Europe Economic Weekly

Wage spirals that don't happen, policy debates that shouldn't happen

29 September 2023

Economics
Europe

Weekly View: A good week for asymmetries

ECB speak this week transpired that a discussion on "more" being needed is already starting – it didn't even need an inflation surprise. We still see risks of higher rates for longer, even if we think tightening already exceeds what would be needed.

Euro area: German negotiated wages: flatten the curve

We check the distribution of 2022/23 negotiated wage hikes: the average has moved higher, but curves have flattened and the lower tail fattened again. The data is inconclusive on the existence or absence of a wage spiral. For us, the risk remains that recent strength is the exception, rather than a new norm.

UK: Consumer confidence strengthens

Our UK consumer confidence survey suggests unemployment is stable and confidence rising a little, suggesting real wage growth and pause in rate hikes could support spending. Confidence in the inflation target may not be rising. 27% see 1-4% inflation in 5 years, 39% don't know, a new high for our survey.

Hot topic: Minimum reserves, maximum uncertainty

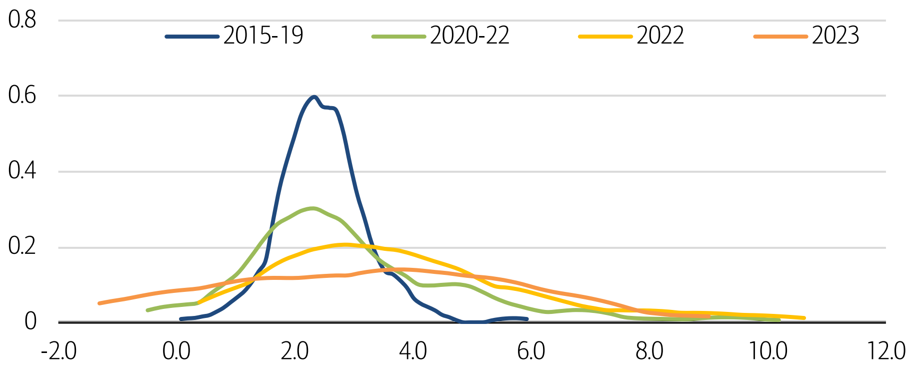
The debate around minimum rerserve requirements at the ECB makes us nervous. A proper credit crunch could be an unintended consequence, and might not even need actual change if banks act by precaution.

Next week:

Euro area September inflation today (4.5% headline and 4.6% core in the forecast), retail sales (Wed), German factory orders (Fri). Thirteen scheduled ECB speakers starting with four today (incl Lagarde), plus BoE's Mann (Mon) and Broadbent (Thu).

Exhibit 1: Density functions of German wage deals, all hikes convoluted

Density functions have shifted significantly – the peak has moved a little to the right, and curves have flattened a lot. And the lower tail has grown again.



Source: BofA Global Research

BofA GLOBAL RESEARCH

BofA Euro Economics
+44 20 7995 1476
europeaneconomics@bofa.com

Ruben Segura-Cayuela
Europe Economist
BofA Europe (Madrid)
+34 91 514 3053
ruben.segura-cayuela@bofa.com

Robert Wood
UK Economist
MLI (UK)
+44 20 7996 7415
robert.d.wood@bofa.com

Evelyn Herrmann
Europe Economist
BofASE (France)
+33 1 8770 0292
evelyn.herrmann@bofa.com

Chiara Angeloni
Europe Economist
BofA Europe (Milan)
+39 02 6553 0365
chiara.angeloni@bofa.com

Alessandro Infelise Zhou
Europe Economist
BofASE (France)
+33 1 8770 0058
alessandro.infelise_zhou@bofa.com

See Team Page for List of Analysts

Weekly View

A good week for asymmetries

We reiterate our ECB call: we expect policy rates to stay on hold until Jun-23, but the risk balance is very asymmetrically tilted towards another hike and a longer hold (also for faster cuts thereafter, but that's probably not quite for immediate consumption).

The asymmetry on more hikes is obvious, and helped by oil prices. Uncertainty on the passthrough to core inflation after the last couple of years is high. The ECB internal debate on "more" has already started. Hawks like Nagel, Holzmann and Elderson have been musing on the need thereof this week. Centrists like Villeroy de Galhau and doves like Lane and de Cos seem to push back arguing that current rates held for a long time should suffice for inflation, and are perhaps as much as the real economy can take.

The asymmetry for a longer hold is also there. For Villeroy de Galhau, a hold until a return to 2% seems preferable, for Kazak, a hold until a return to below 2% ECB forecasts. That may sound less extreme than the ambition to hike until then, which some hawks said would be needed, a year ago. They might also want to see proof of wage growth not only having plateaued but actually being back around 3% (or lower), before starting the path towards more neutral policy. That puts a lot of onus on next year's wage negotiations, many of which only take place in spring. Again, that makes June the very earliest time for a cut.

A tilted risk balance doesn't make the base case less likely

Why hold onto the base case if the risk is asymmetric? First, incoming inflation data this week has provided some comfort. Spanish, German and Belgian inflation prints create some downside risk to our 4.5% Euro area headline forecast for today's (Friday) September release, arguably even to our 4.6% core forecast. So far, good.

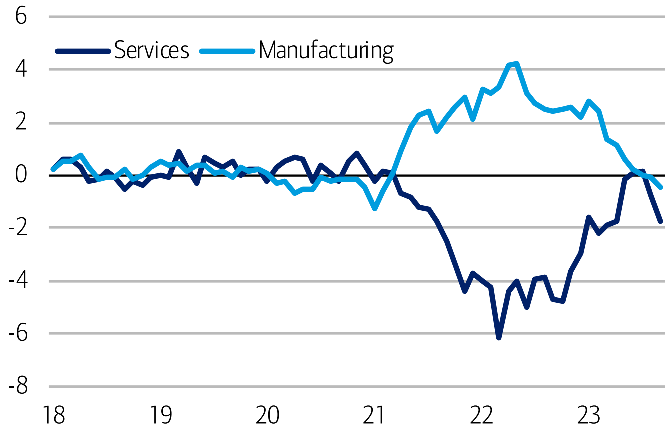
Second, demand conditions matter for the passthrough of exogenous energy price shocks, ie oil. Post-Covid, pricing power was strong in the goods, meek in the services sector. As the energy crisis hit, but services activity normalised, margins for both sectors have returned to normal (Exhibit 2). For manufacturing, that means pricing power is already much weaker. For services, the last two data points equally suggest the spurt is over. Expecting a full passthrough of oil prices in these conditions seems bold.

Third, wage growth is starting to show tentative signs of peaking. This year was bound to be stronger than usual because of a catch-up effect from quasi no hikes during Covid lockdowns, decent employment growth and a partial adjustment to past inflation (yes, we sound like a broken record). With inflation stickier, wage growth could be the same. It's noteworthy, then, that Euro area negotiated wage growth stood at 4.3% yoy in 2Q23, 0.1ppt lower than 1Q23. The "Indeed past wage" tracker that some ECB hawks had used to point to upside, eased from a peak of 5.3% yoy in Sep-22 to 3.9% in Aug-23 – it rolled over even before inflation. In Exhibit 3, we also show Belgian inflation and negotiated wage growth. Wage indexation is relatively pronounced there, and with inflation back at 2.4% again in September, arguably wage growth is to follow soon.

We also dig into German wage negotiations again this week, and find more of the same as in late-22: individual hikes this year have shifted towards a higher average (closer to 4%) but the distribution has flattened further, with fatter lower tails again. Granted, that doesn't provide evidence that a wage spiral cannot materialise yet. But it is evidence that wage growth has still not anchored at higher levels. And with an ECB that is leaning very far into restrictive territory, the risk of anchoring higher on expectations, only (as the macro backdrop was never really conducive to that, in our view), must be reducing.

Exhibit 2: Euro area PMI-implied profit margins

After very different post-Covid trajectories, services and manufacturing margins are now adjusting lower

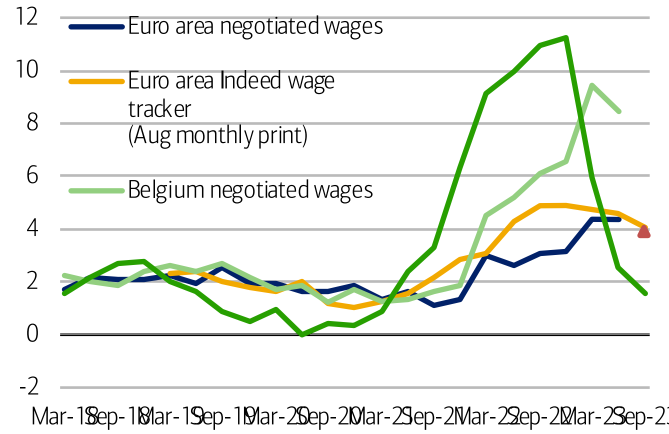


Source: S&P Global, BofA Global Research.
Differential of 2011-19 normalised PMI output and input prices.

BofA GLOBAL RESEARCH

Exhibit 3: Euro area negotiated wage growth

Euro area wage growth seems to have plateaued; alternative indicators already past peak. And check Belgium, where wage indexation is more prominent



Source: Eurostat, Indeed Hiring Lab, Belgium statistics, BofA Global Research

BofA GLOBAL RESEARCH

To finish on the ECB call, the asymmetric risk balance to a faster cutting cycle once it starts is endogenous to the path until then. The stronger the disinflation process becomes and the more certain the return to 2% before policy normalises to neutral, the more likely it becomes that the ECB will have to accelerate the cutting cycle.

The risk of non-linearities comes on top. Lending is one area to watch here. Loan transactions to corporates or for mortgages to households are basically trotting around zero this year, with the odd monthly outlier to the downside. The buffer to more adverse outcomes to the economy from a properly negative credit impulse is very thin.

The debate on mandatory reserves makes us very nervous in that context. Tinkering with reserve requirements as a monetary policy tool is not a good idea. But even thinking aloud about it could be enough to affect bank lending by precautionary motives. The risk of a credit crunch with all the adverse macro consequences it entails is very high, as we argue in our hot topic. We work under the assumption that the ECB will refrain from actual policy action in that space until there is a new operation framework in place, and hopefully put the debate to bed, soon.

At least budget conflicts don't seem imminent

At least there wasn't much spectacular news in the draft budget releases. Italy's 4.3% deficit plan in 2024 is close to expectations. The expenditure plan lookssufficiently close to EU Council recommendations to avoid confrontation right away. Of course, assuming 1.2% growth in 2024 creates fragility (we forecast 0.4%). But that could be a common feature across budget plans, or at least it is already included in France's, where the government plans a 4.4% deficit (also with a structural adjustment close to what the European rulebook requires) assuming 1.4% growth (vs 0.8% in our forecast).

Next week:

(Almost) every week is PMI week: final manufacturing (Mon) and services (Wed) in the Euro area and the UK. Euro area retail sales (Wed), French industrial production (Thu) and German factory orders (Fri) could grow ever so slightly, as production benefits from backlogs and orders normalise after the big July downside from airplane orders.

Plentiful central bank speak with 13 ECB interventions on the schedule already, including Lagarde herself (today and Wed) and Lane (Wed/Thu). We will also hear from the BoE's Mann (Mon) and Broadbent (Thu).

Euro area

Evelyn Herrmann
BofASE (France)
evelyn.herrmann@bofa.com

Ruben Segura-Cayuela
BofA Europe (Madrid)
ruben.segura-cayuela@bofa.com

German negotiated wages: flatten the curve

- We check the distribution of negotiated wage hikes: the average has moved a little higher, but curves have flattened and the lower tail fattened again.
- One-off payments to compensate for inflation seem to be more in fashion than much bigger-than-usual, permanent pay rises.
- The data is inconclusive on the existence or absence of a wage spiral. For us, the risk remains that recent strength is the exception, rather than a new norm.

