MyStratWeekly
Market views and strategy

Ostrum ASSET MANAGEMENT

This document is intended for professional clients in accordance with MIFID

N° 023 // **May 17, 2021**

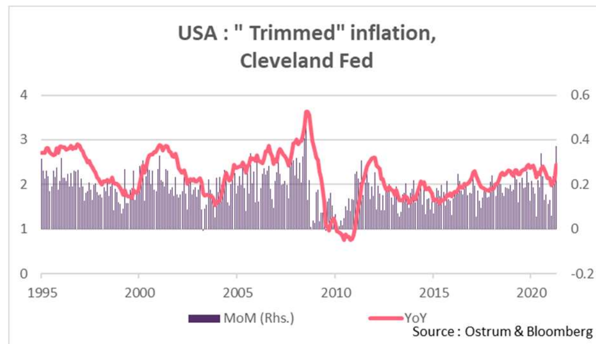
Topic of the week: Debt monetization by the numbers

- **The publication of the annual balance sheets of the central banks makes it possible to measure more precisely the level of monetization of public debt.**
- **If QE is not monetization per se, a non-negligible portion of the debt has become a perpetual zero rate.**
- **Instead of looking at the gross debt of the states, it would actually be much better to look at their "consolidated" debt, that is to say taking into account the share held by the central bank.**

Market review: Inflation denial may be the greater risk

- **US inflation hit 4.2% in April**
- **The upturn in US yields rocked the Nasdaq**
- **ECB seemingly allows higher Bund yields**
- **Credit proved resilient, BB outperform in high yield space**

Chart of the week



US inflation was the main surprise last week with a much stronger than expected rebound, notably in the case of the core index.

The Cleveland Fed's trimmed index is an alternative to the core index, excluding the most volatile components each month. In April it grew by 0.4% on a mom basis, the third largest increase in more than a quarter of a century.

The increase in inflation is therefore not due to a few very volatile factors but is very widespread in a broad set of sectors. Inflationary pressures are spreading throughout the economy. And maybe that's the main lesson from last week's numbers.

Figure of the week

90%

Source : Ostrum AM

According to the latest report from the International Energy Agency, 90% of the world's electricity capacity installed over the next two years will be renewable energy.

Stéphane Déo
Head of markets strategy

Axel Botte
Global strategist

Zouhoure Bousbih
Emerging countries strategist

Aline Goupil- Raguénès
Developed countries strategist

Topic of the week

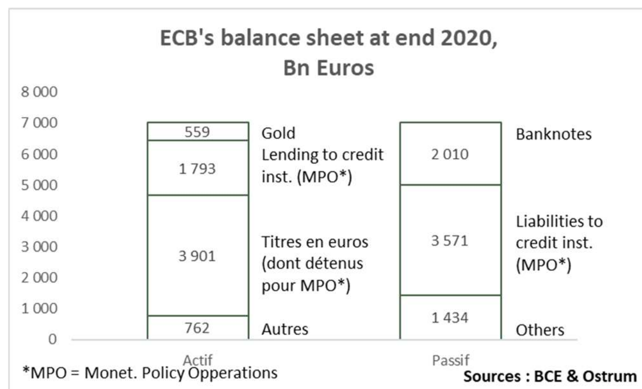
Debt monetization by the numbers

The publication of the annual balance sheets of the central banks makes it possible to measure more precisely the level of monetization of public debt. With QE, a portion of the public debt has almost become a "perpetual zero-rate", so its economic cost is zero. We explain the mechanism, its limitations and conclude that it is now probably more appropriate to look at the consolidated public debt.

Monetization, how does it work?

Reading a central bank's balance sheet

The monetization of the debt requires the establishment of the QE implemented by the central banks. To start with, we have to look at the balance sheet of these central banks. The graph below shows, in a very simplified way, the balance sheet of the Eurosystem (the Eurosystem is the consolidated balance sheet of the ECB and the national central banks of the euro area) at the end of 2020.[1].



