

US Daily: Government Shutdown: Much Closer to the End Than to the Beginning

- The partial shutdown of the federal government looks likely to last longer than any prior shutdown, mainly because there is little political pressure to end it. A greater share of the public holds Republicans and President Trump responsible for the shutdown, putting little pressure on Senate Democrats to support a “clean” continuing resolution to end the shutdown, which they have so far opposed. The Trump administration has also gone beyond typical shutdown procedures to avoid some disruptions that might have forced an earlier agreement, like missed military pay.
- However, signs are emerging that the end of the shutdown might be approaching. Missed air traffic controller and airport screener pay on Oct. 28 raises the odds of air travel delays, particularly ahead of a second pay date Nov. 10. The failure to pay food stamp benefits on time from Nov. 1 might pressure lawmakers to reach a solution, though a recent court ruling looks likely to lead to a partial resumption. Passing political milestones—the Nov. 1 opening of enrollment in ACA plans for 2026 and the Nov. 4 elections in several states—might also open a window for political compromise that doesn’t yet exist. The congressional recess that begins after Nov. 7 might also provide lawmakers with motivation to reach a deal. While unpredictable, our current expectation is that the shutdown is most likely to end around the second week of November.
- Assuming the shutdown ends in mid-November, we expect the release of the September employment report a few days after reopening, but we would not expect the November employment report until early December, either on schedule Dec. 5 or possibly delayed one week. The November CPI release might also face a delay, potentially pushing the next release from the currently scheduled date of Dec. 10 to the following week. In both cases, it is not yet clear how BLS will address the missing October data, but if the agency makes the decision to release figures for October, we would expect them in December along with the November data.
- The current shutdown looks likely to have the greatest economic impact of any shutdown on record. Not only is it likely to run longer than the 35-day partial shutdown in 2018-2019, it is much broader than prior lengthy shutdowns, which affected only a few agencies. While the impact of a shorter shutdown—lasting 2-3 weeks, for example—would be largely confined to the lost work of furloughed federal employees, a longer shutdown could have a greater effect on federal purchases and investment, and potentially a spillover into private sector activity. Assuming the shutdown lasts around 6 weeks, we estimate it will reduce

Alec Phillips+1(202)637-3746 | alec.phillips@gs.com
Goldman Sachs & Co. LLC

quarter-on-quarter annualized growth in 2025Q4 by 1.15pp, with a slightly larger boost of 1.3pp to growth in 2026Q1 as some federal purchases and investment spills over from Q4 to Q1. We now forecast quarterly annualized real GDP growth of +1.0% in 2025Q4 and +3.1% in 2026Q1.

The US Economics Team

Jan Hatzius

+1(212)902-0394
jan.hatzius@gs.com
Goldman Sachs & Co. LLC

Ronnie Walker

+1(917)343-4543
ronnie.walker@gs.com
Goldman Sachs & Co. LLC

Pierfrancesco Mei

+1(212)902-8809
pierfrancesco.mei@gs.com
Goldman Sachs & Co. LLC

Alec Phillips

+1(202)637-3746
alec.phillips@gs.com
Goldman Sachs & Co. LLC

Manuel Abecasis

+1(212)902-8357
manuel.abecasis@gs.com
Goldman Sachs & Co. LLC

Jessica Rindels

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

David Mericle

+1(212)357-2619
david.mericle@gs.com
Goldman Sachs & Co. LLC

Elsie Peng

+1(212)357-3137
elsie.peng@gs.com
Goldman Sachs & Co. LLC

Government Shutdown: Much Closer to the End Than to the Beginning

The shutdown has lasted longer than most observers expected because there has been little political pressure to end it. In most prior shutdowns, the party opposing a “clean” extension of spending authority has faced mounting political pressure as the consequences of the shutdown build and, in each case, that party has ultimately relented and supported a temporary spending patch without other policy concessions attached. This shutdown has been different thus far, for two reasons:

First, public opinion has put little pressure on Democrats to support reopening the government without winning concessions on health care. Although nearly every Senate Republican has supported a “clean” extension of spending authority and nearly every Senate Democrat has opposed it, polling has consistently shown that a greater share of voters hold Republicans and President Trump responsible for the shutdown than Democrats, by an average of 43% to 35% since the shutdown started. Views among independent voters are even more lopsided in their blame of Republicans. Notably, support for Democrats among Democratic voters has increased since the shutdown began: 58% of Democratic voters approve of the way Democrats in Congress are handling their job, up from 39% in July. Democrats continue to have an edge in “generic ballot” polling, as well.

