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THE FED, THE NEW PREFERRED REPO COUNTERPARTY IN TIMES OF TENSION

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Last July, the US Federal Reserve (Fed) expanded its scope of intervention in the money markets. It now has a permanent repo facility (Standing Repo Facility or SRF) in addition to its reverse repo facility (Reverse Repo Program or RRP).

These tools should allow the Fed to modulate its supply of central bank money, downwards as well as upwards, in periods of pressure on short-term market rates.

In the current context of abundant central bank liquidity and limited supply of government securities, money market funds have made considerable use of the RRP.

The ability of the SRF to reduce tension in the event of a drying up of central bank liquidity could, however, be countered by various factors such as the leverage constraints to which primary dealers and banks are subject.

TWO TOOLS, A CORRIDOR FOR SHORT-TERM MARKET RATES

In July, the Fed supplemented its monetary policy toolkit by creating a permanent repo facility (Standing Repo Facility or SRF) to complement its reverse repo facility (Reverse Repo Program or RRP[1]). In contrast to firm purchases or sales of securities, these allow the temporary sterilisation (RRP) or injection (SRF) of central bank liquidity. The two facilities aim to create a corridor for short-term market rates, and more specifically for the (private[2]) repo lending markets. The aim is to be able to attenuate situations of excess or insufficient liquidity and thus ensure good transmission of monetary policy. These (private) markets concentrate very large trading volumes (more than USD 4,000 billion in outstandings in 2021 according to SIFMA) and are one of the main sources for day-to-day refinancing and cash management for US financial institutions. In addition, the effective Fed Funds rate, which determines a large swathe of interest rates for loans to consumers and companies, is highly sensitive to changes in the cost of repos[3]. Lastly, the median repo rate (Secured Overnight Financing Rate, SOFR[4]) will serve as the main benchmark rate for new derivatives contracts in the US from 1 January 2022.

RRP: draining off reserves and providing a floor for short rates

Under the RRP the Fed places Treasury securities it holds on its balance sheet on repo with counterparties (banks, primary dealers, Government Sponsored Enterprises and money market funds). By using this facility, banks and non-banking institutions make a secured loan (cash against Treasuries) to the Fed. Another way of interpreting this transaction is to consider that a financial institution makes a 'deposit' with the Fed in exchange for the transfer of ownership, for a predetermined period, of the securities provided as collateral. This type of transaction transits through bank balance sheets such that it reduces the reserves that banks hold with the Fed. The Fed records the reverse repo in its liabilities as a debt and debits the current account of the intermediary bank (central bank reserves) for the same amount. When a bank enters into a repo transaction with the Fed, the transaction results simply in an exchange of assets on its balance sheet (reverse repo against reserves) with no effect on its overall size. Where a bank is acting on behalf of a money market fund, it debits the deposit account of its client, and its balance sheet is reduced (reduction both in reserves on the asset side and in deposits on the liability side).

1 A repo transaction – a type of temporary disposal of securities – can be considered, from an economic viewpoint, as a collateralised loan (cash against securities); from the point of view of the lender of the cash it is a reverse repurchase agreement; from that of the borrower, it is a repurchase agreement. The repurchase agreement for a security incorporates an undertaking to repurchase that security at a given point in time for an agreed price. The interest rate, or repo rate, is a function of the difference between the sale and repurchase prices. The securities used as collateral under a repo agreement are not derecognised on the borrower's balance sheet. The transaction gives rise to a transfer of their legal ownership but not their 'economic ownership'. The Fed defines the operation as a function of its effect on its counterparty. Thus from the Fed's point of view, a repo is similar to a collateralised loan (taking securities owned by its counterparties on repo) and is recorded on its balance sheet as an asset, whilst a reverse repo is collateralised borrowing (placing securities it owns on repo with its counterparties) and is recorded as a liability.

2 'Private' means repo lending between financial institutions excluding central bank (banks, money market funds, broker-dealers, hedge funds ...).

3 The effective Federal Funds rate is the interest rate at which depository institutions lend reserve balances to other depository institutions overnight. When the repo rate increases, this influences the volume of overnight lending of reserve balances and hence their interest rate.

