

BofA GPS: Global Proprietary Signals

A change in the mix

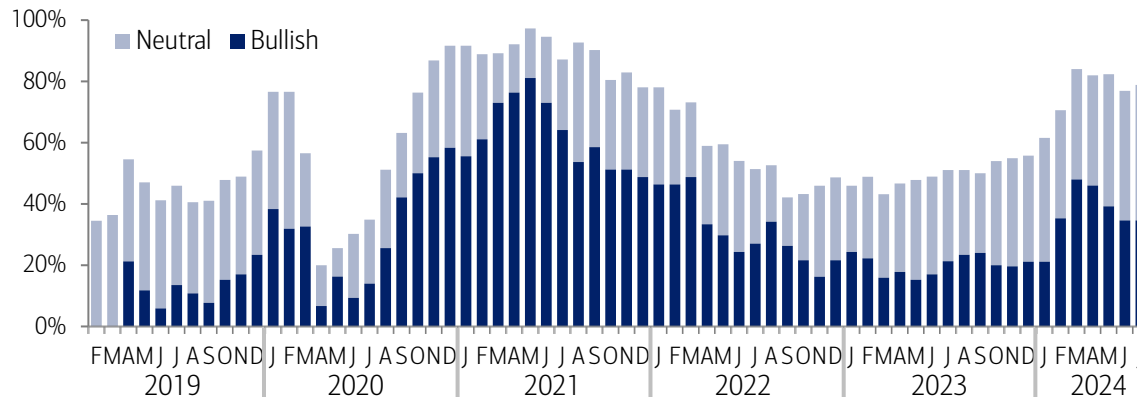
Global Proprietary Signals

BofA Global Proprietary Signals is a compendium of 80+ proprietary indicators across different economies/strategies/markets/asset classes that reflects the insights of BofA Global Research analysts.

Pit-stop

The S&P 500 Index witnessed its first 2% decline in 357 trading days last week, prompting speculation about whether the 21-month long bull market has run its course. We think not. A consolidation phase within the confines of the bull market perhaps, but not the end to it. On the contrary, things are just starting to fall in place for the broader corporate sector, as we lay out in more details below.

Exhibit 1: Breadth of Bullish/Neutral signals near cycle-highs (79%) but Bullish signals down from 48% in March to 35% now
Proportion of growth indicators providing Bullish/Neutral signal



Source: BofA Predictive Analytics. Notes: Based on 52 growth indicators as of today.

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Refer to important disclosures on page 30 to 32.

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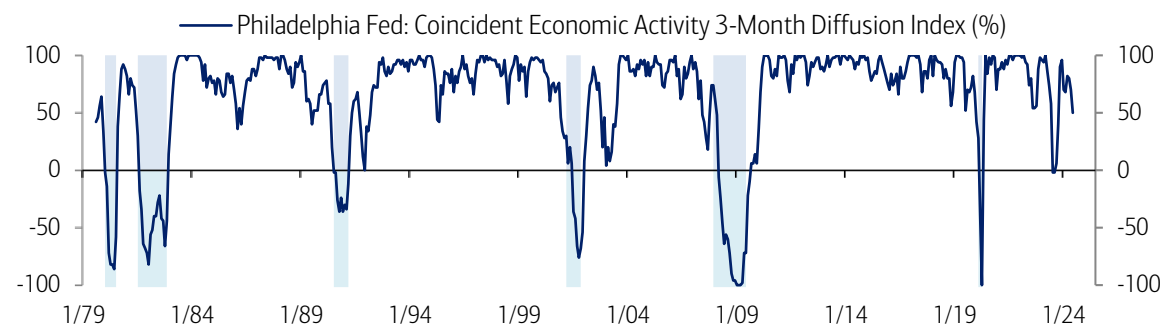
Softlanding vibes

After an extended period of consensus-defying growth, the global economy is set to slow. Not a stark slowdown per se, but a deceleration from the above-trend momentum, as suggested by the Global Proprietary Signals. While the breadth of Bullish/Neutral signals from our growth indicators remains near the cycle-highs at 79%, that of Bullish signals has slid from 48% in March to 35% now, as they cluster towards Neutral signals.

Sections of the US economy, in particular, have been softening in recent months – the June state coincident indexes from the Federal Reserve Bank of Philadelphia saw an improvement in only 64% (i.e. 32 out of 50) of the states over the past 3 months versus 86% in April. Of late, it has spread to some other areas of the world.

Exhibit 2: The June state coincident indexes improved in only 64% of the states over the past 3 months versus 86% in April

US State Coincident Indexes: slowdown in growth momentum



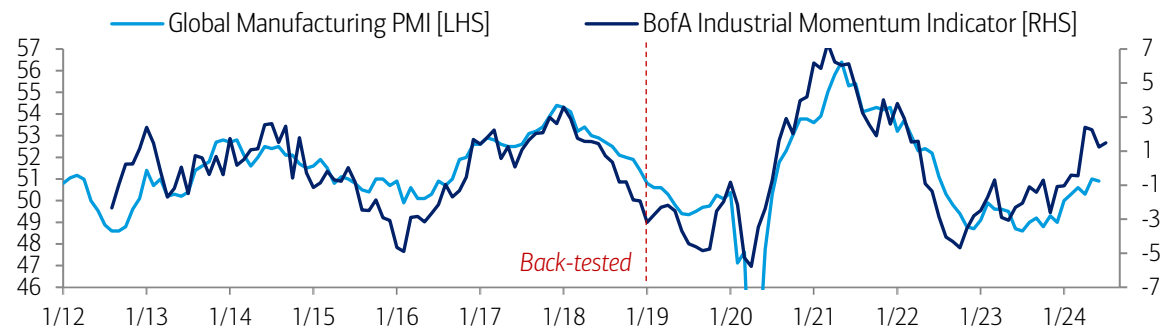
Source: BofA Predictive Analytics, FRB Philadelphia, Haver. Notes: Shaded areas denote NBER-defined US recessions.

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The [Industrial Momentum Indicator \(see note\)](#) for instance, which leads the directional trends in global industrial activity, has rolled over in recent months on a lack of momentum in on-the-ground hard data inputs. Similarly, the [Japan Factory Automation \(FA\) Indicator \(see note\)](#) for machine tool orders saw a mild downtick in June on a drag in China-related inputs, while Europe is also seeing a delay in its take-off.

Exhibit 3: BofA Industrial Momentum Indicator vs Global Manufacturing PMI

Bottoms in the BofA Industrial Momentum Indicator lead bottoms in Global Manufacturing PMI



Source: BofA Global Research, S&P Global, Haver

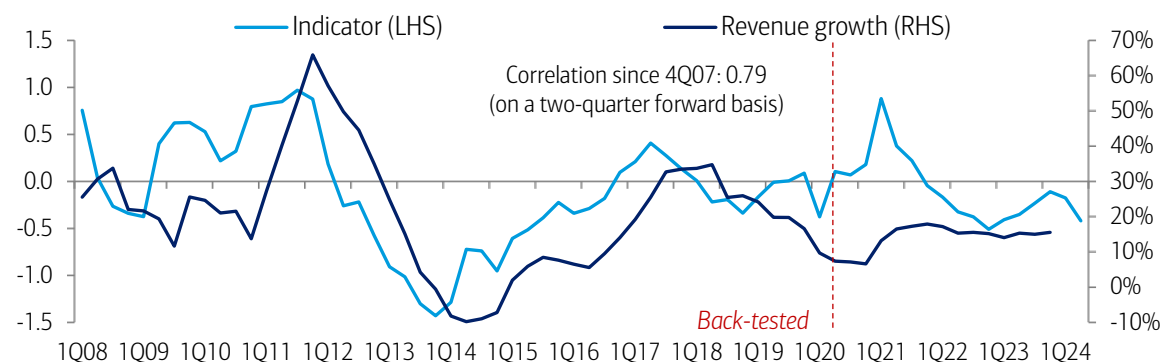
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However, our economists deem the [risk of a sharp slowdown to be low \(see note\)](#). They do subscribe to a moderation in the pace of growth in the US but maintain that the consumer is resilient enough to keep the economy in a solid expansion. In a similar vein, the [US Regime Indicator \(see note\)](#) saw a second consecutive decline in the underlying data but stays firm in the *Recovery* phase. So does the [European Composite Macro Indicator \(see note\)](#) despite flatlining in July, which is not atypical in long-run *Recovery* episodes.

Exhibit 4: The China White Liquor Hydrometer portends a grim outlook even for the defensive staples sector in China

BofA China White Liquor Indicator vs sector revenue growth* (12m rolling)



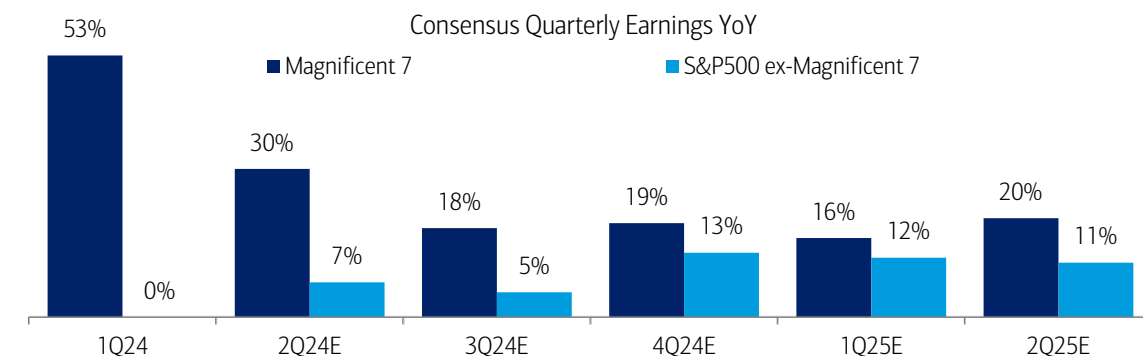
Source: BofA Global Research, companies. Notes: Encompasses 16 listed white liquor companies.

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China, on the other hand, is a node of concern especially as unfavorable base effects kick in. Our analysts think the consumer downcycle still has a way to go, with the [White Liquor Hydrometer \(see note\)](#) portending a grim outlook even for the defensive staples sector. The indicator suggests sustained weakness in white liquor revenues in the coming quarters on a sharp sell-out deceleration post May Day and rapid fall in wholesale prices in conjunction with the overhang of the proposed consumption tax reform.

Exhibit 5: Broadening out: Magnificent 7 expected to decelerate, while the rest is expected to improve

Consensus quarterly EPS YoY: Magnificent 7 vs. S&P 493



Source: BofA US Equity & Quant Strategy, FactSet

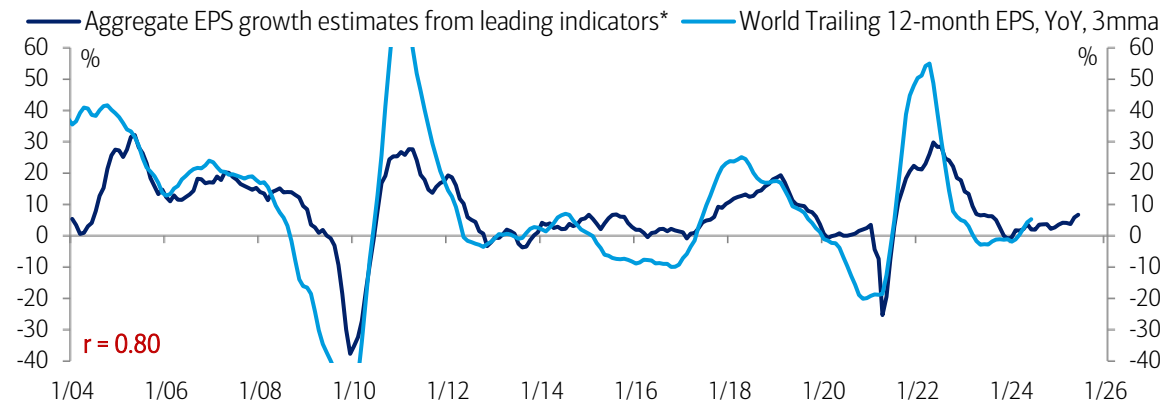
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In contrast, the corporate earnings outlook is still making upward strides as margins in the US are primed to hit all-time highs later in the year. We are also staring at a [broadening of the pie \(see note\)](#), with the S&P 500 ex Magnificent-7 set to register earnings growth for the first time in six quarters this season, with further blossoming down the line.

