BofA SECURITIES

Liquid Insight

3Q preview: 2Q was trough. It gets better from here.

16 October 2023

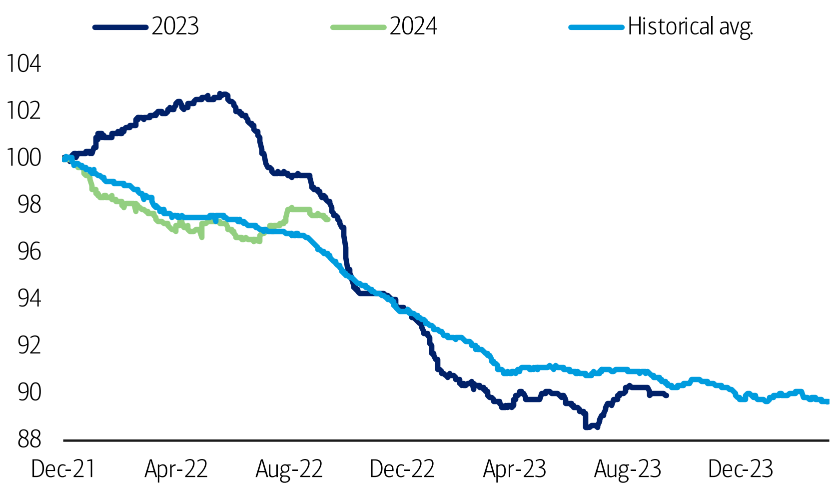
Rates and Currencies Research
Global

Key takeaways

- 3Q marks the start of earnings recovery. Oil and rates say growth is strong. 3Q consensus EPS saw no cuts vs. typical -4%.
- We expect a sizeable 4% beat (vs. a typical 2% beat). De-stocking is now over and EPS should outpace GDP.
- AI is long-term, but infrastructure is near-term. Risk: weakening guidance & strong USD, but oil is not a headwind.

By Ohsung Kwon & Savita Subramanian

Exhibit 2: Both 2023-24 consensus EPS have stabilized
S&P 500 historical FY2 EPS revisions vs. 2023-24 consensus EPS (2023-24 as of 10/8/23)



Source: BofA US Equity & Quant Strategy, FactSet; Note: historical average based on 2001-2022
BofA GLOBAL RESEARCH

S&P 500 3Q EPS was unchanged over the past three months (+0.1%) vs. a typical 4% cut into earnings (first no cut since 4Q21). Despite negative headlines (rate shock, oil shock, now geopolitics), macro data continued to beat expectations (**Exhibit 11**) and the jump in rates and oil suggests improving, not deteriorating, growth. Our Corporate Misery Indicator, a macro gauge of profits, improved for the first time since 3Q22 (**Exhibit 19**). China is a key risk but shows some positive trends – see positive Industrial profit growth & China data deep dive. Consensus 2024 EPS also rose 1% since the end of 2Q, bucking the seasonal pattern of -2% during the period, implying an improving growth outlook. Consensus expects flat EPS in 3Q y/y (vs.-6% in 2Q), the first quarter of recovery. We forecast a sizeable 4% beat (vs. a typical 2% beat), or $58 (+4% y/y).

Global Rates & Currencies Research
MLI (UK)

Ohsung Kwon, CFA
Equity & Quant Strategist
BofAS
+1 646 855 1683
ohsung.kwon@bofa.com

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

Adarsh Sinha
FX Strategist
Merrill Lynch (Hong Kong)
+852 3508 7155
adarsh.sinha@bofa.com

Janice Xue
Emerging Asia FI/FX Strategist
Merrill Lynch (Hong Kong)
+852 3508 8587
janice.xue@bofa.com

See Team Page for List of Analysts

Exhibit 1: Liquid Insight
Recent Publications

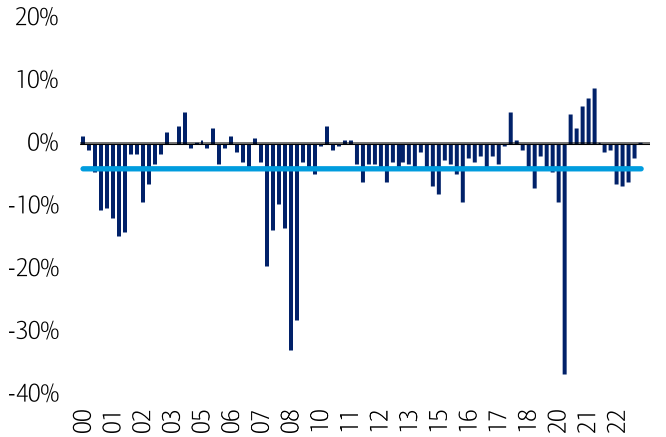
12-Oct-23	Regional FX flows: EUR and CHF selling
11-Oct-23	US rate shock FAQ
10-Oct-23	USD and risk-off – under the hood
9-Oct-23	EUR vs US: Cross market trade opportunities
5-Oct-23	Japan's policy challenge – defend JPY or JGB?
4-Oct-23	FX: A check in on consensus
3-Oct-23	Oil supply shock and FX
29-Sep-23	RBA and RBNZ: a hawkish hold
28-Sep-23	Shutdown concerns in G10 FX
27-Sep-23	Insufficiently restrictive = higher rates

