Goldman | Portfolio Strategy Sachs | Research

17 January 2023 | 10:33AM GMT

Global Macroscope Global Strategy Conference: Results of our 2023 'PM Question Time'

Yesterday, we held our 31st annual Global Strategy Conference in London, which was attended by over 400 clients, in person, for the first time since the pandemic. During the sessions, we surveyed our audience members on their views and outlook. We present the results here, along with our comments and the GS view in each case. When we asked a similar question in last year's conference, we compare the responses with those results. Note that these questions were asked at the outset of the panel sessions, prior to hearing the views of the panelists.

We thank the participants at our conference and wish our readers a successful 2023!

Guillaume Jaisson +44(20)7552-3000 | guillaume.jaisson@gs.com Goldman Sachs International

Andrea Ferrario +44(20)7552-4353 | andrea.ferrario@gs.com Goldman Sachs International

Peter Oppenheimer +44(20)7552-5782 | peter.oppenheimer@gs.com Goldman Sachs International

Goldman Sachs International

Christian Mueller-Glissmann, CFA +44(20)7774-1714 | christian.muellerglissmann@gs.com

Sharon Bell +44(20)7552-1341 | sharon.bell@gs.com Goldman Sachs International

Global Strategy Conference: Results of our 2023 'PM Question Time'

US & Global Economics

Q1. Do you expect a recession in the US in 2023?

57% of our clients do expect a recession in the US while 43% do not (<u>Exhibit 1</u>). This is slightly more optimistic than consensus where the average recession probability stands at 65%. This relative 'bullishness' might be due to the market bounce YTD and the recent good news on the growth-inflation mix.

From here: Our economists do not expect a recession in the US. Their recession probability stands at 35%. Part of this disagreement with consensus arises from our more optimistic view on whether a recession is necessary to tame inflation. They have argued this year that an extended period of below-potential growth can gradually rebalance supply and demand in the labour market and dampen wage and price pressures with a much more limited increase in the unemployment rate than historical relationships would suggest. They also expect more resilience in underlying demand than consensus because their analysis indicates that the combined drag from fiscal tightening and monetary tightening (via financial conditions) has already played a very large role in slowing demand growth in 2022 but will fade quickly in 2023.

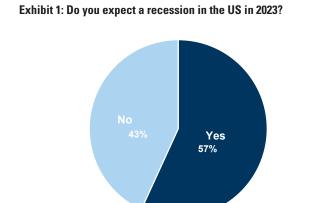


Exhibit 2: GDP growth, % yoy: GS vs. consensus

Real GDP Growth									
Percent Change yoy	2022		2023		2024				
Percent Change yoy	GS	Cons*	GS	Cons*	GS	Cons*			
USA	2.1	1.9	1.4	0.4	1.6	1.3			
Japan	1.2	1.3	1.4	1.3	1.4	1.0			
Euro area	3.4	3.3	0.6	-0.1	1.6	1.4			
Germany	1.7	1.8	0.1	-0.6	1.7	1.2			
France	2.6	2.5	0.7	0.2	1.4	1.1			
Italy	3.8	3.8	0.5	0.0	1.2	1.0			
Spain	5.3	4.6	1.3	1.0	1.9	1.9			
UK	4.1	4.4	-0.5	-0.9	1.0	0.9			
China	2.6	3.0	5.2	4.8	5.2	5.0			
Developed Markets	2.6	2.7	1.1	0.4	1.6	1.4			
Emerging Markets	3.4	3.1	3.7	3.9	4.4	4.4			
World	2.9	3.0	2.2	2.1	2.8	2.9			

Source: Goldman Sachs Global Investment Research

Source: Bloomberg, Goldman Sachs Global Investment Research

Q2. Where do you expect US core PCE inflation to end 2023?

Most clients (57%) expect the US core PCE to moderate from here and end 2023 between 3% and 4% (<u>Exhibit 3</u>). Respondents see risks skewed to the upside, with 21% of them foreseeing inflation above 4% at year-end.

