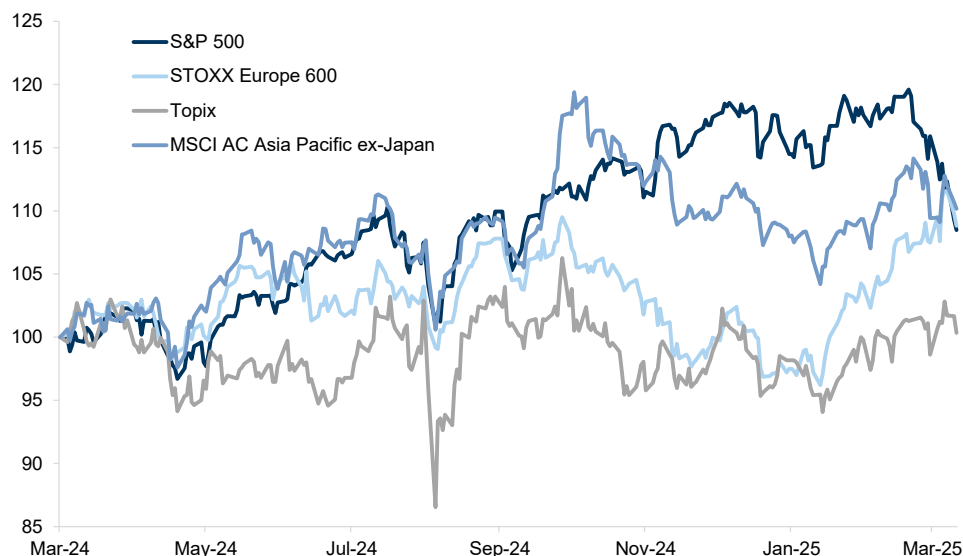


Global Strategy Views

Magnificent Diversification

1. We came into the year with a strong consensus that the prolonged period of US economic and market 'exceptionalism' would continue. Since then, confidence in this view has been tested, resulting in a reversal of fortunes between the US and other stock markets. While the S&P 500 has fallen 8%, and the Nasdaq 12%, Europe and China are up 7% and 14% respectively in US dollar terms ([Exhibit 1](#)).

Exhibit 1: We have recently seen a reversal of fortunes between the US and other global markets
USD, indexed price performance



Source: Datastream, STOXX, Goldman Sachs Global Investment Research

2. For a near 15-year period since the financial crisis the US consistently outperformed other equity markets on the back of much stronger profit growth ([Exhibit 2](#)).

Peter Oppenheimer

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

Sharon Bell

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

Lilia Peytavin

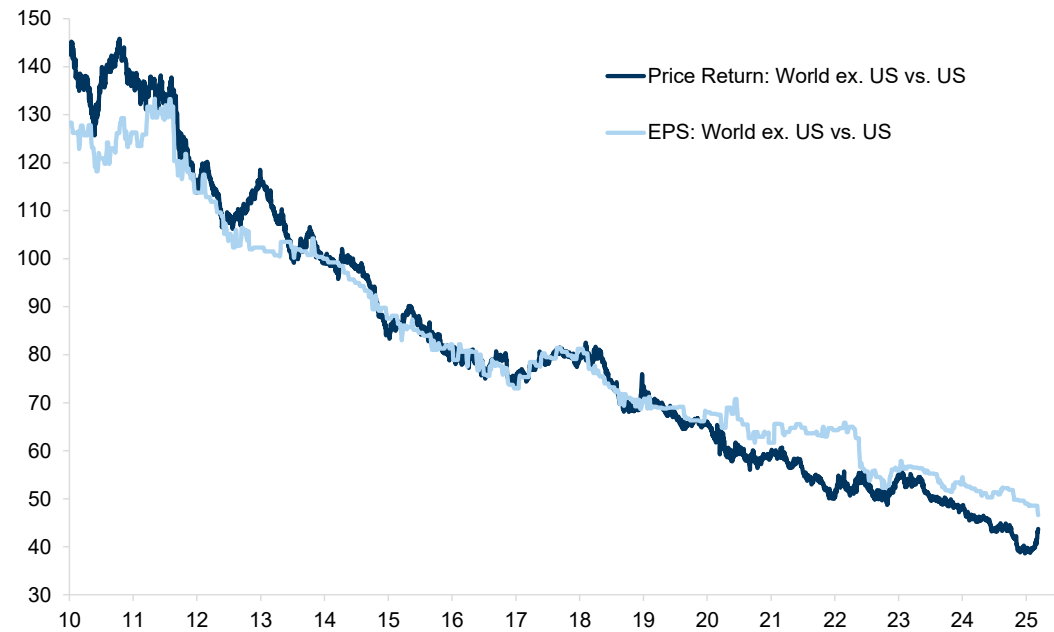
+33(1)4212-1716 | lilia.peytavin@gs.com
Goldman Sachs Bank Europe SE - Paris Branch

Guillaume Jaisson

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

Exhibit 2: The US had generated exceptionally strong earnings growth relative to other markets ever since the financial crisis, largely driven by the exceptional profitability of the technology sector

