

UK Rates Viewpoint

BoE balance sheet primer: 2025 edition

Primer

Key takeaways

- The purpose of this inaugural 2025 edition of the primer is to provide a framework for understanding the BoE balance sheet...
- ... by reviewing the role of reserves, zooming in on balance sheet assets, liabilities & their developments since the GFC,...
- ... focusing on the Bank's transition to repo-led system & exploring how balance sheet changes interact with front-end rates.

BoE's transition to repo-led framework is under way...

The BoE is transitioning towards a demand-led approach to supplying reserves through its repo-led framework. To ensure monetary policy transmission and financial stability, the Bank has introduced new regular lending facilities and modified existing ones.

... changing the Bank's balance sheet composition...

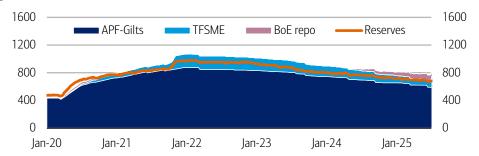
Currently, the BoE is reducing the APF Gilt stock by allowing Gilts to mature and via a programme of Gilt sales. The TFSME is continuing to wind down, with most drawings maturing in 2025. As reserves become scarcer, UK banks' use of the BoE's repo is growing, to around £100bn combined drawings under the ILTR and STR as of late.

... and having an impact on front-end rates in the UK

Since 1Q22, money markets have shifted from an environment of more abundant reserves and relatively scarce collateral to more limited reserves and relatively plentiful collateral. GBP repo rates now tend to experience brief (but expected) fluctuations due to intermediation constraints. The Sonia yield has drifted higher towards the Bank Rate.

Exhibit 1: BoE reserves and their backing assets*

STR & ILTR reserve provision dampening the QT & TFSME repayment drain



Source: Bloomberg, BofA Global Research. * Differential between the sum of facilities shown and reserves represents sterling Banknotes and other BoE sterling facilities.

BofA GLOBAL RESEARCH

28 July 2025

Rates Research United Kingdom

Table of Contents

Overview	2
The role of the central bank balance sheet	2
BoE balance sheet since the GFC	3
Balance sheet assets	5
APF Gilt portfolio	5
Lending operations	6
Collateral	8
The 'demand-driven' system	8
BoE transition in practice	9
BoE balance sheet liabilities	10
Reserves – the main BoE balance sheet liability	10
The BoE reserve remuneration debate	10
Interaction with money market rates	12
Repo	12
Sonia	14
Appendix I: Abbreviations	15
Appendix II: lending operation parameters	16
Research Analysts	20

European Rates Research

MLI (UK)

Agne Stengeryte, CFA Rates Strategist

MLI (UK) agne.stengeryte@bofa.com

Mark Capleton

Rates Strategist MLI (UK) mark.capleton@bofa.com

See Team Page for List of Analysts

Trading ideas and investment strategies discussed herein may give rise to significant risk and are not suitable for all investors. Investors should have experience in relevant markets and the financial resources to absorb any losses arising from applying these ideas or strategies.

BofA Securities does and seeks to do business with issuers covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision. Refer to important disclosures on page 17 to 19.

Timestamp: 28 July 2025 05:29AM EDT

Overview

Note that references to the BoE's balance sheet in this primer refer to the consolidated balance sheet of Issue and Banking Departments. BoE balance sheet is presented as if the assets purchased by the APF appear directly on the Bank's balance sheet.

The role of the central bank balance sheet

Ultimate means of settlement for transactions in an economy

The core function of a central bank's balance sheet is to provide the ultimate means of settlement for transactions in an economy¹. This is primarily achieved through its liabilities, which consist of banknotes and commercial bank reserves. Reserves are deposits that commercial banks hold at the central bank for three main reasons²³:

- 1. banks are required to hold High Quality Liquid Assets (HQLA), such as central bank reserves, to meet payment obligations at all times;
- banks may hold additional reserves to cover unexpected demand or outflows, particularly in periods of stress; and
- banks may hold surplus reserves or lend them to others if doing so is financially attractive.

The Monetary Policy Committee's role in BoE balance sheet control

On a day-to-day basis, the management of the BoE balance sheet – including the design and implementation of balance sheet operations – lies with the Bank's Executive, the Governor and Deputy Governors⁴. Several Executive-level committees support coordination on policy, risk, and operational matters that affect multiple areas of the Bank, including the Bank's balance sheet. These committees are attended by Deputy Governors and Executive Directors across the Bank to ensure effective information-sharing and cross-Bank coordination.

The Monetary Policy Committee's (MPC) interest in the balance sheet arises from its responsibility for maintaining price stability and supporting the economic policy of His Majesty's Government, including its objectives for growth and employment. To do this, the MPC needs sufficient control over monetary conditions, including the amount of money in the economy and market interest rates. The balance sheet provides key instruments to influence these conditions.

The MPC primarily implements its monetary policy stance by setting Bank Rate, typically eight times per year, which determines the interest paid on reserves held by eligible financial institutions. As the key reference rate for all GBP interest rates, Bank Rate influences wholesale money market borrowing rates and, in turn, the rates on loans and deposits for households and businesses. Interest rates charged on the BoE's lending facilities are linked to Bank Rate to reinforce the MPC's monetary policy stance⁵.

Currently, the MPC uses Bank Rate as its primary tool for adjusting its monetary policy stance. Changes in Quantitative Tightening (QT) parameters occur less frequently and are not designed to fine-tune monetary policy⁶. The Committee typically votes on the target for the reduction in the Gilts stock held for monetary policy purposes over the



¹ Understanding the central bank balance sheet by Garreth Rule. Centre for Central Banking Studies, accessed on 27 July 2025.

² A feature not a bug – speech by Megan Greene. Published on 24 June 2025

³ 'Less is more' or 'Less is a bore'? Re-calibrating the role of central bank reserves - speech by Andrew Hauser, published on 3 November 2023.