Big headlines, a lot of one-offs, unclear underlying

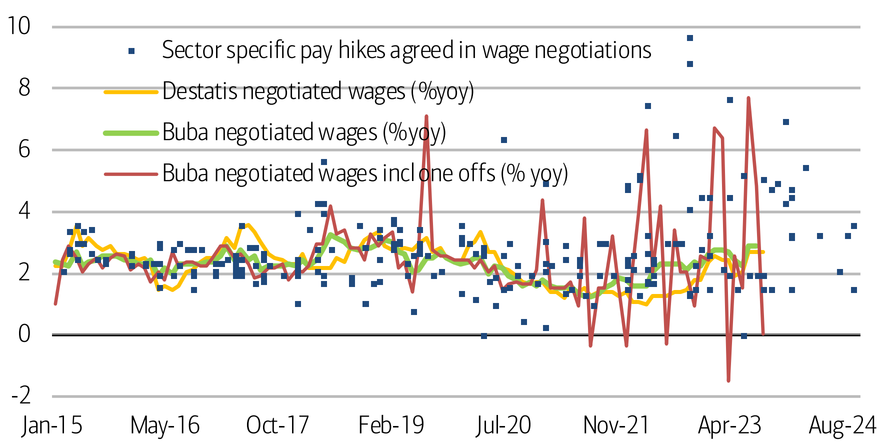
We expected wage growth to pick up to c 4% in 2023, playing catch-up from next-to-no pay rises during Covid lockdowns was part of our base case, as well as partial compensation for past inflation and a decent recovery in the labour market. But even before substantial monetary policy tightening, quasi-chronic demand insufficiency and inflation largely driven by exogenous (energy) drivers meant, to us, that wage growth is likely to normalise again from 2024.

This view also applies to the German economy, perhaps even more so given its growth underperformance vs Euro area peers. Monitoring wage negotiations throughout the calendar year is therefore part of our regular sanity check on inflation views. After a longer than usual break, we resume today. What we find is neither fish nor meat: big one-off payments blur the underlying picture, but digging deeper still shows no clear pattern at the moment. Pay hikes cover a wide range, the average has moved somewhat higher towards 4% vs 3% in 2015-19, but some upward shift was part of our base case. What is surprising is how much the distribution has flattened in 2022, and in 2023 with a growing lower tail. Evidence of re-anchoring at a higher wage growth levels still remains elusive.

One-offs are, by definition, not going to repeat (at least not forever)

Headlines on big wage deals abound. But their structure is noteworthy. Nearly all agreements since mid-2022 come with big one-off inflation-compensating payments.

Exhibit 4: German negotiated wage growth – individual hikes vs aggregates
One-off payments dominate in recent deals. Some sectors have agreed unusually large wage hikes last year, but outliers have become less frequent again and average wage growth is just back to "normal".



Source: Bundesbank, Destatis, WSI Tarifarchiv, BofA Global Research

BofA GLOBAL RESEARCH

However, base pay has grown considerably less so far. This is blatant when comparing Bundesbank's wage data including one-off payments (up 4% yoy on average in Jan-Jul 2023, vs 2.7% last year or 2.9% on 2018-19 average, red line in Exhibit 4) with wage data excluding these one-offs (2.7% so far this year vs 2.1% last or 2.7% in 2018-19, green line in Exhibit 4).

Some of these "one-offs" are actually "two-offs" (and in some exceptional cases even three): last year's chemical industry deal secured a 2022 payment of EUR 1,400 followed by EUR 1,500 in 2023 and 2024; and this year's auto sector deal in Bavaria agreed EUR 1,500 this year and EUR 1,000 next. But even in these examples, the one-off payments stop increasing (or even lower) total wages after the first year, sometimes even when base pay rises come to help. This year's public sector deal is, perhaps, particularly symptomatic of such a hump-shaped trajectory: civil servants will receive EUR 3,000 of inflation one-off payments between Jun-23 and Feb-24 (EUR 2,560 this year), net, and a base pay rise of 5.5% in May-24. For a civil servant in the middle of the pay scale, that means almost a c 9% total pay rise this year, but possibly a 3% decline next. Renegotiation is due only in 2025.

Proper pay rises vary wildly – the distribution has flattened a lot

We prefer looking at the base pay increases – they are permanent and thereby possibly more symptomatic of proper shifts in wage dynamics. We show individual pay hikes in blue dots in Exhibit 4. A few elements to keep in mind when looking at the chart. We make no difference between the first, second and sometimes third pay hikes agreed in the same deal (remember the average deal tends to be for more than two years). We show the pay rises when they are supposed to become effective, not when they are agreed. Also, we don't adjust the data for the size of the sector it affects, nor for the proximity of sector-specific wages to the statutory minimum wage. The increase in the latter from EUR 9.60 per hour in 2H21 to EUR 12.00 per hour in October 2022 probably explains some particularly big pay hikes to sector-specific minimum wages, too, that would show in wage deals. That should not become a permanent feature with the next statutory rise by 3.6% in 2024 and again in 2025 already decided.

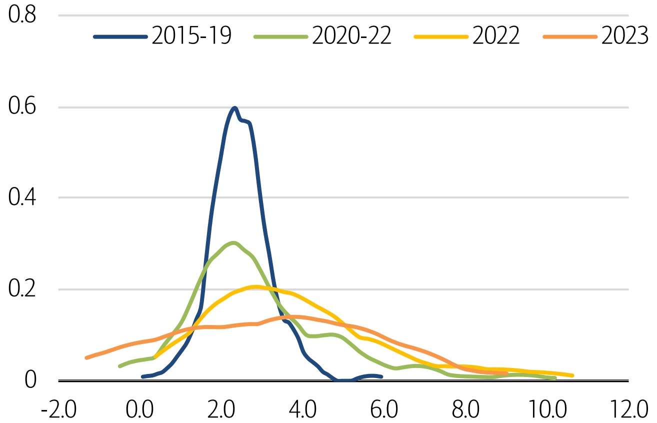
After some sectors have seen very large pay hikes last year, outliers to the upside have become less frequent again, and upcoming pay hikes already agreed seem to be converging back to pre-Covid ranges, at least that's what the data optically transpires.

In order to get a clearer idea on whether something has shifted meaningfully, we check density functions for all wage deals struck in 2015-19, in 2022-22, and then individually for 2022 and 2023. This is a bid to remain agnostic, neither relying on optics nor forcing a prior on the distribution. In the first instance, including all pay hikes; in the second one, checking the very first pay hike per deal in order to get rid of the somewhat usual pattern of smaller second (or third) hikes. Results are shown in Exhibit 5 and Exhibit 6, respectively.

The shape of the density function has changed significantly since the pandemic. The average pay rise has moved higher, closer to 4%. But the flattening of the curves is arguably the more remarkable feature. That had already transpired last year, but becomes even more prominent in this year's data, especially when we zoom in on "first" pay hikes per deal, only. Identifying a "peak" in the curve has become almost impossible (although we would flag that the sample is not particularly large given the wage round is not yet completed). Furthermore, we would actually highlight that, while the average has increased, the lower tail has grown larger again, which is a big change compared to the changes in 2022, in particular. Arguing that wage growth has persistently shifted up a gear seems daring with a curve shaped like that.

Exhibit 5: Density functions of wage deals, all hikes convoluted

Density functions have shifted significantly – the peak has moved a little to the right, and curves have flattened a lot. And the lower tail has grown again.

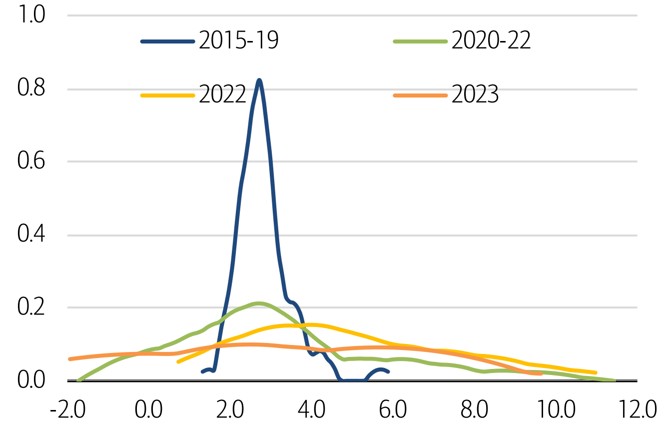


Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 6: Density functions of wage deals, only the first hike

Wage deals often include more than one hike. We check the first one only. Density functions look even more in flux now.



Source: BofA Global Research

BofA GLOBAL RESEARCH

Round-trip or new destination?

Our regular readers will recognise the density function exercise – first carried out last December (see Europe Economic Weekly: Probably 50 but not a done deal 02 December 2022). Three quarters later, similar conclusion again: wage dynamics in Germany have changed, but a firm signal on the destination of travel remain elusive. Data neither support nor rebuff a hawkish view that wage growth has moved higher forever.

Our view remains that a round-trip in wage dynamics, ie a temporary rise before a return to more normal 3% growth, is the more likely outcome. It is based on the assumption that an incomplete recovery from Covid, a severe energy price shock affecting consumers' purchasing power and companies' pricing power paired with insufficient fiscal policy was not the right mix for persistently higher wage growth. The onus is still on inflation expectations to pull wage growth persistently higher.

Today, all the above arguments remain intact. If anything, the ECB has gone further than we thought a year ago, while growth was weaker than hoped for with demand rather than supply the culprit. Inflation expectations remain the main argument for the hope (of some) or threat of persistently higher wage growth, but we are not so convinced that this outcome becomes more likely the longer we have to wait for it.

UK

Consumer Whisperer: strenghtening

Robert Wood
MLI (UK)
robert.d.wood@bofa.com

This section has been published as UK Viewpoint: Consumer Whisperer: strengthening 29 September 2023. That Viewpoint contains the Survey method and questions and full data tables

Confidence points to stable unemployment

One of the most striking changes in recent economic data has been rapid employment falls, dropping 207k in the past 3 months. In contrast our proprietary consumer confidence survey suggests unemployment has been stable (Exhibit 7). Consumers have in the past been good judges of the state of the labour market. Indeed, our broader consumer confidence indicator rose slightly this month as views on personal finances improve. Major purchase intentions also rose.

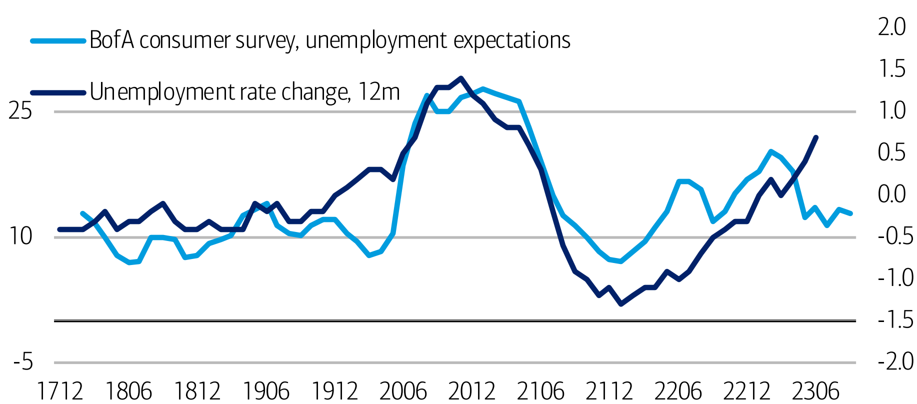
Expected mortgage rates ease

Our survey shows households mortgage rate expectations eased, possibly in in response to the Bank of England pausing rate hikes. Households' spending plans also improved. We show that planned and actual spending cuts increase substantially when households expect mortgage rates of 5% or higher. The average expected mortgage rate in our sample is 4.3%, down from 4.6% in August, below prevailing rates.

