Global Economics Wrap-Up: January 9, 2026

Joseph Briggs
+1(212)902-2163 |
joseph.briggs@gs.com
Goldman Sachs & Co. LLC

Andrew Tilton
+852-2978-1802 |
andrew.tilton@gs.com
Goldman Sachs (Asia) L.L.C.

Katya Vashkinskaya
+44(20)7774-4833 |
katya.vashkinskaya@gs.com
Goldman Sachs International

Jessica Rindels
+1(972)368-1516 |
jessica.rindels@gs.com
Goldman Sachs & Co. LLC

Sarah Dong
+1(212)357-9741 | sarah.dong@gs.com
Goldman Sachs & Co. LLC

Blair Turoff
+1(212)357-7951 | blair.turoff@gs.com
Goldman Sachs & Co. LLC

Global Economics
1/9/26 1:00PM ET

- How concerned should we be about an AI-related job apocalypse?
  - We have previously found that AI can potentially automate tasks that account for 25% of all US work hours, resulting in a 15% economy-wide productivity boost after redeploying hours into other occupations.
  - Although AI is likely to render many occupations permanently obsolete (our baseline forecast assumes that 6-7% of workers will be displaced during the adoption process) it will also create new roles that drive long-run job growth:
    - AI can create new occupations directly, like how computers have created millions of jobs in software engineering, e-commerce, content creation, and video games.
    - New jobs can also be created by enabling increased occupational specialization, as has happened in healthcare over time.
    - AI-driven income gains can also indirectly lead to new discretionary service occupations via higher income and demand, like how employment has increased in pet care, nail salons, educational support/tutoring, and athletic coaching occupations over the last 30 years.
  - Even under our optimistic assessment that AI will create new jobs, we anticipate an increase in frictional unemployment as workers transition to new jobs.
    - We expect a peak gross unemployment increase of a bit more than ½pp under our baseline outlook, but see risks skewed toward large unemployment rate increases.
- DM manufacturing delivery times lengthen in December final PMI release:
  - The global composite PMI fell by -0.7pt in December to 52.0, reflecting a decline in services (-0.9pt to 52.4) and manufacturing (-0.1pt to 50.4).
  - Manufacturing suppliers' delivery times lengthened (-1.0pt to 46.6) in DMs and remained unchanged (flat at 49.9pt) in EMs.
  - The manufacturing new export orders PMI component declined in several of the US's major trading partners in December and remains in

contractionary territory for all major economies besides India.

US Economics
1/9/26 11:00AM ET

- Nonfarm payrolls rose by 50k in December, and the unemployment rate declined to 4.4%:
  - Payroll growth was revised down by 8k in November and by 68k in October.
  - The decline in the unemployment rate largely reflected a 125k decline in unemployed government workers following a shutdown-related 193k increase in the November report.
  - Today's employment report cements the case for skipping a cut at the January FOMC meeting.
- We forecast a larger decline in inflation in 2026 than consensus, the FOMC, and the market expect:
  - While progress on core PCE inflation stalled in 2025 at 2.8% yoy, the remaining overshoot reflects the one-time impact of tariffs and the earlier impact of now mostly complete catch-up inflation.
  - We expect core PCE to fall to 2.1% by end-2026 (30bp below the consensus and FOMC forecasts) for three reasons:
    - The tariff boost should fall from 0.5pp now to 0.2pp by December (though not before rising to 0.8pp by mid-2026).
    - Shelter should slow from 3.7% yoy to 2.3%, below its pre-pandemic pace.
    - Wage growth has fallen to target-consistent levels and will put downward pressure on nonhousing services inflation.
  - But the next two months should be firmer:
    - December will get a roughly 11bp boost (in core CPI terms) after delayed data collection depressed measured prices in November.
    - January should see one last "January effect," especially if companies pass through more tariff costs in their annual price resets.
- Early career workers are likely to adjust more flexibly to AI-related job displacement:
  - Over the past three decades, workers displaced from disrupted occupations—those with the largest employment declines—experienced significantly worse labor market outcomes.
    - They took a month longer to find new jobs.
    - They faced real earnings losses of over 4% when transitioning between full-time jobs after a layoff.
    - They were 5-10pp more likely to become long-term unemployed or exit the labor force entirely.
  - But older workers bore the largest real earnings losses (over 10%), while

younger workers—especially those under 30—transitioned to different occupation categories at significantly higher rates.

