# Japan Strategy Views Thoughts on TOPIX P/E range after recent rally

After a lackluster performance up to the third week of June, Japanese stocks have been making strong gains since the last week of June. This sharp rise in share prices was a bit of surprise to us, as the rise occurred earlier than we expected given we believed that an improvement in the macro environment would be necessary for Japanese stocks to break out of their recent range and see a sustained rise. We think initial price moves were mainly led by positioning and technical factors, but probably medium-term general positive views on Japanese stocks are also an underlying factor. It also appears that the market front-loaded some of the positive catalysts ahead.

We revise our TOPIX earnings forecasts. Our new forecasts call for EPS growth of +10%/+9%/+7% in FY2024-FY2026, and the cumulative 29% growth over the next three years should underpin the Japan market's move higher.

The TOPIX has now reached the upper end of our assumed P/E range of 15.0-15.5X. Given the backdrop of the recent rally, described above, further upside may be limited in the near-term until there is more evidence of a shift in fundamentals that we expect in 2H. While we do not expect a major correction, we note uncertainties around political events in Japan and the US, as well as weak upcoming seasonality, which warrant caution.

In our view, additional positive developments that could drive further upward shift of the P/E range include a stronger virtuous cycle between wages and prices with an upgrade in the domestic economic outlook, a reversal of the weak yen trend, progress in corporate governance, and further participation by individual investors.

Kazunori Tatebe, CFA +81(3)4587-9898 | kazunori.tatebe@gs.com Goldman Sachs Japan Co., Ltd.

Bruce Kirk, CFA +81(3)4587-9950 | bruce.kirk@gs.com Goldman Sachs Japan Co., Ltd.

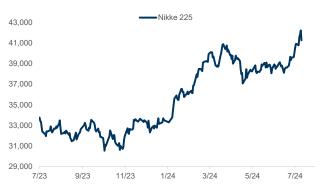
# 1. TOPIX/Nikkei break out

TOPIX closed at 2,772 at the end of May and 2,810 at the end of June, roughly in line with our 3-month forward TOPIX target of 2,800 as of our March 1 and April 1 reports. Japanese stock performance was lackluster until the third week of June, but sharp gains since the last week of June have been attracting attention. On July 4, TOPIX reached a new all-time high, surpassing the previous record set 34 years ago.

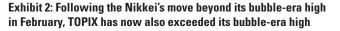
We thought that a recovery in domestic demand and an improvement in the macro environment would be necessary for Japanese stocks to break out of their range and see a sustained rise. We also highlighted that 1Q earnings could be a catalyst. The recent earlier-than-expected sudden rise in share prices therefore came as a bit of a surprise to us.

We think initial price moves were mainly led by positioning and technical factors without any notable changes in fundamentals, but probably medium-term general positive views on Japanese stocks are also an underlying factor. It also appears that the market front-loaded some of the positive catalysts ahead, such as an expected solid 1Q earnings and a recovery in real wages/domestic consumption in the summer.

Exhibit 1: The Nikkei 225 and TOPIX have broken out of their recent ranges



Source: Bloomberg





Source: Bloomberg

# 2. Raising our TOPIX EPS forecasts

We revise our TOPIX earnings forecasts to reflect the stronger-than-expected 403/24results, changes to our forex assumptions (USD/JPY to ¥155/¥150 from ¥150/¥145 for FY2024/25), and our economists' latest macro assumptions. Our new forecasts call for EPS growth of +10%/+9%/+7% in FY2024-FY2026, cumulative 29% growth over the next three years, following the 18% growth seen in FY2023. In addition to the weaker yen on the currency markets, we think the inflationary environment in Japan will boost earnings.

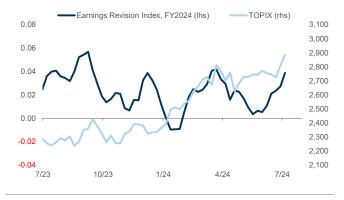
The TOPIX earnings revision index had been on a downward trend in April-May due to cautious guidance issued at the beginning of the fiscal year, but started to rebound and rise in June, as consensus earnings forecasts are moving upward.

