

WEEKLY FUND FLOWS

Europe Buys US Again

Global fund flows, week ending May 20

- Flows into mutual funds and related investment products were positive across both equities and fixed income.
- Net flows into global **equity** funds remained positive in the week ending May 20 (+\$2bn vs +\$20bn in the previous week). Global benchmark funds led the net inflows, with US funds seeing strong demand. Within EM, global EM benchmark funds and Mainland China equity funds saw net outflows; Korea equity funds saw renewed net inflows. At the sector level, financials funds saw the largest net outflows. Technology sector funds saw the largest net inflows across sectors.
- Flows into global **fixed income** funds were well-supported from inflows into government and agg-type bond funds. US Treasury funds have seen cumulative inflows from the Euro Area since the start of the year, but cumulative outflows from Asia (see Chart of the Week). We see this as consistent with our view that a more range-bound Dollar over the course of the energy shock has been due, in part, to more stringent FX management. Short-duration bond funds and inflation-protected bond funds have also seen sustained inflows. In EM, local-currency bond funds saw net inflows while hard-currency bond funds saw net outflows. **Money market** fund assets rose by \$1bn.
- Cross-border **FX flows** were broadly positive, indicating supported risk sentiment. Foreign flows were positive across regions, with DM and Mainland China seeing particularly strong net inflows.

Lexi Kanter  
+1(212)855-9701 |  
alexandra.kanter@gs.com  
Goldman Sachs & Co. LLC

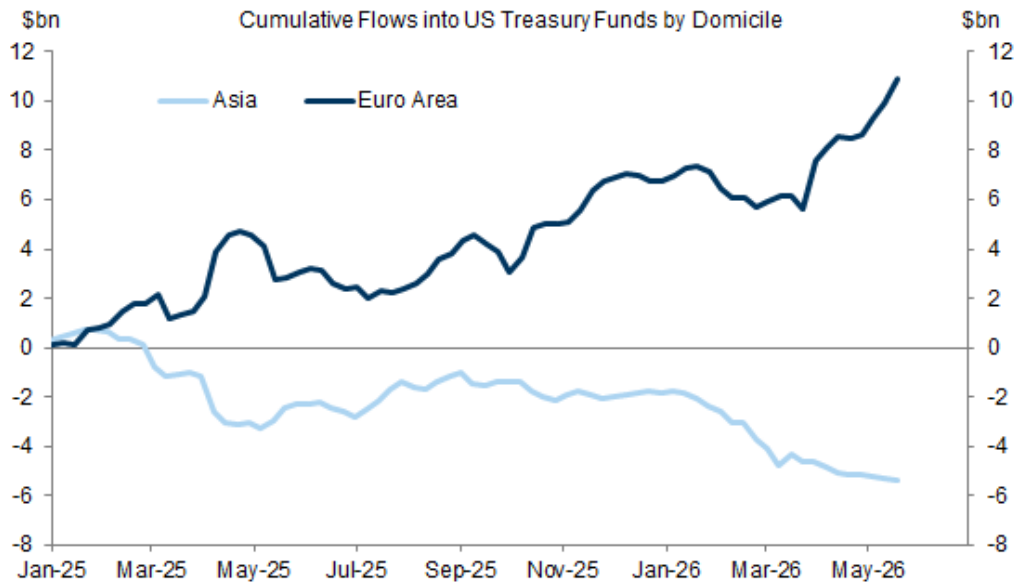
	Global Fund Flows Summary			
	Millions USD		% AUM	
	4wk sum	20-May	4wk avg	20-May
Equity	48,460	2,385	0.04	0.01
Fixed Income	109,304	31,975	0.28	0.33
of which: EM	9,429	2,163	0.34	0.31
Money Markets	113,489	1,220	0.26	0.01
FX Flows*	65,299	17,493	0.10	0.11

