

This document is intended for professional clients in accordance with MIFID
 N° 066 // April 25, 2022

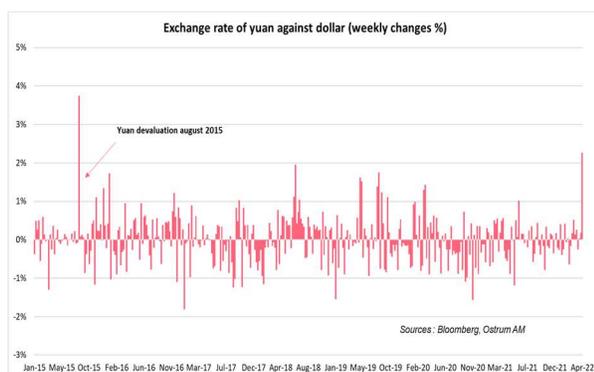
● Topic of the week: The Fed's QT: walking a tight rope

- High inflation forces monetary stimulus withdrawal with rate hikes and balance sheet reduction;
- Quantitative tightening of \$ 95 billion per month looks set to begin in May, according to Lael Brainard;
- As Fed walks back from Treasury markets, term premiums will have to increase to lure investors in the context of sizeable public deficits;
- Cutbacks in MBS holdings may require outright sales given reduced refinancing activity as mortgage rates increase. There is a risk of financial instability as the Fed steps on the brakes.

● Market review: Hawks flying high above markets

- Fed: four 50bp hikes until September?
- Brutal curve flattening;
- Tech stocks under pressure from higher yields;
- Credit spreads widen as fund outflows continue.

● Chart of the week



This is the biggest weekly drop in the yuan against the dollar since the August 2015 devaluation. The announcement of the extension of strict containment measures in China this weekend, and in particular in certain districts of Beijing, further deteriorated the outlook for growth and weighed on the currency.

The widening of the rate differential with the United States also contributed to the depreciation of the yuan against the dollar. Note that the parity with the yen last week reached its highest level since 2015. Is this a new devaluation of the Chinese currency?

● Figure of the week

40%

Source : Ostrum AM

According to the latest MLIV Pulse survey, 40% of participants said they prefer to invest in value stocks through the S&P 500 value index, rather than in the energy sector (25%) or banking (17%).



Stéphane Déo
 Head of markets strategy
 stephane.deo@ostrum.com



Axel Botte
 Global strategist
 axel.botte@ostrum.com



Zouhoure Bousbih
 Emerging countries strategist
 zouhoure.bousbih@ostrum.com



Aline Goupil- Raguénès
 Developed countries strategist
 aline.goupil-raguenes@ostrum.com

● **Topic of the week**

The Fed's QT: walking a tight rope

High and persistent inflation is forcing the Fed to withdraw monetary stimulus. Besides rate increases, the Fed intends to shrink its balance sheet. The Fed has been the marginal bond buyer for years. The Central bank will soon stop reinvesting the proceeds of maturing Treasury bonds and MBS. But quantitative tightening could prove hard to calibrate. Restoring risk premia to lure private investors could entail risk to growth and financial stability.

Balance sheet run-off

'Watching paint dry', really?

In 2017, then Fed Chairwoman Janet Yellen famously argued that the Fed's balance sheet winddown process would be like 'watching paint dry'. With the benefit of hindsight, it is safe to say that there was wishful thinking in the Chair's prediction. Repo markets eventually seized up in September 2019 and the Powell-led Fed promptly resumed support to bond markets (effectively restarting QE via T-Bill purchases).

The reduction in the size of the Fed's balance sheet has implications in terms of asset valuations, credit availability and hence growth and inflation. When the Fed injects liquidity, the rising tide lifts all boats. Conversely, a reduction in excess liquidity tends to raise term and risk premia and thus lower the fair value of assets (higher discount rates). In the economy, higher long-term interest rates may reduce credit demand and inflation pressures.

Faced with persistently high inflation, Fed officials have penciled in rate hikes and signaled that quantitative tightening (QT) will start 'soon'. Lael Brainard added that the QT process could begin in May. The March FOMC minutes also revealed that Fed staff economists had studied the impact of monthly cutbacks in US Treasury and MBS holdings of \$ 60 billion and \$ 35 billion respectively. The message is getting loud and clear.

