

Fixed Income Special

Who's selling US Treasuries and why?



Head of US Rates Strategy **Subadra Rajappa** +1 212-278-5241 subadra.rajappa@sgcib.com



Director US Rates Strategy
Shakeeb Hulikatti
+91 80673 14380
shakeeb.hulikatti@sgcib.com



Head of Research & Chief Economist, Asia Pacific **Wei Yao** +852 2166 4983 wei.yao@sgcib.com



Head of FIC & Commodity Research **Dr Mike Haigh**+44 20 7762 4694
michael.haigh@sgcib.com

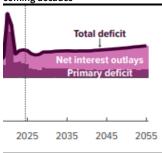
Key points

- The volatility in the United States bond market, the world's largest bond market, has investors searching for answers. We break down the recent price action in bonds and the key catalysts behind the recent sell-off. Unlike in past crises, investors are demanding an uncertainty premium to hold bonds, which is evident in the sharp rise in term premiums and large concessions during recent auctions.
- With \$8.53tn or roughly 30% of the Treasuries outstanding with foreigners, it is easy to focus on retaliatory tariff measure from China or other trading partners as catalysts for the recent rise in yields. While foreign private investors might be lightening up on dollar assets, there is little reason to believe that China or other countries (officials holders) will sell Treasuries to retaliate.
- In this piece, we delve into the foreign holders of Treasuries and China holding of dollar assets in order to gain insights into how the demand dynamics have evolved over the past decade. Including Treasuries, China holds more than \$1.5tn in US securities. As the US-China trade war escalates dramatically under Trump 2.0, it is logical for the PBoC to further quicken the diversification away from dollar assets. However, given the size of the holdings, the process is still more likely to be gradual and orderly rather than adrupt and disruptive.
- The broader move away from dollar assets to alternatives like gold is picking up steam. UK HMRC export data for February 2025 confirmed another significant gold buying month by China, as its longer de-dollarisation trend remains intact.
- **Bottom line**: The decline in foreign demand for US Treasuries is a paradigm shift in the demand dynamic and recent events could accelarate this trend. Over the longer-run foreign demand has helped compress US Treasury term premia and reduced borrowing costs for US taxpayers. A reversal in this trend should lead to higher term premia and therefore higher net interest outlays, a key contributor to deficits projections for the next decade.

1. It's easy to blame the foreigners

The extreme volatility in Treasuries since Liberation Day (2 April), when US President Donald Trump announced broad-based tariffs on all countries, has investors questioning the magnitude of foreigners selling Treasuries, specifically the Chinese official sector as a means of retaliation for the imposition of targeted outsized tariffs on it. While there were potentially foreign sellers of Treasuries based on the price action in the overnight session, it is hard to attribute the sharp rise in yields to foreign officials selling Treasuries – or specifically China for that matter. Treasuries are actively traded overnight with the Asia trading sessions dominated by foreign official accounts and private investors such as asset managers, banks and insurance companies, hedge funds, sovereign wealth funds, and retail investors. The price action seen in bonds and currencies also suggests a potential liquidation of dollar assets and a migration away from US dollars to safe haven currencies like the JPY and CHF over the past week (**Graph 2b**).

Graph 1. Net interest outlays dominate total deficits over the coming decades



Source: CBO

This document contains important disclaimer and disclosure information. Please refer to the back inside cover of this research report.

70

60

50

40

30

20

10

Graph 2a. Recent intraday ranges in Treasuries are in line with prior crises

Covid

■ 10vT

SVB

30vT (in bps)



Graph 2b. The dollar declined sharply as Treasury yields rose



Source: SG Cross Asset Research/Rates, Bloomberg

GFC

Tech bubble

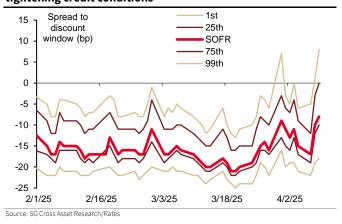
■ 2vT

So what's going on in Treasuries?

As is the case in most periods of market turmoil, there are a confluence of factors driving the price action in bonds. On Friday (11 April) alone, the 10yT yield traded between 4.37% and 4.58%, and the 30yT yield between 4.81% and 4.99%, according to intraday data from Bloomberg. These intraday ranges are comparable to what we saw in past crises (**Graph 2a**) and somewhat troubling as, unlike past crises which are market-driven or black swan events, this volatility is in response to a paradigm shift in US trade policy, exacerbated by the fact that the tariff rates are constantly changing. While the initial reaction on 3 April to the sharp selloff in equities was a flight to quality, with the 10yT yield declining to 3.86%, the safe haven bid quickly evaporated as investors began to worry about Chinese retaliation and the related demand dynamics for Treasuries in the context of rising debt and deficits potentially leading to a higher term premium for Treasury debt.