It can be noted that euro securities held for monetary policy operations represent the lion's share of the assets, 3,901 billion out of 7,015 billion of the all balance sheet, or 55% of the total. In comparison, the Treasury held by the Fed represented 63% of its balance sheet at the end of 2019.

Another point to note is that the ECB's liabilities also account for the "Commitments to banks" which represent 50% of the ECB's liabilities. This account consists of the liquidity deposited by the banks to the ECB. For the Fed, "Bank Reserves", which is the closest equivalent, represents 42% of liabilities.

What happens during QE?

Imagine that the ECB buys one billion government securities from a European commercial bank. This billion will be added to the ECB's assets in the "Euro securities" account. Of course, we need an equivalent in the liabilities side of the balance sheet, the "Commitment to credit institutions" account we were talking about above; the ECB will therefore credit the selling bank's account with a billion euros.

As a result, the bank that transferred its securities to the ECB now has an additional billion dollars in liquidity. That's pure money creation. It is important to note that there is no accounting, regulatory or theoretical limits to these transactions. A central bank can, via QE, create as much liquidity as it wants.

Is QE a monetization of government debt?

In the case of a purchase by the ECB, as part of its QE, of one billion of French debt, this billion of OAT will therefore be booked to the ECB's account.

First point of importance; QE is implemented in a decentralized manner. So it's actually the Banque de France that will buy it and book it on its assets.[2]. When the French Treasury pays a coupon on this debt it will therefore be cashed by the BdF which constitutes a profit. At the end of the year these profits are distributed to its shareholder, which is the French Treasury. The coupon is therefore, de facto, transferred back to the French Treasury. The interest rate on this debt is, de facto, zero!

When the debt matures, the Treasury will have to repay a billion dollars to the Bank. But the ECB is committed to reinvesting all the "redemptions". Why? If it did not do so, the billion received as debt repayment would be retained by the BdF: this would be a drain on the liquidity available to the economy. To avoid this "anti-QE", the ECB decided to channel the billion dollar in the economy by buying a new OAT. As a result, de facto, the debt is not repaid, or rather the BdF, "rolled the debt", meaning that it extends the debt. De facto, the debt is therefore a perpetual debt, that is to say a debt that is never repaid.

---

[1] For the dedicated ones, the weekly Eurosystem's balance sheet is available on https://www.ecb.europa.eu/press/pr/wfs/2019/html/index.en.html

[2] To be precise, we must note that part of QE is implemented directly by the ECB. However, the profits generated by that QE within the programmes SMP, CBPP3, ABSPP, PSPP and PEPP is distributed back in January of the following year to national banks as an advance on dividend.

Of course this debt has not disappeared, it exists from an accounting point of view; it exists in the accounts of the Bank of France, the creditor, but also in the accounts of the State, the debtor. From a legal point of view, the debt has not disappeared either. But de facto (you may have noticed the obsessive use of "de facto" in the preceding paragraphs), this debt no longer exists. Or at least in the economic sense it has become a perpetual zero-rate debt. Hence its cost to the state is zero.

A Monetization Ersatz – Not a Real Monetization

Our description of QE leads to it being presented as a form of monetization. Strictly speaking, this is not quite the case. The purists will object with several arguments.

First and foremost, the ECB does not directly finance the government deficit, since it buys sovereign bonds on the secondary market and not on the primary market[3]. States must therefore continue to finance their deficit from the markets. Real monetization would occur if public debt buyouts were to take place on the primary market. From a practical point of view, however, the difference is slim, banks can finance a purchase using repo operations and they have the assurance of being able to resell it to the ECB if the paper is eligible. The ECB purchases it indirectly (temporarily via the repo) and then directly (via the QE).
Second, as we have explained, the ECB has committed to buy back the "redemptions". But if the ECB decides to stop its reinvestment program, which the Fed tried to do in 2018, then the debt should be repaid for good. The argument of monetization therefore holds only in so far as this reinvestment of the redemptions will not be questioned. The "perpetuity" of the debt is therefore not guaranteed and depends on the ECB's reinvestment decision.