The QT mechanics

It is worth explaining the mechanics of the Fed's balance

sheet run-off. When the US central bank stops reinvesting bond maturities, it destroys liquidity, and the Fed's balance sheet shrinks. The process has an impact on the composition of Fed liabilities and eventually on that of Fed's counterparties which include the US Treasury, US banks and money market funds.

For monetary policy purposes, the Fed holds securities such as nominal Treasury bonds and bills, inflation-protected securities (TIPS) and mortgage-backed securities. On the Fed's liabilities side, there are currency in circulation, deposits held by the US Treasury (the Treasury General Account or TGA, i.e., the federal government's checking account), bank reserves and deposits from money market funds (MMFs). Contrary to the TGA and bank reserves, MMFs cannot hold balances in a Fed account but have access to the Fed's overnight reverse-repo facility (ON RRP). Funds deposited at the Fed via the ON RRP facility have represented as much as 80% of assets under management of eligible money market funds.

When the Fed stops reinvesting the proceeds of maturing securities (and if the US government does not issue a new bond) the Federal government pays cash to the Fed using cash from the TGA. The Fed's balance sheet shrinks in the process. If the US Treasury does issue a new bond, the composition of the Fed's liabilities will change with a reduction in reserves held by the banks and/or a smaller take-up of the ON RRP by the money market funds.

Furthermore, there are some technical aspects depending on the type of Treasury debt securities issued. Since MMFs can only invest in T-bills or 2-year floating rate notes, the combination of bank reserves and ON RRP usage by MMFs drawn by quantitative tightening depends on the US Treasury refunding strategy.

The QT calibration issue

SHOK-ing the economy: modelling QT impact

Gauging the impact of quantitative policies on the economy is far from easy. Ten years ago, Ben Bernanke's estimated that \$ 600 billion asset purchases over one year were the equivalent of a 75 bp rate cut. Whether a reduction in excess liquidity now would have an opposite effect of similar magnitude is an open question. Indeed, some of the excess liquidity is held by banks for regulatory purposes to reduce systemic risks with little impact on the underlying economic conditions.

Using Bloomberg's SHOK model, the planned quantitative tightening (\$95 billion monthly pace) could lower GDP by 1.5pp in cumulative terms by the end of 2023. Unemployment would barely increase though. The maximum impact on quarterly GDP growth would be about

0.5 pp (unannualized). However, the impact on inflation is forecast to be limited. Quantitative tightening would only reduce price pressures by about 0.2pp.

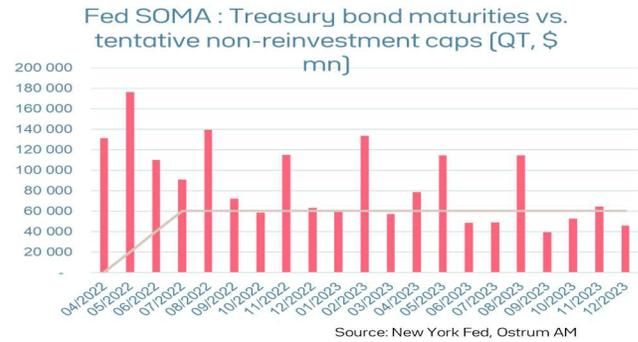
The \$ 95 bn run-off pace

According to the March FOMC minutes, the Fed intends to let \$ 60 billion Treasuries and \$ 35 billion MBS mature each month. In other words, the Fed will reinvest US Treasury bond and MBS proceeds in excess of the monthly caps, which will be subject to revisions. Policymakers also made the case for a phase-in period of three months for quantitative tightening (QT). Whilst the Fed QT strategy will likely be communicated in greater detail on May 4th, the phase-in guidance did not come by accident. Central bankers are very aware of the difficulty to find buyers for such large amounts of bonds at a time when Federal borrowing needs still fetch some \$ 850 billion this fiscal year and mortgage-backed securities have posted record issuance since 2020.

Monthly caps vs. SOMA proceeds

The Fed's portfolio, known as the System Open Market Account or SOMA, is public information available on the New York Fed website. It currently comprises \$ 8.5 trillion securities, of which \$ 326 billion T-bills, \$ 4.96 tr coupons, \$ 470 billion TIPS, \$ 2.3 billion Agency debt and \$ 2.74 trillion Agency MBS.