There are potentially several types of market participants buying and selling Treasuries in this environment. **First**, in a period of high volatility across assets, the most likely sellers were risk parity funds who tend to lessen exposure to both equities and bonds in order to reduce volatility in their portfolio. These are levered strategies and large moves in volatility leading to sizeable unwinds. **Second**, swap spread across the curve

Graph 3. Volume weighted percentiles show pressure on funding markets as banks shore up cash in anticipation of tightening credit conditions



narrowed significantly owing to dislocations in the UST and SOFR IRS curves. SOFR swap spreads reached their tightest ever levels this week as USTs were sold off (**Graph 11**). The violent move in spreads can be attributed to the unwinding of long positions (put on in anticipation of regulatory easing this year) amidst lower liquidity and dealer deleveraging, variable annuity hedgers increasing receiving demand at the long-end of the swaps curve as equities decline, and the sharp rise in Treasury yields and term premia. **Third**, broader deleveraging, balance-sheet constraints and liquidity hoarding likely contributed to some of the pressure in repo markets and the

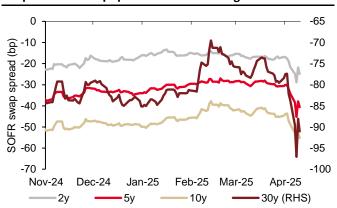


dramatic cheapening of the 20yT in the 10s20s30s fly and the commensurate tightening of the 20y swap spread. In this context, the focus quickly shifted to comments from major bank CEOs about deregulation and potential changes to banking regulations freeing up "hundreds of billions of dollars" to lend to customers, alongside changes to the supplementary leverage ratio (SLR) that could help banks to provide liquidity and intermediate risks in the financial sector.

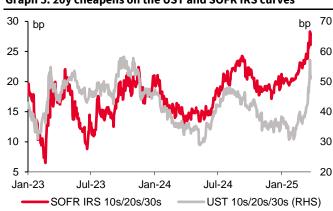
The Fed is ready to intervene if needed

The markets also responded positively to Boston Fed President Susan Collins when she remarked on Friday that the Fed is ready to help stabilise the market if needed. During the COVID-19 crisis in March 2020, the Fed was quick to cut rates and provide extraordinary amounts of liquidity to support market functioning (see here). But this time around, with inflation still above target and tariffs contributing to inflationary pressures, the Fed might have to think carefully before deploying these tools. Collins reassured the markets by saying that the Fed has "various tools" in case of emergencies, but she also acknowledged that "the core interest rates tool" is" probably not the best way to address challenges of liquidity or market functioning".

Graph 4. SOFR swap spreads reach record tight levels



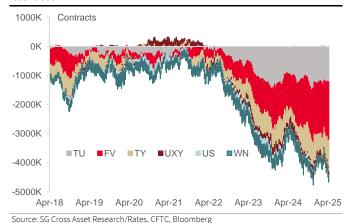
Graph 5. 20y cheapens on the UST and SOFR IRS curves



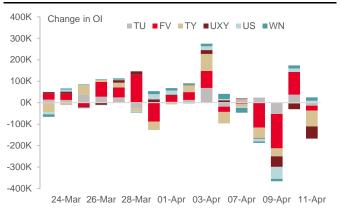
Source: SG Cross Asset Research/Rates, Bloomberg

Fourth, the spotlight was back on the large Treasury futures basis positions held mostly by speculative investors who are long the basis – long cash, short Treasury futures – and which is a lucrative carry strategy. While often considered market-neutral, these trades are typically executed with significant leverage, making them highly sensitive to shifts in repo rates and futures' margin requirements.

Graph 6. Speculators' positioning in Treasury futures remains elevated



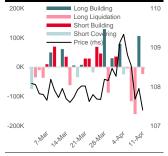
Graph 7. Sharp unwinds in Treasury futures contracts in recent days



Source: SG Cross Asset Research/Rates, Bloomberg

14 April 2025 3

Graph 8. Market positioning in the FV contract shows long unwinds over the past few sessions



Source: SG Cross Asset Research/Rates, Bloomberg

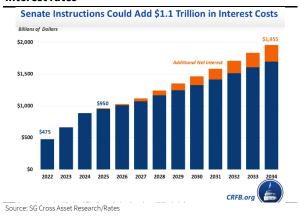
Back in March 2020 the sharp widening of the basis forced large-scale unwinds of levered trade, contributing to gap moves in Treasuries requiring the Fed to intervene. Despite the volatility in recent days however, the markets continue to "function well" – so it is hard to attribute the recent sell-off to the unwinding of basis trades. But the risk remains as the short futures positions of speculators are elevated (**Graph 6**), especially in FV contracts. Recent data shows a sharp decline in open interest which suggests large unwinds of futures positions (**Graph 7**).

In March 2020, a sharp widening in the basis forced large-scale unwinds of the leveraged trades, draining liquidity and contributing to broader market dysfunction. At the time, offshore leveraged funds liquidated over \$220bn in Treasuries over four months, accompanied by a marked drawdown in net short futures positions across the curve. Swift interventions by the Fed helped prevent further deterioration. A 2023 Fed paper (here) highlighted the systemic risks associated with basis trades, cautioning that they remain susceptible to stress during broader market corrections, such as those observed in recent days. In a recent paper entitled Treasury market dysfunction and the role of the central bank, the authors explored ways for the Fed to step in and support an estimated \$1 trillion in Treasury futures basis trades in the event of a crisis.

