European Daily: ECB Preview—Cutting on the Back of Trade Tensions (Stott/Stehn)

- We expect the Governing Council to deliver a sixth consecutive 25bp cut at next week's meeting. This is because (1) inflation has continued to soften towards 2%; (2) the growth outlook has deteriorated materially following the US tariff announcements; and (3) financial conditions have tightened significantly.
- The Governing Council is likely to acknowledge the growing downside risks to growth and note that the trade tensions raise the uncertainty around the inflation outlook. We expect the Governing Council to remove the "meaningfully less restrictive" phrase but keep the remaining policy language unchanged.
- During the press conference, we look for President Lagarde to signal more concern around growth due to the trade tensions but remain non-committal on future policy steps. Lagarde might also suggest that the recent appreciation of the Euro and the EU's cautious approach to retaliation have reduced some of the concerns regarding the inflationary impact of tariffs.
- Looking ahead, we see a further 25bp cut in June as highly probable given the likely downgrade to the staff projections and then expect the Governing Council to follow through with a cut at the July meeting. In our recent forecast downgrade—which entails no growth in Q3-Q4 and a modest inflation undershoot in 2026—we added a further cut in September for a terminal rate of 1.5%.

Sven Jari Stehn
+44(20)7774-8061 | jari.stehn@gs.com
Goldman Sachs International

Filippo Taddei
+44(20)7774-5458 |
filippo.taddei@gs.com
Goldman Sachs International

Alexandre Stott
+33(1)4212-1108 |
alexandre.stott@gs.com
Goldman Sachs Bank Europe SE - Paris Branch

James Moberly
+44(20)7774-9444 |
james.r.moberly@gs.com
Goldman Sachs International

Niklas Garnadt
+44(20)7051-7722 |
niklas.garnadt@gs.com
Goldman Sachs International

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

Giovanni Pierdomenico
+44(20)7051-6807 |
giovanni.pierdomenico@gs.com
Goldman Sachs International

ECB Preview—Cutting on the Back of Trade Tensions

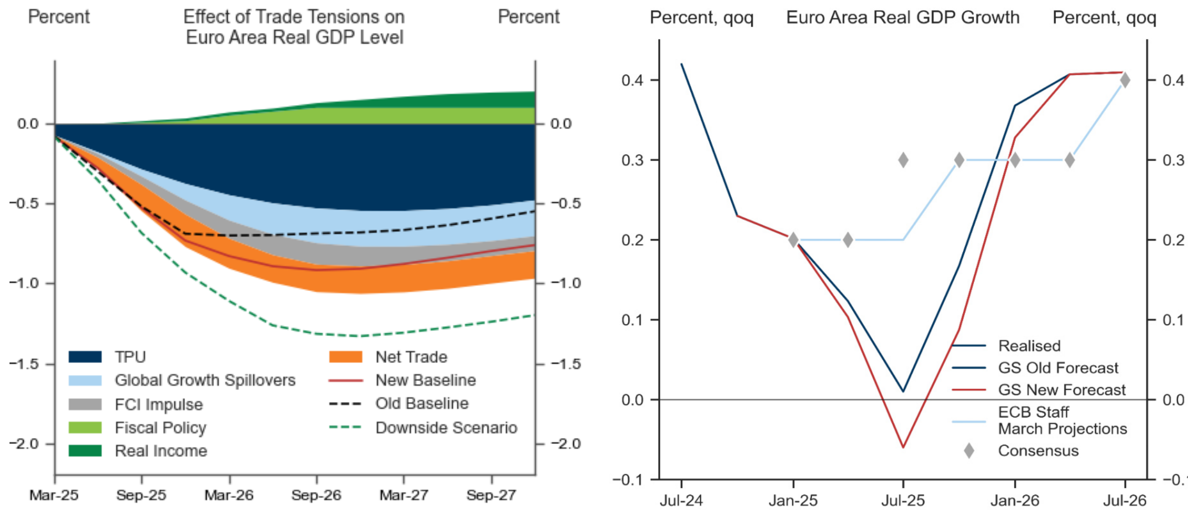
We view a 25bp cut at the ECB's upcoming meeting on April 17 as highly likely for at least three reasons.