From here: Supply chain recovery finally appears to be yielding the deflationary payback that has been deferred for more than a year by a series of further pandemic- and war-related disruptions. In addition, more moderate commodity price inflation, falling transportation costs, and downward pressure on import prices from dollar appreciation should also help to reduce core PCE goods inflation. On the services side, disinflation

will take longer because of some lag from a slowdown in wage growth to a slowdown in inflation in labour-intensive services categories. A more specific reason is that the largest categories, health care and shelter, already appear destined to stay high for longer because of lags in the official data. Taken together, our economists expect year-over-year core PCE inflation to decline to 2.9% in December 2023 and an even larger decline in year-over-year core CPI inflation to 3.0% in December 2023.

Exhibit 3: Where do you expect US core PCE inflation to end 2023?

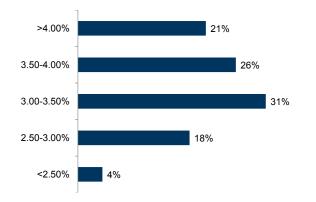
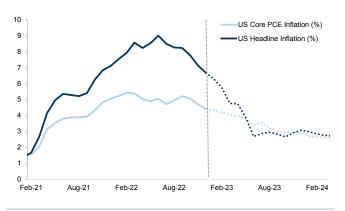


Exhibit 4: Our economists believe inflation has peaked in the US US Headline Inflation (%) and US Core PCE Inflation (%)



Source: Goldman Sachs Global Investment Research

Source: Goldman Sachs Global Investment Research

Q3. Where will the Fed stop its hiking cycle? (currently 4.25 - 4.5%)

About 2 out of 3 respondents expect the FOMC to hike by another 50bps or 75bps before stopping, which is consistent with market pricing of +60 bps (<u>Exhibit 5</u>). Outside of this modal outcome, views are skewed to the upside with 23% of clients expecting the FED to bring the policy rate above 5.25%.

From here: Our economists expect the FOMC to slow the pace of rate hikes further to 25bp at the January 31/February 1 meeting. Beyond February, they continue to expect two more 25bp hikes followed by an unchanged 5-514% funds rate through the end of 2023, consistent with the December dot plot but with two-sided risks.

Q4. When do you expect the first rates cut from the Fed?

More than half of the clients (52%) expect the first rate cut in H1-2024, while few (20%) think the FED will cut rates this year (<u>Exhibit 6</u>).

From here: Our economists think that there are two possible rationales for cutting the funds rate in the future: 1) if inflation declines and Fed officials decide that policy does not need to be as restrictive anymore; 2) if the economy is entering recession or threatens to do so without an easing in monetary policy. Our economists are doubtful that a goods-driven decline in inflation that they expect in 2023 would be sufficient to give the FOMC confidence that inflation is moving down in a sustained way and do not expect the US to enter a recession this year. Thus, they expect the FOMC to just leave the policy rate unchanged until something goes wrong - they have cuts in their forecast over 2024-2026, as a placeholder for an uncertain future date when this might happen.

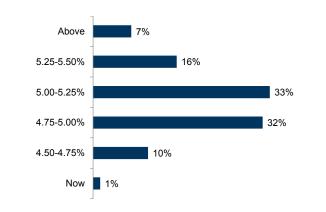
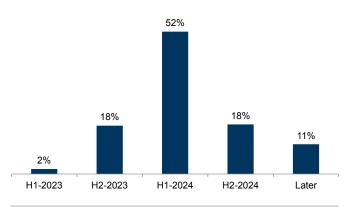


Exhibit 5: Where will the Fed stop its hiking cycle? (currently 4.25 - 4.50%)

Exhibit 6: When do you expect the first rates cut from the Fed?



Source: Goldman Sachs Global Investment Research

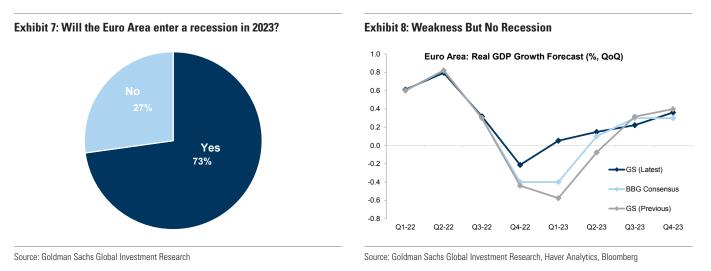
Source: Goldman Sachs Global Investment Research

Europe Economics

Q5. Do you expect a recession in the Euro area in 2023?