Let's start with the easy part, namely US Treasury bonds. The assumed phase-in period corresponds to the May-July period during which bond redemptions will be sizeable at \$ 376 billion. Assuming monthly caps rise linearly from \$ 20 billion in May to \$ 60 billion in July, the Fed would reinvest 68% of total UST reimbursement flows during the phase-in period. The Fed's cautious approach may help to avoid disruption in Treasury bond and repo markets. For the remainder of the year, the \$ 60 billion cap will remain below monthly redemptions except in October 2022 (\$ 58.6 billion). In that case, the Fed indicated that Treasury bill holdings will be allowed to run off to reach the \$ 60 billion monthly cap. At this juncture, the Fed is not inclined to sell Treasury coupons outright.



Luring back foreign Treasury buyers

The Federal Reserve has been the largest buyer of Treasuries for years. Quantitative easing has suppressed the term premium required by private foreign investors to invest into US bonds. At the start of the pandemic, foreign capital outflows had forced the Fed to double down on bond purchases to fund deficits and stem outflows.



There are now tentative signs of a revival in foreign demand for US Treasuries. Foreigners have bought about \$29 billion Treasuries on average in the 12 months to February. From a carry perspective, Treasuries are hard to beat. Hedging out currency risk on 3-month horizon, 10-year notes offer a pickup of 52 bp vs. equivalent German Bunds or 140bp vs. Japanese JGBs. The rise of US yields above Chinese bond yields may foster further capital allocation onto US Treasuries going forward. On a cross-currency swap basis, the yield advantage for US Treasuries is less pronounced or even negative against Japanese bonds. That said, QT may contribute to restore a term premium as the Fed assumes less duration risk. On the New York Fed's ACM model, the 10-year term premium is still negative (-22 bp as of April 8th). So far, the bulk of the rise in long-term yields appears traceable to higher expected short rates (3,03%).



Potential size and duration of QT

The Fed's experience with the overnight reverse repo facility is interesting and could help inform the policymakers of the potential size of QT. The reverse repo facility allows eligible counterparties to deposit cash with the Fed at 0.30% (5 bps above the low end of the Fed funds target band) in exchange for bonds. Money market funds, banks and other institutions essentially engage in a temporary purchase of US bonds. Current lending in the ON RRP facility totals about \$ 1.7 trillion. In other words, the Fed has *already* sold bonds worth 18 months of QT at the intended caps... though temporarily. Policymakers may have end 2023 in mind as the horizon for quantitative tightening, though monetary policy will remain subject to incoming data.

Winding down MBS could even be trickier

The biggest headache for the Fed?

MBS holdings could be much harder to unwind for the Federal Reserve. Housing has been a significant source of inflation lately as residential investment responded swiftly to pandemic relief. With hindsight, the Fed should have reined in MBS purchases much earlier to avoid the pitfalls of 30%+ home price appreciation in the past two years and sticky shelter inflation of 5% and up. Bringing inflation closer to target will require much tighter mortgage lending standards.

Non-Treasury securities (MBS, Agency debt) held in the Fed's SOMA have theoretical maturities of only \$ 374 million until December 2023. This is assuming no prepayment on MBS. Given the sharp rise in mortgage rates, applications for loan refinancing have declined. On MBA's data, refinancing activity has indeed plunged as 30-year mortgage interest rates hit 5% for the first time since 2018. The average coupon on the Fed's high-quality MBS portfolio is in the low 2% range, pointing to significant maturity extension risk.

For years, the Fed has been the asset holder of last resort in the MBS market, but it could soon turn into a net seller if the \$ 35 billion monthly cap becomes out of reach. For now, the cap appears in line with recent reinvestments. In the March 14th-April 13th period, the Fed managed to purchase \$ 46.5 billion MBS with 774 transactions of 60 million \$ on average. The \$ 46.5 billion total was even higher than the tentative \$ 38 billion target published a month ago by the New York Fed. The average coupon on these purchases is 3.16%. In the month to May 12th, the Fed intends to reinvest around \$ 40.1 billion MBS proceeds. As indicated in the table below, expected reinvestment have already slowed markedly from \$ 67 billion last October to around \$ 40 billion at present.