\*Cross-border fund flows, excluding hard currency and FX-hedged funds

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

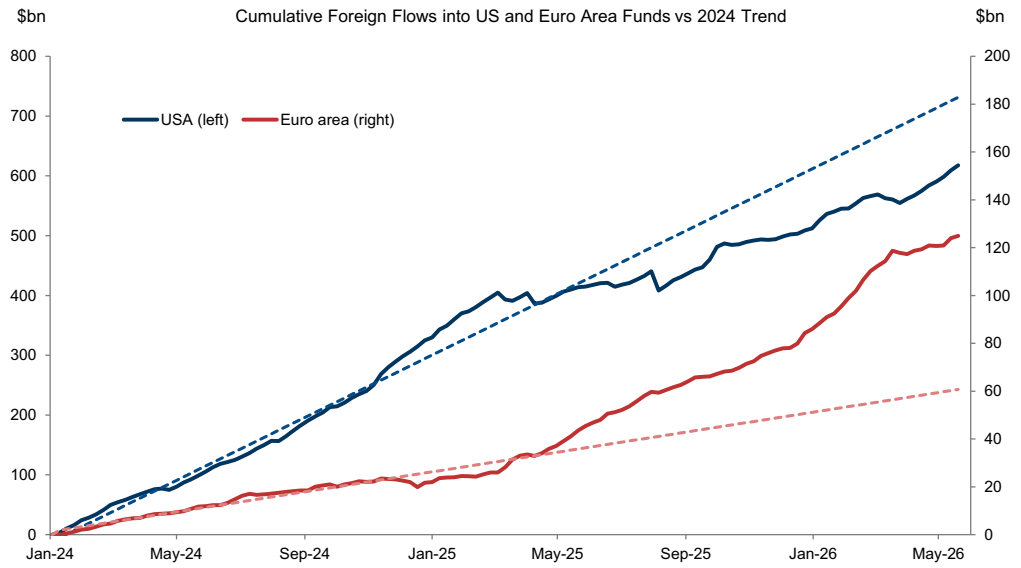
Investors should consider this report as only a single factor in making their investment decision. For Reg AC certification and other important disclosures, see the Disclosure Appendix, or go to [www.gs.com/research/hedge.html](http://www.gs.com/research/hedge.html).

