

Rates Technical Advantage

Bullish UST bias put to the test

Key takeaways

- US10y yield is testing 4.10% for the third time this year. Theoretically this is top of range, but what if it breaks higher?
- Above 4.1% can lead to 4.34% (Oct 2022 high) and possibly 4.50-4.60%. No breakout and decline below 3.8% reasserts bull case.
- US 2s10s may form a double bottom. Above -82bps targets -54bps. US 5s30s may be in wave c steeper to +14bps.

02 August 2023

FICC Technical Strategy
Global Markets

Paul Ciana, CMT
Technical Strategist
BofAS
+1 646 855 6007
paul.ciana@bofa.com

View: US 10Y tests a pressure point for a third time

Our year ahead view called for yields to build tops in the 1H23 by retesting 2022 highs and then in 2H23 yields could begin to drop. The July 5th channel breakout higher in US 10y yield and the flip of the 50d SMA back above the 200d SMA have become relevant risks to our view. The 10Y yield is testing the highs of the YTD range of 4.10% for the third time this year. A move about this means yield can retest the 2022 highs of about 4.34%. If it did this and turned down then a double top may form. However, a risk is the July 5, 2023 channel breakout measures higher to 4.5-4.6%. No breakout above 4.10% and a decline below 3.80% will reassert a bull case and yield topping process.

Daily: Channel breakout and 50d > 200d supporting yield

The July 5th channel breakout higher in 10Y yield and the 50d SMA of yield crossing back above the 200d SMA on July 14th favor a yield uptrend. If yield breaks above 4.10% exiting the YTD range then technical traders are likely to target a retest of the Oct 2022 yield highs of 4.30-4.34%. In this upside scenario, 4.5-4.6% is also a risk. No breakout above 4.1% and decline below 3.72% can form a small double top in yield (Chart 1).

Weekly: Is Oct 22-Aug 23 a wave 4 preceding wave 5 up?

One possibility is the consolidation in 10y yield from October 2022 to now is a wave 4 consolidation preceding a 5th wave higher in yield. The breakout during the week of July 5 favors this and another breakout above 4.10% would support it. A decline below 3.8% will break a trend line and would support a bullish bias (lower yield) (Chart 2).

Monthly: In this cycle or the next, 10y yield exceeds 5%

The 10Y yield was in a declining channel from 1990-2022. It broke out of it at 2.6% in 2022. The average swing in the channel was 240bp. Adding that to the breakout point (a common technical method) estimates 5% for the 10Y yield. The height of the channel added to the breakout point is about 5.50%. We still can see the 10Y yield reaching into the 5% area in this cycle or the next (Chart 3).

US curve trying to bear steepen, again

US 2s10s above -82 confirms a double bottom and targets -54 (Chart 4). US 5s30s is entering wave c steeper that targets +14bps (Chart 5).

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 8 to 10. Analyst Certification on page 7. 12587196

Timestamp: 02 August 2023 12:15AM EDT

US 10 Year Yield Daily Chart

All eyes on top of YTD range of 4.10%

We've been of the view that the US 10y yield was in a range from 4.10-3.60%. This view weakened when the 10y yield rose above the (red) channel line on July 5 and then the 50d SMA crossed back above the 200d SMA on July 14.

The first week of August is seeing the 10y yield test the 4.10% level for a third time this year. This is the top of its YTD range. Given the channel breakout on July 5, the moving average cross higher on July 14 and the MACD turning up, yield is just one breakout away from signaling upside to 4.30-4.34% (Oct 2022 highs) and possibly the 4.5-4.6% measured move target (calculated by the red channel breakout).