⁴ Governance of the Bank of England's balance sheet: principles of engagement. Bank of England, accessed on 27 July 2025.

⁵ BoE Market Operations Guide: Our objectives. Bank of England, accessed on 27 July 2025.

⁶ Monetary Policy Report - August 2024. Bank of England, published on 1 August 2024.

next 12-month period in September, having reviewed the process of QT as part of August's Monetary Policy Report (MPR).

BoE balance sheet since the GFC

Five periods of BoE balance sheet expansion

In times of low and stable inflation there should be limited volatility in the balance sheet. Its growth should depend on demand for Bank liabilities amid growth in the volume and value of transactions in the economy. Since the Global Financial Crisis (GFC), there have been five periods when the BoE's balance sheet increased in response to a shock or a challenge (Exhibit 1 and Exhibit 2).

Exhibit 2: BoE balance sheet as a share of nominal GDP, %

Actions taken by the BoE in response to Covid expanded the balance sheet to historically elevated levels



Source: BoE, ONS, BofA Global Research. Time series constructed using multiple datasets.

BofA GLOBAL RESEARCH

Most of this expansion was driven by Quantitative Easing (QE), financed by the creation of central bank reserves. Longer-term funding programmes – when funded through reserves rather than asset swaps – accounted for most of the remainder:

- 2007-08 GFC: the BoE's balance sheet more than doubled to c. £200bn at the end of 2010. The increase was primarily driven by the first round of QE £200bn buying of Gilts from March 2009. The Special Liquidity Facility (SLF) was introduced earlier, in April 2008, allowing participants to swap high-quality mortgage-backed and other assets for UK T-bills for up to three years. The SLF (and Funding for Lending Scheme (FLS), outlined below) was funded through asset swaps rather than reserves, so it did not impact the Bank's balance sheet. But both the SLF and FLS are nonetheless important for context.
- 2011-12 Eurozone sovereign debt crisis: the BoE's balance sheet increased by c. 50% to c. £300bn by mid-2012 and by c. 13% to c. £340bn by end-2012. The second and third rounds of QE were £125bn from October 2011 and £50bn from July 2012. The FLS was launched alongside QE3, allowing participants to borrow UK T-bills in exchange for a broad range of eligible collateral for up to four years. As in the case of SLF, the FLS did not impa ct the BoE's balance sheet, but is important for context.
- 2016 Brexit referendum: the BoE's balance sheet increased by c. 35% to nearly £600bn by late 2017. The BoE MPC's fourth round of QE in August 2016 amounted to £70bn, comprising £60bn Gilt and £10bn UK corporate bond buying. The Term Funding Scheme (TFS), launched alongside QE4, provided funding to participants at an interest rate close to Bank Rate for up to four years and was financed by the issuance of reserves.
- 2020-22 Covid pandemic: £450bn of QE5 (of which £10bn UK corporate bonds) began in March 2020. The Term Funding Scheme with additional incentives for SMEs (TFSME) offered four-year funding at, or very close to, Bank Rate, for up to four years initially. The Covid Corporate Financing Facility (CCFF) provided funding to businesses by purchasing commercial paper of up to a one-year maturity, funded by the issuance of additional central bank reserves (set up in a separate legal entity from the Bank and the APF). More familiar liquidity facilities were also engaged: the



CTRF was launched alongside increased usage of the regular ILTR operation. The CTRF offered unlimited liquidity against a broad range of collateral at a spread of 15bp over Bank Rate.

• 2022 Liability Driven Investment (LDI) crisis: the Bank carried out temporary long-dated Gilt buying from September 2022. The MPC's then annual target of an £80bn stock reduction was unaffected and kept unchanged.

BoE balance sheet unwind

In February 2022, the MPC voted to begin unwinding the APF by ceasing the reinvestment of maturing Gilts and corporate bonds⁷. In September, the MPC voted to begin active sales⁸, continuing to vote on the annual target for APF unwind since then.

- To ensure short-term market interest rates remain close to Bank Rate as the level
 of BoE reserves reduces, the Bank launched a new short-term open market
 operation (OMO), the Short-Term Repo (STR). The STR commenced in October
 2022, sitting alongside the Indexed Long-Term Repo (ILTR) as an OMO under the
 Bank's Sterling Monetary Framework (SMF).
- In 2025, the Bank also opened the Contingent NBFI Repo Facility (CNRF) for applications, a contingent facility aimed at addressing Gilt market dysfunction arising from system-wide shocks that temporarily increase non-bank financial institutions' (NBFIs) demand for liquidity when that demand is outside the reach of existing SMF liquidity facilities. The Bank may activate the CTRF in response to actual or prospective market-wide stress of an exceptional nature.
- The TFSME is continuing to wind down, with most drawings maturing in 2025.

Current balance sheet tools at the BoE's disposal to achieve monetary policy and financial stability objectives are shown in Exhibit 3. Parameters currently applicable for the BoE's regular, on-demand and contingent lending operations are shown in Appendix II. For a global comparison, see Global policy implementation guide, 9 July.

Exhibit 3: BoE balance sheet tools at a glance

Current tools at the BoE's disposal to achieve monetary policy and financial stability objectives

Deposit facilities
Reserves account
Operational Standing Facility
Alternative Liquidity Facility (ALF)
(non-interest based)
Lending facilities
Regular operations
Short-Term Repo (STR)
Indexed Long-Term Repo (ILTR)
US Dollar Repo
On-demand operations
Operational Standing Facility (OSF)
Discount Window Facility (DWF)
Contingent operations
Contingent Term Repo Facility (CTRF)
Contingent NBFI Repo Facility (CNRF)
Term funding
Term Funding Scheme with additional incentives for SMEs (TFSME)
(closed to new drawings)
Gilt holdings
Asset Purchase Facility (APF)
Source: Bank of England



Monetary Policy Summary and minutes of the MPC meeting. BoE, 3 February 2022.
 Monetary Policy Summary and minutes of the MPC meeting, BoE, 22 September 2022.