Source: BofA Global Research
BofA GLOBAL RESEARCH

 12611985

Timestamp: 16 October 2023 01:51AM EDT

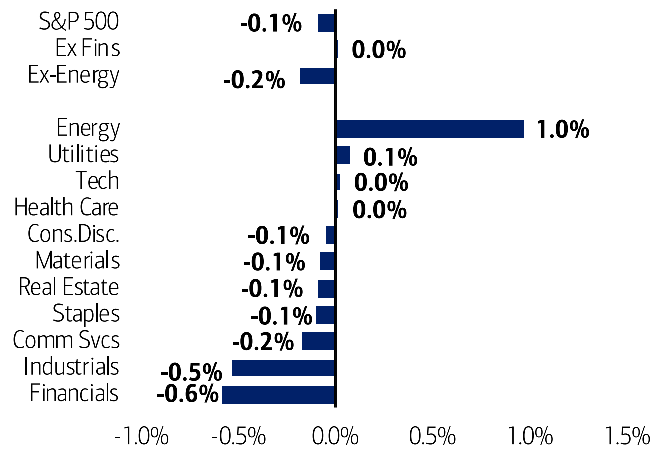
Exhibit 3: 3Q EPS flat over the last 3mos vs. -4% average
Bottom-up S&P 500 EPSrevision by quarter in 3mos. before reporting season, 2000-3Q23



Source: FactSet, BofA US Equity & Quant Strategy

BofA GLOBAL RESEARCH

Exhibit 4: Upward revisions in Energy largely offset downward revisions in Financials and Industrials
Revision to consensus 3Q23 earnings estimates over the last 3 months



Source: FactSet, BofA US Equity & Quant Strategy

BofA GLOBAL RESEARCH

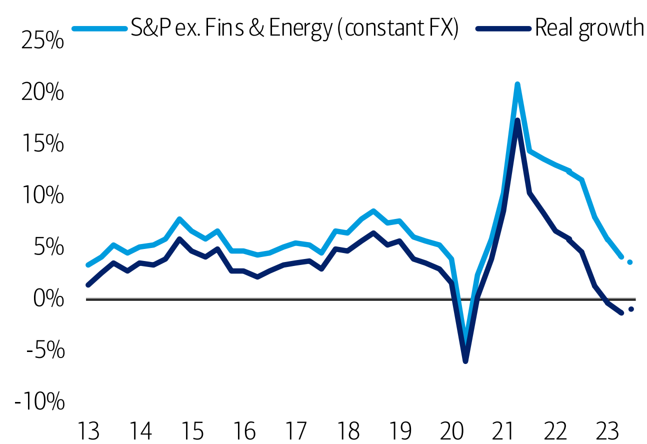
Exhibit 5: Consensus expects flat earnings YoY in 3Q
S&P 500 consensus earnings and sales growth expectations by sector based on current constituents

	Earnings		Sales	
Sector	**YoY%**	**QoQ%**	**YoY%**	**QoQ%**
Consumer Disc.	22.6%	(0.2%)	7.0%	1.1%
Consumer Staples	(0.2%)	(2.0%)	4.5%	4.8%
Energy	(37.6%)	19.1%	(18.6%)	7.3%
Financials	8.8%	(2.4%)	4.6%	(2.2%)
Health Care	(11.5%)	17.1%	4.6%	(0.5%)
Industrials	3.2%	(14.0%)	1.9%	(1.7%)
Technology	5.1%	2.4%	1.5%	2.3%
Materials	(22.2%)	(21.3%)	(10.1%)	(5.0%)
Real Estate	0.1%	(6.4%)	6.3%	0.3%
Communication Services	32.2%	42.2%	5.3%	1.2%
Utilities	12.1%	48.5%	4.5%	25.5%
S&P 500	**0.1%**	**6.4%**	**1.5%**	**1.6%**
ex. Financials	**(1.6%)**	**8.4%**	**1.1%**	**2.1%**
ex. Energy	**5.2%**	**5.5%**	**3.8%**	**1.1%**
ex. Fins & Energy	**4.4%**	**7.5%**	**3.7%**	**1.6%**

Source: FactSet, BofA US Equity & Quant Strategy

BofA GLOBAL RESEARCH

Exhibit 6: Real sales growth (ex. Fins & Energy) expected to bottom out in 3Q
S&P 500 sales growth ex. Fins & Energy (constant FX) and real growth (constant FX ex. Fins & Energy) – 2013-3Q23E



Source: FactSet, BofA US Equity & Quant Strategy; dotted line = forecast

BofA GLOBAL RESEARCH

Exhibit 7: Six of 11 sectors are expected to see earnings growth improving this quarter vs. 2Q
S&P 500 sectors' quarterly earnings growth YoY

	4Q21	1Q22	2Q22	3Q22	4Q22	1Q23	2Q23	3Q23E	Direction q/q
Comm. Svcs.	42%	23%	6%	(8%)	(19%)	(21%)	(19%)	32%	▲
Cons. Disc.	74%	41%	4%	1%	4%	10%	20%	23%	▲
Staples	11%	7%	2%	0%	(2%)	(2%)	0%	(0%)	▼
Energy	2370%	3219%	550%	273%	165%	92%	12%	(38%)	▼
Financials	56%	23%	(1%)	(9%)	(12%)	(8%)	(3%)	9%	▲
Health Care	26%	24%	19%	11%	6%	(5%)	(13%)	(11%)	▲
Industrials	65%	83%	41%	27%	26%	25%	21%	3%	▼
Tech	38%	29%	18%	7%	(2%)	(6%)	(7%)	5%	▲
Materials	82%	73%	42%	19%	4%	(11%)	(23%)	(22%)	▲
Real Estate	6%	6%	7%	6%	6%	4%	3%	0%	▼
Utilities	9%	11%	7%	2%	1%	(10%)	(10%)	12%	▲
S&P 500	**27%**	**12%**	**10%**	**4%**	**(1%)**	**(3%)**	**(6%)**	**0%**	▲

