Market Analysis Comment

Bob Farrell's "Ten Market Rules to Remember" & how they can help us today

Market Analysis

24 May 2022
Market Analysis
United States

Stephen Suttmeier, CFA, CMT
Technical Research Strategist
BofAS
+1 646 855 1888
stephen.suttmeier@bofa.com

Savita Subramanian
Equity & Quant Strategist
BofAS
+1 646 855 3878
savita.subramanian@bofa.com

Michael Hartnett
Chief Investment Strategist
BofAS
+1 646 855 1508
michael.hartnett@bofa.com

Ritesh Samadhiya, CFA >>
Equity Strategist
Merrill Lynch (Hong Kong)
+852 3508 7907
ritesh.samadhiya@bofa.com

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

How the pioneer of technical analysis can help us today

Bob Farrell, one of the pioneers of technical analysis, worked at Merrill Lynch for over 45 years. We revisit his **Ten Market Rules to Remember** and find that they are as relevant today as when he retired from Merrill Lynch 20 years ago.

Farrell's rules applied to today

An equity bear market, the highest inflation in 40 years, a Fed hiking cycle and Value vs Growth are all causing deep investor concerns. Farrell's rules suggest that equity corrections are normal, the upward reversion for interest rates can continue and that a bigger rotation to Value from Growth is underway.

Pay attention to the cycle especially when it's gone too far

As far as cycles go, here's what Farrell says we need to know: When trends go too far in one direction, investors can prepare for a reversal toward the mean (Rule 1). But sometimes reversion to the mean is not enough. A market can swing like a pendulum with an excessive move in one direction preceding an extreme move the opposite way (Rule 2). Investors have seen their share of asset bubbles popping over the past 40 years, and these exponential moves do not end by going sideways (Rule 4).

"This time is different" – really? Farrell says no new eras

When investors talk about a new era, run the other way. It just means excesses have been built up, the big move has already happened and sentiment is too extreme for the trend to continue (Rule 3).

Taking a contrarian view can pay off

Farrell's rules also cover sentiment. If the public buys the most at the top and the least at the bottom, don't follow the crowd: Taking a contrarian view can pay off (Rule 5). Fear and greed can cloud our emotions, test our resolve and lead to poor investment decisions (Rule 6). When everyone agrees, something else can happen. Consensus among the experts is often fully discounted in asset prices, putting forecasts at risk (Rule 9).

The broader the better: narrowing rallies prone to failure

Broad-based rallies have the potential to continue, while narrowing rallies are prone to failure. It is important to remember that a market rally driven by a handful of blue-chip names suggests that the SMID cap troops have abandoned the largest cap generals, which is a weak setup for market breadth and a risk to an equity market rally (Rule 7).

Three stages for bear markets: watch SPX 3800 and 3500

Farrell believes that bear markets have three stages: A sharp decline, followed by a reflex rebound and then a drawn-out fundamental downtrend (Rule 8). We are likely in the third stage, with risk to 3800 (20% correction) and even 3500 (27%) on the S&P 500.

Timestamp: 24 May 2022 08:32AM EDT

10 market rules to remember

Farrell's rules are still relevant

You can't change human nature and Mr. Farrell's rules seem as relevant today as when he retired from Merrill Lynch 20 years ago.

- Rule1: Markets tend to return to the mean over time
- Rule 2: Excesses in one direction will lead to an opposite excess in the other direction
- Rule 3: There are no new eras — excesses are never permanent
- Rule 4: Exponential rapidly rising or falling markets usually go further than you think, but they do not correct by going sideways
- Rule 5: The public buys the most at the top and the least at the bottom
- Rule 6: Fear and greed are stronger than long-term resolve
- Rule 7: Markets are strongest when they are broad and weakest when they narrow to a handful of blue chip names
- Rule 8: Bear markets have three stages — sharp down — reflexive rebound — a drawn-out fundamental downtrend
- Rule 9: When all the experts and forecasts agree – something else is going to happen
- Rule 10: Bull markets are more fun than bear markets

Rule 1: Markets tend to return to the mean over time

When trends go too far in one direction, investors can prepare for some form of reversal in trend and reversion to the mean. Some investors are trend followers, while others focus on mean reversion. There is a constant battle between the two. One strategy investors can use is to combine mean reversion with trend-following by looking to buy dips within uptrends (rising moving averages) and sell rallies in downtrends (declining moving averages). See report: Technicals Explained: Equity technical analysis for the fundamental investor for more on this trend reversion approach.

Investors are concerned about the 2022 equity bear market

S&P 500: 2022 cyclical bear market = mean-reversion of a secular bullish trend

A moving average (MA) represents a rolling mean over a certain timeframe. When prices move too far from the MA, the risk of reversion to that MA (aka mean) increases. Our technical view for the S&P 500 remains a cyclical correction within a long-term secular bull market (see report: Cyclical corrections stress test a secular bull market). Cyclical bear markets within secular bull markets tend to mean-revert toward the rising 200-week moving average on the S&P 500, a key 2022 support near 3500. If S&P 500 holds above or near its rising 200-week MA, the secular bull market remains firmly in place.

Chart 1: S&P 500 with the 200-week MA: Weekly chart

Cyclical bear markets within secular bull markets tend to mean-revert toward the rising 200-week moving average on the S&P 500, a key 2022 support near 3500. This mean-reversion to the rising 200-week MA happened during recessions, economic slowdowns and crashes during the 1950-1966, 1980-2000 and 2013 to present secular bull markets. These cyclical bear markets found support prior to continuing the longer-term secular bull market.

Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

Secular mean-reversion for rates and commodities

Higher rates a big concern: Mean-reversion suggests a higher US 10-year yield

A 39-year down cycle for the US 10-year yield (bond bull market) from 1981 likely ended in 2020. This sets up the 10-year yield for longer-term upward mean-reversion. The average US 10-year yield going back to 1920 is 4.74%. The 1950-1966 secular bull market for US equities did not end until the 10-year yield surpassed 5% in 1966 (see report: Cyclical corrections stress test a secular bull market). The bigger question: Is mean-reversion (Rule 1) enough? Or can rates overshoot on the upside (Rule 2)?

Chart 2: US 10-year Treasury yield with the 96-month moving average: Monthly chart

The average 10-year yield back to 1920: 4.74%. A 39-year down cycle for the US 10-year yield (bond bull market) from 1981 likely ended in 2020. This sets up the 10-year yield for mean-reversion to the upside.