Exhibit 6: Leading indicators (aggregate) anticipate near double-digit growth in global earnings in the next 12 months

*Global EPS growth projection: Based on Asian exports growth, global manufacturing PMI, global manufacturing new orders, global earnings revisions ratio, corporate guidance for the US, and BofA China Financial Conditions Indicator



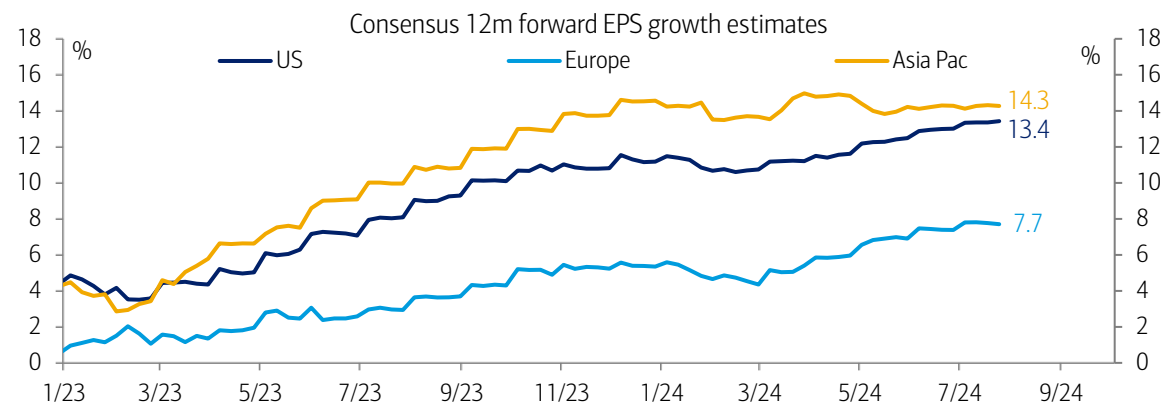
Source: BofA Predictive Analytics, MSCI, IBES, FactSet

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Leading indicators anticipate global earnings to post near double-digit growth in the next 12 months after flatlining in 2023, with projections climbing higher with each passing month. Consensus projections for the 12-month forward EPS growth similarly continue to rise across regions.

Exhibit 7: Consensus 12-month forward EPS growth projections continue to trend up across regions

Consensus 12-month forward EPS growth estimates (%): US | Europe | Asia Pac



Source: BofA Predictive Analytics, MSCI, IBES, Refinitiv

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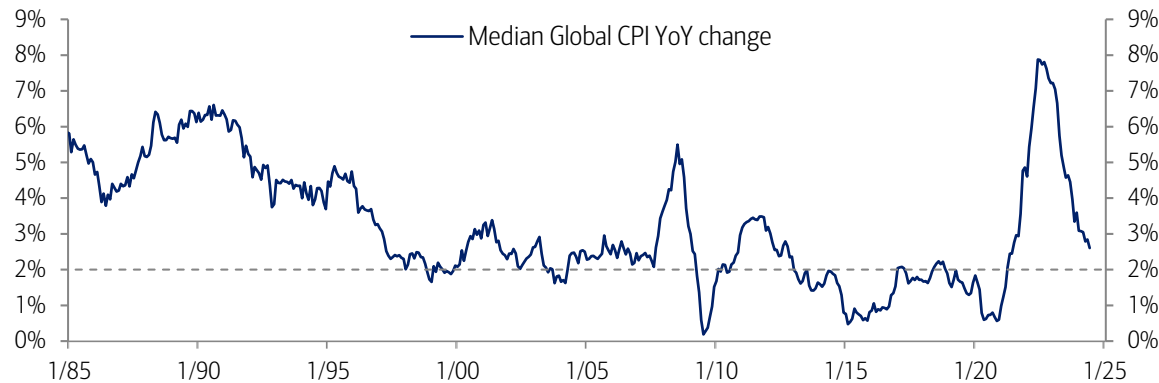


The race to 2%: one step closer

Meanwhile, the path to 2% inflation is well and truly back on track, after a head-fake in the US in the first quarter, with 1-year US inflation swaps back to below 2%. Median global CPI dipped further to touch a new cycle-low of 2.6% YoY with the first (*convincing*) monthly price contraction in the US in four years.

Exhibit 8: Disinflation is in full swing

Median Global CPI YoY: Based on 45 countries as of today



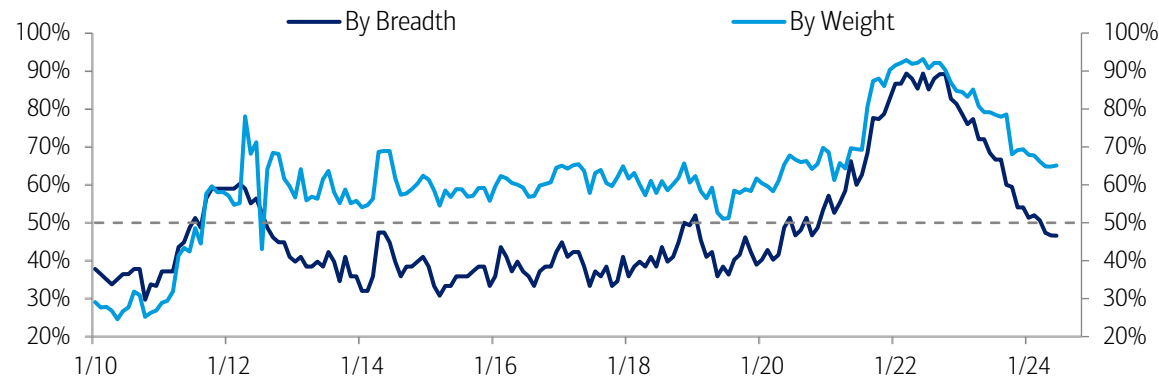
Source: BofA Predictive Analytics, Bloomberg, Refinitiv

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The breadth of disinflation in the US, in particular, was reassuringly broad, with core goods still in deflation and core services resuming its downward trend, and leading indicators hinting of a glidepath to the coveted 2%. Rising supply chain pressures pose upside risks but are unlikely to persist given they are primarily a reflection of stocking up ahead of potentially higher tariffs. In contrast, falling commodity prices and stocks spell persistent downside pressure for commodities, and in turn, goods inflation.

Exhibit 9: More than 50% of 74 US CPI components are running below 2.0% YoY for three months now

Proportion of US CPI Components above 2% YoY: Based on 74 components



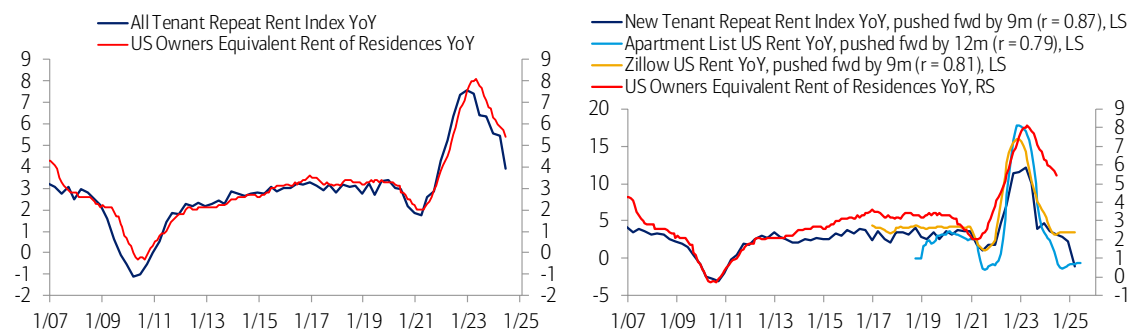
Source: BofA Predictive Analytics, BLS, Haver

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Exhibit 10: Shelter is headed for a steady disinflation, as informed by Apartment List, Zillow and the Cleveland Fed

Disinflationary impulse: Measures of asking rents versus US owners' equivalent rent of residences YoY (26% weight in headline CPI)



Source: BofA Predictive Analytics, BEA, Apartment List, Zillow Inc, Bloomberg, Adams, Brian, Lara Loewenstein, Hugh Montag, and Randal J. Verbrugge. 2022. "Disentangling Rent Index Differences: Data, Methods, and Scope." Federal Reserve Bank of Cleveland, Working Paper No. 22-38.

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The stand-out figure in the June report was the cooling in rent and owners' equivalent rent (OER) inflation, with both near-term as well as intermediate-term measures of asking rents, as informed by Apartment List, Zillow and the Cleveland Fed, pointing to further normalization in the coming months.

Exhibit 11: Wage growth levels inching back to pre-pandemic levels

US Phillips Curve: Wage growth vs unemployment rate



Source: BofA Predictive Analytics, FRB Atlanta, BLS. **Notes:** Concept courtesy Alpine Macro.

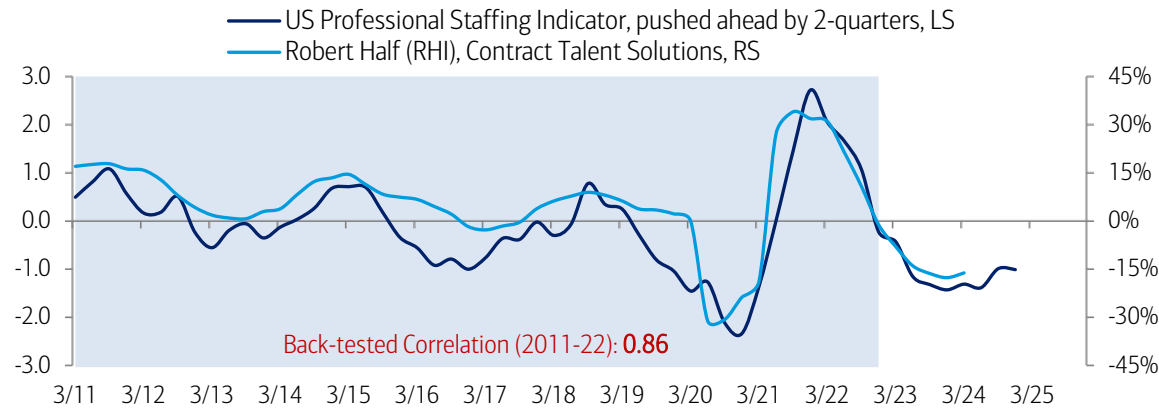
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Services ex-shelter should also yield to the diminishing wages pressures, as captured by the shift in the Phillips Curve closer to pre-pandemic realms with more to come, as seen in the high frequency data on job postings and advertised wages tracked by Indeed. Bearish signals from our staffing indicators in the [US \(see note\)](#) and [EMEA \(see note\)](#) attest to the view that the labor market is losing steam.