73% of our clients do expect a recession in the Euro Area while 27% do not (<u>Exhibit 7</u>). This is less optimistic than what they expect for the US (57/43% - see Question 1). The mood is less positive than in 2022, despite the fact that recent hard and soft data has held up better than expected as TTF prices have fallen *c*.80% from their August peak.

From here: Our economists do not expect a recession in the Euro Area, they expect real GDP growth of +0.1% in Q1, +0.1% in Q2, +0.2% in Q3 and +0.4% in Q4, implying +0.6% for 2023. We thus look for a period of growth weakness rather than a recession over the winter months, although the probability of a technical recession remains elevated at 40% over the next year. Nevertheless, weakness remains for the moment due to high inflation weighting on real disposable incomes and tight financial conditions.



Q6. Where do you expect Euro area core inflation to end 2023?

29% of our clients expect Euro area core inflation to end 2023 in the range of

2.50-3.00%. The results show that there is a material skew to the upside (2.50% and above) as only 2% expect Euro area core inflation to fall below 2.50% at the end of 2023. That said, we would note that these polls generally underestimate the significant moves (on the way up and on the way down). For example, last year, at our conference in January, 60% of our clients expected Euro Area inflation to end 2022 below 2.25%. Ultimately, it reached *c*.10% in December.

From here: Our economists believe inflation has peaked in Europe thanks to rapidly falling energy prices and easing bottlenecks in global supply chains. They think Headline inflation peaked at *c*.10% in November for the Euro Area and forecast core inflation falling back to 3.3% and headline inflation falling back to 3.6% in December 2023, respectively. Still, the delayed transmission of high energy and labour costs to consumer prices, suggests there may still be upward pressure due to service inflation.

Exhibit 9: Where do you expect Euro area core inflation to end 2023?

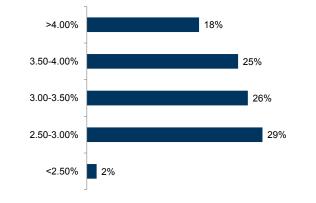
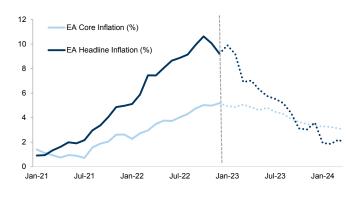


Exhibit 10: Our economists believe inflation has peaked in Europe EA Core Inflation and EA Headline Inflation (%)



Source: Goldman Sachs Global Investment Research

Source: Goldman Sachs Global Investment Research

Q7. Where will the ECB stop its hiking cycle?

30% of our clients expect the ECB to end its hiking cycle as the policy rate reaches 3.25%. The results are skewed to the upside with 39% of respondents expecting the ECB policy rate to be raised to 3.50% or above. (Exhibit 11).

From here: Our economists look for a terminal rate of 3.25% in May. Given surprisingly resilient growth, sticky core inflation pressures and hawkish commentary, they expect the Governing Council to tighten significantly more in coming months. They believe that 50bp hikes are very likely in each of February and March, before slowing to 25bp in May. Their baseline remains that the Governing Council stops in May at 3.25% as headline inflation cools notably and the Fed stops hiking, but we see a low bar for a further 25bp hike to 3.5% in June in case of more persistent service inflation pressures. The firmer growth outlook reinforces our view that the ECB is unlikely to cut soon after reaching the terminal rate and we maintain our forecast for the first cut in 2024Q4, two quarters after the Fed.

Q8. Where will the BoE stop its hiking cycle?

23% of our clients expect the BoE to stop its hiking cycle as the bank rate reaches

4.25%. However, this masks the wide distribution of answers where most clients expect the BoE to stop between 4.00-4.50% (<u>Exhibit 12</u>). The market is pricing the bank rate to reach 4.50% by March 2023.

From here: Our economists expect a terminal Bank Rate of 4.5% in May. The MPC pushed back against market pricing in November and stepped down the hiking pace to 50bp in December with two dissents to keep Bank Rate on hold. They do not, however, look for a near-term end to the hiking cycle despite this dovish rhetoric, the recession and higher mortgage rates. The main reason is that the UK labour market is significantly overheated, like the US jobs market. The unemployment rate stands at 3.7% (up only slightly from the trough), vacancies remain very high (with a notably positive jobs-workers gap) and wage growth is still very strong (with our wage tracker running at 6%). Although we see core inflation past the peak, we expect UK core inflation to remain notably higher than elsewhere in 2023H1 and look for a 50bp Bank Rate hike in February, followed by 25bp hikes in March and May for a terminal rate of 4.5%.