Source: BofA Global Research, Bloomberg, GFD

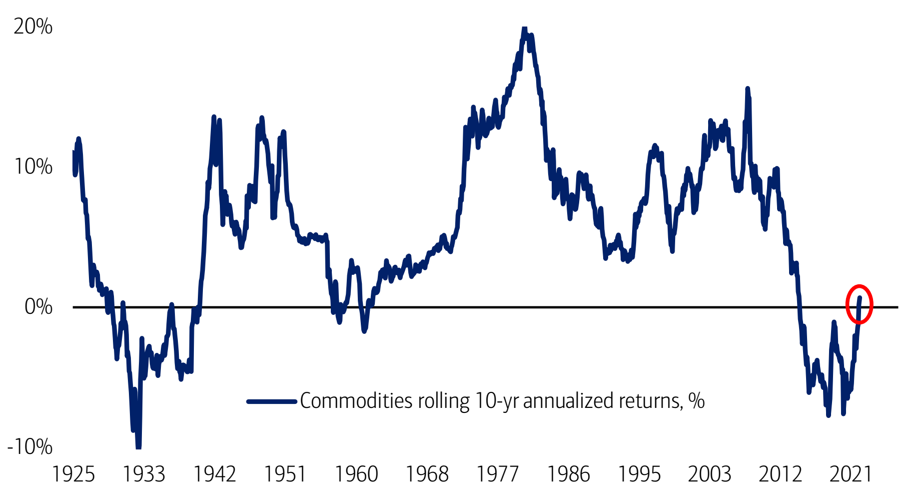
BofA GLOBAL RESEARCH

Mean-reversion secularly bullish for long-run commodities returns

There are signs of a major bottom and bullish turn for commodities prices that could persist for years. The rolling 10-year annualized price returns for commodities may be breaking out like it did in the 1940s.

Chart 3: Best year for commodities since 1915

Rolling 10yr annualized price returns since 1924, Commodities



Source: BofA Global Investment Strategy, Ibbotson, Bloomberg and Datastream

BofA GLOBAL RESEARCH

Rule 2: Excesses in one direction will lead to an opposite excess in the other direction

Sometimes reversion to the mean is not enough. A market can swing like a pendulum with an excessive move in one direction preceding an extreme move in the opposite direction. Rallies that become parabolic and overshoot on the upside often herald declines that become parabolic and overshoot on the downside.

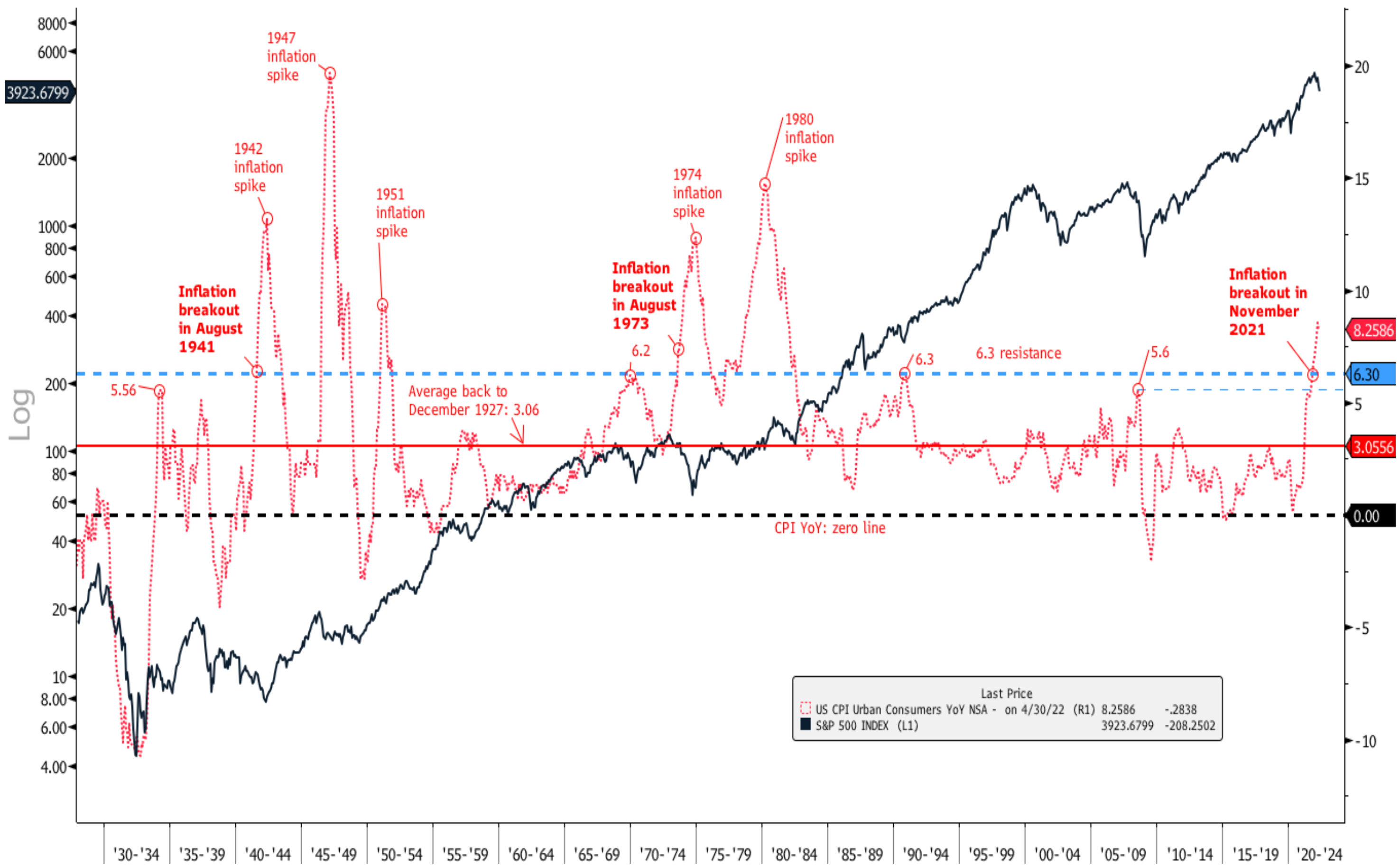
Inflation rocks the nation

YoY CPI overshot its mean at 3.06% with room to continue higher

Investors are worried about inflation. If YoY CPI does not subside, the risk is for a 1970s or 1940s-style surge in inflation. Our technical work showed 5.6% to 6.3% as resistance for YoY CPI, which this measure of consumer price inflation surpassed in November 2021. History shows similar breakouts in August 1941 and August 1973 with spikes higher in YoY CPI to much higher levels of inflation in 1942, 1947, 1974 and 1980.

Chart 4: S&P 500 and YoY US Consumer Price Index (CPI): Monthly chart

If YoY CPI does not subside, the risk is for a 1970s or 1940s-style surge in inflation.



Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

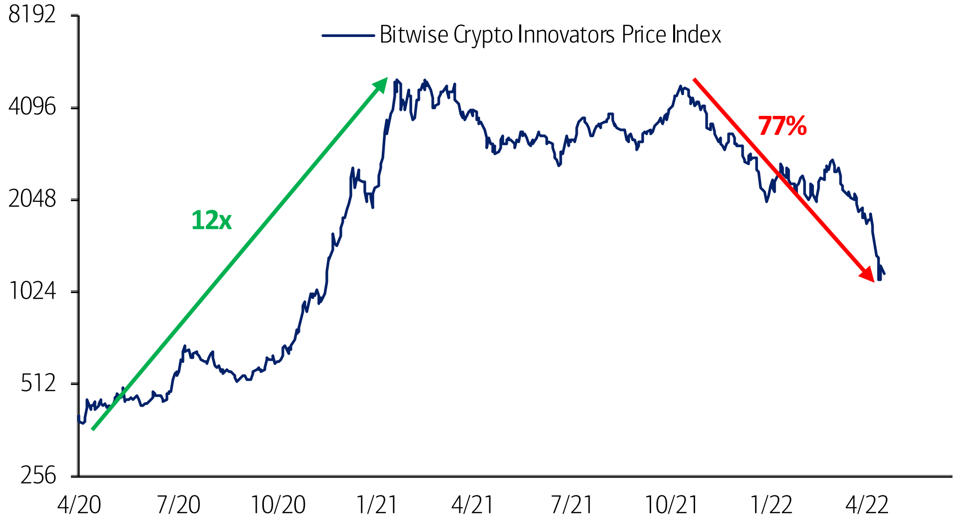
Investors love to talk about crypto…

…But it's payback time for crypto stocks

Crypto stocks were up 12X in less than year and then lost 77% in less than six months.

Chart 5: The Bitwise Crypto Innovators 30 Price Return Index (companies that are building the future of the crypto-asset-enabled decentralized economy)

Payback time. Crypto stocks were up 12X in less than year time and then lost 77% of it in six months.



Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

Should I invest in Value or Growth?

Biggest top since the 2000 peak favors Value over Growth longer term

Longer-term, Growth vs Value swings like a pendulum. Russell 1000 Growth relative to Russell 1000 Value has had multi-year trends of Growth leadership and Value leadership. The 2020-2021 peaks mark the biggest top for Growth vs Value since the tech bubble peak in 2000 and suggest that a long-term Value leadership cycle is underway.

Chart 6: Russell 1000 Growth relative to Russell 1000 Value: Weekly chart

The 2020-2021 peaks mark the biggest top for Growth vs Value since the tech bubble peak in 2000 and suggest that a long-term Value leadership cycle is underway.

Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

Rule 3: There are no new eras — excesses are never permanent

When excesses get built up, we begin to hear the phrase "this time is different". Trend reversals in the opposite direction tend to occur when investors believe that excesses are a permanent regime change. When investors talk about a new era, the big move has likely already happen and sentiment is too extreme for the move to continue.

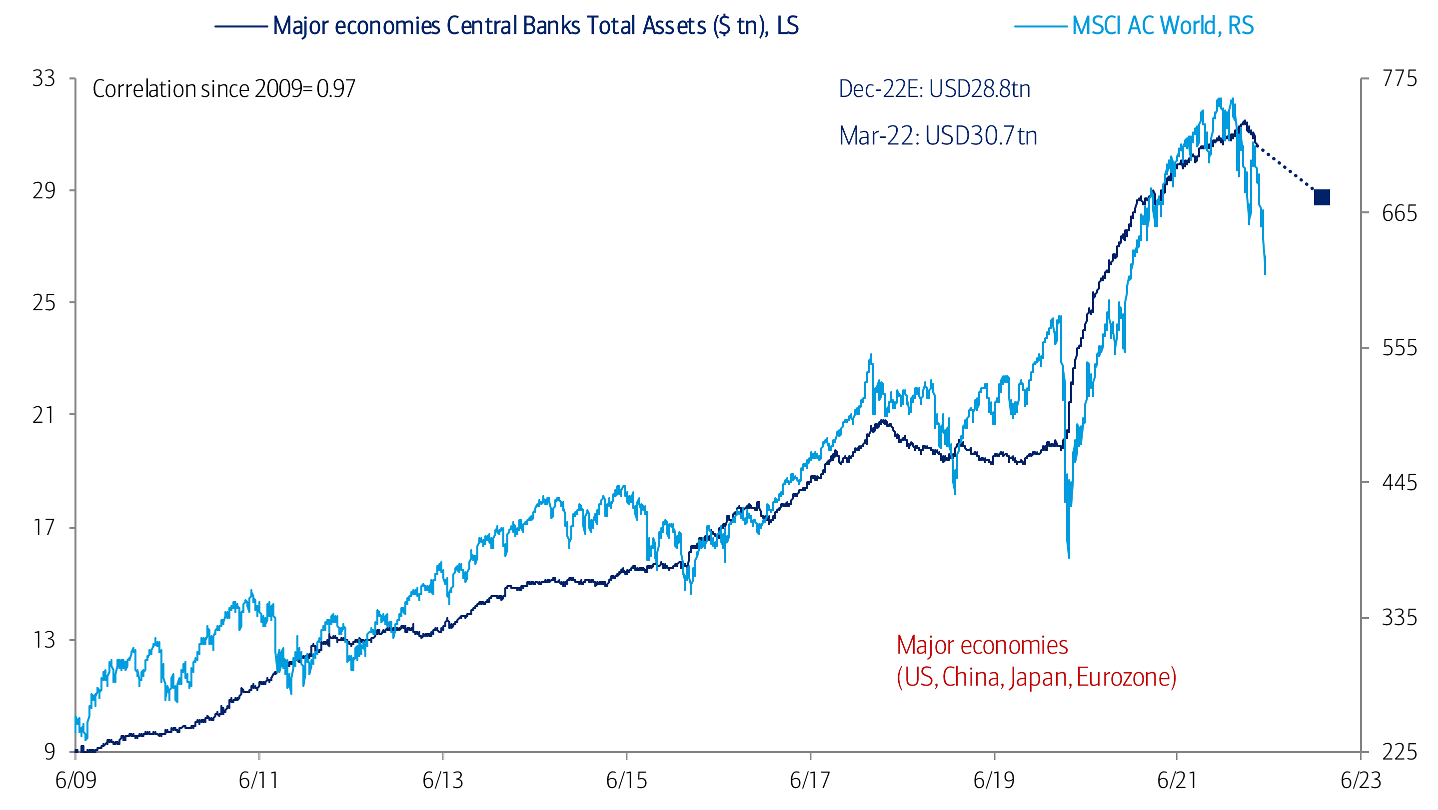
Investors concerned as the Fed does the "tighten up"

What the Fed Giveth, the Fed Taketh Away

The COVID shock led to an unprecedented expansionary policy that ignited an economic boom and unleashed animal spirits. For those music lovers out there, the soundtrack for monetary policy in 2020 was "Saved by Zero" by a group ironically called The FIXX. This policy was not a "new era" and is in reverse now. BofA Global Research expects central bank balance sheets to continue to contract, as 2022 shows the Fed doing the "Tighten up" by Archie Bell and the Drells.