Price return and 12m fwd EPS in local currency. Indexed to 100 in Jan-2014

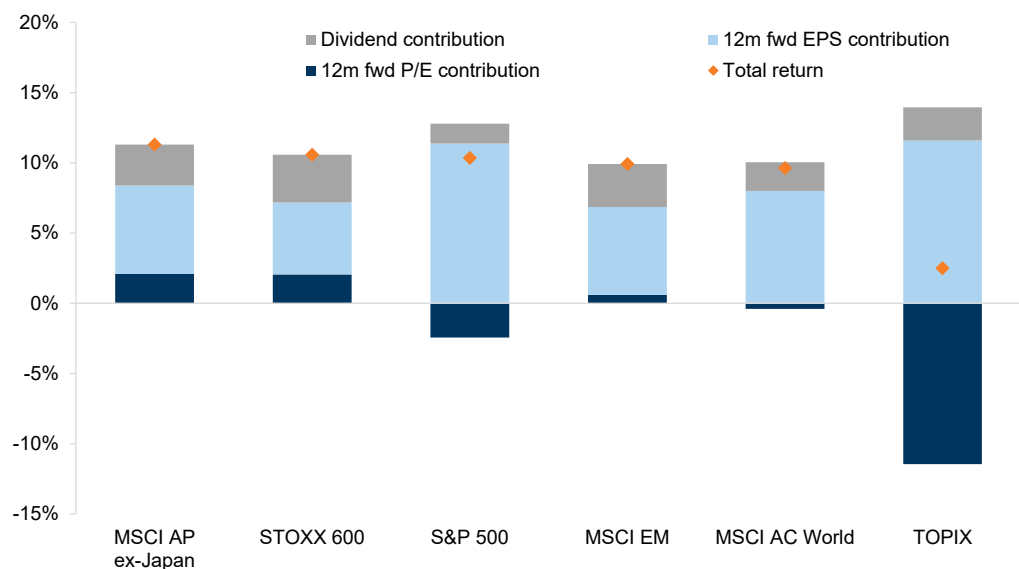


Source: Datastream, STOXX, Goldman Sachs Global Investment Research

However, regional earnings growth and index returns have been converging over the past 12 months and diversification has begun to pay off.

While overall returns have converged over a 12-month horizon, the drivers have differed. On a relative basis, Europe has seen more of a contribution from valuation expansion, while Japan has de-rated most ([Exhibit 3](#)).

Exhibit 3: Europe has seen more of a contribution from valuation expansion, while Japan has de-rated most
12m trailing return in local currency



Source: FactSet, Datastream, STOXX, Goldman Sachs Global Investment Research

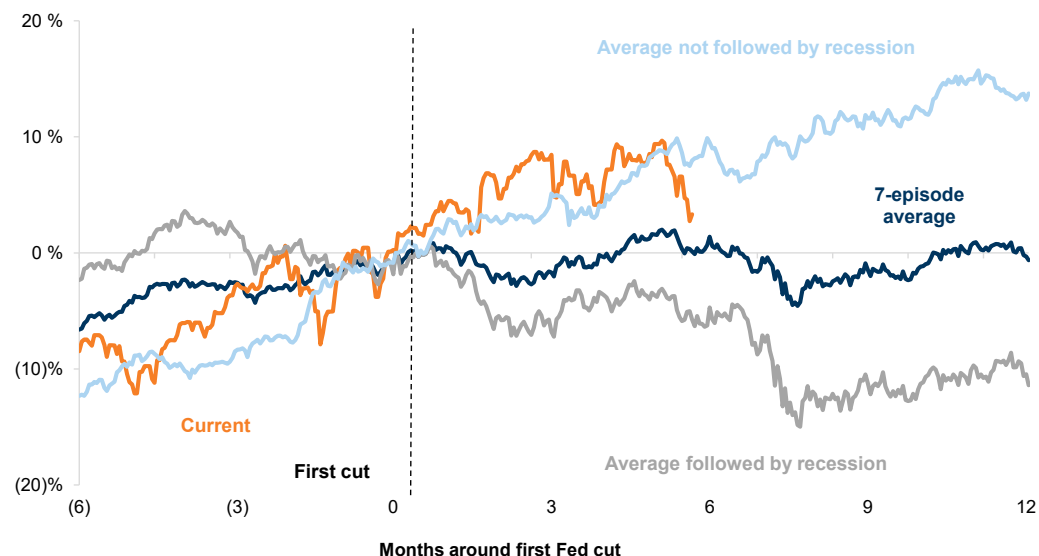
3. The shift in relative equity performance in 2025, so far, has been driven by three factors that combine to reflect an important inflection point. The first is that US economic growth is moderating from a high level, while growth prospects are improving from a low level in some other parts of the world and, particularly, in Europe and China. The second is that tariff fears are starting to weigh on US confidence more than in other regions, leading to a shift in relative risk premia. The third is that high stock and sector concentration in the US is starting to act as a drag on index performance as large cap technology is underperforming.

4. From a growth perspective, what matters for equity markets is not so much how strong activity is, but how expectations evolve relative to what has been priced. This is why the second derivative is so important. The superior growth of the US economy relative to both trend and other regions has been well understood and reflected in performance for most of the past decade. At the margin, however, the US growth rate is slowing. Last year, for example, the US economy was growing at a rate of around 2.5%, but this is fading. Our economists have cut their 2025 US growth forecast to 1.7% Q4/Q4 – their first below-consensus call in 2½ years – and raised their US inflation forecast, both on the back of more adverse tariff assumptions.

While equity markets typically rise following the first interest rates cuts in a US cycle as long as a recession is avoided, investor confidence in the economic cycle is fading at the margin. This typical path is shown in Exhibit 4 in light blue. The alternative – an interest rate cutting cycle that is followed by recession – is typically accompanied by falling equity markets. The orange line shows the current cycle. While equity markets were fully reflecting the combination of further interest rate cuts and strong economic activity throughout 2024, the recent performance is consistent with the market starting to price more risk of recession.