2. Twin deficits

While the Trump administration and the Department of Government Efficiency (DOGE) are keen to cut spending and lower deficits, it is unclear that they will be able to achieve that objective. An extension of the Tax Cuts and Jobs Act (TCJA) will increase deficits by \$4.5tn. While high tariffs could offset spending, it will need to be high enough and stick around for an extended period to be counted as a reliable source of revenues over the longer term. Revenues raised by way of tariffs could come at the expense of lower

Graph 9. Net interest outlays on federal debt to dominate deficits with rising debt issuance and higher interest rates



tax receipts if consumer behaviours change due to tariffs or if it leads to lower growth and higher unemployment.

From the Committee for a Responsible Federal Budget (CRFB) on April 10, 2025 (see here): The House of Representatives just voted to adopt the Senate-amended Fiscal Year (FY) 2025 concurrent budget resolution, making it a concurrent resolution that unlocks fast-track reconciliation instructions. The budget's reconciliation instructions would allow for legislation to add \$5.8 trillion to deficits through FY 2034 – including a permanent extension of the expiring 2017 tax cuts using the "current policy" gimmick – while requiring only \$4 billion in gross deficit reduction. A package this size would double the growth in debt-to-GDP, and push annual deficits to \$3.4 trillion by 2034.

Graph 8. Foreigners hold 30% of the US Treasury debt

Broker/dealers

ETFs 1%

Insurance cos

Pensions

MEs

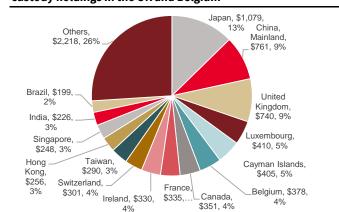
State and

local govts 6% Others

10%

MMFs

Graph 9. Japan and China hold 22% and potentially more via custody holdings in the UK and Belgium



Source: SG Cross Asset Research/Rates

10%

US banks

Foreigners own 30% of US Treasuries while the rest ...

Foreigners

Fed

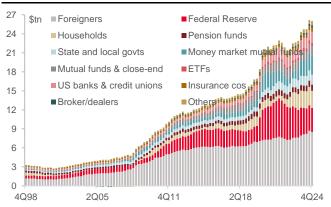
14%

Amid our preoccupation with large trade deficits and the belief that alongside a sense of US exceptionalism comes an insatiable appetite for dollar assets, it is easy to lose sight of the fact that the US continues to heavily rely on foreigners to finance its deficits. Roughly 30% of the \$28.9tn in Treasury debt held by the public is with foreigners, while the remainder is held by the Fed and domestic investors (**Graph 8**). Japan and China are the largest holders of Treasuries, accounting for 22% of foreign holdings – with potentially more via custody holdings in the UK and Belgium.

... is held by the Fed or price-sensitive domestic investors

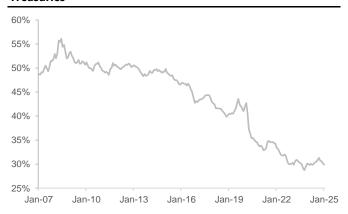
Foreign holdings of Treasuries have steadily increased with the dramatic increase in Treasury debt outstanding (**Graph 10**). But foreign holdings as a percentage of marketable Treasury debt have steadily declined since the Great Financial Crisis or GFC (**Graph 11**). As a result, the US Treasury has increasingly relied on domestic investors to take down the supply. Among domestic investors, MMFs' AUMs have increased significantly since COVID and surpassed \$7tn recently as investors migrate from risky assets to cash due to the volatile market conditions. The household sector, a residual category that includes hedge funds and endowments, now hold 10% of the debt outstanding, mostly by way of Treasury futures basis trades (see **Graph 6**). Other types of domestic investors' (banks, pensions, insurance companies, primary dealers) Treasury holdings have remained relatively stable.

Graph 10. Treasury marketable debt holdings by major investor groups



Source: SG Cross Asset Research/Rates, US Treasury, Bloomberg

Graph 11. Foreign holdings % of marketable outstanding Treasuries



5

 ${\tt Source: SG\ Cross\ Asset\ Research/Rates, US\ Treasury, Bloomberg}$

14 April 2025

Recent TIC data (**Graph 12**) showed foreign investors sold Treasuries for the third straight month in January when net holdings declined by \$13.3bn. Meanwhile, foreign official investors sold \$24.1bn worth of Treasury notes and bonds in January, following significant sales in December 2024, marking the largest two-month selling period since April 2020. Also in January, as Trump assumed office, Canada led the selling with record net sales of \$30.1bn, cutting its holdings to the lowest level since April of last year. Canadian investors also sold a large tranche of other assets in January (**Graph 13**). China's Treasury holdings peaked in 2013 and have been declining steadily since. With rising JGB yields, Japanese investors are more domestically focused. Their Treasury holdings have declined by roughly \$300bn since late-2021. And with President Trump once again raising the pressure on all US trading partners, this may not bode well for their willingness to hold Treasuries.