4 In 2021, the SOFR was calculated on the basis of secured loan volumes of between USD 850 billion and USD 1,000 billion.

This type of transaction does not change the size of the Fed's balance sheet, but does change the make-up of its liabilities (repo against reserves)[5].

The RRP seeks to create a floor for short-term market rates. Central banks' asset purchasing programmes (QE), the main aim of which is to reduce bond yields, create abundant central bank liquidity (central bank reserves) and bank deposits[6]. Under such conditions, the programme has the effect of reducing downward pressure on short-term rates by encouraging money market funds and GSEs to "lend" part of their cash to the Fed rather than on markets (repo, Fed Funds) where demand has dried up. By temporarily sterilising the excess reserves created and by reducing banks' balance sheets, it also reduces the balance sheet constraints that banks are subject to.

SRF: injecting reserves and providing a ceiling for short-term rates

Under the SRF, some counterparties (primary dealers and depository institutions) place Treasury debt securities, debt securities and MBS issued by the mortgage guarantee and refinancing agencies (GSE and public agencies) on repo with the Fed. The Fed records the repo in assets as a credit and credits the current account of the intermediary bank (central bank reserves) for the same amount in its liabilities. When a bank enters into a repo transaction with the Fed on its own behalf, the transaction results in a debt to the Fed (the repo) being recorded as a liability on its balance sheet and an increase of reserves held at the central bank on its asset side. Where a bank is acting on behalf of a primary dealer, it credits the deposit account of its client. All other things being equal, the facility increases banks' reserves with the central bank and enlarges their balance sheets. As with firm purchases of securities (QE), the SRF increases the size of the Fed's balance sheet[7]. A fundamental difference between the two is, obviously, the difference in maturity of the respective transactions.

The SRF seeks to create a ceiling for short-term market rates. In a situation of insufficient central bank liquidity, it will reduce pressure by offering credit institutions the opportunity to rebuild their stock of reserves and thus be able to meet the cash needs expressed on the money markets. The SRF system allows the temporary 'monetisation' of securities and a reduction of the liquidity constraints faced by banks (for regulatory or internal liquidity risk management reasons).

RRP and SRF transactions are made on a daily basis, each working day, and within the cumulative daily limits applicable individually to each counterparty. Under the RRP programme, each eligible counterparty can, on its own initiative, 'lend' the Fed up to USD 160 billion in cash on a daily basis. These 'deposits' earn 0.05% (Chart 1). Under the SRF programme, each eligible counterparty can 'borrow' up to USD 120 billion from the Fed on a daily basis. Transactions are charged at the marginal lending rate (0.25%) and capped in the aggregate at USD 500 billion[8].

HIERARCHY OF MONEY MARKET RATES AT 24 NOVEMBER 2021

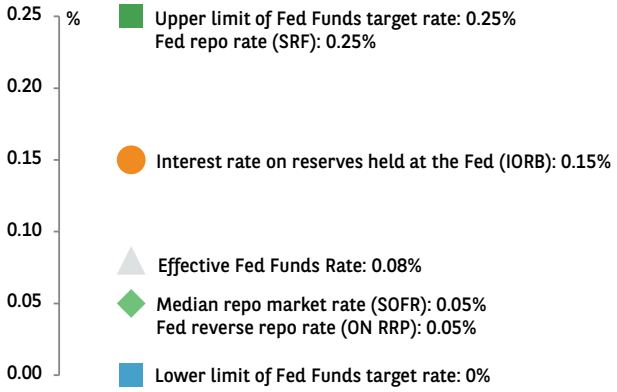

CHART 1 SOURCE: MACROBOND

THE RRP FACILITY HAS BEEN WIDELY USED BY MONEY MARKET FUNDS

The Fed carries out the majority of its reverse repo transactions (via banks) with money market funds (MMF), the only institutions with an incentive to take part[9].