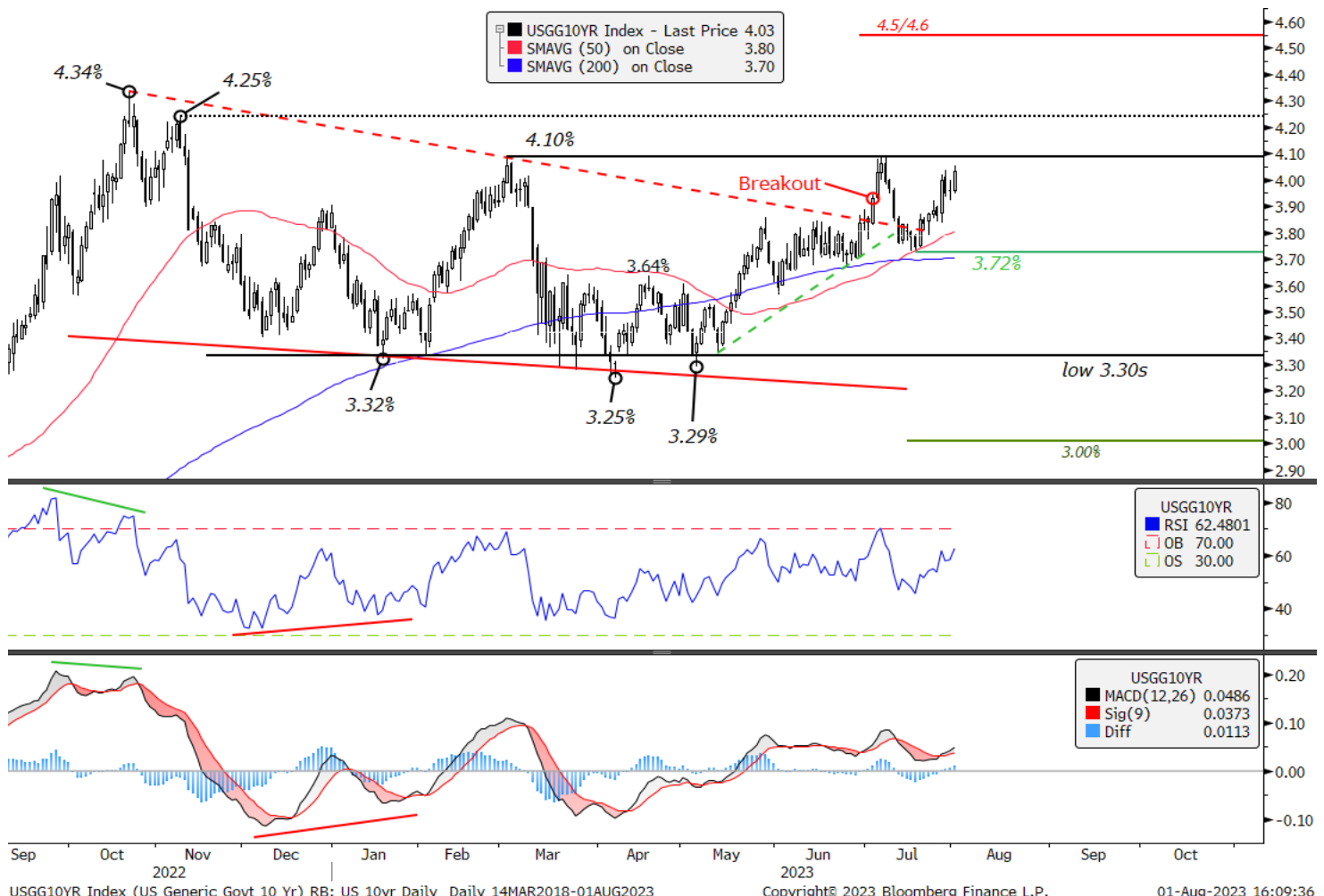
In the event 10y yield turns down from 4.10%, again, then the range has narrowed to 4.1-3.72%. A small double top in yield would be a scenario to watch for. A break below the last yield low of 3.72% would confirm a double top and suggests a decline toward 3.30%. Should 10y yield break higher above 4.10%, test 4.34% and then turn down from the Oct 2022 high, then a large double top in yield may be forming and would echo the choppy year markets have had.

10Y yield support: 3.80%, 3.72%, 3.60%, 3.35%

10Y yield resistance: 4.10%, 4.25%, 4.34%, 4.5-4.6%

Chart 1: US 10Y yield – Daily Chart (G691)

Narrow range from 4.1-3.72%. Risk of an upside breakout above 4.1% due to July 5th trend line breakout, 50d SMA above the 200d SMA and MACD turning up.



Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

US 10Y yield weekly chart

Testing top of range at 4.10%, was the last nine months a wave 4?