Finally, while there is no accounting limit for QE, these transactions do, however, pose a risk to the ECB. The balance sheet of the Eurosystem is solid and the results remain very comfortable, as we will see below. But it is not unimaginable that the ECB's operations lead to losses, we can imagine several scenarios: the size of TLTRO at negative rates which constitute an erosion of interest income, losses on the credit portfolio (the ECB had lost several billion on Lehman's bankruptcy) or simply losses on the returns from the sovereign portfolio if financing rates were to rise. All this would therefore lead to an erosion of the capital of the ECB and the Eurosystem with consequences for the credibility of the Euro. The operation is therefore, as we can see, far from being risk-free: there is no free meal.

The "printing press" and the Piet Mondrian painting.

The proverbial image of the "printing press" is largely erroneous, monetary creation is done in a purely electronic way. The image is actually wrong as shows the example of Mondrian's painting.

The first element of a central bank's liabilities is "Notes in circulation". Why? When you get 100 euros from a money machine, the bank that owns that money machine had to buy that note from the ECB. This is a cost to the bank (it bought the note), and its stock of notes thus appears in its assets. It is a source of funding for the central bank (it sold the note), which therefore appears in its liabilities. It is therefore also, paradoxically, a liquidity levy on the economy since the commercial bank must buy from the ECB the banknotes it puts into circulation, it must therefore transfer liquidity to pay, liquidity which is no longer available to the economy. In central bank jargon this is called "an absorbing factor" because it does help absorb the liquidity of the banking market. The banknote, again paradoxically and contrary to the proverbial image, is therefore not a monetary creation, but an absorption of liquidity.

In the modern system, the "printing press" does not create liquidity, it merely exchanges existing (electronic) interbank liquidity for fiduciary (physical) currency.

Hence the anecdote of Mondrian's painting. When the Euro was introduced the notes and coins in national currency were exchanged for euros. Some of these notes and coins were never returned to the central bank. It is therefore a profit for her since this money no longer have any legal tender and we can no longer present them at the counter for reimbursement. So it's a debt on the Central Bank that disappears, the equivalent of a debt cancellation, and so it's a profit. The Central Bank of the Netherlands considered this to be an undue profit and wished to return it to the country. These profits were used to buy a painting by Piet Mondrian that was donated to the Gemeentemuseum in The Hague.

This is how the "printing press" can, in exceptional circumstances, generate a profit.

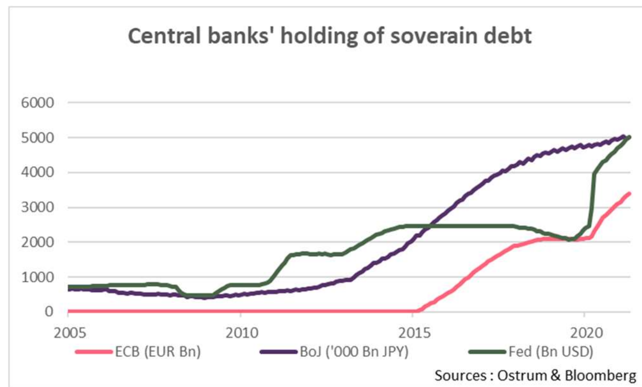
---

[3] There is no direct financing of the States by central banks since that is forbidden by the treaty: article 123-1 which can be found in https://eur-lex.europa.eu/legal-content/FR/TXT/PDF/?uri=CELEX:12012E/TXT

It is excessive to equate current QE with pure monetization of debt even if in fact the consequences of QE are a faithful reproduction of it.