Exhibit 4: The recent performance of the S&P 500 is consistent with a market that is pricing in more recession risk

S&P 500 returns around the start of Fed cutting cycles

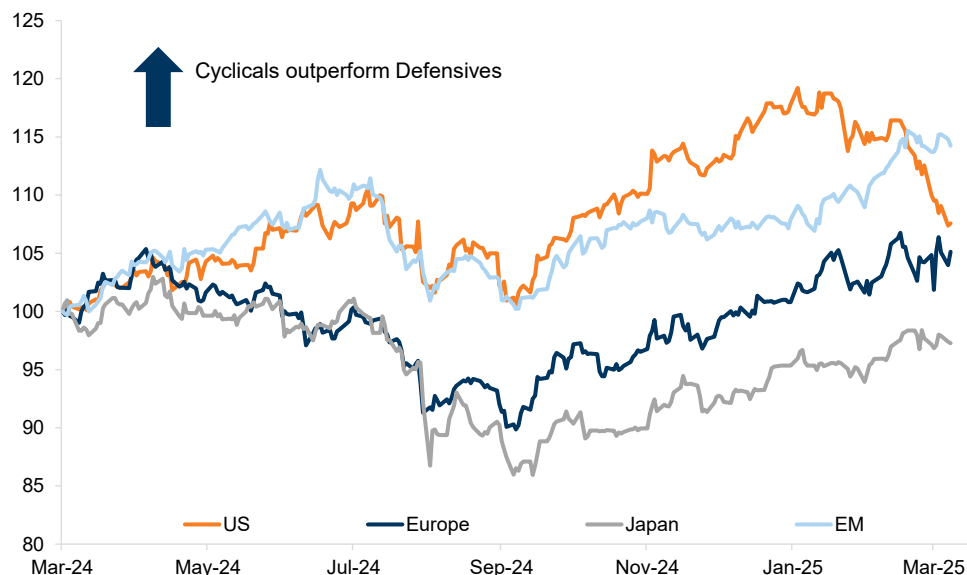


Source: Datastream, Goldman Sachs Global Investment Research

We can also observe this shift in implied probabilities by comparing the performance of the most cyclical relative to defensive parts of the market ([Exhibit 5](#)). The reversal of relative returns (from a more extreme starting point) has occurred more clearly in the US than in other markets.

Exhibit 5: The recent relative underperformance of Cyclical vs. Defensives has been more pronounced in the US

MSCI Indices relative price return (USD)



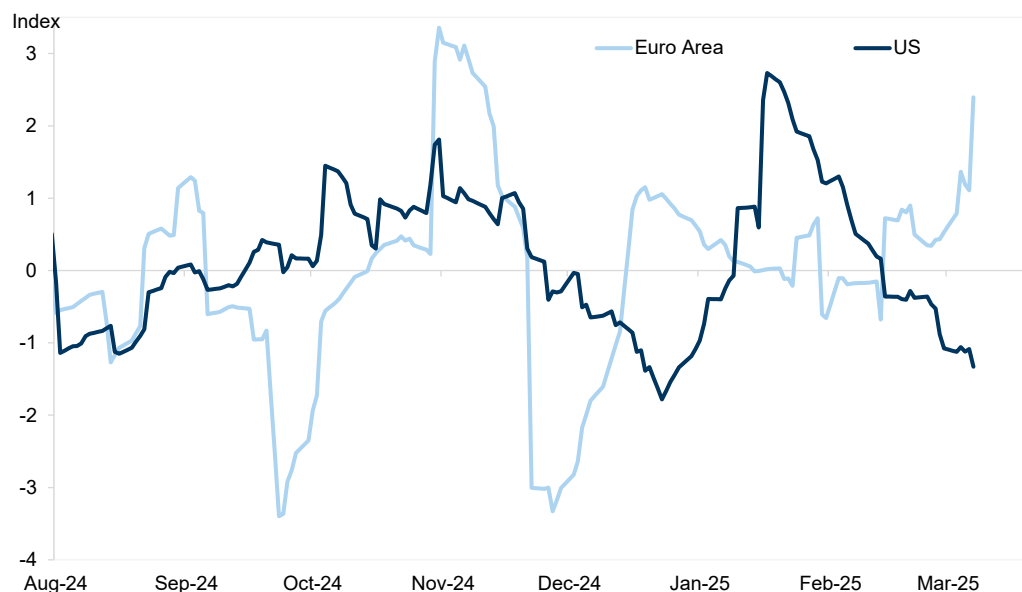
For details on the construction of the indices, please see: Cyclical vs. Defensives: A global implementation.

Source: Datastream, Worldscope, Goldman Sachs Global Investment Research

5. While confidence in the US growth story is moderating, perceived prospects in some other regions have been rising. In Europe, Germany's CDU/CSU and SPD leaders' proposal for an unprecedented fiscal package aimed at boosting defence and infrastructure spending, together with other measures by the European Commission, have improved the outlook. Our economists have upgraded their German growth forecast materially based on higher public spending on defence and infrastructure, even assuming that spending will be scaled up gradually. On the back of this, their Euro area growth forecast has also risen, especially for 2026-2027. These shifts are also reflected in macro surprises (data releases relative to consensus expectations) ([Exhibit 6](#)).

Exhibit 6: Recent shifts in European policy are reflected in macro surprises

GS MAP Surprise Index (21 Day MA)