First, the near-term growth outlook has deteriorated materially following the US announcement of "reciprocal" tariffs on April 2, despite the indication of a 90-day pause on country-specific reciprocal tariffs on April 9. While we now expect the effective US tariff rate on EU goods to rise by a total of 15pp (rather than 20pp with full implementation of the reciprocal tariffs), significant downgrades to our global growth forecasts and a sharp tightening in financial conditions led us to shave another 0.2pp off Euro area growth this year, for a total tariff-related hit of 0.9%.[1] We

[1] We estimate that the US tariffs announced so far (net of exemptions) and the incremental tariff we expect on critical goods will increase the US effective tariff rate on the EU by 15pp. In a scenario where the full 20% reciprocal tariff is implemented, we see an incremental 5pp upside to the effective tariff rate.

now expect almost no growth for the rest of the year and see the Euro area economy on the edge of a technical recession. This corresponds to an annual growth average of 0.7%, below consensus and ECB staff expectations of 0.9%, before growth picks up in 2026-27 on the back of more expansionary fiscal policy.

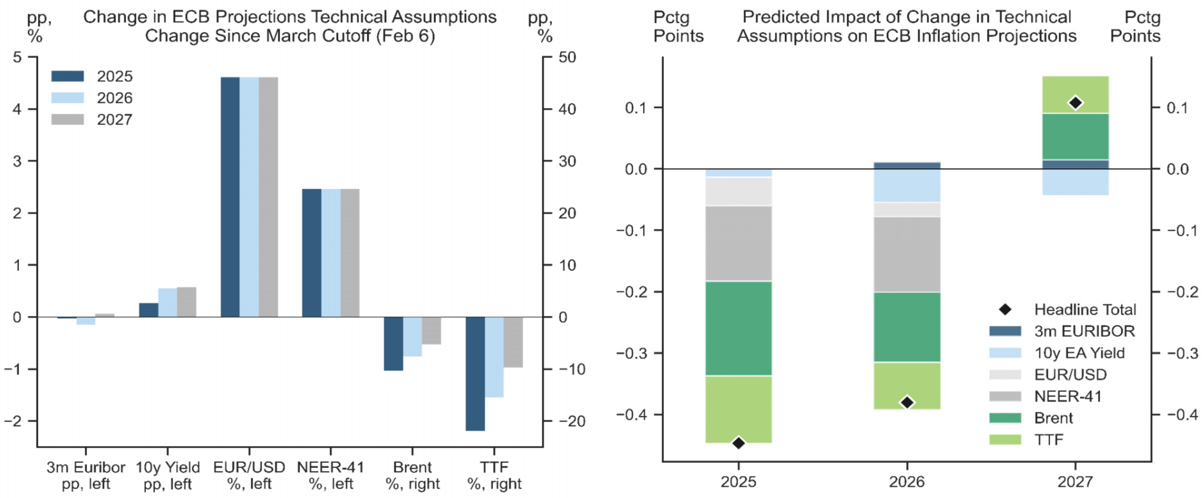
Exhibit 1: A Large Trade-Related Hit Despite Reciprocal Tariff Pause



Source: Goldman Sachs Global Investment Research, Haver Analytics, ECB, Bloomberg

Second, the incoming inflation data have continued to soften. The flash release for March showed core inflation falling to 2.4%yoy, below consensus expectations. This implied 2.56% for Q1, just a touch above the March ECB staff projections of 2.5%. Looking ahead, the significant Euro appreciation and large fall in energy prices imply a material mechanical downgrade to the staff inflation projections in June. And we estimate that weaker growth in Europe, increased trade diversion from China, and de-escalation steps from the EU will result in a further drag on inflation. Taken together, we recently downgraded our year-end core inflation forecast by 0.2pp to 1.9% in 2025, 0.2pp to 1.8% in 2026, and 0.1pp to 1.9% in 2027.

Exhibit 2: A Softer Inflation Outlook



Source: Goldman Sachs Global Investment Research, Haver Analytics, ECB

Third, our analysis suggests that monetary policy remains slightly restrictive and a pause would lead to a risk of financial conditions tightening unduly further. Cutting in April would take the policy rate to 2.25%, the upper bound of the neutral range according to the latest ECB staff estimates. Moreover, financial conditions have tightened notably, which will likely lead to a tightening in the broader measures of monetary policy restriction, such as bank lending standards. We therefore expect next week's Survey on the Access to Finance of Enterprises (on April 14) and the Bank Lending Survey (on April 15) to be supportive of a cut, too.