First introduced in the autumn of 2013, one year before the ending of QE3 (the Fed's third quantitative easing programme) and two years before the beginning of the post-crisis monetary tightening, this facility saw high levels of participation by money market funds (with interest rates of between 0.01% and 0.07% up to the end of 2015) and helped establish a floor for short-term interest rates[10]. Reactivated in March 2021 (with a first increase in the individual cap from USD 30 billion to USD 80 billion on 17 March, an expansion of the list of eligible counterparties on 30 April, the introduction of a positive interest rate on 16 June and a second increase in the individual cap to USD 160 billion on 22 September), the RRP facility is once again, and to an even greater degree, widely used (Chart 2).

Since the beginning of the year, the system nearly fully offsets the effect on central bank reserves of a drying up of the Treasury's account with the Fed (see box). On average, since early June, USD 1,000 billion of cash has been 'taken back' each day by the Fed under RRP. At 30 September, MMF cash 'deposits' with the Fed peaked at USD 1,600 billion; the average daily outstanding amount reached USD 1,400 billion in October and the first fortnight of November. 84% of cash is placed by

5 The same type of facility (Foreign Repo Pool) allows foreign central banks to take securities held by the Fed on repo in exchange for a cash deposit. The Fed's reverse repo transactions have the same effect on its balance sheet and that of the banking system whether they involve money market funds or foreign central banks.

6 To illustrate this point: when a central bank purchases a bond from a pension fund, it is creating central bank reserves. The deposits of the pension fund with its bank increase and the reserves of the bank held with the central bank increase with the same amount.

7 The FIMA repo facility, introduced in July, allows foreign central banks (without access to the Fed's liquidity swaps) to put Treasuries on repo with the Fed in exchange for liquidity.

8 This amount corresponds to the maximum liquidity injected under the Fed's repo transactions (USD496 billion on 17 March 2020).

9 Whilst the interest rate on these operations remains below the IORB rate paid on reserves, banks have little incentive to participate. The facility might of course be of interest to those looking for very high-quality collateral to refinance themselves or meet initial margin requirements. However, at a prudential level, excess reserves and Treasuries (and repos guaranteed by Treasuries) are treated equally (receiving the most favourable treatment). Although the RRP interest rate is similar to IORB for non-banking institutions, the involvement of the GSEs (notably the Federal Home Loan Banks) is limited for regulatory reasons. Thus the programme involves mainly (i.e. at more than 80%) money market funds, giving them a high-quality counterparty and collateral and making it easier for them to satisfy SEC requirements.

10 In 2018, secured lending by MMFs to the Fed fell significantly. Increased issuance of Treasury securities pushed up the repo rates on the triparty market, luring MMFs away from the Fed's less well remunerated reverse repos. See Choulet, C. (2018) *Will central bank reserves soon become insufficient? Conjoncture*, BNP Paribas

government funds[11], 16% by prime funds[12]. Independent money market funds are slightly more active than those affiliated to a banking group: the former make 59% of guaranteed 'loans' to the Fed, the latter, 41%.

A deep reallocation of the MMFs' portfolios

Data on money market portfolio structures published by the Investment Company Institute (ICI) and the Office of Financial Research (OFR) show that the increase in MMF 'deposits' with the Fed resulted only temporarily from an increase in subscriptions to fund shares. The increasing scale of the RRP system has in reality been caused by a reallocation of the money market funds' portfolios (Chart 3).

At the beginning of the year, banks sought to reorient non-operational deposits (deposits from institutional clients) to MMF shares in order to slim down balance sheets (without affecting liquidity ratios[13]). Subscriptions to MMF shares increased as a result. In the absence of remunerative investment opportunities, MMFs eligible for the RRP facility have temporarily held the cash received in the form of deposits with the Fed. In March 2021, the increase in MMF 'loans' to the Fed thus resulted from an expansion of MMF portfolios (Chart 4). The phenomenon was, however, short-lived considering that, as of April, MMF assets did not change that much.