Exhibit 11: Where will the ECB stop its hiking cycle? (currently 2.00%)

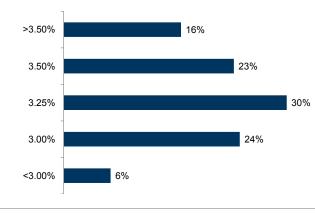
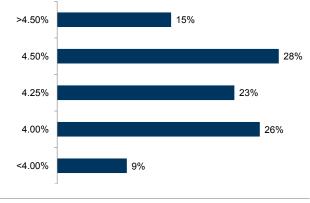


Exhibit 12: Where will the BoE stop it hiking cycle? (currently 3.50)



Source: Goldman Sachs Global Investment Research

Equities & Asset allocation

Q9. In 2023, what will global equity returns be in \$ terms?

After 2021 and 2022, when global equities returned respectively +17% and -20% (USD, total return), the majority of our clients (46%) expect positive, but single-digit, returns (0% to 10%) in 2023. The distribution is more skewed to the upside than last year, when only 13% of the clients expected returns above 10%, while today, 27% of the clients expect double-digit returns. Overall, 73% of our clients are expecting positive returns this year (vs. 78% expecting the same last year) (<u>Exhibit 13</u>).

From here: Our targets in each region imply a price return in global equities in the low-single-digit space, or the mid-single-digit space including dividends. After a strong rally year-to-date, we remain cautious on equities. While we expect a turning point in markets this year, the hurdle rate for investing in equities has increased. There is now a reasonable alternative return available in bonds and cash. We continue to expect a relatively 'flat and fat' market environment. The outlook for earnings will be crucial

Source: Goldman Sachs Global Investment Research

because higher real interest rates are likely to constrain valuations. We generally expect profits to weaken more than consensus does, albeit less than in many historical recessionary periods. The main reason why our profit forecast top-down is below the bottom-up consensus is that we expect margins to weaken.

Q10. Which region will perform best in 2023 (in local currency terms)?

There is a clear consensus that Asia (ex. Japan) will be the best performing region in 2023. Clients have much more faith in Asia (ex. Japan), which attracted 48% of the votes, compared to only 18% last year. The boost from China reopening will be quite substantial for the MSCI Asia Pacific ex Japan index which fell 20% last year, the 4th largest decline in the 35-year index history. With this, our clients expect Europe and the US to be the relative losers. Only 18% of our clients expect the US to outperform - a major change after a decade of outperformance. Last year, the majority of our clients forecast the relative outperformance of Europe we saw in 2022 (in local currency terms). They do not expect this to continue and exhibit a more balanced approach.

From here: Our current targets imply relatively modest annual returns of around 2% for the S&P 500, 7% for the STOXX 600, 9% for the MXAPJ and 21% for the TOPIX (all total return, in local currencies). While valuations in most markets have come down this year, the US continues to look expensive. This partly reflects sector weighting differences, but even when we compare these markets on a sector-adjusted basis, the premium of the US vis-a-vis the rest of the world looks extreme.

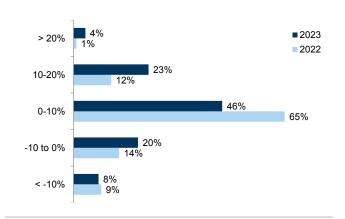
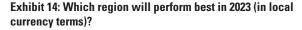
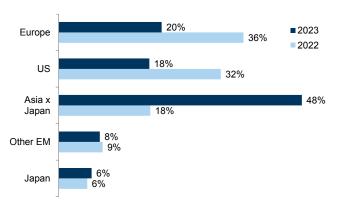


Exhibit 13: In 2023, what will global equity returns be in \$ terms?





Source: Goldman Sachs Global Investment Research

Source: Goldman Sachs Global Investment Research

Exhibit 15: Key market forecasts

	Index Level		Price Return		Total Return**	
	Current	12m	Local	USD*	Local	USD*
S&P 500	3999	4000	0%	0%	2%	2%
STOXX Europe 600	455	465	2%	4%	6%	7%
ΤΟΡΙΧ	1886	2200	17%	19%	19%	21%
MSCI Asia-Pacific ex Jp (\$)	546	580	6%	6%	9%	9%
Global Equities***	-	-	1%	2%	3%	4%

* GS FX Strategy forecast ** Consensus 12m fwd Dividend *** Mkt cap weighted avg of our regional forecasts

Source: Datastream, FactSet, Goldman Sachs Global Investment Research

We would like to thank Marcus von Scheele and Parthivi Bansal for their contributions to this report.