Chart of the Week

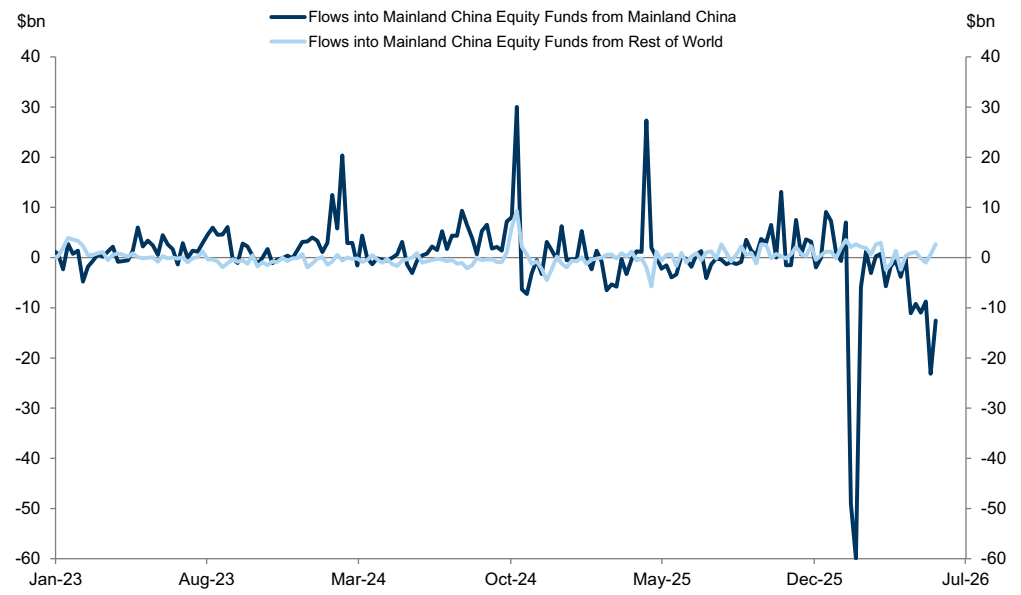


Source: EPFR, Haver Analytics, Goldman Sachs Global Investment Research

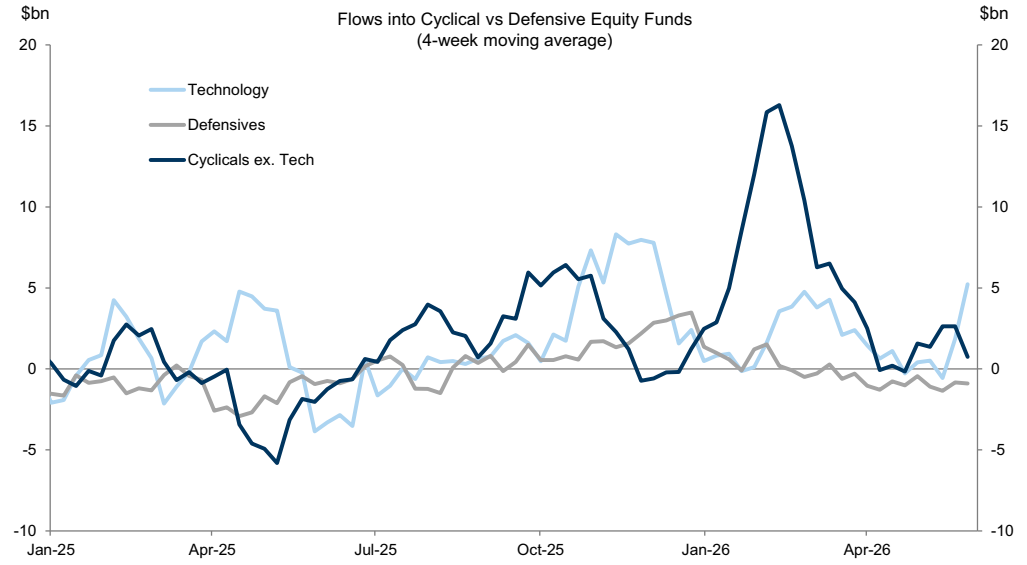
# Global Fund Flow Trends



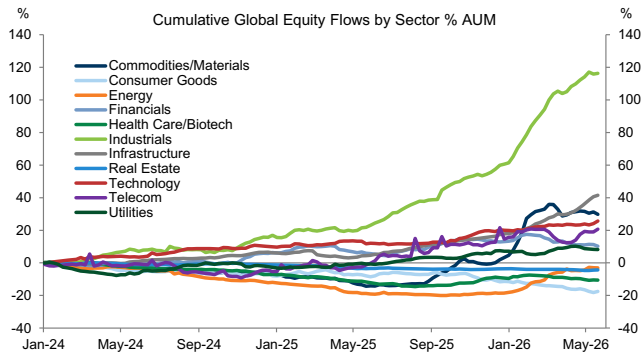
Source: EPFR, Goldman Sachs Global Investment Research



Source: EPFR, Goldman Sachs Global Investment Research

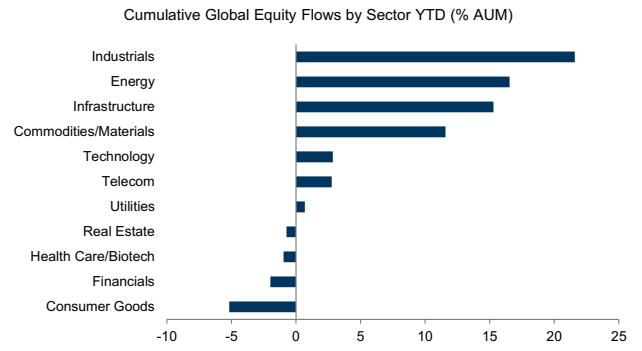


Source: EPFR, Goldman Sachs Global Investment Research



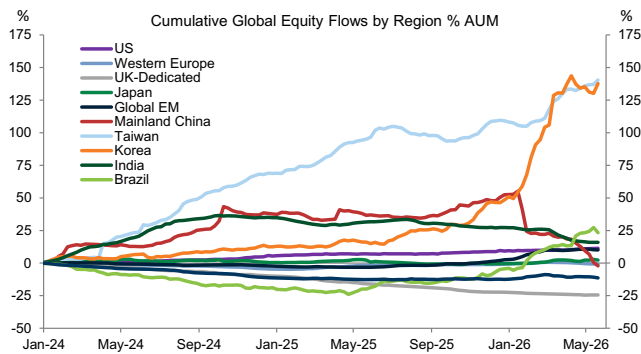
Captures flows to sector dedicated funds

Source: EPFR, Goldman Sachs Global Investment Research



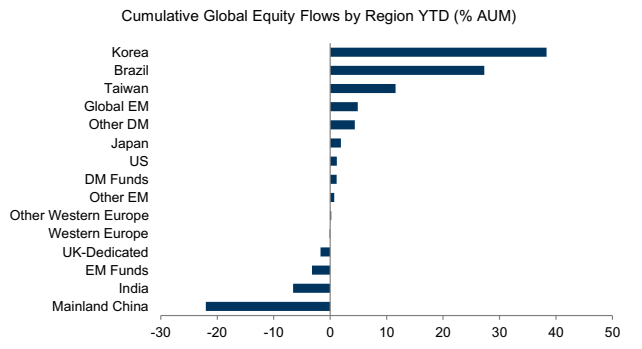
Captures flows to sector dedicated funds

Source: EPFR, Goldman Sachs Global Investment Research



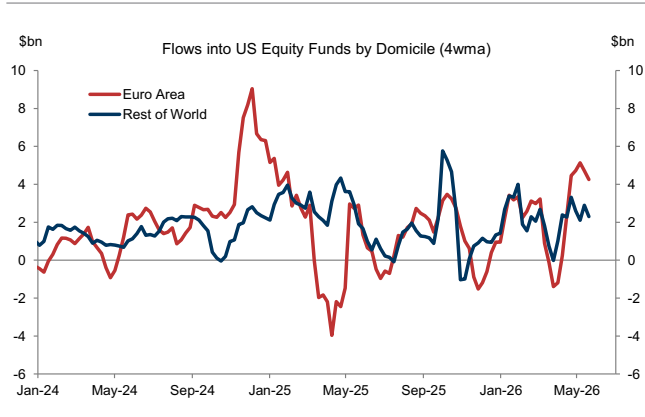
Captures flows to country- and region-dedicated funds