Balance sheet assets

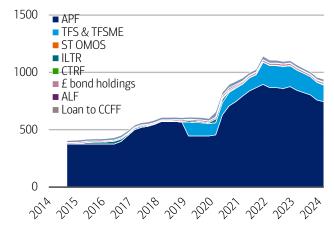
APF Gilt portfolio, TFSME term funding and regular lending ops in focus

There have been five periods since the GFC when the BoE's balance sheet increased in response to a shock or challenge. Most of this expansion was driven by QE, financed by the creation of central bank reserves. Longer-term funding programmes – the TFSME most recently – accounted for most of the remainder (Exhibit 4 and Exhibit 5).

As of 1Q24, Gilts held at the APF accounted for 80% of consolidated balance sheet assets, with TFS and TFSME accounting for 15%. For comparison, in 1Q14, Gilts held at the APF accounted for 93% of consolidated balance sheet assets.

Exhibit 4: Bank of England balance sheet assets, £bn

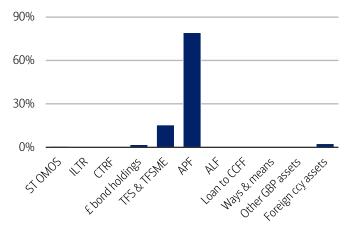
APF Gilt holdings – the main asset on BoE's consolidated balance sheet ...



Source: Bank of England, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 5: Bank of England balance sheet assets, % ... accounting for 80% of total liabilities as of 1Q24



Source: Bank of England, BofA Global Research

BofA GLOBAL RESEARCH

APF Gilt portfolio

Currently, the BoE is reducing the APF Gilt stock as instructed by the MPC via (1) allowing Gilts to mature over the relevant 12-month period and (2) a programme of Gilt sales over the same period. The MPC's QT process is guided by three principles⁹:

- the MPC intends to use Bank Rate as its active policy tool when adjusting its monetary policy stance. The parameters of the QT strategy are amended less frequently than decisions on Bank Rate and are not calibrated with a view to fine-tuning the monetary policy stance;
- 2. sales are conducted so as not to disrupt the functioning of financial markets, and only in appropriate market conditions; and
- 3. to help achieve that, sales are conducted in a relatively gradual and predictable manner over a period of time.

The mechanics of APF asset sales

The Bank calculates its QT amounts in terms of the original purchase cost of each Gilt that matures or is sold. APF Gilts with a residual maturity of greater than three years are made available for sale. Gilts to be re-opened by the DMO, including via a tender, are not made available for sale by the BoE during the two-week period (exactly 336 hours) before and after the re-opening. Gilt sales are distributed equally across maturity "buckets" defined as "short" for Gilts with a residual maturity of 3-7 years, "medium" when between 7 and 20 years, and "long" when over 20 years.

⁹ Monetary Policy Report - August 2024. Published on 1 August 2024.



Given the profile of maturing Gilts over the "QT year" is known, an approximate pace of Gilt sales over that period can be inferred from the MPC's total APF Gilt stock reduction amount. However, the precise amount of Gilts to be sold each quarter is confirmed in June, September, December and March, at least one week ahead of the end of each calendar quarter. At those points, the Bank sets out the precise timing and size of Gilt sale operations in the quarter ahead, having accounted for prevailing market prices, the realised distribution of sales across the APF's holdings in previous quarters, and the available operating dates in the quarter ahead.

The mechanics of the APF's unique indemnity from HMT

The BoE's APF is fully indemnified by HMT. This means that any lifetime financial losses made are borne by HMT rather than the Bank, and likewise any gains over the life of the APF are owed to HMT. Unrealised gains/losses are not settled; they appear on the APF's balance sheet as a theoretical amount due to/from HMT under the indemnity.

Since November 2012, cash transfers between the APF and HMT have been conducted on a quarterly basis so that the APF does not accrue a large cash position at any time, instead transferring to (or receiving transfers from) HMT 10 . The APF's activities generated positive net cash flows from the APF to HMT up until 2022, peaking at a cumulative £123.9bn in July 2022. The first quarterly transfer from HMT to the APF occurred in October 2022 and such payments have been made on a quarterly basis since, totalling £90.2bn up until the latest reported transfer in April 2025.

Lending operations

Term funding: TFSME

At times of low interest rates, banks and building societies can struggle to cut deposit rates, which limits how much they can reduce their lending rates. The BoE has offered various term funding schemes in the past to ease these constraints, improving monetary policy transmission in doing so.

The TFMSE lending scheme was launched in March 2020, with most of the drawings having a 4-year term. However, eligible TFSME participants were able to extend the term of their drawings to align with the Treasury's Bounce Back Loans Scheme (BBLS). The first phase of the extension from 4 to 6 years was completed in 2022. The second phase of the extension from 6 to 10 years in 2024 impacted a small number of drawings, with all other drawings due to mature as per their contractual 4-year term.

Regular operations: STR and ILTR

The STR, launched in 2022, was designed to ensure market interest rate control amid fluctuations in liquidity demand as Bank reserves decline. But the BoE expects that STR alone cannot meet the system's overall reserve needs and envisages ILTR playing an increasingly important role in supplying reserves during the transition¹¹. Both STR and ILTR are intended to be used routinely by firms for sterling liquidity management, a shift reflected in the PRA's published statements confirming their expanded roles.

On 11 June 2025, the BoE confirmed recalibrated parameters of the Indexed Long-Term Repo (ILTR) operation, with changes taking effect from 17 June¹²:

• The total amount of reserves available per auction will rise from £25bn to £35bn (i.e., the maximum stock of reserves available will rise to £840bn).



¹⁰ Transfers between the APF and HMT can be tracked in the monthly Public Sector Finances report from the ONS. Transfers from the APF to HMT are recorded as series MT6A in Table PSA9B. Transfers from HMT to the APF appear as series MF7A on Table PSA6F.