Graph 12. Foreigners have been selling US Treasury debt in recent months

Jan-25 2025 2024 2023 Japan 4.0 4.0 -47.0 15.9 China, Mainland -3.2 -3.2 -101.8 -68.2 United Kingdom 36.8 36.8 34.8 141.1 Luxembourg -2.2 -2.2 28.2 13.9 Cayman Islands 77.1 2.5 2.5 72.1 -7.8 Belgium -6.5 -6.5 -38.4 Canada -30.1 -30.1 41.5 62.7 France -8.4 -8.4 87.3 87.7 Ireland -8.6 9.6 -1.6 -1.6 1.0 25.5 Switzerland 1.0 -2.6 Others -5.6 343.5 304.9 -5.6**Grand Total** -13.3 -13.3 472.8 598.6

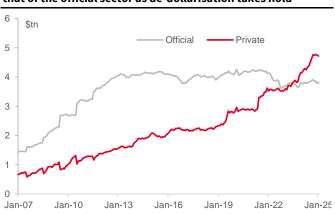
Graph 13. Canada sold a record amount of US Treasuries in January of this year



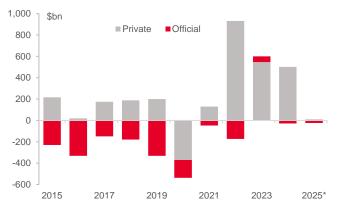
Source: SG Cross Asset Research/Rates

Foreign official holdings of Treasuries remained mostly stable from 2013 to 2020 but this has gradually declined since then, as large foreign official holders of Treasuries such as China have gradually shifted their FX reserves away from dollars to gold. With higher bond yields, foreign private investor holdings are now higher than that of the official sector (**Graphs 14 & 15**).

Graph 14. Foreign private investor Treasury holdings surpass that of the official sector as de-dollarisation takes hold



Graph 15. Post-COVID Treasury buying is almost entirely by private investors as China shifts its FX reserves to gold



Source: SG Cross Asset Research/Rates, Bloomberg



3. The China story

Jan-21

Jan-25

With the latest tariffs, and geopolitical tensions flaring, concerns about foreigners selling US Treasuries are once again front and centre – particularly in regards to China, the second-largest foreign holder of US government debt. China and Japan, the top two foreign holders, have been reducing their Treasury exposures (**Graph 16**). China has been the largest net seller of Treasuries for the past two years, bringing its holdings down in December 2024 to their lowest level since February 2009. This sustained drop, particularly against the largely steady level of China's total FX reserves during the same time, reflects a broader strategic pivot by Chinese authorities towards reserve diversification (**Graph 17**).

Graph 16. China's holdings of US Treasuries dropped in December 2024 to their lowest level since 2009

1.4 1.3 1.2 1.1 1.0 1.0 0.9 0.8 0.7 Japan — China

Jan-17

Graph 17. China's FX reserves continue to diversify away from US Treasuries



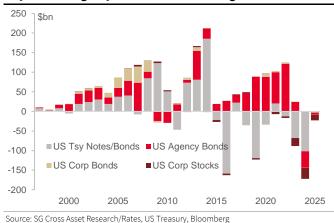
Source: SG Cross Asset Research/Rates, US Treasury, Bloomberg

Jan-13

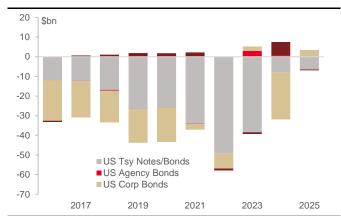
Jan-09

Given the current geopolitical backdrop, a sharp reversal in this trend appears unlikely. If anything, selling may even have accelerated, which we will know for certain in the coming weeks and months. During the escalation of US-China trade tensions in 2019, China offloaded about \$119bn in US Treasuries (**Graph 18**) during the year, with Belgium – commonly viewed as a proxy for China's custodial holdings – selling another \$27bn (**Graph 19**). However, China's \$89bn in agency debt purchases during the same period helped to soften the blow.

Graph 18. China has been a net seller of US debt over the past two years, whereas in earlier years, they were significant buyers of US agency debt even while selling Treasuries



Graph 19. Belgium has been a consistent seller of Treasuries



Source: SG Cross Asset Research/Rates, US Treasury, Bloomberg

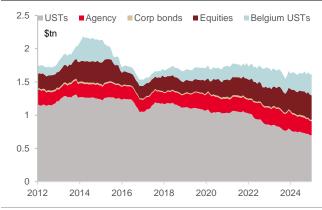
In fact, China's overall holding of US securities have seen a much more accelerated decline of \$150bn in the past five years (Graph 20). The declines in its explicit holding in USTs were offset

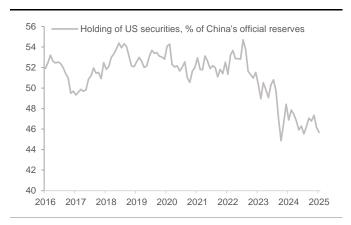
14 April 2025 7

partly by increases in USTs held by its proxy, US equities and agency bonds (until mid-2023). That said, the share of US securities in China's official reserves has dropped quickly in the recent years to mid-40%. Hence, China's diversification away from the dollar assets has been via a more passive approach, achieved more by increasing non-dollar assets than by selling down dollar assets.