Inflation expectations steady, uncertainty high

1-year and 5-year ahead inflation expectations held steady in our survey, a little above pre-Covid readings. The proportion of people expecting very high inflation continues to fall, now down to mid-2021 levels. However, confidence in the inflation target does not seem to be increasing. The % of people expecting inflation between 1% and 4% remains below pre-Covid levels at 27%, while 39% of people say they don't know where inflation will be, a new record high for our survey. This uncertainty could be a reason why pay growth recently appears to follow more closely recent inflation rather than lower inflation expectations.

Exhibit 7: Consumer confidence says unemployment not going to keep rising quickly
BofA consumer confidence survey unemployment expectations vs. change in unemployment rate



Source: BofA Global Research., ONS

BofA GLOBAL RESEARCH

Hot Topic

Minimum reserves, maximum uncertainty

Ruben Segura-Cayuela
BofA Europe (Madrid)
ruben.segura-cayuela@bofa.com

Alastair Ryan >>
MLI (UK)
alastair.ryan@bofa.com

Ronald Man
MLI (UK)
ronald.man@bofa.com

The debate that shouldn't happen

An ECB debate on changing the minimum reserve ratio risks transforming a fragile outlook into a credit crunch-driven recession. The uncertainty it creates could lead to banks turning more risk-averse and curtailing lending. This debate risks triggering more dangerous non-linear dynamics, we think, and could do so disproportionately for the periphery. We assume that balance will prevail, and the ECB will not do so, for now. Once the ECB agrees on the new framework it can adjust the reserve ratio to that framework. We work on the assumption that at that point (Spring 2024), minimum reserve requirements are likely to go back to the level of 2011: 2%, if not slightly higher. For PEPP we still expect partial reinvestments to start in June 2024 but ongoing developments could bring that forward by a quarter, if spreads remain well behaved.

Linking the ECB P&L with monetary policy

The ECB linked its decision to 0% remuneration on mandatory reserves with "efficiency" (Box 1), i.e. paying out less. The ECB has a scale problem: its c. €70bn annual carry cost is more than 10x the amount saved thus far. Any raise in mandatory reserves, even if only to 2% (Box 2) opens the door to debate on significantly greater next steps.

Expensive on multiple fronts

The ECB incurred the carry cost through its QE programme; a natural response would be to reduce it through bond sales. These are not on the table (Box 3), so the ECB is discussing what some perceive as a cheaper alternative. We see mandatory reserve increases as the opposite: expensive from 5 perspectives: 1) the implied confusion of inflation targeting and the ECB's P&L, 2) each step opens the door to more, 3) the transformation of a bank's highest-quality asset, cash, into an encumbered non-yielding asset hits at the heart of the transmission mechanism, 4) a 17% Cost of Equity applied to banks, in part because of this debate, impairs credit provision, 5) as liquidity is not evenly distributed, the implications for cash poor banks could be greater.

Risks of money market distortions

Higher reserve requirements mean lower excess liquidity and create an incentive for banks to reduce their required reserves. This has five implications for rates: 1) upward pressure on money market rates may be brought forward, 2) risks of unintended sudden tightening in money markets, 3) richer month-ends, 4) more terming of liabilities by banks, and 5) cheaper repo vs euro short-term rate (€str).

A big theme already

This topic was a dominant theme at our 28th Annual Financials CEO Conference, see Conference wrap (report link). The ECB's public musings are expensive but may at least help it appreciate the real costs of using this tool are potentially above the alternatives of a simple inflation focus or a reduction in bond holdings.

Economics: The debate that shouldn't happen

Ruben Segura-Cayuela
BofA Europe (Madrid)
ruben.segura-cayuela@bofa.com

Over the last few weeks, we have been getting headlines about how the ECB's debate on how to unwind – faster – its balance sheet is gathering speed. This is not a surprising debate per se; we were expecting those conversations, which are part of our call that the ECB will stop full PEPP reinvestments already by June 2024, if not slightly earlier. But some parts of the debate have the potential to risk transforming a fragile, but somewhat resilient, outlook into a credit crunch-driven recession.

Yes, we are talking about the debate on changing the level of mandatory reserves as a way of mopping up liquidity as the review of the operational framework reaches a conclusion. ECB sources have suggested the possibility of moving mandatory reserves to 3-4%. The Governor of the Austrian Central Bank, Holzmann, went a step further on 27 September and talked about potentially moving to 5-10%. This is a dangerous game to play, as we argue below. But before we do so we would like to start by quoting others on this matter:

> "it would be undesirable to use the proceeds from taxes levied against credit institutions for general budgetary purposes if and to the extent that doing so would make credit institutions less resilient to economic shocks and, as a result, limit their ability to provide credit, pushing them to offer less favourable terms to customers when providing loans and other services and reducing certain activities. This would create uncertainty and adversely affect real economic growth".

> "As key ECB interest rates will be set at sufficiently restrictive levels for as long as is necessary to achieve a timely return of inflation to the 2 % medium-term target, it is important to keep in mind that monetary policy operations always have some distributional implications...

> Evidence shows that net interest income typically tends to expand on impact as policy rates increase... However, as the tightening cycle proceeds, this positive income effect can be offset by lower lending volumes, a higher cost of funding, losses recorded in the securities portfolio and an increase in provisions resulting from potential deterioration of the quality of the credit portfolio. The realisation of downside risks in the current environment may significantly reduce the repayment capacity of debtors and translate into lower bank profitability. The net effect of tighter monetary policy on bank profitability when measured across the policy cycle may therefore be less positive, or even negative, over an extended horizon...

> More generally, caution must be taken to ensure that the extraordinary tax does not impact the ability of individual credit institutions to build strong capital bases and adequately provision for increased impairments and a deterioration in credit quality. Curtailing the ability of credit institutions to maintain adequate capital positions or to prudently build provisions against the backdrop of a possible downturn in credit quality could endanger a smooth bank-based transmission of monetary policy measures to the wider economy".

Readers may be wondering the source of these quotes. Well, it's not us, though we make similar arguments below. These are in fact the ECB's opinions on the Spanish and Italian levies on banks.

Uncertainty, uncertainty, uncertainty

Changing mandatory reserves without a proper anchor in place would be a dangerous step, in our view. It would be hard to argue this was being done to fine-tune the monetary policy stance or the transmission of policy rates when the ECB president Lagarde recently stated that the transmission is more or less where the ECB wants it to be. With that in mind, opening that door creates several issues.

First, the market might question whether this was driven by fiscal motives. In other words, "fiscal dominance" fears would come clearly to the fore and, ironically, the source of that dominance would not necessarily come from the usual suspects, commentators like to highlight.

Second, and related, the market may wonder whether the motivating factor is to avoid the negative headlines that large losses at some central banks could generate, and their impact on public opinion in certain countries. Yes, we talk about perception because central bank losses are not necessarily something we should be worried about, in the context of an institution that has a monopoly over the creation of money. The Fed has clearly shown how this can be dealt with.

Third, as we elaborate above, a small increase in mandatory reserves to 2% would make little difference to the ECB's accounting losses. In itself, it should not have a strong impact on banks' willingness to lend. But uncertainty could. Given the size of potential losses on the ECB balance sheet, the market would quickly (indeed it already is to an extent) wonder about the next steps. Banks, facing that environment, could turn more risk-averse and curtail lending more aggressively than they have done so far in this hiking cycle. Yes, the transmission of monetary policy has been strong but, to a large extent, it has also been quite smooth. This debate, even if it doesn't materialize in actions, risks triggering much more dangerous non-linear dynamics.

Finally, on the topic of non-linear dynamics, it is worth flagging the distributional impact of an increase in mandatory reserves. Liquidity is unevenly allocated across countries. Regulatory constraints could force some banks in the periphery to unwind part of their government bond portfolios to meet those regulatory demands. Ironically, either PEPP reinvestments or TPI might need to come to the rescue.

Hope for the best, prepare for the worst

We work on the assumption that balance will prevail, and the ECB will stay away from raising mandatory reserves in this context. Back at the July meeting this was already discussed:

> "Other members, by contrast, saw the minimum reserve requirement as a monetary policy tool that could be used to support or complement the intended restrictive monetary policy stance."

And

> "overall, caution was expressed against using the minimum reserve ratio as an active instrument for adjusting the monetary policy stance."

In other words, a majority in the Governing Council probably doesn't disagree with us. But this is a key distinction – it is using the minimum reserve ratio as an active instrument for adjusting the stance that makes it dangerous. It would be much different if any change was perceived in a structural way.

The outcome of the operational framework review is the right place to frame that debate, we believe. Once the ECB agrees on the framework for the future (which includes some idea on the endpoint for the balance sheet and how policy will be steered) it can adjust the minimum reserve ratio to whatever fits that framework. In that context, we would work on the assumption that at that point (Spring 2024 according to the last we heard from Lagarde), minimum reserve requirements are likely to go back to the level of 2011: 2%, if not slightly higher.

Another reason for PEPP reinvestments to end earlier

With the outcome of the operational framework review not due until spring 2024 and, if we are right, any changes to minimum reserves not likely until then, the incentive to act on other fronts will increase, we think. As we have argued before, active sales of APP holdings are likely to be ruled out given they would crystallise those feared losses. That leaves passive quantitative tightening of PEPP as the only available tool. Our call is for partial reinvestments to start in June 2024, with a potential announcement by the March meeting. But ongoing developments could bring that forward by a quarter, as long as spreads remain well behaved.

Banks: Replacing visible with unpredictable

Alastair Ryan >>
MLI (UK)
alastair.ryan@bofa.com

We provide an in-depth follow up to European Rates Viewpoint: The ECB's cost minimisation problem 01 August 2023 (report link) by looking at the ECB's debate on raising mandatory reserves, from the perspective of European banks.

Box 1

> European Central Bank policymakers want to soon start discussing how to tackle the multi-trillion-euro pool of excess liquidity sloshing around banks, with raising reserve requirements a possible first move, six sources told Reuters...
> Several policymakers are in favour of raising the amount of reserves that banks must park at the central bank - on which they do not earn

> interest - from 1% of customer deposits to a figure that could be closer to 3% or 4%, the sources said.
> The sources said this would have the dual benefit of mopping up cash from the banking system and reducing how much the ECB and the euro zone's 20 national central banks pay out in interest on deposits, which has led to large losses for some.
> *Reuters, September 2023*

The background is the ECB's move in July to cancel remuneration on banks' mandatory reserves, shown in Exhibit 8.

Exhibit 8: ECB "saved" €6.6bn with its move in July
Banks currently face €165bn mandatory reserves

https://www.ecb.europa.eu/mopo/implement/mr/html/index.en.html	
Mandatory reserves	165,143
Deposit rate	4%
ECB "efficiency"	6,606

Source: BofA Global Research estimates, ECB

BofA GLOBAL RESEARCH

The explanation was provided in the monetary policy statement, shown in Box 2.

Box 2

> The Governing Council decided to set the remuneration of minimum reserves at 0%. This decision… will improve the efficiency of monetary policy by reducing the overall amount of interest that needs to be paid on reserves
> *ECB monetary policy statement, July 2023*

The discussion around this was further detailed in the minutes, summarised in Box 3.

Box 3

> The efficiency aspect had gained in relevance, in line with the higher level of the key ECB interest rates…
> It was cautioned that changes in the remuneration of minimum reserves could raise questions about the objectives in the Eurosystem's reaction function related to central bank profits and losses…
> Other members… preferred to increase the minimum reserve ratio to 2%… reversing the previous reduction to 1%, decided in December 2011 as part of a package of measures to support the bank lending channel and free up liquidity and collateral…
> However, it was also recalled that, before 2011, minimum reserves were remunerated at the MRO rate. Moreover, it was mentioned that the very rationale for minimum reserve requirements was now less clear, in view of the prudential liquidity regulations for banks that had been introduced in response to the global financial crisis. Overall, caution was expressed against using the minimum reserve ratio as an active instrument for adjusting the monetary policy stance.