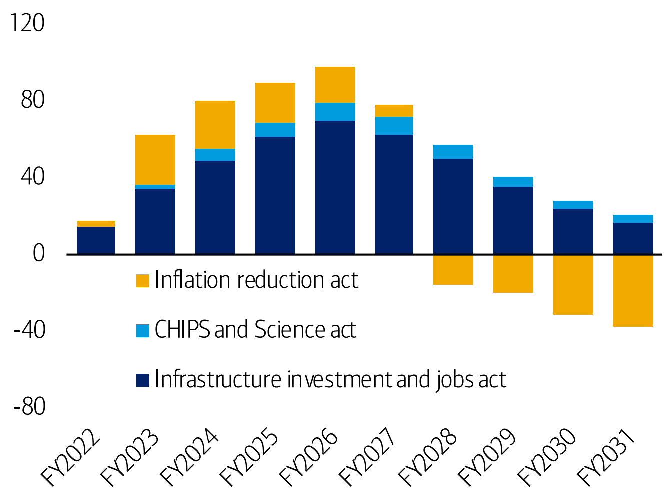
Source: FactSet, BofA US Equity & Quant Strategy

BofA GLOBAL RESEARCH

AI is long-term; Infrastructure spend is now

AI is real, potentially saving ~$65B in costs for the S&P 500 over the next five years (see AI primer). But any meaningful contribution may be some quarters away. A bigger near-term contributor will be fiscal stimulus via the Infrastructure Investment and Jobs Act (IIJA), then Inflation Reduction Act (IRA). Incremental spending of $550B over the next five years from the IIJA ($110B/yr run rate, 10% of total non-res construction) will be a significant boost in the near-term. $116B worth of projects have been either announced or awarded so far from the IIJA, and the expected government outlay timeline indicates accelerating pace of investments through FY2026. While citing it as a tailwind, many companies were hesitant to put numbers around it in 2Q. But we may start to hear more clarity on benefits this quarter.

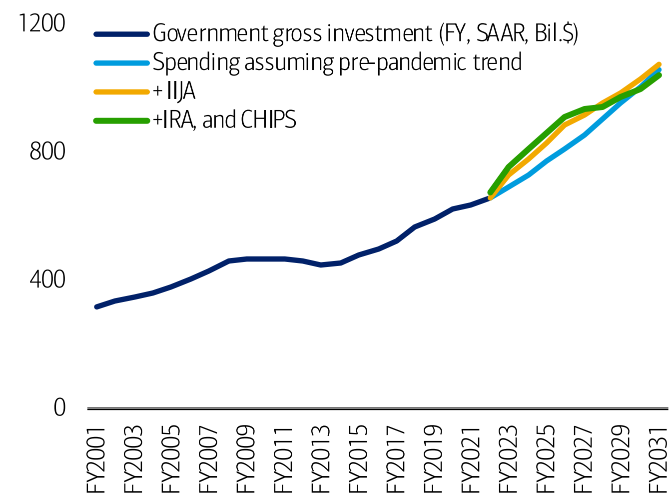
Exhibit 8: Investments from IIJA and IRA are expected to accelerate in FY24 (+28% y/y), which began on Oct 1, 2023
Estimated increase in discretionary spending



Source: Congressional Budget Office, Haver Analytics, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 9: Investment from fiscal stimulus is expected to accelerate in the near term
Estimated Government gross investment ($B; SAAR)



Source: Congressional Budget Office, Haver Analytics, BofA Global Research

BofA GLOBAL RESEARCH

De-stocking is over, goods > services

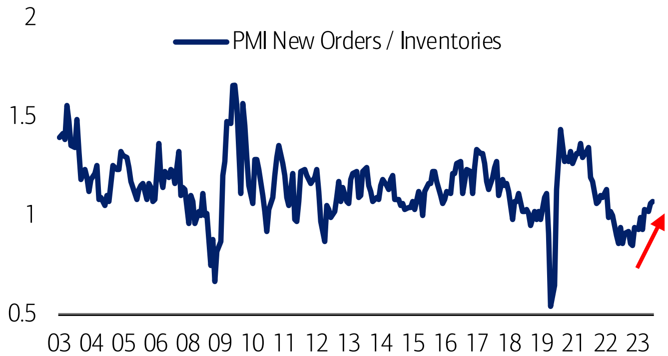
Earnings lagged GDP growth for the fifth straight quarter (historically, quarterly earnings outpaced GDP by 1.5ppt on avg. since 1950). The lag was partly due to the shift from goods (50% of earnings vs. 30% of economy) to services, which we believe is now over. Despite still muted signs of re-stocking (see Trucking report), at least the de-stocking cycle is now over (Exhibit 10). Manufacturing PMI also started to catch up to Services PMI, which has historically been a tailwind to earnings vs. GDP (Exhibit 11).

De-stocking commentaries from 2Q earnings:

J.B. Hunt (JBHT): "We saw evidence from customers in June that the destocking trend has moderated."