Subsequently, MMFs uptake of the RRP facility was more the result of a substitution effect. First, the drying up of the market for T-bills[14] prevented funds from reinvesting as securities on their balance sheets matured. Secondly, the marked increase in deposits on bank balance sheets (linked to QE, the provision of guaranteed loans to companies and 'stimulus checks' financed by the reduction of the Treasury's account with the Fed) reduced banks' need to refinance themselves with the Federal Home Loan Banks (FHLB) in the form of secured loans (advances[15]). At the end of June, the volume of secured loans from the FHLB to banks reached a low point for the last twenty years (USD 360 billion, from USD 800 billion in March 2020), as did their issuance of debt securities. As with T-bills, this reduction in the supply of high-quality short-term paper prevented the funds, and particularly government funds from renewing their agency debt portfolios. Since April, the contraction in the stock of Treasury and agency debt on MMF balance sheets has been counterbalanced by an increase in MMF 'deposits' with the Fed (Chart 4). From June, the interest paid by the Fed has also increased the facility's attractions.

Residual capacity for RRP uptake remains substantial

We have used data from the Office of Financial Research to assess the residual amount of cash that eligible money market funds could place with the Fed under RRP (on the basis of portfolio structures on 30 September). There are 98 money market funds on the list of eligible counterparties for the RRP. Of these, 80 funds had active reverse repo transactions with the Fed at 30 September, for a total value of USD 1,439 billion[16]. On this date, the MMFs allocated an average of

11 Government funds are only exposed to US public-sector debt, either via direct holdings of public debt securities, or via repos of such securities entered into with US or foreign financial institutions.

12 Prime funds are mainly invested in debt securities from private issuers (commercial paper, certificates of deposit). Like government funds they enter into repo transactions, but accept a wider range of collateral.

13 'Non-operational' deposits are less favourably treated than retail or operational deposits within the framework of liquidity requirements as they are more likely to flee in the event of stress.

14 The supply of T-bills had shrunk due to the increase in the maturity of the securities issued and the political lodjam around the US debt ceiling. This shortage of short-dated securities affected returns by increasing the downward pressure on short-term market rates.

15 The role of the FHLBs' advances (or collateralized loans to members) is to stabilize commercial bank members' residential mortgage lending activities.

16 The investment portfolios of these 80 funds represented 81% of total portfolios of all US money market funds at 30 September.