Europe Economics
1/9/26 9:50AM ET

- German industrial data generally beat expectations over the past week:
    - Manufacturing orders increased by +5.6% mom in November, notably above consensus expectations.
        - The headline number was driven by major orders in other transport equipment and fabricated metals, likely reflecting rising defence spending.
    - Industrial turnover increased by +2.7% mom in November thanks to strong domestic sales.
    - Industrial production was also stronger than consensus had expected at +0.8% mom, reflecting strong capital goods and autos production.
    - While other data points over the week were a bit more mixed, we have raised our Q4 German GDP tracking estimate to +0.3%; we continue to see area-wide GDP growth at +0.3%.
- Euro area inflation data was softer than expectations for December:
    - In the flash release for December, headline HICP inflation ticked down by 0.18pp to 1.96% yoy and core HICP inflation went down 12bp to 2.29% yoy.
    - We estimate that seasonally adjusted sequential core inflation was 0.17% mom in December, up slightly from 0.16% mom in the November reading.
    - Across major components, sequential goods inflation went down further to -0.03% mom, while sequential services inflation ticked up to 0.28% mom.
    - We now expect core inflation to average 2.1% in 2026 (vs 2.2% previously), reaching 1.8% by end-2026 and 1.9% by end-2027, slightly weaker than the ECB staff December projections.
- UK PMIs on the soft side:
    - Final composite PMI for December was revised down to 51.4 (versus a flash estimate of 52.1), with the service sector showing a slower pace of expansion than initially estimated.
    - The construction PMI also remained weak in December at 40.1, only slightly above its November low, with data pointing to weakness across the housing, commercial, and civil engineering segments.
- BoE's Decision Maker Panel survey data for December:
    - Points to weak employment intentions, with year-ahead expected job growth dropping to -0.4% (from -0.2%) on a 3-month average basis.
    - The survey also showed a slight decrease in firms' price and wage expectations for the year ahead, albeit both series remain at elevated levels.

Asia/EM Economics
1/8/26 9:55PM ET

- We published our 2026 economic outlooks for Asian economies over the past week:
  - For China, we forecast real GDP growth of 4.8% in 2026, above the 4.5% consensus.
    - Strong manufacturing competitiveness should drive export volume growth of 5–6% and a current account surplus of 4.2% of GDP, well above consensus.
    - While the property downturn continues, its impact on GDP is diminishing as the sector shrinks.
    - Weak household consumption may persist, but increased government spending and a rebound in investment should provide an offset.
  - Japan's economy is expected to grow steadily by 0.8% in 2026, led by solid consumption and capex.
    - The BOJ will likely resume a semi-annual pace of rate hikes (we forecast a hike to 1% in July).
    - Expansionary fiscal policies will require close monitoring to ensure long-term fiscal soundness.
  - Australia and New Zealand are reaccelerating, with 2026 GDP growth expected at 2.4% and 3.1%, respectively.
    - Private demand is supported by rising income, but inflation risks may prompt rate hikes.
  - India's economy is set for continued growth after a proactive policy shift in 2025.
    - INR's underperformance has likely ended, supported by a favorable external balance.
  - We expect export volume growth in Korea and Taiwan to remain solid (particularly in Taiwan) but decelerate from 2025.
    - Domestic consumption growth remains weak.
    - Monetary policies are likely to diverge, with Taiwan hiking and Korea cutting.
- China's consumer goods trade-in program was extended, but with lower subsidies.
  - China's consumer goods trade-in program was extended, with 2026 subsidies at RMB 250 billion—less than 2025.
    - We expect nominal retail sales growth to slow from 3.8% in 2025 to 2.7% in 2026.
  - USD/CNY broke below 7.0 at end-2025, driven by broad USD weakness and year-end FX settlement demand.
    - Recent policy signals indicate PBOC may prefer a stronger CNY but aims to avoid rapid appreciation.