Disclosure Appendix

Reg AC

We, Guillaume Jaisson, Andrea Ferrario, Peter Oppenheimer, Christian Mueller-Glissmann, CFA and Sharon Bell, hereby certify that all of the views expressed in this report accurately reflect our personal views, which have not been influenced by considerations of the firm's business or client relationships.

Unless otherwise stated, the individuals listed on the cover page of this report are analysts in Goldman Sachs' Global Investment Research division.

Disclosures

Regulatory disclosures

Disclosures required by United States laws and regulations

See company-specific regulatory disclosures above for any of the following disclosures required as to companies referred to in this report: manager or co-manager in a pending transaction; 1% or other ownership; compensation for certain services; types of client relationships; managed/co-managed public offerings in prior periods; directorships; for equity securities, market making and/or specialist role. Goldman Sachs trades or may trade as a principal in debt securities (or in related derivatives) of issuers discussed in this report.

The following are additional required disclosures: **Ownership and material conflicts of interest:** Goldman Sachs policy prohibits its analysts, professionals reporting to analysts and members of their households from owning securities of any company in the analyst's area of coverage. **Analyst compensation:** Analysts are paid in part based on the profitability of Goldman Sachs, which includes investment banking revenues. **Analyst as officer or director:** Goldman Sachs policy generally prohibits its analysts, persons reporting to analysts or members of their households from serving as an officer, director or advisor of any company in the analyst's area of coverage. **Non-U.S. Analysts** is analysts may not be associated persons of Goldman Sachs & Co. LLC and therefore may not be subject to FINRA Rule 2241 or FINRA Rule 2242 restrictions on communications with subject company, public appearances and trading securities held by the analysts.

Additional disclosures required under the laws and regulations of jurisdictions other than the United States