# Exhibit 3: TOPIX earnings forecast: We estimate 29% EPS growth over the next three years, following 18% growth in FY2023

	FY2023	FY2	2024	FY2	FY2026		
	Actual	Cons- ensus	GS Est.	Cons- ensus	GS Est.	GS Est.	
YoY, %							
Sales	5.4	3.0	4.0	3.2	2.2	2.8	
Recurring Profit	15.0	8.1	9.9	9.3	8.1	6.6	
EPS	17.8	8.4	10.1	10.2	9.3	7.4	
EPS (Y)		184.4	187.3	203.1	204.6	219.7	

Our FY2024-FY2026 USD/JPY assumptions are ¥155/¥150/¥150

Exhibit 4: Japanese companies' earnings forecasts have been revised upward recently



Source: I/B/E/S, FactSet, Data compiled by Goldman Sachs Global Investment Research

Source: Goldman Sachs Global Investment Research

# 3. Correlation between JPY weakness and Japanese stocks is back

One of the notable developments in the Japanese stock market in 2Q was the breakdown of the correlation between forex and Japanese stocks, with <u>the weaker yen</u> <u>no longer providing a tailwind for Japanese equities</u>. However, we note with interest that the correlation between the weaker yen and higher Japanese share prices seems to have returned from late June. Nevertheless, we are skeptical about whether it will continue. If the yen weakens further from the current level, we think the side effects could become more pronounced and yen weakness may not be seen as a positive.

Our sensitivity analysis shows that a ¥10 depreciation of the yen would increase profits by 3.5%, but we think the benefits of further yen depreciation from this level are likely to be smaller than our sensitivity analysis suggests, due to the increasing negative impact on real disposable income and domestic consumption. On the side note, if the virtuous cycle between wages and prices strengthens and the pace of yen depreciation is moderate, then the emergence of side effects could be delayed.

The weaker yen trend could stop or reverse due to weaker US growth/inflation data and rising expectations for US rate cuts. If the trend were to shift to moderate yen appreciation, we believe it would create a more favorable environment for long-term investors who do not hedge their currency exposure to invest in Japanese equities. The recent buying of Japanese stocks may also reflect in part the somewhat weaker US economic data.

Exhibit 5: The correlation between the weaker yen and higher share prices, which had broken down in 20, returned from late June



Exhibit 6: Our sensitivity analysis shows that a 10-yen depreciation/appreciation of the yen would increase/decrease profits by 3.5%, but the benefits of yen depreciation are likely to be smaller due to the increasing side effects

		* GS assumption									
USDJPY	130	140	145	150	155 *	160	165				
FY24 EPS growth	0.5%	4.3%	6.2%	8.2%	10.1%	12.0%	14.0%				
FY24 EPS (¥)	171	177	181	184	187	191	194				
(+)											

Source: MSCI, Bloomberg

Source: Goldman Sachs Global Investment Research

# 4. Positive micro developments

While the sharp rise in Japanese stocks since late June has been attracting attention, we would also highlight the positive micro developments that were seen during the preceding period of weakness.

- Share buyback announcements remained brisk after increasing sharply in April-May, with Recruit announcing a ¥600 bn buyback program this month, bringing the overall total for the year to over ¥10 tn, which already exceeds last year's level.
- AGMs have become more *live*, with the percentage of votes supporting CEO/director nominations fluctuating significantly depending on how management's performance is viewed. Since the unwinding of cross-shareholdings will reduce the number of stable shareholders, we think shareholder meetings could become even more lively going forward. We plan to look at AGMs in more detail in a future report.
- TOPIX review (new rules for TOPIX constituents): The Tokyo Stock Exchange has announced new rules related to the forthcoming TOPIX review. The number of constituent companies is expected to decline to about 1,200, increasing pressure on companies to achieve profit growth and valuation expansion.