Graph 20. China is moving away from dollar assets gradually in absolute terms ...

Graph 21. ... but more quickly in relative terms



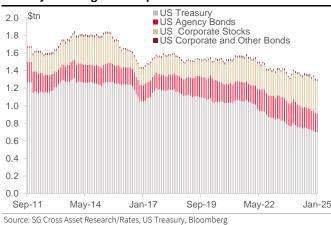


Source: SG Cross Asset Research. PBoC, US Treasury

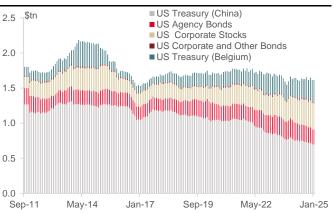
With trade tensions flaring again, the risk of foreign entities such as China selling Treasuries has returned to the spotlight again. Nonetheless, the robust demand observed at the recent 10y note auction, with bids from indirect investors (often including foreign participants) well above the recent average, has somewhat alleviated market anxiety around foreign demand for now.

While Chinese holdings of US debt has been steadily declining over the past decade, their holdings in addition to Belgian holdings of Treasuries is more stable. Although we have focused primarily on China's holdings of Treasuries, they also hold agency MBS, corporate bonds and equities. Foreigners (primarily China, Taiwan, Japan and Canada) hold \$1.32 trillion of MBS or roughly 15% of the outstanding. Both China and Canada recently, have reduced their MBS holdings. Any substantive changes could have a meaningful impact on mortgage spreads.

Graph 22. While Chinese holdings of all US assets have been steadily declining over the past decade...



Graph 23. ... Chinese holdings of US assets + Belgian holdings of Treasuries are more stable



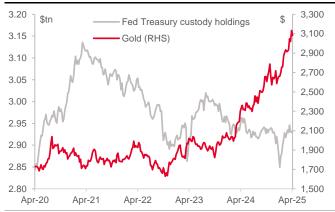
China increases its gold buying

Gold has turned out to be the ultimate important beneficiary of the market turmoil, and to many the drop provided to be a buying opportunity, with spot prices reaching an all-time high at \$3,240/oz on Friday. The anticipation of interest rate cuts by the Federal Reserve due to uncertainties, a weakened dollar, but most importantly – the constant and unpredictable escalating tensions – have prompted the continued search by investors for safe havens, adding to the buying momentum in gold we have seen for many months now.

Graph 24. Foreign Treasury custody holdings at the Fed are generally correlated with the US dollar

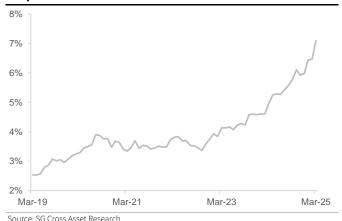


Graph 25. Custody holdings have fallen steadily since COVID as FX reserve flows into gold has led to a surge in the price

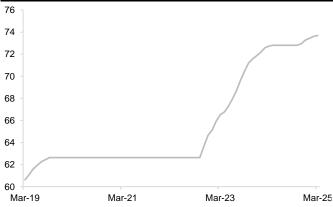


On Friday (April 11), the HMRC UK export data (which includes gold exports) was released for the month of February. Yes, admittedly the data comes with a slightly greater than a one-month lag, but it does provide insight into probable People's Bank of China (PBoC)transactions, whose data generally comes with an even greater lag – sometimes even as much as three months and with obvious questions about the accuracy of the central bank's official activity. Therefore, it is worth paying attention to the HMRC data given London's global dominance in bullion trading.

Graph 26. Gold as a % of China's reserves



Graph 27. China's gold reserves (million Troy ounces)



The HMRC data release on Friday confirms yet another month of very significant gold holdings heading to China from the UK at a (relatively) massive 50 tonnes, the third-largest export volume recorded in the past two years. Adding up all the months together, we estimate that a staggering 700 tonnes has been tracked by the HMRC into China in the past two years with an average value of \$49bn per month, of which much finds its way to the central bank. The rotation from US Treasuries into gold seems like something we can loosely correlate and somewhat keep track of – and the selling of Treasuries matching that of gold exports to China is something we can't help but take notice of.

14 April 2025





Global Head of Economics, Cross-Asset & Quant Research Kokou Agbo Bloua +44 20 7762 5433

CROSS ASSET RESEARCH - FIXED INCOME GROUP



Head of FIC & Commodity Research **Dr Mike Haigh** +44 20 7762 4694 michael.haigh@sgcib.com



Head of Rates Strategy **Adam Kurpiel** +33 1 42 13 63 42 adam.kurpiel@sgcib.com



Jorge Garayo jorge.garayo@sgcib.com



Anamika Misra +91 8067310385 anamika.misra@sgcib.com



sean.kou@sgcib.com Stephen Spratt +852 2166 4108

Kivong Seong

+852 2166 4658

Ninon Bachet

Sean Kou +44 20 7550 2053

+33 1 58 98 30 26



stephen.spratt@sgcib.com

ninon.bachet@sgcib.com



Head of US Rates Strategy Subadra Rajappa +1 212 278 5241 subadra.rajappa@sgcib.com