Chart 7: Central banks balance sheets and global equities

What the Fed Giveth, the Fed Taketh Away. COVID shock led to an unprecedented expansionary policy that ignited an economic boom and unleashed animal spirits. In reverse now



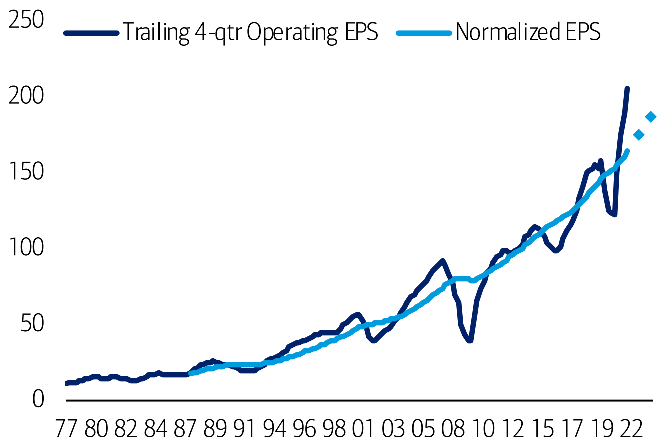
Source: BofA Global Research, Bloomberg. Notes: Dots denote forecast from BofA Global Rates Research

BofA GLOBAL RESEARCH

No new EPS era: One of the biggest spreads in history vs. normalized EPS

Actual operating EPS has one of the biggest spreads in history vs. normalized EPS, which is adjusted for cyclicality. In the prior three instances when earnings were similarly stretched (1996, 2000, and 2007), growth slowed to sub-trend (1996) or turned negative (2000 and 2007). Our equity strategists expect downside risks to consensus earnings.

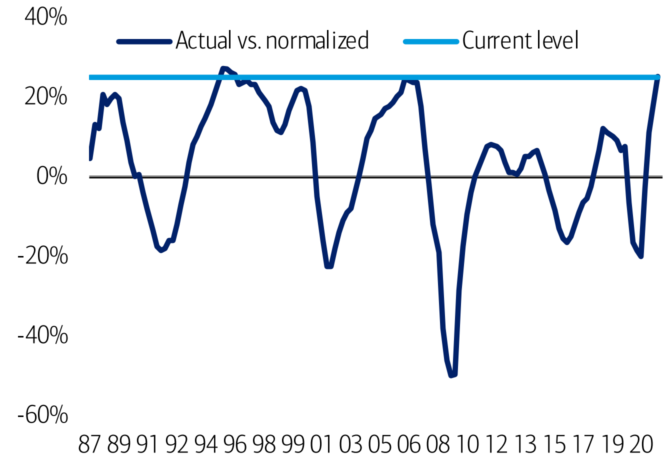
Chart 8: Risk: earnings are cyclically elevated...
S&P 500 operating EPS vs. normalized EPS (1977-present; light blue dots = 2022-23E normalized earnings)



Source: Haver Analytics, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

Chart 9: ...with one of the biggest spreads vs. trend in history
% spread between S&P 500 operating EPS vs. normalized EPS (1987-4Q21)



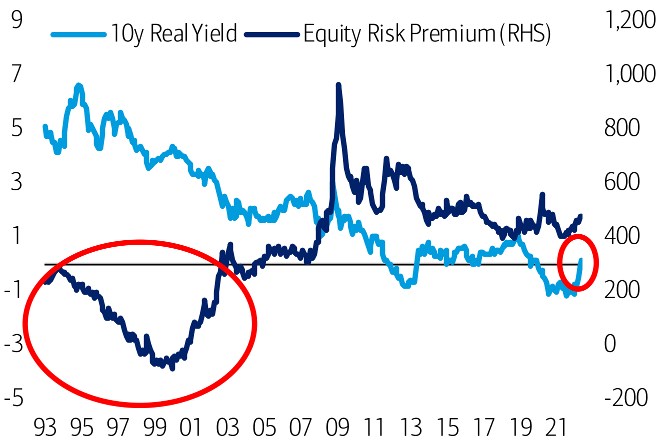
Source: Haver Analytics, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

Strategists accepted negative real rates, but no new era for negative real rates

In [their 2022 year ahead](), our equity strategists highlighted the array of similarities to 1999/2000, one of which was acceptance of the unthinkable. In 99, strategists accepted and began forecasting negative equity risk premia (ERP); last year, they accepted and began forecasting negative real rates. Real rates just flipped back to positive, putting us in rational territory, but that came with a big pain in Growth stocks. Falling real rates fueled Growth outperformance since 2018, with -96% correlation between the 10-yr real rates and the relative performance of the Russell 1000 Growth vs. Value, and the recent jump in real rates have been a big headwind for Growth stocks.

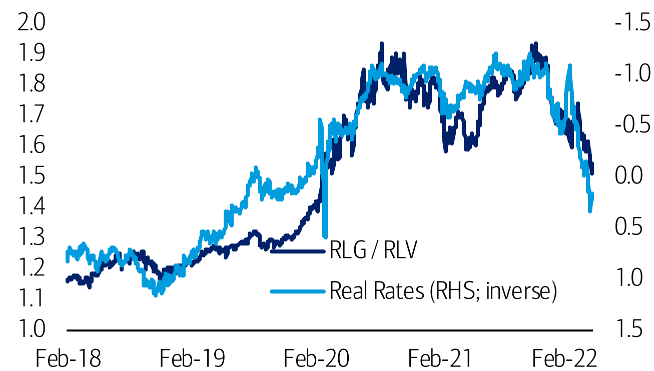
Chart 10: One bubble popped: real rates flipped back to positive
Equity Risk Premium and real 10-yr US Treasury yield (1993-5/16/2022)



Source: Bloomberg, BofA US Equity & Quant Strategy

BofA GLOBAL RESEARCH

Chart 11: Falling real rates fueled Growth outperformance. A reversal has been painful (-96% correlation since 2018).
Russell 1000 Growth vs. Value relative performance and 10-yr real rates (2018-5/16/22)