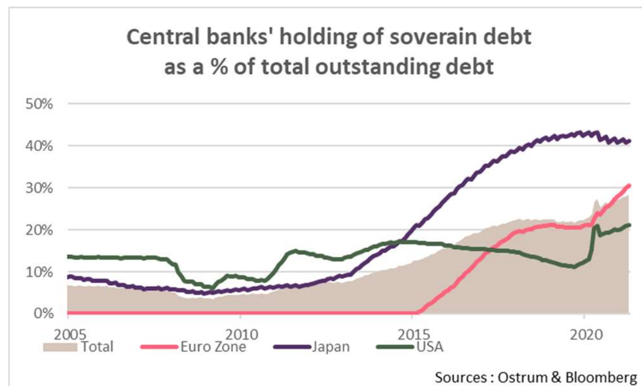
Let's talk numbers: where are we in terms of QE in the G3?

Now that the methodological argument has been made, let's talk numbers. The chart below shows the purchase history for the ECB, the Fed and the Bank of Japan. At the end of April, the order of magnitude was 3.3 Tr of euros for the ECB, 5 Tr of dollars for the Fed and 500 Tr of Yen for the BoJ. However, these figures continue to grow very rapidly.



Colossal numbers of course. To give an order of magnitude, the Fed's balance sheet was $900 billion before the 2009 crisis, the ECB's balance sheet was €1,800 billion…

The consequence is that the share of debt held by central banks has risen sharply as shown in the chart below. In total, the three main central banks hold almost 30% of public debt issued in the United States, the Euro Area and Japan.



Concrete case: Germany, France and Italy.

Let us now look in more detail at the cases of the three major Eurozone countries: Germany, France and Italy. The three central banks of these countries publish their annual accounts in the spring, so we will use the figures at the end of 2020 to illustrate our point.

The ECB held a third of the German debt. On the other hand, it held only 21% of the Italian debt. The capital keys which impose a constant proportion of purchases between countries lead to absorbing a larger share of the debt of countries with a lower debt. The introduction of the PEPP, which had the explicit option to deviate from capital keys on a temporary basis, did not change much.

	Soverain debt, end 2020		Purchased via QE		Consolidated debt (gross debt - QE), % of GDP
	Bn EUR	% GDP	Bn EUR	% of outstanding debt	
Germany	2 325	70%	755	32%	47%
France	2 650	116%	611	23%	89%
Italy	2 573	156%	538	21%	123%
Euro Area	11 107	98%	2 914	26%	72%

Sources : Eurostat, ECB, Ostrum

In the case of debt servicing we compare it with the amount that is returned by the central banks to the national treasury. To be precise, the profits of these central banks are of course not exclusively linked to QE. Repo operations with banks, for example, are also a source of profit. However, the size of QE is such that the main line of the three central banks' income accounts, by far, is the "Net Interest Income" line.

Another technical point to emphasize is that distribution is not identical for each of these central banks. The Bundesbank, for example, transfers all its "distributable income" to the State while the Banque de France, like the Bank of Italy, transfers part in the form of taxes and part in the form of a transfer. These technical details do not change the argument that QE interest profits are ultimately returned to the national Treasury.

It should also be noted that the Buba has decided to book this year significant provisions, 2.4 billion euros for currency risk and valuation risks on its portfolio of assets in the event of an increase in rates. This extreme prudence led to a net distributable income of 0 this year. In the case of Germany, therefore, the 2020 debt service has not been monetized by the Buba, which rather used it to strengthen its own funds.

	Debt service		Amount repaid by the central bank		
	Bn EUR	% of GDP	Bn EUR	Interest revenue	% of debt service
Germany	23.4	0.7%	0.00 (1)	5.47	0%
France	29.7	1.3%	3.55 (2)	5.99	12%
Italy	57.8	3.5%	8.88 (3)	8.60	15%
Euro Area	169.8	1.5%			

Sources : Eurostat, Buba, BdF, Bd'I, Ostrum
(1) Buba has written provisions in case of yield increases
(2) Dividends + taxes
(3) 2019 numbers, the 2020 repport is not yet out

Take Italy, the country with the most debt, and 21% of the debt issued was held by the ECB at the end of 2020. We also find that the profits of the Banca d'Italia cover 15% of the Italian interest charge in 2019. De facto, therefore, there is 15% of the debt which, if it maintains an indisputable accounting and legal existence, are a debt which has been cancelled from an economic point of view. This part is a perpetual debt, it is never repaid, at zero rate, any interest paid is returned. It therefore has no cost and no impact on the sustainability of public finances.