Period	Tentative Agency MBS Reinvestment Purchases**
August 13, 2021 - September 14, 2021	\$58.8 billion
September 15, 2021 - October 14, 2021	\$67.4 billion
October 15, 2021 - November 12, 2021	\$66.9 billion
November 15, 2021 - December 13, 2021	\$61.4 billion
December 14, 2021 - January 13, 2022	\$54.6 billion
January 14, 2022 - February 11, 2022	\$50.9 billion
February 14, 2022 - March 11, 2022	\$42.8 billion
March 14, 2022 - April 13, 2022	\$38.0 billion
April 14, 2022 - May 12, 2022	\$40.1 billion

Source: New York Fed

There is therefore a thin margin between projected reinvestments and caps. The Fed will have to address the issue and possibly consider selling MBS outright. In the longer run, the Fed also intends to shift SOMA holdings towards US Treasuries, preferably Treasury bills. It is unnatural for the Fed to assume duration and mortgage credit risks. From mid-2010 to late 2011, the Fed sold just under \$ 300 billion MBS in the market but reinvested the sale proceeds (and then some due to QE) into Treasuries. The market impact of MBS sales would not be cushioned by Treasury bond buying under tighter monetary policy.

Mortgage market structure issue?

There are other aspects of the economy and market behavior that cannot be properly modelled and anticipated. Quantitative tightening may unveil underlying weaknesses in the structure of mortgage lending in the US. Non-bank lenders have gained a considerable market share in mortgage origination business since the 2008 financial crisis. Non-bank lenders have originated more than half of total prime mortgage loans since the mid-2010s. Their business model relies on continued access to money-market and bank liquidity and requires large volumes of new mortgage loans (and fees). The loans are sold to government-sponsored enterprises (Fannie Mae, Freddie Mac, Ginnie Mae) which package them into mortgage-backed securities. MBS are then issued in the bond market, where the Fed has had an essential role. As the Fed walks

back from the market to tame housing inflation, the risk of financial disruption among the poorly regulated non-bank lenders would likely increase. The US taxpayer would end up footing the bill, though without Fed underwriting this time round. Furthermore, outright MBS sales could generate steep losses for the Federal Reserve, again at taxpayers' expense.

Conclusion

The Fed has been the marginal buyer of US Treasuries and MBS for years. As the Fed takes a step back from markets, part of its \$ 9

trillion balance sheet will be allowed to run off. The pace of balance sheet reduction will initially be set at \$ 95 billion per month. The process could be relatively straightforward as concerns Treasuries providing that term premiums rise enough to attract investor demand. Exiting the MBS market could however be trickier as the Fed may be forced to sell securities.

Axel Botte

• **Market review**

Hawks flying high over the markets

“Don’t fight the Fed” as the saying goes, interest rate markets sway as equities try to weather the storm

The message from central bankers is akin to torture. The dripping comments are gradually increasing the upward pressure on yields. A 50 bp hike in Fed funds seems to be a given during the May 4 FOMC and the money market is pricing in three hikes of the same magnitude between June and September. James Bullard, often at the forefront of Fed action, even talks about 75 bp moves. The calendar is also accelerating in Canada, Australia, and New Zealand. The Bank of Canada seems willing to step up monetary tightening given the latest employment and inflation figures. The RBNZ and RBA will also respond to price acceleration.

In the euro area, several members of the ECB (Wunsch, De Guindos) are distancing themselves from the caution embodied by Christine Lagarde. A first rate hike in July is mentioned. The signal may come in June with the updating of inflation projections for 2022-2024. The hawks' offensive reflects the primacy of the price stability mandate over activity. The apparent resilience of activity surveys in the euro zone (composite PMI at 55.8 in April) is questionable given the scale of the energy shock, the persistence of constraints on supply and the loss of household confidence. The Bundesbank estimates that the German economy stagnated in the first quarter and forecasts a contraction of activity of 5% in 2022 in the event of a ban on Russian gas imports. In the United Kingdom, the unprecedented plunge in household confidence raises questions about the extent of the monetary tightening to be expected. Andrew Bailey seems undecided while Catherine Mann wants to raise rates by up to 75 bp in the face of inflation which is nearing 9% in March. The BoE's policy has probably not finished fueling market volatility.