The following disclosures are those required by the jurisdiction indicated, except to the extent already made above pursuant to United States laws and regulations. Australia: Goldman Sachs Australia Pty Ltd and its affiliates are not authorised deposit-taking institutions (as that term is defined in the Banking Act 1959 (Cth)) in Australia and do not provide banking services, nor carry on a banking business, in Australia. This research, and any access to it, is intended only for "wholesale clients" within the meaning of the Australian Corporations Act, unless otherwise agreed by Goldman Sachs. In producing research reports, members of the Global Investment Research Division of Goldman Sachs Australia may attend site visits and other meetings hosted by the companies and other entities which are the subject of its research reports. In some instances the costs of such site visits or meetings may be met in part or in whole by the issuers concerned if Goldman Sachs Australia considers it is appropriate and reasonable in the specific circumstances relating to the site visit or meeting. To the extent that the contents of this document contains any financial product advice, it is general advice only and has been prepared by Goldman Sachs without taking into account a client's objectives, financial situation or needs. A client should, before acting on any such advice, consider the appropriateness of the advice having regard to the client's own objectives, financial situation and needs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests and a copy of Goldman Sachs' Australian Sell-Side Research Independence Policy Statement are available at: https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html. Brazil: Disclosure information in relation to CVM Resolution n. 20 is available at https://www.gs.com/worldwide/brazil/area/gir/index.html. Where applicable, the Brazil-registered analyst primarily responsible for the content of this research report, as defined in Article 20 of CVM Resolution n. 20, is the first author named at the beginning of this report, unless indicated otherwise at the end of the text. Canada: This information is being provided to you for information purposes only and is not, and under no circumstances should be construed as, an advertisement, offering or solicitation by Goldman Sachs & Co. LLC for purchasers of securities in Canada to trade in any Canadian security. Goldman Sachs & Co. LLC is not registered as a dealer in any jurisdiction in Canada under applicable Canadian securities laws and generally is not permitted to trade in Canadian securities and may be prohibited from selling certain securities and products in certain jurisdictions in Canada. If you wish to trade in any Canadian securities or other products in Canada please contact Goldman Sachs Canada Inc., an affiliate of The Goldman Sachs Group Inc., or another registered Canadian dealer. Hong Kong: Further information on the securities of covered companies referred to in this research may be obtained on request from Goldman Sachs (Asia) L.L.C. India: Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (India) Securities Private Limited, Research Analyst - SEBI Registration Number INH000001493, 951-A, Rational House, Appasaheb Marathe Marg, Prabhadevi, Mumbai 400 025, India, Corporate Identity Number U74140MH2006FTC160634, Phone +91 22 6616 9000, Fax +91 22 6616 9001. Goldman Sachs may beneficially own 1% or more of the securities (as such term is defined in clause 2 (h) the Indian Securities Contracts (Regulation) Act, 1956) of the subject company or companies referred to in this research report. Japan: See below. Korea: This research, and any access to it, is intended only for "professional investors" within the meaning of the Financial Services and Capital Markets Act, unless otherwise agreed by Goldman Sachs. Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (Asia) L.L.C., Seoul Branch. **New** Zealand: Goldman Sachs New Zealand Limited and its affiliates are neither "registered banks" nor "deposit takers" (as defined in the Reserve Bank of New Zealand Act 1989) in New Zealand. This research, and any access to it, is intended for "wholesale clients" (as defined in the Financial Advisers Act 2008) unless otherwise agreed by Goldman Sachs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests is available at: https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html. Russia: Research reports distributed in the Russian Federation are not advertising as defined in the Russian legislation, but are information and analysis not having product promotion as their main purpose and do not provide appraisal within the meaning of the Russian legislation on appraisal activity. Research reports do not constitute a personalized investment recommendation as defined in Russian laws and regulations, are not addressed to a specific client, and are prepared without analyzing the financial circumstances, investment profiles or risk profiles of clients. Goldman Sachs assumes no responsibility for any investment decisions that may be taken by a client or any other person based on this research report. Singapore: Goldman Sachs (Singapore) Pte. (Company Number: 198602165W), which is regulated by the Monetary Authority of Singapore, accepts legal responsibility for this research, and should be contacted with respect to any matters arising from, or in connection with, this research. Taiwan: This material is for reference only and must not be reprinted without permission. Investors should carefully consider their own investment risk. Investment results are the responsibility of the individual investor. United Kingdom: Persons who would be categorized as retail clients in the United Kingdom, as such term is defined in the rules of the Financial Conduct Authority, should read this research in conjunction with prior Goldman Sachs research on the covered companies referred to herein and should refer to the risk warnings that have been sent to them by Goldman Sachs International. A copy of these risks warnings, and a glossary of certain financial terms used in this report, are available from Goldman Sachs International on request.

European Union and United Kingdom: Disclosure information in relation to Article 6 (2) of the European Commission Delegated Regulation (EU) (2016/958) supplementing Regulation (EU) No 596/2014 of the European Parliament and of the Council (including as that Delegated Regulation is implemented into United Kingdom domestic law and regulation following the United Kingdom's departure from the European Union and the European Economic Area) with regard to regulatory technical standards for the technical arrangements for objective presentation of investment

recommendations or other information recommending or suggesting an investment strategy and for disclosure of particular interests or indications of conflicts of interest is available at https://www.gs.com/disclosures/europeanpolicy.html which states the European Policy for Managing Conflicts of Interest in Connection with Investment Research.

Japan: Goldman Sachs Japan Co., Ltd. is a Financial Instrument Dealer registered with the Kanto Financial Bureau under registration number Kinsho 69, and a member of Japan Securities Dealers Association, Financial Futures Association of Japan and Type II Financial Instruments Firms Association. Sales and purchase of equities are subject to commission pre-determined with clients plus consumption tax. See company-specific disclosures as to any applicable disclosures required by Japanese stock exchanges, the Japanese Securities Dealers Association or the Japanese Securities Finance Company.