Mathias Kpade +33 157294393 mathias.kpade@socgen.com



Shakeeb Hulikatti +91 80 6731 4380 shakeeb.hulikatti@sgcib.com



Theodore Kalambokidis +1 212 278 4504 theodore.kalambokidis@sgcib.com



Emerging Markets Head of EM Strategy Phoenix Kalen +44 20 7676 7305 phoenix.kalen@sgcib.com

Marek Drimal



kiyong.seong@sgcib.com Senior Frontier Markets Strategist



Gergely Urmossy +44 20 7762 4815 gergely.urmossy@sgcib.com



Bertrand Delgado +1 212 278 6918 bertrand.delgado-calderon@sgcib.com



Foreign Exchange Chief Global FX Strategist **Kit Juckes** +44 20 7676 7972

kit.juckes@sgcib.com

marek.drimal@sgcib.com



FX Derivatives Strategy Olivier Korber +33 1 42 13 32 88 olivier.korber@sgcib.com

Rates & Forex Research for Corporates



Kenneth Broux +44 2076767334 kenneth.broux@sgcib.com



Santosh Ejanthkar (91) 80 67168215 santosh.ejanthkar@sgcib.com



Tanmay Purohit +91 80 6731 8267 tanmay.purohit@sgcib.com



Juliette Guillaume +33 1 57 29 40 41 juliette.guillaume@sgcib.com



Credit strategy Macro Credit Strategy +33 1 56 37 36 83 juan.valencia@sgcib.com



ANALYST CERTIFICATION

Each author of this research report listed on the cover hereby certifies that the views expressed in the research report accurately reflect his or her personal views, including views about subject securities or issuers mentioned in the report, if any. No part of his or her compensation was, is or will be related, directly or indirectly to the specific recommendations or views expressed in this report.

The analyst(s) who author research are employed by SG and its affiliates in locations, including but not limited to, Paris, London, New York, Hong Kong, Tokyo, Bangalore, Frankfurt, Madrid, Seoul, and Casablanca.

CONFLICTS OF INTEREST

This research contains the views, opinions and recommendations of Societe Generale (SG) credit research analysts and/or strategists. To the extent that this research contains trade ideas based on macro views of economic market conditions or relative value, it may differ from the fundamental credit opinions and recommendations contained in credit sector or company research reports and from the views and opinions of other departments of SG and its affiliates. Credit research analysts and/or strategists routinely consult with SG sales and trading desk personnel regarding market information including, but not limited to, pricing, spread levels and trading activity of a specific fixed income security or financial instrument, sector or other asset class. Trading desks may trade, or have traded, as principal on the basis of the research analyst(s) views and reports.

As a general matter, SG and/or its affiliates normally make a market and trade as principal in fixed income securities discussed in research reports. SG has mandatory research policies and procedures that are reasonably designed to (i) ensure that purported facts in research reports are based on reliable information and (ii) to prevent improper selective or tiered dissemination of research reports. In addition, research analysts receive compensation based, in part, on the quality and accuracy of their analysis, client feedback, competitive factors and SG's total revenues including revenues from sales and trading and investment banking.

IMPORTANT NOTICE: Sections of this publication that are contributed by non-independent analysts should not be construed as investment research as such have not been prepared in accordance with legal requirements designed to promote the independence of investment research. Therefore, even if such sections contain a research recommendation, such sections should be treated as a marketing communication and not as investment research. SG is required to have policies in place to manage the conflicts which may arise in the production of its research, including preventing dealing ahead of investment research.

Other Material Conflicts

Société Générale (SG), SG Americas Securities LLC and Société Générale Capital Canada Inc. (together, "SG Entities") have been engaged by Bemstein Institutional Services LLC and Sanford C. Bemstein (Canada) Limited (together, "Bernstein Entities") to introduce potential clients to Bernstein Entities. While SG Entities and Bemstein Entities have certain business relationships, SG Entities are not a current advisory client. SG Entities earn from clients referred by SG Entities. The fee payable to SG Entities for its referral of clients to Bernstein Entities presents a strong economic incentive for SG Entities to actively seek clients on behalf of Bernstein Entities. Prospective clients should be aware that SG Entities are therefore subject to certain conflicts of interest, including an incentive to recommend Bernstein Entities over other services providers from which we do not receive compensation, or from which we receive less compensation, for recommending them.

Important Disclaimers: Material contained in this publication was prepared by financial analysts employed by Societe Generale or one of its affiliates. Material contained in this publication has been produced in accordance with the regulatory provisions concerning investment research. This publication is not a marketing communication. Societe Generale has organisational arrangements and information barriers in place to ensure the objectivity and independence of financial analysts and of the investment research they produce and to manage the conflicts which may arise in the production of its investment research. Information concerning conflicts of interest and Societe Generale's management of such conflicts is contained in Societe Generale's Policies for Managing Conflicts of Interests in Connection with Investment Research which is available at: https://insight-public.sgmarkets.com/compliance/equity.