In the absence of major data releases, central banker comments moved markets. Short-term rate contracts predict 50 bp increases at each meeting until September and then two moves of 25 bp in October and December. In this context, speculative short positions are accumulating on futures markets (euro-dollar, 2-year, SOFR, Fed funds, etc.). The 2-10 year spread (-19 bp this week) partially erased the steepening caused by the announcement of quantitative tightening. Bond yields between 5 and 30 years hover about 3%. However, inflation breakevens continue to widen (3% at 10 years) after a solid auction of 5-year TIPS mid-week. The anchoring of inflation expectations is no longer assured. Jerome Powell arguably aims for a soft landing, the market response is that 10-year real yields thus cannot exceed 0%. In the euro area, the Bund is shooting higher towards 1%.

Investor are obsessed with risk of a rate hike in July. Schatz now yield more than 0.25%. Curve flattening is brutal and the prospects for a slowdown could increase the outperformance of long-term (real) bond yields in the months to come. The Bund/T-note spread appears capped around 200 bp. In parallel, sovereign spreads were little changed. The risk of a victory for Marine Le Pen is receding so that the 10-year OAT is tightening within 45 bp. Swap spreads remain high given the high volatility environment. As for peripheral markets, Italian 10-year bonds widened towards the weekly close (169 pb).

The expected monetary tightening pushing credit spreads wider. The widening in the euro IG spreads continues reaching 137 bp against Bunds (69 bp against swap). Credit funds and ETFs have recorded outflows of nearly €13.5 billion since the start of the year. However, there is investor demand for funds invested over 1-3 year maturities. ECB-eligible corporate bonds are underperforming. On dollar credit markets, flows remained positive in 2022 (+\$5.8 billion). It is not enough to reduce differences in spread changes with Europe as the US primary market remained very active in April (\$53 billion in April). The European high yield market is facing increased risk aversion (and hence protection buying) but spreads seem to have stabilized just above 400 bp. The absence of primary issuance may have compensated for continued outflows from European high yield funds.

Intra-day volatility remains high on the equity markets, but without any real trend on the main indices. The Euro Stoxx is up 1%, the S&P loses 1%. However, the Nasdaq (-3%) is once again under upward pressure from higher interest rates. The FANG index, which brings together the leaders of the technology sector, even plunged by almost 8% this week. This reaction is symptomatic of an increased sensitivity to earnings guidance. The earnings season is however upbeat so far with 80% of releases surprising on the upside. This points to fragility of equity markets and the asymmetry of market reactions to negative surprises when valuations are high. Rising rates could also discourage speculative demand for equities and create a vicious cycle of liquidation to pay for margin calls.

The dollar is in high demand. The greenback remains the safe haven, especially as US rates are expected to increase. The dollar appears to be a no-brainer long as the euro struggles to integrate an environment of higher rates. BoJ policy is also fueling the excess supply of yen which tested new lows up to 129.40 this week. The yuan is now penalized by the economic cost of the zero-covid policy and capital outflows encouraged by higher yields on US Treasuries.