ECB minutes, July 2023

In the following meeting, the ECB stated that it was not discussing bond sales (Box 4), providing a platform for the Reuters story which followed shortly afterwards.

Box 4

> we have not discussed the PEPP programme, the reinvestment and the forward guidance… We have not discussed any kind of APP outright sales.
> *ECB president Lagarde, September 2023*

We find the debate challenging for both the ECB itself and the banks it supervises. Key considerations are:

1. The debate expands ECB goals from inflation targeting to ECB profitability. These are two potentially conflicting goals. They will almost certainly confuse the ECB's message on inflation.

2. A small increase in mandatory reserves to 2% would make little difference to the ECB's accounting losses. We update our scenario analysis and expect the Eurosystem to make a loss of between €64bn and €71bn in 2024, depending on whether further remuneration changes are made[1] (Exhibit 9). An increase in mandatory reserves to 2% will chip away only a further €6bn in 2024 given our economist's policy rate profile. Such a step would necessarily invite discussion about more steps. If the ECB is focusing attention on its accounting losses is the thing, steps that address a small part of the accounting loss will make the market assume further steps.

3. In Exhibit 10, we show that euro area banks make a return on equity well below the cost of equity. It is implicit in the ECB debate, we think, that yields on ECB deposits are somehow unjustified. Market prices do not support this

4. Zero remuneration would naturally reduce the value of deposits to banks. We expect that deposit rates paid to clients would fall as a result. This is a loosening of monetary policy.

5. Pushing in the opposite direction, potentially at the same time, is that while the banking system is highly liquid, that liquidity is not evenly distributed and removing key assets from circulation would risk money market dislocations from those banks that needed cash

6. Making bank deposit funding uniquely disadvantaged, compared with other forms of market funding, would drive the business out of the regulated euro banking system to non-banks and other currencies

[1] **Further remuneration change**: The remuneration rate on government and non-euro area resident deposits assumed to fall from c. €str minus 20bp to 0% from 1 January 2024 for all NCBs.
No further remuneration change: The remuneration rate on government and non-euro area resident deposits stays at c. €str minus 20bp.

In August 2023, the Bundesbank announced it remunerate domestic government deposits at 0% from 1 October 2023.

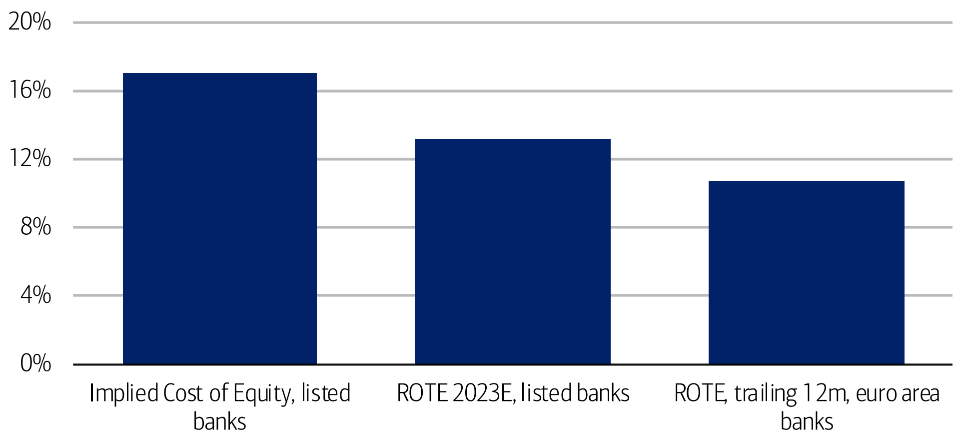
Exhibit 9: Eurosystem net income scenario analysis details
Losses expected in both scenarios

	No further remuneration change	Further remuneration change
Income from assets (A)	81	81
Refi	0	0
TLTRO	6	6
QE portfolio	75	75
Cost of liabilities (B)	120	113
Current account (min reserves)	0	0
Deposit facility	106	113
Other euro area resident deposits	0	0
Government deposits	7	0
Non-euro area resident deposits	6	0
Net income (C) = (A) - (B)	-39	-32
Amortisation adjustment (D)	-33	-33
Net income accounting for amortisation adjustment: (C) + (D)	-71	-64

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 10: euro area banks cover only 60% of their Cost of Equity
Return on equity and Implied Cost of Equity, euro area banks (%) 2023



Source: BofA Global Research estimates, ECB

BofA GLOBAL RESEARCH

Two towers, in conflict

Regulation is a complex area, with the Liquidity Coverage Ratio having increased banks global demand for liquidity by US$7 trillion since the financial crisis, according to the Basel Committee. Mandatory reserve inflation takes a bank's highest-quality liquid asset, cash, and turns it into an encumbered, non-yielding asset. This challenge to the business model of banks would potentially put monetary policy in conflict with supervisors across the city in Frankfurt.

We start the discussion with a look at mandatory reserves and their use by central banks.

An emerging market, FX tool

High mandatory reserves are used in a number of emerging markets and where are used by western central banks as policy tools in the past. Commonly, however, the use is associated with capital controls, a fixed exchange rate or a central bank micromanaging demand on behalf of the government.

Exhibit 11: central banks with high reserve requirements
Often these less-independent central banks are dealing with FX challenges

Türkiye	5-22%

Exhibit 11: central banks with high reserve requirements
Often these less-independent central banks are dealing with FX challenges

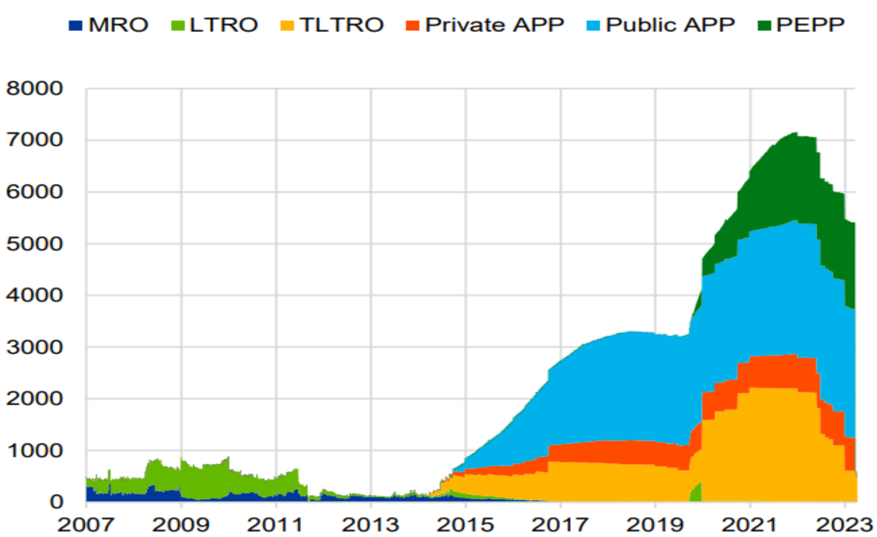
China	7%
Nigeria	27%
Argentina	17-42%

Source: BofA Global Research

BofA GLOBAL RESEARCH

A reduction of the ECB balance sheet through a run-off of its bond portfolios would be symmetrical with the purchase of those bonds. This is exactly what the ECB did with its Targeted Longer Term Refinancing Operations, of which it has now exited €1.6 trilllion – see Exhibit 12.

Exhibit 12: ECB cut €1.6t from its TLTRO, now the bonds dominate its assets
ECB monetary policy assets (€ bn) 2007-2023



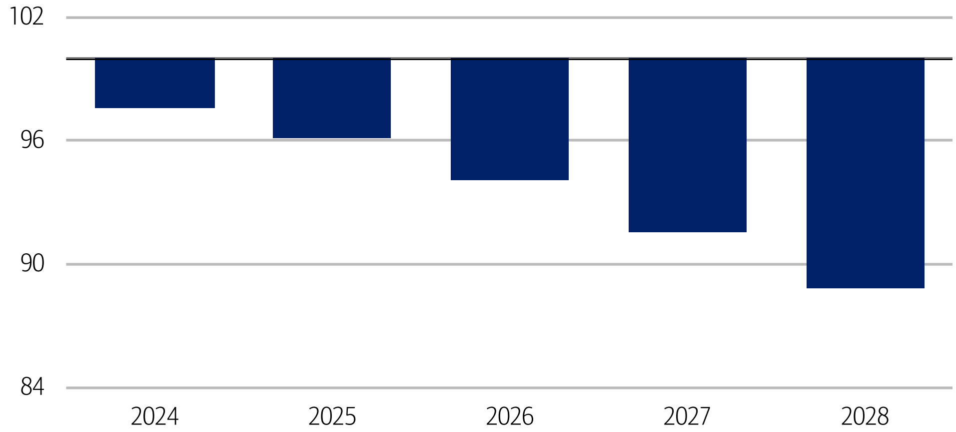
Source: ECB/ Schnabel

BofA GLOBAL RESEARCH

From recent comments, the ECB clearly has some concern about the impact on the bond. market functioning pricing from large sales. However, seeking to achieve a reduction in system and liquidity through mandatory reserves, would only be moving a visible cost to a less-predictable, and misunderstood one.

For banks, Quantitative Tightening represents substituting one high-quality liquid asset – cash - with another, government bonds. As we wrote previously, government bonds are not a perfect substitute, other than short dated bills – see the discounted price of certain Bunds in Exhibit 13. Potential price declines require a bank to hold stress capital. But in actual liquidity terms, they are close to one another.

Exhibit 13: Low-coupon Bund prices fall to below €0.90
Bunds by maturity – current price



Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

An increase in mandatory reserves simply disappears the cash. It becomes an encumbered asset, ineligible for the liquidity coverage ratio. Banks would lose their highest quality liquid asset, which - if in significant size - would shock their liquidity management. It could also have rating agency implications, as the agencies look at both encumbrance and liquidity. In Exhibit 14, we illustrate the impact of a large move in mandatory reserves, such as would be necessary if the ECB were seeking to directly address its carry cost of bonds through this route. As much as 30% of banks' HQLA would simply vanish.

Exhibit 14: a move to 10% mandatory reserves would remove 29% of banking system HQLA
This would not be evenly distributed

HQLA	4,943
Mandatory reserve	165
Increase reserve from 1% to 10%	1,485
Impact on HQLA	-30%

Source: BofA Global Research estimates, ECB

BofA GLOBAL RESEARCH

Banks face many constraints in their operations. They need to meet regulatory requirements for capital, liquidity and funding of course, but may also look at other liquidity metrics – as discussed in European Banks Strategy: Peak nothing 01 September 2023 (report link), the LCR in particular has proven to be just one liquidity measure among many. And banks face a specific set of liquidity, funding and capital metrics at each of their rating agencies. Large and abrupt chances to ECB rules could challenge each bank differently, but the impacts would likely be significant. We sketch just two in Exhibit 15, for one of the largest euro area banks.