REALLOCATION OF MONEY MARKET FUND PORTFOLIOS

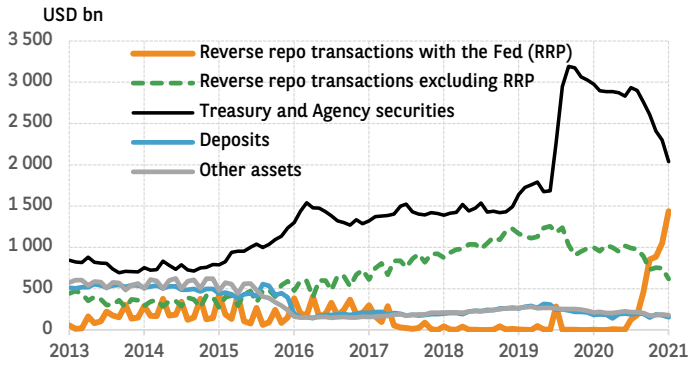

CHART 3 SOURCE: INVESTMENT COMPANY INSTITUTE

MORE THAN USD1,000 BILLION OF CASH LODGED WITH THE FED EVERY DAY

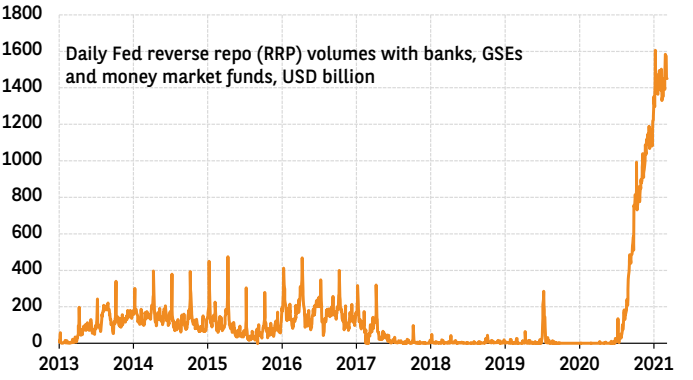

CHART 2 SOURCE: FEDERAL RESERVE BANK OF NEW YORK

A SUBSTITUTION EFFECT

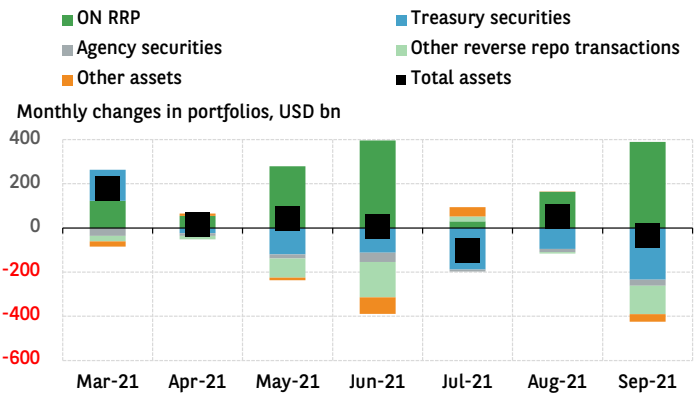

CHART 4 SOURCE: INVESTMENT COMPANY INSTITUTE

30% of their resources to the scheme (Chart 5). Theoretically, each MMF can 'lend' up to USD 160 billion a day to the Fed. In practice, the sums involved for the eligible funds are well below this cap[17]. The total value of their public debt security portfolios does, however, give an indication of residual potential. Since the re-activation of the RRP facility, the 80 participating MMFs have reduced their portfolios of Treasuries and Agencies by USD 926 billion (64% of the USD 1,439 billion placed with the Fed under RRP on 30 September). In the extreme case where none of the stock of Treasuries and Agencies held on the balance sheets of these MMFs were renewed, their residual capacity to make reverse repo loans to the Fed would be nearly USD 1,400 billion (Chart 6).

THE SRF, AN ADVANCE INDICATOR OF TENSION ON LIQUIDITY

Through the SRF facility, the Fed has given itself a new tool to detect and address possible shortages in central bank cash. Introduced as an emergency temporary measure in September 2019, this facility allowed the repo market crisis to be absorbed[18]. However, it failed in the run-up to this shock when regulatory constraints on liquidity, exacerbated by the reduction in the Fed's balance sheet, prevented banks from meeting the demand for cash expressed by the money markets[19]. Of little use in the current conditions of abundant liquidity, the possibility of converting securities into reserves at any time, without the stigma associated with the use of the discount window, could however lead to certain banks inflating their portfolios of Treasuries and Agencies. This could be the case for mid-sized banks which, unlike their bigger rivals, hold stocks of securities that are well below the individual SRF cap. The system's ability to attenuate monetary tensions in the event of insufficient central bank money could however be compromised by various factors.

Balance sheet constraints

A first factor is the absence of netting off of repo transactions with the Fed. Under a repo transaction (collateralised loan), the borrower's balance sheet increases: liabilities increase by the amount borrowed (in the form of the repo), assets by the cash received. The security used as collateral remains on the balance sheet of the borrower (which retains its 'economic ownership'). The Fed's repo transactions are carried out on the tripartite repo platform operated by Bank of New York Mellon, which plays the role of clearing bank. However, use of the tripartite market does not allow the netting off of positions, unlike transactions carried out via the Fixed Income Clearing Corporation (FICC). As we approach the closing of accounts, the liquidity offered by the Fed through the SRF, thus risks being inaccessible to the primary dealers or depository institutions most constrained by their leverage requirements. Even in 2019, the Fed's interventions, on their own, were not able to attenuate the tension that had arisen, particularly at the end of the year. Over and above the USD256 billion of liquidity 'borrowed' from the Fed under its repo transactions on 31 December 2019, dealers partly refinanced their inventory of securities through repo with MMFs that were cleared and settled via the FICC (USD 276 billion, Chart 7).