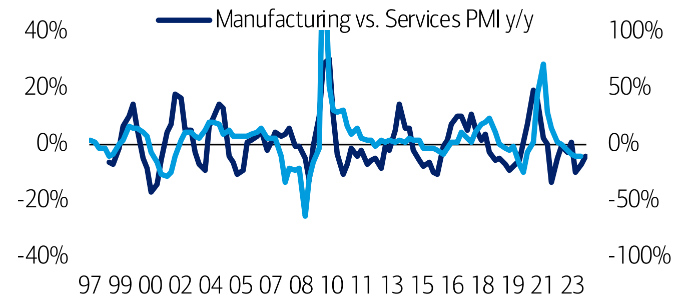
Knight-Swift Transportation (KNX): "We believe we're in the final stage of inventory destocking."

Exhibit 10: De-stocking cycle turn: orders rising, inventories falling
ISM Manufacturing PMI new orders / inventories (2003-9/23)



Source: Bloomberg, BofA US Equity & Quant Strategy
BofA GLOBAL RESEARCH

Exhibit 11: Manufacturing outpacing services has generally been a tailwind for earnings vs. GDP
ISM Manufacturing PMI – Services PMI YoY vs. EPS YoY –GDP YoY (1997-9/23)

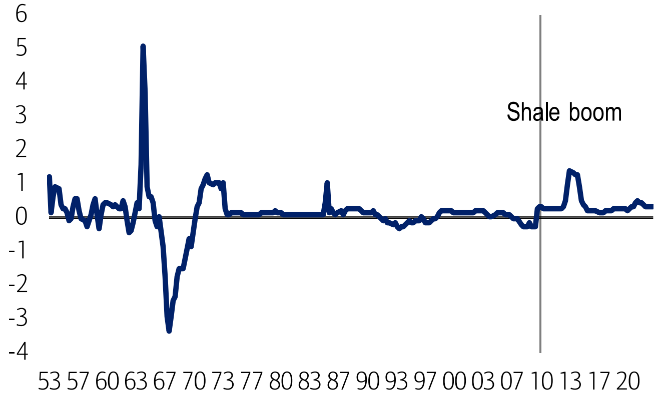


Source: FactSet, Bloomberg, BofA US Equity & Quant Strategy
BofA GLOBAL RESEARCH

Higher oil has historically been a tailwind to earnings

While the recent jump in oil concerned some investors, higher oil prices have historically helped S&P earnings (Exhibit 12). Oil represents only ~3% of total costs and a consumption 'shock' is unlikely absent another spike, in our view (Exhibit 13). Easing wage pressure (40% of total costs) should more than offset the impact from oil.

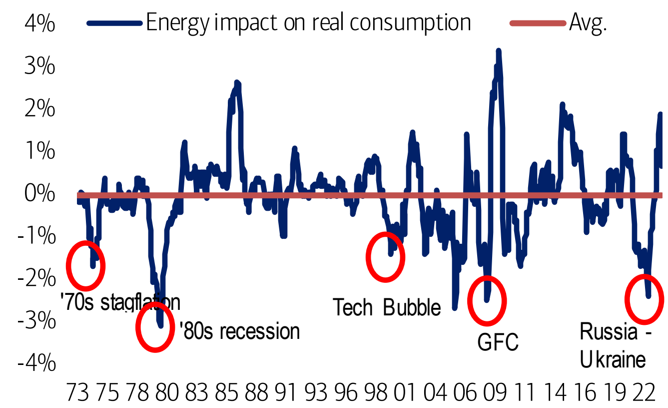
Exhibit 12: Higher oil prices have historically been a tailwind to earnings, especially after the shale revolution
WTI 5-yr rolling beta to S&P 500 earnings based on a multivariate regression using WTI and GDP vs. S&P EPS (1953-2Q23)



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

BofA GLOBAL RESEARCH

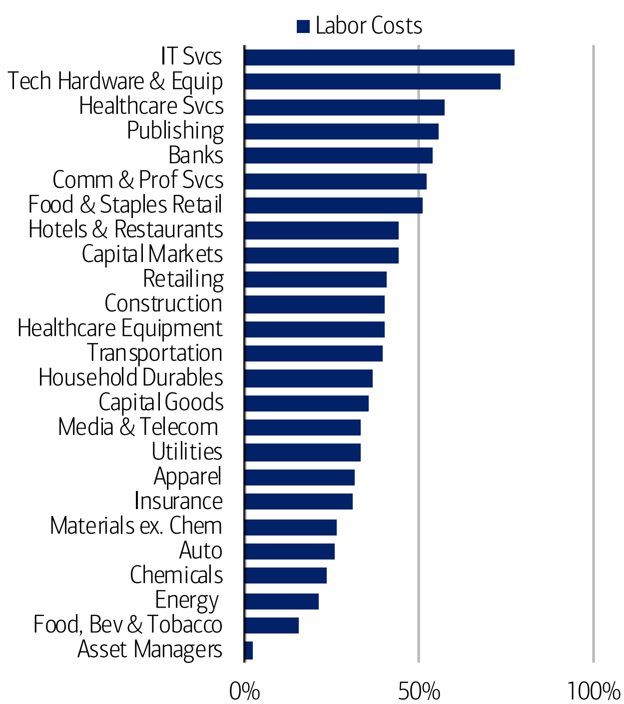
Exhibit 13: Lower oil added ~70bps to real consumption. A significant jump in oil is needed to have a similar impact as prior shocks
Spread between CPI ex. Energy and CPI YoY (1973-8/23)