Source: Bloomberg, BofA US Equity & Quant Strategy

BofA GLOBAL RESEARCH

Rule 4: Exponential rapidly rising or falling markets usually go further than you think, but they do not correct by going sideways

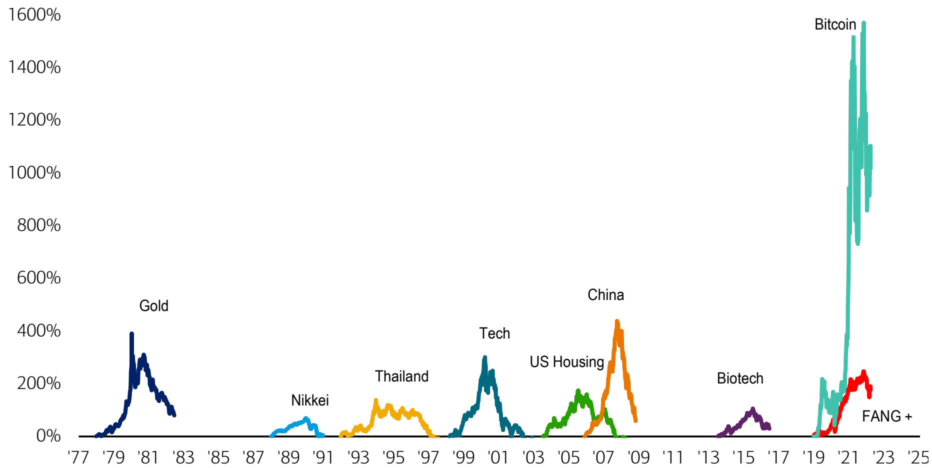
Parabolic rallies, asset bubbles, manias and crashes fit this rule. For example, prior to a bubble popping, there is often talk of a new era (Rule 3), extremely bullish sentiment (Rule 5), greed ruling over fear (Rule 6) and narrowing market breadth (Rule 7).

Human nature (cycle of fear and greed) makes it hard to learn from past bubbles

Investors have seen their share of asset bubbles popping over the last 40 years. There are plenty of examples to learn from, but human nature (cycle of fear and greed) make it difficult to avoid bubbles as the “fear of missing out” or “FOMO” takes control.

Chart 12: Asset Bubbles of Past 40 years

Investors have seen their share of asset bubbles popping over the last 40 years.



Source: BofA Global Investment Strategy, Bloomberg

BofA GLOBAL RESEARCH

ARK Innovation ETF fits the NASDAQ 100 circa late 1990s early 2000s

Cathie Wood, the founder of Ark Invest has a huge following. The Ark Innovation ETF (ARKK) remains very popular among investors. The recent parabolic rise and fall for ARKK rhymes with that of the NASDAQ 100 (NDX) from the late 1990s into early 2000s.

Chart 13: ARK Innovation ETF (ARKK) and NASDAQ 100 (NDX): Daily chart

The recent parabolic rise and drop for ARKK rhymes that of the NDX from the late 1990s into early 2000s.

Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

Rule 5: The public buys the most at the top and the least at the bottom

This rule focuses on sentiment and positioning. If the public buys the most at the top and the least at the bottom, don't follow the crowd: Taking a contrarian view can pay off. Sentiment indicators tell us what investors are saying. Positioning reveals what investors are doing. When aligned, these indicators can provide powerful signals.

Individual investors are the most bearish since early 2009

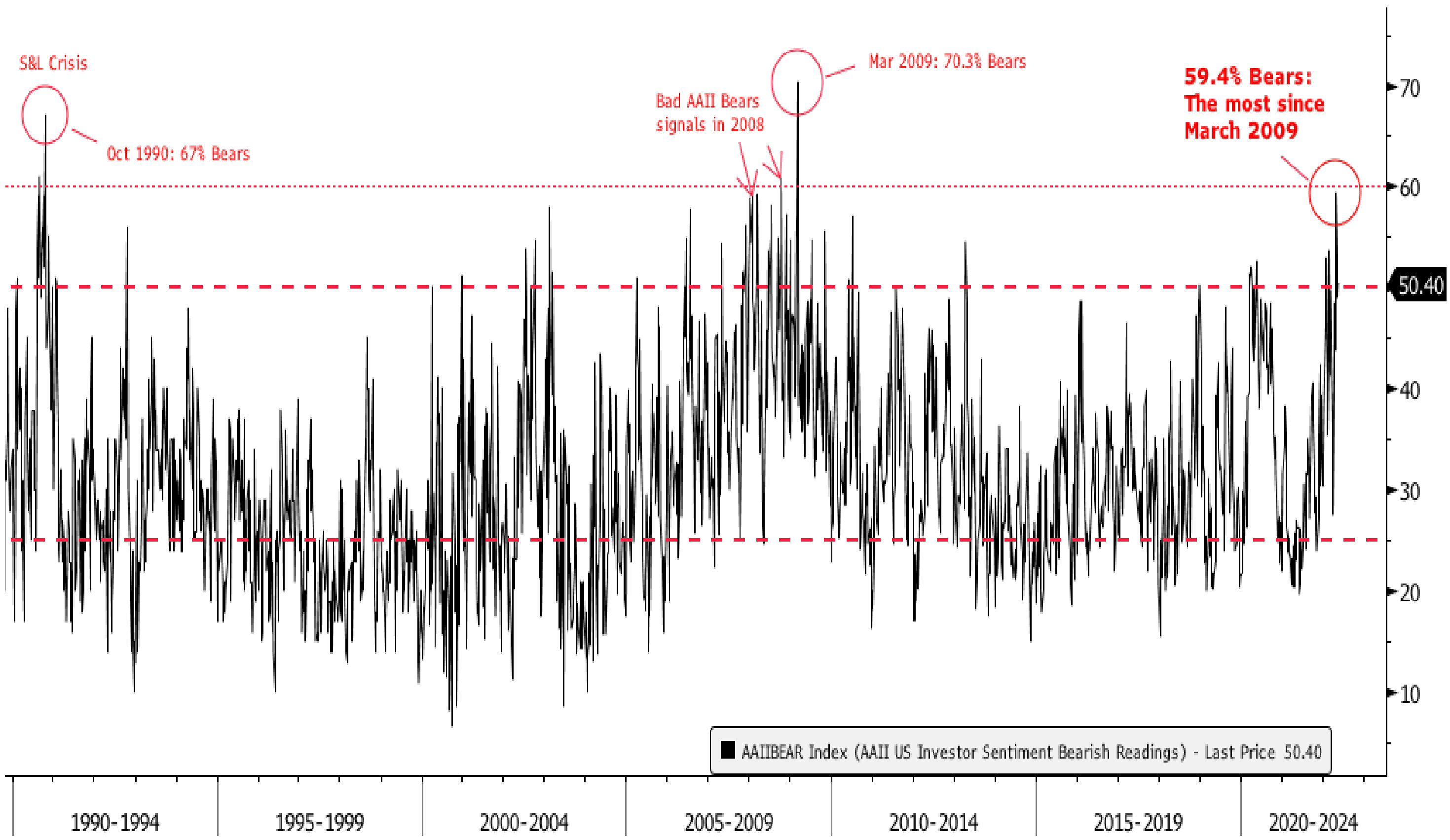
AAII Bears: Individual investors the most bearish since the Great Recession

