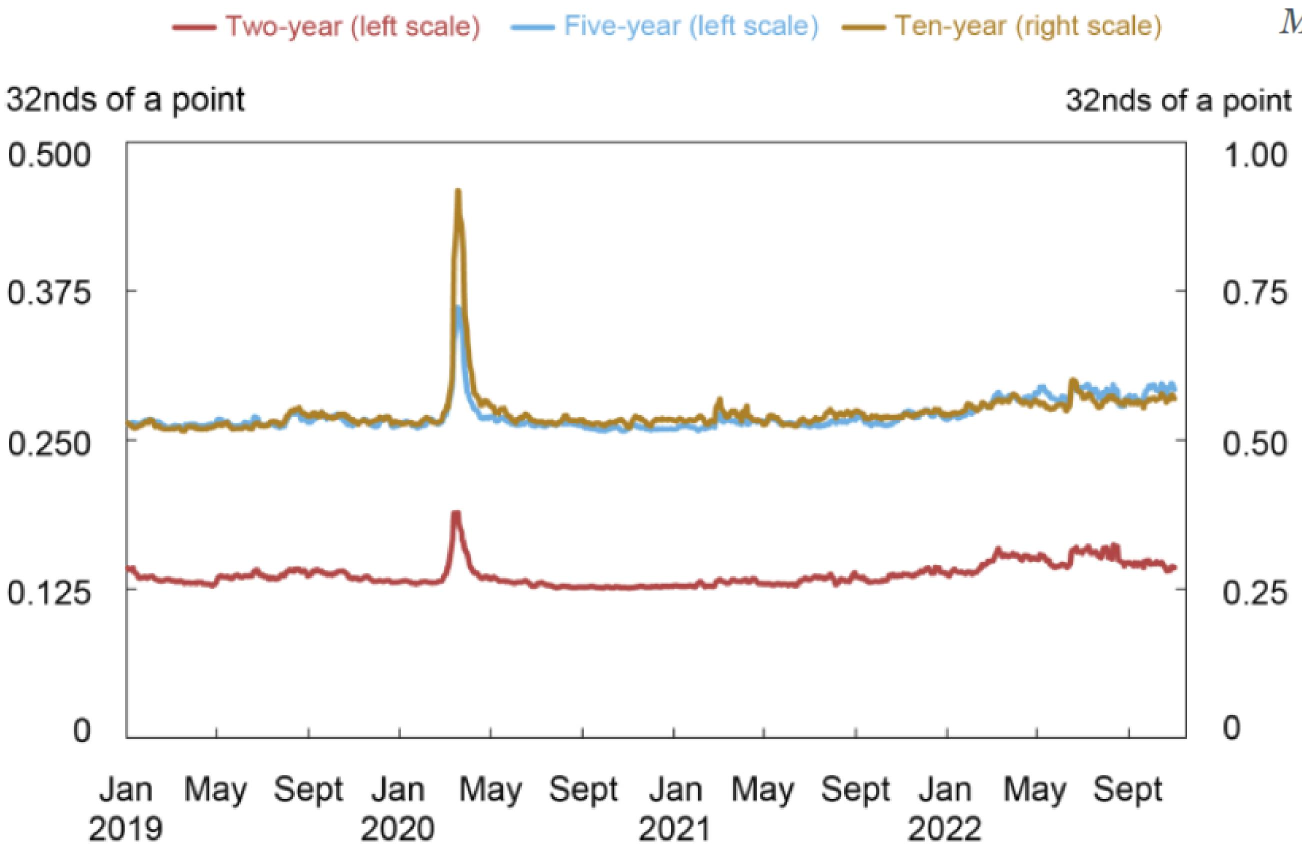


Bid Ask Spread Over Time

NOVEMBER 15, 2022

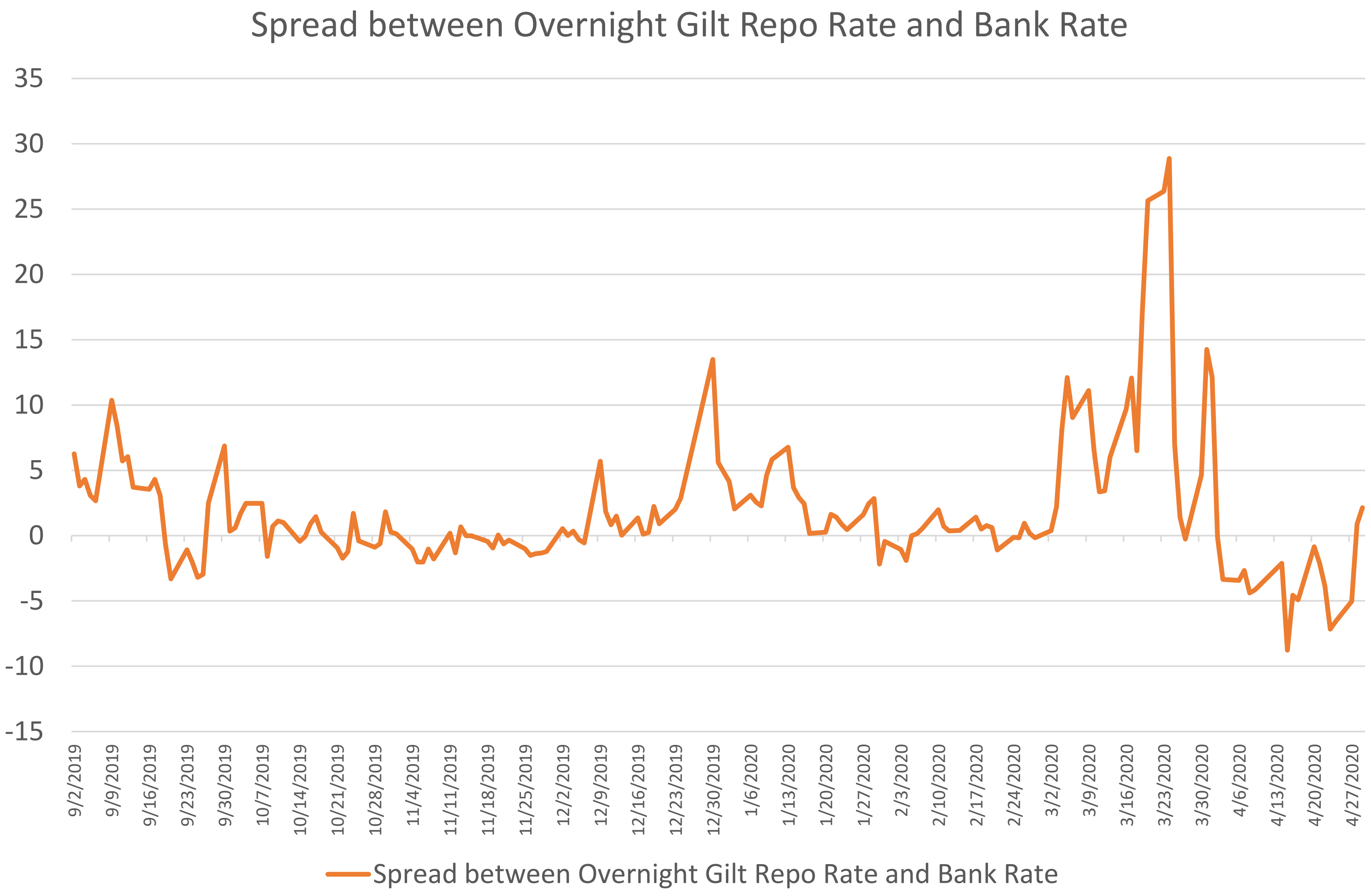
How Liquid Has the Treasury Market Been in 2022?