¹¹ Learning by doing – speech by Victoria Saporta, published on 11 June 2025.

¹² Recalibration of the Indexed Long-Term Repo Operation – Market Notice 11 June 2025.

- The quantity of reserves available at minimum clearing spreads will rise from £5bn to £8bn per auction (i.e., the maximum stock of reserves available at minimum spreads will rise to £192bn).
- The upward-sloping supply curve for quantities above what is available at minimum spreads will be gentler than previously: it is expected that reserves in excess of the "quota" available at minimum spreads will be provided at around 20bp-40bp above Bank Rate when drawing against Level C collateral and more cheaply when drawn against more liquid collateral.
- The minimum bid amount will fall from £5mn to £1mn.

In November 2025, following the substantial repayment of drawings under the TFSME, the Bank also intends to increase ILTR's minimum spread over Bank Rate on bids against Level A collateral from 0bp to 3bp, with the effective date to be confirmed ahead of time in a Market Notice due to be published in November.

The introduction of this 3bp spread above Bank Rate "is intended to balance incentives for participants between the STR and ILTR facilities against Level A collateral by more closely aligning the effective costs of the facilities given the longer tenor of the ILTR".

The accompanying feedback statement provided some more colour on the flexibility considered for the BoE's lending facilities¹³. According to the paper, several respondents requested greater flexibility in these facilities in the form of increased operation frequency, a greater variety of tenors, or the ability to repay ILTR drawings earlier. The latter two are particularly important, we think:

On available tenors in the STR and ILTR (BofA own highlights):

"The Bank is **open to considering moving the ILTR to a single, shorter tenor – such as a three-month term** – if there is a compelling case that this would materially improve the usability of the facility, and that this benefit would exceed the cost of the increased operational burden for the Bank and participating firms of rolling over drawings more frequently (...). The Bank welcomes continued engagement on this issue."

On early repayment (BofA own highlights):

"Offering full flexibility to repay drawings at any time would undermine the integrity of the ILTR as a competitive auction – since participants would no longer have a strong incentive to bid in line with their true demand for liquidity. But the Bank will continue to review the case for offering alternative forms of flexibility such as strictly limited forms of early repayment. An important consideration here will be whether any additional flexibility could advantage some ILTR participants at the expense of others, for example if greater flexibility was particularly valued by a subset of participants. The Bank welcomes continued engagement on this issue."

¹³ Transitioning to a repo-led operating framework – discussion paper feedback statement, published on 11 June 2025.



UK Rates Viewpoint | 28 July 2025

Collateral

Eligible firms must pledge collateral when borrowing from the BoE market operations. Individual securities will be eligible as either Level A, Level B or Level C, with the list of eligible securities updated monthly¹⁴. Lending facility collateral needs are shown in Exhibit 6. A summary table of haircuts for Bank lending operations can be found on the BoE's website: as an example, haircuts for level A fixed coupon sovereign and central bank debt of the UK issued in either GBP, EUR, USD or CAD range from 0.5pp for <1y maturity to 10pp for >30y maturity.

Exhibit 6: Collateral needed for each operation or facility

BoE lends through market operations against collateral delivered by firms

Collateral	Level A	Level B	Level C
Intraday Liquidity	Υ	N	N
ÖSF	Υ	Ν	Ν
US Dollar Repo	Υ	Υ	Υ
ILTR ·	Y	Υ	Y
STR	Υ	N	N
DWF	Υ	Υ	Υ
CTRF	Υ	Υ	Υ
TFSME	Y	Υ	Y
CNRF	Gilts only	N	N

Source: Bank of England

BofA GLOBAL RESEARCH

The 'demand-driven' system

Recall the main motives for reserve demand, highlighted in the overview section: transactions (to meet predictable payment needs), precautionary (to guard against unexpected outflows) and relative return (to weigh returns against other liquid assets).

"Supply-driven" or abundant-reserves framework

In a "supply-driven" or abundant-reserves framework the central bank supplies more reserves than banks collectively need at the policy rate, so transactional and precautionary needs are already met, and marginal demand depends on relative returns. If reserves offer a lower return than other assets, banks will try to economise by reducing their reserve holdings (lending them out or investing), pushing short-term interest rates down. To prevent this and maintain control of market rates, the central bank pays interest on reserve balances at the policy rate, ensuring banks have no incentive to lend reserves below that rate.

Preferred Minimum Range of Reserves

The BoE began reducing its balance sheet in early 2022 through passive unwinding (no longer reinvesting the proceeds of maturing Gilts), later augmenting the pace of reduction with active Gilt sales. As reserves in the system decline, there will come a point when the supply of reserves reaches a level equal to the aggregate demand for transactional and precautionary purposes, referred to as the Preferred Minimum Range of Reserves (PMRR). The Bank has a range of estimates for PMRR; in June, its survey estimate was £385-540bn¹⁵

"Demand-driven" reserves framework

Moving below the PMRR results in a "reserves scarcity" regime, where banks would aim to borrow reserves in the market, driving short-term interest rates upwards and hindering the BoE's monetary policy transmission mechanism. To prevent this, the BoE's STR should cap the upward pressure on money market rates, since banks can always obtain cheaper funding directly from this weekly operation. Alongside STR, the ILTR is expected to play a growing role in reserve provision. Together, these form a core part of the BoE's strategy to transition to a demand-driven reserves system.

1111

¹⁴ See: https://www.bankofengland.co.uk/markets/eligible-collateral

¹⁵ Learning by doing – speech by Victoria Saporta, published on 11 June 2025.

