

**EXECUTIVE  
BOARD  
MEETING**

SM/20/84  
Supplement 1

**CONFIDENTIAL**

April 3, 2020

To: Members of the Executive Board

From: The Secretary

Subject: **April 2020 Global Financial Stability Report—Chapter 1—Online Annex**

Board Action:	Executive Directors' <b>consideration</b> (Formal)
Tentative Board Date:	<b>Tuesday, April 7, 2020</b>
Publication:	<p>Yes, it is intended that the Global Financial Stability Report documents will be released to the public at the time of the Global Financial Stability Report press conference, tentatively scheduled for <b>Tuesday, April 14, 2020</b>.</p> <p>The online annex will only be published on the external website.</p>
Questions:	<p>Mr. Natalucci, MCM (ext. 37108) Ms. Ilyina, MCM (ext. 35351) Mr. Kerry, MCM (ext. 37204) Mr. Papageorgiou, MCM (ext. 34261)</p>
Additional Information:	<p>The paper will be revised for publication in light of the Executive Board discussion. If Executive Directors have additional comments, they should notify Mr. Natalucci and Ms. Ilyina by <b>5:30 p.m. on Tuesday, April 7, 2020</b>.</p>



## ONLINE ANNEX 1. TECHNICAL NOTE

### Online Annex 1.1. Fragilities in US Dollar Short-Term Funding Markets

On September 16, 2019, rates in US short-term funding markets spiked. The price action prompted the US Federal Reserve to provide additional liquidity through overnight and term open markets repo operations and subsequently through Treasury bill purchases. These large liquidity injections helped the Fed reassert control over short-term money market rates and ensure smooth conditions through the end of 2019 and into early 2020, although demand for liquidity has remained robust.

The enduring severity of the price action unmasked several underlying structural fragilities in US dollar funding markets—such as continued reliance on overnight funding and rigidities in the market structure—that have built up over the years. When the demand curve for reserves is flat, the distribution of reserves among market participants is less relevant. However, when the demand curve for reserves becomes steeper, money market rates can suddenly spike once fragilities and inefficiencies in repo markets come into play. Recent experience suggests that repo rate volatility tends to be higher when bank excess reserves approach the lowest comfortable level (LCLoR).<sup>1</sup>

#### ***Greater Role of Leveraged Investors***

Holdings of Treasuries by leveraged investors likely increased until the COVID-19 crisis. Over the past two years, higher US dollar-hedging costs appear to have dissuaded real-money investors—such as mutual funds, the foreign official sector, insurers, and pension funds—from increasing their holdings of Treasuries in line with increasing supply. Leveraged investors, such as hedge funds, have reportedly filled the gap as marginal buyers of Treasuries.<sup>2</sup> Leveraged investors rely on repo funding to finance their Treasury holdings, with dealers intermediating such transactions. Dealers, as market-makers, also need to fund their own inventories of securities, which have increased, typically through repo as well.

#### ***Reliance on Overnight Repo Funding***

Reliance on overnight repo funding can leave market participants more vulnerable to a sudden deterioration in conditions. Yet until September 2019, ample liquidity and low volatility, resulting in part from quantitative easing (QE) and the large amounts of reserves it produced, contributed to a perception of overnight funding as safe and plentiful. The flattening of the yield curve likely further encouraged leveraged investors to employ the cheapest and shortest source of tenor funding to enhance returns. On the supply side, the 2016 Money Market Fund Reform encouraged money funds—an important source of financing to dealers—to shorten the maturity of their exposures, resulting in a higher share of overnight lending. Finally, sponsored repo, a rapidly growing segment of the repo market, is only overnight, with no term lending yet available.