Exhibit 12: The US Professional Staffing Indicator suggests continued weakness in the temporary staffing industry

US Professional Staffing Indicator vs. RHI Contract Talent Solutions c\$ days-adjusted sales growth



Source: BofA Global Research

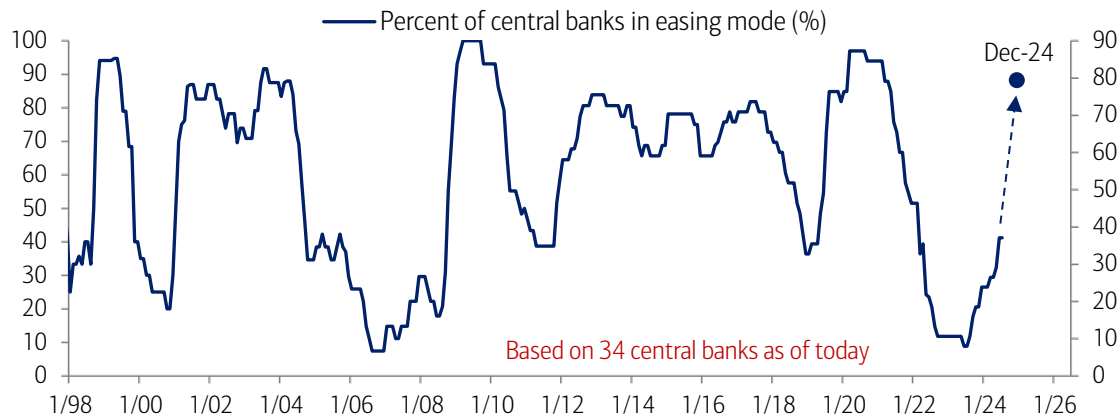
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Central banks on your side

The persistent and pervasive disinflation makes for synchronized global monetary policy easing to usher in. 42% of 34 global central banks are already in easing mode, with consensus expectations projecting a doubling of the proportion from here to the end of 2024. The June US CPI print, in particular, has pulled forward the easing cycle in the US, with the futures market pricing in 72bp of rate cuts through the end of the year, including a first cut in September, making the setup even more favorable for risk assets.

Exhibit 13: 80% of global central banks are expected to be in easing mode by the end of 2024 vs only 10% in July 2023

Percent of central banks in easing mode



Source: Ned Davis Research. Notes: December-expectation based on Bloomberg consensus. Latest stance has been replicated for December for countries for which no forecasts are available.

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Lest we forget, non-recessionary rate cuts have been bullish for equity markets in the past. In the seven episodes since 1950 when the US economy did not crash into a recession within a year of the first Fed rate cut (our base case for the current cycle), the S&P500 returned, on average, 10%/12% over a 3/6-month horizon from the first rate cut without a notable pullback in the interim period.

Exhibit 14: More often than not, the S&P500 delivered robust returns following the first Fed rate cut
S&P500 returns since 1950 when the US economy did not see a recession within a year of the first Fed rate cut

| # | Fed First Rate Cut Date | S&P 500 Price Returns (% , USD) | | | | | | | |
|---------|-------------------------|---------------------------------|-----------------|----------------|---------------|----------------|----------------|----------------|-----------------|
| | | 3 months before | 2 months before | 1 month before | 1 month after | 2 months after | 3 months after | 6 months after | 12 months after |
| 1 | 4/7/1967 | 9% | 3% | 1% | -5% | 2% | 3% | 9% | 4% |
| 2 | 8/30/1968 | 1% | -1% | 1% | -4% | 5% | 10% | -1% | -3% |
| 3 | 11/19/1971 | -7% | -8% | -6% | -9% | 13% | 15% | 19% | 26% |
| 4 | 11/21/1984 | -2% | -1% | -2% | -1% | 7% | 10% | 15% | 22% |
| 5 | 6/6/1989 | 10% | 10% | 5% | 1% | 6% | 8% | 7% | 13% |
| 6 | 7/6/1995 | 9% | 7% | 3% | -1% | 3% | 5% | 11% | 19% |
| 7 | 9/29/1998 | -8% | -7% | 2% | -3% | 14% | 18% | 25% | 21% |
| Average | | 2% | 0% | 1% | -3% | 7% | 10% | 12% | 15% |

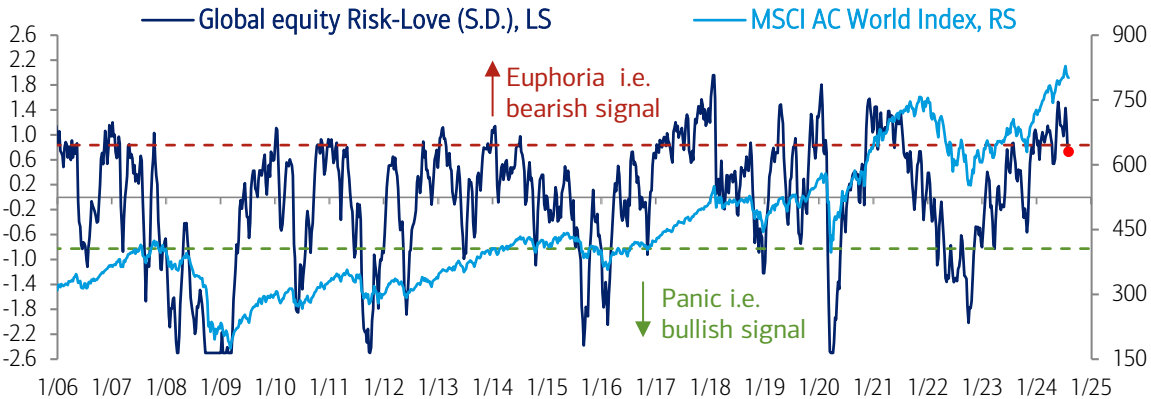
Source: BofA Predictive Analytics, Bloomberg

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Handling it well

Thus far, sentiment has been the Achilles heel of the market setup, with [Global Risk-Love \(see note\)](#), our contrarian equity sentiment indicator, raging in the 96th percentile of history leading to the sell-off.

Exhibit 15: Sentiment had been raging in the 96th percentile leading to the sell-off, but has since eased somewhat
Global Equity Risk-Love: currently at the 75th percentile of its history since 1987



Source: BofA Predictive Analytics, Bloomberg

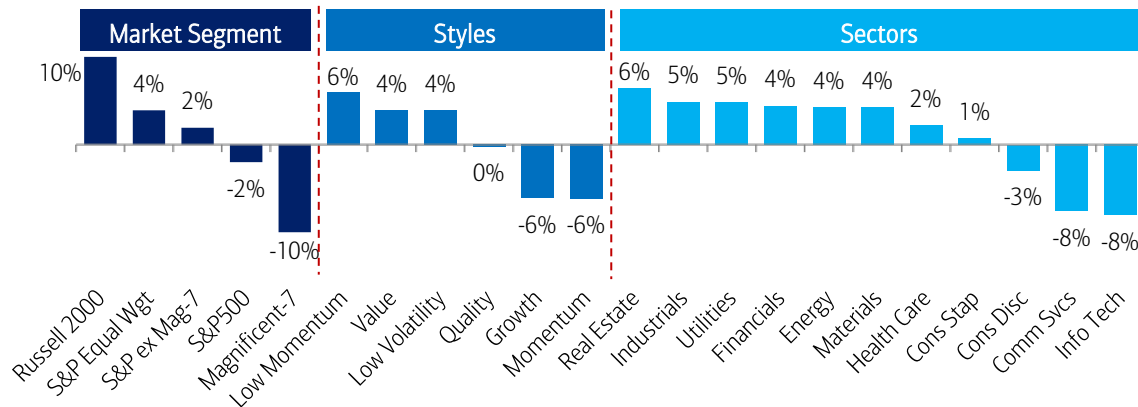
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It has since eased somewhat (75th percentile of history) owing to a sell-off in the mega-cap outperformers, but strikingly, without an erosion of market breadth, thanks to a violent rotation to laggards.



Exhibit 16: Broadening is here: violent rotation to laggards following the June US CPI release

Price changes in indexes since July 10 (% USD) – the peak in the Magnificent-7



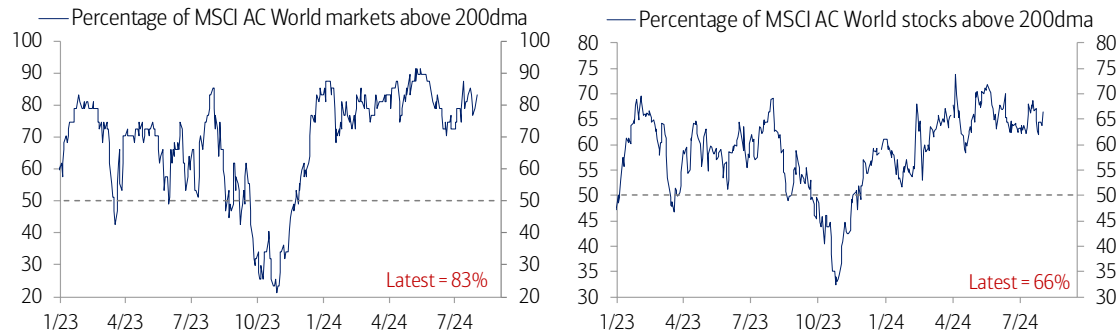
Source: BofA Predictive Analytics, Bloomberg

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Globally, 66% of stocks, 92% of industry groups and 83% of markets are trading above their 200-day moving averages – meaningfully higher than the respective long-term averages of 58%, 67%, and 61%. It is even better in the US, where 78% of stocks are trading above their 200-day moving averages now, up from 68% on July 10 in a confirmation that the bull market is intact.

Exhibit 17: Looking from the lens of direction, market breadth is not half bad

Market breadth above 200-day moving average: Global stocks | Global markets



Source: BofA Predictive Analytics, MSCI, Bloomberg

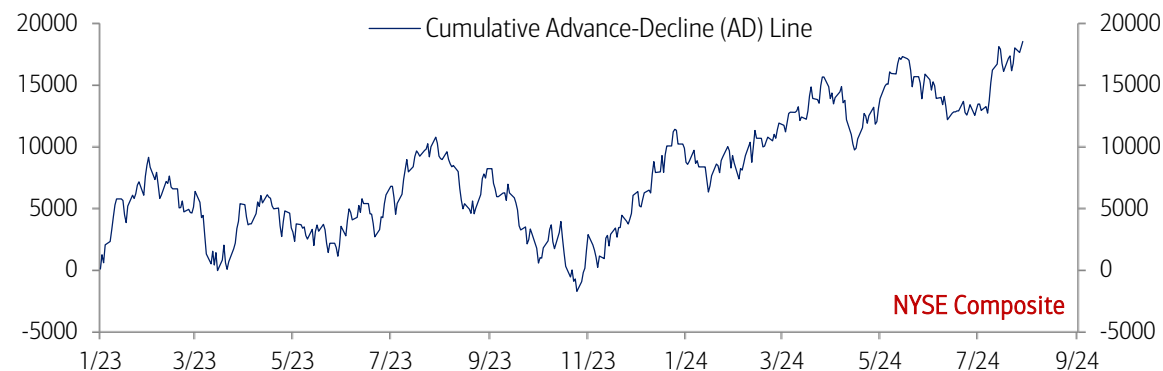
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The 2.3% decline in the S&P 500 on July 24 was its steepest daily fall since 2022, though historical studies see no bearing of such moves on prospective performance. In the 15 episodes since 1928, when the S&P 500 saw a 2% decline for the first time in a year, it rose an average 4%/6%/11% over the ensuing 3/6/12 months with a win ratio of 73% (i.e. 11 out of 15) across all horizons. Contrasting these with the worst declines, on average, over the same window starting on these dates (-3%/-3%/-6%), the risk-reward looks reasonably favorable.