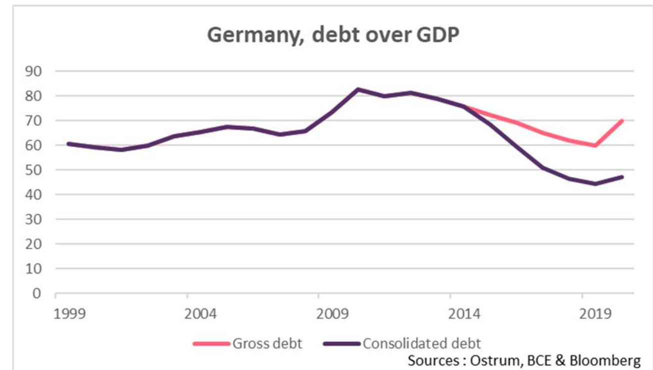
It would then be wise to remove this part of the debt from the sustainability simulations, in the Italian case the debt on GDP would no longer be 156% but 123%. A figure that remains considerable for a country whose growth is sluggish, but a less impressive figure.

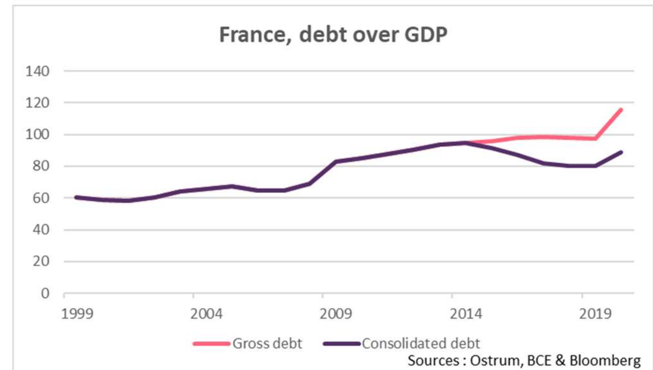
Conclusion: plea for a “consolidated” debt

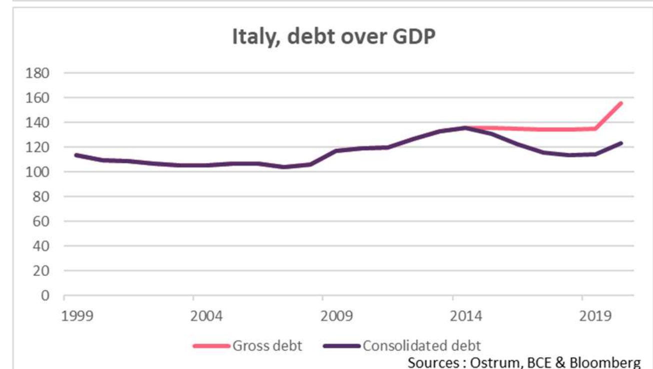
Instead of looking at the gross debt of the states, we argue that it would actually be much better to look at their “consolidated” debt, that is to say taking into account the share held by the central bank and keeping in mind that the monetization of the debt is incomplete as we explained above. This approach, unnecessary before QE was implemented, is now truer to the economic situation than a simple approach in terms of gross debt.

We leave it there, but a more comprehensive approach could also be interesting. The OECD publishes the gross debt of the states, but also the net position of the states that takes into account their financial assets. The OECD estimated that at the end of 2020 the gross debt of the Euro area was 119.4% but the net financial position was 75.8%. For the OECD as a whole, it went from 126.9% to 79.7%.

In the German, French and Italian cases, the evolution of gross and non-EQ debt, what we have called “consolidated debt”, gives the following results. They illustrate the impact of QE, which is indeed far from negligible.