Axel Botte
Global strategist

Written on April 22, 2022

● Main market indicators

G4 Government Bonds	25-Apr-22	-1w k (bp)	-1m (bp)	YTD (bp)
EUR Bunds 2y	0.15 %	+10	+29	+77
EUR Bunds 10y	0.85%	+0	+26	+102
EUR Bunds 2s 10s	70 bp	-10	-3	+25
USD Treasuries 2y	2.54 %	+9	+27	+181
USD Treasuries 10y	2.78 %	-8	+30	+127
USD Treasuries 2s 10s	24 bp	-16	+4	-54
GBP Gilt 10y	1.84 %	-5	+15	+87
JPY JGB 10y	0.25 %	+0	+1	+18
€ Sovereign Spreads (10y)	25-Apr-22	-1w k (bp)	-1m (bp)	YTD (bp)
France	47 bp	-2	+5	+10
Italy	174 bp	+10	+24	+39
Spain	98 bp	+5	+13	+24
Inflation Break-evens (10y)	25-Apr-22	-1w k (bp)	-1m (bp)	YTD (bp)
EUR OATI (9y)	164 bp	+5	+13	-
USD TIPS	292 bp	-3	-6	+33
GBP Gilt Index-Linked	438 bp	+5	+6	+44
EUR Credit Indices	25-Apr-22	-1w k (bp)	-1m (bp)	YTD (bp)
EUR Corporate Credit OAS	138 bp	+4	-5	+43
EUR Agencies OAS	60 bp	-3	-1	+11
EUR Securitized - Covered OAS	72 bp	-2	+3	+26
EUR Pan-European High Yield OAS	404 bp	-6	-13	+86
EUR/USD CDS Indices 5y	25-Apr-22	-1w k (bp)	-1m (bp)	YTD (bp)
iTraxx IG	84 bp	+5	+4	+36
iTraxx Crossover	396 bp	+21	+27	+154
CDX IG	80 bp	+6	+8	+30
CDX High Yield	437 bp	+25	+71	+144
Emerging Markets	25-Apr-22	-1w k (bp)	-1m (bp)	YTD (bp)
JPM EMBI Global Div. Spread	419 bp	+15	-37	+51
Currencies	25-Apr-22	-1w k (%)	-1m (%)	YTD (%)
EUR/USD	\$1.071	-0.7	-2.51	-5.83
GBP/USD	\$1.271	-2.38	-3.59	-6.08
USD/JPY	¥127.67	-0.53	-4.4	-9.86
Commodity Futures	25-Apr-22	-1w k (\$)	-1m (\$)	YTD (\$)
Crude Brent	\$100.6	-\$12.6	-\$16.8	\$24.2
Gold	\$1 895.2	-\$83.7	-\$63.1	\$66.0
Equity Market Indices	25-Apr-22	-1w k (%)	-1m (%)	YTD (%)
S&P 500	4 223	-3.84	-7.05	-11.40
EuroStoxx 50	3 763	-2.22	-2.70	-12.45
CAC 40	6 453	-2.07	-1.53	-9.78
Nikkei 225	26 591	-0.78	-5.54	-7.64
Shanghai Composite	2 929	-8.36	-8.83	-19.54
VIX - Implied Volatility Index	30.51	37.62	46.61	77.18

Source: Bloomberg, Ostrum Asset Management

Additional notes

Ostrum Asset Management

Asset management company regulated by AMF under n° GP-18000014 – Limited company with a share capital of 48 518 602 €. Trade register n°525 192 753 Paris – VAT : FR 93 525 192 753 – Registered Office: 43, avenue Pierre Mendès-France, 75013 Paris – www.ostrum.com

This document is intended for professional, in accordance with MIFID. It may not be used for any purpose other than that for which it was conceived and may not be copied, distributed or communicated to third parties, in part or in whole, without the prior written authorization of Ostrum Asset Management.

None of the information contained in this document should be interpreted as having any contractual value. This document is produced purely for the purposes of providing indicative information. This document consists of a presentation created and prepared by Ostrum Asset Management based on sources it considers to be reliable.

Ostrum Asset Management reserves the right to modify the information presented in this document at any time without notice, which under no circumstances constitutes a commitment from Ostrum Asset Management.

The analyses and opinions referenced herein represent the subjective views of the author(s) as referenced, are as of the date shown and are subject to change without prior notice. There can be no assurance that developments will transpire as may be forecasted in this material. This simulation was carried out for indicative purposes, on the basis of hypothetical investments, and does not constitute a contractual agreement from the part of Ostrum Asset Management.

Ostrum Asset Management will not be held responsible for any decision taken or not taken on the basis of the information contained in this document, nor in the use that a third party might make of the information. Figures mentioned refer to previous years. Past performance does not guarantee future results. Any reference to a ranking, a rating or an award provides no guarantee for future performance and is not constant over time. Reference to a ranking and/or an award does not indicate the future performance of the UCITS/AIF or the fund manager.

Under Ostrum Asset Management's social responsibility policy, and in accordance with the treaties signed by the French government, the funds directly managed by Ostrum Asset Management do not invest in any company that manufactures, sells or stocks anti-personnel mines and cluster bombs.