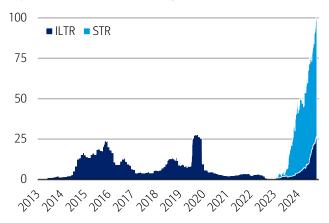
BoE transition in practice

BoE repo offsetting about half QT/TFSME reserve drain lately

As reserves have become scarcer, UK banks' usage of the BoE's repo has grown to around £100bn combined drawings under the ILTR and STR. The pickup in ILTR usage has been more significant recently, with most borrowings against Level A collateral and to a lesser extent level C collateral (Exhibit 7 and Exhibit 8).

Exhibit 7: STR and ILTR outstanding, £bn $\,$

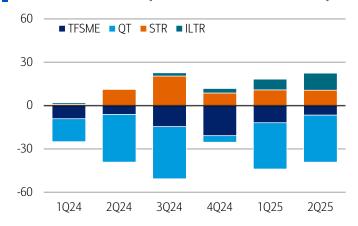
Very close to £100bn total outstanding



Source: Bloomberg, BofA Global Research.

BofA GLOBAL RESEARCH

Exhibit 8: BoE reserve backing assets' quarterly changes, £bn STR & ILTR balance increased by c. 50% of QT & TFSME balance fall lately*



Source: BoE, Bloomberg, BofA Global Research. *Lately = in the last three quarters on average.

BofA GLOBAL RESEARCH

According to BoE Overground¹⁶, the number of counterparties using these facilities has increased, with more than 20 weekly STR participants and close to 60 participants with ILTR drawings outstanding as of mid-2025. Both are being used by a range of SMF firm types. In addition to an absolute uptick in ILTR demand, Bank Overground highlighted that some firms are moving increasing proportions of their STR drawings into the ILTR.

According to BoE Overground, factors behind the rise in facility usage were:

- ongoing normalisation;
- diversification benefits; and
- increased participation from both large and small firms.

Additionally, some facility users highlighted:

- value in STR's full-allotment;
- lower operational overhead of the ILTR (utilising level A collateral); and
- use of the ILTR to refinance TFSME repayments (utilising Level C collateral).

¹⁶ How is the transition to a repo-led framework progressing? Bank Overground, 6 June 2025,



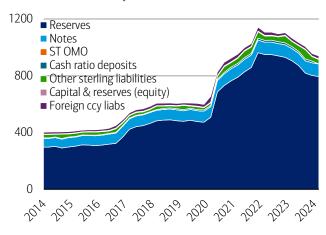
BoE balance sheet liabilities

Reserves - the main BoE balance sheet liability

The main sterling liabilities on the BoE balance sheet are reserves balances and notes in circulation (Exhibit 9 and Exhibit 10). As of 1Q24, reserves accounted for 85% of consolidated balance sheet liabilities, with notes in circulation accounting for 9%. For comparison, in 1Q14, reserves accounted for 74% of consolidated balance sheet liabilities, with notes in circulation accounting for 15%.

Exhibit 9: Bank of England balance sheet liabilities, £bn

Reserves – the main liability on BoE's consolidated balance sheet ...

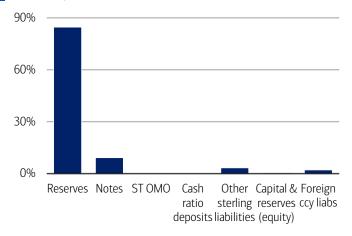


Source: Bank of England, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 10: Bank of England balance sheet liabilities, %

... accounting for 85% of total liabilities as of 1Q24



Source: Bank of England, BofA Global Research

BofA GLOBAL RESEARCH

The BoE reserve remuneration debate

What's the problem with the way BoE pays interest on its reserves?

Under the current framework, the rate of interest paid on the central bank reserve account balances held by UK banks with the BoE is Bank Rate. Three factors will determine the future amount of BoE interest payments to UK banks:

- (1) the future path of Bank Rate;
- (2) the future pace of BoE balance sheet asset unwind; and
- (3) the future BoE balance sheet asset mix.

The debate over changing the way the BoE pays interest on reserves came to the fore in 2024 because of the increasingly large interest payments made to commercial banks on the reserves they hold at the BoE, as a result of both:

- (1) BoE reserve balances peaking at close to £1trn in 2022; and
- (2) the rate hiking cycle from late 2021, taking Bank Rate to 5.25%.

It is a hot button issue because the APF now generates negative net cash flows – a combination of the negative carry on the Gilt portfolio (coupons received less reserve remuneration costs) and the crystallised losses on Gilts that mature or are sold. Transfers from HMT to the APF since October 2022 now total £90.2bn (up to and including the latest transfer in April 2025), representing another fiscal cost attached to the BoE's current operational framework.

What could be the minimum reserve requirement in the UK?

With no minimum reserve requirement in the UK at present, drawing comparisons from experiences abroad is the natural first step when thinking about how such a measure might be introduced. The OECD's technical note on the use of reserve requirements, the



motivation for using them, and practical considerationsⁱ prepared in October 2018 identified four possible design choices:

- (1) By maturity;
- (2) By type of liability;
- (3) By currency denomination of liabilities; and
- (4) By residency of the counterpart.

The ECB's minimum reserve requirement calculation framework is a good starting point for assessing the potential BoE framework, in our view. Currently, the ECB applies a 1% reserve coefficient for overnight deposits, deposits with agreed maturity or period of notice up to 2y, debt securities issued with maturity up to 2y and money market paper. A 0% coefficient is applied for deposits with agreed maturity or period of notice over 2y, repos, and debt securities issued with maturity over 2y. The minimum reserve requirement is calculated using the month-end data from two months before the maintenance period starts.

A 1% reserve coefficient might be viewed as a lower end of the possible range of outcomes. The ECB's coefficient stood at 2% until the reserve maintenance period that started on 18 Jan 2012 (Exhibit 11), although total system reserves were obviously a lot lower then. And ECB sources suggested the possibility of moving mandatory reserves to 3-4% back in 2023, with the Governor of the Austrian Central Bank, Holzmann, going further on 27 September 2023 in talking about potentially moving to a 5-10% requirement. Higher mandatory reserves are used in a number of emerging markets. Commonly, such use is associated with capital controls, a fixed exchange rate or managing demand on behalf of the government, although cost mitigation will almost certainly be a consideration.

