

Technical Advantage

The ghosts of 2017 and 2018

Key takeaways

- The DXY continues to repeat the 4Q16-1Q17 pattern. A lower high in 1Q25 may form a repeat head and shoulders top.
- US 10Y yield tends to double top. It may again if it retests 4.80% (YTD high) or 5% (Oct 2023 high) by Memorial Day.
- Oil was sideways in 1H17 & rallied in 2H17. SPX patterns align 2025 with 2018 (tough year) unless Trump year 1 (2017) repeats

Summary: The ghosts of 2017

We previously reflected on the technical tendency to trust history repeats or at least rhymes. We initially looked at the FX market ([Remembering the 1Q17 DXY top 22 Jan 2025](#)). As this repeat pattern continues to evolve, in this report we look at macro markets to better understand how they may also be rhyming with history.

DXY: A January peak, Q1 top, Q2-Q3 drop repeats 2017

If the DXY continues to repeat, the right shoulder of a head and shoulders top may form in the remainder of 1Q25. If a bounce is to a lower high, such as +/- 108.50, and then it turns down, a repeat top may be forming. A retest of 110 may form a double top. But new highs would break the pattern leading to 112.50 and/or the 2022 highs in the 114s.

US10Y Yield: Double top at 4.80% / 5% by Memorial Day?

We compare 2015-2017 with that of 2023-2025. If history continues to repeat/rhyme, the comparison suggests yield double tops by the US Memorial Day holiday in May 2025 and declines into the US Labor Day holiday beginning September 2025. Such a double top could be at about 4.80% (YTD high) or 5%. (Oct 2023 high). The primary difference is the tide. Now is a secular bear market while 2016-2017 was a secular bull market.

Oil: Choppy/sideways in H1, better in H2 if \$65 holds

We compare 2015-2017 with that of 2023-2025. If history continues to repeat/rhyme, oil prices remain in a range for the 1H25 and eventually break higher into an uptrend in the 2H25 and into 1H26. A break to new lows, such as below \$65 would deviate (stop) the rhyming pattern.

SPX: A volatile 2018 looks like a risk for 2025

We compare 2022-2025 to 2014-2017. While patterns align, election years do not. In 2022-2023, a cup and handle base led to an uptrend through 2024. In 2015-2016, a head and shoulders base led to an uptrend through 2017. In 2018 the S&P 500 swung sharply to a higher high and lower low. If 2025 repeats 2018, an uninspiring or volatile year may be ahead (See: [2025 Equity Technical Strategy Year Ahead 08 January 2025](#)). One risk to this is equities persevered in year 1 of Trumps first term (2017) with the SPX rising almost 20%. Also the January barometer is supportive for the SPX this year.

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 9 to 11. Analyst Certification on page 8. 12796632

Timestamp: 19 February 2025 12:15AM EST

19 February 2025

Technical Strategy
Global

Paul Ciana, CMT
Technical Strategist
BofAS
+1 646 743 7014
paul.ciana@bofa.com

BofA Global Research Reports

Title: Subtitle	Primary Author	Date Published
Market Analysis Comment: Bulls drink from cup and handle patterns	Stephen Suttmeier, CFA, CMT	10 February 2025
FX Technical Advantage: Hammering out a deal	Paul Ciana, CMT	05 February 2025
Rates Technical Advantage: Doves vs. hummingbirds	Paul Ciana, CMT	27 January 2025
Seasonality Advantage: Five Feb-April macro trends to know	Paul Ciana, CMT	26 January 2025
FX Technical Advantage: Remembering the 1Q17 DXY top	Paul Ciana, CMT	22 January 2025
Technicals Explained: In 2025, get to know technical strategy	Paul Ciana, CMT	14 January 2025
2025 Equity Technical Strategy Year Ahead: A victim of its own success	Stephen Suttmeier, CFA, CMT	08 January 2025

FX Technical Advantage

DXY 2023-2025 may be repeating 2015-2017

If the DXY continues to repeat, the right shoulder of a head and shoulders top may form in the remainder of 1Q25. If the bounce is to a lower high, such as +/- 108.50, and then it turns down, a repeat top may be forming. A retest of 110 may form a double top. But new highs would break the pattern leading to 112.50 and/or the 2022 highs in the 114s.