# Fragilities in US Dollar Short-Term Funding Markets (continued)

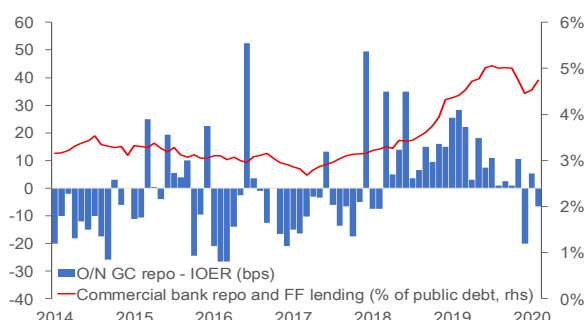
## High Concentration

Repo markets have become more concentrated and sensitive to changes in the behavior of a few large dominant players, leaving markets more susceptible to idiosyncratic shocks faced by any of these players. In particular, intermediation of Treasury repo is dominated by a few large dealers, which benefit from their scale in the relatively low-margin Treasury repo business. Concentration is also evident on the supply side. Money market funds are a major source of liquidity to dealer banks, but usually lend to large financial institutions. As of the fourth quarter of 2019, money market funds had lent \$1.1 trillion through repo transactions to financial institutions, nearly half of which goes to large dealers.

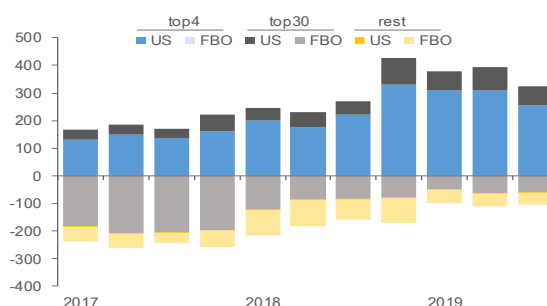
Meanwhile, a few large commercial banks have become more prominent providers of funding in repo markets. Commercial banks' share of gross repo provision nearly doubled from 2017 to 2019 (Online Annex Figure 1.1.1, panel 1) and has come mostly from a handful of US top-tier banks (Online Annex Figure 1.1.1, panel 2).

**Online Annex Figure 1.1.1. Commercial Banks' Repo Lending and Inelastic Supply of Repo Funding**

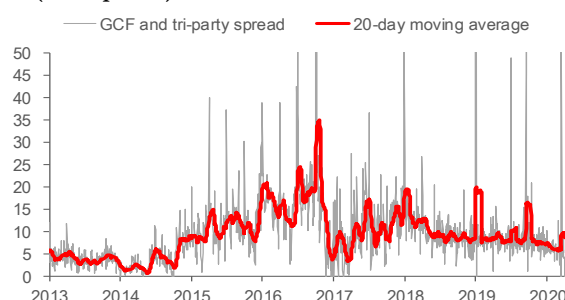
### 1. US Commercial Bank' Repo and Federal Funds Lending



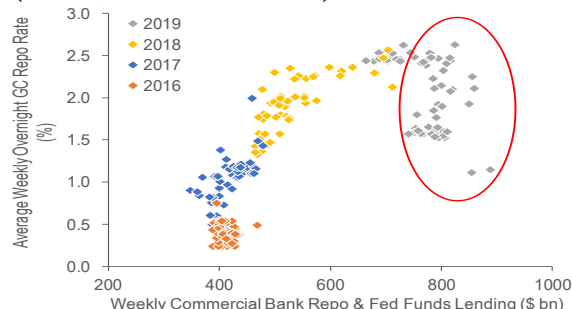
### 2. Net Repo Lending by US and Foreign Banks (Billions of US dollars)



### 2. General Collateralized Financing (GCF) Repo and Tri-party Repo Rates (Basis points)



### 4. US Commercial Bank's Repo and Fed Funds Lending and General Collateralized Financing Repo Rates (Percent; billions of US dollars)



Sources: Bloomberg Finance L.P.; Federal Reserve; DTCC; and Bank of New York Mellon.

Note: FBOs = foreign banking organizations; FF = Federal Funds; IOER = interest rate on excess reserves. GCF = general collateralized financing. On panel 3, the vertical scale is capped at 50 basis points.