Global product; distributing entities

The Global Investment Research Division of Goldman Sachs produces and distributes research products for clients of Goldman Sachs on a global basis. Analysts based in Goldman Sachs offices around the world produce research on industries and companies, and research on macroeconomics, currencies, commodities and portfolio strategy. This research is disseminated in Australia by Goldman Sachs Australia Pty Ltd (ABN 21 006 797 897); in Brazil by Goldman Sachs do Brasil Corretora de Títulos e Valores Mobiliários S.A.; Public Communication Channel Goldman Sachs Brazil: 0800 727 5764 and / or contatogoldmanbrasil@gs.com. Available Weekdays (except holidays), from 9am to 6pm. Canal de Comunicação com o Público Goldman Sachs Brasil: 0800 727 5764 e/ou contatogoldmanbrasil@gs.com. Horário de funcionamento: segunda-feira à sexta-feira (exceto feriados), das 9h às 18h; in Canada by Goldman Sachs & Co. LLC; in Hong Kong by Goldman Sachs (Asia) L.L.C.; in India by Goldman Sachs (India) Securities Private Ltd.; in Japan by Goldman Sachs Japan Co., Ltd.; in the Republic of Korea by Goldman Sachs (Asia) L.L.C., Seoul Branch; in New Zealand by Goldman Sachs New Zealand Limited; in Russia by OOO Goldman Sachs; in Singapore by Goldman Sachs (Singapore) Pte. (Company Number: 198602165W); and in the United States of America by Goldman Sachs & Co. LLC. Goldman Sachs International has approved this research in connection with its distribution in the United Kingdom.

Effective from the date of the United Kingdom's departure from the European Union and the European Economic Area ("Brexit Day") the following information with respect to distributing entities will apply:

Goldman Sachs International ("GSI"), authorised by the Prudential Regulation Authority ("PRA") and regulated by the Financial Conduct Authority ("FCA") and the PRA, has approved this research in connection with its distribution in the United Kingdom.

European Economic Area: GSI, authorised by the PRA and regulated by the FCA and the PRA, disseminates research in the following jurisdictions within the European Economic Area: the Grand Duchy of Luxembourg, Italy, the Kingdom of Belgium, the Kingdom of Denmark, the Kingdom of Norway, the Republic of Finland, the Republic of Cyprus and the Republic of Ireland; GS -Succursale de Paris (Paris branch) which, from Brexit Day, will be authorised by the French Autorité de contrôle prudentiel et de resolution ("ACPR") and regulated by the Autorité de contrôle prudentiel et de resolution and the Autorité des marches financiers ("AMF") disseminates research in France; GSI - Sucursal en España (Madrid branch) authorized in Spain by the Comisión Nacional del Mercado de Valores disseminates research in the Kingdom of Spain; GSI - Sweden Bankfilial (Stockholm branch) is authorized by the SFSA as a "third country branch" in accordance with Chapter 4, Section 4 of the Swedish Securities and Market Act (Sw. lag (2007:528) om värdepappersmarknaden) disseminates research in the Kingdom of Sweden; Goldman Sachs Bank Europe SE ("GSBE") is a credit institution incorporated in Germany and, within the Single Supervisory Mechanism, subject to direct prudential supervision by the European Central Bank and in other respects supervised by German Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht, BaFin) and Deutsche Bundesbank and disseminates research in the Federal Republic of Germany and those jurisdictions within the European Economic Area where GSI is not authorised to disseminate research and additionally, GSBE, Copenhagen Branch filial af GSBE, Tyskland, supervised by the Danish Financial Authority disseminates research in the Kingdom of Denmark; GSBE - Sucursal en España (Madrid branch) subject (to a limited extent) to local supervision by the Bank of Spain disseminates research in the Kingdom of Spain; GSBE - Succursale Italia (Milan branch) to the relevant applicable extent, subject to local supervision by the Bank of Italy (Banca d'Italia) and the Italian Companies and Exchange Commission (Commissione Nazionale per le Società e la Borsa "Consob") disseminates research in Italy; GSBE - Succursale de Paris (Paris branch), supervised by the AMF and by the ACPR disseminates research in France; and GSBE - Sweden Bankfilial (Stockholm branch), to a limited extent, subject to local supervision by the Swedish Financial Supervisory Authority (Finansinpektionen) disseminates research in the Kingdom of Sweden.

General disclosures

This research is for our clients only. Other than disclosures relating to Goldman Sachs, this research is based on current public information that we consider reliable, but we do not represent it is accurate or complete, and it should not be relied on as such. The information, opinions, estimates and forecasts contained herein are as of the date hereof and are subject to change without prior notification. We seek to update our research as appropriate, but various regulations may prevent us from doing so. Other than certain industry reports published on a periodic basis, the large majority of reports are published at irregular intervals as appropriate in the analyst's judgment.