After the 2024 election, two rallies comprised a 6.32% rise and a timely turn

So far after the 2024 US election, the DXY saw two rallies totaling 6.32%. It broke out higher from its two-year range. The measured move target estimates upside can persist to +/- 114, unless a top forms. So far it has reached half its target (low 110s intraday). Provided there is no higher high in 1Q25, it may be forming a top and repeating 1Q17.

After the 2016 election, two rallies comprised a 6.4% rise and then a Q1 top

After the 2016 US election, the DXY saw two rallies totaling 6.42%. It broke out higher from its two-year range to new 13-year highs. The measured move target estimated upside to +/- 107. It peaked halfway to target on January 3rd at 103.82. In 1Q17 the head and right shoulder of a head and shoulders top formed. Then the DXY declined through August 2017.

Exhibit 1: DXY in 2015-2017 is tracking 2023-2025. If history repeats, a head and shoulders top may form in 1Q25.

DXY in 2022-2025 (top) vs 2014-2017 (bottom)



Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH



Rates Technical Advantage

US10Y yield: 2023-2025 is rhyming with 2015-2017

We compare 2015-2017 with that of 2023-2025. If history continues to repeat/rhyme, the comparison suggests yield double tops by the US Memorial Day holiday in May 2025 and declines into the US Labor Day holiday beginning September 2025. Such a double top could be at about 4.80% (YTD high) or 5%. (Oct 2023 high). The primary difference is the tide. Now is a secular bear market while 2016-2017 was a secular bull market.

After the 2024 US election, 10y yield dipped, then broke out higher rising 64bps

From 4Q23-3Q24, the US 10y yield was trending lower. From September 2023 to the US election on Nov 5th 2024, higher lows began as yield broke above two downtrend lines. After the election, yield rose slightly, dipped and then went to another higher high and above a third downtrend line. From the low shortly after the election, 10Y yield has risen 64bps. If it were to rise the same amount as in 2017, or about 85bps, it may test 5%. If history continues to rhyme, a retest of 4.80-5.00% is next as a double top forms.

After the 2016 election, 10y yield rose 85bps to retest a key high in Sept 2014

From 3Q15-2Q16, US 10Y yield was trending lower. From July 2016 to the US election on Nov 8th 2016, higher lows began and yield broke above two downtrend lines. After the election, yield went to another higher high and above a third downtrend line. From election day, the US 10Y yield rose 85bps. The rise in US 10Y yield stalled at the Sept 2014 peak of 2.62%. In 1Q17 a double top formed and it declined through August.

Exhibit 2: US10Y Yield: 2015-2017 looks similar to the 2023-2025. If history repeats, 10Y yield may double top at 4.80-5.00% by Memorial Day.

US 10Y yield in 2022-2025 (top) vs 2014-2017 (bottom)



Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH



Commodity Technical Advantage

WTI Crude Oil: 2022-2025 is rhyming with 2014-2017

Below we compare 2015-2017 with that of 2023-2025. If history continues to repeat/rhyme, oil prices remain in a range for the 1H25 and eventually break higher into an uptrend in the 2H25 and into 1H26. A break to new lows, such as below \$65 would deviate (stop) from the rhyming pattern.

After the 2024 election, oil traded sideways, then higher, then back into range

In 2022-2024, oil price was in a downtrend and found support in the \$65s. A descending triangle pattern had been forming. After the US election price broke out to the upside. The rally wasn't sustained. Price has settled in a \$65-80 range. While no new lows are seen below the support line at \$65, then a sideways to higher pattern may be repeating.

After the 2016 election, 10y yield rose 85bps to retest a key high in Sept 2014

In 2014-2016, oil price was in a downtrend and found support in the \$25s with a double bottom at the lows. Then a larger head and shoulders bottom formed. After the US election, oil price broke out to the upside. The rally wasn't sustained. Eventually price settled into a \$42-55 range. Then price broke out above a trend line and continued higher into 2018.