Second, the Trump administration has stretched to make certain payments that would normally be disallowed during shutdowns, eliminating potential pressure points. Even before the shutdown began, this had seemed likely to an extent, as the fiscal package enacted in July included multi-year funding in areas like defense, immigration enforcement, and even air traffic control, which did not expire Sep. 30 and might be used to bridge a funding gap. However, the Trump administration appears to have gone further, for example by paying troops out of unspent funds that Congress appropriated last year for other purposes.

While it has run longer than most observers including ourselves had expected, we think the end of the shutdown is starting to come into sight. The American Federation of Government Employees (AFGE), the largest federal workers’ union, on Oct. 27 called on Congress to pass a clean continuing resolution to reopen the government. As public sector unions are an important Democratic constituency, this could add pressure on Senate Democrats to support the continuing resolution they have thus far opposed. And while the Trump administration has taken steps to avoid some shutdown-related disruptions, it looks less likely to intervene to prevent others from occurring:

- **Air traffic controller and airport security screener pay (Oct. 28 and Nov. 10):** Air traffic controllers and airport security screeners missed their first full paycheck on Oct. 28. In the 2018-2019 shutdown, air traffic controller absences at key airports were blamed on missed paychecks, and air travel delays created pressure to reopen the government. While the fiscal package enacted this summer included multi-year funding for air traffic control modernization, the administration has indicated that it cannot pay air traffic controllers. In the 2018-2019 experience, controllers had already missed one full paycheck and were a few days from missing a second when travel delays pressured Republicans to end the shutdown (this year, the equivalent date would be around Nov. 6)

- **Congressional staff and support pay (Oct. 28, Oct. 31, Nov. 5, and Nov. 11):** House staff are paid monthly and will miss their first full paycheck Oct. 31, while Senate staff are paid biweekly and will miss a second full paycheck Nov. 5. Support staff will miss a full paycheck Oct. 28 and again Nov. 10 unless the government reopens. Financial difficulties among lawmakers' own staff and support personnel (e.g., the Capitol Police) could create pressure on lawmakers to compromise.
- **Military pay (Oct. 31 and Nov. 15):** The Trump administration paid troops on Oct. 15 out of \$8bn in unspent Research, Development, Testing and Evaluation (RDT&E) funding that carried over from FY2025, and the Pentagon looks likely to find other unspent funds to fund the next payment on Oct. 31. Treasury Secretary Bessent has indicated that, while the Oct. 31 payment is likely to be made, the Nov. 15 payment is in doubt.
- **Supplemental Nutrition Assistance Program payments to states (Nov. 1):** While most entitlement programs (e.g., Medicare) are funded outside the annual appropriations process, a few including SNAP rely on congressional appropriations. SNAP benefits have not been impacted by prior shutdowns and the Dept. of Agriculture (USDA) contingency plan released Sep. 30 indicated it would make contingency funds available to pay benefits during the shutdown, but USDA announced Oct. 24 that it would not pay November benefits due to the shutdown. Most states transfer benefits to electronic cards on a rolling basis over the first several days of the month, so that nearly all benefits would normally be paid by around Nov. 10. Two federal district courts ruled Oct. 31 that the administration must use contingency funds to pay at least partial benefits, with a response from the Dept. of Agriculture due by Nov. 3. President Trump indicated Nov. 1 that he would instruct USDA to seek legal guidance on how to fund the program legally. This implies that the administration will either use around \$5bn in contingency funds to pay roughly 60% of normal benefits due, or possibly use those funds plus transferred funds from other Dept. of Agriculture accounts to make full benefit payments. In either case most SNAP recipients are likely to receive benefits with a delay.