Exhibit 15: Unicredit example – impacting both asset encumbrance and LCR
LCR could fall 33 points, asset encumbrance almost double

	Jun-23
Encumbered assets	41,762
Cash	76,000
HQLA	184,987
Net cash outflows	115,775
LCR	160%
Illustration	
Deposits, euro area	429,100
Additional mandatory reserve	9%
Additional mandatory reserve	38,619
Encumbrance increase	92%
LCR	126%

Exhibit 15: Unicredit example – impacting both asset encumbrance and LCR
LCR could fall 33 points, asset encumbrance almost double

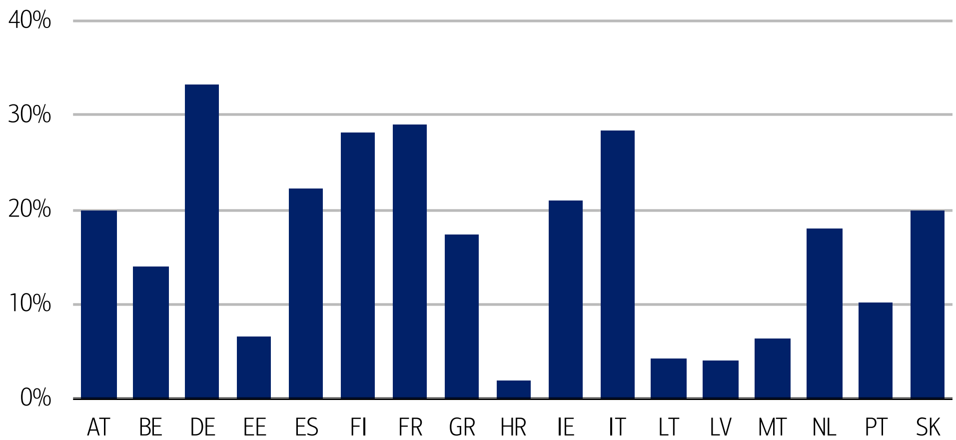
	Jun-23
LCR decrease (points)	-33%

Source: BofA Global Research estimates, company report

BofA GLOBAL RESEARCH

By changing the rules of banking, the impact on some banks would be greater than others, in ways that would be hard to define its *ex ante*. Generally, banks with lower credit ratings, that is smaller banks in general, have less access to alternative forms of liquidity - which may be directly because deposits are more valuable to them for this reason. And by increasing asset encumbrance, some banks have optimised this, while others have not (Exhibit 16). This is one part of the euro area where averages may well prove unreliable for predicting outcomes.

Exhibit 16: such a wide variety of encumbrance ratios, an average will not be useful
Euro area banks, asset encumbrance ratios, 1Q 23



Source: EBA

BofA GLOBAL RESEARCH

Push me – pull you

The implications for monetary policy would be complex. One would expect a tightening of credit availability, as banks will in part need to shrink the loan book or expand loan margins to absorb the revenue hit. Equally, banks may seek to reduce deposit prices to restore their deposit spread, representing an easing of policy.

As an intervention into one sort of funding, that would not impact others, one would also expect a further drive of assets out of the banking system.

A depressed multiple impacts behaviour

The inconvenient truth is that the market is not pricing banks as approaching the cost of capital cover, even after the doubling of their profits since 2019. In part because of debates, such as this, the market has increased its implied cost of equity, such that banks still trade at a 30% discount to tangible book. For policymakers, this has significant implications. Banks with low multiples struggle to justify fresh. Evidence that the central bank is actively depressing Earnings, without considering whether banks have a surplus is a strong negative signal

Interesting in this context to highlight the language in the recent ECB letter to the Italian government on its proposed tax - see Box 5

Box 5: ECB legal opinion

As key ECB interest rates will be set at sufficiently restrictive levels for as long as is necessary to achieve a timely return of inflation to the 2 % medium-term target, it is important to keep in mind that monetary policy operations always have some distributional implications…
Evidence shows that net interest income typically tends to expand on impact as policy rates increase… However, as the tightening cycle proceeds, this positive income effect can be offset by lower lending volumes, a higher cost of funding, losses recorded in the securities portfolio and an increase in provisions resulting from potential deterioration of the quality of the credit portfolio. The realisation of downside risks in the current environment may significantly reduce the repayment capacity of debtors and translate into lower bank profitability. The net effect of tighter monetary policy on bank profitability when measured across the policy cycle may therefore be less positive, or even negative, over an extended horizon…
More generally, caution must be taken to ensure that the extraordinary tax does not impact the ability of individual credit institutions to build strong capital bases and adequately provision for increased impairments and a deterioration in credit quality. Curtailing the ability of credit institutions to maintain adequate capital positions or to prudently build provisions against the backdrop of a possible downturn in credit quality could endanger a smooth bank-based transmission of monetary policy measures to the wider economy
OPINION OF THE EUROPEAN CENTRAL BANK of 12 September 2023

Rates market implications

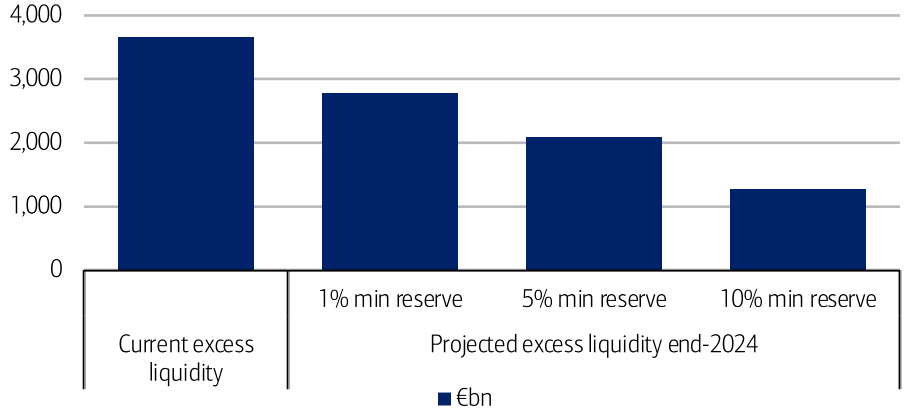
Ronald Man
MLI (UK)
ronald.man@bofa.com

The impact of an increase in reserve requirement on the front-end rates market is likely to be driven by the associated decline in excess liquidity and a general desire among banks to reduce their required reserves. We believe this generally means more funding needs, uncertainty, and intramonth volatility in the front-end rates market.

1. Upward pressure on money market rates may be brought forward
increases to the minimum reserve requirement would impact banks in some countries more than others. Exhibit 18 shows the country-level decomposition of excess liquidity net of TLTROs, accounting for quantitative tightening, if the minimum reserve requirement is at 5% and 10% by the end of 2024. In the case of 10% minimum reserve requirement, there would be negative excess liquidity net of TLTRO by the end of 2024 in Italy, Greece, Spain, and Portugal. Currency growth has not been accounted in our country decomposition, which means there are downside risks to the figures presented.

For cash poor banks, we believe a higher minimum reserve requirement would have greater impact on their funding demand than a comparable punitive tiering framework that applies 0% on the first X amount of a bank's excess reserves. This is because a higher minimum reserve requirement that pushes banks' excess liquidity into negative territory would force them to raise funds, which would not be the case in punitive tiering. The need for cash poor banks to raise funds to meet the higher reserve requirement would bring forward upward pressure on front-end rates and widening pressure on money market spreads.

Exhibit 17: Excess liquidity projections based on different minimum reserve requirement
Raising the minimum reserve requirement would lower excess liquidity in the euro area



Source: BofA Global Research, ECB

BofA GLOBAL RESEARCH

2. Risks of unintended sudden tightening

Prior to the Covid shock, the euro overnight indexed swap (OIS) rate was notably less sensitive to changes in excess liquidity levels when excess liquidity was above €1trn. The implication was that €1trn of excess liquidity is sufficient to keep OIS rates close to the floor of the policy rate corridor.

But banks' inherent demand for excess liquidity has likely increased in recent years and that quantum is currently unknown (see European Rates Viewpoint, 19 May 2023). An increase in the minimum reserve requirement would accelerate the decline in excess liquidity. By the end of 2024 when 1) all TLTROs have fully rolled off, 2) accounting for quantitative tightening, 3) accounting for currency growth, we estimate excess liquidity will fall to €2.1trn if the minimum reserve requirement is set at 5% and fall to €1.3trn if it is set at 10% (Exhibit 17). This means an increase in the minimum reserves could lead to sooner-than-intended reserve scarcity in the banking system and sudden upward pressure on front-end rates.

3. Richer month-ends

The minimum reserve requirement is calculated using the month-end data from two months before the maintenance period starts. Institutions subject to the minimum reserve requirement may have an incentive to reduce liabilities used to calculate their reserve requirement over month-end. Issuance of very short-dated paper (one- to two-week paper) by such institutions over month-end may be reduced and concentrated intramonth. The reduction of very short-dated paper supply may increase scarcity and, in turn temporary richening pressure, of short-dated assets over month-ends that are used for minimum reserve calculation.

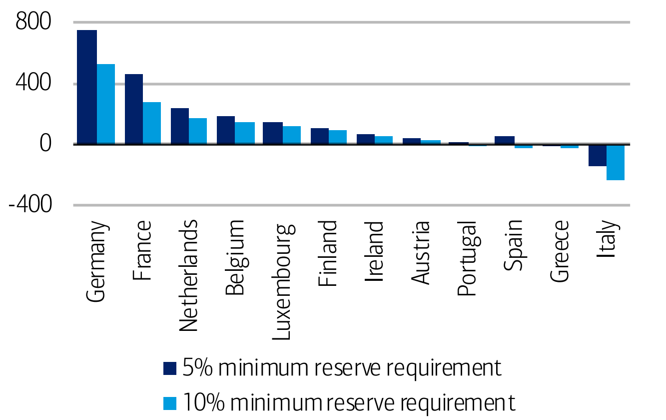
4. More terming of liabilities

Deposits with maturity greater than two years and debt securities issued with an original maturity over two years are excluded from the minimum reserve calculations. An increase in the minimum reserve requirement would create an incentive for banks to continue terming out their liabilities: in deposits this has so far been achieved by widening the spread between term and overnight deposit rates (Exhibit 19). Such behaviour may risk further widening in money market spreads.

5. Cheaper repo vs €str

Deposits from repo transactions are also excluded from the minimum reserve calculations. This may give institutions subject to the minimum reserve requirement an incentive to rely more on repo markets, both overnight and term, to raise cash. As deposits received from the €str market would be included in the minimum reserve calculations, the incentive to raise cash from repo could provide room for the one-day GC repo rates to be cheaper than €str on a sustained basis.

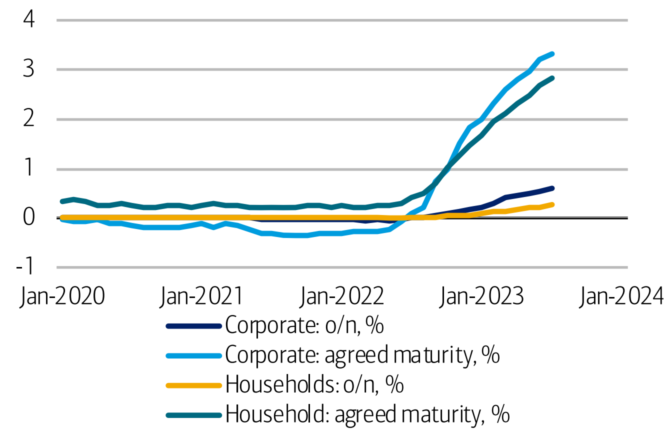
Exhibit 18: End-2024 excess liquidity projections by country
A 10% min reserve requirement may leave many banks very cash scarce



Source: BofA Global Research, ECB

BofA GLOBAL RESEARCH

Exhibit 19: Bank rates on new deposits
Banks have passed on more of the rate hikes via term deposits



Source: ECB

BofA GLOBAL RESEARCH

European forecasts

Exhibit 20: Euro area economic forecasts
We see the ECB reaching a refi terminal of 4.50%.