Exhibit 3: WTI: 2014-2017 looks similar to 2022-2025. If history repeats, oil trades sideways in 1H25, breaks higher in 2H25 and trends higher into 1H26

WTI Crude Oil future (CL1) in 2022-2025 (top) vs 2014-2017 (bottom)



Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH



Equity Technical Advantage

SPX: 2022-2024 rhymed w/2014-2017; 2018 a 2025 risk

We compare 2022-2025 to 2014-2017. While patterns align, election years do not. In 2022-2023, a cup and handle base led to an uptrend through 2024. In 2015-2016, a head and shoulders base led to an uptrend through 2017. In 2018 the S&P 500 swung sharply to a higher high and lower low. If 2025 repeats 2018, an uninspiring or volatile year may be ahead (See: [2025 Equity Technical Strategy Year Ahead 08 January 2025](#)). One risk to this is equities persevered in year 1 of Trump's first term (2017) with the SPX rising almost 20%. Also, the January barometer is supportive for the SPX this year ([Seasonality Advantage 26 January 2025](#)).

After the 2024 election, the S&P500 rallied to higher highs, but less impulse

In 2022-2023, the SPX formed a cup and handle base and rallied in 2024. After the US election in 2024, the SPX rallied another +/- 7% ending January 2025. Price broke below short-term trend line support but the medium-term uptrend line remains.

After the 2016 election, the S&P500 rallied thru 2017, 2018 was a rough year

In 2015-2016, the SPX formed an inverse head and shoulders base pattern. Upon the onset of the US election, the index tested the neckline as support and then began a full year rally through 2017. In January 2018, the SPX rallied +/- 7% to a peak and then a correction occurred that broke below short-term trend line support. The medium-term uptrend line broke later on in October 2018.

Exhibit 4: S&P 500: Patterns align, however election years do not. 2022-2024 = 2015-2017 but the 2024 election does not = the 2016 election. A risk is 2025 begins to repeat/rhyme with 2018 which saw volatile sharp swings in asset prices.

SPX in 2022-2025 (top) vs 2014-2017 (bottom)



Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH



Chart Alpha

Exhibit 5: Open trades

Open technical trades and cross strategy alpha trades including technicals

Report	Trade	Entry / revise date	Entry Level	Spot target 1	Spot target 2	Spot target 3	Spot stop	Rationale / time horizon	Risks
FX Technical Advantage	Buy GBPUSD 3m call spread 1x1.5	2/5/2025	0.4135% GBP (Spot ref: 1.2480, vol ref: 7.80%/7.50%).	1.26	1.275	1.2850	-	Downtrend channel that is broken to the upside, potential for a head and shoulders base, and higher highs in RSI and MACD. The weekly chart may have just turned up after completing wave C down, its MACD is starting to turn up and net non-commercial vs open interest is near a two-year short	1) A failed hammer or head and shoulders pattern if spot declines below 1.2249 (Monday low), 2) If the UK is targeted with tariffs causing GBP to sell off and 3) Strong US NFP data on Friday February 6 causing USD to rally
FX Alpha	Buy USDCHF 3mth 0.92/0.9450 call spread	14-Jan-24	0.6466% USD	0.924	0.945	-	-	Increasing momentum and uptrend, possible double bottom extends rally.	Short term trend is overbought.
Global Macro Year Ahead	US 5s30s Steepener	21-Jan-25	30	60	85	100	30 (raised)	An uptrend channel, supportive oscillators and primary wave III up remain underway.	A break below the channel may lead to further flattening and a loss.
EM Alpha	Long BRL/COP	21-Nov-24	754	825	861	898	700	TD Combo buy signal, bullish divergence, trend line breakout, wave count, head & shoulders base	A decline below 735 would invalidate a head and shoulders base.

Note: Bid/offer spreads accounted for in initiation and closing levels. Does not reflect tax withholdings or any investment advisory fees. Past performance is no guarantee of future results. A complete performance record is available on request. Inception date - 10/16/2015. As of 2024, trade entry levels are typically based on the chart time stamp. For additional discussion on baseline views, valuation and risks to open trades, please see reports.

Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

Exhibit 6: Closed trades

Approximately two years of closed technical and/or collaborative cross strategy trades in the alpha, technical advantage and year ahead reports

Report	Trade description	Entry date	Entry level	Spot target 1	Spot target 2	Spot target 3	Stop	Revise / close date	Level closed
Global Macro Year Ahead	Short EURJPY via long 6m ERKO EURJPY put, ATM strike: 158.75, down/out European barrier: 150	24-Nov-24	0.7425% EUR, spot ref: 160.65. expiry May 23 2025.	158.75	150	-	-	2/7/2025	0.99% EUR with spot ref: 157.51
Global Macro Year Ahead	US 5s30s Steepener (Raise stop)	24-Nov-24	30	60	85	100	30	1/21/2025	45
EM Alpha	Long BRL / MXN	9/24/2024	3.51	3.67	3.80	3.95	3.40	11/14/2024	3.55
Chart Alpha	Buy USZ4	10/31/2024	117-29	120	120-25	-	116-20	11/1/2024	116-20
FX Technical Advantage	Short gold vs silver	9/26/2024	83.50	80.00	78.50	75.00	87.5	10/29/2024	80.52
FX Technical Advantage	Short USDKRW	9/26/2024	1335	1300	1270	1225.00	1355	10/14/2024	1355
FX Technical Advantage	Short GBPUSD	10/2/2024	1.362	1.3100	-	-	1.34	10/4/2024	1.308
FX Technical Advantage	Short GBPUSD (lower stop)	9/26/2024	1.3407	1.3250 (reached)	1.31	-	1.3525 to 1.3400	10/2/2024	1.326
FX Technical Advantage	Short NZDUSD	8/22/2024	0.6140	0.6092	0.6050	0.5975	0.6230	8/23/2024	0.6230
FX Alpha	Buy EURSEK 3m 11.40/11.60 CS	6/7/2024	0.62% EUR, vol ref 5.7%; exp 9 Sep 2024, spot ref 11.3891	45544	11.4	11.6	-	7/12/2024	0.87% EUR
FX Alpha	Buy a 25D 3m GBP/USD call	3/8/2024	spot ref: 1.28. Cost = 0.51% GBP	1.3000	1.3140	-	-	6/8/2024	0
EM Alpha	Short USDZAR	11/15/2023	18.15	17.6	17.25	-	18.55	5/13/2024	18.06 (Spot 18.36 less 1.6% carry)
Rates Alpha	Buy 10y bunds vs USTs	2/13/2024	182bps	200bps (reached)	225bps	-	Raise to 188	5/9/2024	200bps



Exhibit 6: Closed trades

Approximately two years of closed technical and/or collaborative cross strategy trades in the alpha, technical advantage and year ahead reports