Exhibit 11: ECB reserve coefficients

The ECB's coefficient stood at 2% until the reserve maintenance period that started on 18 Jan 2012

As from the maintenance period starting on	O/n deposits, deposits up to 2y, debt securities up to 2y, money market paper	Deposits over 2y, repos, debt securities issued with maturity over 2y
1 Jan 1999	2%	0%
18 Jan 2012	1%	0%

 $\textbf{Source:} \ \textbf{ECB.} \ For standardized \ deductions \ and \ lump-sum \ allowances, see \ https://www.ecb.europa.eu/mopo/implement/mr/html/calc.en.html.$

BofA GLOBAL RESEARCH

Further steps are possible: setting a higher minimum reserve coefficient aside, the Bank could choose some amount of reserves <u>above</u> the minimum reserve requirement that would also be renumerated at 0% (i.e., a maximum stock of reserves to be remunerated). For example, the BoE could choose to pay 0% interest on X times the minimum reserve amount where the "X" could be calibrated to offset the current loss arising from the difference between income on APF holdings and payments on reserves.

What would be the monetary policy implications?

Changes to the BoE's reserves remuneration can have complex monetary policy implications, possibly leading to the tightening of credit availability and/or lower deposit rates, thereby impacting the transmission of monetary policy. It could also increase demand for short-dated UK government bonds, lowering yields and reducing the effective passthrough of monetary policy. Andrew Bailey defended the current remuneration system by saying that "central bank reserves are remunerated at the official policy rate and as such they provide an essential anchor for the implementation of monetary policy". Moreover, imposing minimum reserve requirements in the UK can have implementation challenges, something that was highlighted when the BoE was considering negative rates and tiering. Changes to the BoE's deposit remuneration for fiscal reasons could also raise questions about the mandate of the central bank and increase debates about fiscal dominance.



Interaction with money market rates

Please note that this section assumes some prior knowledge of GBP money market rates. We intend to publish a separate GBP money markets-focused primer in the future.

Money market rates play a key role in how monetary policy is put into action

The GBP money market is where banks and other institutions engage in short-term wholesale borrowing and lending to manage their cash balances. Meanwhile, the BoE uses repo-like facilities to supply reserves and ensure monetary policy transmission.

Two key types of front-end GBP market rates are:

- the Sterling Overnight Index Average (Sonia), a benchmark interest rate that reflects the average rate at which banks and other financial institutions borrow money in the sterling unsecured market; and
- repo, an interest rate that reflects secured borrowing where one party lends cash to another against Gilt collateral.

Activity in both is concentrated in sub-1-month maturity trades, both in terms of number and value of transactions (Exhibit 12 and Exhibit 13).

Exhibit 12: Average daily number of transactions during 1Q25 Transactions overwhelmingly in short maturities...

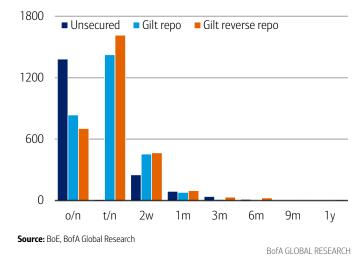
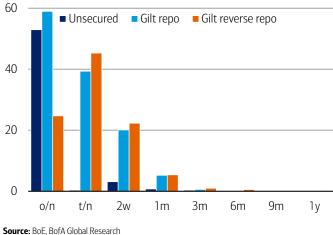


Exhibit 13: Average daily turnover of transactions during 1Q25, £bn ... with daily value of turnover also concentrated in short maturities



BofA GLOBAL RESEARCH

Repo

Navigating the shifting cash-collateral balance

Since 1Q22, money markets have shifted from an environment of more abundant reserves and relatively scarce collateral to more limited reserves and relatively plentiful collateral: the stock of aggregate BoE reserves has fallen by around £300bn (a result of BoE QT and TFSME maturities and repayments), while the free-float of Gilts, calculated as total nominal amount outstanding (excluding inflation uplift for index-linked Gilts) less BoE and DMO holdings, has risen by around £500bn (a result of BoE QT and higher net supply from the DMO) – Exhibit 14.

The uptake of BoE's STR and ILTR facilities has risen to nearly £100bn, in line with the BoE's transition towards a demand-driven approach to supplying reserves through its repo-led framework, although the usage remains a small proportion of the repo activity – Exhibit 15. Increasing funding demand by banks as liquidity declines is one reason behind the cheapening of Gilt repo relative to Bank Rate over this period¹⁷.



¹⁷ How has the changing cash-collateral backdrop affected repo markets?. Bank Overground, published on 5 December 2024.

Increasing funding demand from banks as liquidity declines, banks' balance sheet restrictions around specific reporting dates and the extent of perceived stigma around reliance on central bank funding, together with the persistently high Gilt supply outlook, are some of the upside risks to repo relative to Bank Rate. Positioning is harder to predict, but a long bond stance by leveraged investors who sustain funding demand in repo could also contribute to upward pressures on repo-Sonia rate spreads.

Exhibit 14: BoE reserves and Gilt free float, £bn

An almost £1tn increase in Gilt free-float relative to reserves since early 2022

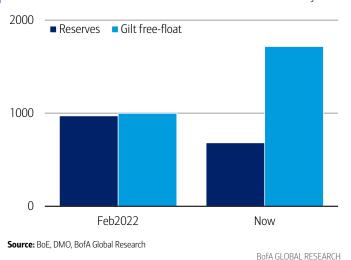
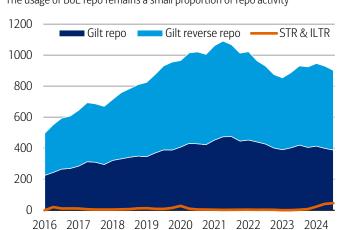


Exhibit 15: Gilt repo and reverse repo vs. BoE repo outstanding*, £bn The usage of BoE repo remains a small proportion of repo activity



Source: BoE, BofA Global Research. * For Gilt repo and reverse repo, average amount outstanding over the quarter shown on the chart; BoE repo = ILTR & STR; latest data point is March 2025.