Michael Fleming and Claire Nelson

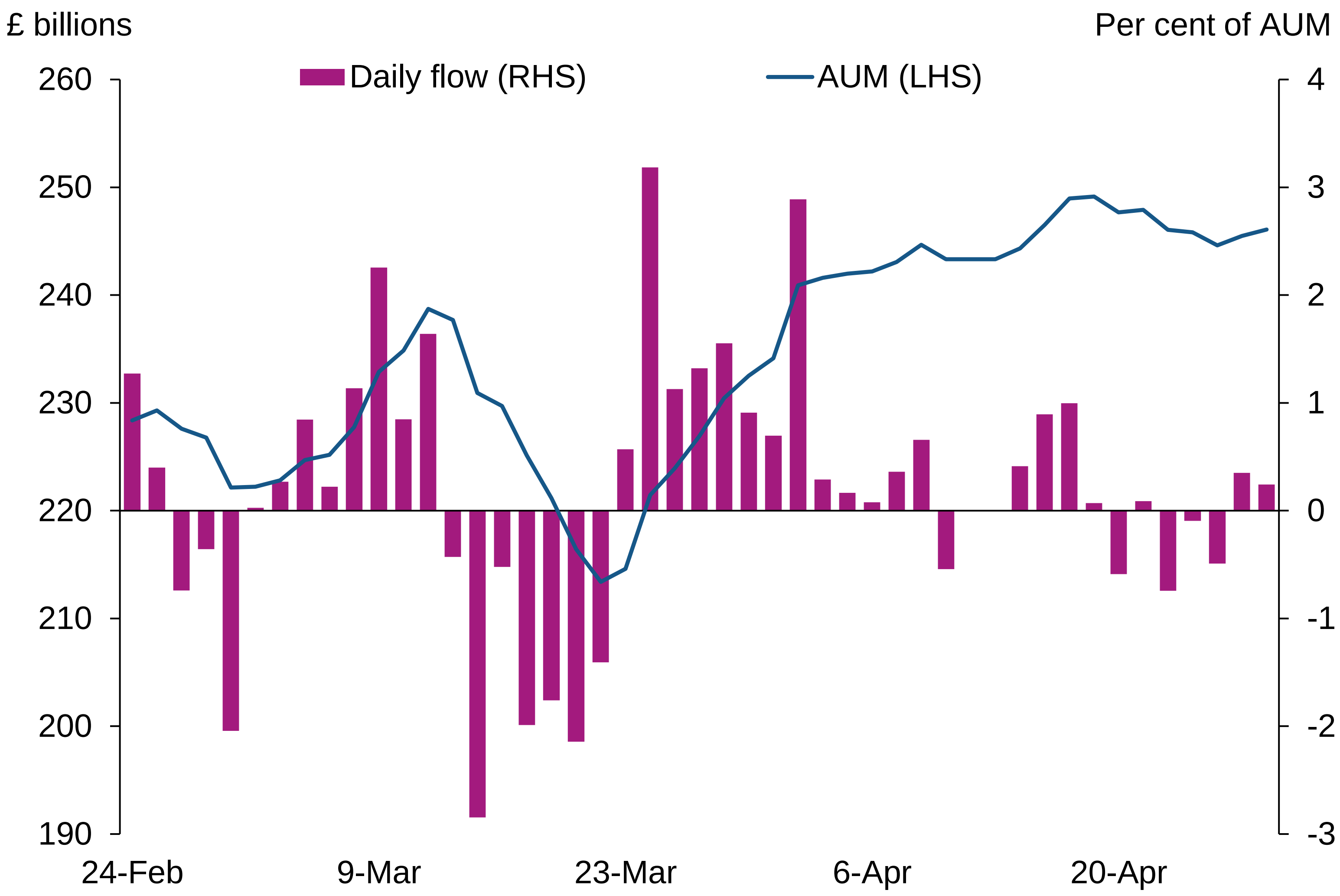


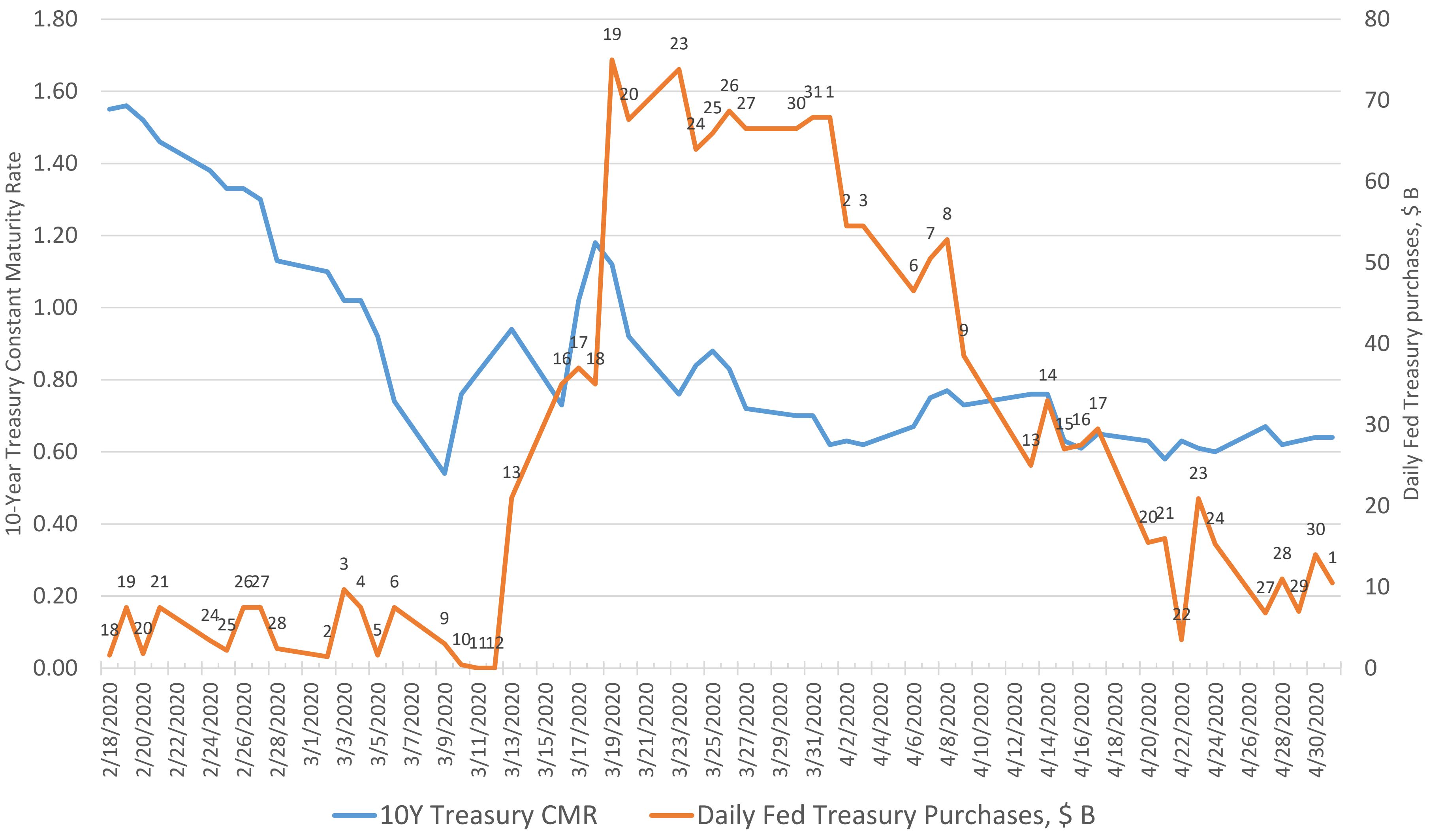
Source: Authors' calculations, based on data from BrokerTec.
Notes: The chart plots five-day moving averages of average daily bid-ask spreads for the on-the-run two-, five-, and ten-year notes in the interdealer market from January 2, 2019, to October 31, 2022. Spreads are measured in 32nds of a point, where a point equals one percent of par.