The financial analysts responsible for preparing this publication receive compensation that is based on various factors including Societe Generale's total revenues, a portion of which are generated by investment services and activities and other ancillary services, no part of the financial analysts' compensation was, is, or will be related, directly or indirectly, to the specific recommendations or views expressed in this publication. Societe Generale does, from time to time, deal, trade in, profit from, hold, act as market-makers or advisers, brokers or bankers in relation to the securities, or derivatives thereof, of persons, firms or entities mentioned in this publication and may be represented on the board of such persons, firms or entities. Societe Generale does, from time to time, act as a principal trader in equities or debt securities that may be referred to in this publication and may hold equity or debt securities positions or related derivatives. Societe Generale is under no obligation to disclose or take account of this document when advising or dealing with or on behalf of customers. Employees of Societe Generale, or individuals connected to them, may from time to time have a position in or hold any of the investments or related investments mentioned in this publication.

The views expressed in this publication reflect the financial analysts' personal views about the issuers or securities covered and may differ from the views and opinions of others at, or other departments or divisions of, Societe Generale and its affiliates. Though material contained in this publication is believed to be reliable and has been obtained from public sources believed to be reliable, neither Societe Generale, any representatives, directors, employees of Societe Generale nor any other entities affiliated with Societe Generale make any representations or warranties, expressed or implied, with respect to the completeness or accuracy of any of the information contained in this publication or any other information (whether communicated in written or oral form) transferred or made available to you.

The views of Societe Generale reflected in this publication may change without notice. In addition, Societe Generale may issue other publications that are inconsistent with, and reach different conclusions from, the information presented in this publication and is under no obligation to ensure that such other publications are brought to the attention of any recipient of this publication. Where the views presented in this publication differ from any previous publications concerning the same financial instrument or issuer that has been disseminated during the preceding 12-month period, the change(s) and the date of that previous recommendation will be indicated.

Any past performance or simulated past performance contained in this publication is not a reliable indicator of future performance. Forecasts of future performance are based on assumptions that may not be realized and are not a reliable indicator of future performance.

To the maximum extent possible at law, Societe Generale does not accept any liability whatsoever arising from the use of the material or information contained herein.

The information herein is not intended to be an offer to buy or sell, or a solicitation of an offer to buy or sell, any securities or financial instruments.

Investments in general, and derivatives in particular, involve numerous risks, including, among others, market, counterparty default and liquidity risk. The value of securities and financial instruments is subject to currency exchange rate fluctuation that may have a positive or negative effect on the price of such securities or financial instruments, and investors in securities and financial instruments assume this risk.

Societe Generale does not provide, and has not provided, any advice, including personal recommendations, investment advice or tax advice. The financial instruments discussed in this publication may not be suitable for all investors and investors must make their own informed decisions and seek their own advice regarding the appropriateness of investing in financial instruments or implementing strategies discussed herein. This publication is not intended for use by or targeted to retail customers. Should a retail customer or potential retail customer obtain a copy of this publication he/she should not base his/her investment decisions solely on the basis of this publication and must seek independent financial advice.

Trading in options involves additional risks and is not suitable for all investors. An option may become worthless by its expiration date, as it is a depreciating asset. Option ownership could result in significant loss or gain, especially for options of unhedged positions. Prior to buying or selling an option, investors must review the "Characteristics and Risks of Standardized Options" at https://www.theocc.com/company-information/documents-and-archives/options-disclosure-document or from your SG representative. Analysis of option trading strategies does not consider the cost of commissions. Supporting documentation for options trading strategies is available upon request.

Notice to French Investors: This publication is issued in France by or through Societe Generale ("SG") which is authorised and supervised by the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the Autorité des Marchés Financiers (AMF).

Notice to U.K. Investors: Societe Generale is a French credit institution (bank) authorised by the Autorité de Contrôle Prudentiel (the French Prudential Control Authority) and the Prudential Regulation Authority and subject to limited regulation by the Financial Conduct Authority and Prudential Regulation Authority. Details about the extent of our authorisation and regulation by the Prudential Regulation Authority, and regulation by the Financial Conduct Authority are available from us on request.

Notice to Swiss Investors: This document is provided in Switzerland by or through Societe Generale Paris, Zürich Branch, and is provided only to qualified investors as defined in article 10 of the Swiss Collective Investment Scheme Act ("CISA") and related provisions of the Collective Investment Scheme Ordinance and in strict compliance with applicable Swiss law and regulations. The

14 April 2025



products mentioned in this document may not be suitable for all types of investors. This document is based on the Directives on the Independence of Financial Research issued by the Swiss Bankers Association (SBA) in January 2008.

Notice to Polish Investors: this document has been issued in Poland by Societe Generale S.A. Oddzial w Polsce ("the Branch") with its registered office in Warsaw (Poland) at 111 Marszałkowska St. The Branch is supervised by the Polish Financial Supervision Authority and the French "Autorité de Contrôle Prudentiel". This report is addressed to financial institutions only, as defined in the Act on trading in financial instruments. The Branch certifies that this document has been elaborated with due diligence and care.