Source: EPFR, Goldman Sachs Global Investment Research

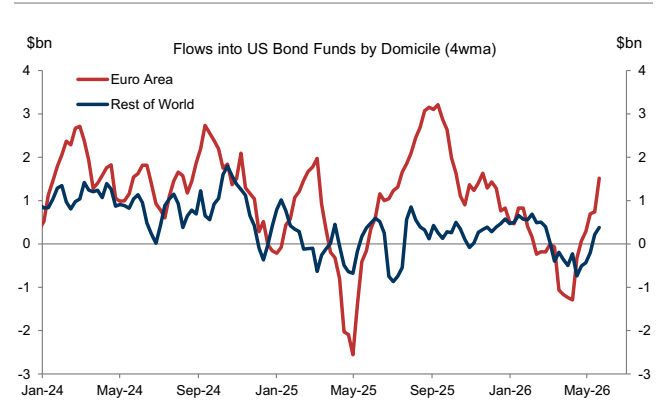


Captures flows to country- and region-dedicated funds

Source: EPFR, Goldman Sachs Global Investment Research

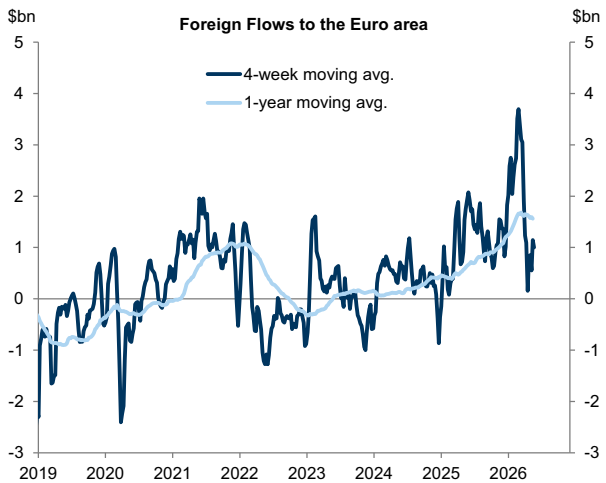
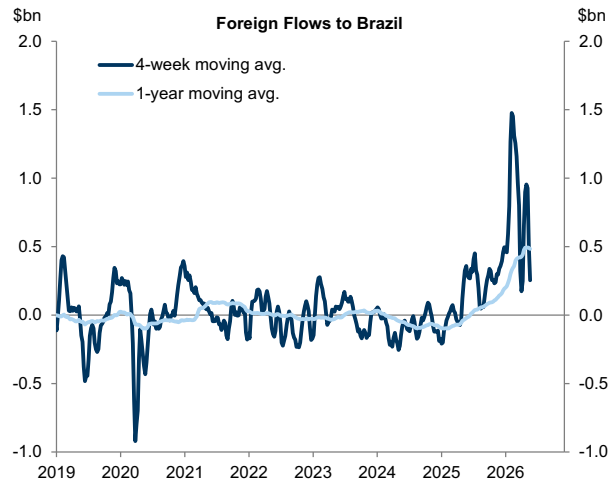
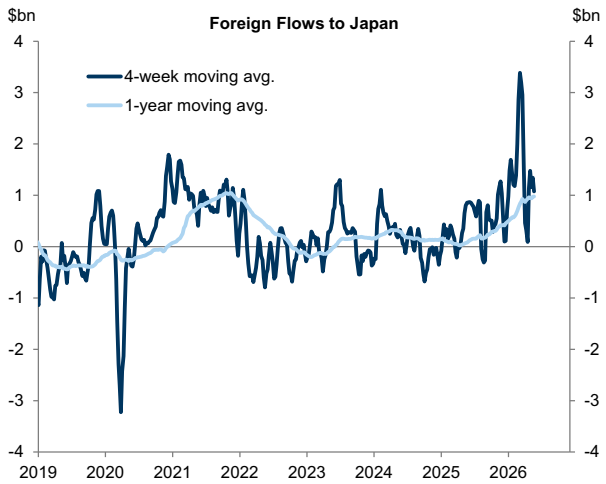
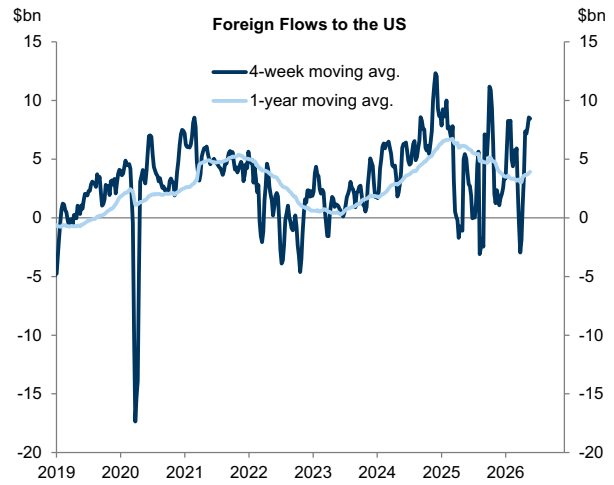