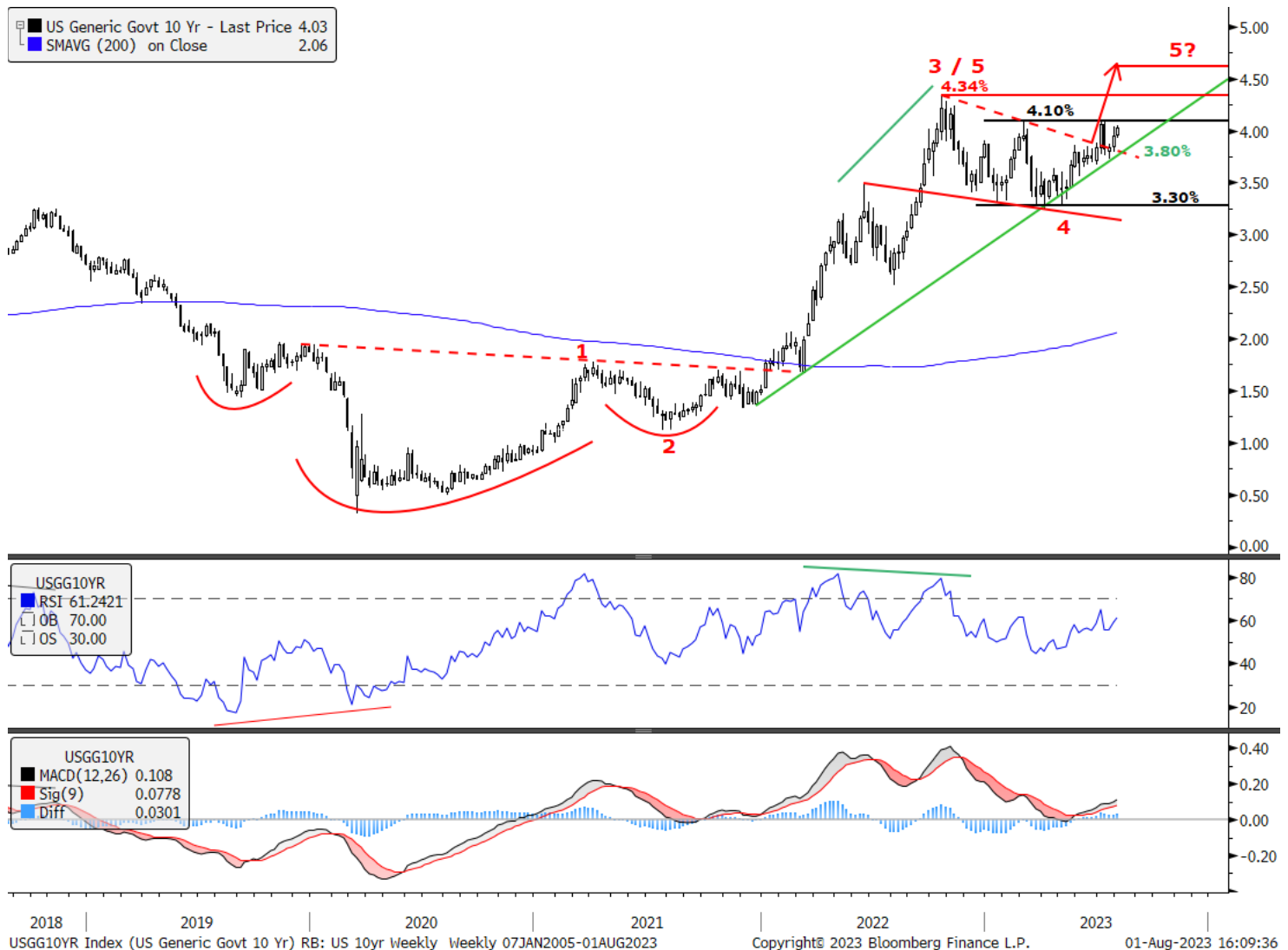
Below we update the weekly chart of 10Y yield to show the ongoing YTD range from 3.30-4.10% (black lines), the wedge pattern with yield breaking out higher in July (red lines) and the green trend line the UST bulls need to see broken to strengthen a long conviction.

The July breakout from the wedge (red) suggested some upside potential to retest the 2022 highs at 4.34% and a measured move target area of 4.5-4.6%. However yield stopped at 4.10% keeping the range. Now the 10y yield is testing the top of range for the third time. A breakout higher would reiterate upside potential from the wedge breakout. For what it's worth, the measured move target based on a range breakout (black lines) is almost 5%.

If the bond market holds the 10y yield below 4.10%, starts to rally and yield falls below the green trend line at about 3.8%, then the range remains with downside to 3.3% again possible.