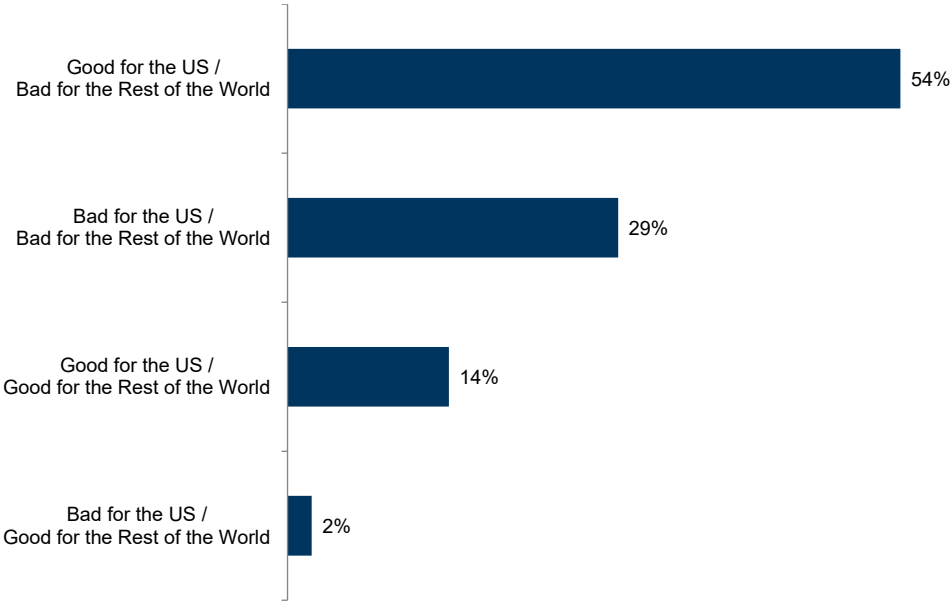
Our daily MAP surprise indices summarise the importance and strength (relative to consensus expectations) of economic indicators worldwide. Across numerous countries, our surprise index's methodology standardises the criteria for indicator selection and importance, thresholds for "surprise" scores, and schemes for aggregation, while allowing for occasional judgmental input from local economists.

Source: Goldman Sachs Global Investment Research

6. Changes in growth expectations are also being supported by relative shifts in risk premia. The focus of policy uncertainty, particularly around the impact of tariffs, is beginning to bear down on the animal spirits that marked the start of the year in the US. At our [strategy conference](#) in London at the start of the year, a significant majority of those polled expected the tariffs to be good for the US and bad for the rest of the world ([Exhibit 7](#)). Alongside a broad belief that the US would be the best-performing market, expectations are shifting.

Exhibit 7: Thinking about the outlook for economies and markets, will the policies of the new US administration be ...

Based on respondents at our GS Global Strategy conference, London, January 2025

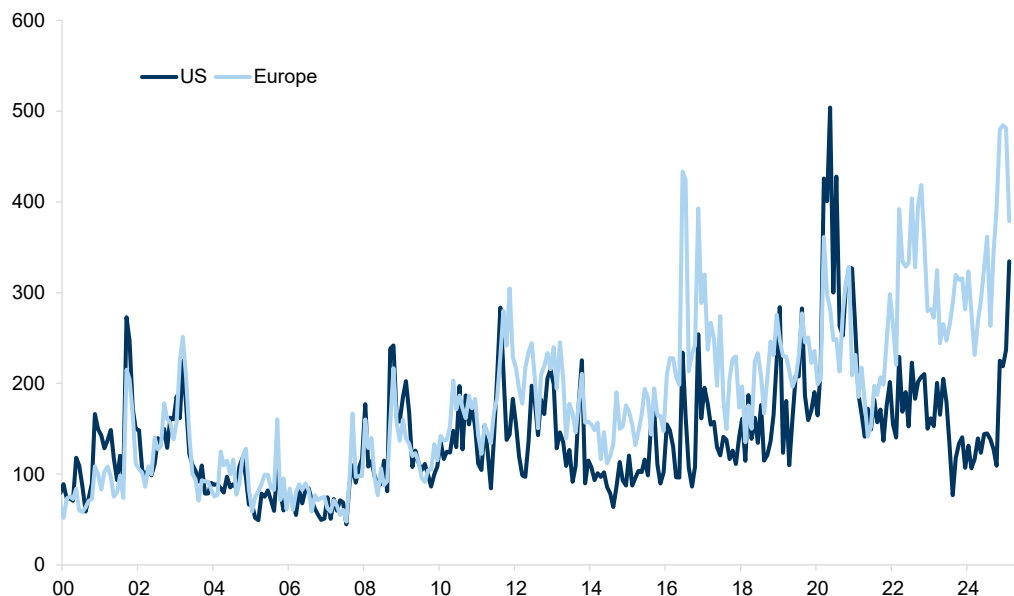


Source: Goldman Sachs Global Investment Research

Our economists have revised their baseline tariff assumptions to assume higher tariffs, both on products (e.g., autos, pharmaceuticals, electronic components, and critical minerals) and reciprocal tariffs that go beyond simple tariff differentials, which we estimate to average only 1-2pp on a trade-weighted basis. Policy uncertainty indicators – a proxy for risk premia – have recently been rising in the US and falling in Europe, reversing the gap that built up since Russia’s full-scale invasion of Ukraine (Exhibit 8).

Exhibit 8: Policy uncertainty indicators have been rising in the US and falling in Europe, reversing the gap that built up since Russia's full-scale invasion of Ukraine

News-Based Economic Policy Uncertainty Index* for Europe and the US



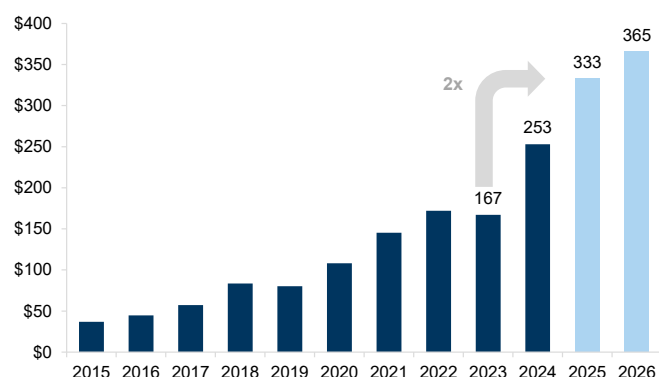
* EPU index reflects the relative frequency of own-country newspaper articles that contain a trio of terms pertaining to the economy (E), policy (P) and uncertainty (U)

Source: Haver Analytics, Goldman Sachs Global Investment Research

7. In addition to the marginal moves in growth expectations and confidence, we have also seen a shift in sector leadership that has dented the confidence in the US exceptionalism story. Technology, the dominant sector in the US equity market and for so long a source of relative strength, has started to underperform led by its index heavyweights. Weaker earnings growth among some of the mega cap US technology leaders has coincided with new competition in the AI space from Chinese companies. The combination has shaken confidence in the impenetrability of the 'moats' of the leading US technology companies and has brought into question the wisdom of their capex plans. While the leading tech stocks have roughly doubled their capex on AI in two years ([Exhibit 9](#)), the excess earnings growth that they have achieved is starting to moderate ([Exhibit 10](#)).