Final version dated 25/04/2022

Natixis Investment Managers

This material has been provided for information purposes only to investment service providers or other Professional Clients, Qualified or Institutional Investors and, when required by local regulation, only at their written request. This material must not be used with Retail Investors.

In the E.U. (outside of the UK and France): Provided by Natixis Investment Managers S.A. or one of its branch offices listed below.

Natixis Investment Managers S.A. is a Luxembourg management company that is authorized by the Commission de Surveillance du Secteur Financier and is incorporated under Luxembourg laws and registered under n. B 115843. Registered office of Natixis Investment Managers S.A.: 2, rue Jean Monnet, L-2180 Luxembourg, Grand Duchy of Luxembourg. **Italy:** Natixis Investment Managers S.A., Succursale Italiana (Bank of Italy Register of Italian Asset Management Companies no 23458.3). Registered office: Via San Clemente 1, 20122 Milan, Italy. **Germany:** Natixis Investment Managers S.A., Zweigniederlassung Deutschland (Registration number: HRB 88541). Registered office: Im Trutz Frankfurt 55, Westend Carrée, 7. Floor, Frankfurt am Main 60322, Germany. **Netherlands:** Natixis Investment Managers, Nederlands (Registration number 50774670). Registered office: Stadsplateau 7, 3521AZ Utrecht, the Netherlands. **Sweden:** Natixis Investment Managers, Nordics Filial (Registration number 516405-9601 - Swedish Companies Registration Office). Registered office: Kungsgatan 48 5tr, Stockholm 111 35, Sweden. **Spain:** Natixis Investment Managers, Sucursal en España. Serrano n°90, 6th Floor, 28006, Madrid, Spain. **Belgium:** Natixis Investment Managers S.A., Belgian Branch, Louizalaan 120 Avenue Louise, 1000 Brussel/Bruxelles, Belgium.

In France: Provided by Natixis Investment Managers International – a portfolio management company authorized by the Autorité des Marchés Financiers (French Financial Markets Authority - AMF) under no. GP 90-009, and a public limited company (société anonyme) registered in the Paris Trade and Companies Register under no. 329 450 738. Registered office: 43 avenue Pierre Mendès France, 75013 Paris.

In Switzerland: Provided for information purposes only by Natixis Investment Managers, Switzerland Sàrl, Rue du Vieux Collège 10, 1204 Geneva, Switzerland or its representative office in Zurich, Schweizergasse 6, 8001 Zürich.

In the British Isles: Provided by Natixis Investment Managers UK Limited which is authorised and regulated by the UK Financial Conduct Authority (register no. 190258) - registered office: Natixis Investment Managers UK Limited, One Carter Lane, London, EC4V 5ER. When permitted, the distribution of this material is intended to be made to persons as described as follows: in the United Kingdom: this material is intended to be communicated to and/or directed at investment professionals and professional investors only; in Ireland: this material is intended to be communicated to and/or directed at professional investors only; in Guernsey: this material is intended to be communicated to and/or directed at only financial services providers which hold a license from the Guernsey Financial Services Commission; in Jersey: this material is intended to be communicated to and/or directed at professional investors only; in the Isle of Man: this material is intended to be communicated to and/or directed at only financial services providers which hold a license from the Isle of Man Financial Services Authority or insurers authorised under section 8 of the Insurance Act 2008.

In the DIFC: Provided in and from the DIFC financial district by Natixis Investment Managers Middle East (DIFC Branch) which is regulated by the DFSA. Related financial products or services are only available to persons who have sufficient financial experience

and understanding to participate in financial markets within the DIFC, and qualify as Professional Clients or Market Counterparties as defined by the DFSA. No other Person should act upon this material. Registered office: Unit L10-02, Level 10 ,ICD Brookfield Place, DIFC, PO Box 506752, Dubai, United Arab Emirates

In Japan: Provided by Natixis Investment Managers Japan Co., Ltd., Registration No.: Director-General of the Kanto Local Financial Bureau (kinsho) No. 425. Content of Business: The Company conducts discretionary asset management business and investment advisory and agency business as a Financial Instruments Business Operator. Registered address: 1-4-5, Roppongi, Minato-ku, Tokyo.