Goldman Sachs conducts a global full-service, integrated investment banking, investment management, and brokerage business. We have investment banking and other business relationships with a substantial percentage of the companies covered by our Global Investment Research Division. Goldman Sachs & Co. LLC, the United States broker dealer, is a member of SIPC (<u>https://www.sipc.org</u>).

Our salespeople, traders, and other professionals may provide oral or written market commentary or trading strategies to our clients and principal trading desks that reflect opinions that are contrary to the opinions expressed in this research. Our asset management area, principal trading desks and investing businesses may make investment decisions that are inconsistent with the recommendations or views expressed in this research.

We and our affiliates, officers, directors, and employees, will from time to time have long or short positions in, act as principal in, and buy or sell, the securities or derivatives, if any, referred to in this research, unless otherwise prohibited by regulation or Goldman Sachs policy.

The views attributed to third party presenters at Goldman Sachs arranged conferences, including individuals from other parts of Goldman Sachs, do not necessarily reflect those of Global Investment Research and are not an official view of Goldman Sachs.

Any third party referenced herein, including any salespeople, traders and other professionals or members of their household, may have positions in the products mentioned that are inconsistent with the views expressed by analysts named in this report.

This research is focused on investment themes across markets, industries and sectors. It does not attempt to distinguish between the prospects or performance of, or provide analysis of, individual companies within any industry or sector we describe.

Any trading recommendation in this research relating to an equity or credit security or securities within an industry or sector is reflective of the investment theme being discussed and is not a recommendation of any such security in isolation.

This research is not an offer to sell or the solicitation of an offer to buy any security in any jurisdiction where such an offer or solicitation would be illegal. It does not constitute a personal recommendation or take into account the particular investment objectives, financial situations, or needs of individual clients. Clients should consider whether any advice or recommendation in this research is suitable for their particular circumstances and, if appropriate, seek professional advice, including tax advice. The price and value of investments referred to in this research and the income from them may fluctuate. Past performance is not a guide to future performance, future returns are not guaranteed, and a loss of original capital may occur.

Fluctuations in exchange rates could have adverse effects on the value or price of, or income derived from, certain investments.

Certain transactions, including those involving futures, options, and other derivatives, give rise to substantial risk and are not suitable for all investors. Investors should review current options and futures disclosure documents which are available from Goldman Sachs sales representatives or at <u>https://www.theocc.com/about/publications/character-risks.jsp</u> and

https://www.fiadocumentation.org/fia/regulatory-disclosures_1/fia-uniform-futures-and-options-on-futures-risk-disclosures-booklet-pdf-version-2018. Transaction costs may be significant in option strategies calling for multiple purchase and sales of options such as spreads. Supporting documentation will be supplied upon request.

Differing Levels of Service provided by Global Investment Research: The level and types of services provided to you by the Global Investment Research division of GS may vary as compared to that provided to internal and other external clients of GS, depending on various factors including your individual preferences as to the frequency and manner of receiving communication, your risk profile and investment focus and perspective (e.g., marketwide, sector specific, long term, short term), the size and scope of your overall client relationship with GS, and legal and regulatory constraints. As an example, certain clients may request to receive notifications when research on specific securities is published, and certain clients may request that specific data underlying analysts' fundamental analysis available on our internal client websites be delivered to them electronically through data feeds or otherwise. No change to an analyst's fundamental research views (e.g., ratings, price targets, or material changes to earnings estimates for equity securities), will be communicated to any client prior to inclusion of such information in a research report broadly disseminated through electronic publication to our internal client websites or through other means, as necessary, to all clients who are entitled to receive such reports.

All research reports are disseminated and available to all clients simultaneously through electronic publication to our internal client websites. Not all research content is redistributed to our clients or available to third-party aggregators, nor is Goldman Sachs responsible for the redistribution of our research by third party aggregators. For research, models or other data related to one or more securities, markets or asset classes (including related services) that may be available to you, please contact your GS representative or go to https://research.gs.com.

Disclosure information is also available at https://www.gs.com/research/hedge.html or from Research Compliance, 200 West Street, New York, NY 10282.

© 2023 Goldman Sachs.

No part of this material may be (i) copied, photocopied or duplicated in any form by any means or (ii) redistributed without the prior written consent of The Goldman Sachs Group, Inc.