Exhibit 9: The leading tech stocks have roughly doubled their capex on AI in two years

Magnificent Seven annual capex spend (\$ billions). Consensus estimates for 2025 and 2026

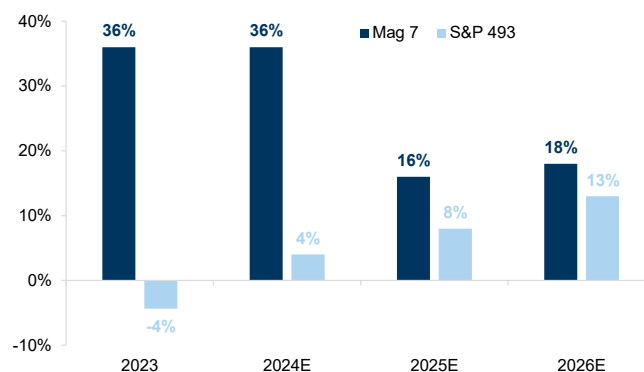


Notes: Magnificent 7 is a group of large US tech companies: Meta, Amazon, Apple, Microsoft, Alphabet, Tesla, NVIDIA

Source: FactSet, Goldman Sachs Global Investment Research

Exhibit 10: Despite recent large earnings growth differences between the Magnificent 7 and the rest of the S&P 500, we now expect convergence

Annual earnings growth. Expected figures are based on consensus estimates



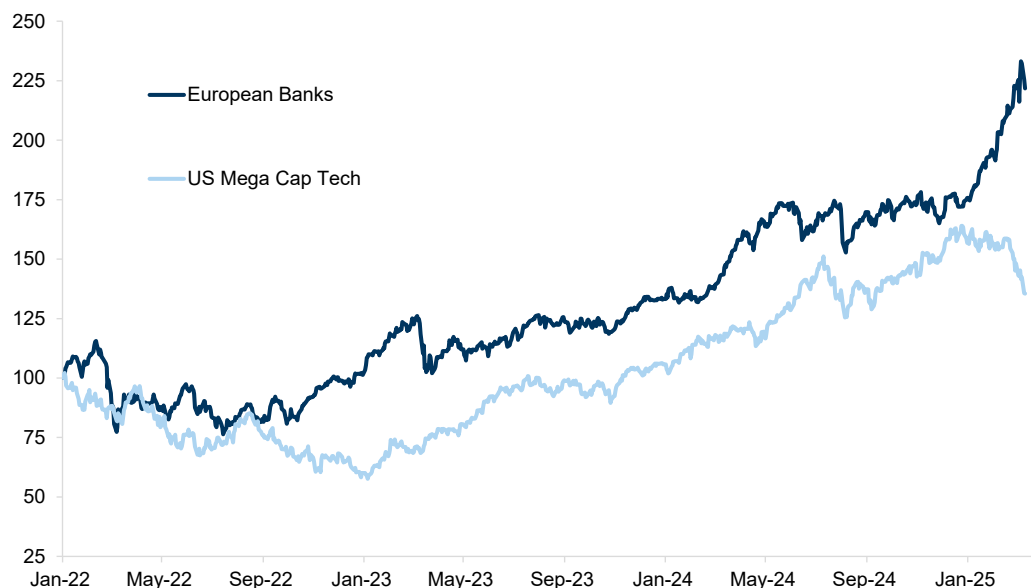
Source: FactSet, Goldman Sachs Global Investment Research

Consequently, the Magnificent 7 are down 14% ytd, while the China tech sector (Hang Seng Tech) is up 31%.

8. Other factors are shifting the scales for sector leadership. The proposed increase in German spending has pushed bund yields higher, and our [rates strategists](#) now expect German 10y yields at 3% at end-2025, rising to 3.25% by end-2026 as deficit financing reaches its peak. By contrast, they were expecting 1.9% for end-2025 only a month ago. The adjustment has been rapid, with the increase in yields last week being the sharpest since German reunification in 1990. These shifts have benefited value areas of the European market, such as banks – where we are overweight – which are already up 28% this year, having remarkably outperformed the US Magnificent 7 since 2022 ([Exhibit 11](#)).

Exhibit 11: We have seen some Value areas outperform the Magnificent 7, especially European banks, which we are overweight

Total return. Indexed to 100 in Jan 2022



Source: Datastream, Goldman Sachs Global Investment Research

In general, Value is outperforming and has been on a rising relative trend for a few months – a factor that again weighs on the US relative to other markets (the reverse of the dominant trend since the financial crisis) ([Exhibit 12](#)).