Source: BofA US Equity & Quant Strategy, Haver Analytics

BofA GLOBAL RESEARCH

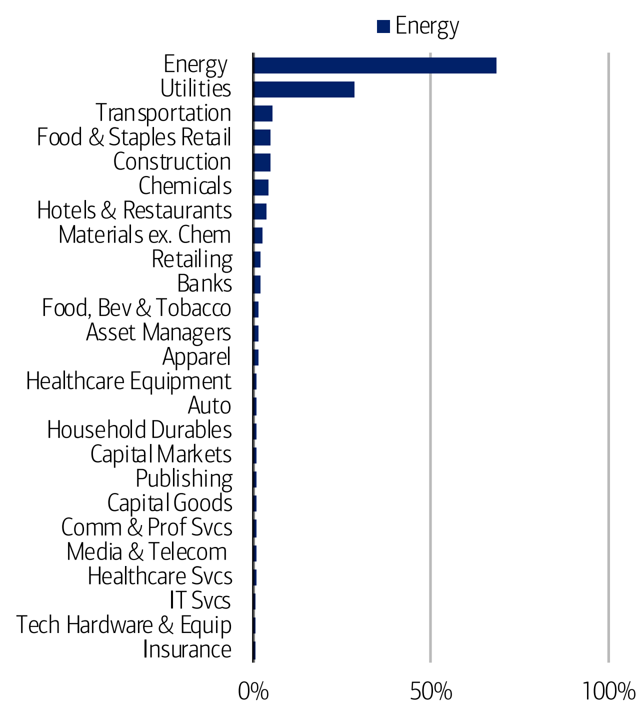
Exhibit 14: Labor Costs are the biggest cost component for most industries...
Labor Costs as % of Total Operating Costs by Industry (the use of commodities by industries; as of 2020)



Source: BEA, BofA US Equity & Quant Strategy

BofA GLOBAL RESEARCH

Exhibit 15: ...whereas Energy costs are insignificant in most industries
Energy Costs as % of Total Operating Costs by Industry (the use of commodities by industries; as of 2020)



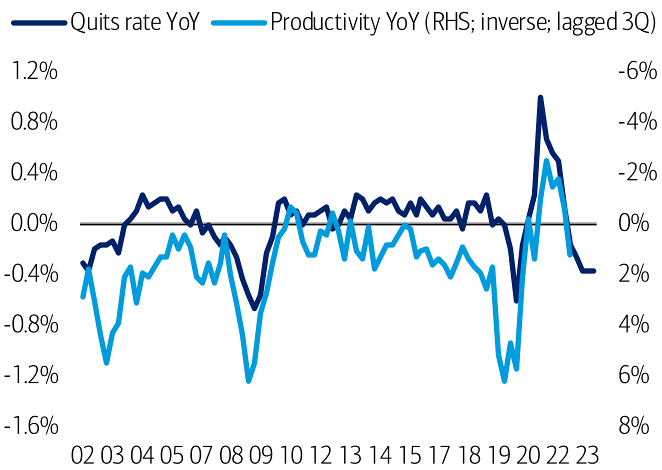
Source: BEA, BofA US Equity & Quant Strategy

BofA GLOBAL RESEARCH

Early signs of productivity gains

We see encouraging early signs of productivity gains. The falling quits rate suggests better productivity ahead (workers stay longer, becoming more productive; Exhibit 16), and revenue/worker for the S&P 500 is now inching toward its highs from 2008. We expect more productivity gains as the economy upgrades its old equipment (avg. age of equipment at a 60-yr high; Exhibit 19).

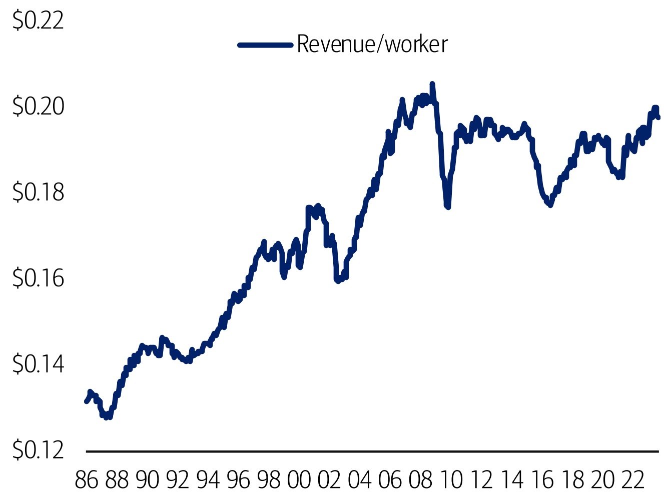
Exhibit 16: Falling quits rate have historically led to productivity gains in the near-term
JOLTS



Source: Bloomberg, BofA US Equity & Quant Strategy

BofA GLOBAL RESEARCH

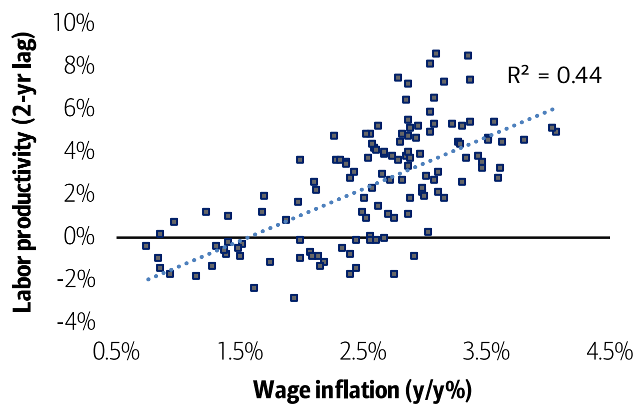
Exhibit 17: Labor efficiency has been inching toward the record high from 2008
S&P 500 companies' revenue per worker ($M 1986 dollar)