Source: EPFR, Goldman Sachs Global Investment Research



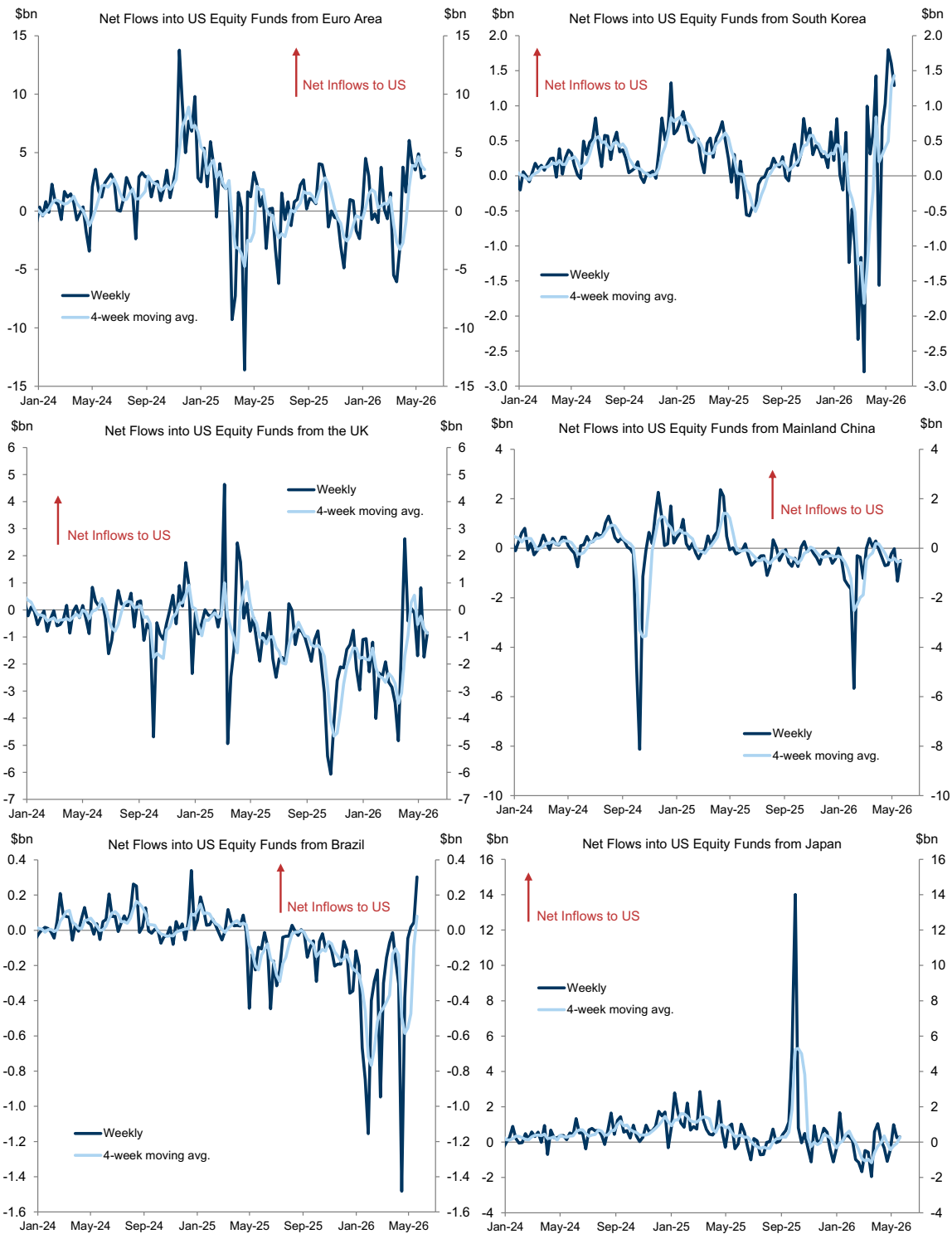
Source: EPFR, Goldman Sachs Global Investment Research