17 The portfolios of eligible MMFs are very variable in size – from USD1.2 billion for Financial Square Prime Obligations Fund from Goldman Sachs to USD237.1 billion for JP Morgan's US Government Money Market Fund – with most valued at less than the individual RRP cap. On 30 September, when 'deposits' hit record levels, the largest funds by balance sheet size allocated less than USD90 billion (USD89.4 billion in the case of JP Morgan US Government Money Market Fund; USD74.5 billion for Fidelity Government Money Market Fund; USD48 billion for Goldman Sachs Financial Square Government Fund).

18 It also helped lessen the shock of the Covid-19 pandemic thanks to a significant increase in the level of drawing allowed.

19 Choulet, C. (2019) *The Fed's new role under Basel 3, EcoFlash*, BNP Paribas.

'DEPOSITS' WITH THE FED REPRESENT 30% OF MMF PORTFOLIOS

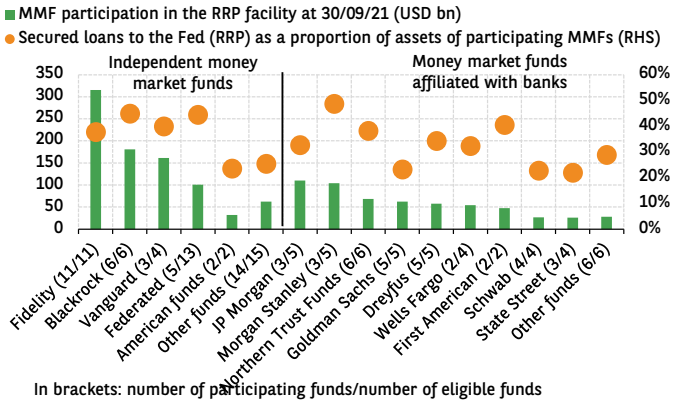

CHART 5 SOURCE: OFFICE OF FINANCIAL RESEARCH, BNPPARIBAS

RESIDUAL CAPACITY FOR RRP UPTAKE REMAINS SUBSTANTIAL

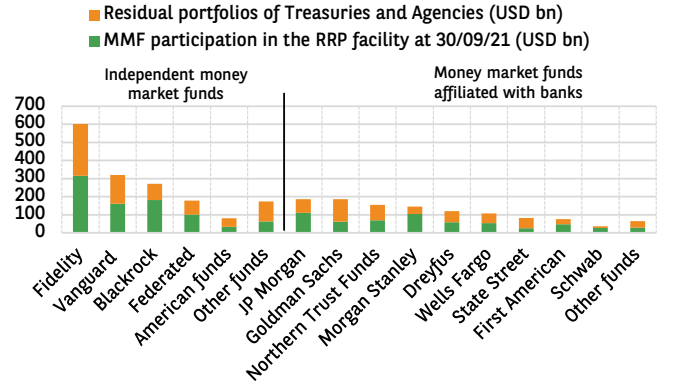

CHART 6 SOURCE: OFFICE OF FINANCIAL RESEARCH, BNPPARIBAS

OUTSTANDING SPONSORED REPOS

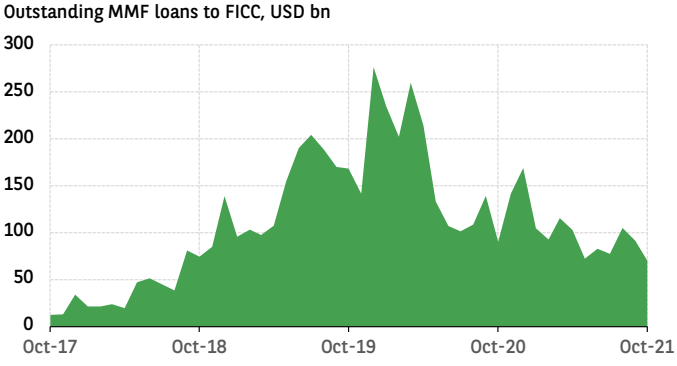

CHART 7 SOURCE: OFFICE OF FINANCIAL RESEARCH

Increased risk of competition

A second factor is the timing of the repo transactions. The Fed plans to carry them out under SRF between 1:30pm and 1:45pm, which is relatively late in the day given the timeslots traditionally used on the repo markets, where the bulk of transactions are concluded very early in the morning[20]. In the event of stress, this could lead borrowers to use the open markets at the beginning of the morning, going beyond their immediate needs for fear that the SRF ceiling will be reached rapidly in the early afternoon and their refinancing needs left unmet. Under such conditions of increased competition, which would push up the cost of repo loans, the Fed could be forced to raise the ceiling for its system.