Exhibit 12: Value is outperforming and has been on a rising relative trend for a few months especially in the US

MSCI Indices relative price return (USD). Indexed to 100 in March 2024



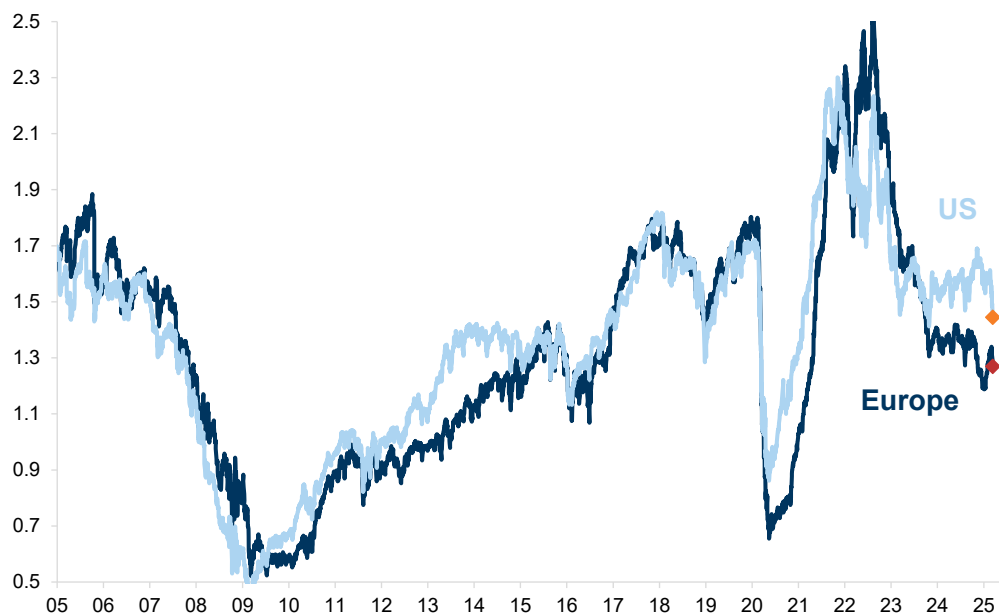
Source: Datastream, Goldman Sachs Global Investment Research

9. From a valuation perspective, too, the de-rating of the US compared with Europe has made sense given the starting point in expectations and the second derivative of

growth. The PEG ratios between the two regions – long aligned – diverged last year (Exhibit 13). Valuation extremes rarely trigger a major move in market pricing but often serve to amplify the speed of an adjustment if the underlying fundamentals are perceived to change.

Exhibit 13: The PEG ratio between US and Europe has opened up in recent years

PEG ratio (12m fwd P/E divided by second 12m fwd EPS growth)

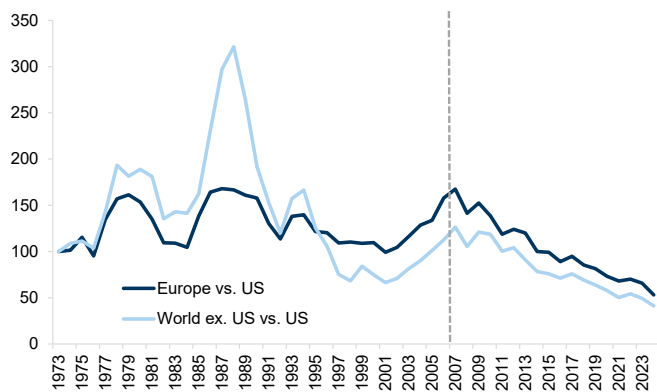


Source: Datastream, Goldman Sachs Global Investment Research

These factors have all helped to generate a better performance in non-US equities, particularly when measured in common currency (US dollars). Over the longer term there is no consistent pattern of the US equity market outperforming (Exhibit 14), so it is understandable that, given the record discount of European (and many other regional indices) compared with the US (Exhibit 15), the relative performance would reverse if triggered by a fundamental inflection point.

Exhibit 14: Over the longer term there is no consistent pattern of the US equity market outperforming

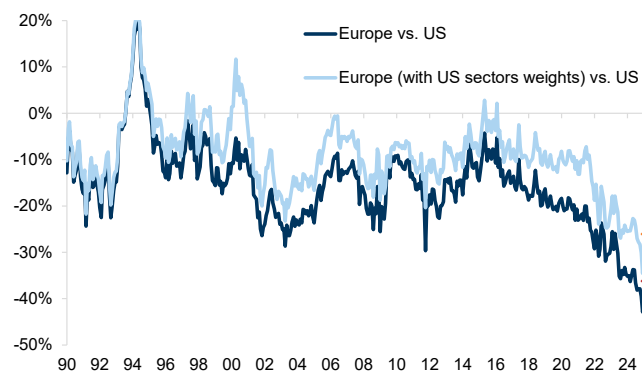
Relative total return performance (indexed to 100 in 1973)



Source: Datastream, Worldscope, Goldman Sachs Global Investment Research

Exhibit 15: Europe's discount to the US is especially large

Europe relative to US 12m forward P/E



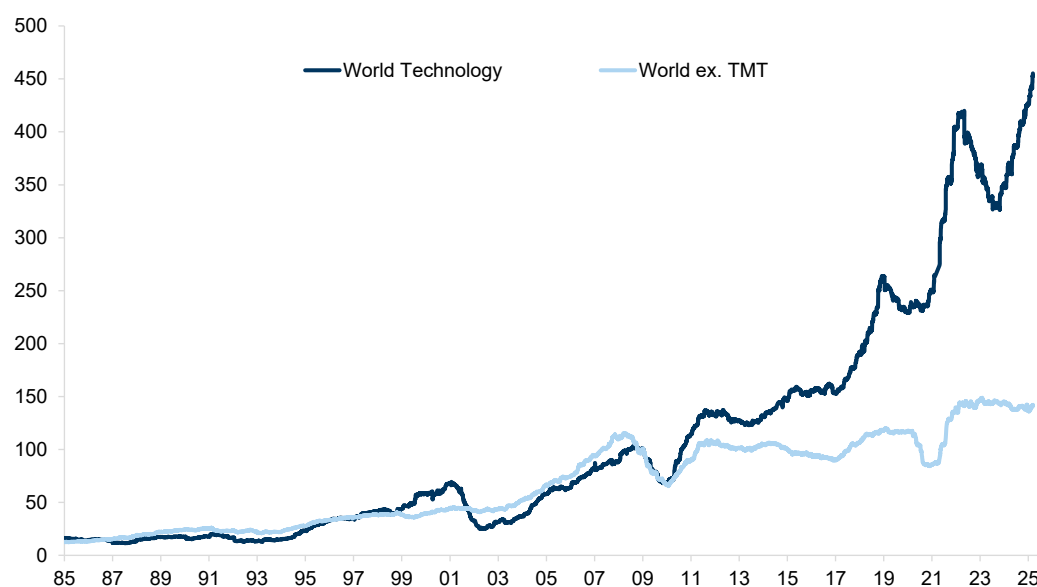
Source: Datastream, Goldman Sachs Global Investment Research