**Total Unhedged Foreign Flows By Country**



Source: EPFR, Goldman Sachs Global Investment Research

**Net Unhedged Flows into US Equity Funds**



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

## Fixed Income &amp; Equity Flows

	Global Fund Flows							
	Millions USD					% AUM		Z-score of
	4wk sum	20-May	13-May	6-May	29-Apr	4wk avg	20-May	4wk sum
<b>Total Equity</b>	<b>48,460</b>	<b>2,385</b>	<b>20,458</b>	<b>2,574</b>	<b>23,042</b>	<b>0.04</b>	<b>0.01</b>	<b>-0.11</b>
<b>Global Benchmarks<sup>1</sup></b>	<b>46,024</b>	<b>10,309</b>	<b>20,289</b>	<b>5,530</b>	<b>9,895</b>	<b>0.15</b>	<b>0.14</b>	<b>2.02</b>
Including US	37,707	8,475	15,974	5,050	8,207	0.18	0.16	2.76
Excluding US	8,317	1,834	4,315	480	1,688	0.09	0.08	0.17
<b>Developed Markets<sup>2</sup></b>	<b>57,328</b>	<b>-27</b>	<b>25,548</b>	<b>8,669</b>	<b>23,137</b>	<b>0.07</b>	<b>0.00</b>	<b>0.87</b>
US	60,011	9,488	21,897	9,333	19,293	0.09	0.06	0.96
Western Europe	-9,334	-2,323	-1,525	-2,119	-3,366	-0.11	-0.11	-1.13
UK-dedicated	-533	-86	-137	368	-678	-0.04	-0.03	1.51
Other	-8,802	-2,237	-1,388	-2,488	-2,689	-0.13	-0.13	-1.32
Japan	7,397	-4,420	4,622	484	6,710	0.16	-0.38	1.22
Other	-746	-2,772	555	971	500	-0.04	-0.67	-1.12
<b>Emerging Markets<sup>3</sup></b>	<b>-54,893</b>	<b>-7,898</b>	<b>-25,380</b>	<b>-11,625</b>	<b>-9,991</b>	<b>-0.46</b>	<b>-0.27</b>	<b>-3.07</b>
Global EM Benchmarks	-3,268	-738	-2,634	-455	559	-0.06	-0.05	-0.70
Mainland China	-53,096	-9,739	-22,191	-9,783	-11,383	-1.79	-1.37	-2.41
Taiwan	3,070	1,708	72	476	813	0.39	0.85	0.48
Korea	1,389	2,964	-404	-1,609	438	0.22	1.63	0.01
India	-458	22	2	-285	-198	-0.14	0.03	-0.68
Brazil	55	-749	555	189	60	0.04	-2.84	-0.15
Other	-2,583	-1,365	-780	-158	-280	-0.17	-0.36	-0.85
<b>Equity Sector Flows</b>								
Commodities/Materials	-2,405	-1,810	943	-1,234	-305	-0.21	-0.64	-0.63
Consumer Goods	-2,966	1,432	-1,385	-2,040	-973	-0.34	0.68	-0.79
Energy	4,592	-309	-510	4,190	1,221	0.34	-0.09	1.14
Financials	-2,728	-3,129	-419	1,080	-260	-0.16	-0.72	-0.63
Health Care	-3,587	-690	814	-1,634	-2,076	-0.24	-0.19	-0.61
Industrials	3,505	390	-1,108	2,574	1,650	0.33	0.14	0.25
Infrastructure	5,436	633	1,731	1,551	1,522	0.95	0.44	3.42
Real Estate	419	255	1,267	-24	-1,080	0.02	0.04	0.69
Technology	20,884	14,073	6,524	-4,542	4,829	0.24	0.64	1.60
Telecom	1,475	805	2	-128	796	0.43	0.92	0.76
Utilities	-1,906	-131	-257	-345	-1,172	-0.24	-0.07	-1.13
High Beta <sup>4</sup>	-1,991	-3,677	979	481	225	-0.07	-0.52	-0.59
Low Beta <sup>4</sup>	-3,015	677	-449	-1,288	-1,954	-0.11	0.10	-0.61
<b>Total Fixed Income</b>	<b>109,304</b>	<b>31,975</b>	<b>28,550</b>	<b>26,994</b>	<b>21,785</b>	<b>0.28</b>	<b>0.33</b>	<b>2.18</b>
<b>Developed Markets<sup>5</sup></b>	<b>95,025</b>	<b>28,353</b>	<b>25,755</b>	<b>24,559</b>	<b>16,358</b>	<b>0.27</b>	<b>0.32</b>	<b>2.09</b>
Government	25,331	10,829	5,559	4,115	4,828	0.40	0.68	1.75
Mortgage-backed	2,681	923	1,151	861	-254	0.22	0.31	0.50
Municipal	7,510	2,624	1,895	1,764	1,227	0.28	0.39	1.83
Agg-type	34,677	9,149	8,687	10,704	6,137	0.31	0.32	1.85
IG Credit	5,608	125	3,588	1,515	380	0.12	0.01	-0.03
High yield	3,831	289	1,718	-246	2,070	0.14	0.04	0.31
Bank loan	2,682	783	740	894	265	0.38	0.44	0.40
Long-duration <sup>6</sup>	5,506	2,995	2,014	310	187	0.21	0.47	-0.08
Short-duration <sup>6</sup>	29,560	11,246	6,205	7,562	4,547	0.32	0.49	1.56
Inflation-protected	4,003	1,016	785	1,378	824	0.58	0.59	2.45
<b>Emerging Markets</b>	<b>9,429</b>	<b>2,163</b>	<b>2,295</b>	<b>1,387</b>	<b>3,584</b>	<b>0.34</b>	<b>0.31</b>	<b>1.33</b>
Hard	1,523	-54	582	-374	1,369	0.14	-0.02	0.90
Blend	1,086	126	667	125	168	0.40	0.19	1.54
Local	6,820	2,091	1,047	1,635	2,047	0.47	0.58	1.15
<b>Money Markets</b>	<b>113,489</b>	<b>1,220</b>	<b>5,756</b>	<b>135,971</b>	<b>-29,458</b>	<b>0.26</b>	<b>0.01</b>	<b>0.46</b>