Report	Trade description	Entry date	Entry level	Spot target 1	Spot target 2	Spot target 3	Stop	Revise / close date	Level closed
FX Alpha	Buy 3m EUR/JPY put spread	1/26/2024	0.6663% EUR (strikes 158.00, 155.00, spot ref 160.31, vol refs 8.709, 8.965)	158	155	-	-	25-Apr	0
Technical Advantage	Buy BRL/CLP (raise stop to 192)	2/28/2024	190.75	200 (reached)	215	-	-	3/13/2024	192
Technical Advantage	Buy BRL/CLP (raise stop to 192)	2/2/2024	190.75	200 (reached)	215	-	190	2/28/2024	196.65
Technical Advantage	Buy USDSEK	2/2/2024	10.49	-	10.65	10.9	-	2/27/2024	10.30
Global Macro Year Ahead	US 5s30s steepener	1/23/2024	15	35	55	80	15	2/2/2024	24.00
Global Macro Year Ahead	US 5s30s steepener, raise stop to 15	11/19/2023	15	35 (reached)	55	80	0	1/23/2024	32.00
2024 FICC Technical Advantage	Buy USDKRW +1m NDF	12/1/2023	1293	1315	1327	1340	1270	1/3/2024	1308
2024 FICC Technical Advantage	Short MXN/CLP	12/1/2023	49.85	48.25	47.5	46.1	52.2	12/22/2023	52.20
Global Macro Year Ahead	Short GBPAUD via 3m 1.90-1.86 GBP/AUD put spread	11/19/2023	s/r 1.9192	1.86	1.84	-	-	1/3/2024	1.2315% GBP (s/r 1.8762, vol ref 7.354 / 6.921)
Global Macro Year Ahead	Sell EUR/NOK via 6m risk reversal	11/19/2023	s/r 11.8623 vol refs: 8.929 and 9.108).	11.35	11.22	11.1	-	1/3/2024	Received 0.7307% EUR
EM Alpha	Buy EURZAR	10/2/2023	20.15	20.75	-	-	19.60	11/1/2023	19.60
FX Alpha	Buy CADMXN	10/23/2023	13.3338	14.00	-	-	13.00	10/31/2023	13.00
FX Alpha	Buy EURSEK 3m zero-cost collar spot ref 11.5456	10/13/2023	3m 11.8380 call for 0.5676% EUR, vol 7.394%; sell 3m 11.3143, vol 6.701%, zero-cost	11.84	-	-	-	10/30/2023	1.12%
FX Alpha	Buy GBPAUD 6m put seagull	9/8/2023	0.3827% GBP (long 6m put spread, 1.94 / 1.90)	1.94	1.90	-	2.05	9/22/2023	1.2341% GBP
FX Technical Advantage	Short USDCAD	8/29/2023	1.3570	1.3497	1.346	1.335	1.3725	9/13/2023	1.3550
Commodities Technical Advantage	Buy CTZ3	9/5/2023	89.0600	94.60	96.5	100	86.3	9/7/2023	86.30
FX Alpha	Sell 2m 25-delta OTM EUR/GBP put	6/24/2023	0.31% EUR (strike ref: 0.8472, spot ref: 0.8592, vol ref: 5.584)	24-Aug-23	-	-	-	8/3/2023	Spot ref 0.86470, vol ref :4.214)
FX Alpha	Buy USDSEK via 3m collar (spot ref is 10.2724)	7/19/2023	Buy 3m 10.73 call for 0.7795% USD (vol ref: 12.296%) and sell 3m 9.8960 put for the same price (vol ref: 10.202%).	10.5	10.7	-	9.896	8/1/2023	1.3316% USD with spot ref 10.6109
Technical Advantage	Buy USDMXN	6/27/2023	17.10	17.50	18.00	-	16.90	7/12/2023	16.90
FX Technical Advantage	Short GBPUSD	4/25/2023	1.2420	1.2367	1.223	1.216	1.255	4/28/2023	1.255
FX Alpha	Buy 3m USDSEK call spread	1/20/2023	1.4689% USD strikes 10.2466 & 10.70, spot ref 10.2971, vol refs 12.752/13.307)	10.25	10.5	10.7	-	3/7/2023	.82% USD (spot ref 10.7008, vol refs 12.18/11.943)
Rates Technical Advantage	5s30s steepener	2/12/2023	-12	0	10	20	-25	2/24/2023	-25
Rates Technical Advantage	Short US 10Y	1/22/2023	3.48%	3.70%	3.82%	3.90%	3.30%	2/17/2023	3.82%
2023 FICC Technical Views	Short USDCAD via 6m 1.33/1.30 put spread	12/2/2022	65 USD pips (Spot ref: 1.3489, vol: 7.668%/8.035%)	1.33	1.319	1.30	-	2/1/2023	74.53 USD pips (spot ref: 1.33, vol: 6.893% / 7.237%)

Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH



Options Risk Statement

Options and other related derivatives instruments are considered unsuitable for many investors. **Options strategy is by definition governed by a finite duration. The most severe risks associated with general options trading are total loss of capital invested and delivery/assignment risk, all which can occur in a short period.**

Analyst Certification

I, Paul Ciana, CMT, hereby certify that the views expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.



Disclosures

Important Disclosures

Due to the nature of technical analysis, the issuers or securities recommended or discussed in this report are not continuously followed. Accordingly, investors must regard this report as providing stand-alone analysis and should not expect continuing analysis or additional reports relating to such issuers and/or securities.