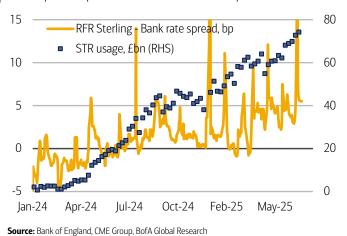
BofA GLOBAL RESEARCH

Temporary repo spikes not indicative of structural cash scarcity

As the reserves transition towards the PMRR continues, the Bank expects friction in the distribution of reserves to lead to pockets of reserve demand, which could result in periods of market rates moving upwards¹⁸. One example is overnight Gilt repo rates spiking temporarily higher relative to Bank Rate at quarter ends – Exhibit 16 – with STR take-up often dropping around the same time. This can be explained by a dealer's ability to 'net' transactions if repo faces a reverse repo (or vice versa) with the same counterparty and maturity, making it less economical to borrow from the STR when bank balance sheets are most constrained.

Exhibit 16: Repo vs. Bank Rate and BoE STR usage

Visible spike in repo relative to Bank Rate around quarter-ends



¹⁸ Let's get ready to repo! - speech by Victoria Saporta, published on 22 July 2024.



Sonia

Sonia flatlining episode was striking but not unexplainable

Sonia flatlining at 5bp below Bank Rate from April to December 2024 was striking but not unexplainable (Exhibit 17). One explanation put forward by a Bank Underground¹⁹ blog post is a degree of stickiness in the journey upwards in deposit rates as banks seek to resist erosion of the margin earned on this cash, for example by placing these deposits on reserve-earning Bank Rate. The flatlining also happened amid healthy volumes in the market (Exhibit 18) and diverse participation, according to the post. Exhibit 20 shows Sonia rates occurring at the percentiles of volume in 2025-to-date.

The steady liquidity drain meant that Sonia would resume its upwards drift at some point as the ongoing reserve reduction resulted in some banks seeking alternative liquidity sources in the Sonia market, and some also adjusting their deposit pricing higher in a more competitive environment. Sonia exceeding Bank rate slightly is a risk if the imbalance between reserve demand and supply is greater than expected.

Exhibit 17: Sonia - Bank Rate spread, bp

Flatlining at 5bp below Bank Rate was unprecedented, but not unexplainable

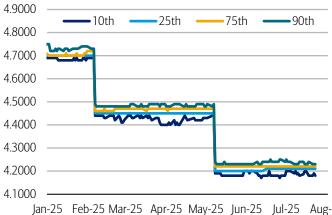


Source: BoE, Bloomberg, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 19: Sonia rate occurring at the percentiles of volume, % Trimmed mean is calculated as the volume-weighted mean rate, based on

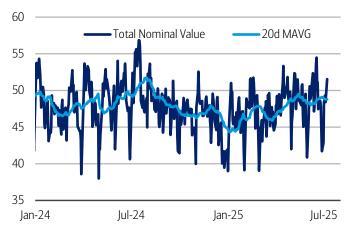
Trimmed mean is calculated as the volume-weighted mean rate, based or the central 50% of the volume-weighted distribution of rates



Source: Bank of England, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 18: Sonia total nominal value, £bn Relatively steady total nominal value



Source: BoE, BofA Global Research



¹⁹ SONIA: steady as she goes. BankUnderground, published on 14 August 2024.