1. Primarily MSCI World and MSCI ACWI benchmarks. 2. Sum of DM country- and region-dedicated funds; excludes global DM benchmark funds (e.g. MSCI World funds). 3. Sum of Global EM benchmark funds and EM country- and region-dedicated funds. 4. High beta funds include commodity, financial, & industrial sector funds. Low beta funds include consumer goods, real estate, & utility sector funds. 5. Benchmarks may include some investment grade EM bonds; categories below include DM & EM funds. 6. Long-duration includes long-term Agg-type, long-term corporate, and long-term government bond funds. Short-duration includes short-term Agg-type, short-term corporate, and short-term government bond funds.

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

## FX Flows

	FX Flows <sup>1</sup>							
	Millions USD					% AUM		Z-score of
	4wk sum	20-May	13-May	6-May	29-Apr	4wk avg	20-May	4wk sum
<b>Total</b>	<b>65,299</b>	<b>17,493</b>	<b>25,746</b>	<b>10,157</b>	<b>11,904</b>	<b>0.10</b>	<b>0.11</b>	<b>0.88</b>
<b>G10</b>	<b>52,343</b>	<b>12,715</b>	<b>21,181</b>	<b>10,015</b>	<b>8,431</b>	<b>0.13</b>	<b>0.12</b>	<b>1.46</b>
USD	33,788	8,544	10,889	7,950	6,404	0.15	0.14	1.25
EUR	4,012	1,004	3,018	183	-193	0.07	0.08	0.28
GBP	4,326	529	1,908	932	957	0.10	0.05	0.67
AUD	973	420	304	137	113	0.12	0.21	1.34
NZD	88	27	26	20	15	0.19	0.23	1.67
CAD	2,380	383	1,047	685	266	0.17	0.11	1.87
CHF	1,402	286	840	38	237	0.08	0.07	0.50
NOK	383	98	156	42	88	0.09	0.09	0.69
SEK	689	224	340	92	33	0.07	0.10	0.37
JPY	4,300	1,201	2,653	-65	510	0.11	0.13	0.93
<b>Asia</b>	<b>1,503</b>	<b>2,395</b>	<b>907</b>	<b>-1,982</b>	<b>183</b>	<b>0.01</b>	<b>0.10</b>	<b>-0.05</b>
CNY	2,685	2,857	795	-816	-151	0.08	0.35	0.59
HKD	365	67	174	55	69	0.07	0.05	0.72
INR	-326	-71	-219	-109	73	-0.03	-0.02	-0.64
KRW	-1,663	-460	142	-1,264	-81	-0.11	-0.11	-1.13
MYR	94	31	33	22	8	0.06	0.08	0.36
SGD	250	1	165	46	38	0.07	0.00	0.84
TWD	-150	-120	-279	27	223	-0.01	-0.02	-0.32
THB	-39	-7	-10	4	-26	-0.02	-0.02	-0.30
IDR	250	84	90	47	28	0.12	0.15	0.70
PHP	37	13	16	6	1	0.05	0.07	0.25
<b>Americas</b>	<b>1,667</b>	<b>3</b>	<b>406</b>	<b>404</b>	<b>854</b>	<b>0.10</b>	<b>0.00</b>	<b>0.29</b>
ARS	-53	5	4	-54	-7	-0.15	0.05	-1.25
BRL	1,015	-56	136	372	563	0.11	-0.02	0.34
MXN	287	-10	126	14	158	0.07	-0.01	0.12
CLP	118	16	38	19	46	0.09	0.05	0.26
PEN	101	1	40	15	45	0.11	0.01	0.36
COP	198	46	63	39	50	0.21	0.19	1.01
<b>EMEA</b>	<b>822</b>	<b>146</b>	<b>299</b>	<b>124</b>	<b>254</b>	<b>0.08</b>	<b>0.06</b>	<b>0.24</b>
CZK	142	31	54	30	26	0.17	0.15	1.06
HUF	86	26	22	17	22	0.09	0.11	0.42
PLN	96	43	33	-4	25	0.05	0.09	-0.09
RON	130	27	50	26	26	0.19	0.16	1.11
RUB	3	1	1	0	1	0.08	0.08	0.37
TRY	98	15	19	19	45	0.10	0.06	0.43
ILS	268	62	115	38	53	0.14	0.13	0.98
ZAR	0	-59	5	-2	56	0.00	-0.08	-0.28
<b>Frontier</b>	<b>75</b>	<b>6</b>	<b>25</b>	<b>13</b>	<b>32</b>	<b>0.04</b>	<b>0.01</b>	<b>-0.02</b>
UAH	14	2	7	3	3	0.25	0.17	0.97
EGP	48	11	15	10	12	0.15	0.13	0.52
NGN	36	5	16	6	9	0.15	0.09	0.89
KWD	-1	0	-2	0	1	-0.01	0.01	-0.24
SAR	-22	-13	-11	-6	8	-0.02	-0.04	-0.35