Exhibit 18: Looking from the lens of direction, market breadth is not half bad

NYSE Composite Cumulative Advance-Dcline (AD) Line



Source: BofA Predictive Analytics, MSCI, Bloomberg

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Exhibit 19: A 2% decline in the S&P 500 out of the blue has historically not been a precursor to deeper corrections

S&P 500 returns following a 2% decline in a day for the first time in at least a year

| # | Date of First 2% Pullback in S&P 500 | S&P 500 Price Returns (% USD) | | | |
|-------------------------|--------------------------------------|-------------------------------|----------------|----------------|-----------------|
| | | 3 months after | 6 months after | 9 months after | 12 months after |
| 1 | 4/6/1953 | -1% | -5% | 2% | 10% |
| 2 | 8/19/1957 | -11% | -8% | -4% | 5% |
| 3 | 11/24/1958 | 8% | 14% | 15% | 12% |
| 4 | 9/19/1960 | 6% | 20% | 20% | 24% |
| 5 | 5/28/1962 | 6% | 12% | 16% | 26% |
| 6 | 11/22/1963 | 12% | 16% | 18% | 24% |
| 7 | 8/26/1966 | 6% | 14% | 19% | 21% |
| 8 | 7/28/1969 | 8% | -4% | -11% | -14% |
| 9 | 5/14/1973 | -3% | -3% | -14% | -14% |
| 10 | 10/31/1978 | 7% | 9% | 11% | 9% |
| 11 | 1/8/1986 | 12% | 16% | 14% | 24% |
| 12 | 2/16/1993 | 1% | 4% | 8% | 9% |
| 13 | 3/8/1996 | 6% | 4% | 17% | 27% |
| 14 | 2/27/2007 | 8% | 5% | 2% | -1% |
| 15 | 2/2/2018 | -5% | 2% | -1% | -2% |
| Average | | 4% | 6% | 7% | 11% |
| Average (ex-recession*) | | 6% | 10% | 13% | 17% |

Source: BofA Predictive Analytics, Bloomberg. *Notes: Shaded rows denote NBER-defined US recessions within a year of the sell-off date.

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Bottomline. Still-high sentiment amidst seasonal weakness and the election uncertainty make risk assets susceptible to downside risks, but a favorable tilt in the pillars of equity markets renders an end to the bull run unlikely. In fact, in many ways, it resembles the setup witnessed at the onset of a typical bull market – return of *real* sales growth, broadening of the earnings pie, not-too-hot-not-too-cold inflation, and a pivot to monetary easing including a growing money supply. It may be a volatile ride but we are unlikely to stop here. We stay constructive on markets.

Check inside for indicator signals.

See links to recent editions of the BofA Global Proprietary Signals below

[BofA GPS: Global Proprietary Signals: The upside 02 July 2024](#)

[BofA GPS: Global Proprietary Signals: Not too hot, not too cold 31 May 2024](#)

[BofA GPS: Global Proprietary Signals: The most important thing 30 April 2024](#)



Exhibit 20: Macroeconomic Indicators

Please refer to the Glossary at the back of the report for a brief description of each of these indicators (and see links to macro indicator reports below, numbered in the global column)

| # Indicator | Predictor of | Latest Signal | | | | | | | | | | | |
|---|--------------------------------|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Global | | Aug-23 | Sep-23 | Oct-23 | Nov-23 | Dec-23 | Jan-24 | Feb-24 | Mar-24 | Apr-24 | May-24 | Jun-24 | Jul-24 |
| 1 Bull & Bear Indicator (W) - M. Hartnett | Global Cross-Asset Risk | ⇔ | ✓ | ✓ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 2 Global Risk-Love Indicator (M) - R. Samadhiya | Global Equities | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ✗ | ✗ | ✗ | ✗ | ⇔ | ✗ | ⇔ |
| 3 Global FMS Cash Indicator (M) - M. Hartnett | Global Equities | ⇔ | ✓ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 4 Global Breadth Rule (W) - M. Hartnett | Global Equities | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 5 Global Flow Trading Rule (W) - M. Hartnett | Global Equities | ⇔ | ✓ | ⇔ | ✗ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 6 EM Flow Trading Rule (W) - M. Hartnett | Emerging Markets Equities | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ✗ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 7 EMFX Carry Sentiment Indicator (Q) - D. Hauner | Emerging Markets Currencies | ⇔ | ⇔ | ✓ | ✓ | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ | ⇔ | ⇔ |
| 8 CompassAlarm (Q) - D. Hauner | Emerging Markets Currencies | ✗ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 9 Emerging Monetary Mood Indicator (Q) - D. Hauner | EM Central Banks Policy Stance | ⇔ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ⇔ | ⇔ | ⇔ | ⇔ |
| 10 GFSI Risk Allocator (W) - B. Bowler | Cross-Market Gauge of Risk | ⇔ | ✗ | ⇔ | ⇔ | ⇔ | ✓ | ✓ | ✓ | ⇔ | ✓ | ✓ | ✓ |
| 11 Global Wave (M) - N. Tupper | Global Equities | ✗ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 12 Global News Pulse (M) - N. Tupper | Global Equities | ✓ | ✓ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ✓ | ✓ | ✓ | ✓ |
| 13 Global EPS Growth Model (W) - M. Hartnett | Global EPS Growth | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 14 WTI Crude Oil Directional Forecast (M) - F. Blanch | WTI Crude Oil | ✓ | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ | ✓ | ✗ | ✗ | ✓ |

| Americas | | Aug-23 | Sep-23 | Oct-23 | Nov-23 | Dec-23 | Jan-24 | Feb-24 | Mar-24 | Apr-24 | May-24 | Jun-24 | Jul-24 |
|---|-----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 15 Indicator of US Labor Market Momentum (M) - M. Gapen | US Labor Market | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| 16 US GDP Tracker (W) - M. Gapen | US GDP | ✓ | ✓ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 17 BAC Aggregated Card Data (M) - A. Bhav | US Retail Sales | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 18 Sell Side Indicator (M) - S. Subramanian | US Equities | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 19 Indicator of US Financial Conditions (M) - M. Gapen | US Financial Conditions | ✗ | ✗ | ✗ | ✗ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 20 US HY Default Rate Indicator (M) - O. Melentyev | US High Yield Default Probability | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 21 US Regime Indicator (M) - S. Subramanian | US Business Cycle | ✓ | ✓ | ✓ | ✓ | ⇔ | ⇔ | ⇔ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 22 Machine-learning Based Cycle Indicator (Q) - A. Bhav | US Economic Cycle | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 23 Indicator of US Labor Market Conditions (M) - M. Gapen | US Labor Market | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 24 Corporate Misery Indicator (Q) - S. Subramanian | S&P 500 EPS Growth | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 25 Indicator of US Financial Stress (M) - M. Gapen | US Financial Stress | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ✓ | ✓ | ✓ | ✓ |



Exhibit 20: Macroeconomic Indicators

Please refer to the Glossary at the back of the report for a brief description of each of these indicators (and see links to macro indicator reports below, numbered in the global column)

| # Indicator | Predictor of | Latest Signal | | | | | | | | | | | |
|---|---------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 26 Canada Cycle Indicator (M) - O. Kwon | Canada Business Cycle | | | | | | | | | | ✓ | ✓ | ✓ |
| 27 Brazil Activity Coincident Tracker (M) - D. Beker | Brazil Economic Cycle | ⇔ | ✗ | ⇔ | ⇔ | ✗ | ✗ | ✓ | ✓ | ✓ | ✓ | ✗ | ✓ |
| Europe | | Aug-23 | Sep-23 | Oct-23 | Nov-23 | Dec-23 | Jan-24 | Feb-24 | Mar-24 | Apr-24 | May-24 | Jun-24 | Jul-24 |
| 28 Euro Area GDP Tracker (M) - R. Segura-Cayuela | Euro Area GDP | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| 29 UK Consumer Confidence Indicator (M) - S. Punhani | UK Consumer Spending | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| 30 Euro Area Procyclical Core Inflation (M) - R. Segura-Cayuela | Euro Area Inflation | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ⇔ |
| 31 European Credit Macro Indicator (M) - I. Angelakis | European Credit Spreads | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ✓ | ✓ | ✓ | ⇔ | ⇔ | ⇔ | ⇔ |
| 32 Bank of England Mood Indicator (M) - S. Punhani | Bank of England Policy Rate | ✓ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 33 Riksbank Mood Indicator (M) - M. Rousakis | Riksbank Policy Rate | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✗ | ✗ | ✗ | ⇔ |
| 34 European Composite Macro Indicator (M) - P. Strzelinska | European Business Cycle | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 35 European Momentum Conviction Indicator (M) - P. Strzelinska | Momentum Style | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 36 UK GDP Tracker (M) - S. Punhani | UK GDP | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✓ |
| 37 NORBI Mood Indicator (M) - M. Rousakis | Norges Bank Policy Rate | ✓ | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ⇔ | ⇔ | ✓ | ✓ |
| Asia Pac | | Aug-23 | Sep-23 | Oct-23 | Nov-23 | Dec-23 | Jan-24 | Feb-24 | Mar-24 | Apr-24 | May-24 | Jun-24 | Jul-24 |
| 38 Asia ex-Japan Risk-Love Indicator (M) - R. Samadhiya | Asian Equities | ⇔ | ⇔ | ✓ | ✓ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 39 China Investment Compass (Q) - W. Wu | China Business Cycle | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 40 China ACT (M) - H. Qiao | China Economic Cycle | ⇔ | ⇔ | ✓ | ✓ | ✓ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 41 China FCI (M) - H. Qiao | Liquidity in China | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ✓ | ✓ | ✓ | ✓ | ⇔ | ⇔ | ⇔ |
| 42 China A-share Wax & Wane Indicator (W) - W. Wu | China A-share Equities | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ⇔ |
| 43 AU Household Consumption Tracker (Q) - A. Zhou | Australia Household Consumption | | ✗ | ✗ | ✗ | ✗ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 44 RBA Sentiment Indicator (M) - O. Livingston | RBA Policy Rate | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |

Source: BofA Predictive Analytics

BofA GLOBAL RESEARCH

✓ denotes Bullish ⇔ denotes Balanced ✗ denotes Bearish

Note: D, W, B, M, Bm and Q in the parentheses denote frequency of update/publication of the indicator. D denotes daily, W denotes weekly,

B denotes biweekly, M denotes monthly, Bm denotes bimonthly and Q denotes quarterly.