The period of US 'exceptionalism' has largely been a feature of the post financial crisis

environment dominated by ultra-low interest rates and the extraordinary superior profit growth of the technology sector ([Exhibit 16](#)).

Exhibit 16: Tech earnings have grown faster than the market in the last decade

12m Trailing EPS (USD). Indexed to 100 on Jan-2009



Source: Datastream, Worldscope, Goldman Sachs Global Investment Research

The reversal of fortunes for Europe and some other markets relative to the US likely has further to run, underscoring our view that geographic and sector diversification is likely to improve risk-adjusted returns. The average pairwise correlation between equities across different countries has reached its lowest level since the 1990s.

10. Nevertheless, the rest of the world is unlikely to be immune from further downgrades in US growth expectations. If US growth fears – rather than dominant tech stocks – are the main source of any further correction in the US, then historical performance would suggest that other markets would tend to fall too. [Exhibit 17](#) shows all the periods of US equity drawdowns of 10% or more (some, such as the financial crisis and covid period, have been amalgamated into one single drawdown, despite some rebounds during the period). The broad observation is that *all equity markets fall during these periods in absolute terms*. *Relative* performance during US corrections varies, however. It would be plausible for Europe and other markets to continue to outperform the US even in a drawdown, particularly if economies remain more resilient.

Exhibit 17: Broadly, all equity markets tend to fall when the US experiences a correction above 10%

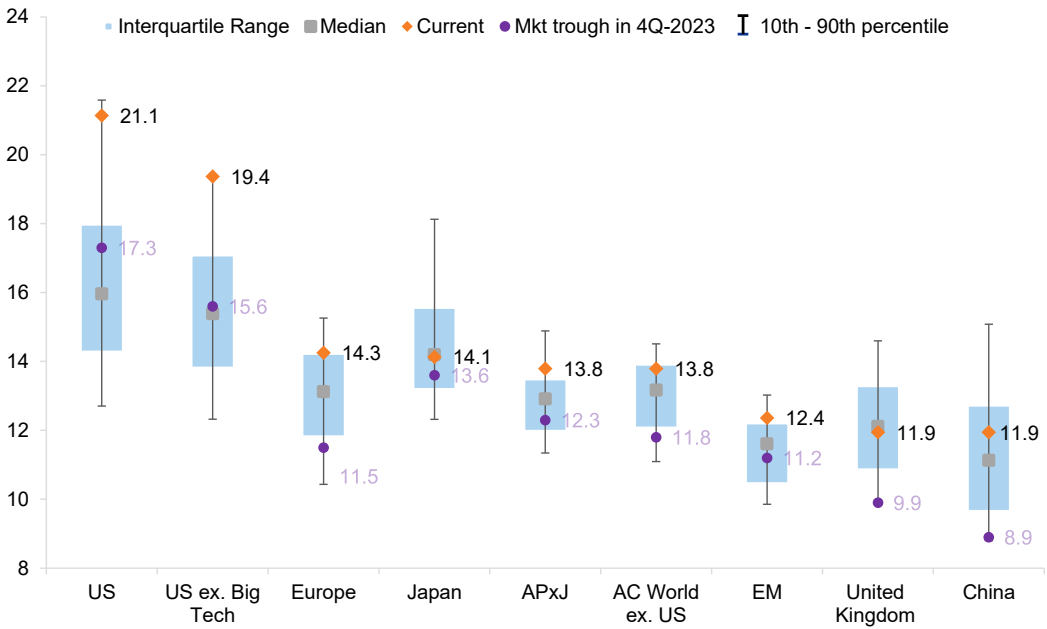
Periods of SPX correction above 10% since 1990. Price returns in local currency. Shading denotes when regional markets outperformed the US

Start	End	SPX Return	MXAPJ (\$) Return	MSCI Japan Return	HSI Return	SXXP Return	FTSE 100 Return
02-Jan-90	30-Jan-90	-10%	-2%	-5%	-3%	-3%	-5%
16-Jul-90	11-Oct-90	-20%	-26%	-29%	-17%	-20%	-13%
07-Oct-97	27-Oct-97	-11%	-17%	-5%	-29%	-7%	-9%
17-Jul-98	31-Aug-98	-19%	-21%	-14%	-16%	-17%	-15%
16-Jul-99	15-Oct-99	-12%	-6%	-4%	-9%	-7%	-10%
24-Mar-00	09-Oct-02	-49%	-49%	-46%	-50%	-53%	-44%
27-Nov-02	11-Mar-03	-15%	-13%	-13%	-11%	-24%	-17%
09-Oct-07	09-Mar-09	-57%	-62%	-59%	-60%	-59%	-46%
23-Apr-10	02-Jul-10	-16%	-9%	-15%	-6%	-11%	-15%
29-Apr-11	03-Oct-11	-19%	-27%	-14%	-29%	-21%	-16%
21-May-15	25-Aug-15	-12%	-23%	-14%	-22%	-13%	-13%
03-Nov-15	11-Feb-16	-13%	-15%	-18%	-18%	-20%	-13%
26-Jan-18	08-Feb-18	-10%	-8%	-6%	-8%	-7%	-6%
20-Sep-18	24-Dec-18	-20%	-9%	-16%	-7%	-12%	-9%
19-Feb-20	18-Mar-20	-29%	-24%	-24%	-19%	-36%	-32%
03-Jan-22	12-Oct-22	-25%	-31%	-8%	-28%	-21%	-8%
31-Jul-23	27-Oct-23	-10%	-12%	-3%	-13%	-9%	-5%
Average		-21%	-21%	-17%	-20%	-20%	-16%
Median		-16%	-17%	-14%	-17%	-17%	-13%