Chart 2: US 10Y Yield – Weekly Chart (G692) – Flashbacks to 2006-2007

Ongoing range from 3.7-4.1% however an upside breakout is a risk. Above 4.1% starts to signal 4.34% and possibly 4.5-4.6% can happen. Below 3.80% and yield may fall toward the lows of 3.3%



Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH



US 10Y yield monthly chart

Long-term channel breakout still says above 5% in this cycle or the next

When a trend channel is broken, it is common technical process to take the height of the channel and add it to the breakout point to derive a target. In the chart below we measure four swings from the bottom to the top of the channel as 286, 267, 225 and 183 basis points. The average is 240 basis points. The breakout point was approximately 2.6%. Therefore an average channel target is about 5% for the 10Y yield. The last time it was near this was in 2006-2007. We discuss an average channel target first because the actual height of the channel added to the breakout point targets the mid-5% area (Red vertical arrow). This being a more typical technical measuring process.

Chart 3: US 10Y Yield – Monthly chart (G1203)

Channel breakout measures on average to 5% however a full measured move is closer to 5.5%



USGG10YR Index (US Generic Govt 10 Yr) RB: US 10yr Monthly Monthly 31JAN1962-01AUG2023

Copyright© 2023 Bloomberg Finance L.P.

01-Aug-2023 16:09:36

Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

US Curve trying to bear steepen

Chart 4: US 2s10s – daily chart

A double bottom can be confirmed if a steeper move above -82bps occurs and it would target -54bps.



Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

Chart 5: US 5s30s – daily chart

Initial ABC pattern targets +14bps. Bigger picture “range” may also be a “triple bottom.”



Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

Chart Alpha

We just closed our long USDSEK trade, please see ([FX Alpha: Close long USDSEK collar 01 August 2023](#)).

Exhibit 1: Open trades

Open technical trades and cross strategy alpha trades including technicals

Report	Trade	Entry / revise date	Entry Level	Option expiry	Spot target 1	Spot target 2	Spot target 3	Spot stop	Rationale / time horizon	Risks
FX Alpha	Sell 2m 0.89 USD/CHF put	6/23/2023	1.0126% USD (spot ref: 0.8967, vol ref: 6.44)	24-Aug-23	-	-	-	-	Our relative monetary policy outlook suggests USDCHF spot is overly stretched.	Softer USD on 'goldilocks'
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	-	-	-	-	Tail risks of UK harder landing have increased, and we now see risks to GBP as more balanced than before.	Fading tail risks of UK hard landing and/or ECB pausing in September

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. Initiation and closing prices are priced/used for trade rules and publication. For additional discussion on baseline views, valuation and risks to open trades, please see reports. DC = Daily close.

Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

Exhibit 2: 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	Close date	Level closed
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	Short USDCAD via 6m	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%)
Technical Views	1.33/1.30 put spread								
EM Alpha	Long USDZAR	1/19/2023	17.23	-	17.46	17.75	17.86	2/1/2023	17.40
Global Rates, FX, EM 2023 Year Ahead	Short 10Y UST	11/20/2022	3.75%	3.60%	4.00%	4.25%	3.40%	1/18/2023	3.40%
FX Technical Advantage	Buy USD/CLP	11/20/2022	925	898	980	1000	865	12/12/2022	865
FX Technical Advantage	Buy DXY dip	9/12/2022	108.33	110.35	112.1	115	105	11/4/2022	110.87
Chart Alpha	Buy USD/ZAR	11/15/2022	17.30	18.00	18.50	-	<16.90	12/1/2022	17.90
Technical Advantage	Sell gold's bounce	10/3/2022	1702.00	1615.00	1560.00	1440.00	1740	11/10/2022	1760
Rates Technical Advantage	Short 10Y > 3.1%	8/31/2022	3.16%	3.38%	3.50%	3.96%	<2.95%	10/11/2022	3.94%
Technical Advantage	Buy USDKRW	6/12/2022	1279.04	1321	1374	1400	1210	10/6/2022	1406
Commodities									
Technical Advantage	Buy USDCLP breakout	6/24/2022	917	920	945	985	872.75	07/15/2022	985.00