		2021	2022	2023	2024	2025	1Q23	2Q23	3Q23	4Q23	1Q24	2Q24	3Q24	4Q24
GDP	% qoq						0.1	0.1	0.0	0.1	0.1	0.2	0.3	0.3
	% qoq ann.						0.3	0.5	-0.1	0.2	0.3	1.0	1.0	1.3
	% yoy	**5.6**	**3.4**	**0.5**	**0.5**	**1.3**	1.1	0.5	0.1	0.2	0.3	0.4	0.6	0.9
Private Consumption	% qoq						0.0	0.0	0.1	0.1	0.2	0.3	0.3	0.3
	% yoy	**4.1**	**4.3**	**0.3**	**0.7**	**1.1**	1.4	0.2	-0.6	0.2	0.4	0.6	0.9	1.0
Government Consumption	% qoq						-0.6	0.2	0.2	0.2	0.2	0.3	0.2	0.2
	% yoy	**4.1**	**1.4**	**0.0**	**0.9**	**1.0**	-0.4	0.1	0.3	0.0	0.9	0.9	0.9	1.0
Investment	% qoq						0.3	0.3	0.2	0.1	0.0	0.2	0.3	0.4
	% yoy	**3.6**	**2.9**	**1.1**	**0.7**	**1.6**	1.9	1.3	0.6	0.9	0.6	0.5	0.6	0.9
Final Domestic Demand[1]	% qoq						0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3
	% yoy	**3.9**	**3.1**	**0.4**	**0.7**	**1.1**	1.0	0.4	-0.1	0.3	0.5	0.6	0.8	0.9
Net exports[1]	% qoq						0.6	-0.4	-0.1	0.0	0.1	0.0	0.1	0.1
	% yoy	**1.4**	**-0.1**	**0.4**	**0.0**	**0.3**	0.5	0.2	0.7	0.1	-0.5	0.0	0.1	0.3
Stockbuilding[1]	% qoq						-0.5	0.4	-0.1	0.0	-0.1	0.0	-0.1	0.0
	% yoy	**0.3**	**0.4**	**-0.3**	**-0.2**	**-0.1**	-0.4	-0.1	-0.5	-0.2	0.2	-0.3	-0.3	-0.3
Current Account Balance	EUR bn	**278**	**-149**	**147**	**209**	**219**	74	-36	35	75	55	-6	85	75
	% of GDP	**2.3**	**-1.1**	**1.1**	**1.4**	**1.5**	2.1	-1.0	1.0	2.1	1.5	-0.2	2.4	2.0
Industrial production	% qoq						-0.3	-1.0	0.2	0.5	0.4	0.5	0.7	0.7
	% yoy	**8.8**	**2.1**	**-0.9**	**1.5**	**2.6**	0.1	-1.1	-2.1	-0.6	0.1	1.6	2.1	2.3
Unemployment rate[3]	%	**7.7**	**6.8**	**6.7**	**7.0**	**6.9**	6.6	6.6	6.7	6.7	7.0	7.0	7.0	6.9
CPI (harmonised) [4]	% qoq						0.4	1.6	0.6	0.9	0.4	1.1	-0.1	0.3
	% yoy	**2.6**	**8.4**	**5.7**	**2.7**	**1.5**	8.0	6.2	5.0	3.6	3.6	3.1	2.4	1.8
CPI (core) [4]	% qoq						0.6	2.4	0.5	0.6	0.1	1.5	-0.1	0.3
	% yoy	**1.5**	**3.9**	**5.0**	**2.6**	**1.8**	5.5	5.4	5.1	4.2	3.7	2.8	2.2	1.8
General govt balance	% of GDP	**-5.3**	**-3.6**	**-3.9**	**-3.0**	**-2.6**								
General govt debt	% of GDP	**95.5**	**91.6**	**90.0**	**89.7**	**88.3**								
Refinancing rate	%	**0.00**	**2.50**	**4.50**	**3.75**	**2.75**	3.50	4.00	4.50	4.50	4.50	4.25	4.00	3.75

Source: BofA Global Research, Notes: 1 Contribution to GDP growth 2 Excluding construction, sa, quarterly averages 3 Period averages 4 Period averages, quarterly change

BofA GLOBAL RESEARCH

Exhibit 21: UK economic forecasts
Low growth, entrenched inflation

		2022	2023	2024	2025	1Q23	2Q23	3Q23	4Q23	1Q24	2Q24	3Q24	4Q24	1Q25	2Q25	3Q25	4Q25
GDP	% qoq					0.1	0.2	0.4	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3
	% qoq ann.					0.6	0.8	1.6	0.0	0.0	0.0	0.4	0.4	0.4	0.8	0.8	1.2
	% yoy	**4.1**	**0.6**	**0.3**	**0.6**	0.2	0.4	0.9	0.8	0.6	0.4	0.1	0.2	0.3	0.5	0.6	0.8
Private Consumption	% qoq					0.0	0.6	0.4	0.0	-0.1	-0.1	-0.1	0.0	0.2	0.2	0.2	0.2
	% yoy	**5.6**	**0.7**	**0.1**	**0.4**	0.3	0.5	1.2	0.9	0.8	0.2	-0.3	-0.3	0.0	0.3	0.6	0.8
Government Consumption	% qoq					1.7	1.2	0.9	0.4	0.1	0.3	0.3	0.3	0.3	0.5	0.5	0.5
	% yoy	**1.8**	**1.4**	**2.1**	**1.5**	-2.2	2.6	2.8	2.7	4.6	1.7	1.0	0.9	1.2	1.4	1.7	1.8
Investment	% qoq					2.4	0.0	-1.2	0.1	0.0	-0.2	-0.2	0.0	0.1	0.2	0.3	0.4
	% yoy	**8.6**	**2.0**	**-0.8**	**0.4**	1.5	3.8	1.4	1.3	-1.1	-1.3	-0.2	-0.4	-0.2	0.2	0.6	1.0
Final Domestic Demand[1]	% qoq					0.1	1.0	0.2	0.1	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.3
	% yoy	**5.4**	**1.1**	**0.3**	**0.7**	0.0	1.5	1.5	1.3	1.2	0.2	0.0	-0.1	0.2	0.5	0.8	1.1
Net exports[1]	% qoq					-1.0	-1.1	-0.1	-0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0
	% yoy	**-1.2**	**0.2**	**-0.3**	**0.0**	4.1	1.7	-2.6	-2.2	-1.2	-0.1	0.1	0.1	0.1	0.0	-0.1	-0.2
Stockbuilding[1]	% qoq					1.1	0.3	0.3	-0.1	0.1	0.0	0.1	0.0	-0.1	0.0	0.0	0.0
	% yoy	**-0.1**	**-0.8**	**0.3**	**-0.1**	-3.8	-2.9	1.9	1.6	0.6	0.3	0.1	0.1	0.0	0.3	-0.2	-0.1
Current Account Balance	% of GDP	**-3.8**	**-3.5**	**-3.8**	**-3.7**	-2.3	-3.8	-3.9	-3.9	-3.9	-3.8	-3.7	-3.7	-3.7	-3.7	-3.8	-3.8
Manufacturing output	% qoq					0.7	1.6	1.5	0.0	0.1	0.3	0.5	0.6	0.6	0.6	0.6	0.6
	% yoy	**-3.7**	**1.8**	**1.9**	**-3.7**	-1.7	0.8	4.3	3.8	3.2	1.9	0.9	1.5	2.0	2.3	2.4	2.4
Unemployment rate [2]	%	**3.7**	**4.1**	**4.6**	**4.8**	3.9	4.2	4.2	4.3	4.4	4.6	4.7	4.8	4.8	4.8	4.8	4.7
RPI Inflation[2]	% yoy	**11.6**	**9.8**	**4.3**	**3.4**	13.6	11.1	9.0	6.0	5.2	4.1	4.2	3.9	3.8	3.4	3.3	3.3
CPI Inflation (harmonised)[2]	% yoy	**9.1**	**7.4**	**3.2**	**2.3**	10.2	8.4	6.7	4.7	4.1	2.8	3.1	2.8	2.6	2.2	2.3	2.3
CPI (core)[2]	% yoy	**5.9**	**6.4**	**4.2**	**2.8**	6.1	6.9	6.5	6.0	5.5	4.2	3.8	3.3	3.1	2.7	2.7	2.7
General govt balance [5]	% of GDP	**-5.6**	**-4.7**	**-3.2**	**-2.8**												
General govt debt [3,5]	% of GDP	**96.2**	**97.0**	**98.5**	**98.7**												
General govt debt	% of GDP	**101.0**	**100.1**	**100.8**	**101.8**												
Bank Rate [4]	%	**3.50**	**5.25**	**5.25**	**4.25**	4.25	5.00	5.25	5.25	5.25	5.25	5.25	5.25	5.00	4.75	4.50	4.25

Source: BofA Global Research. Notes: 1 Contribution to GDP growth 2 Period averages 3 Excludes Nationalised banks, and thus is not on Maastricht basis 4 End period, 5 Fiscal years

BofA GLOBAL RESEARCH

Exhibit 22: Euro area GDP and CPI forecasts
Euro area member states profiles

	GDP						HICP					
	2020	2021	2022.0	2023F	2024F	2025F	2020	2021	2022	2023	2024	2025
Euro area	-6.3	5.6	3.4	0.5	0.5	1.3	0.3	2.6	8.4	5.7	2.7	1.5
Austria	-6.5	4.7	4.9	0.1	0.4	1.3	1.4	2.8	8.6	7.6	3.6	2.4
Belgium	-5.4	6.3	3.2	0.9	0.6	1.2	0.4	3.2	10.3	2.8	3.4	1.9
Finland	-2.4	3.2	1.6	0.3	0.5	1.0	0.4	2.1	7.2	4.5	1.7	1.5
France	-7.7	6.4	2.5	0.9	0.8	1.3	0.5	2.1	5.9	5.9	2.9	1.6
Germany	-4.2	3.1	1.9	-0.4	0.3	1.3	0.4	3.2	8.6	6.5	3.4	2.0
Greece	-8.7	8.1	5.9	2.1	1.0	1.7	-1.3	0.6	9.3	4.2	1.9	1.7
Ireland	5.8	14.8	7.1	1.3	2.4	2.0	1.1	1.2	5.1	5.4	2.2	1.6
Italy	-9.0	7.0	3.8	0.7	0.4	1.2	-0.1	1.9	8.7	6.6	2.4	1.4
Netherlands	-3.9	6.2	4.4	0.3	0.3	1.6	1.1	2.8	11.6	4.9	3.3	1.6
Portugal	-8.3	5.5	6.7	2.2	1.1	1.5	-0.1	0.9	8.1	5.8	2.7	1.3
Spain	-11.3	5.5	5.5	2.1	1.1	1.5	-0.3	3.0	8.3	3.7	2.6	1.2