Repo Market Stress

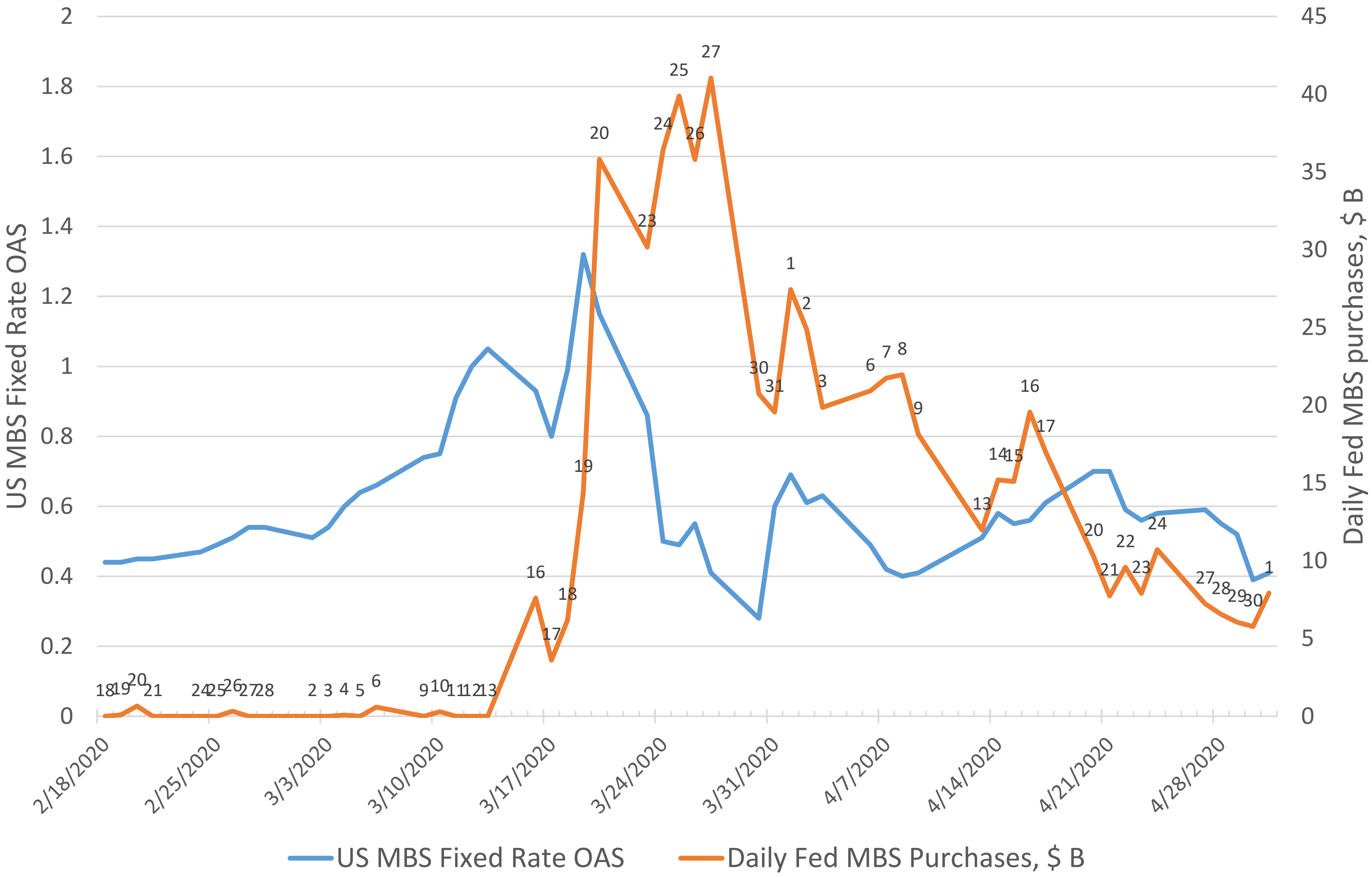


Money Market Spillover

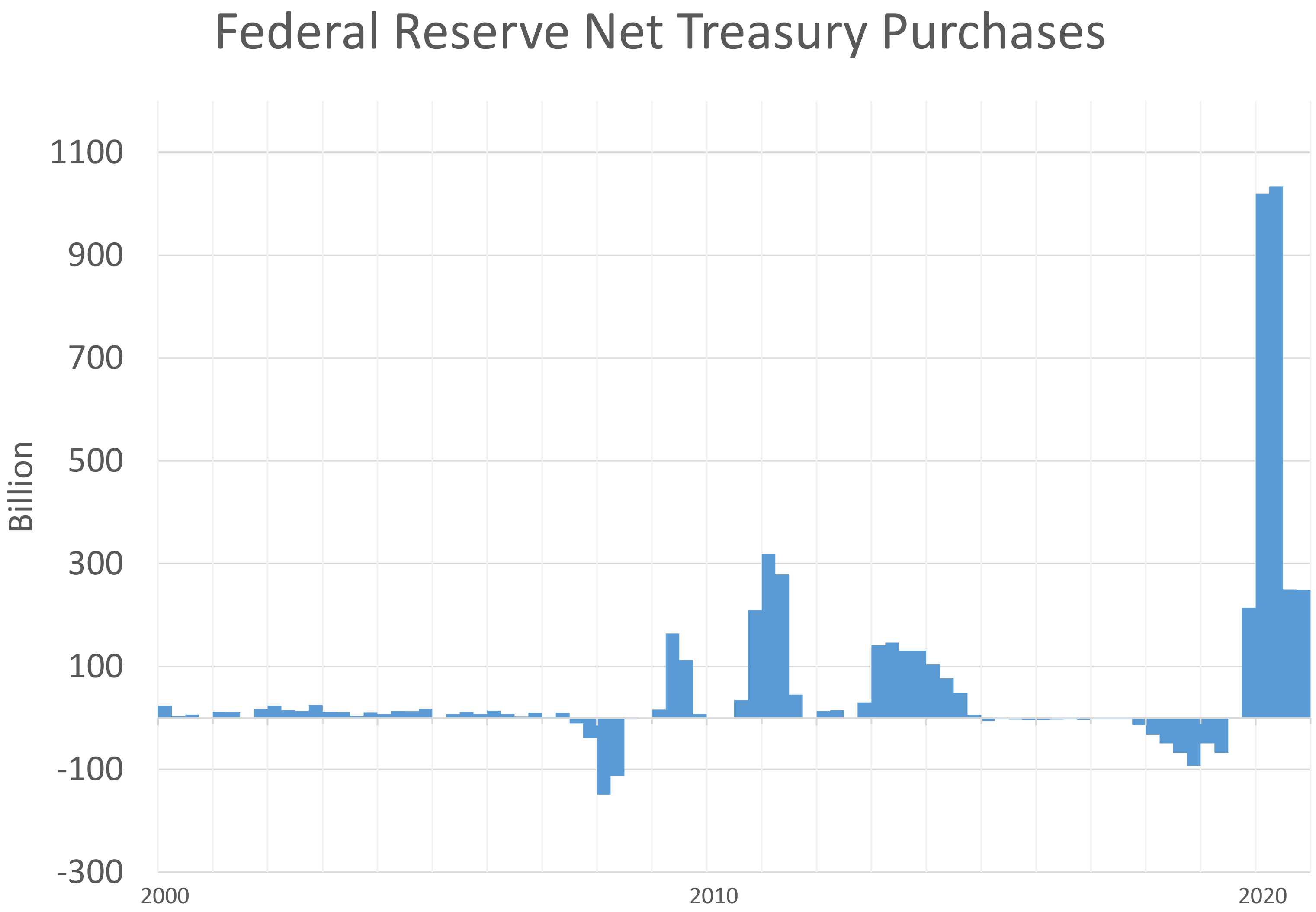




The Treasury Market in Spring 2020 and the Response of the Federal Reserve
Annette Vissing-Jorgenson


US MBS Fixed Rate OAS
Daily Fed MBS purchases, $ B
US MBS Fixed Rate OAS
Daily Fed MBS Purchases, $ B
2/18/2020
2/25/2020
3/3/2020
3/10/2020
3/17/2020
3/24/2020
3/31/2020
4/7/2020
4/14/2020
4/21/2020
4/28/2020