Exhibit 21: Sectoral Indicators

Please refer to the Glossary at the back of the report for a brief description of each of these indicators (and see links to macro indicator reports below, numbered in the global column)

| # Indicator | Predictor of | Latest Signal | | | | | | | | | | | |
|--|-------------------------------------|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Global / Americas | | Aug-23 | Sep-23 | Oct-23 | Nov-23 | Dec-23 | Jan-24 | Feb-24 | Mar-24 | Apr-24 | May-24 | Jun-24 | Jul-24 |
| 45 Global EV Battery Value Chain Indicator (M) - J. Lee | Global EV Battery Revenue | X | X | X | X | X | X | X | X | X | X | X | X |
| 46 Health Care Labor Tracker (M) - K. Fischbeck | US Health Care Earnings Outlook | X | X | X | X | X | X | X | X | X | X | X | X |
| 47 US Discount Store Demand Indicator (M) - R. Ohmes | Spending at U.S. Discount Stores | ✓ | ✓ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | X | X |
| 48 US Professional Staffing Indicator (Q) - H. Balsky | US Professional Temporary Staffing | | | | | | | | | | | | X |
| 49 Global Luxury Demand Indicator (M) - A. Wallace | Global Luxury Companies | ✓ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 50 Industrial Momentum Indicator (M) - M. Feniger | Global Industrial Activity | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ✓ | ✓ | ✓ | ✓ | ⇔ | ⇔ |
| 51 Fluid Power Distributor Indicator (B) - A. Obin | Global Fluid Power Outlook | X | X | X | X | ✓ | ✓ | ✓ | ⇔ | ⇔ | ⇔ | X | ⇔ |
| 52 Truckload Diffusion Indicator (B) - K. Hoexter | US Trucking Freight Outlook | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ✓ | ✓ | ✓ | ✓ | ⇔ | ⇔ |
| 53 Industrial Real Estate Indicator (M) - C. Bonnel | US Industrial Real Estate Demand | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 54 Managed Care Utilization (M) - K. Fischbeck | US Managed Care Earnings | ⇔ | ✓ | ✓ | ✓ | ✓ | ✓ | ⇔ | ⇔ | ✓ | ✓ | ⇔ | ⇔ |
| 55 Lodging Macro Activity Tracker (M) - S. Kelley | US Lodging Industry Revenue | ⇔ | ✓ | ⇔ | ⇔ | ⇔ | ⇔ | ✓ | ✓ | ⇔ | ✓ | ✓ | ⇔ |
| 56 RENO Barometer (M) - R. Ohmes | US Home Improvement Spend | ⇔ | ⇔ | ⇔ | ⇔ | ✓ | ✓ | ✓ | ✓ | ✓ | ⇔ | ⇔ | ⇔ |
| 57 Petrochemical Sentiment Indicator (M) - S. Byrne | Global Petrochemical Sentiment | X | X | X | X | X | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 58 US Home Sales Indicator (M) - R. Jadosich | US Housing Demand | | | | | | ⇔ | ⇔ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 59 Internet Advertising Indicator (M) - J. Post | US Digital Advertising Revenue | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 60 S&P500 Energy Sector Directional Forecast (M) - F. Blanch | US Energy Sector Relative Price | ✓ | X | X | X | X | X | ✓ | ✓ | ✓ | X | X | ✓ |
| Europe | | Aug-23 | Sep-23 | Oct-23 | Nov-23 | Dec-23 | Jan-24 | Feb-24 | Mar-24 | Apr-24 | May-24 | Jun-24 | Jul-24 |
| 61 EU Logistics Growth Indicator (Q) - M. Kulesa | EU Industrial Real Estate Demand | | | | | | | | | | X | X | X |
| 62 EMEA Staffing Indicator (Q) - S. Sarli | EMEA Staffing | | X | X | X | X | X | X | X | X | X | X | X |
| 63 Veolia Waste Volume Indicator (M) - A. Roncier | Veolia Waste Volume Growth | | X | X | X | X | X | ⇔ | ⇔ | X | X | X | X |
| 64 European IT Services Indicator (M) - A. Buddhavarapu | European IT Services Revenue Growth | | | | | | | | | | | ⇔ | ⇔ |
| 65 Testing Growth Indicator (Q) - H. Agarwal | Testing, Inspection & Certification | X | X | X | X | X | X | X | X | X | ⇔ | ⇔ | ⇔ |
| 66 Chemical Conditions Tool (M) - M. Yates | European Chemical Sentiment | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| Asia Pac | | Aug-23 | Sep-23 | Oct-23 | Nov-23 | Dec-23 | Jan-24 | Feb-24 | Mar-24 | Apr-24 | May-24 | Jun-24 | Jul-24 |
| 67 China Cement Outlook Indicator (M) - M. Zhao | China Cement Sector Outlook | X | X | X | X | X | X | X | X | X | X | X | X |



Exhibit 21: Sectoral Indicators

Please refer to the Glossary at the back of the report for a brief description of each of these indicators (and see links to macro indicator reports below, numbered in the global column)

| # Indicator | Predictor of | Latest Signal | | | | | | | | | | | |
|---|------------------------------------|---------------|---|---|---|---|---|---|---|---|---|---|---|
| 68 China White Liquor Hydrometer (Q) - C. Luo | China White Liquor Revenue | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | X |
| 69 Philippines Credit Growth Indicator (M) - A. Swaminathan | Philippines Credit Growth | X | X | X | X | X | X | X | X | X | X | X | X |
| 70 Macau Macro Activity Tracker (M) - S. Kelley | Macau Gross Gaming Revenue | X | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | X | ⇔ | ⇔ |
| 71 Korea Beauty Indicator (Q) - A. Cho | Korea Beauty Brands Revenue | | | | | | | | | | | | ⇔ |
| 72 China Flight Signals (M) - N. Gee | China Airlines Unit Revenue | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ⇔ | ⇔ |
| 73 Australian Bank Credit Loss (Q) - M. Dunger | Australian Banks Bad Debts | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 74 India Loan Growth Indicator (M) - A. Swaminathan | India Commercial Banks Loan Growth | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 75 Korean Banks NII Indicator (Q) - J. Park | Korean Banks Net Interest Income | X | X | X | X | X | X | X | ✓ | ✓ | ✓ | ✓ | ⇔ |
| 76 Singapore Credit Growth Indicator (M) - A. Swaminathan | Singapore Credit Growth | X | X | X | X | X | X | X | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 77 Malaysia Credit Growth Indicator (M) - A. Swaminathan | Malaysia Credit Growth | X | X | X | X | X | X | X | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| 78 Indonesia Credit Growth Indicator (M) - A. Swaminathan | Indonesia Credit Growth | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ⇔ | ⇔ | ⇔ |
| 79 Thailand Credit Growth Indicator (M) - A. Swaminathan | Thailand Credit Growth | X | X | X | X | X | X | X | ✓ | ✓ | ⇔ | ⇔ | ⇔ |
| 80 Memory Indicator (M) - S. Woo | Semiconductor Memory Cycle | X | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 81 Athletic Apparel Indicator (Q) - R. Leung | Global Athletic Apparel Revenue | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 82 Athletic Footwear Indicator (Q) - R. Leung | Global Athletic Footwear Revenue | X | X | X | X | X | X | X | ⇔ | ⇔ | ⇔ | ✓ | ✓ |
| 83 Asian Synthetic Rubber Indicator (Q) - J. Lee | Asian Synthetic Rubber Revenue | X | X | X | X | X | X | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 84 Japan Factory Automation Indicator (M) - K. Hotta | Japan Factory Automation Cycle | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 85 India IT Services Indicator (M) - K. Tayal | India IT Services Revenue Growth | | | | | ⇔ | ⇔ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

Source: BofA Predictive Analytics

BofA GLOBAL RESEARCH

✓ denotes Bullish ⇔ denotes Balanced X denotes Bearish

D, W, B, M, Bm and Q in the parentheses denote frequency of update/publication of the indicator. D denotes daily, W denotes weekly, B denotes biweekly, M denotes monthly, Bm denotes bimonthly and Q denotes quarterly.

The indicators above have different methodologies, risk considerations and assumptions, and reflect different time horizons. **The labels of 'bullish', 'balanced' or 'bearish' reflect the analysts' interpretation of their respective indicators. 'Bullish' in a broad sense means that the indicator currently suggests a positive outlook for the relevant economy/strategy/discipline/market/ asset class. Similarly, 'bearish' means that the indicator currently suggests a negative outlook for the relevant economy/strategy/discipline/market/asset class. When the analyst is of the view that the indicator does not currently suggest a clear directional signal (either bullish or bearish), it is labeled as 'balanced'.** Investors should always refer to the most recent reports (hyperlinks) for full details and consider their own circumstances/objectives before making any investment decisions.



Disclaimer: Each of the indicators above is intended to be indicative metric only and may not be used for reference purposes or as a measure of performance for any financial instrument or contract, or otherwise relied upon by third parties for any other purpose, without the prior written consent of BofA Global Research. These indicators were not created to act as benchmarks.

The analysis of all the indicators in this report is back-tested and does not represent the actual performance of any account or fund. Back-tested performance depicts the hypothetical back-tested performance of a particular strategy over the time period indicated. In future periods, market and economic conditions will differ and the same strategy will not necessarily produce the same results. No representation is being made that any actual portfolio is likely to have achieved returns similar to those shown herein. In fact, there are frequently sharp differences between back-tested returns and the actual results realized in the actual management of a portfolio. Back-tested performance results are created by applying an investment strategy or methodology to historical data and attempts to give an indication as to how a strategy might have performed during a certain period in the past if the product had been in existence during such time. Back-tested results have inherent limitations including the fact that they are calculated with the full benefit of hindsight, which allows the security selection methodology to be adjusted to maximize the returns. Further, the results shown do not reflect actual trading or the impact that material economic and market factors might have had on a portfolio manager's decision-making under actual circumstances. Back-tested returns do not reflect advisory fees, trading costs, or other fees or expenses.



Glossary

Asia ex-Japan Risk-Love Indicator

Risk-Love is a contrary investor sentiment indicator. It tries to quantify investor emotions and help us understand swings in investor psychology. When at extremes, the indicator is valuable in anticipating reversals in investor mindset, and thus markets, going forward. We have constructed Risk-Love indicator for major Asian/emerging markets as well as for the world as a whole. We include data on positioning, investor surveys, volatility, spreads, correlations, hedging and market technicals measures. Since 1993, median 12m forward returns for Asia ex-Japan markets equities were 17% (in US dollar terms) when the Asia ex-Japan Risk-Love Indicator was in panic.

Australian Household Consumption Tracker

The Australian Household Consumption Tracker is a tool to assess the growth momentum of household spending in Australia that contributes to around 60% of GDP. The tracker comprises 14 data series spread over four different categories, namely, the housing market, the labor market, retail activity, and sentiment. It is constructed using the first principal component for each of the 4 different categories as independent inputs in a linear regression on actual household consumption data. It leads the YoY household consumption by one quarter with a correlation of 0.90 on a back-tested basis since 2009.

ASEAN Credit Growth Indicators (BofA Singapore Credit Growth Indicator, BofA Malaysia Credit Growth Indicator, BofA Indonesia Credit Growth Indicator, BofA Thailand Credit Growth Indicator & BofA Philippines Credit Growth Indicator)

The ASEAN Credit Growth Indicators seek to identify directional trends and key turning points in credit growth across each of the ASEAN-5 countries – Singapore, Malaysia, Indonesia, Thailand, and the Philippines. With lead times ranging from 3-12 months, these indicators are intended to help gauge how banks' loan growth are likely to shape up over the next one to two quarters. The set of six indicators – one for each of the six countries – is calculated using 5-10 input variables for each country that have leading cyclical properties contributing to system credit growth. The inputs, consisting of a mix of macro/market variables, banking system data, and other BofA proprietary indicators, can broadly be classified under four key categories – namely, system liquidity, business/retail expectations, rates and prices, and external factors. Our back-tested analysis indicates a 0.7-0.8 correlation between our set of BofA ASEAN Credit Growth Indicators and system credit growth across the entire backtested period.

Asian Synthetic Rubber Indicator

The Asian Synthetic Indicator is an aggregate of nine components (seven industry-specific and two macro) that drive the synthetic rubber business cycle. It tracks the directionality trends of the average YoY rubber revenue growth of the major listed synthetic rubber manufacturers in the Asia-Pacific region. The indicator leads the synthetic rubber revenues by six months with a correlation of 0.81 as well as the YoY change in aggregated average share prices by one quarter with a correlation of 0.80 since March 2004.