Stéphane Déo

Market review

Inflation denial may be the greater risk

The Fed is in denial of growing inflation risks, which makes stock markets' all the more sensitive to US long-term yields

The inflation genie is out of the bottle. The US consumer price index reacts with a one-month delay to the sharp acceleration in producer and import prices unveiled in March. Inflation stood at 4.2% year on year and inflation excluding volatiles reached 3% in April. The Fed insists on the transitory nature of the inflationary surge, but nothing is less certain. The reopening of the economy allows the sectors that were most affected by the pandemic to regain leeway to raise their prices, especially as household finances are in good shape thanks to the recovery in employment. Air transport prices thus rose by 10% m in April. The prices of hotels and rental cars follow the same pattern. The significant pressures on raw materials are linked to the necessary transformation of the growth model brought about by climate change challenges. The international energy agency recently estimated that the transition to the sustainable development model, including the electrification of the vehicle fleet and renewable energies, will require 40 times more lithium in 2040 than in 2020, 20 times more nickel , 7 times more manganese or even 2.5 times more copper. It is obvious that commodity prices will define priorities given the time and investments required for mining much needed metals. Inflation cannot just a transitory phenomenon. Moreover, the cost of housing will accelerate. The end of the moratoriums on rents will also cause a readjustment.

Truth be told, the issue of inflation is only of importance for financial markets in the near term to the extent that it changes the Fed's tapering scenario. To this end, the Jackson Hole conference, at the end of August, remains the most timely occasion for a pre-announcement. The reduction in QE will begin at the earliest in October, at the latest in early 2022. The rise in breakeven inflation points to their highest since 2005 - beyond 2.8% over the 5-year maturity - clearly calls into question the Fed scenario and questions about the targeting of average inflation. Real rates (-1% on 10 years' maturity) are also much too low relative to US growth potential. The T-note after a brief drop below 1.50% after the publication of April payrolls data is now close to 1.65% The steepening of the yield curve reflects on the one hand the wait-and-see attitude of the Fed and the risks of a more brutal tightening thereafter. The 5s30s spread widened before stabilizing after strong 10- and 30-year Treasury bond auctions. Around 2.40%, 30-year yield levels should attract new final investor demand.

In the eurozone, investor optimism represented by the rise in the ZEW is driving rates higher. The Bund is trading near -0.12% and low weekly PEPP figures seem to indicate that the ECB is now permitting the upshot in yields as it is inseparable from higher inflation expectations. The weekly rise in breakeven points in Europe (+ 14bp on the 10-year inflation swap) is even stronger than in the United States (+ 8bp). Quantitative easing purchases have decreased to € 16.3 billion compared with around € 20 billion after the March ECB statement. Tensions on Bund yields also reflect the syndication of the 30-year German Green for € 6 billion. Demand, totaling € 27bn, reduced the spread to -2bp against the nominal mirror bond. Hedging flows weighed on the bond market. The steepening of the German yield curve pushed French rates beyond psychological thresholds. The 1% level on the 30-year OAT is thus triggering buying interest from insurers. The 10-year Italian bonds also exceeded 1% ahead of Thursday's issues. In general, the peripheral sovereigns remain well oriented. There is also a clear tightening in swap spreads. The Bund asset swap narrowed 4bp over the week. Investors have arguably favored swaps to hedge equity weakness. There are significant receiving flows of 15 years.

The US equity markets are subject to profit taking concentrated on growth technology stocks sensitive to pressure on long-term rates. The Nasdaq has undergone a 5% correction. The flow of good news with strong quarterly publications is no longer preventing valuation adjustments. Earlier this week, 47% of S&P 500 stocks were still trading at their 52-week high. The economic backdrop is now taking over as the market driver. European technology is no longer immune to US tech gyrations. In Europe, sector rotations are accelerating to the benefit of financial institutions and oil companies. Prices are down 2% this week, still insufficient movement to consider valuations attractive.