#### Exhibit 7: AGM approval ratings

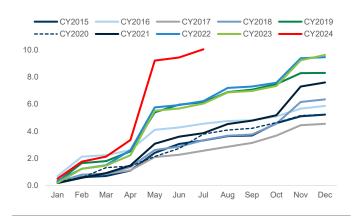
6M ADTV > \$20mn

Ticker	Name	Latest FY	Previous Rating	Latest Rating	Latest vs prev.	Ticker	Name	Latest FY	Previous Rating	Latest Rating	Latest vs prev.
7751	CANON INC	12/2023	50.6%	90.9%	+40.3%	6504	FUJI ELECTRIC CO.	03/2024	91.0%	85.1%	-5.9%
9503	KANSAI ELEC POWER	03/2024	66.2%	97.9%	+31.7%	4005	SUMITOMO CHEM CO	03/2024	91.9%	85.7%	-6.2%
5021	COSMO ENERGY HLDGS	03/2024	67.1%	96.3%	+29.3%	7276	KOITO MFG CO LTD	03/2024	88.2%	81.4%	-6.8%
9508	KYUSHU ELEC POWER	03/2024	68.6%	96.8%	+28.2%	8830	SUMITOMO RLTY&DEV	03/2024	87.0%	80.0%	-7.0%
8316	SUMITOMO MITSUI FG	03/2024	67.3%	94.6%	+27.3%	4519	CHUGAI PHARM CO	12/2023	91.7%	84.7%	-7.0%
7003	MITSUI E&S CO LTD	03/2024	70.4%	95.9%	+25.5%	4755	RAKUTEN GROUP INC	12/2023	89.5%	82.2%	-7.3%
6417	SANKYO CO LTD	03/2024	71.3%	96.4%	+25.1%	8227	SHIMAMURA CO	02/2024	90.4%	83.0%	-7.4%
9434	SOFTBANK CORP	03/2024	76.2%	99.2%	+23.0%	7259	AISIN CORPORATION	03/2024	98.4%	90.8%	-7.6%
3382	SEVEN & I HOLDINGS	02/2024	76.4%	95.6%	+19.2%	6586	MAKITA CORP	03/2024	95.4%	87.5%	-7.9%
9506	TOHOKU ELEC POWER.	03/2024	78.8%	97.4%	+18.6%	7912	DAI NIPPON PRINTNG	03/2024	82.7%	74.6%	-8.1%
5803	FUJIKURA	03/2024	72.0%	90.2%	+18.2%	9531	TOKYO GAS CO	03/2024	98.5%	90.4%	-8.1%
4324	DENTSU GROUP INC	12/2023	65.6%	81.3%	+15.7%	5332	TOTO LTD	03/2024	96.9%	88.7%	-8.2%
9766	KONAMI GROUP CORP	03/2024	82.2%	97.7%	+15.5%	3407	ASAHI KASEI CORP	03/2024	97.9%	89.7%	-8.2%
9201	JAPAN AIRLINES CO	03/2024	82.6%	97.2%	+14.7%	8411	MIZUHO FINL GP	03/2024	86.0%	77.0%	-9.0%
7202	ISUZU MOTORS	03/2024	82.2%	96.0%	+13.8%	2127	NIHON M&A CENTER H	03/2024	96.9%	87.5%	-9.4%
7911	TOPPAN HOLDINGS IN	03/2024	69.2%	82.2%	+12.9%	3994	MONEY FORWARD INC	11/2023	93.4%	84.0%	-9.5%
4661	ORIENTAL LAND CO	03/2024	82.7%	95.1%	+12.4%	9432	NIPPON TEL&TEL CP	03/2024	94.1%	84.0%	-10.1%
7951	YAMAHA CORP	03/2024	87.7%	98.7%	+11.0%	8306	MITSUBISHI UFJ FIN	03/2024	75.9%	64.6%	-11.4%
6323	RORZE CORP	02/2024	80.1%	89.8%	+9.7%	7013	IHI CORPORATION	03/2024	90.1%	78.2%	-11.9%
9502	CHUBU ELEC POWER	03/2024	71.5%	80.4%	+8.9%	3697	SHIFT INC	08/2023	97.8%	84.9%	-12.9%
3659	NEXON CO LTD	12/2023	78.7%	87.5%	+8.8%	8309	SUMITOMO MITSUI TR	03/2024	83.7%	70.0%	-13.6%
6367	DAIKIN INDUSTRIES	03/2024	88.4%	96.8%	+8.4%	6315	TOWA CORP	03/2024	99.0%	83.1%	-15.9%
7974	NINTENDO CO LTD	03/2024	83.8%	92.0%	+8.2%	8766	TOKIO MARINE HLDG	03/2024	83.0%	66.9%	-16.0%
4107	ISE CHEMICALS CORP	12/2023	89.5%	97.6%	+8.1%	6971	KYOCERA CORP	03/2024	81.1%	64.8%	-16.3%
1801	TAISEI CORP	03/2024	66.0%	73.7%	+7.8%	9984	SOFTBANK GROUP CO	03/2024	95.9%	79.2%	-16.7%
3132	MACNICA HLDGS INC	03/2024	91.6%	99.3%	+7.7%	4502	TAKEDA PHARMACEUTI	03/2024	95.7%	76.2%	-19.5%
2801	KIKKOMAN CORP	03/2024	79.4%	86.7%	+7.3%	8630	SOMPO HOLDINGS INC	03/2024	83.4%	61.5%	-21.9%
3563	FOOD & LIFE COMPAN	09/2023	86.7%	92.8%	+6.1%	3038	KOBE BUSSAN CO LTD	10/2023	90.3%	67.0%	-23.3%
8795	T&D HOLDINGS INC	03/2024	77.2%	82.5%	+5.3%	6753	SHARP CORP	03/2024	88.9%	63.6%	-25.3%
8697	JAPAN EXCHANGE GP	03/2024	88.9%	94.1%	+5.2%	8473	SBI HOLDINGS INC	03/2024	94.3%	61.1%	-33.2%