## Fragilities in US Dollar Short-Term Funding Markets (concluded)

### *More Inelastic Supply of Repo Funding*

Provision of secured financing has become relatively more inelastic to conditions in money markets, likely reflecting both tighter regulation and supervision and more conservative internal risk controls following the financial crisis. Large commercial banks hold cash buffers for internal liquidity risk management purposes (including for internal liquidity stress testing and resolution and recovery requirements). Their intraday liquidity management operates within closely monitored mandates to insure against liquidity shocks and often leads to banks holding excess reserves at the Federal Reserve to meet their internal liquidity stress metrics. Further, enhanced disclosure requirements have created incentives for banks to hold enough reserves to avoid any reliance on public support.

In addition, dealers in global systemically important banks (GSIB) have an incentive to shrink repo books to keep their supplementary leverage ratio (SLR) lower<sup>3</sup>—especially around the quarter- or year-end because repo transactions affect multiple components of their GSIB buffer score.<sup>4</sup> As a result, balance sheet management by GSIB dealers results in tighter funding conditions for smaller dealers, as evidenced by the persistent spread between general collateralized financing (GCF) repo rates and tri-party repo rates (Online Annex Figure 1.1.1, panel 3)<sup>5</sup> with regular quarter-end spikes. The combination of more conservative liquidity risk management practices, tighter regulations, and a more stringent supervisory posture implies that large dealer banks have been unable or unwilling to respond quickly to fluctuations in rates and associated arbitrage opportunities (Online Annex Figure 1.1.1, panel 4).

Fed actions have ameliorated strains in the repo market for the time being, but structural issues remain. With the Treasury supply forecasted to continue expanding, aggregate funding needs are likely to grow as well. While ample reserves may lessen the likelihood of volatility events, US repo markets remain susceptible to strains and sudden deterioration in conditions.

---

This note was prepared by David Jones, Yingyuan Chen, and Akihiko Yokoyama.

<sup>1</sup> The Federal Reserve's February 2019 Senior Financial Officer Survey asked bankers for the approximate lowest level of reserves their institutions would feel comfortable holding before taking actions to maintain or increase their reserve balance levels.

<sup>2</sup> The Federal Reserve's Z.1 Flow of Funds consolidates data for US-based hedge funds into the "household" sector balance sheet.

<sup>3</sup> On April 1, 2020, the Federal Reserve temporarily relaxed the supplementary leverage ratio (SLR) to exclude on-balance sheet holdings of US Treasuries and deposits at the Federal Reserve from the denominator, in order to enhance the ability of large banks and dealers to provide market liquidity.

<sup>4</sup> Whereas US banks report balance sheets as a period average, European and Japanese banks report balance sheets on a period-end basis.

<sup>5</sup> GSIB dealers borrow through repo before they on-lend to smaller dealers, thereby increasing the size of their balance sheets. The cost of balance sheet management by GSIB dealers is passed on to smaller dealers, and the intermediation cost can be proxied by the spread between general collateral financing (GCF) repo and tri-party repo (see BIS 2017). Over the past two years, the average intermediation cost was at quarter-ends was around 25 basis.

## References

- Bank for International Settlements (BIS). 2017. “Repo Market Functioning.” CGFS Paper No. 59, Committee on the Global Financial System, April.
- Federal Reserve. 2019. “Senior Loan Officer Opinion Survey on Bank Lending Practices.” (August).
- Keating, Thomas, Francis Martinez, Luke Pettit, Marcelo Rezende, Mary-Frances Styczynski, and Alex Thorp. 2019. “Estimating System Demand for Reserve Balances Using the 2018 Senior Financial Officer Survey,” FEDS Notes, April 9, Board of Governors of the Federal Reserve System.
- Logan, Lorie K. 2019. “Observations on Implementing Monetary Policy in an Ample-Reserves Regime.” “Remarks before the Money Marketeers of New York University, New York City,” April 19.