Source: Eurostat, BofA Global Research

BofA GLOBAL RESEARCH

Calendar for the week ahead

Exhibit 23: European Economic calendar
Key data for the next week

	GMT	Country	Data/Event	For	BofAe	Cons.†	Previous	Comments
Monday, 2 Oct								
✪✪	07:00	UK	Nationwide House PX (mom)	Sep	-0.3%	--	-0.8%	
✪✪	07:00	UK	Nationwide House Px (nsa, yoy)	Sep	-5.5%	--	-5.3%	
✪✪✪	08:15	Spain	Manufacturing PMI	Sep	47.0	--	46.5	
✪✪✪	08:45	Italy	Manufacturing PMI	Sep	46.5	--	45.4	
✪✪✪	08:50	France	Manufacturing PMI (F)	Sep	43.6	--	43.6	
✪✪✪	08:55	Germany	Manufacturing PMI (F)	Sep	39.8	--	39.8	
✪✪✪	09:00	Italy	Unemployment Rate	Aug	7.7%	--	7.6%	
✪✪✪	09:00	Euro area	Manufacturing PMI (F)	Sep	43.4	--	43.4	
✪✪✪	09:30	UK	Manufacturing PMI (F)	Sep	44.2	--	44.2	
✪✪✪	10:00	Euro area	Unemployment Rate	Aug	6.5%	--	6.4%	
Tuesday, 3 Oct								
✪✪	00:01	UK	BRC Shop Price Index (yoy)	Sep	n.a.	--	6.9%	
Wednesday, 4 Oct								
✪✪✪	08:15	Spain	Composite PMI	Sep	49.1	--	48.6	
✪✪✪	08:15	Spain	Services PMI	Sep	49.5	--	49.3	
✪✪✪	08:45	Italy	Composite PMI	Sep	49.0	--	48.2	
✪✪✪	08:45	Italy	Services PMI	Sep	50.1	--	49.8	
✪✪✪	08:50	France	Services PMI (F)	Sep	43.9	--	43.9	
✪✪✪	08:50	France	Composite PMI (F)	Sep	43.5	--	43.5	
✪✪✪	08:55	Germany	Services PMI (F)	Sep	49.8	--	49.8	
✪✪✪	08:55	Germany	Composite PMI (F)	Sep	46.2	--	46.2	
✪✪✪	09:00	Euro area	Services PMI (F)	Sep	48.4	--	48.4	
✪✪✪	09:00	Euro area	Composite PMI (F)	Sep	47.1	--	47.1	
✪✪✪	09:30	UK	Official Reserves Changes	Sep	n.a.	--	-1.5bn	
✪✪✪	09:30	UK	Services PMI (F)	Sep	47.2	--	47.2	
✪✪✪	09:30	UK	Composite PMI (F)	Sep	46.8	--	46.8	
✪✪✪	10:00	Euro area	Retail Sales (mom)	Aug	0.3%	--	-0.2%	
✪✪✪	10:00	Euro area	Retail Sales (yoy)	Aug	n.a.	--	-1.0%	
✪✪✪	10:00	Euro area	PPI (mom)	Aug	n.a.	--	-0.5%	
✪✪✪	10:00	Euro area	PPI (yoy)	Aug	n.a.	--	-7.6%	
Thursday, 5 Oct								
✪✪✪	07:45	France	Industrial Production (mom)	Aug	0.3%	--	0.8%	
✪✪✪	07:45	France	Industrial Production (yoy)	Aug	n.a.	--	2.7%	
✪✪✪	08:00	Spain	Industrial Output (nsa, yoy)	Aug	n.a.	--	-1.8%	
✪✪✪	08:00	Spain	Industrial Output (sa, yoy)	Aug	0.4%	--	-1.8%	
✪✪✪	08:00	Spain	Industrial Production (mom)	Aug	n.a.	--	0.2%	
✪✪✪	09:30	UK	Construction PMI	Sep	50.0	--	50.8	
Friday, 6 Oct								
✪✪✪	07:00	Germany	Factory Orders (mom)	Aug	1.2%	--	-11.7%	
✪✪✪	07:00	Germany	Factory Orders (wda, yoy)	Aug	n.a.	--	-10.5%	
✪✪✪	09:00	Italy	Retail Sales (mom)	Aug	-0.2%	--	0.4%	
✪✪✪	09:00	Italy	Retail Sales (yoy)	Aug	n.a.	--	2.7%	

Source: BofA Global Research, Bloomberg, Reuters, Central banks. Notes: †Bloomberg consensus; µ = level of importance; A = advanced; F = final; P = preliminary; sa = seasonally adjusted; nsa = not seasonally adjusted; wda = working-day adjusted; n.a. = not available; mom = month-on-month; qoq = quarter-on-quarter; yoy = year-on-year. *Refers to previous period, not preliminary release. BofA GLOBAL RESEARCH

Exhibit 24: Common acronyms/abbreviations used in our reports

This list is subject to change

Acronym/Abbreviation	Definition	Acronym/Abbreviation	Definition
1H	First Half	IT	Italy
2H	Second Half	Jan	January
1Q	First Quarter	Jul	July
2Q	Second Quarter	Jun	June
3Q	Third Quarter	lhs	left-hand side
4Q	Fourth Quarter	m	month
ann	annualized	MA	Moving Average
APP	Asset Purchase Programme	Mar	March
Apr	April	Eonia	Euro overnight indexed average
AS	Austria	mom	month-on-month
Aug	August	Mon	Monday
BdF	Banque de France (Bank of France)	MPC	Monetary Policy Committee
BE	Belgium	MWh	Megawatt-hour
BEA	Bureau of Economic Analysis	NGEU	NextGenerationEU
BLS	Bank Lending Survey	NE	Netherlands
BoE	Bank of England	Nov	November
BofA	Bank of America	NADEF	Nota di Aggiornamento al Documento di Economia e Finanza
BoI	Banca d'Italia (Bank of Italy)	NSA	Non-seasonally Adjusted
BoJ	Bank of Japan	OAT	Obligations assimilables du Trésor
BoS	Banco de España (Bank of Spain)	OBR	Office for Budget Responsibility
bp	basis point	Oct	October
BTP	Buoni Poliennali del Tesoro	OECD	Organisation for Economic Co-operation and Development
Buba	Bundesbank	ONS	Office for National Statistics
c	circa	p	preliminary/flash print
CA	Current Account	PBoC	People's Bank of China
CPI	Consumer Price Index	PEPP	Pandemic Emergency Purchase Programme
CSPP	Corporate Sector Purchase Programme	PMI	Purchasing Managers' Index
d	day	PSPP	Public Sector Purchase Programme
GE	Germany	PT	Portugal
Dec	December	QE	Quantitative Easing
DS	Debt sustainability	qoq	quarter-on-quarter
EA	Euro area	QT	Quantitative Tightening
EC	European Commission	RBA	Reserve Bank of Australia
ECB	European Central Bank	RBNZ	Reserve Bank of New Zealand
ECJ	European Court of Justice	rhs	right-hand side
EFSF	European Financial Stability Facility	RPI	Retail Price Index
EGB	European Government Bond	RRF	Recovery and Resilience Facility
EIB	European Investment Bank	SA	Seasonally Adjusted
EMOT	Economic Mood Tracker	SAFE	Survey on the access to finance of enterprises
EP	European Parliament	Sat	Saturday
SP	Spain	Sep	September
ESI	Economic Sentiment Indicator	SMA	Survey of Monetary Analysts
ESM	European Stability Mechanism	SNB	Swiss National Bank
EU	European Union	SPF	Survey of Professional Forecasters
f	final print	Sun	Sunday
Feb	February	SURE	Support to mitigate Unemployment Risks in an Emergency
Fed	Federal Reserve	S&P	Standard & Poor's
FR	France	Thu	Thursday
Fri	Friday	TLTRO	Targeted Longer-term Refinancing Operations
GC	General collateral	TPI	Transmission Protection Instrument
GDP	Gross Domestic Product	TTF	Title Transfer Facility
GNI	Gross National Income	Tue	Tuesday
GR	Greece	UK	United Kingdom
HICP	Harmonised Index of Consumer Prices	US	United States
HMT	His Majesty's Treasury	WDA	Work-day Adjusted
IMF	International Monetary Fund	Wed	Wednesday

Source: BofA Global Research

BofA GLOBAL RESEARCH

Disclosures

Important Disclosures

Due to the nature of strategic analysis, the issuers or securities recommended or discussed in this report are not continuously followed. Accordingly, investors must regard this report as providing stand-alone analysis and should not expect continuing analysis or additional reports relating to such issuers and/or securities.
BofA Global Research personnel (including the analyst(s) responsible for this report) receive compensation based upon, among other factors, the overall profitability of Bank of America Corporation, including profits derived from investment banking. The analyst(s) responsible for this report may also receive compensation based upon, among other factors, the overall profitability of the Bank's sales and trading businesses relating to the class of securities or financial instruments for which such analyst is responsible.

Other Important Disclosures

Prices are indicative and for information purposes only. Except as otherwise stated in the report, for any recommendation in relation to an equity security, the price referenced is the publicly traded price of the security as of close of business on the day prior to the date of the report or, if the report is published during intraday trading, the price referenced is indicative of the traded price as of the date and time of the report and in relation to a debt security (including equity preferred and CDS), prices are indicative as of the date and time of the report and are from various sources including BofA Securities trading desks.
The date and time of completion of the production of any recommendation in this report shall be the date and time of dissemination of this report as recorded in the report timestamp.