- We continue to project USD/CNY to reach 6.95/6.90/6.85 in 3/6/12-months.

- Asia and EM manufacturing PMIs were mixed in December:
  - Mainland China (both the official and unofficial PMIs increased), Japan, and small open economies (Korea, Taiwan, and some ASEAN) saw stronger manufacturing PMIs, while India's declined.
  - Manufacturing PMIs softer on net in EM ex-Asia, with downticks in 5 out of 7 countries, especially in Latam.
  - Services PMIs were softer in India and Japan.

GDP Forecast Tracker: GS vs. Consensus

Real GDP Growth:	Annual Average							Q4/Q4
	2024	2025		2026		2027		2026
	Actual	GS	Consensus	GS	Consensus	GS	Consensus	GS
DMs								
US	2.8	2.2	2.0	2.7	2.1	2.1	2.0	2.5
Euro Area	0.8	1.5	1.4	1.3	1.2	1.3	1.4	1.4
Germany	-0.5	0.3	0.3	1.1	1.0	1.4	1.5	1.5
France	1.1	0.9	0.8	1.2	1.0	0.9	1.1	0.9
Italy	0.5	0.6	0.6	0.7	0.7	0.9	0.9	1.0
Spain	3.5	2.9	2.9	2.4	2.2	1.8	1.8	2.0
Japan	-0.2	1.2	1.2	0.8	0.8	1.2	0.8	1.1
UK	1.1	1.4	1.4	0.9	1.1	1.5	1.4	1.4
Canada	2.0	1.7	1.7	1.3	1.3	1.9	1.8	1.7
Australia	1.0	1.9	1.9	2.4	2.2	2.6	2.3	2.6
EMs								
China	5.0	5.0	4.9	4.8	4.5	4.7	4.3	4.9
India	6.7	7.6	7.6	6.7	6.5	6.8	6.4	7.0
Brazil	3.4	2.3	2.3	1.8	1.7	2.3	1.9	2.8
Russia	4.3	0.5	0.8	1.2	1.0	1.7	1.4	1.7
South Korea	2.0	1.1	1.1	1.9	2.0	2.3	1.8	1.5
Mexico	1.4	0.3	0.4	1.3	1.3	2.1	2.0	2.0
World	2.8	2.8	2.7	2.8	2.6	2.8	2.6	2.9

Note: Global GDP growth rates aggregated using market exchange rate weights. IMF forecast used for India 2027 consensus value.

Source: Bloomberg, Goldman Sachs Global Investment Research

Disclosure Appendix

Reg AC

We, Joseph Briggs, Andrew Tilton, Katya Vashkinskaya, Jessica Rindels, Sarah Dong and Blair Turoff, 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:** Non-U.S. 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 a subject company, public appearances and trading in securities covered 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 Global Investment Research 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, 10th Floor, Ascent-Worli, Sudam Kalu Ahire Marg, Worli, 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. Investment in securities market are subject to market risks. Read all the related documents carefully before investing. Registration granted by SEBI and certification from NISM in no way guarantee performance of the intermediary or provide any assurance of returns to investors. Goldman Sachs (India) Securities Private Limited compliance officer and investor grievance contact details can be found at: https://www.goldmansachs.com/worldwide/india/documents/Grievance-Redressal-and-Escalation-Matrix.pdf, and a copy of the annual audit compliance report can be found at this link: https://publishing.gs.com/content/site/india-annual-compliance-report.html. **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 Type II Financial Instruments Firms Association, The Investment Trusts Association, Japan, and Japan Investment Advisers 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

Goldman Sachs Global Investment Research 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.

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: 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 within the European Economic Area.

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 Global Investment Research. Goldman Sachs & Co. LLC, the United States broker dealer, is a member of SIPC (https://www.sipc.org).

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 https://www.theocc.com/about/publications/character-risks.jsp and https://www.goldmansachs.com/disclosures/cftc_fcm_disclosures. 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 Goldman Sachs Global Investment Research 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.