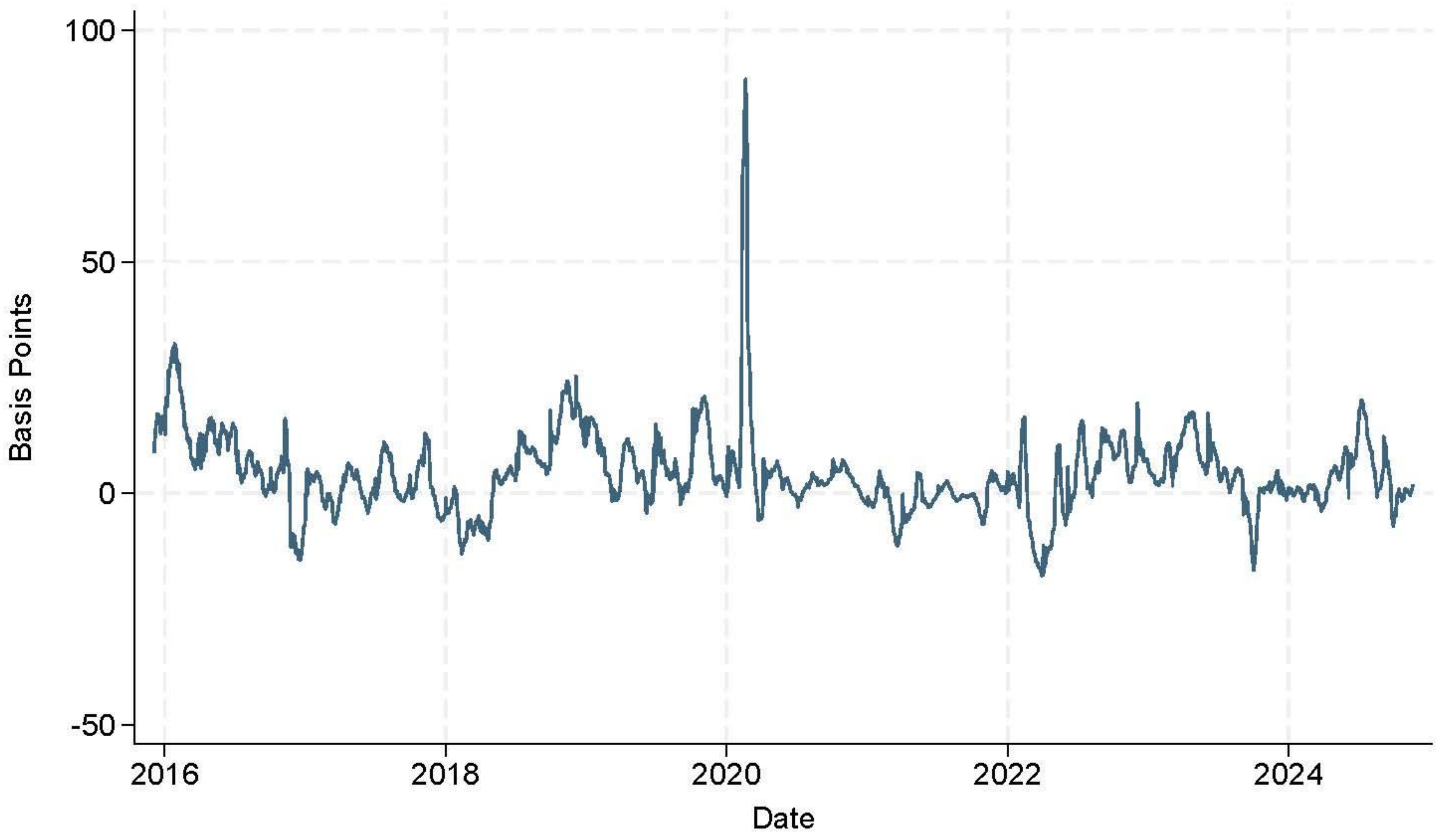
Fed buying exceeds QE1, QE2, QE3



FOMC Explanations

Date	Excerpts from FOMC Statements
Unscheduled Meeting March 15, 2020	The Federal Reserve is prepared to use its full range of tools to support the flow of credit to households and businesses and thereby promote its maximum employment and price stability goals. ***To support the smooth functioning of markets*** for Treasury securities and agency mortgage-backed securities ***that are central to the flow of credit to households and businesses,*** over coming months the Committee will increase its holdings of Treasury securities by at least $500 billion and its holdings of agency mortgage-backed securities by at least $200 billion. The Committee will also reinvest all principal payments from the Federal Reserve's holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities. In addition, the Open Market Desk has recently expanded its overnight and term repurchase agreement operations. The Committee will continue to closely monitor market conditions and is prepared to adjust its plans as appropriate.
Unscheduled Meeting March 23, 2020	The Federal Open Market Committee is taking further actions to support the flow of credit to households and businesses by addressing strains in the markets for Treasury securities and agency mortgage-backed securities. The Federal Reserve will continue to purchase Treasury securities and agency mortgage-backed securities in the amounts ***needed to support smooth market functioning and effective transmission of monetary policy to broader financial conditions.*** The Committee will include purchases of agency commercial mortgage-backed securities in its agency mortgage-backed security purchases. In addition, the Open Market Desk will continue to offer large-scale overnight and term repurchase agreement operations. The Committee will continue to closely monitor market conditions, and will assess the appropriate pace of its securities purchases at future meetings.
Regularly Scheduled Meeting April 29, 2020	To support the flow of credit to households and businesses, the Federal Reserve will continue to purchase Treasury securities and agency residential and commercial mortgage-backed securities in the amounts needed to ***support smooth market functioning, thereby fostering effective transmission of monetary policy to broader financial conditions.*** In addition, the Open Market Desk will continue to offer large-scale overnight and term repurchase agreement operations. The Committee will closely monitor market conditions and is prepared to adjust its plans as appropriate.
Regularly Scheduled Meeting September 16, 2020	In addition, over coming months the Federal Reserve will increase its holdings of Treasury securities and agency mortgage-backed securities at least at the current pace to ***sustain smooth market functioning and help foster accommodative financial conditions***, thereby supporting the flow of credit to households and businesses.

Treasury Spot Futures Basis



The basic story

- The basis trade exists to help solve asset managers' asset and liability mismatch problem:
  - They can't hedge their liabilities without financial engineering
- Dealers intermediate to help but don't use much balance sheet.
- Hedge funds step in to take the opposite side of the asset managers.
- Duration risk does not reside on the balance sheets of the actors that hold physical treasuries.
- Provides a new perspective on fragility, the relevant sources of shocks and potential policy responses.

Key Model Implications

- In normal times, dealers focus scarce balance sheet capacity primarily on market-making, leaving most of the policing of Treasury-futures basis to hedge funds.

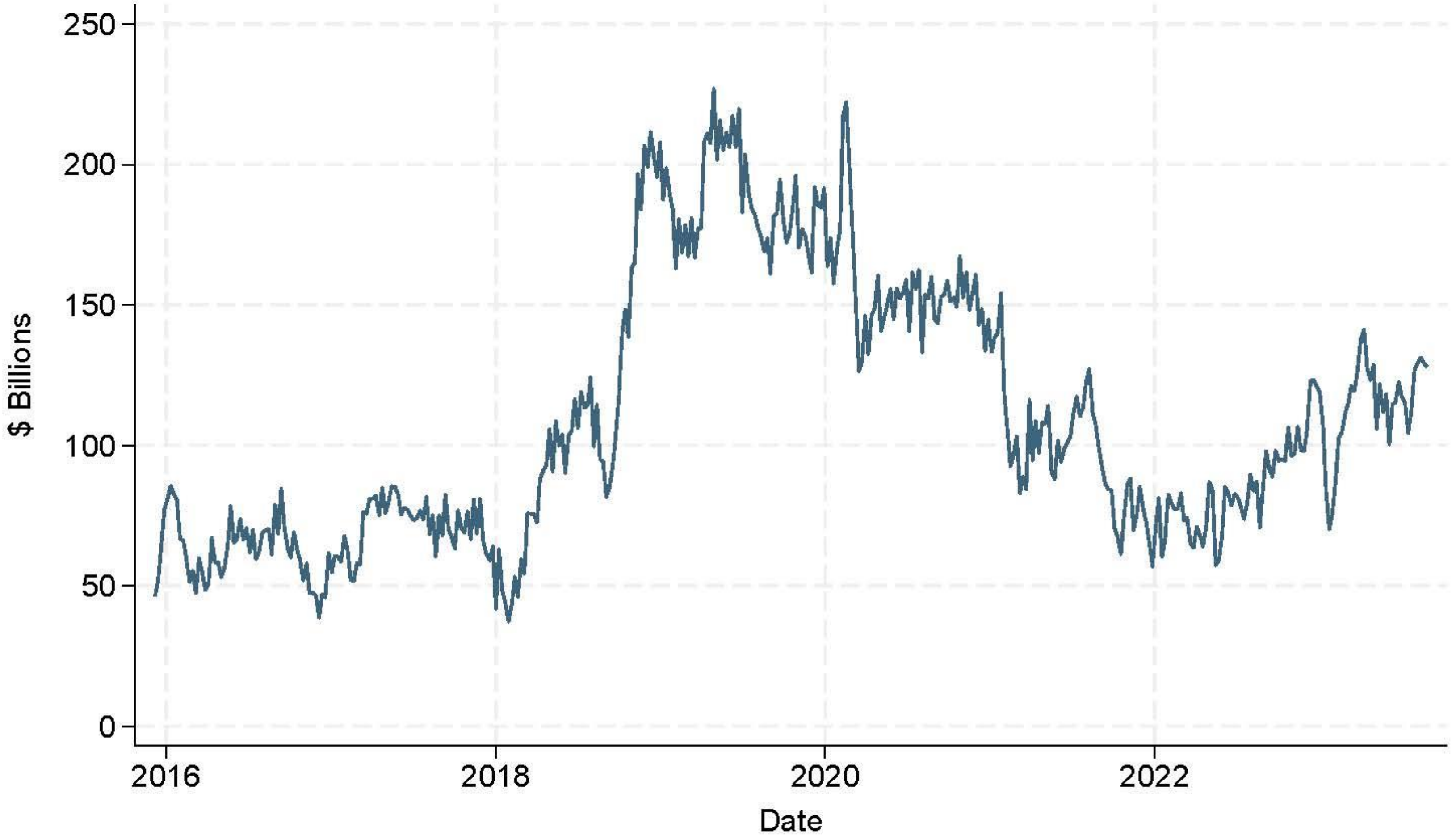
- As size of Treasury market grows, so too does levered position of the hedge funds (because the AM's want to hold bigger long positions). This makes them increasingly vulnerable to a variety of external shocks.
  - Shocks to the cash leg: funding is generally shorter than maturity of futures contracts, widespread sales of cash Treasuries can cheapen them vs futures
  - Shocks to the futures leg: futures tend to lead due to liquidity preference (outperform in a rally, as happened in 2020), asset managers could reduce their duration exposure

- Under stress, highly levered hedge funds are forced to unwind their basis trades, leaving capital-constrained dealers to absorb these positions.
  - Treasury-futures basis widens; cash Treasury yields spike upwards .
  - Treasury-market liquidity dries up.