Recipients who are not institutional investors or market professionals should seek the advice of their independent financial advisor before considering information in this report in connection with any investment decision, or for a necessary explanation of its contents.
Officers of BofAS or one or more of its affiliates (other than research analysts) may have a financial interest in securities of the issuer(s) or in related investments.
Individuals identified as economists do not function as research analysts under U.S. law and reports prepared by them are not research reports under applicable U.S. rules and regulations.
Macroeconomic analysis is considered investment research for purposes of distribution in the U.K. under the rules of the Financial Conduct Authority.
Refer to BofA Global Research policies relating to conflicts of interest.
"BofA Securities" includes BofA Securities, Inc. ("BofAS") and its affiliates. Investors should contact their BofA Securities representative or Merrill Global Wealth Management financial advisor if they have questions concerning this report or concerning the appropriateness of any investment idea described herein for such investor. "BofA Securities" is a global brand for BofA Global Research.
Information relating to Non-US affiliates of BofA Securities and Distribution of Affiliate Research Reports:
BofAS and/or Merrill Lynch, Pierce, Fenner & Smith Incorporated ("MLPF&S") may in the future distribute, information of the following non-US affiliates in the US (short name: legal name, regulator): Merrill Lynch (South Africa): Merrill Lynch South Africa (Pty) Ltd., regulated by The Financial Service Board; MLI (UK): Merrill Lynch International, regulated by the Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA); BofASE (France): BofA Securities Europe SA is authorized by the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers (AMF). BofA Securities Europe SA ("BofASE") with registered address at 51, rue La Boétie, 75008 Paris is registered under no. 842 602 690 RCS Paris. In accordance with the provisions of French Code Monétaire et Financier (Monetary and Financial Code), BofASE is an établissement de crédit et d'investissement (credit and investment institution) that is authorised and supervised by the European Central Bank and the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers. BofASE's share capital can be found at www.bofaml.com/BofASEdisclaimer; BofA Europe (Milan): Bank of America Europe Designated Activity Company, Milan Branch, regulated by the Bank of Italy, the European Central Bank (ECB) and the Central Bank of Ireland (CBI); BofA Europe (Frankfurt): Bank of America Europe Designated Activity Company, Frankfurt Branch regulated by BaFin, the ECB and the CBI; BofA Europe (Madrid): Bank of America Europe Designated Activity Company, Sucursal en España, regulated by the Bank of Spain, the ECB and the CBI; Merrill Lynch (Australia): Merrill Lynch Equities (Australia) Limited, regulated by the Australian Securities and Investments Commission; Merrill Lynch (Hong Kong): Merrill Lynch (Asia Pacific) Limited, regulated by the Hong Kong Securities and Futures Commission (HKSFC); Merrill Lynch (Singapore): Merrill Lynch (Singapore) Pte Ltd, regulated by the Monetary Authority of Singapore (MAS); Merrill Lynch (Canada): Merrill Lynch Canada Inc, regulated by the Investment Industry Regulatory Organization of Canada; Merrill Lynch (Mexico): Merrill Lynch Mexico, SA de CV, Casa de Bolsa, regulated by the Comisión Nacional Bancaria y de Valores; Merrill Lynch (Argentina): Merrill Lynch Argentina SA, regulated by Comisión Nacional de Valores; BofAS Japan: BofA Securities Japan Co., Ltd., regulated by the Financial Services Agency; Merrill Lynch (Seoul): Merrill Lynch International, LLC Seoul Branch, regulated by the Financial Supervisory Service; Merrill Lynch (Taiwan): Merrill Lynch Securities (Taiwan) Ltd., regulated by the Securities and Futures Bureau; BofAS India: BofA Securities India Limited, regulated by the Securities and Exchange Board of India (SEBI); Merrill Lynch (Israel): Merrill Lynch Israel Limited, regulated by Israel Securities Authority; Merrill Lynch (DIFC): Merrill Lynch International (DIFC Branch), regulated by the Dubai Financial Services Authority (DFSA); Merrill Lynch (Brazil): Merrill Lynch S.A. Corretora de Títulos e Valores Mobiliários, regulated by Comissão de Valores Mobiliários; Merrill Lynch KSA Company: Merrill Lynch Kingdom of Saudi Arabia Company, regulated by the Capital Market Authority.
This information: has been approved for publication and is distributed in the United Kingdom (UK) to professional clients and eligible counterparties (as each is defined in the rules of the FCA and the PRA) by MLI (UK), which is authorized by the PRA and regulated by the FCA and the PRA - details about the extent of our regulation by the FCA and PRA are available from us on request; has been approved for publication and is distributed in the European Economic Area (EEA) by BofASE (France), which is authorized by the ACPR and regulated by the ACPR and the AMF; has been considered and distributed in Japan by BofAS Japan, a registered securities dealer under the Financial Instruments and Exchange Act in Japan, or its permitted affiliates; is issued and distributed in Hong Kong by Merrill Lynch (Hong Kong) which is regulated by HKSFC; is issued and distributed in Taiwan by Merrill Lynch (Taiwan); is issued and distributed in India by BofAS India; and is issued and distributed in Singapore to institutional investors and/or accredited investors (each as defined under the Financial Advisers Regulations) by Merrill Lynch (Singapore) (Company Registration No 198602883D). Merrill Lynch (Singapore) is regulated by MAS. Merrill Lynch Equities (Australia) Limited (ABN 65 006 276 795), AFS License 235132 (MLEA) distributes this information in Australia only to 'Wholesale' clients as defined by s.761G of the Corporations Act 2001. With the exception of Bank of America N.A., Australia Branch, neither MLEA nor any of its affiliates involved in preparing this information is an Authorised Deposit-Taking Institution under the Banking Act 1959 nor regulated by the Australian Prudential Regulation Authority. No approval is required for publication or distribution of this information in Brazil and its local distribution is by Merrill Lynch (Brazil) in accordance with applicable regulations. Merrill Lynch (DIFC) is authorized and regulated by the DFSA. Information prepared and issued by Merrill Lynch (DIFC) is done so in accordance with the requirements of the DFSA conduct of business rules. BofA Europe (Frankfurt) distributes this information in Germany and is regulated by BaFin, the ECB and the CBI. BofA Securities entities, including BofA Europe and BofASE (France), may outsource/delegate the marketing and/or provision of certain research services or aspects of research services to other branches or members of the BofA Securities group. You may be contacted by a different BofA Securities entity acting for and on behalf of your service provider where permitted by applicable law. This does not change your service provider. Please refer to the Electronic Communications Disclaimers for further information.
This information has been prepared and issued by BofAS and/or one or more of its non-US affiliates. The author(s) of this information may not be licensed to carry on regulated activities in your jurisdiction and, if not licensed, do not hold themselves out as being able to do so. BofAS and/or MLPF&S is the distributor of this information in the US and accepts full responsibility for information distributed to BofAS and/or MLPF&S clients in the US by its non-US affiliates. Any US person receiving this information and wishing to effect any transaction in any security discussed herein should do so through BofAS and/or MLPF&S and not such foreign affiliates. Hong Kong recipients of this information should contact Merrill Lynch (Asia Pacific) Limited in respect of any matters relating to dealing in securities or provision of specific advice on securities or any other matters arising from, or in connection with, this information. Singapore recipients of this information should contact Merrill Lynch (Singapore) Pte Ltd in respect of any matters arising from, or in connection with, this information. For clients that are not accredited investors, expert investors or institutional investors Merrill Lynch (Singapore) Pte Ltd accepts full responsibility for the contents of this information distributed to such clients in Singapore.
General Investment Related Disclosures:
Taiwan Readers: Neither the information nor any opinion expressed herein constitutes an offer or a solicitation of an offer to transact in any securities or other financial instrument. No part of this report may be used or reproduced or quoted in any manner whatsoever in Taiwan by the press or any other person without the express written consent of BofA Securities.
This document provides general information only, and has been prepared for, and is intended for general distribution to, BofA Securities clients. Neither the information nor any opinion

expressed constitutes an offer or an invitation to make an offer, to buy or sell any securities or other financial instrument or any derivative related to such securities or instruments (e.g., options, futures, warrants, and contracts for differences). This document is not intended to provide personal investment advice and it does not take into account the specific investment objectives, financial situation and the particular needs of, and is not directed to, any specific person(s). This document and its content do not constitute, and should not be considered to constitute, investment advice for purposes of ERISA, the US tax code, the Investment Advisers Act or otherwise. Investors should seek financial advice regarding the appropriateness of investing in financial instruments and implementing investment strategies discussed or recommended in this document and should understand that statements regarding future prospects may not be realized. Any decision to purchase or subscribe for securities in any offering must be based solely on existing public information on such security or the information in the prospectus or other offering document issued in connection with such offering, and not on this document.

Securities and other financial instruments referred to herein, or recommended, offered or sold by BofA Securities, are not insured by the Federal Deposit Insurance Corporation and are not deposits or other obligations of any insured depository institution (including, Bank of America, N.A.). Investments in general and, derivatives, in particular, involve numerous risks, including, among others, market risk, counterparty default risk and liquidity risk. No security, financial instrument or derivative is suitable for all investors. Digital assets are extremely speculative, volatile and are largely unregulated. In some cases, securities and other financial instruments may be difficult to value or sell and reliable information about the value or risks related to the security or financial instrument may be difficult to obtain. Investors should note that income from such securities and other financial instruments, if any, may fluctuate and that price or value of such securities and instruments may rise or fall and, in some cases, investors may lose their entire principal investment. Past performance is not necessarily a guide to future performance. Levels and basis for taxation may change.

BofA Securities is aware that the implementation of the ideas expressed in this report may depend upon an investor's ability to "short" securities or other financial instruments and that such action may be limited by regulations prohibiting or restricting "shortselling" in many jurisdictions. Investors are urged to seek advice regarding the applicability of such regulations prior to executing any short idea contained in this report.

Foreign currency rates of exchange may adversely affect the value, price or income of any security or financial instrument mentioned in this report. Investors in such securities and instruments effectively assume currency risk.

BofAS or one of its affiliates is a regular issuer of traded financial instruments linked to securities that may have been recommended in this report. BofAS or one of its affiliates may, at any time, hold a trading position (long or short) in the securities and financial instruments discussed in this report.

BofA Securities, through business units other than BofA Global Research, may have issued and may in the future issue trading ideas or recommendations that are inconsistent with, and reach different conclusions from, the information presented herein. Such ideas or recommendations may reflect different time frames, assumptions, views and analytical methods of the persons who prepared them, and BofA Securities is under no obligation to ensure that such other trading ideas or recommendations are brought to the attention of any recipient of this information.

In the event that the recipient received this information pursuant to a contract between the recipient and BofAS for the provision of research services for a separate fee, and in connection therewith BofAS may be deemed to be acting as an investment adviser, such status relates, if at all, solely to the person with whom BofAS has contracted directly and does not extend beyond the delivery of this report (unless otherwise agreed specifically in writing by BofAS). If such recipient uses the services of BofAS in connection with the sale or purchase of a security referred to herein, BofAS may act as principal for its own account or as agent for another person. BofAS is and continues to act solely as a broker-dealer in connection with the execution of any transactions, including transactions in any securities referred to herein.

Copyright and General Information:

Materials prepared by BofA Global Research personnel are based on public information. Facts and views presented in this material have not been reviewed by, and may not reflect information known to, professionals in other business areas of BofA Securities, including investment banking personnel. BofA Securities has established information barriers between BofA Global Research and certain business groups. As a result, BofA Securities does not disclose certain client relationships with, or compensation received from, such issuers. To the extent this material discusses any legal proceeding or issues, it has not been prepared as nor is it intended to express any legal conclusion, opinion or advice. Investors should consult their own legal advisers as to issues of law relating to the subject matter of this material. BofA Global Research personnel's knowledge of legal proceedings in which any BofA Securities entity and/or its directors, officers and employees may be plaintiffs, defendants, co-defendants or co-plaintiffs with or involving issuers mentioned in this material is based on public information. Facts and views presented in this material that relate to any such proceedings have not been reviewed by, discussed with, and may not reflect information known to, professionals in other business areas of BofA Securities in connection with the legal proceedings or matters relevant to such proceedings.

This information has been prepared independently of any issuer of securities mentioned herein and not in connection with any proposed offering of securities or as agent of any issuer of any securities. None of BofAS any of its affiliates or their research analysts has any authority whatsoever to make any representation or warranty on behalf of the issuer(s). BofA Global Research policy prohibits research personnel from disclosing a recommendation, investment rating, or investment thesis for review by an issuer prior to the publication of a research report containing such rating, recommendation or investment thesis.

Any information relating to the tax status of financial instruments discussed herein is not intended to provide tax advice or to be used by anyone to provide tax advice. Investors are urged to seek tax advice based on their particular circumstances from an independent tax professional.

The information herein (other than disclosure information relating to BofA Securities and its affiliates) was obtained from various sources and we do not guarantee its accuracy. This information may contain links to third-party websites. BofA Securities is not responsible for the content of any third-party website or any linked content contained in a third-party website. Content contained on such third-party websites is not part of this information and is not incorporated by reference. The inclusion of a link does not imply any endorsement by or any affiliation with BofA Securities. Access to any third-party website is at your own risk, and you should always review the terms and privacy policies at third-party websites before submitting any personal information to them. BofA Securities is not responsible for such terms and privacy policies and expressly disclaims any liability for them.

All opinions, projections and estimates constitute the judgment of the author as of the date of publication and are subject to change without notice. Prices also are subject to change without notice. BofA Securities is under no obligation to update this information and BofA Securities ability to publish information on the subject issuer(s) in the future is subject to applicable quiet periods. You should therefore assume that BofA Securities will not update any fact, circumstance or opinion contained herein.

Certain outstanding reports or investment opinions relating to securities, financial instruments and/or issuers may no longer be current. Always refer to the most recent research report relating to an issuer prior to making an investment decision.

In some cases, an issuer may be classified as Restricted or may be Under Review or Extended Review. In each case, investors should consider any investment opinion relating to such issuer (or its security and/or financial instruments) to be suspended or withdrawn and should not rely on the analyses and investment opinion(s) pertaining to such issuer (or its securities and/or financial instruments) nor should the analyses or opinion(s) be considered a solicitation of any kind. Sales persons and financial advisors affiliated with BofAS or any of its affiliates may not solicit purchases of securities or financial instruments that are Restricted or Under Review and may only solicit securities under Extended Review in accordance with firm policies.

Neither BofA Securities nor any officer or employee of BofA Securities accepts any liability whatsoever for any direct, indirect or consequential damages or losses arising from any use of this information.

Research Analysts

Ruben Segura-Cayuela
Europe Economist
BofA Europe (Madrid)
+34 91 514 3053
ruben.segura-cayuela@bofa.com

Evelyn Herrmann
Europe Economist
BofASE (France)
+33 1 8770 0292
evelyn.herrmann@bofa.com

Robert Wood
UK Economist
MLI (UK)
+44 20 7996 7415
robert.d.wood@bofa.com

Chiara Angeloni
Europe Economist
BofA Europe (Milan)
+39 02 6553 0365
chiara.angeloni@bofa.com

Alessandro Infelise Zhou
Europe Economist
BofASE (France)
+33 1 8770 0058
alessandro.infelise_zhou@bofa.com