Credit in the euro zone remains well oriented. The average spread is 84bp vs. Bund. Market liquidity is satisfactory despite the marked weakness of the Nasdaq. Synthetic indices have failed to respond to rising equity volatility, seen as a valuation issue rather than a credit risk. The iTraxx XO nonetheless increased by 5bp over the week. The high yield market seems stable despite a very active primary market. The credit quality is relatively high, so that B and CCC issues are rarer. The BB segment is supported by rating upgrades.

Finally, the dollar is at a crossroads. Twin deficits and inflation argue for a further decline, but pressure on rates mitigates this risk. The euro fell back below $ 1.21 ending the week almost unchanged. The Canadian dollar stands out, driven by the prices of metals and lumber in particular.

Axel Botte
Global strategist

Main market indicators

G4 Government Bonds	17-May-21	-1wk (bp)	-1m (bp)	YTD (bp)
EUR Bunds 2y	-0.66 %	+3	+4	+5
EUR Bunds 10y	-0.12%	+10	+15	+45
EUR Bunds 2s10s	54 bp	+7	+11	+41
USD Treasuries 2y	0.15 %	0	-1	+3
USD Treasuries 10y	1.64 %	+3	+6	+72
USD Treasuries 2s10s	148 bp	+3	+7	+69
GBP Gilt 10y	0.87 %	+8	+10	+67
JPY JGB 10y	0.09 %	0	-1	+6
€ Sovereign Spreads (10y)	17-May-21	-1wk (bp)	-1m (bp)	YTD (bp)
France	39 bp	+1	+14	+16
Italy	120 bp	+6	+19	+9
Spain	71 bp	+4	+6	+10
Inflation Break-evens (10y)	17-May-21	-1wk (bp)	-1m (bp)	YTD (bp)
EUR OATi (9y)	146 bp	+2	+19	-
USD TIPS	256 bp	+2	+18	+57
GBP Gilt Index-Linked	355 bp	0	+6	+55
EUR Credit Indices	17-May-21	-1wk (bp)	-1m (bp)	YTD (bp)
EUR Corporate Credit OAS	84 bp	+0	-3	-8
EUR Agencies OAS	38 bp	-2	-1	-3
EUR Securitized - Covered OAS	27 bp	-3	-3	-5
EUR Pan-European High Yield OAS	301 bp	+2	-1	-57
EUR/USD CDS Indices 5y	17-May-21	-1wk (bp)	-1m (bp)	YTD (bp)
iTraxx IG	51 bp	+1	+1	+3
iTraxx Crossover	253 bp	+3	+7	+12
CDX IG	52 bp	+1	+1	+1
CDX High Yield	293 bp	+8	+1	0
Emerging Markets	17-May-21	-1wk (bp)	-1m (bp)	YTD (bp)
JPM EMBI Global Div. Spread	334 bp	-2	-9	-17
Currencies	17-May-21	-1wk (%)	-1m (%)	YTD (%)
EUR/USD	$1.216	-0.02	+0.98	-0.56
GBP/USD	$1.413	-0.06	+1.05	+3.53
USD/JPY	¥109.13	-0.29	-0.98	-5.34
Commodity Futures	17-May-21	-1wk ($)	-1m ($)	YTD ($)
Crude Brent	$69.5	$1.2	$3.2	$18.0
Gold	$1 866.3	$28.6	$94.8	-$28.1
Equity Market Indices	17-May-21	-1wk (%)	-1m (%)	YTD (%)
S&P 500	4 154	-0.83	-0.76	10.58
EuroStoxx 50	4 007	-0.41	-0.65	12.78
CAC 40	6 367	-0.29	1.28	14.70
Nikkei 225	27 825	-5.74	-6.26	1.39
Shanghai Composite	3 518	2.61	2.66	1.28
VIX - Implied Volatility Index	20.69	5.24	27.32	-9.05

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 17/05/2021

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

Ostrum ASSET MANAGEMENT

An affiliate of: NATIXIS INVESTMENT MANAGERS