Source: FactSet, Bloomberg, BofA US Equity & Quant Strategy

BofA GLOBAL RESEARCH

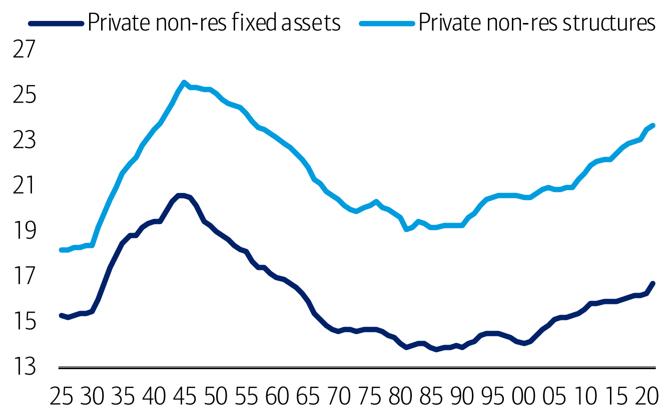
Exhibit 18: Wage inflation has historically driven labor productivity growth on a lagged basis
US Manufacturing wage inflation and labor productivity (y/y % changes)



Source: Bureau of Labor Statistics, BofA Global Research
Note: Quarterly data of US manufacturing labor productivity versus average hourly earnings of production & nonsupervisory employees

BofA GLOBAL RESEARCH

Exhibit 19: Stuff is old. Productivity should improve as equipment gets upgraded
Average age of private nonresidential fixed assets and structures (years; 1925-2021)



Source: BEA, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

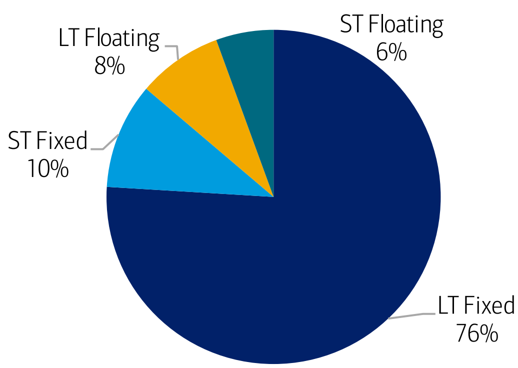
Some headwinds from higher rates, but manageable

Despite the fastest hiking cycle in 40+ years, we believe the impact to S&P 500 earnings will be manageable, with over 75% of debt being long-term fixed. The debt maturity schedule for the S&P 500 is also more spread out. The real risk is in the Russell 2000, where only 60% is long-term fixed and the debt maturity schedule is much more front-loaded (Exhibit 21).

The effective interest rate for the S&P 500 has started to rise but is only back at pre-COVID levels (Exhibit 22). Also, companies are generating much higher interest income from their cash balance, mitigating the impact of higher interest expense. Even if we assume ~7% cost of debt through 2026, we estimate just -3% cumulative impact to S&P 500 EPS (Exhibit 23).

Exhibit 20: 75%+ of S&P 500 debt is L/T fixed today vs. just 44% back in 2007

S&P 500 debt composition (as of March 2023)

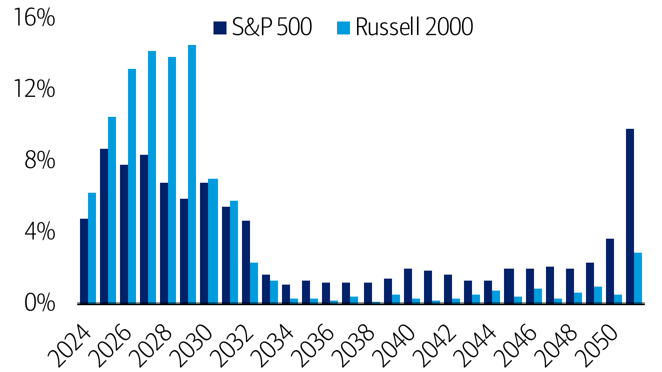


Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

Exhibit 21: S&P 500 debt maturing in manageable chunks, but not the Russell 2000

% of LT fixed debt maturing each year for S&P 500 ex. Fins



Source: FactSet, BofA US Equity & Quant Strategy

BofA GLOBAL RESEARCH

Exhibit 22: The effective interest rate is on the rise, but only back to pre-COVID levels

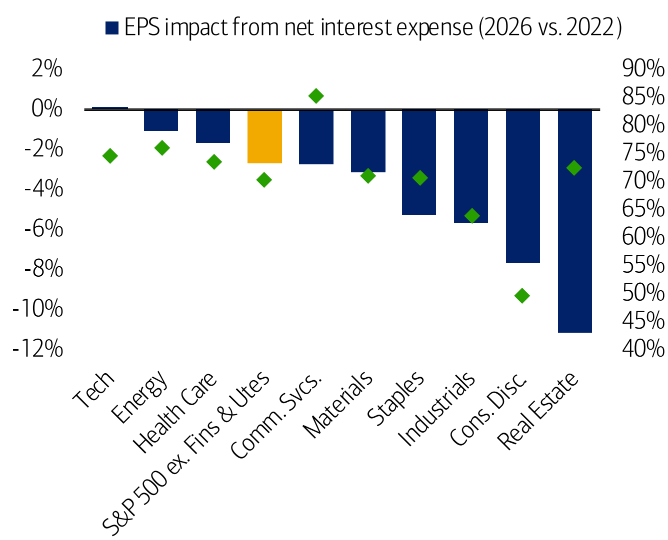
S&P 500 effective interest rate on debt (1994-9/23)

Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

Exhibit 23: EPS impact will be manageable for the S&P 500 overall, but not for certain sectors

Cumulative impact to S&P 500 EPS from higher interest rate by 2026, assuming 7% debt cost



Source: FactSet, BofA US Equity & Quant Strategy

BofA GLOBAL RESEARCH

Notable Rates and FX Research

- **Global Rates, FX & EM Year Ahead 2023 –** Year Ahead 2023: Pivot ≠ Peak, 20 Nov 2022
- Central bank hopeful thinking **Global FX Weekly**, 13 Oct 2023
- Real spooky rates **Global Rates Weekly**, 13 Oct 2023
- USD consolidation for now; unloved CHF to see support from geopolitics?, **Liquid Cross Border Flows**, 09 Oct 2023

Rates, FX & EM trades for 2023

For a complete list of our open trade recommendations, as well as our trade recommendations closed over the past 12 months, see the reports below:

Global FX Weekly: Central bank hopeful thinking 13 October 2023

Global Rates Weekly: Real spooky rates 13 October 2023

Disclosures

Important Disclosures

BofA Global Research personnel (including the analyst(s) responsible for this report) receive compensation based upon, among other factors, the overall profitability of Bank of America Corporation, including profits derived from investment banking. The analyst(s) responsible for this report may also receive compensation based upon, among other factors, the overall profitability of the Bank's sales and trading businesses relating to the class of securities or financial instruments for which such analyst is responsible.
BofA Securities fixed income analysts regularly interact with sales and trading desk personnel in connection with their research, including to ascertain pricing and liquidity in the fixed income markets.

Other Important Disclosures

Prices are indicative and for information purposes only. Except as otherwise stated in the report, for any recommendation in relation to an equity security, the price referenced is the publicly traded price of the security as of close of business on the day prior to the date of the report or, if the report is published during intraday trading, the price referenced is indicative of the traded price as of the date and time of the report and in relation to a debt security (including equity preferred and CDS), prices are indicative as of the date and time of the report and are from various sources including BofA Securities trading desks.
The date and time of completion of the production of any recommendation in this report shall be the date and time of dissemination of this report as recorded in the report timestamp.

This report may refer to fixed income securities or other financial instruments that may not be offered or sold in one or more states or jurisdictions, or to certain categories of investors, including retail investors. Readers of this report are advised that any discussion, recommendation or other mention of such instruments is not a solicitation or offer to transact in such instruments. Investors should contact their BofA Securities representative or Merrill Global Wealth Management financial advisor for information relating to such instruments.
Rule 144A securities may be offered or sold only to persons in the U.S. who are Qualified Institutional Buyers within the meaning of Rule 144A under the Securities Act of 1933, as amended.
SECURITIES OR OTHER FINANCIAL INSTRUMENTS DISCUSSED HEREIN MAY BE RATED BELOW INVESTMENT GRADE AND SHOULD THEREFORE ONLY BE CONSIDERED FOR INCLUSION IN ACCOUNTS QUALIFIED FOR SPECULATIVE INVESTMENT.
Recipients who are not institutional investors or market professionals should seek the advice of their independent financial advisor before considering information in this report in connection with any investment decision, or for a necessary explanation of its contents.
The securities or other financial instruments discussed in this report may be traded over-the-counter. Retail sales and/or distribution of this report may be made only in states where these instruments are exempt from registration or have been qualified for sale.
Officers of BofAS or one or more of its affiliates (other than research analysts) may have a financial interest in securities of the issuer(s) or in related investments.
This report, and the securities or other financial instruments discussed herein, may not be eligible for distribution or sale in all countries or to certain categories of investors, including retail investors.
Refer to BofA Global Research policies relating to conflicts of interest.
"BofA Securities" includes BofA Securities, Inc. ("BofAS") and its affiliates. Investors should contact their BofA Securities representative or Merrill Global Wealth Management financial advisor if they have questions concerning this report or concerning the appropriateness of any investment idea described herein for such investor. "BofA Securities" is a global brand for BofA Global Research.
Information relating to Non-US affiliates of BofA Securities and Distribution of Affiliate Research Reports:
BofAS and/or Merrill Lynch, Pierce, Fenner & Smith Incorporated ("MLPF&S") may in the future distribute, information of the following non-US affiliates in the US (short name: legal name, regulator): Merrill Lynch (South Africa): Merrill Lynch South Africa (Pty) Ltd., regulated by The Financial Service Board; MLI (UK): Merrill Lynch International, regulated by the Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA); BofASE (France): BofA Securities Europe SA is authorized by the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers (AMF). BofA Securities Europe SA ("BofASE") with registered address at 51, rue La Boétie, 75008 Paris is registered under no. 842 602 690 RCS Paris. In accordance with the provisions of French Code Monétaire et Financier (Monetary and Financial Code), BofASE is an établissement de crédit et d'investissement (credit and investment institution) that is authorised and supervised by the European Central Bank and the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers. BofASE's share capital can be found at www.bofaml.com/BofASEdisclaimer; BofA Europe (Milan): Bank of America Europe Designated Activity Company, Milan Branch, regulated by the Bank of Italy, the European Central Bank (ECB) and the Central Bank of Ireland (CBI); BofA Europe (Frankfurt): Bank of America Europe Designated Activity Company, Frankfurt Branch regulated by BaFin, the ECB and the CBI; BofA Europe (Madrid): Bank of America Europe Designated Activity Company, Sucursal en España, regulated by the Bank of Spain, the ECB and the CBI; Merrill Lynch (Australia): Merrill Lynch Equities (Australia) Limited, regulated by the Australian Securities and Investments Commission; Merrill Lynch (Hong Kong): Merrill Lynch (Asia Pacific) Limited, regulated by the Hong Kong Securities and Futures Commission (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 (Israel): Merrill Lynch Israel Limited, regulated by Israel Securities Authority; Merrill Lynch (DIFC): Merrill Lynch International (DIFC Branch), regulated by the Dubai Financial Services Authority (DFSA); Merrill Lynch (Brazil): Merrill Lynch S.A. Corretora de Títulos e Valores Mobiliários, regulated by Comissão de Valores Mobiliários; Merrill Lynch KSA Company: Merrill Lynch Kingdom of Saudi Arabia Company, regulated by the Capital Market Authority.
This information: has been approved for publication and is distributed in the United Kingdom (UK) to professional clients and eligible counterparties (as each is defined in the rules of the FCA and the PRA) by MLI (UK), which is authorized by the PRA and regulated by the FCA and the PRA - details about the extent of our regulation by the FCA and PRA are available from us on request; has been approved for publication and is distributed in the European Economic Area (EEA) by BofASE (France), which is authorized by the ACPR and regulated by the ACPR and the AMF; has been considered and distributed in Japan by BofAS Japan, a registered securities dealer under the Financial Instruments and Exchange Act in Japan, or its permitted affiliates; is issued and distributed in Hong Kong by Merrill Lynch (Hong Kong) which is regulated by 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.