Athletic Supply Chain Indicators (BofA Global Athletic Footwear Indicator & BofA Global Athletic Apparel Indicator)

The Athletic Supply Chain Indicators seek to identify revenue growth trends in the global athletic footwear and apparel industry that has been a key driver of earnings and valuation. They track the revenue of key suppliers to gauge order trends for the overall industry and brands, given the relatively concentrated supply chain that continues to consolidate further. The BofA Global Athletic Footwear Indicator leads the sales-weighted average YoY revenue growth of major



athletic footwear brands by two quarters with a correlation of 0.82 since 2014. The BofA Global Athletic Apparel Indicator leads the sales-weighted average YoY revenue growth of the major athletic apparel brands by three quarters, with a correlation of 0.83 since 2011.

Australian Bank Credit Loss Indicator

The Australian Bank Credit Loss Indicator is a proprietary tool that seeks to identify turning points and directionality in the Australian banking system credit cycle.

BAC US Aggregated Credit and Debit Card Data

The BAC US aggregated credit and debit card data is based on aggregated and anonymized transaction data. The data is utilized to predict US Retail Sales. Readers should be aware that although the BAC datasets utilized in our analysis represent a significant number of data points, they nevertheless present a degree of selection bias, including but not limited to income levels and geographies. In addition, the data are limited to debit and credit cards and does not include other payment methods such as cash or checks. For more information on the methodology, disclaimers and limitations regarding BAC US aggregated credit and debit card data please see the most recent [BofA on USA report \(see linked report here\)](#).

Bank of England Mood Indicator (BoEMI)

We apply Natural Language Processing techniques to quantify the degree of hawkish 'sentiment' in around 400 BoE publications since 1997. Backtesting the BoEMI, pre-2008 the correlation between the BoEMI and the shadow rate peaks at 0.73 where the BoEMI has an eight month lead. Between 2008 and 2018 the same correlation peaks at 0.57 where the BoEMI has an eleven month lead.

Brazil Activity Coincident Tracker

The Brazil Activity Coincident Tracker is a monthly composite gauge of the underlying growth rate of the economy that helps to flag inflection points in the economic cycle based on the growth rates of consumer confidence, business confidence, auto sales, and narrow money supply. It provides a “sneak peek” into the trend of monthly GDP (proxied by the IBC-Br index) four weeks in advance with a correlation of 0.90 between September-2006 and February-2018 and of 0.95 between March-2018 and June-2020. The directionality hit ratio (i.e. % of correct prediction in GDP growth yoy change direction) is also high at 80%.

Bull & Bear Indicator

The Bull & Bear Indicator is a proprietary cross-asset barometer that uses fund flows, positioning data & market technicals to quantify investor sentiment. The indicator is max bullish when it reaches 10 and max bearish when it reaches 0. Sell risk assets when the Bull & Bear Indicator exceeds the “greed” threshold of 8.0. Buy risk assets when the Bull & Bear Indicator falls below the “fear” threshold of 2.0.

Canada Cycle Indicator

The Canada Cycle Indicator assesses the macro cycle for Canadian equities with the help of five top-down variables that capture earnings and economic growth expectations, inflation, yield spreads and commodity prices. It has been a reliable coincident indicator for the relative performance of TSX vs S&P 500 (r-square of 0.27 since 1950), especially in recent years (r-square of 0.50 over the past five years and 0.72 with a lead of five months).

China A-share Wax & Wane Indicator

The China A-share Wax & Wane (W&W) Indicator gauges the China A-share market sentiment in the short term using fund flows, liquidity, positioning, leverage, and valuation data. Scaled between 0 and 100, a reading above 80 for this



contrarian indicator denotes a 'Very Bearish' signal, while those between 60 and 80 count as a 'Bearish' signal. Similarly, a reading below 20 is a 'Very Bullish' signal and the range between 20 and 40 denotes a 'Bullish' signal. 'Very Bullish' and 'Very Bearish' signals had hit rates of 88-100% over a 3-6 month horizon, while 'Bullish'/'Bearish' signals were found to be 60-70% accurate in the back-testing since Jan-2010.

China ACT

The China Aggregate Coincident Tracker (China ACT) is designed to gauge coincident growth momentum in aggregate demand of the Chinese economy. It is a composite indicator constructed by aggregating the YoY growth rate of seven monthly components with their respective weights. The components cover investment, government expenditure, exports, imports and household consumption (in goods and services). The correlations of BofA China-ACT with contemporaneous IP and GDP growth are 87% and 80% respectively during January 2002 to September 2016. In addition, BofA China-ACT displays a higher standard deviation than IP and GDP, and thus likely to better capture the short-term economic growth fluctuations.

China Cement Outlook Indicator

The China Cement Outlook Indicator tracks the market sentiment on cement based on a proprietary survey of 150 cement producers (accounting for c.18% of the national capacity) and 50 concrete stations about their 3-month price outlook and the relative cement inventory level. The indicator is scaled to a range of ± 1 , with +1 denoting the most positive case for a price hike in next 3 months (i.e. a higher likelihood of price hike in our view) and vice versa. We assign scores of +1/0/-1 to the survey responses of positive/neutral/negative about the participants' expectation of both demand and price over the next 3-months to arrive at the 3-month price outlook and calculate the inventory level from Digital Cement, relative to the past 24 months, scaled in the range of +1 to -1, with +1 being the lowest absolute level during the period. A weighting scheme of 50/25/25% is applied to the 3-month cement outlook/the 3-month concrete outlook/the relative cement inventory level to arrive at the indicator.

China FCI

China FCI is designed to offer a simple measure of liquidity tightness in China to help calibrate future growth of the Chinese economy. It is the weighted-sum of nominal interest rate, CNY nominal effective exchange rate, and total social financing growth. The weights are estimated to optimize the explaining power of input variables on industrial production (IP) growth. In addition, it reliably leads our coincident indicator, BofA China Activity Coincident Tracker, by 6-7 months.

China Flight Signals

China Flight Signals is a proprietary directionality indicator for the unit revenue (quarterly revenue per available tonne kilometer) of Chinese airlines, which is a key driver of Chinese airline ROEs and valuations. It tracks the unit revenue for the three largest Chinese airlines for the next 6 months using Chinese domestic unit revenue data, airline supply/demand data and other macro variables. The indicator leads quarterly average Chinese airline unit revenue by 6 months with a correlation of 0.83 since 2005.

China Investment Compass

China Investment Compass is a four-phase framework that identifies the current state in the China investment cycle, based on GDP growth and liquidity (*defined as the quarterly average of the 3-month SHIBOR minus the 3-month benchmark time deposit rate*). The four phases are – **C1**: recovering phase, with accelerating GDP growth and loose liquidity; **C2**: peaking phase, with accelerating growth and tight liquidity; **C3**: over-tightening phase, with decelerating



growth and tight liquidity; and **C4**: *stimulating phase*, with decelerating growth and loose liquidity. Chinese equities typically have low beta with flattish returns in C1, while C4 witnesses higher volatility. On the other hand, C2 typically coincides with a bull market, and C3 a bear market.

China White Liquor Hydrometer

The China White Liquor Hydrometer is a directionality indicator to track the revenue growth of the white liquor sector in China, defined as YoY growth of the rolling 12-month revenue for a total of 16 listed white liquor A-share companies, using a total of nine factors (two macro and seven industry-specific), which, in our view, drive the white liquor cycle. The indicator leads the China white liquor sector revenue growth by two quarters with a correlation of 0.85 since 2007.

CompassAlarm

The indicator seeks to estimate probability of pressures on EM currencies over the upcoming six months based on various macro/market indicators. Pressure is defined as a 2.5 standard deviation move vs historical average. The indicator would have predicted correctly 60% of the pressure episodes over the past 15 years. Moreover, most of the model errors are episodes of no pressures given alarm, with a very tiny fraction of pressure given no alarm.

Corporate Misery Indicator

The Corporate Misery Indicator is our macro-based predictor of the profits cycle and is based on the CPI, Average Hourly Earnings, and the Coincident Indicators. Our theory is that corporate profits are a function of how many units a company sells and their margin per unit. Implicitly, these factors incorporate productivity because enhanced productivity will result in either better margins or more units sold for the same inputs. When the indicator declines, it implies that profits are being squeezed. This has historically coincided with a decelerating profits cycle. Based on its history since 1978, subsequent to the indicator's peaks, EPS growth in the next 12-mth declined in 78% of cases.

EM Flow Trading Rule

The EM Flow Trading Rule is a contrarian indicator. When investor flows into EM funds become overly bullish, EM equities become vulnerable to short-term tactical pull-backs and vice versa. Sell EM equities when inflows into EM equity funds represent more than 1.5% of AUM over four weeks. Buy EM equities when redemptions from EM equity funds are greater than 3.0% of AUM over four weeks.

Emerging Monetary Mood Indicator (EMMI)

The indicator data-mines EM central banks statement to gauge the attitude of monetary authorities, by country and for EM as a whole. EMMI is positively correlated and leads policy rates in most EM.

EMFX Carry Sentiment Indicator

The indicator uses information contained in various positioning and survey data to gauge sentiment on EM carry. Chances of a selloff over subsequent month are an increasing function of "exuberance" as measured by the indicator. When the indicator is at the 80th percentile, chances of a selloff are 60% in the subsequent month.

Euro Area GDP Tracker

This is a nowcasting model that seeks to provide a timely measure of GDP growth in the course of a quarter for the euro area and its main economies. In other words, it attempts to replicate national accounts, but a faster and timelier way. We use this indicator to monitor the risks to our, ECB and consensus forecasts.



Euro Area Procyclical core Inflation

It measures core inflation including only those components that react to the cycle. Procyclical core is a very good leading indicator for core inflation 12 months ahead.

European Composite Macro Indicator

The European Composite Macro Indicator quantifies the trend in European economic activity in order to identify the phase of the cycle and act as a timing indicator for style investing in European equities. It consists of six inputs: OECD EU Leading Indicator, German IFO, 12m change in Pan European BY, Producer Price Inflation, Pan European Consensus GDP Forecasts and Global EPS Revision Ratio. The Style Cycle strategy, which marries the phase indicated by European CMI and styles preferences, gained since its inception in 2004, on the top stocks 99.2% and on the bottom stocks 55.9%.

European Credit Macro Indicator

The European Credit Macro Indicator is an aggregation of selected macroeconomic data. We find that country specific OECD Leading Indicators, PMIs from Germany and the EZ, along with data from the ECB on loan demand and 3m EPS Revision Ratio from Germany best capture trends in credit markets. From these, we construct an indicator that can be used as a tool to determine whether patterns seen in credit land are consistent with the prevailing macroeconomic backdrop and to identify turning points in macroeconomic trends. Our work highlights that a negative reading of our Indicator tended to be associated with positive excess returns and tighter spreads over the next 12 months; both in IG and HY credit.

European IT Services Indicator

It is a proprietary tool to identify directional trends in the organic revenue growth of European IT Services companies. The indicator, constructed using 6 macro and industry-specific inputs (economic sentiment | health of the services sector | earnings trends | hiring activity | IT services earnings call sentiment | corporate sentiment), leads the organic revenue growth of European IT services companies by 9 months with a historical correlation of 0.73 over 2005-2023. It also moves in tandem with the stock prices as well as their price multiples.