Recent comments from ECB officials have emphasised the downside risks to growth over inflation concerns and have accordingly expressed a preference for lowering rates further in April, especially after the announcement of "reciprocal tariffs" on April 2. Bundesbank President Nagel, for example, stated that global growth prospects had deteriorated "massively," and ECB Vice-President de Guindos argued that the "biggest" impact would be on growth rather than inflation. Even though the announcement of the 90-day pause coincided with the start of the quiet period for ECB officials, Bank of Finland Governor Rehn suggested that the case for an April cut was supported by the materialisation of downside risks.

Exhibit 3: ECB Commentary Points to an April Cut

Speaker	Date	Comment
Escriva	09/04/2025	"some of the worst-case scenarios that we had identified are materialising"
Rehn	09/04/2025	"The case for continuing rate cuts in April is supported by downside risks materialising"
Villeroy	09/04/2025	"April 2 tariffs argue for an imminent cut"
Nagel	08/04/2025	"Monetary policy in Europe will do its part"
Schnabel	05/04/2025	"recent events had caused a dramatic surge in uncertainty which may be only the beginning"
Stournaras	03/04/2025	"recent developments do not constitute an obstacle to a further rate cut in April."
Kazimir	03/04/2025	"We need to see the European Union's response. Nevertheless, this is not good news for the economy,"
de Guindos	27/03/2025	"An outright trade war with the United States could push up inflation but the biggest impact would be a drag on growth,"

Source: Data compiled by Goldman Sachs Global Investment Research, Bloomberg, Reuters, ECB

More Growth Concerns, No Policy Guidance

We therefore expect the Governing Council to deliver a sixth consecutive 25bp cut at next week's meeting.

Regarding the economy, we look for the Governing Council to (1) reiterate that disinflation remains on track with inflation slowing broadly as expected; (2) acknowledge the materialisation of trade-related downside risks to growth; and (3) note that the trade tensions raise the uncertainty around the inflation outlook.

On the policy language, we expect the Governing Council to remove the reference to the degree of monetary policy restriction ("meaningfully less restrictive"). This would also be consistent with the policy rate being lowered to the upper end of the 1.75%-2.25% neutral range as estimated by ECB staff.

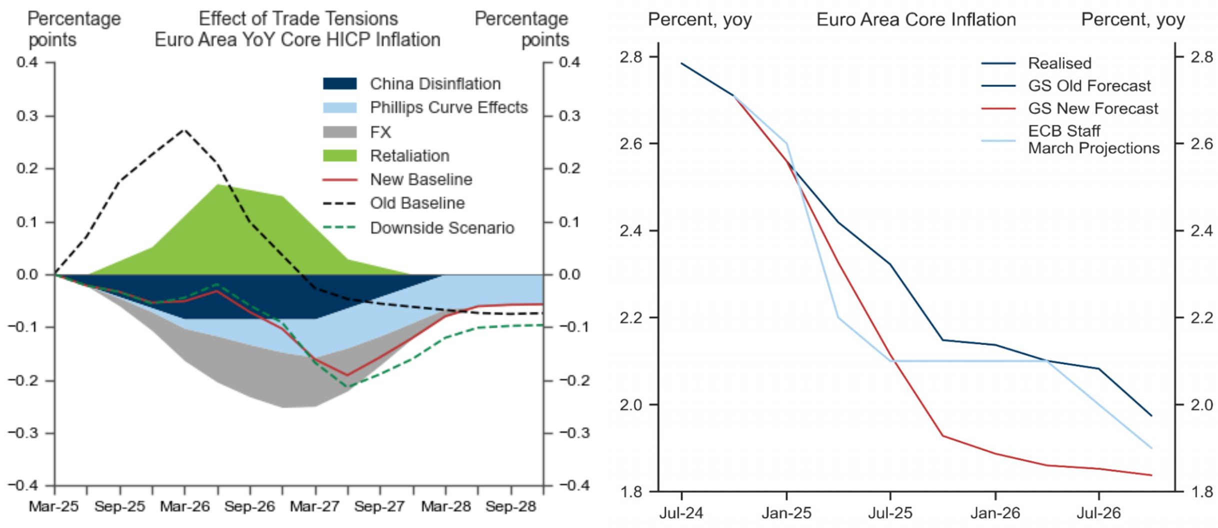
We expect the remaining policy language to stay unchanged. Specifically, we look for the Council to reiterate that (1) high uncertainty supports a "data-dependent and meeting-by-meeting approach to determining the appropriate monetary policy stance" and that (2) the Council is "not pre-committing to a particular rate path."