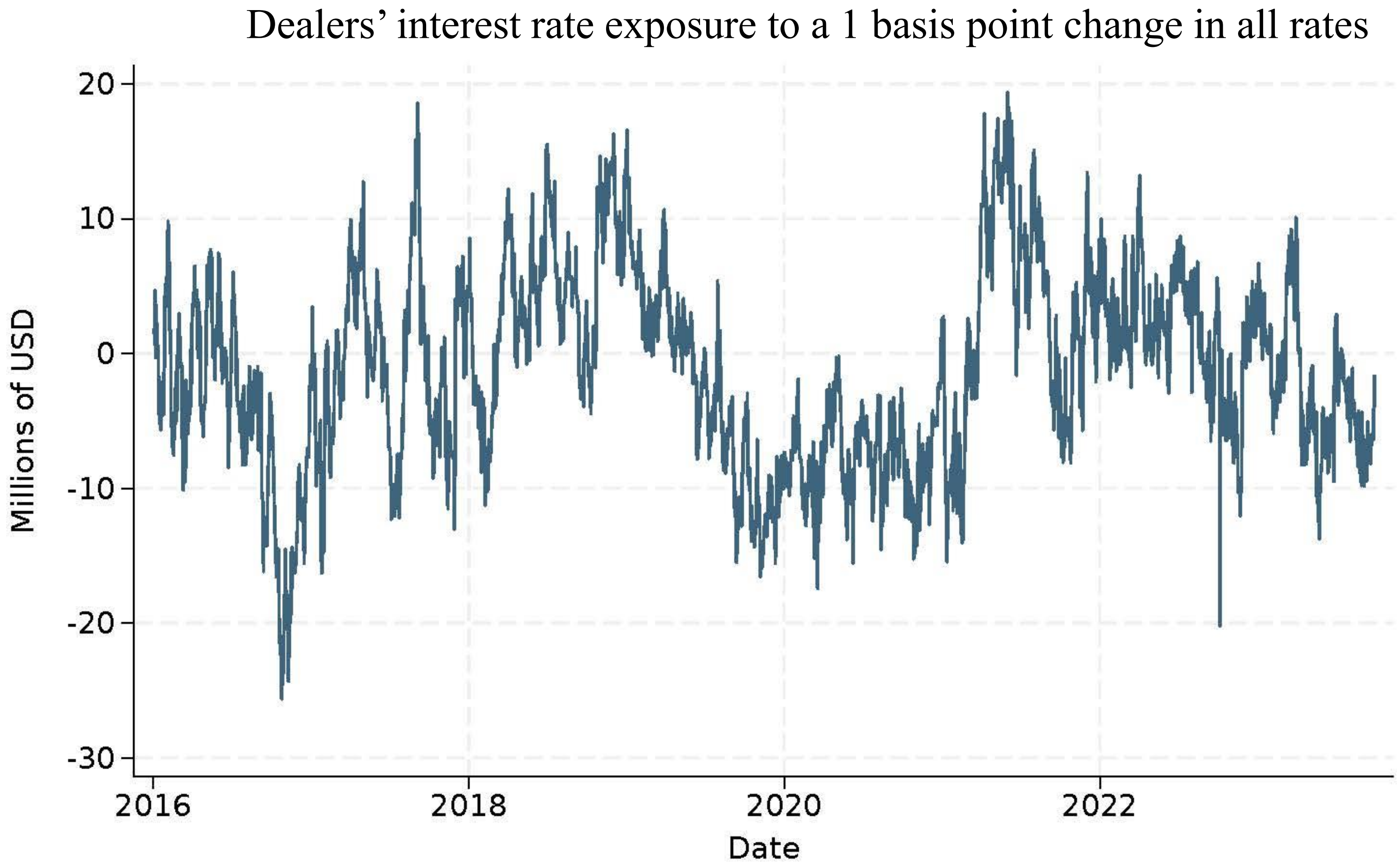
Supporting facts

- Duration hedging by dealers and hedge funds
- Inverse positions of hedge funds and asset managers
- Hedge funds as marginal suppliers of balance sheet to hold Treasuries
- Spreads co-vary as predicted