European Momentum Conviction Indicator

The European Momentum Conviction Indicator is a tactical indicator that helps in dynamic Momentum allocation by significantly reducing skewness risk and identifying potential momentum crashes of 10% or more. It aims to identify episodes where volatility of a cross-sectional approach to Momentum investing is too high to support consistent returns or when trends might break. The indicator is constructed using three sets of inputs: Momentum Volatility Risk, Implied Volatility for Equities, and Trend Reversal Risk, which are combined using an equal-weighted scheme and scaled from 0-100 to arrive at the final indicator, with values close to 100 denoting a bull signal or those close to 0 denoting a bear signal for Momentum style investing.

EU Logistics Growth Indicator

The EU Logistics Growth Indicator analyses logistics space demand by spotting near-term inflections in demand and rent growth in the Continental Europe Logistics property market. It is constructed using seven variables across the four key categories of consumer trends, macro trends, construction and inflation, that have an indicative leading relationship with the demand cycles of industrial real estate over a 6-month window. The indicator has strong historical correlation with logistics occupancy rate (82%) and logistics market rent (78% with a lead of two quarters) since 1990 as well as with the like-for-like rent growth of listed logistics companies (84% with a lead of four quarters) over the past 10 years.



Fluid Power Distributor Indicator

The Global Fluid Power Distributor Indicator is based on a survey of 50 industrial distributors from North America, EMEA, and Asia Pacific focusing on fluid power (hydraulics and pneumatics). The indicator tries to gauge sentiment through demand trends, pricing, and inventory levels. An indicator value greater than 50 marks improving sentiment, while below 50 marks deteriorating sentiment. To calculate the indicator value, we assign a value of +1 to responses of “better” demand, “too low” inventory levels, and “improving” pricing. “Same”, “normal”, and “flat” are assigned a value of 0, and “worse”, “too high”, and “declining” are assigned -1. We divide the sum of these values by the number of survey respondents, multiply by 50, and add 50 to get a value relative to our 50.0 baseline.

Global Breadth Rule

The Global Breadth Rule is a contrarian indicator of equity market breadth. When an overwhelming majority of equity markets around the world become oversold, we turn bullish as equities tend to trough and rebound on the back of overdone pessimism. Buy global equities when a net 88% of markets in the MSCI All Country World Index are trading below both their 200-day moving average and 50-day moving average. Sell global equities when a net 88% of markets in the MSCI All Country World Index are trading above both their 200-day moving average and 50-day moving average.

Global EPS Growth Model

The Global EPS Growth Model is composed of Asian export growth, global PMI, US Treasury yield curve & Chinese financial conditions and predicts the year-on-year change in 12-month forward IBES consensus EPS for MSCI ACWI.

Global Flow Trading Rule

The Global Flow Trading Rule combines cross-asset flows with a validating filter for macro conditions to generate buy & sell signals for global equities. When flows into global equity & HY bond funds become overly bullish especially against a backdrop of weaker PMI, risk assets become vulnerable to short-term tactical pullbacks and vice versa. Sell global equities when average inflows to global equity funds and global HY bond funds exceed 1.0% of AUM over four weeks and ISM is trending lower. Buy global equities when average redemptions from global equity funds and global HY bond funds exceed 1.0% of AUM over four weeks and ISM is trending higher.

Global FMS Cash Indicator

The Global FMS Cash Rule is a contrarian trading signal designed to take advantage of the predictive value of FMS cash balance data for future equity returns. Buy equities when the FMS average cash balance rises to 4.5% or higher. Sell equities when the FMS average cash balance falls to 3.5% or lower.

Global News Pulse

The Global News Pulse tries to quantify whether significant news globally is trending positively or negatively. The Global News Pulse has had a 79% correlation with the MSCI All Country World Index (ACWI) over the last 15 years, according to our backtesting.

Global Risk-Love Indicator

Risk-Love is a contrary investor sentiment indicator. It tries to quantify investor emotions and help us understand swings in investor psychology. When at extremes, the indicator is valuable in anticipating reversals in investor mindset, and thus markets, going forward. We have constructed Risk-Love indicator for major Asian/emerging markets as well as for the world as a whole. We include data on positioning, investor surveys, volatility, spreads, correlations, hedging and market technicals measures. The Global Risk-Love indicator has 35 factors. Buy when it is low and sell when it is



extremely high. Since 1988, median 12m forward returns for emerging markets equities were 15% (in US dollar terms) when the EM Risk-Love Indicator was in panic.

Global Wave

Global Wave quantifies global trends in economic activity in order to predict equity market performance and rotation within equities. The Global Wave consists of seven indices including Global Industrial Confidence, Global Consumer Confidence, Global Capacity Utilisation, Global Unemployment, Global Producer Prices, Global Credit Spreads, and Global Earnings Revision Ratio. Since 1988, the MSCI ACWI has returned 14.4% post troughs in the Global Wave, and -1.2% post peaks in the Global Wave, on average.

GFSI Risk Allocator

The Risk Allocator (RA) can help investors add or reduce exposure to risk assets based on how financial market stress is distributed across asset classes, as measured by the BofA Global Financial Stress Indicator (BofA GFSI™). Note that the GFSI is a broad gauge of risk, hedging demand and investment flows across geographies and asset markets. The RA uses the proportion of GFSI components that are in Bullish, Bearish or Neutral territory to infer a level of conviction when investing in risk assets. From 2005 to 2018, managing global equity beta by varying exposure (from 0 to 200%) using the GFSI's RA would have hypothetically generated 1.6x the Sharpe of global equities and reduced max drawdowns by more than half.

Global EV Battery Value Chain Indicator

The Global EV Battery Value Chain Indicator tracks the trends in the rapidly growing EV value chain sector. The indicator provides visibility into the EV-battery-related revenue growth of 26 major value chain names for the next quarter (correlation of 0.87 since 1Q 2017), with a focus on identifying the turning points. Constructed using 20 industry-specific factors that broadly fall under the categories of car sales, battery demand and supply, raw material prices, and analyst opinions, this directional indicator also has a correlation of 0.74 with the average YoY change in EV battery companies' share prices.

Global Luxury Demand Indicator

The Global Luxury Demand Indicator is a proprietary tool to gauge global luxury demand and constant currency revenue growth of the luxury companies under BofA coverage. It is constructed using the weighted average growth of 51 key data points.

India IT Services Indicator

It is a proprietary tool to identify directional trends in the revenue growth of the India IT Services companies. The Indicator is constructed using 8 inputs across key drivers of IT exports (services sector activity | earnings trends | hiring activity | corporate and news sentiment) that, in aggregate, lead the revenue growth of India IT companies by 6 months with a historical correlation of 0.91 since 2005. The Indicator also moves in tandem with the sector price index (0.64 historical correlation with MSCI India Software & Services Index YoY since 2005) as well as the sector price multiples.

India Loan Growth Indicator

The India Loan Growth Indicator is a proprietary tool that seeks to identify inflection points and directionality in the Indian banking system credit cycle by tracking the aggregate growth in loans for all Scheduled Commercial Banks (SCBs) in India. The indicator has been fitted using a multiple linear regression model using six macroeconomic data inputs spanning interest rates, wage inflation, price inflation, industrial activity and money supply growth. It leads the actual SCB loan growth by eight months with a correlation of 79% since May-1999.



Indicators of US Financial Stress and Conditions

The Indicator of US Financial Stress is a tool for gauging the state of market functioning in the US, while the Indicator of US Financial Conditions tracks the degree of tightness or looseness in US monetary policy. A principle components analysis was performed with 11 financial market variables that capture the monetary policy transmission mechanism effectively – viz. the foreign exchange value of the US dollar, the 30-day change in the US dollar, the US corporate AAA yields less the 10-year US Treasury yield, the US corporate BBB yields less US corporate AAA yields, the US corporate high yield less US corporate BBB yields, the 10-year US Treasury yield less 2-year US Treasury yield, the 10-year US Treasury yield less global government bond yields, a modified TED spread, the 2-year swap spread, the 30-day change in the S&P500 index, and the ratio of volatility of financial stocks to industrial stocks – each with daily observations spanning from 1990 to present. The resulting first principal component reflects financial stress events in the US and is referred to as the Indicator of US Financial Stress, while the second principal component reflects the degree of US monetary policy tightness and is referred to as the Indicator of US Financial Conditions. Values were normalized with a mean of zero and standard deviation of one, with readings above zero indicating periods in which financial stress is higher than normal or financial conditions are tighter than normal compared to the three-decade span of data and vice-versa.

Indicators of US Labor Market Conditions and Momentum

The Indicator of US Labor Market Conditions is a tool for gauging US labor market activity, while the Indicator of US Labor Market Momentum tracks the rate of change of US labor market activity. A principal components analysis was performed with 14 labor market variables on monthly US labor market data starting from January 1994. The resulting primary principal component, which corresponds with level-based indicators of labor market activity such as the U3 unemployment rate and long-term unemployment, is referred to as the Indicator of US Labor Market Conditions, while the secondary principal component, which corresponds with indicators of the rate of change in labor market conditions such as six-month percent changes in private payroll employment and temporary help services employment, is referred to as the Indicator of US Labor Market Momentum. Readings above zero for the Conditions Indicator suggest above-average conditions, while those below zero mark below-average conditions. Similarly, for the Momentum Indicator, readings above zero indicate above-average positive momentum, while those below zero indicate deteriorating labor market conditions. Additionally, the Conditions Indicator typically rises with positive readings of the Momentum Indicator and vice-versa.

Internet Advertising Indicator

The Internet Advertising Indicator is a proprietary macro tool designed to identify inflection points and momentum in US digital advertising revenues. It is an aggregate of six, equally weighted inputs that capture US consumer health and activity, US corporate sentiment, and US/global economic outlook. The indicator has a high correlation to US Internet ad revenue growth published by the Interactive Advertising Bureau (0.81 since 2003), as well as that from Google Properties (0.89 since 2017), Meta (0.81 since 2017), and a basket of stocks under our coverage (0.87 since 2017).

Industrial Real Estate Indicator (US)

The Industrial Real Estate Indicator gauges the demand cycles of industrial real estate in the US over the next 12 months with a focus on identifying the near-term inflection points of demand. It is based on ten variables across four key categories, viz. consumption, trade/supply chains, construction, and jobs, that have a leading relationship with industrial real estate demand. Each variable is equally weighted within each category so that the four categories make up a quarter of the total weighting of our indicator. This directional indicator has strong historical correlations with net



absorption (90%), annual net effective rent growth (78%) and REIT SS (same store) NOI (net operating income) growth (85%) since 2007.

Lodging Macro Activity Tracker

Lodging Macro Activity Tracker (LMAT) is a macro tool that can be used to predict the current and near-term RevPAR environment. The LMAT consists of two components, 1) a demand component that is an average of the year-over-year growth of 11 macro factors across the U.S. with high correlations to traditional U.S. Lodging metrics, and 2) a supply component, which tracks expected U.S. hotel room supply growth. The LMAT has a 94% correlation with RevPAR on a 3-month leading basis since 2009.

Industrial Momentum Indicator

It is a tool for identifying major inflection points for Industrials spanning the US, European, and Japanese Machinery, Transportation, Multi-Industry, and Aerospace & Defense sectors. It is based on BofA's Truckload Diffusion Indicator, Global Fund Manager Survey, and the copper price.

Japan Factory Automation Indicator

The indicator is an aggregation of nine components (five macro and four industry-specific) that drive the factory automation cycle. It has a 0.92 correlation since 2008 with the Japan machine tool orders data series on a 3 month forward basis. The indicator leads YoY (%) growth in sector revenue and operating profit by two quarters with a 0.9 correlation since June 2007.