Source: Datastream, Goldman Sachs Global Investment Research

One important factor to think about here is valuation. While most non-US equity markets have outperformed the US so far this year, they only look cheap on a relative basis compared with the US – not compared with their own history (Exhibit 18).

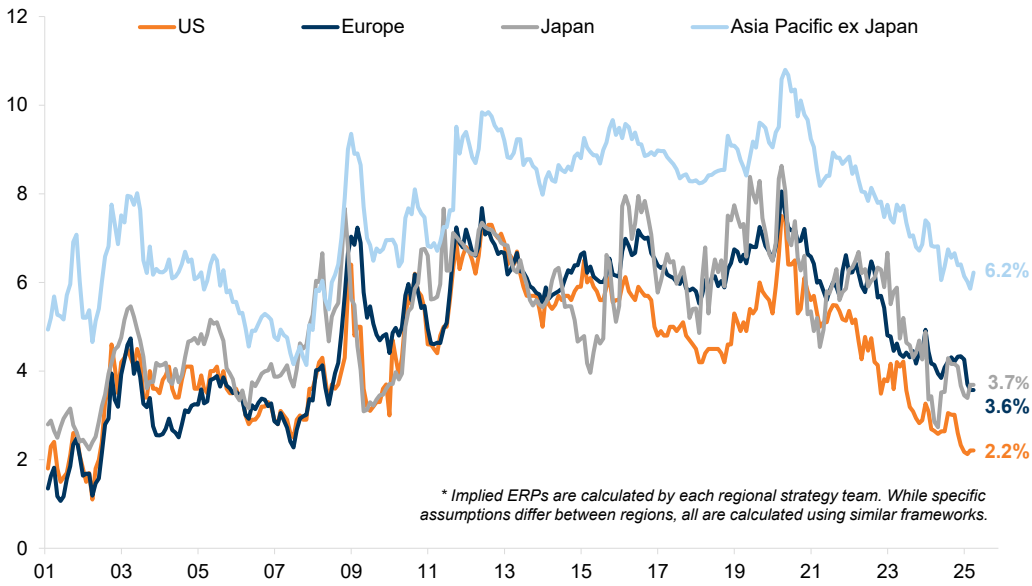
Exhibit 18: Non-US markets, while cheap relative to the US, are not particularly inexpensive relative to their own history
12m fwd P/E, MSCI regions; data since 2003



Source: FactSet, Goldman Sachs Global Investment Research

This is also true across regions when we compare the valuation of equities with bonds (Exhibit 19). This low equity risk premium leaves all markets vulnerable to a correction, even if it is one where the US underperforms. As a consequence, we continue to recommend broad diversification, and our asset allocation strategists like hedges such as put spreads. They have downgraded USD HY and upgraded US treasuries to mitigate correction risk.

Exhibit 19: Low Equity Risk Premia leave markets vulnerable to a correction
Global market-implied ERP (%)



Source: Goldman Sachs Global Investment Research

Disclosure Appendix

Reg AC

We, Peter Oppenheimer, Sharon Bell, Lilia Peytavin and Guillaume Jaisson, 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

Marquee disclosure

Marquee is a product of Goldman Sachs Global Banking & Markets. Any Marquee content linked in this report is not necessarily representative of GS Research views. If you need access to Marquee, please contact your GS salesperson or email the Marquee team at gs-marquee-sales@gs.com.

MSCI disclosure

All MSCI data used in this report is the exclusive property of MSCI, Inc. (MSCI). Without prior written permission of MSCI, this information and any other MSCI intellectual property may not be reproduced or redisseminated in any form and may not be used to create any financial instruments or products or any indices. This information is provided on an "as is" basis, and the user of this information assumes the entire risk of any use made of this information. Neither MSCI, any of its affiliates nor any third party involved in, or related to, computing or compiling the data makes any express or implied warranties or representations with respect to this information (or the results to be obtained by the use thereof), and MSCI, its affiliates and any such third party hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability or fitness for a particular purpose with respect to any of this information. Without limiting any of the foregoing, in no event shall MSCI, any of its affiliates or any third party involved in, or related to, computing or compiling the data have any liability for any direct, indirect, special, punitive, consequential or any other damages (including lost profits) even if notified of the possibility of such damages. MSCI and the MSCI indexes are service marks of MSCI and its affiliates. The Global Industry Classification Standard (GICS) were developed by and is the exclusive property of MSCI and Standard & Poor's. GICS is a service mark of MSCI and S&P and has been licensed for use by The Goldman Sachs Group.

Equity Basket disclosure

The ability to trade the basket(s) discussed in this research will depend upon market conditions, including liquidity and borrow constraints at the time of trade.

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 résolution (“ACPR”) and regulated by the Autorité de contrôle prudentiel et de résolution and the Autorité des marchés 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 (Finansinspektionen) 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_1/fia-uniform-futures-and-options-on-futures-risk-disclosures-booklet-pdf-version-2018.

Transaction costs may be significant in option strategies calling for multiple purchase and sales of options such as spreads. Supporting documentation will be supplied upon request.

Differing Levels of Service provided by Global Investment Research: The level and types of services provided to you by 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.