Appendix I: Abbreviations

ALF: Alternative Liquidity Facility

APF: Asset Purchase Facility

BBLS: Bounce Back Loan Scheme

BoE: Bank of England

CCFF: Covid Corporate Financing Facility

CCY: Currency

CNRF: Contingent NBFI Repo Facility

CTRF: Contingent Term Repo Facility

DMO: Debt Management Office

DWF: Discount Window Facility

ECB: European Central Bank

FLS: Funding for Lending Scheme

GFC: Global Financial Crisis

HMT: His Majesty's Treasury

HQLA: High Quality Liquid Assets

ILTR: Indexed Long-Term Repo

LDI: Liability Driven Investment

MPC: Monetary Policy Committee

MPR: Monetary Policy Report

NBFI: Non-banking Financial Institution

OECD: Organisation for Economic Co-operation and Development

OMO: Open Market Operation

O/N: Overnight

ONS: Office for National Statistics

OSF: Operational Standing Facility

PMRR: Preferred Minimum Range of Reserves

QE: Quantitative Easing

QT: Quantitative Tightening

SLF: Special Liquidity Facility

SME: Small and Medium-sized Enterprises

STR: Short-Term Repo

TFSME: Term Funding Scheme with additional incentives for SMEs

TFS: Term Funding Scheme

XCCY: Cross-currency



Appendix II: lending operation parameters

Exhibit 20: Summary of SMF lending facilities

Scheduled, bilateral and contingent BoE lending facilities

	Schedule	ed OMOs	Bilatera	l facilities	Contingent	facilities
Facility	Short-Term Repo (STR)	Indexed Long- Term Repo (ILTR)	Operational Standing Facility (OSF)	Discount Window Facility (DWF)	Contingent Term Repo Facility (CTRF)	Contingent NBFI Repo Facility (CNRF)
Purpose	A source of reserves for payments and precautionary reasons	A source of reserves for payments and precautionary reasons	A tool to manage liquidity demand shocks, such as short- term payment frictions	A bilateral source of highly liquid assets for the purposes of liquidity management	A contingent source of reserves in a scenario of actual or prospective market-wide stress	A contingent source of cash to address episodes of severe Gilt market dysfunction
Туре	Market-wide lending	Market-wide lending	Bilateral deposit and lending	Bilateral lending	up to DWF	Eligible ICPFs
Frequency	Weekly (Thursday)	Weekly (Tuesday)	On-demand daily	On-demand daily	Triggered by the BoE	Triggered by the BoE
Term	Seven days	Six months	One day	Up to 30 days (CCPs up to five days)	Flexible	Flexible short-term (1-2 weeks)
Settlement	T+0	T+2	T+0	T+0	T+1	
Volume	Unlimited	Maximum size of operation subject to demand in the auction	Size at the request of the participant (dependent on collateral value for OSF lending)	Size at the request of the participant (dependent on collateral value)	Unlimited	Fully allocated
Pricing	Bank Rate	Min price against each collateral: Level A: Bank Rate (+3bp from Nov) Level B: Bank Rate +5bp Level C: Bank Rate +15bp The clearing price for each collateral set can rise above these minimum depending on demand.	Deposit: Bank Rate - 25bp Lending: Bank Rate +25bp	Drawings up to 5% of ELs: Level A: Bank Rate +25bp Level B: Bank Rate +50bp Level C: Bank Rate +75bp After this, marginal pricing increases linearly relative to drawing size, up to 15% of ELs. Pricing above that is at the Bank's discretion.	Flexible pricing set by the Bank at activation	Flexible pricing set by the Bank at activation
Collateral	Level A	Level A, B and C	Level A	Level A, B and C	Level A, B and C	A subset of Level A collateral
Asset	Central bank reserves (cash)	Central bank reserves (cash)	Central bank reserves (cash)	Gilts or central bank reserves (cash) at the Bank's discretion	Central bank reserves (cash)	Central bank reserves (cash)

Source: Bank of England, BofA Global Research



Disclosures

Important Disclosures

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.

BofA Securities fixed income analysts regularly interact with sales and trading desk personnel in connection with their research, including to ascertain pricing and liquidity in the fixed income

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.

This report may refer to fixed income securities or other financial instruments that may not be offered or sold in one or more states or jurisdictions, or to certain categories of investors, including retail investors. Readers of this report are advised that any discussion, recommendation or other mention of such instruments is not a solicitation or offer to transact in such instruments. Investors should contact their BofA Securities representative or Merrill Global Wealth Management financial advisor for information relating to such instruments. Rule 144A securities may be offered or sold only to persons in the U.S. who are Qualified Institutional Buyers within the meaning of Rule 144A under the Securities Act of 1933, as amended. SECURITIES OR OTHER FINANCIAL INSTRUMENTS DISCUSSED HEREIN MAY BE RATED BELOW INVESTMENT GRADE AND SHOULD THEREFORE ONLY BE CONSIDERED FOR INCLUSION IN ACCOUNTS OUALIFIED FOR SPECULATIVE INVESTMENT.

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.

The securities or other financial instruments discussed in this report may be traded over-the-counter. Retail sales and/or distribution of this report may be made only in states where these instruments are exempt from registration or have been qualified for sale.

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.

This report, and the securities or other financial instruments discussed herein, may not be eligible for distribution or sale in all countries or to certain categories of investors, including retail investors.

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 Sector Conduct Authority; 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 (Hong Kong): Merr (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): Merrill Lynch (Canada): Merrill Lynch (Mexico): Merrill Ly de Bolsa, regulated by the Comisión Nacional Bancaria y 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 (DIFC): Merrill Lynch (DIFC): Merrill Lynch (Brazil): M 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.

This report may contain a trading idea or recommendation which highlights a specific identified near-term catalyst or event impacting a security, issuer, industry sector or the market generally that presents a transaction opportunity, but does not have any impact on the analyst's particular "Overweight" or "Underweight" rating (which is based on a three month trade horizon). Trading ideas and recommendations may differ directionally from the analyst's rating on a security or issuer because they reflect the impact of a near-term catalyst or event.

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:

Copyright 2025 Bank of America Corporation. All rights reserved. iQdatabase® is a registered service mark of Bank of America Corporation. This information is prepared for the use of BofA Securities clients and may not be redistributed, retransmitted or disclosed, in whole or in part, or in any form or manner, without the express written consent of BofA Securities. This document and its content is provided solely for informational purposes and cannot be used for training or developing artificial intelligence (AI) models or as an input in any Al application (collectively, an AI tool). Any attempt to utilize this document or any of its content in connection with an AI tool without explicit written permission from BofA Global Research is strictly prohibited. BofA Global Research information is distributed simultaneously to internal and client websites and other portals by BofA Securities and is not publicly-available material. Any unauthorized use or disclosure is prohibited. Receipt and review of this information constitutes your agreement not to redistribute, retransmit, or disclose to others the contents, opinions, conclusion, or information contained herein (including any investment recommendations, estimates or price targets) without first obtaining express permission from an authorized officer of BofA Securities. 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. Invest

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 sustainability in this material is limited as discussed herein and is not intended to provide a comprehensive view on any sustainability claim with respect to any issuer or security.

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

Ralf Preusser, CFA Rates Strategist MLI (UK) ralf.preusser@bofa.com

Sphia Salim Rates Strategist MLI (UK) sphia.salim@bofa.com

Mark Capleton Rates Strategist MLI (UK) mark.capleton@bofa.com

Ronald Man

Rates Strategist MLI (UK) ronald.man@bofa.com

Erjon Satko Rates Strategist BofASE (France) erjon.satko@bofa.com

Agne Stengeryte, CFA Rates Strategist MLI (UK) agne.stengeryte@bofa.com

Edvard Davidsson

Rates Strategist MLI (UK) edvard.davidsson@bofa.com

Trading ideas and investment strategies discussed herein may give rise to significant risk and are not suitable for all investors. Investors should have experience in relevant markets and the financial resources to absorb any losses arising from applying these ideas or strategies.