In Taiwan: Provided by Natixis Investment Managers Securities Investment Consulting (Taipei) Co., Ltd., a Securities Investment Consulting Enterprise regulated by the Financial Supervisory Commission of the R.O.C. Registered address: 34F., No. 68, Sec. 5, Zhongxiao East Road, Xinyi Dist., Taipei City 11065, Taiwan (R.O.C.), license number 2020 FSC SICE No. 025, Tel. +886 2 8789 2788.

In Singapore: Provided by Natixis Investment Managers Singapore Limited (company registration no. 199801044D) to distributors and institutional investors for informational purposes only.

In Hong Kong: Provided by Natixis Investment Managers Hong Kong Limited to institutional/ corporate professional investors only.

In Australia: Provided by Natixis Investment Managers Australia Pty Limited (ABN 60 088 786 289) (AFSL No. 246830) and is intended for the general information of financial advisers and wholesale clients only .

In New Zealand: This document is intended for the general information of New Zealand wholesale investors only and does not constitute financial advice. This is not a regulated offer for the purposes of the Financial Markets Conduct Act 2013 (FMCA) and is only available to New Zealand investors who have certified that they meet the requirements in the FMCA for wholesale investors. Natixis Investment Managers Australia Pty Limited is not a registered financial service provider in New Zealand.

In Latin America: Provided by Natixis Investment Managers S.A.

In Uruguay: Provided by Natixis Investment Managers Uruguay S.A., a duly registered investment advisor, authorised and supervised by the Central Bank of Uruguay. Office: San Lucar 1491, Montevideo, Uruguay, CP 11500. The sale or offer of any units of a fund qualifies as a private placement pursuant to section 2 of Uruguayan law 18,627.

In Colombia: Provided by Natixis Investment Managers S.A. Oficina de Representación (Colombia) to professional clients for informational purposes only as permitted under Decree 2555 of 2010. Any products, services or investments referred to herein are rendered exclusively outside of Colombia. This material does not constitute a public offering in Colombia and is addressed to less than 100 specifically identified investors.

In Mexico Provided by Natixis IM Mexico, S. de R.L. de C.V., which is not a regulated financial entity, securities intermediary, or an investment manager in terms of the Mexican Securities Market Law (Ley del Mercado de Valores) and is not registered with the Comisión Nacional Bancaria y de Valores (CNBV) or any other Mexican authority. Any products, services or investments referred to herein that require authorization or license are rendered exclusively outside of Mexico. While shares of certain ETFs may be listed in the Sistema Internacional de Cotizaciones (SIC), such listing does not represent a public offering of securities in Mexico, and therefore the accuracy of this information has not been confirmed by the CNBV. Natixis Investment Managers is an entity organized under the laws of France and is not authorized by or registered with the CNBV or any other Mexican authority. Any reference contained herein to "Investment Managers" is made to Natixis Investment Managers and/or any of its investment management subsidiaries, which are also not authorized by or registered with the CNBV or any other Mexican authority.

The above referenced entities are business development units of Natixis Investment Managers, the holding company of a diverse line-up of specialised investment management and distribution entities worldwide. The investment management subsidiaries of Natixis Investment Managers conduct any regulated activities only in and from the jurisdictions in which they are licensed or authorized. Their services and the products they manage are not available to all investors in all jurisdictions. It is the responsibility of each investment service provider to ensure that the offering or sale of fund shares or third party investment services to its clients complies with the relevant national law.

The provision of this material and/or reference to specific securities, sectors, or markets within this material does not constitute investment advice, or a recommendation or an offer to buy or to sell any security, or an offer of any regulated financial activity. Investors should consider the investment objectives, risks and expenses of any investment carefully before investing. The analyses, opinions, and certain of the investment themes and processes referenced herein represent the views of the portfolio manager(s) as of the date indicated. These, as well as the portfolio holdings and characteristics shown, are subject to change. There can be no assurance that developments will transpire as may be forecasted in this material. Past performance information presented is not indicative of future performance.

Although Natixis Investment Managers believes the information provided in this material to be reliable, including that from third party sources, it does not guarantee the accuracy, adequacy, or completeness of such information. This material may not be distributed, published, or reproduced, in whole or in part.

All amounts shown are expressed in USD unless otherwise indicated.



www.ostrum.com