Beyond missed payments, two other events are likely to influence the timing of government reopening:

- **Affordable Care Act (ACA) enrollment period (Nov. 1 to Dec. 15):** Congressional Democrats' primary demand an extension of enhanced premium subsidies enacted in 2021, which made them more generous for low- and middle-income earners and expanded eligibility for higher-income earners. Enrollment for 2026 plans begins Nov. 1, at which point potential enrollees are likely to encounter substantially increased premiums, with much less of that premium subsidized than had been in 2025. While it seems clear that congressional Democrats have an incentive to continue to insist on extending subsidies before enrollment begins, it is less clear when they will believe it is acceptable to reopen the government without a compromise on these subsidies. Enrollment for insurance starting Jan. 1 does not end until Dec. 15.
- **Election Day (Nov. 4):** New Jersey and Virginia elect governors Nov. 4, and other states and localities will hold elections including the New York mayoral contest and

congressional redistricting in California. While there is no direct relationship to the shutdown, it seems unlikely that either party will want to concede until after Election Day.

- **Congressional recess (Nov. 10-14, Nov. 24-28):** The Senate is scheduled to be in recess Nov. 10-14, which means that senators will be able to leave Washington Nov. 7 if there is no pending business. The prospect of cancelling the planned recess could add to lawmakers' incentives to reach a deal by Nov. 7, or possibly over the few days that follow. The next recess is scheduled for Nov. 24-28, for Thanksgiving, and could be a forcing event for a compromise if one has not yet been reached.

Previous shutdowns have all ended with passage of a "clean" continuing resolution (CR) that reopens the government and temporarily funds the government for several weeks or a few months, providing time for full-year spending bills to pass. The CR the Senate has repeatedly failed to pass would extend spending authority until Nov. 21. Republican leaders have begun to eye an early 2026 end date instead, but this would require passage in the House, which has been in recess since September.

The path to reopening seems likely to follow one of two general routes. First, a few more Democratic Senators might break from Democratic leaders and vote for the pending CR. With 52 Republican senators likely supporting a clean CR—Sen. Paul never votes for spending bills—8 Democrats would need to support the CR to reach the 60-voted threshold. Thus far, 3 Democrats (Sens. Cortez Masto, Fetterman, and King, who is an independent but caucuses with Democrats) have voted for the CR, while two others (Sens. Ossoff and Warnock) voted for Republican-sponsored legislation to pay federal employees working during the shutdown, but have voted against the CR thus far. At this stage, there are few signs that any other Democrats are considering supporting the CR absent a broader deal, but this could change.

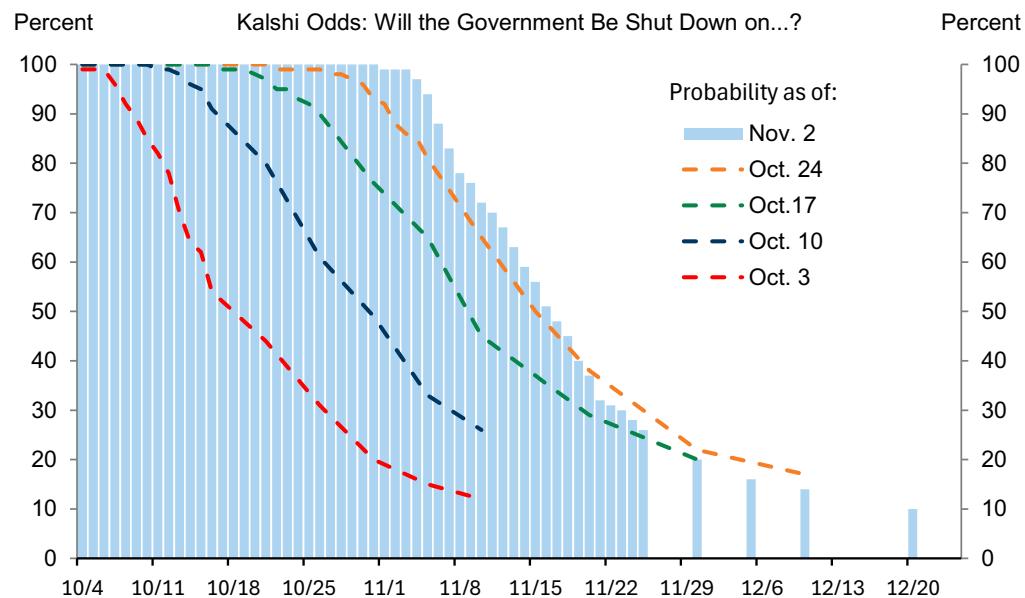
A second path to reopening might involve a commitment from Democrats to support the CR if Republicans commit to negotiate and allow a vote on health subsidies once the government has reopened. The pending CR's Nov. 21 expiration date might become a new deadline for passage of an extension of health subsidies, as Democrats could withhold their votes for a further extension. This appears to us the more likely scenario, as it would allow Democrats to retain some leverage in negotiations on health care after reopening without requiring Republicans to negotiate a compromise during the shutdown.