Korean Banks Net Interest Income (NII) Indicator

The Korean Banks Net Interest Income Indicator is a directional tool to identify inflection points in the aggregated YoY NII growth of the Korean banks under our coverage. It is an equal-weighted average of five factors in standardized form, namely, Korea leading composite index growth (YoY), Korea industrial production growth (YoY), Korea retail (household) delinquency rate, Korea credit card delinquency rate, and Korea loan rate changes. On a back-tested basis since 2Q07, it has a correlation of 0.84 with the coverage banks' NII growth (YoY) with a lead of one quarter and a correlation of 0.67 with the KRX Bank Index growth (YoY).

Korea Beauty Indicator

The Korea Beauty Indicator identifies directional trends in the revenue growth of 21 listed beauty companies, including OEMs/ODMs in Korea. It comprises seven variables across the four key revenue drivers for beauty names, viz. domestic sales trends, overseas sales trends, exports trends, and travel retail sales trends. The indicator has co-incident correlation of 0.88 with the revenue growth of the K-beauty basket since 1Q 2014.

Lodging Macro Activity Tracker

Lodging Macro Activity Tracker (LMAT) is a macro tool that can be used to predict the current and near-term RevPAR environment. The LMAT consists of two components, 1) a demand component that is an average of the year-over-year growth of 11 macro factors across the U.S. with high correlations to traditional U.S. Lodging metrics, and 2) a supply component, which tracks expected U.S. hotel room supply growth. The LMAT has a 94% correlation with RevPAR on a 3-month leading basis since 2009.

Macau Macro Activity Tracker

Macau Macro Activity Tracker (MMAT) is intended to provide a gauge of Chinese economic and financial activity and how it may impact Macau gross gaming revenues (GGR). It is an average of the year-over-year growth of 12 data series



across China with high correlations to Macau GGR. The MMAT has a ~90% coincident correlation with monthly Macau GGR growth since 2009. A subset of the MMAT leads overall Macau GGR and these leading components are ~90% correlated with Macau GGR growth since 2009 on a 3-month forward basis.

Machine-learning Based Cycle Indicator

The business cycle indicator takes a big-data approach, classifying the US cycle into three phases that correspond to economic booms, soft patches and recessions. It is derived by running a machine-learning algorithm on over 55 years of monthly data covering 124 economic and financial variables. Since November 1962, the correlation between the machine-learning recession indicator and the official NBER indicator has been 82%.

Managed Care Utilization

The monthly Managed Care Utilization Tracker measures utilization through a proprietary hospital volume surveys and industry data.

Memory Indicator

The Memory Indicator identifies the current phase of the semiconductor memory cycle by gauging the earnings momentum (YoY growth in revenue and operating profit) of the four key memory companies. This monthly indicator, constructed using seven components (DRAM spot price, DRAM ASP, DRAM billings, NAND spot price, NAND ASP, NAND billings, and Korea semis exports) that fall under three broad categories of data – memory prices, billings, and exports, provides a read ahead of the companies' quarterly earnings results. It has a correlation of 0.93 / 0.78 / 0.75 with these companies' revenues (1Q09-4Q20) / operating profits (1Q10-4Q20) / share-price performance (since 1991).

NORBI Mood Indicator

NORBI, an acronym which stands for NORges Bank mood Indicator, gauges the hawkishness of the monetary policy assessments of Norges Bank by applying Natural Language Processing techniques. It quantifies the hawkish 'sentiment' in the statements accompanying a monetary policy decision (akin to press releases) with score between 0 and 1 that represents the fraction of sentences that our algorithm determines are 'hawkish'. Post the Global Financial Crisis, the YoY change in NORBI exhibits peak correlation of 0.68 with the YoY change in the policy rate and 0.74 with the YoY change in the 1-year swap with a 7-period lead.

Petrochemical Sentiment Indicator

The Petrochemical Sentiment Indicator tracks the sentiment on petrochemicals based on Natural Language Processing of all S&P Global Platts' Polymerscan reports (*a leading publication on global plastic and resins including polyethylene, polypropylene, and polyvinyl chloride*) published since October 27, 2004. A smoothened version (12-month moving average) of the indicator has a correlation above 0.70 with 18 out of 30 stocks under our coverage over the last five years, including 7 with a correlation of 0.80+. A higher reading denotes a more positive sentiment and vice-versa.

RBA Sentiment Indicator

The RBA Sentiment Indicator tracks incremental changes in the level of hawkishness and dovishness in the Reserve Bank of Australia (RBA) communication. We apply Natural Language Processing techniques to all monthly Minutes of Policy Meetings, quarterly Statement on Monetary Policy and the transcript of speeches delivered by RBA Governors since 2000 to produce three different data (score) series, the average of which is our sentiment indicator. A higher reading denotes a more hawkish sentiment and vice-versa. The indicator leads the AUD cash rate 6-month forwards by one month with a correlation of 0.83.



RENO Barometer

The BofA RENO barometer is a proprietary indicator meant to gauge the outlook for consumer spending at home improvement stores. Inputs for the barometer include: Real-time spending metrics, such as aggregated BAC credit and debit card data; Economic drivers, such as residential investment; National household financial health, such as home prices; and Opinions on housing, such as consumer confidence. The BofA RENO barometer is comprised of 14 factors, which in aggregate had an 85% historical correlation with the average same-store sales growth of major US home improvement companies from February 2009 to September 2018, according to our backtested analysis.

Riksheard Mood Indicator

Riksheard applies Natural Language Processing techniques to Riksbank policy meeting minutes to assess the hawkishness of the Riksbank Monetary Policy Committee that tends to have a bearing into the potential future path of the Swedish policy interest rate. It quantifies the hawkish ‘sentiment’ in the statements with score between 0 and 1 that represents the fraction of sentences that our algorithm determines are ‘hawkish’. Riksheard leads the policy interest rate by 2-months with a peak correlation of 0.47 pre-2008 and 0.54 post-2010.

S&P500 Energy Sector Directional Forecast

S&P500 Energy Sector Directional Forecast tracks the monthly performance of the S&P500TR Energy sector index relative to the S&P500 TR broad market index using the same set of 10 fundamental and 9 macro/financial variables as used in the WTI Crude Oil Directional Forecast Indicator. We employ a number of linear and non-linear forecasting techniques: predictive regression approaches using fixed, dynamic as well as no correlation filters, Principal Component Regression (PCR), Partial Least Squares (PLS), regularized regressions (Lasso and Ridge), decision tree frameworks (random forest and gradient boost). On their own, the best performing models based on the last 12 monthly forecasts were Random Forest, Lasso and PCR with hit rates of 75% and higher - decision tree frameworks were found to be better at capturing turning points in energy sector outperformance, but regularized regressions performed better over the full sample period. Given their unique set of benefits and varying relative accuracies over time, we average out the forecasts across all models to arrive at our aggregate signal.

Sell Side Indicator

The Sell Side Indicator is based on the average recommended equity allocation of Wall Street strategists as of the last business day of each month. We have found that Wall Street’s consensus equity allocation 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. The Sell Side Indicator has had stronger predictive power (R-square: 26%) over 12-month S&P 500 returns than many other popular market timing models like the Fed Model, valuation frameworks, money growth, etc.

Testing Growth Indicator

The Testing Growth Indicator for each testing, inspection & certification (TIC) company is a tool to gauge organic revenue growth rates and trends in the next six months, based on global macro indicators.

Truckload Diffusion Indicator

The Truckload Diffusion Indicator is a result of a survey of nearly 1,000 truck shippers. It is a sentiment indicator, with the Indicator focused on shippers outlook for demand for the next 0-3 months (with the other questions focused on truck pricing, supply, and shipper’s inventory levels). We look to discern the trends in the Transportation sector, given trucking represents two-thirds of all tonnage moved in the US and more than 80% of all revenue spent on transportation.



UK Consumer Confidence Indicator

An online survey of around 4000-5000 consumers a month. Six questions are repeated each month, allowing us to produce a consumer confidence indicator and wage growth indicators. We rotate other questions depending on the issues in focus.

US Discount Store Demand Indicator

The US Discount Store Demand Indicator provides an indication of BofA US discount stores company coverage same-store sales growth direction based on 13 factors spanning five different US consumer categories viz. US Spending & DPI, Earnings & Employment, Consumer Confidence & Borrowing, Housing & Mortgages and Cost of Living. The indicator is used to identify directional trends and major inflection points for US Discount Stores and has a correlation of 0.78 since 2008 with a one quarter lead.

UK GDP Tracker

Uses soft and hard data to 'nowcast' UK GDP growth.

US GDP Tracker

The US GDP tracker is a nowcasting model that monitors quarterly US real GDP growth in real time using the higher frequency monthly US economic data. The US GDP tracker utilizes a bottoms-up framework that mimics the Bureau of Economic Analysis's (BEA) methodology, with GDP components estimated using source data generally from government agencies like the Census Bureau and Bureau of Labor Statistics. Since 2012, the average absolute forecast error for the advance estimate of GDP is 0.5% qoq saar.

US High Yield Default Rate Indicator

The US High Yield Default Rate Indicator attempts to estimate the next-12-month value of Moody's US high yield issuer weighted default rate, which is defined as the number of companies defaulting over a given 12mo time horizon divided by the total number of issuers rated HY by this agency. The indicator consists of four factors - Fed lending survey, issuers with plunging bonds, the degree of dispersion, and low quality issuance. The indicator explains 87% of the variation in the next-12mo issuer-weighted HY default rates.

US New and Existing Home Sales Indicators

The US Home Sales Indicators identify inflection points and trends in the US housing sector. They are constructed using 9 data sets across key drivers of housing (affordability | demographics | buyer confidence | housing supply) that when blended together have historically led housing sales and captured inflection points in prior housing cycles going back 50 years. The New Home Sales (NHS) Indicator leads new home sales by 3 months with a correlation of 0.80 from 2013 (0.65 from 1979), while the Existing Home Sales Indicator leads existing home sales by 5 months with a correlation of 0.87 from 2013 (0.69 from 1979). The trailing 3-month NHS has a 0.62 correlation with homebuilder stocks since 1996.

US Regime Indicator

We aggregate top-down variables that capture earnings and economic growth expectations, inflation, credit conditions and other variables, to yield the following four signals on the business cycle: Early Cycle – below-average but improving trends in macro indicators, Mid Cycle – above-average and improving trends in macro indicators, Late Cycle – above-average but deteriorating trends in macro indicators, and Recession – below-average and deteriorating trends in macro indicators. Based on its history since 1990, the indicator tends to identify outperforming investment styles with 75% to 100% success rate.



WTI Crude Oil Directional Forecast

WTI Crude Oil Directional Forecast uses a dynamic signal-based approach to forecast WTI crude oil returns. We combine 10 fundamental and 9 macro/financial variables to project weekly crude returns using a number of linear and non-linear forecasting techniques: a fixed-threshold correlation filter with a predictive regression approach, a dynamic-threshold correlation filter with a predictive regression approach, Principal Component Analysis (PCA), Partial Least Squares (PLS), regularized regressions (Lasso and Ridge), and decision tree frameworks (random forest and gradient boost). Although the most accurate predictions are derived from the OLS model with a static correlation filter (hit rate of 0.55 over the last 10 years coupled with rolling 1-y hit rates in excess of 0.5 throughout most of the out of sample period), we aggregate the outputs of all the models to arrive at our final forecast.



Disclosures

Important Disclosures

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| 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.

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