Source: Company data, Data compiled by Goldman Sachs Global Investment Research

# Exhibit 8: Announced share buybacks have already exceeded last year's record level

JPY tn



Source: QUICK, Data compiled by Goldman Sachs Global Investment Research

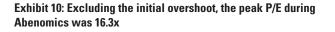
# 5. Thoughts on TOPIX P/E range

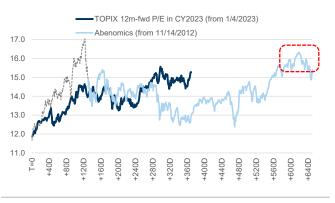
The TOPIX has now reached the upper end of <u>our assumed P/E range</u> of 15.0-15.5X. This is also the P/E level at which the index peaked in late March. Given the backdrop of the recent rally, described above, further upside may be limited in the near term until there is more evidence of a shift in fundamentals that we expect in 2H, including solid 1Q earnings and evidence of a strengthening recovery in domestic demand. While we do not expect a major correction, we note uncertainties around political events in Japan and the US, as well as weak upcoming seasonality, which warrant caution.

In our view, additional positive developments that could drive further upward shift of the P/E range include a stronger virtuous cycle between wages and prices with an upgrade in the domestic economic outlook, a reversal of the weak yen trend, progress in corporate governance, and further participation by individual investors. If the TOPIX were to break out of its current range, we think the Abenomics peak of 16.3X (May 2015) would be investors next focus.

Exhibit 9: TOPIX has reached the upper end of our assumed P/E range (15.0-15.5x)







Source: FactSet, Data compiled by Goldman Sachs Global Investment Research

#### Exhibit 11: 3m and 12m forward TOPIX levels based on USD/JPY and P/E levels

3-month forward TOPIX level								12-month forward TOPIX level										
		USDJPY									USDJPY							
		130	140	145	150	155	160	165			130	140	145	150	155	160	165	
	13.0	2,305	2,393	2,437	2,482	2,526	2,570	2,614		13.0	2,472	2,567	2,614	2,662	2,709	2,757	2,804	
	13.5	2,393	2,485	2,531	2,577	2,623	2,669	2,715	Forward P/E	13.5	2,567	2,666	2,715	2,764	2,814	2,863	2,912	
	14.0	2,482	2,577	2,625	2,672	2,720	2,768	2,815		14.0	2,662	2,765	2,816	2,867	2,918	2,969	3,020	
	14.5	2,571	2,669	2,719	2,768	2,817	2,867	2,916		14.5	2,758	2,863	2,916	2,969	3,022	3,075	3,128	
rd P/E	15.0	2,659	2,761	2,812	2,863	2,914	2,965	3,016		15.0	2,853	2,962	3,017	3,071	3,126	3,181	3,236	
Forward P/E	15.2	2,695	2,798	2,850	2,902	2,953	3,005	3,057		15.2	2,891	3,002	3,057	3,112	3,168	3,223	3,279	
	15.3	2,713	2,817	2,869	2,921	2,973	3,025	3,077		15.3	2,910	3,021	3,077	3,133	3,189	3,244	3,300	
	15.5	2,748	2,853	2,906	2,959	3,012	3,064	3,117		15.5	2,948	3,061	3,117	3,174	3,230	3,287	3,343	
	16.0	2,837	2,945	3,000	3,054	3,109	3,163	3,217		16.0	3,043	3,159	3,218	3,276	3,335	3,393	3,451	
	16.3	2,890	3,001	3,056	3,112	3,167	3,222	3,278		16.3	3,100	3,219	3,278	3,338	3,397	3,457	3,516	

Source: Goldman Sachs Global Investment Research

### Exhibit 12: Weak seasonality ahead



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

# **Disclosure Appendix**

# **Reg AC**

I, Kazunori Tatebe, CFA, 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 analyst's 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 Investor Grievance E-mail: india-client-support@gs.com. Compliance Officer: Anil Rajput |Tel: + 91 22 6616 9000 | Email: anil.m.rajput@gs.com. 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 <u>https://www.gs.com/disclosures/europeanpolicy.html</u> 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.; 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 (<u>https://www.sipc.org</u>).

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

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

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

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

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

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

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

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

https://www.fiadocumentation.org/fia/regulatory-disclosures\_1/fia-uniform-futures-and-options-on-futures-risk-disclosures-booklet-pdf-version-2018. Transaction costs may be significant in option strategies calling for multiple purchase and sales of options such as spreads. Supporting documentation will be supplied upon request.

**Differing Levels of Service provided by Global Investment Research:** The level and types of services provided to you by 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 <a href="https://research.gs.com">https://research.gs.com</a>.

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

#### © 2024 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 third-party 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.