In theory, a third scenario would be for Senate Republicans to change Senate rules to abolish the legislative filibuster (it was ended in 2013 for most nominations, and in 2017 for Supreme Court nominations). While counterintuitive, it takes only 51 votes in the Senate to override the current Senate rule requiring 60 votes to end debate and vote on a measure. On Oct. 30, President Trump called on Senate Republicans to do this to pass the CR the Senate has repeatedly rejected over the last month. However, Senate Majority Leader Thune reiterated his opposition to the change on Oct. 31, and in any case at least four Senate Republicans look likely to object, which would deny Republican leaders a majority if they attempted a rules change.

After underestimating the duration of the shutdown, prediction markets have changed much less over the last week and currently imply roughly even odds that the shutdown ends by Nov. 15, and less than a 20% chance that the government remains shut down

over Thanksgiving (Exhibit 1). While unpredictable, the pressure points noted earlier reinforce the signal from prediction markets that the shutdown is more likely than not to end around mid-November.

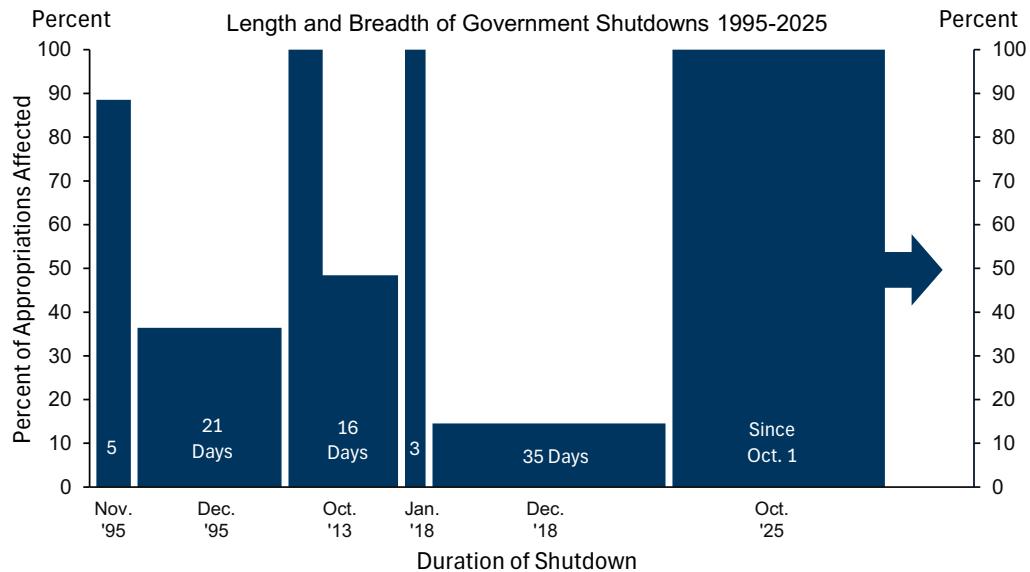
Exhibit 1: Prediction Market Implies Roughly Even Odds of Reopening by Mid-November



Source: Kalshi, Goldman Sachs Global Investment Research

Using the 2013 shutdown experience as a guide, if the government reopens around mid-November, we expect the Bureau of Labor Statistics (BLS) to release the September employment report a few days after reopening, but we would not expect the next report until early December. In light of the earlier than usual reference week in November, due to the Thanksgiving holiday, it is possible that the December report could be issued on schedule Dec. 5, though after prior shutdowns the following month's releases were delayed by roughly a week to allow time for processing. The CPI release might also face such a delay, potentially pushing the next release from the currently scheduled date of Dec. 10 to the following week. In both cases, it is not yet clear how BLS will address the missing October data, but if the agency makes the decision to publish October data, we expect it would be released in December along with the November figures.