Exhibit 2: 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	Close date	Level closed
Commodities Technical Advantage	Sell HG1 breakdown	6/22/2022	394.4	350	335	314	421.9	7/15/2022	323.40
Commodities Technical Advantage	Buy crude oil	6/2/2022	116.87	130.3	140	-	111.2	6/17/2022	109.56
Chart Alpha	Buy Euro	5/4/2022	1.0610	1.0800	1.0850	-	-	5/12/2022	1.0470
Chart Alpha	Sell USDCHF	5/4/2022	0.9740	0.9602	0.9525	-	-	5/5/2022	0.9825
Rates Alpha	Buy 10Y UST	4/14/2022	2.83%	3.05%	2.56%	2.40%	2.25%	1/0/1900	3.10%
FX Alpha	Buy AUD/NZD by owning a 6m call spread	1/27/2022	0.7764% (Spot: 1.069, 1.0753 (atmf) and 1.0944	1.0743	1.0817	1.0944	-	4/22/2022	1.2168% AUD
Global Rates, FX, EM Year Ahead	Buy USD/MXN	11/23/2021	20.70	20.50	21.93	22.67	-	3/9/2022	21.25
2022 FICC Technical Advantage	Sell AUD/USD by owning a 3m .69/.65 put spread	12/3/2021	74 USD pips, spot ref: .7020, vol: 10.74%/12.32%	0.718	0.69	0.65	-	3/3/2022	0.00
FX Alpha	Buy USD/JPY	11/23/2021	112.60 (Raised stop loss, spot ref 115)	114.5	117	-	112.6	2/24/2022	115.40
Global Rates, FX, EM Year Ahead	Buy USD/CHF 3m .94/.97 call spread, expiry Feb 21 2022	11/23/2021	Spot ref: .9258, vol ref: 6.839%/6.949% for 0.5359% USD	0.9259	0.94	0.97	-	2/23/2022	0.00
Chart Alpha	Buy EUR/ZAR (Raise stop)	2/4/2022	17.20 (Raise stop to 17.25, spot ref: 17.73)	17.82	18.25	18.5	17.25 (raised from 16.70)	2/10/2022	17.25
Chart Alpha	Buy EUR/ZAR	1/25/2022	17.20	17.82	18.25	18.5	16.7	2/4/2022	17.73
FX Alpha	Buy USD/JPY (Raise stop)	10/1/2021	110.30 (raise stop loss to 110.80, spot ref 113.40)	114.5	117	-	110.3 (Raised from 108)	10/14/2021	110.80
FX Alpha	Buy USD/JPY at 110.25	9/8/2021	110.25 (raise stop to 110.30, spot ref 111.40)	112.2	114.5	-	108	10/1/2021	108.00
FX Alpha	Buy USD/SEK 3m CS 1x2 8.6806 / 8.9303	8/13/2021	0.41%	-	8.93	9.04	-	9/20/2021	0.61%
Chart Alpha	Buy EUR/ZAR	8/26/2021	17.53	18.07	18.61	-	17.00	9/3/2021	17.00
EM Alpha	Buy EUR/ZAR	6/25/2021	16.8	16.88	200d SMA	17.98	17	8/3/2021	17.15

Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

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 Investment Industry Regulatory Organization of Canada; Merrill Lynch (Mexico): Merrill Lynch Mexico, SA de CV, Casa de Bolsa, regulated by the Comisión Nacional Bancaria y de Valores; Merrill Lynch (Argentina): Merrill Lynch Argentina SA, regulated by Comisión Nacional de Valores; BofAS Japan: BofA Securities Japan Co., Ltd., regulated by the Financial Services Agency; Merrill Lynch (Seoul): Merrill Lynch International, LLC Seoul Branch, regulated by the Financial Supervisory Service; Merrill Lynch (Taiwan): Merrill Lynch Securities (Taiwan) Ltd., regulated by the Securities and Futures Bureau; BofAS India: BofA Securities India Limited, regulated by the Securities and Exchange Board of India (SEBI); Merrill Lynch (Israel): Merrill Lynch Israel Limited, regulated by Israel Securities Authority; Merrill Lynch (DIFC): Merrill Lynch International (DIFC Branch), regulated by the Dubai Financial Services Authority (DFSA); Merrill Lynch (Brazil): Merrill Lynch S.A. Corretora de Títulos e Valores Mobiliários, regulated by Comissão de Valores Mobiliários; Merrill Lynch KSA Company: Merrill Lynch Kingdom of Saudi Arabia Company, regulated by the Capital Market Authority.

This information: has been approved for publication and is distributed in the United Kingdom (UK) to professional clients and eligible counterparties (as each is defined in the rules of the FCA and the PRA) by MLI (UK), which is authorized by the PRA and regulated by the FCA and the PRA - details about the extent of our regulation by the FCA and PRA are available from us on request; has been approved for publication and is distributed in the European Economic Area (EEA) by BofASE (France), which is authorized by the ACPR and regulated by the ACPR and the AMF; has been considered and distributed in Japan by BofAS Japan, a registered securities dealer under the Financial Instruments and Exchange Act in Japan, or its permitted affiliates; is issued and distributed in Hong Kong by Merrill Lynch (Hong Kong) which is regulated by 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 2023 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. 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 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.