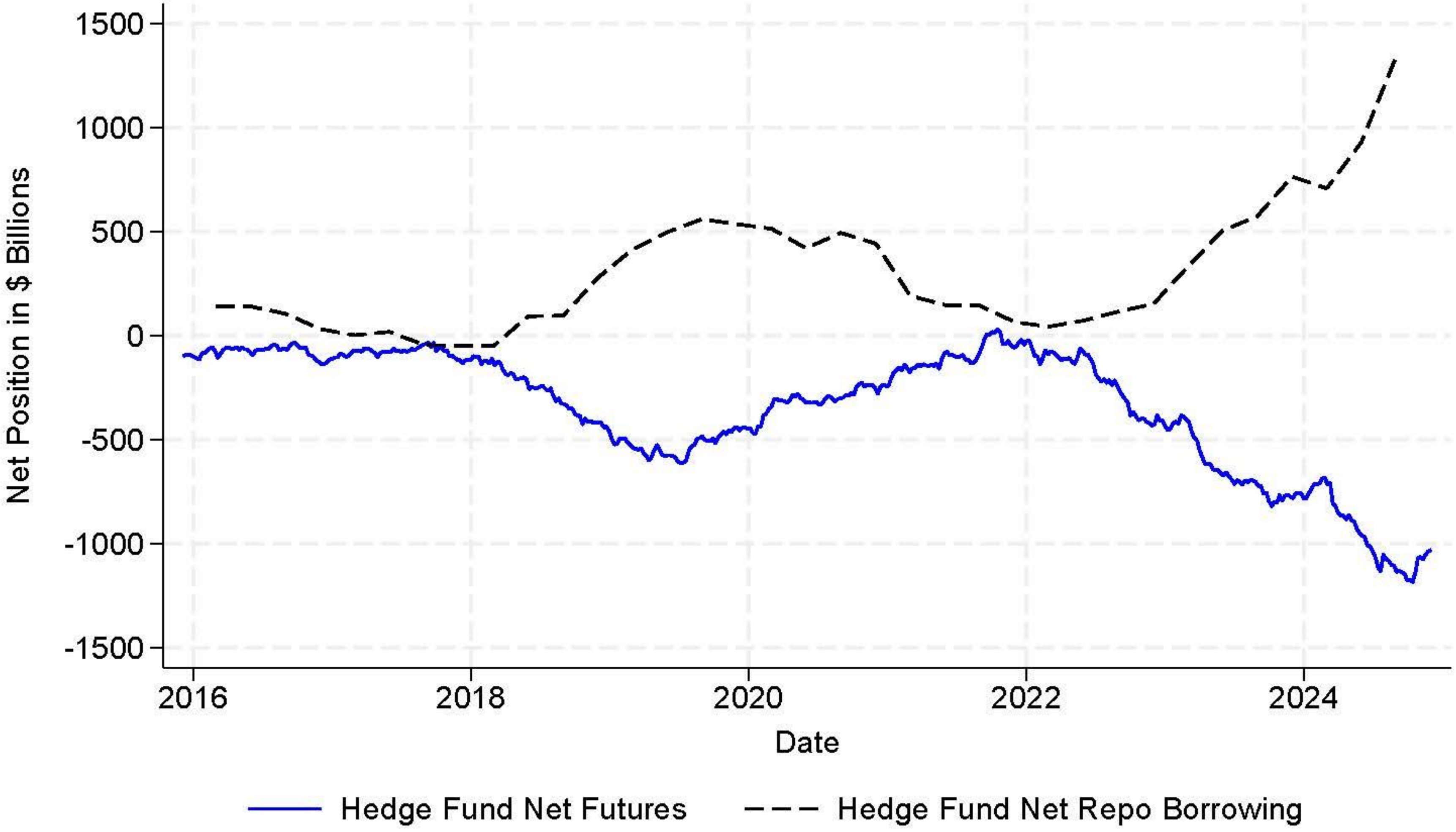
Dealers do own Treasuries



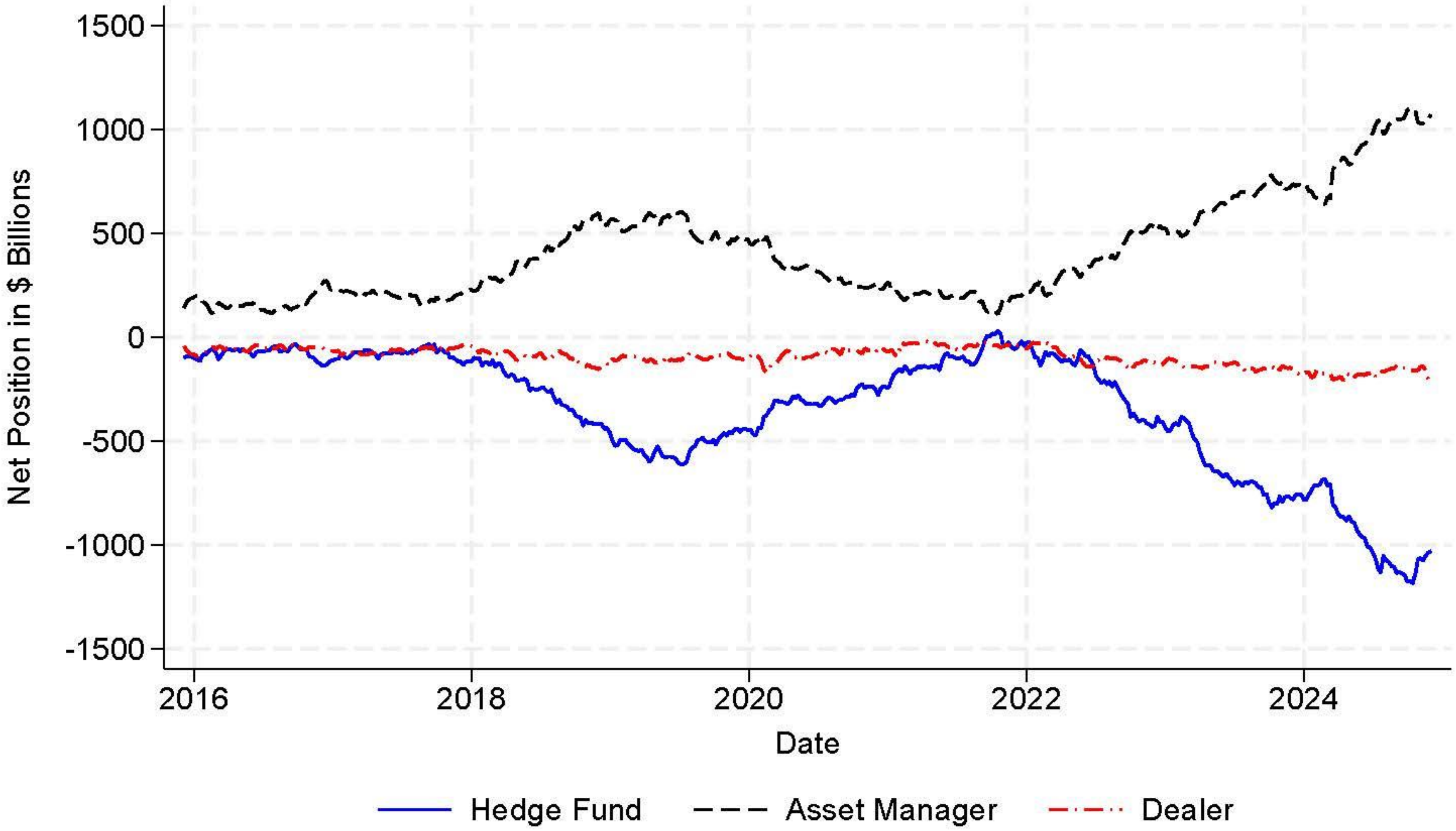
But, Dealers hedge aggressively



Hedge Funds lever and hedge



Asset-Managers and Hedge Funds are on Opposite Sides of the Treasury Market

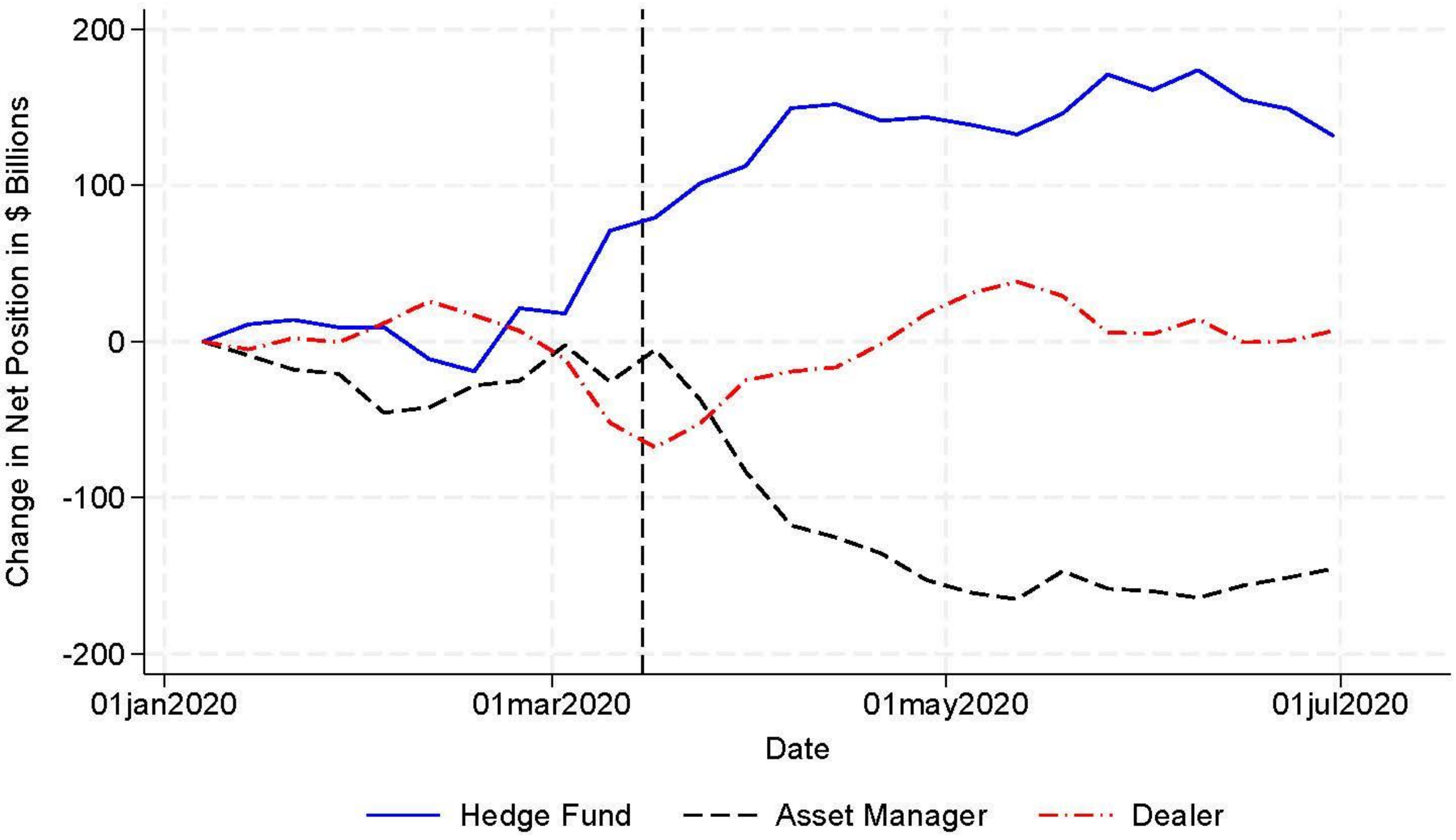


Zooming in on March 2020 Period

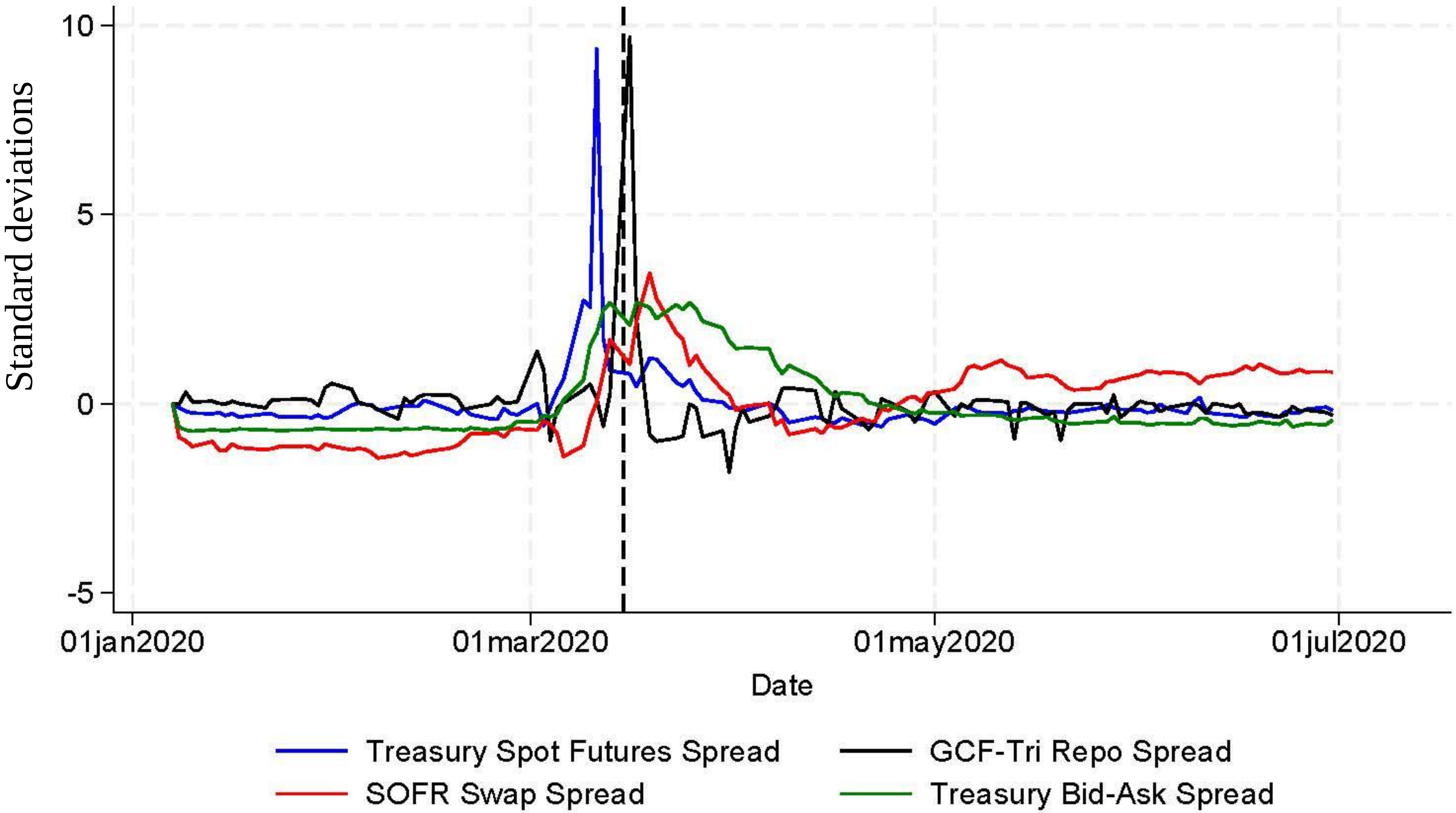
- Around March 2020 market stress, hedge funds increase net positions sharply—i.e., liquidate their existing shorts. Roughly $150 billion in a few weeks.

- Balance-sheet constrained dealers are forced to take other side in the short run.

- In the longer run, dealers re-balance and asset managers take over temporarily bloated dealer positions.



When the trade unwinds, it spills over



Summary

- Asset managers financially engineer a security they want to own.
- Hedge funds assist them but use lots of borrowing to do so.
- Various shocks to hedge funds’ ability to hold their positions could destabilize the Treasury market, e.g.
  - Needs for cash, say due to margin calls
  - Losses on other trades
  - Decision to reduce risk

What to do the next time?

- Fed purchases will work, but that creates three issues

1. Moral hazard – encourages more risk-taking if a bailout is assured.
2. Buying likely changes the pricing of treasuries (term premia) which looks like monetary policy.
3. How do you exit when the turmoil ends?

Alternative Policy Proposal

- **Hedged Purchases: Buy Treasuries but hedge with futures.**
- This delivers exactly what the hedge funds would be offloading – and could be done via an auction.
- No term premia impact, no monetary policy spillover.
- Builds in an exit strategy.