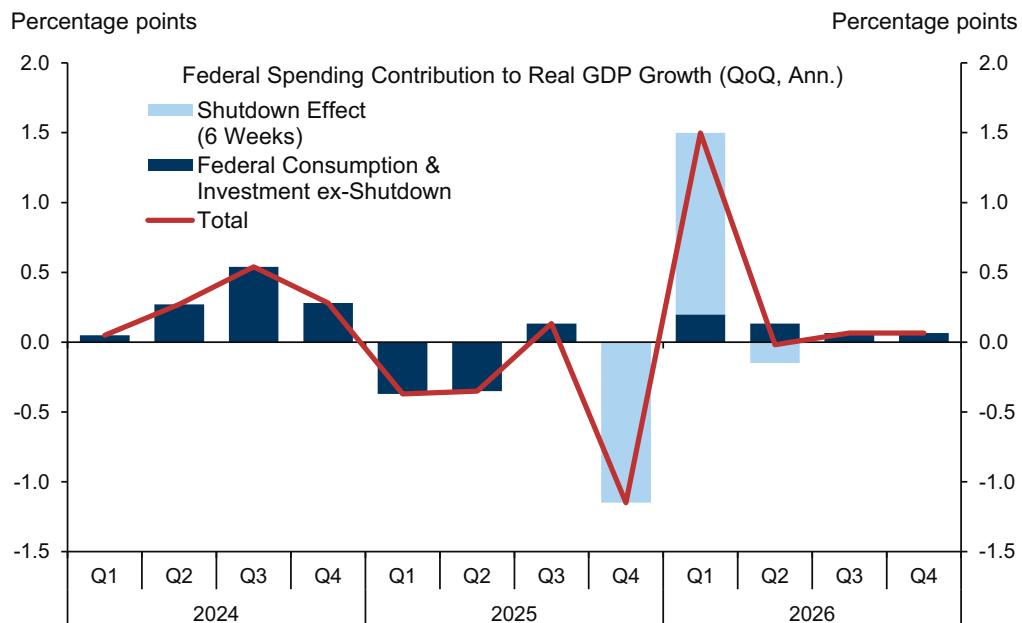
Exhibit 2: The Current Shutdown Will Have By Far the Greatest Economic Impact on Record



Source: Library of Congress, House and Senate Appropriations Committees, Goldman Sachs Global Investment Research

The current shutdown should result in a much greater hit to growth than any prior shutdown, not only because it looks likely to last longer but also because it represents a full lapse in congressional appropriations, whereas in prior shutdowns only a few agencies were affected (Exhibit 2).

Exhibit 3: A Hit to Q4 and a Slightly Larger Boost to Q1



Source: Department of Commerce, Goldman Sachs Global Investment Research

Assuming the shutdown lasts roughly six weeks, we expect it to reduce quarter-on-quarter annualized real GDP growth in 4Q2025 by 1.15pp, primarily as a result of federal employee furloughs, with a smaller negative effect on federal

investment and government purchases (Exhibit 3). The effect would more than reverse in 1Q2026, adding 1.3pp, as a result of furloughed workers returning plus a temporary increase in federal investment and government purchases pushed from Q4 into Q1. The effect on growth in 2Q2026 would be slightly negative (-0.15pp), as federal investment and purchases step down to their normal level. We now forecast quarterly annualized real GDP growth of +1.0% in 2025Q4 and +3.1% in 2026Q1.

Alec Phillips

Disclosure Appendix

Reg AC

I, Alec Phillips, hereby certify that all of the views expressed in this report accurately reflect my 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 this link: <https://www.goldmansachs.com/worldwide/india/documents/Grievance-Redressal-and-Escalation-Matrix.pdf>. **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 Públco 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.

© 2025 Goldman Sachs.

You are permitted to store, display, analyze, modify, reformat, and print the information made available to you via this service only for your own use. You may not resell or reverse engineer this information to calculate or develop any index for disclosure and/or marketing or create any other derivative works or commercial product(s), data or offering(s) without the express written consent of Goldman Sachs. You are not permitted to publish, transmit, or otherwise reproduce this information, in whole or in part, in any format to any third party without the express written consent of Goldman Sachs. This foregoing restriction includes, without limitation, using, extracting, downloading or retrieving this information, in whole or in part, to train or finetune a machine learning or artificial intelligence system, or to provide or reproduce this information, in whole or in part, as a prompt or input to any such system.