AAII US Investor Sentiment Bearish Readings suggest that individual investors were the most bearish since March 2009 in late April 2022. We view this spike in bearishness as contrarian bullish but acknowledge that a similar move to these levels in 2008 proved to be a bad signal for US equities during the depths of the Great Recession.

The BofA Bull & Bear Indicator also suggests that sentiment is at a bearish extreme, which is contrarian bullish (see report: The Flow Show: "3600 is the new bull case" 19 May 2022).

Chart 14: AAII US Investor Sentiment Bearish Readings: Weekly chart: 1987 - present

Contrarian bullish: AAII Bears hit its highest level since early 2009.



Source: BofA Global Research, Bloomberg, AAII

BofA GLOBAL RESEARCH

Rule 6: Fear and greed are stronger than long-term resolve

Fear and greed can cloud our emotions and lead to poor investment decisions, such as selling at the bottom and buying at the top (Rule 5). When emotions begin to take control, take a breath and remember that markets tend to return to the mean over time (Rule 1), excesses in one direction will lead to an opposite excess in the other direction (Rule 2), that there are no new eras (Rule 3) and don't follow the crowd (Rule 5). Finally, having an investment plan and/or adding some rules-based indicators to your investment process can reduce help control the emotions of fear and greed.

Higher prices at the pump

Oil prices: Even the largest commodity market swings from fear and greed

Oil is one of the world's most demanded commodities as it serves multiple purposes when refined. Over production (greed) into the 2008 oil peak resulted in an oil crash as the Global Financial Crisis unfolded destroying demand. The COVID-19 shock resulted in front month oil prices going negative because demand for oil declined extensively with global populations staying home. Oil prices recently spiked to a 14 year high when Russian invaded Ukraine. Markets feared a global disruption in oil supply as oil is a major commodity export for Russia. Has oil peaked? Or does it need to see a new all-time high such as $175/barrel like our technical measures have suggested since May 2021?

Chart 15: WTI Crude Oil – Monthly chart

Large swings in oil prices is often attribute to fear and greed

Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

Rule 7: Markets are strongest when they are broad and weakest when they narrow to a handful of blue chip names

The breadth of the market is important. Broad-based rallies have the potential to continue, while narrowing rallies are prone to failure. A market rally driven by a handful of blue chip names suggests that the SMID cap troops have abandoned the largest cap generals, which is a weak setup for market breadth. Technical analysts use indicators such as advance-decline (A-D) lines, new highs and new lows and the percentage of stocks above MAs to measure market breadth.

The troops abandoned the generals entering 2022

NYSE A-D line: Weak breadth a leading indicator of 2022 correction

What a difference a year makes. Late 2020 had bullish market breadth and a decisive breakout for the NYSE all issues A-D line. This broad-based rally continued into 2021. Late 2021 into early 2022 saw a failed breakout as well as lower highs for this A-D line that showed narrowing breadth on the new highs for the S&P 500 into early 2022. Throughout 2022 this indicator has declined as narrowing breadth has either preceded or confirmed lower lows on the S&P 500 (see reports: Buckle up! 2022 could be a rocky year and Messy indicators, but the SPX defends support).

Chart 16: Market breadth as measured by the NYSE all issues advance-decline line: Daily chart

Late 2021 into early 2022 saw a failed breakout as well as lower highs for this A-D line that showed narrowing breadth on the new highs for the S&P 500 into early 2022. Throughout 2022 this indicator has declined as narrowing breadth has either preceded or confirmed lower lows on the S&P 500.

Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

Rule 8: Bear markets have three stages — sharp down — reflexive rebound —a drawn-out fundamental downtrend

2022 is a cyclical bear market for equities. Rule 8 suggests three phases to a bear market. The first phase is a sharp downward move, but this decline does not completely unwind bullish sentiment and positioning. The second stage is a reflex rally that is based on the hope that the prior "buy the dip" trend continues and leads to new highs, but a "sell the rip" pattern develops. The final bear market stage is a drawn-out fundamental downtrend that can take investor sentiment and positioning to bearish extremes.

S&P 500: 2022 cyclical bear market shows three phases

Cyclical bear market in fundamental downtrend phase: watch 3800 and 3500

Daily closing price data on the S&P 500 show a 13% drop from January 3 through March 8 followed by a reflex rally of 11% into March 29 ahead of decline of 16% through May 19. The YTD correction through May 19 is 18.7% (20.93% using daily high low data). A tactical bounce is not ruled out, but the risk is for a fundamental downtrend into the low 3800s (20% correction), which was tested on an intra-day basis last week, and even toward 3500 (rising 200-week MA), which would mark a 27% drawdown.

Chart 17: S&P 500: Weekly chart with moving averages

The "drawn-out fundamental downtrend" could take the S&P 500 to 3500 (50% retracement and 200-week MA) with the next levels at 3195 (61.8% retracement).

Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

Rule 9: When all the experts and forecasts agree – something else is going to happen

Rule 9 refers to market sentiment and forecasts from analysts, economists, strategists and other Wall Street experts. This rule suggests that consensus among the experts is often fully discounted in asset prices, which is a risk that forecasts do not come to fruition. Something else is going to happens means that a market may either mean-revert prior to achieving forecasted values or overshoot the expert forecasts.

No capitulation yet from the Sell Side Indicator

Sell Side Indicator drops from contrarian bearish peak but not yet oversold

Our US equity strategists' Sell Side Indicator (SSI), which tracks the average recommended equity allocation by sell-side strategists, has been a reliable contrary indicator. In other words, it has historically been a bullish signal when Wall Street was extremely bearish, and vice versa. Amid a 98th percentile sell-off in the S&P 500, Wall St. became more cautious, with the SSI slipping another 44bps to 57.2%, representing the fourth month of declines. But the SSI is still in neutral territory, suggesting limited upside risk (see report: [Sell Side Indicator: Wall of worry, no capitulation 03 May 2022]).