Notice to U.S. Investors: For purposes of SEC Rule 15a-6, SG Americas Securities LLC ("SGAS") takes responsibility for this research report. This report is intended for institutional investors only. Any U.S. person wishing to discuss this report or effect transactions in any security discussed herein should do so with or through SGAS, a U.S. registered broker-dealer and futures commission merchant (FCM). SGAS is a member of FINRA, NYSE and NFA. Its registered address at 245 Park Avenue, New York, NY, 10167. (212)-278-6000.

Notice to Canadian Investors: This document is for information purposes only and is intended for use by Permitted Clients, as defined under National Instrument 31-103, Accredited Investors, as defined under National Instrument 45-106, Accredited Counterparties as defined under the Derivatives Act (Québec) and "Qualified Parties" as defined under the ASC, BCSC, SFSC and NBSC Orders Notice to Singapore Investors: This document is provided in Singapore by or through Societe Generale ("SG"), Singapore Branch and is provided only to accredited investors, expert investors and institutional investors, as defined in Section 4A of the Securities and Futures Act, Cap. 289. Recipients of this document are to contact Societe Generale, Singapore Branch in respect of any matters arising from, or in connection with, the document. If you are an accredited investor or expert investor, please be informed that in SG's dealings with you, SG is relying on the following exemptions to the Financial Advisers Act, Cap. 110 ("FAA"): (1) the exemption in Regulation 33 of the Financial Advisers Regulations ("FAR"), which exempts SG from complying with Section 27 of the FAA on recommendations; and (3) the exemption set out in Regulation 35 of the FAR, which exempts SG from complying with Section 25 of the FAA on disclosure of certain interests in securities.

Notice to Hong Kong Investors: This report is distributed or circulated in Hong Kong only to "professional investors" as defined in the Securities and Futures Ordinance (Chapter 571 of the Laws of Hong Kong) ("SFO"). Any such professional investor wishing to discuss this report or take any action in connection with it should contact SG Securities (HK) Limited. This report does not constitute a solicitation or an offer of securities or an invitation to the public within the meaning of the SFO.

Notice to Japanese Investors: This publication is distributed in Japan by Societe Generale Securities Japan Limited, which is regulated by the Financial Services Agency of Japan. This document is intended only for the Specified Investors, as defined by the Financial Instruments and Exchange Law in Japan and only for those people to whom it is sent directly by Societe Generale Securities Japan Limited, and under no circumstances should it be forwarded to any third party. The products mentioned in this report may not be eligible for sale in Japan and they may not be suitable for all types of investors.

Notice to Korean Investors: This report is distributed in Korea by SG Securities Korea Co., Ltd which is regulated by the Financial Supervisory Service and the Financial Services Commission.

For Documents distributed In Australia by SG Securities (HK) Limited - Notice to Australian Investors: This document is distributed by SG Securities (HK) Limited, a Registered Foreign Company and Foreign Financial Services Provider in Australia (ARBN 126058688) that is exempt from the requirement to hold an Australian financial services licence under the Corporations Act 2001 ("Act"). SG Securities (HK) Limited is regulated by the Securities and Futures Commission under Hong Kong laws, which differ from Australian laws. The information contained in this document is only directed to recipients who are wholesale clients as defined under the Act.

For Documents Distributed in Australia by SG Sydney Branch - Notice to Australian investors: This document is distributed by Société Générale (ABN 71 092 516 286). Société Générale holds an AFSL no. 511956 issued under the Corporations Act 2001 (Cth) ("Act"). Société Générale is a foreign Authorised Deposit-Taking Institution under the Banking Act 1959 (Cth) and any products described in this document which are issued by Société Générale do not form deposits or other funds of Société Générale. No entity described in this document (aside from Société Générale) is an Authorised Deposit-Taking Institution and the transactions which may be proposed and products which may be issued as described in this document do not form deposits or other funds of Société Générale. Unless this document expressly provides that Société Générale will provide a guarantee, Société Générale does not guarantee the obligations of any other entity described in this document in respect of any proposed transactions or products and those obligations do not represent liabilities of Société Générale. This document is provided to you on the basis that you are a 'wholesale client' within the meaning of section 761G of the Act.

Notice to Indian Investors: Societe Generale Global Solution Center Pvt. Ltd (SG GSC) is a 100% owned subsidiary of Societe Generale, SA, Paris. Societe Generale SA is authorised and supervised by the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the Autorité des Marchés Financiers (AMF). Analysts employed by SG GSC do not produce research covering securities listed on any stock exchange recognised by the Securities and Exchange Board of India (SEBI) and is not licensed by either SEBI or the Reserve Bank of India.

For Recipients in Thailand receiving this document from offshore: This document has been distributed by SG solely at your request. This document is not intended to be either an offer, sale, or invitation for subscription or purchase of the securities or any regulated financial services in Thailand. Neither SG, any representatives, directors, employees of SG nor any other entities affiliated with SG make any representations or warranties, expressed or implied, with respect to the completeness or accuracy of any of the information contained in this document or any other information (whether communicated in written or oral form) transferred or made available to you.

https://wholesale.banking.societegenerale.com/en/. Copyright: The Societe Generale Group 2025. All rights reserved. This publication may not be reproduced or redistributed in whole in part without the prior consent of SG or its affiliates. .