During the press conference, we look for President Lagarde to express more concern with respect to the outlook for growth but remain non-committal regarding future policy steps. In particular, we expect President Lagarde to hint at a larger impact from tariffs on growth than in the staff analysis presented to the European Parliament, as suggested by recent press reports. President Lagarde might also suggest that the recent appreciation of the Euro and the EU's cautious approach to retaliation have reduced some of the concerns regarding the inflationary impact of tariffs. But we do not expect President Lagarde to provide any explicit guidance on the June decision or on the broader direction of the policy.

Cutting to 1.5% in September

Looking ahead, we expect a notable downgrade to the staff growth and inflation projections at the June meeting and therefore believe that a further cut in June is highly likely. We then look for the Governing Council to follow through with another cut at the July meeting as inflation continues to slow and growth weakens. Following our most recent forecast downgrade—which entails a contraction in Q3 and an inflation undershoot in 2026—we added a further cut in September for a terminal rate of 1.5%.

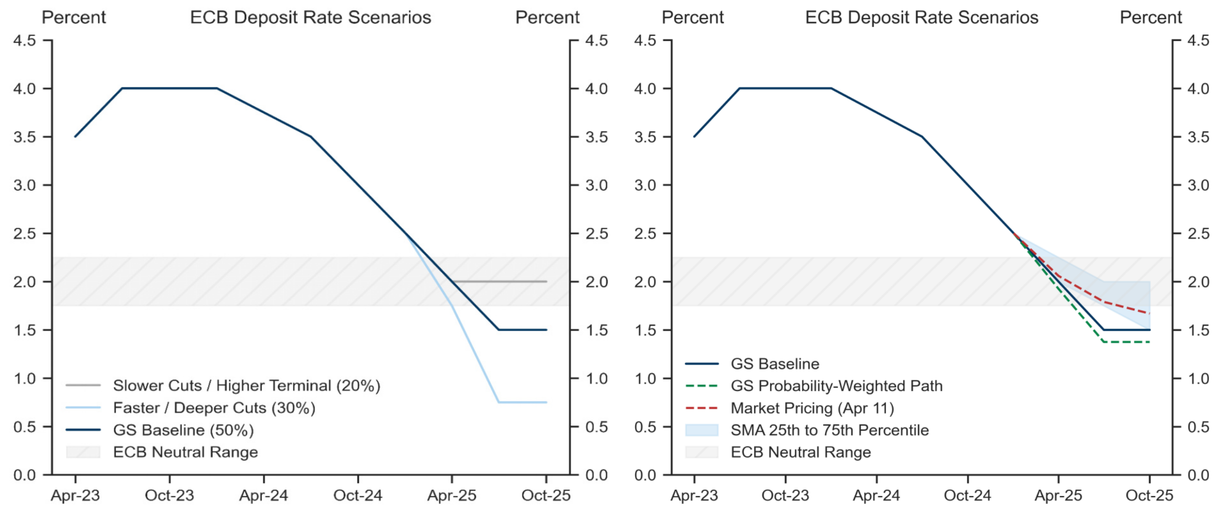
Exhibit 4: We Expect a Notable Downgrade to the Staff Projections in June



Source: Goldman Sachs Global Investment Research, Bloomberg, ECB, Haver Analytics

Our updated ECB scenario analysis includes a downside scenario where the policy rate falls to 0.75% (for example, if the Euro area enters a deeper downturn) and an upside scenario where the policy rate remains at 2% (for example, if the US administration reverts to narrower tariffs). We place probabilities of 50% on our baseline, 30% on the upside scenario, and 20% on the downside scenario. The probability-adjusted path is slightly below our baseline but notably below market pricing.

Exhibit 5: Our ECB Forecast Remains Below Market Pricing



Source: Goldman Sachs Global Investment Research, Haver Analytics, Bloomberg

Alexandre Stott

Sven Jari Stehn

Disclosure Appendix

Reg AC

We, Sven Jari Stehn, Filippo Taddei, Alexandre Stott, James Moberly, Niklas Garnadt, Katya Vashkinskaya and Giovanni Pierdomenico, 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 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 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, 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. 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 this link: https://publishing.gs.com/disclosures/hedge.html - /general/equity. **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: 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 and the Republic of Ireland; GSI - Succursale de Paris (Paris branch) which is 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 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.fiadocumentation.org/fia/regulatory—disclosures/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 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.