BofA Global Research personnel (including the analyst(s) responsible for this report) receive compensation based upon, among other factors, the overall profitability of Bank of America Corporation, including profits derived from investment banking. The analyst(s) responsible for this report may also receive compensation based upon, among other factors, the overall profitability of the Bank's sales and trading businesses relating to the class of securities or financial instruments for which such analyst is responsible.

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 markets.

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 QUALIFIED 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 Service Board; MLI (UK): Merrill Lynch International, regulated by the Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA); BofASE (France): BofA Securities Europe SA is authorized by the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers (AMF). BofA Securities Europe SA ("BofASE") with registered address at 51, rue La Boétie, 75008 Paris is registered under no 842 602 690 RCS Paris. In accordance with the provisions of French Code Monétaire et Financier (Monetary and Financial Code), BofASE is an établissement de crédit et d'investissement (credit and investment institution) that is authorised and supervised by the European Central Bank and the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers. BofASE's share capital can be found at www.bofam.com/BofASEdisclaimer; BofA Europe (Milan): Bank of America Europe Designated Activity Company, Milan Branch, regulated by the Bank of Italy, the European Central Bank (ECB) and the Central Bank of Ireland (CBI); BofA Europe (Frankfurt): Bank of America Europe Designated Activity Company, Frankfurt Branch regulated by BaFin, the ECB and the CBI; BofA Europe (Madrid): Bank of America Europe Designated Activity Company, Sucursal en España, regulated by the Bank of Spain, the ECB and the CBI; Merrill Lynch (Australia): Merrill Lynch Equities (Australia) Limited, regulated by the Australian Securities and Investments Commission; Merrill Lynch (Hong Kong): Merrill Lynch (Asia Pacific) Limited, regulated by the Hong Kong Securities and Futures Commission (HKSF); Merrill Lynch (Singapore): Merrill Lynch (Singapore) Pte Ltd, regulated by the Monetary Authority of Singapore (MAS); Merrill Lynch (Canada): Merrill Lynch Canada Inc, regulated by the Canadian Investment Regulatory Organization; Merrill Lynch (Mexico): Merrill Lynch Mexico, SA de CV, Casa 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 International (DIFC Branch), regulated by the Dubai Financial Services Authority (DFSA); Merrill Lynch (Brazil): Merrill Lynch S.A. Corretora de Títulos e Valores Mobiliários, regulated by Comissão de Valores Mobiliários; Merrill Lynch KSA Company: Merrill Lynch Kingdom of Saudi Arabia Company, regulated by the Capital Market Authority. This information has been approved for publication and is distributed in the United Kingdom (UK) to professional clients and eligible counterparties (as each is defined in the rules of the FCA and the PRA) by MLI (UK), which is authorized by the PRA and regulated by the FCA and the PRA - details about the extent of our regulation by the FCA and PRA are available from us on request; has been approved for publication and is distributed in the European Economic Area (EEA) by BofASE (France), which is authorized by the ACPR and regulated by the ACPR and the AMF; has been considered and distributed in Japan by BofAS Japan, a registered securities dealer under the Financial Instruments and Exchange Act in Japan, or its permitted affiliates; is issued and distributed in Hong Kong by Merrill Lynch (Hong Kong) which is regulated by HKSF; 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.

Futures and options are not appropriate for all investors. Such financial instruments may expire worthless. Before investing in futures or options, clients must receive the appropriate risk disclosure documents. Investment strategies explained in this report may not be appropriate at all times. Costs of such strategies do not include commission or margin expenses.

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 AI 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. Investors should consult their own legal advisers as to issues of law relating to the subject matter of this material. BofA Global Research personnel's knowledge of legal proceedings in which any BofA Securities entity and/or its directors, officers and employees may be plaintiffs, defendants, co-defendants or co-plaintiffs with or involving issuers mentioned in this material is based on public information. Facts and views presented in this material that relate to any such proceedings have not been reviewed by, discussed with, and may not reflect information known to, professionals in other business areas of BofA Securities in connection with the legal proceedings or matters relevant to such proceedings.

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

Any information relating to 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.