Chart 18: The fourth straight month of decline in our Sell Side Indicator

Sell Side Indicator, 9/1985-4/2022

Source: BofA US Equity & Quant Strategy. Note: Buy and Sell signals are based on rolling 15-year +/- 1 standard deviation from the rolling 15-year mean. A reading above the red line indicates a Sell Signal and a reading below the green line indicates a Buy Signal

BofA GLOBAL RESEARCH

Rule 10: Bull markets are more fun than bear markets

Bull markets are associated with economic expansions and a positive wealth effect, while bear markets are often linked to recessions and a negative wealth effect. However, your affinity for a bull market also depends on your time horizon, investment style and point of view. Investors with multi-year time horizons likely find bull markets more fun than bear markets. Long/short hedge funds can struggle with finding good shorts in a bull market and may find bear markets more fun. "Perma-bears" and investors who are too quick to take contrarian bearish view also do not have much fun during a bull market.

S&P 500 is a leading indicator of economic activity

Equity returns better in expansions than recessions

It is common sense: Bull markets are more fun than bear markets. The S&P 500 is a leading indicator and a reflection of economic activity. S&P 500 returns are stronger heading into and during expansions than they are heading into and during recessions. Big corrections for equities are often accompanied by the fear of an economic recession even if one does not occur.

Table 1: S&P 500 returns, recessions and expansions: Late 1920s to present

S&P 500 returns are stronger heading into and during expansions than they are heading into and during recessions

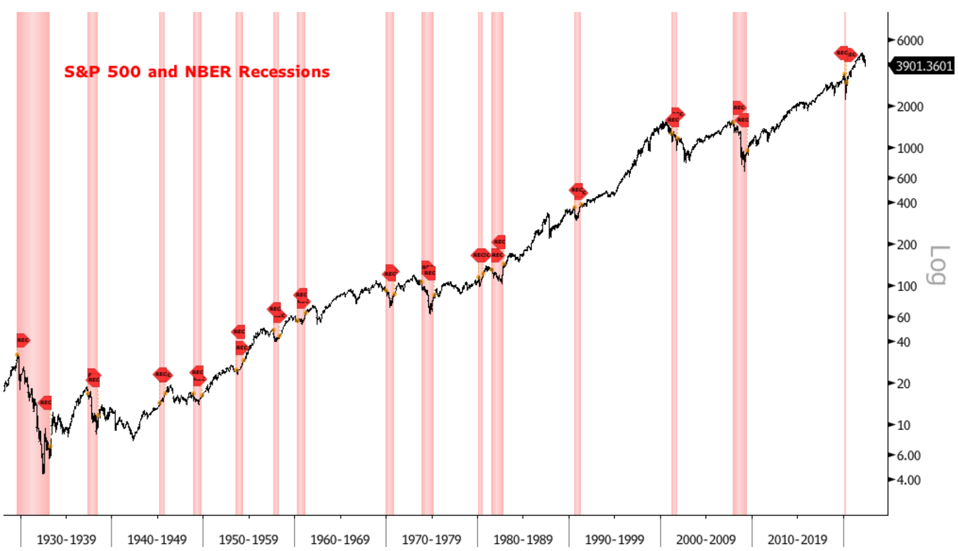
	Returns 6-months prior to recessions	S&P 500 returns during recessions	Returns 6-months prior to expansions	S&P 500 returns during expansions
Average	-0.33%	-6.39%	14.54%	70.16%
Median	-2.33%	-1.41%	15.34%	44.19%
% of time up	46.67%	46.67%	86.67%	93.33%
Maximum	23.92%	17.94%	28.31%	230.34%
Minimum	-19.23%	-81.55%	-6.23%	-4.01%

Source: BofA Global Research, Bloomberg, NBER

BofA GLOBAL RESEARCH

Chart 19: S&P 500 with NBER recessions: Monthly chart

It should come as no surprise that most of the longer-term, or secular, upward progress for the S&P 500 is during economic expansions.



Source: BofA Global Research, Bloomberg, NBER

BofA GLOBAL RESEARCH

Disclosures

Important Disclosures

FUNDAMENTAL EQUITY OPINION KEY: Opinions include a Volatility Risk Rating, an Investment Rating and an Income Rating. *VOLATILITY RISK RATINGS*, indicators of potential price fluctuation, are: A - Low, B - Medium and C - High. *INVESTMENT RATINGS* reflect the analyst's assessment of both a stock's: absolute total return potential as well as its attractiveness for investment relative to other stocks within its *Coverage Cluster* (defined below). There are three investment ratings: 1 - Buy stocks are expected to have a total return of at least 10% and are the most attractive stocks in the coverage cluster; 2 - Neutral stocks are expected to remain flat or increase in value and are less attractive than Buy rated stocks and 3 - Underperform stocks are the least attractive stocks in a coverage cluster. Analysts assign investment ratings considering, among other things, the 0-12 month total return expectation for a stock and the firm's guidelines for ratings dispersions (shown in the table below). The current price objective for a stock should be referenced to better understand the total return expectation at any given time. The price objective reflects the analyst's view of the potential price appreciation (depreciation).

Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster[R1]
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

[R1] Ratings dispersions may vary from time to time where BofA Global Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

INCOME RATINGS, indicators of potential cash dividends, are: 7 - same/higher (dividend considered to be secure), 8 - same/lower (dividend not considered to be secure) and 9 - pays no cash dividend. *Coverage Cluster* is comprised of stocks covered by a single analyst or two or more analysts sharing a common industry, sector, region or other classification(s). A stock's coverage cluster is included in the most recent BofA Global Research report referencing the stock.

Due to the nature of strategic analysis, the issuers or securities recommended or discussed in this report are not continuously followed. Accordingly, investors must regard this report as providing stand-alone analysis and should not expect continuing analysis or additional reports relating to such issuers and/or securities.
Due to the nature of quantitative 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.
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). Note that BofA Securities Europe SA has registered address at 51 rue la Boétie, 75008 Paris, is registered under no. 842 602 690 RCS Paris, and its share capital can be found on BofASE's disclaimer webpage; BofA Europe (Milan): Bank of America Europe Designated Activity Company, Milan Branch, regulated by the Bank of Italy, the European Central Bank (ECB) and the Central Bank of Ireland (CBI); BofA Europe (Frankfurt): Bank of America Europe Designated Activity Company, Frankfurt Branch regulated by BaFin, the ECB and the CBI; BofA Europe (Madrid): Bank of America Europe Designated Activity Company, Sucursal en España, regulated by the Bank of Spain, the ECB and the CBI; Merrill Lynch (Australia): Merrill Lynch Equities (Australia) Limited, regulated by the Australian Securities and Investments Commission; Merrill Lynch (Hong Kong): Merrill Lynch (Asia Pacific) Limited, regulated by the Hong Kong Securities and Futures Commission (HKSFC); Merrill Lynch (Singapore): Merrill Lynch (Singapore) Pte Ltd, regulated by the Monetary Authority of Singapore (MAS); Merrill Lynch (Canada): Merrill Lynch Canada Inc, regulated by the Investment Industry Regulatory Organization of Canada; Merrill Lynch (Mexico): Merrill Lynch Mexico, SA de CV, Casa de Bolsa, regulated by the Comisión Nacional Bancaria y de Valores; Merrill Lynch (Argentina): Merrill Lynch Argentina SA, regulated by Comisión Nacional de Valores; BofAS Japan: BofA Securities