- Purchases at a "penalty discount" limit moral hazard.
- By product: the hedge limits losses if rates rise later.
- (There is some precedent for central banks trading in financial derivatives. E.g., the assumption of FX forward portfolios in the resolution of Franklin National Bank (1974).)

And Why Do We Care, Anyways?

- From a macro perspective, what's the big deal? Absent an equally dramatic move in level of cash interest rates, what are real-economy consequences of spike in Treasury-futures basis, reduced market liquidity, wider repo intermediation spreads?

- Reserve currency answer: important that investors in Treasuries have full confidence in market liquidity in all states of the world.

- Financial-stability answer: roughly trillion-dollar basis trade is heavily concentrated in a few large multi-strategy hedge funds: Citadel, Millenium, Point 72. If it unwinds sharply, these institutions may be forced to fire-sell all kinds of other assets.
  - Leading to generalized and unpredictable contagion in other markets that the Fed does not have the tools to stabilize.

Summary

- The basis trade reflects the equilibrium of how the asset managers, dealer and hedge funds interact

- The equilibrium is fragile and creates an interconnectedness linking various parts of the financial system

- Existing central bank tools are not terribly well-suited to dealing with potential stress

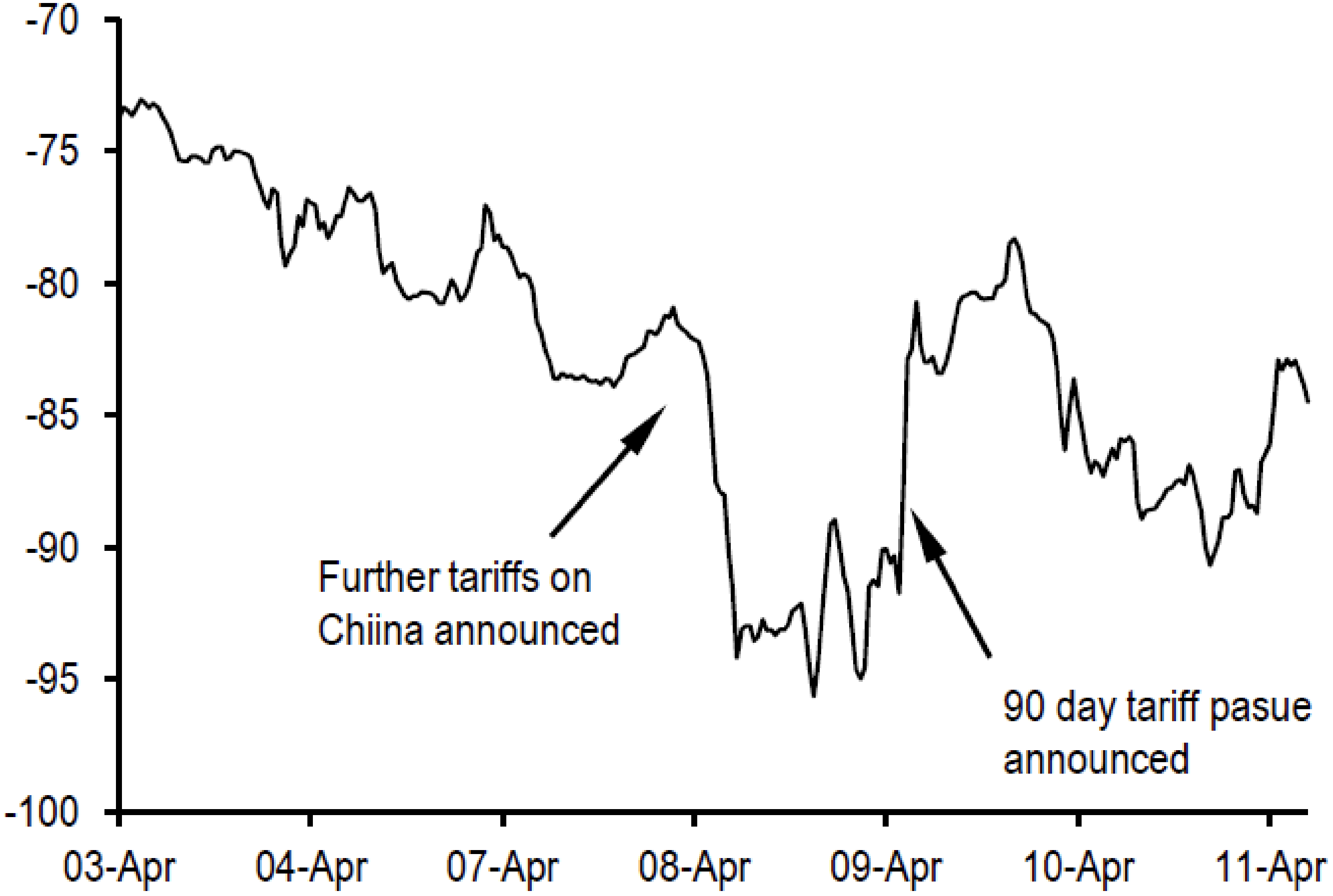
- We offer a new proposed tool that could be considered

Early April

JP Morgan
U.S. Fixed Income Markets Weekly
April 11, 2025

Figure 7: Intra-day volatility in long end swap spreads has been significant since the tariff announcements