Reputational risk

Reputational risk is a third factor, which might weigh on the willingness of banks to use SRF. Although the names of counterparties to transactions will not be published, there is a non-zero risk that supervisors will see use of the SRF facility as an early signal of bad management of liquidity or individual difficulties in accessing liquidity (as with withdrawals from the discount window). To decrease this reputational risk, the use of the SRF will need to be viewed as a refinancing tool rather than a rescue system. The supervisor is still considering whether banks will be allowed to assume use of the SRF in liquidity stress tests and resolution plans (which is not the case for the discount window).

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THE DRAINING OF RESERVES VIA THE RRP

In response to the Covid-19 shock in March 2020, the US Federal Reserve, in common with many other central banks, significantly expanded its balance sheet in order to underpin the correct operation of financial markets and support the financing of economies. Since 11 March, its assets have increased by USD 4,371 billion, primarily due to the effects of its QE asset purchasing programme; at 24 November they stood at USD 8,731 billion. Because of the intermediary role played by banks in the Fed's securities purchases, their reserves with the central bank have increased substantially. However, trends in other areas of the Fed's balance sheet offset to some degree the mechanical effect of QE on reserves.

Between March and December 2020, Treasury had raised funding with a view to provide support to economy. Pending implementation of this support, Treasury increased its deposits at the Fed (Treasury General Account and Treasury contributions to the Fed's credit facilities increased by USD 1,355 billion). This increase sterilised part of the central bank money created[1] (Chart 8). Over the period, bank reserves at the Fed therefore 'only' increased by USD 1,362 billion (against a USD 3,051 billion expansion of the Fed's balance sheet). Since the beginning of 2021, however, the Fed's reverse repo transactions with money market funds under RRP almost completely offset the effect of the reduction in the Treasury's account with the Fed (financing of stimulus packages, cessation of T-bill issuance due to the political logjam on the question of the debt ceiling). Since January 2021, bank reserves have thus increased by USD 1,029 billion, close to the size of the expansion in the Fed's balance sheet, at USD 1,319 billion.

FACTORS IN CREATION/DESTRUCTION OF RESERVES AT THE FED

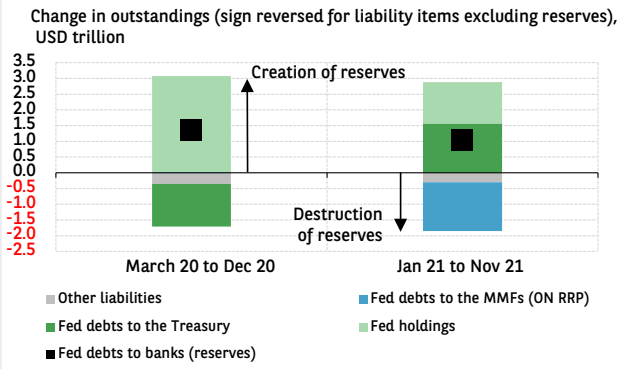

CHART 8

SOURCE: FEDERAL RESERVE (H.4.1)

1 When the Treasury issues debt, the bank deposits held by the investor purchasing the debt decline. The transaction also results in the transfer of deposits at the central bank. The placing of securities generates a transfer of cash from the current account of the subscriber's bank at the Fed to the Treasury General Account. When the government's issuance of debt does not result in an immediate public spending (but in an increase in TGA), money supply (subscriber's deposits) and base money (bank reserves at Fed) decrease.

20 More than 60% before 8:30am on markets cleared by FICC DVP and GCF; see Clark K., Copeland A., Kahn R.J., Martin A., Paddrik M. and Taylor B. (2021), *Intraday timing of General Collateral Repo Markets, Liberty Street Economics, June 14.*

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