Japan Co., Ltd., regulated by the Financial Services Agency; Merrill Lynch (Seoul): Merrill Lynch International, LLC Seoul Branch, regulated by the Financial Supervisory Service; Merrill Lynch (Taiwan): Merrill Lynch Securities (Taiwan) Ltd., regulated by the Securities and Futures Bureau; BofAS India: BofA Securities India Limited, regulated by the Securities and Exchange Board of India (SEBI); Merrill Lynch (Indonesia): PT Merrill Lynch Sekuritas Indonesia, regulated by Otoritas Jasa Keuangan (OJK); Merrill Lynch (Israel): Merrill Lynch Israel Limited, regulated by Israel Securities Authority; Merrill Lynch (Russia): OOO Merrill Lynch Securities, Moscow, regulated by the Central Bank of the Russian Federation; Merrill Lynch (DIFC): Merrill Lynch International (DIFC Branch), regulated by the Dubai Financial Services Authority (DFSA); Merrill Lynch (Brazil): Merrill Lynch S.A. Corretora de Títulos e Valores Mobiliários, regulated by Comissão de Valores Mobiliários; Merrill Lynch KSA Company: Merrill Lynch Kingdom of Saudi Arabia Company, regulated by the Capital Market Authority.

This information: has been approved for publication and is distributed in the United Kingdom (UK) to professional clients and eligible counterparties (as each is defined in the rules of the FCA and the PRA) by MLI (UK), which is authorized by the PRA and regulated by the FCA and the PRA - details about the extent of our regulation by the FCA and PRA are available from us on request; has been approved for publication and is distributed in the European Economic Area (EEA) by BofASE (France), which is authorized by the ACPR and regulated by the ACPR and the AMF; has been considered and distributed in Japan by BofAS Japan, a registered securities dealer under the Financial Instruments and Exchange Act in Japan, or its permitted affiliates; is issued and distributed in Hong Kong by Merrill Lynch (Hong Kong) which is regulated by HKSFC; is issued and distributed in Taiwan by Merrill Lynch (Taiwan); is issued and distributed in India by BofAS India; and is issued and distributed in Singapore to institutional investors and/or accredited investors (each as defined under the Financial Advisers Regulations) by Merrill Lynch (Singapore) (Company Registration No 198602883D). Merrill Lynch (Singapore) is regulated by MAS. Merrill Lynch Equities (Australia) Limited (ABN 65 006 276 795), AFS License 235132 (MLEA) distributes this information in Australia only to 'Wholesale' clients as defined by s.761G of the Corporations Act 2001. With the exception of Bank of America N.A., Australia Branch, neither MLEA nor any of its affiliates involved in preparing this information is an Authorised Deposit-Taking Institution under the Banking Act 1959 nor regulated by the Australian Prudential Regulation Authority. No approval is required for publication or distribution of this information in Brazil and its local distribution is by Merrill Lynch (Brazil) in accordance with applicable regulations. Merrill Lynch (DIFC) is authorized and regulated by the DFSA. Information prepared and issued by Merrill Lynch (DIFC) is done so in accordance with the requirements of the DFSA conduct of business rules. BofA Europe (Frankfurt) distributes this information in Germany and is regulated by BaFin, the ECB and the CBI. BofA Securities entities, including BofA Europe and BofASE (France), may outsource/delegate the marketing and/or provision of certain research services or aspects of research services to other branches or members of the BofA Securities group. You may be contacted by a different BofA Securities entity acting for and on behalf of your service provider where permitted by applicable law. This does not change your service provider. Please refer to the Electronic Communications Disclaimers for further information.

This information has been prepared and issued by BofAS and/or one or more of its non-US affiliates. The author(s) of this information may not be licensed to carry on regulated activities in your jurisdiction and, if not licensed, do not hold themselves out as being able to do so. BofAS and/or MLPF&S is the distributor of this information in the US and accepts full responsibility for information distributed to BofAS and/or MLPF&S clients in the US by its non-US affiliates. Any US person receiving this information and wishing to effect any transaction in any security discussed herein should do so through BofAS and/or MLPF&S and not such foreign affiliates. Hong Kong recipients of this information should contact Merrill Lynch (Asia Pacific) Limited in respect of any matters relating to dealing in securities or provision of specific advice on securities or any other matters arising from, or in connection with, this information. Singapore recipients of this information should contact Merrill Lynch (Singapore) Pte Ltd in respect of any matters arising from, or in connection with, this information. For clients that are not accredited investors, expert investors or institutional investors Merrill Lynch (Singapore) Pte Ltd accepts full responsibility for the contents of this information distributed to such clients in Singapore.

General Investment Related Disclosures:

Taiwan Readers: Neither the information nor any opinion expressed herein constitutes an offer or a solicitation of an offer to transact in any securities or other financial instrument. No part of this report may be used or reproduced or quoted in any manner whatsoever in Taiwan by the press or any other person without the express written consent of BofA Securities.

This document provides general information only, and has been prepared for, and is intended for general distribution to, BofA Securities clients. Neither the information nor any opinion expressed constitutes an offer or an invitation to make an offer, to buy or sell any securities or other financial instrument or any derivative related to such securities or instruments (e.g., options, futures, warrants, and contracts for differences). This document is not intended to provide personal investment advice and it does not take into account the specific investment objectives, financial situation and the particular needs of, and is not directed to, any specific person(s). This document and its content do not constitute, and should not be considered to constitute, investment advice for purposes of ERISA, the US tax code, the Investment Advisers Act or otherwise. Investors should seek financial advice regarding the appropriateness of investing in financial instruments and implementing investment strategies discussed or recommended in this document and should understand that statements regarding future prospects may not be realized. Any decision to purchase or subscribe for securities in any offering must be based solely on existing public information on such security or the information in the prospectus or other offering document issued in connection with such offering, and not on this document.

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

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

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:

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.