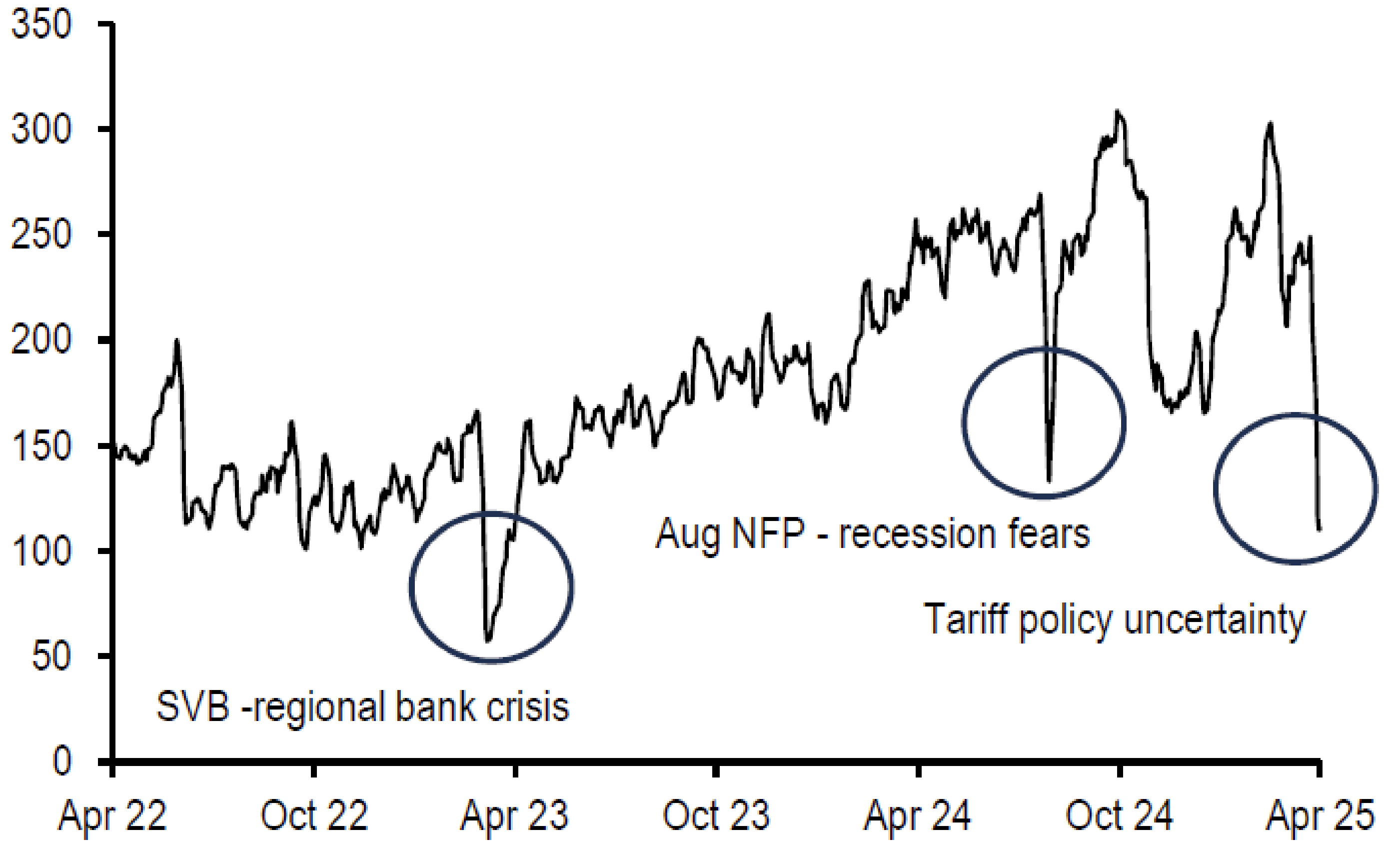
20Y SOFR swap yield - 20Y OTR UST yield, 4/3/2025 - 4/11/2025*



* Data points were collected at a 30 minute frequency from 4/3 (9:30 AM - 4/11 (4:00 PM)
Source: J.P. Morgan., Bloomberg Finance L.P.

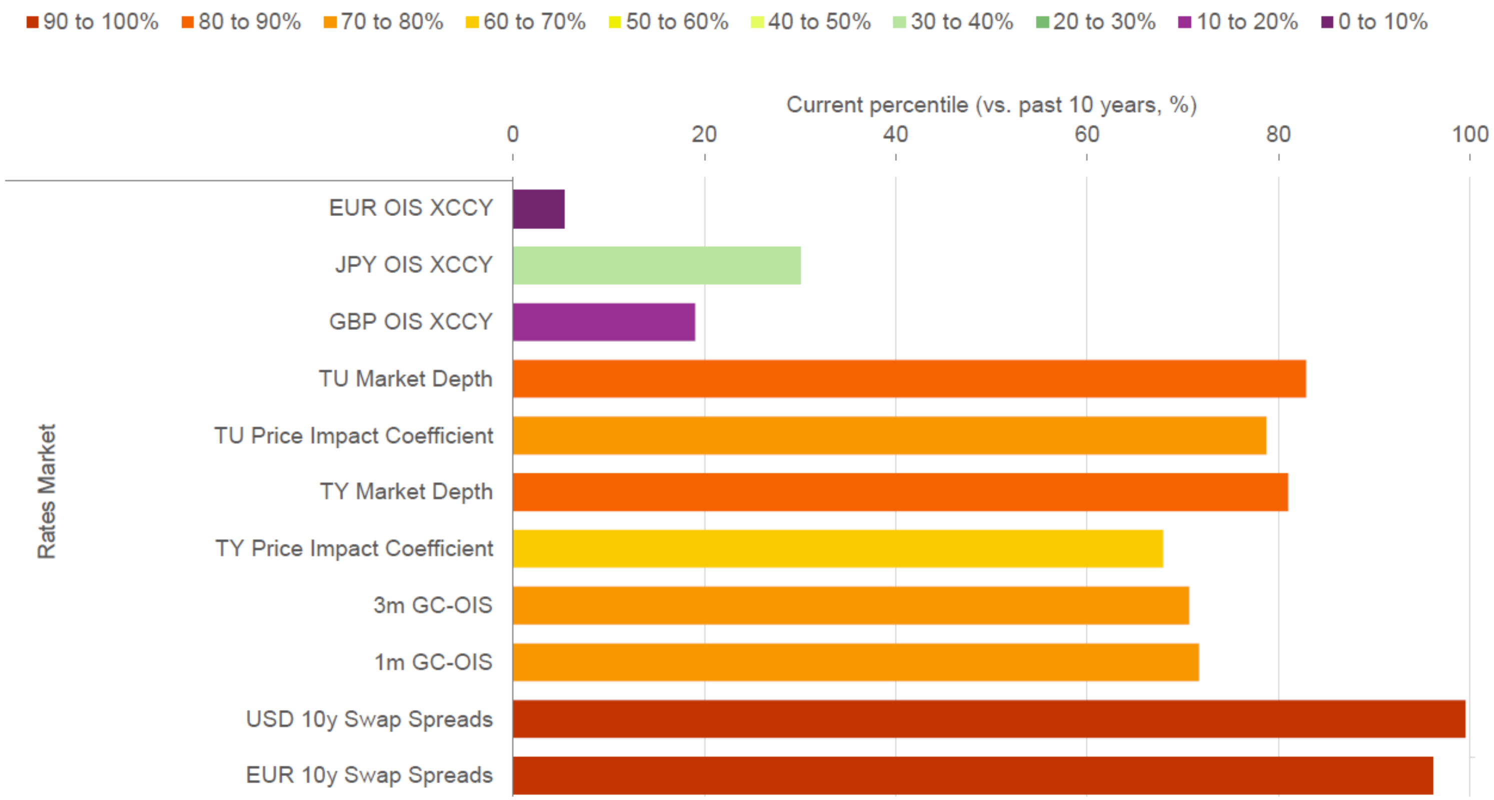
Market Depth Deterioration

5-day moving average of duration-weighted Treasury market depth*, past 3 years; $mn
10-year Treasury equivalents



* Market depth is the size of the top 3 bids and offers by queue position, averaged between 8:30 - 10:30am daily. Duration weighted market depth refers to the weighted sum of market depth in 2s, 5s, 10s, and 30s using weights of 0.25, 0.5, 1 and 2, respectively
Source: BrokerTec, J.P. Morgan

Temperature Check



April 22,2025: Current percentile is the most recent day (April 21).

Thanks for attending

For background information, go to

https://faculty.chicagobooth.edu/anil-kashyap

There is both the full paper posted and an oped for The Economist