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

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

This report may contain a trading idea or recommendation which highlights a specific identified near-term catalyst or event impacting a security, issuer, industry sector or the market generally that presents a transaction opportunity, but does not have any impact on the analyst's particular "Overweight" or "Underweight" rating (which is based on a three month trade horizon). Trading ideas and recommendations may differ directionally from the analyst's rating on a security or issuer because they reflect the impact of a near-term catalyst or event.

Foreign currency rates of exchange may adversely affect the value, price or income of any security or financial instrument mentioned in this report. Investors in such securities and instruments effectively assume currency risk.

BofAS or one of its affiliates is a regular issuer of traded financial instruments linked to securities that may have been recommended in this report. BofAS or one of its affiliates may, at any time, hold a trading position (long or short) in the securities and financial instruments discussed in this report.

BofA Securities, through business units other than BofA Global Research, may have issued and may in the future issue trading ideas or recommendations that are inconsistent with, and reach different conclusions from, the information presented herein. Such ideas or recommendations may reflect different time frames, assumptions, views and analytical methods of the persons who prepared them, and BofA Securities is under no obligation to ensure that such other trading ideas or recommendations are brought to the attention of any recipient of this information.

In the event that the recipient received this information pursuant to a contract between the recipient and BofAS for the provision of research services for a separate fee, and in connection therewith BofAS may be deemed to be acting as an investment adviser, such status relates, if at all, solely to the person with whom BofAS has contracted directly and does not extend beyond the delivery of this report (unless otherwise agreed specifically in writing by BofAS). If such recipient uses the services of BofAS in connection with the sale or purchase of a security referred to herein, BofAS may act as principal for its own account or as agent for another person. BofAS is and continues to act solely as a broker-dealer in connection with the execution of any transactions, including transactions in any securities referred to herein.

Copyright and General Information:

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.

Research Analysts

US

Ralph Axel
Rates Strategist
BofAS
+1 646 855 6226
ralph.axel@bofa.com

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

John Shin
FX Strategist
BofAS
+1 646 855 9342
joong.s.shin@bofa.com

Vadim Iaralov
FX Strategist
BofAS
+1 646 855 8732
vadim.iaralov@bofa.com

Mark Cabana, CFA
Rates Strategist
BofAS
+1 646 855 9591
mark.cabana@bofa.com

Bruno Braizinha, CFA
Rates Strategist
BofAS
+1 646 855 8949
bruno.braizinha@bofa.com

Meghan Swiber, CFA
Rates Strategist
BofAS
+1 646 855 9877
meghan.swiber@bofa.com

Europe

Ralf Preusser, CFA
Rates Strategist
MLI (UK)
+44 20 7995 7331
ralf.preusser@bofa.com

Ruben Segura-Cayuela
Europe Economist
BofA Europe (Madrid)
+34 91 514 3053
ruben.segura-cayuela@bofa.com

Mark Capleton
Rates Strategist
MLI (UK)
+44 20 7995 6118
mark.capleton@bofa.com

Athanasios Vamvakidis
FX Strategist
MLI (UK)
+44 20 7995 0279
athanasios.vamvakidis@bofa.com

Sphia Salim
Rates Strategist
MLI (UK)
+44 20 7996 2227
sphia.salim@bofa.com

Kamal Sharma
FX Strategist
MLI (UK)
+44 20 7996 4855
ksharma32@bofa.com

Ronald Man
Rates Strategist
MLI (UK)
+44 20 7995 1143
ronald.man@bofa.com

Michalis Rousakis
FX Strategist
MLI (UK)
+44 20 7995 0336
michalis.rousakis@bofa.com

Pac Rim

Adarsh Sinha
FX Strategist
Merrill Lynch (Hong Kong)
+852 3508 7155
adarsh.sinha@bofa.com

Janice Xue
Emerging Asia FI/FX Strategist
Merrill Lynch (Hong Kong)
+852 3508 8587
janice.xue@bofa.com

Shusuke Yamada, CFA
FX/Rates Strategist
BofAS Japan
+81 3 6225 8515
shusuke.yamada@bofa.com