Note: AUM is calculated at the domicile level.

1. FX flows are measured as cross-border equity and fixed income fund flows (based on the domicile of underlying funds), excluding hard currency EM-bond funds and FX-hedged products.

Source: EPFR, Goldman Sachs Global Investment Research

## The G10 FX Strategy Team

---

**Michael Cahill**  
+44(20)7552-8314  
michael.e.cahill@gs.com  
Goldman Sachs International

**Karen Reichgott Fishman**  
+1(212)855-6006  
karen.fishman@gs.com  
Goldman Sachs & Co. LLC

**Stuart Jenkins**  
+44(20)7051-4700  
stuart.jenkins@gs.com  
Goldman Sachs International

**Lexi Kanter**  
+1(212)855-9701  
alexandra.kanter@gs.com  
Goldman Sachs & Co. LLC

## Disclosure Appendix

### Reg AC

I, Lexi Kanter, 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.

**Contributing Authors:** Lexi Kanter Goldman Sachs & Co. LLC.

Unless otherwise stated, the individuals listed in the Contributing Authors disclosure of this report are analysts in Goldman Sachs' Global Investment Research division.

### Disclosures

#### Regulatory disclosures

##### Disclosures required by United States laws and regulations

See company-specific regulatory disclosures above for any of the following disclosures required as to companies referred to in this report: manager or co-manager in a pending transaction; 1% or other ownership; compensation for certain services; types of client relationships; managed/co-managed public offerings in prior periods; directorships; for equity securities, market making and/or specialist role. Goldman Sachs trades or may trade as a principal in debt securities (or in related derivatives) of issuers discussed in this report.

The following are additional required disclosures: **Ownership and material conflicts of interest:** Goldman Sachs policy prohibits its analysts, professionals reporting to analysts and members of their households from owning securities of any company in the analyst's area of coverage. **Analyst compensation:** Analysts are paid in part based on the profitability of Goldman Sachs, which includes investment banking revenues. **Analyst as officer or director:** Goldman Sachs policy generally prohibits its analysts, persons reporting to analysts or members of their households from serving as an officer, director or advisor of any company in the analyst's area of coverage. **Non-U.S. Analysts:** Non-U.S. analysts may not be associated persons of Goldman Sachs & Co. LLC and therefore may not be subject to FINRA Rule 2241 or FINRA Rule 2242 restrictions on communications with a subject company, public appearances and trading in securities covered by the analysts.

##### Additional disclosures required under the laws and regulations of jurisdictions other than the United States

The following disclosures are those required by the jurisdiction indicated, except to the extent already made above pursuant to United States laws and regulations. **Australia:** Goldman Sachs Australia Pty Ltd and its affiliates are not authorised deposit-taking institutions (as that term is defined in the Banking Act 1959 (Cth)) in Australia and do not provide banking services, nor carry on a banking business, in Australia. This research, and any access to it, is intended only for "wholesale clients" within the meaning of the Australian Corporations Act, unless otherwise agreed by Goldman Sachs. In producing research reports, members of Global Investment Research of Goldman Sachs Australia may attend site visits and other meetings hosted by the companies and other entities which are the subject of its research reports. In some instances the costs of such site visits or meetings may be met in part or in whole by the issuers concerned if Goldman Sachs Australia considers it is appropriate and reasonable in the specific circumstances relating to the site visit or meeting. To the extent that the contents of this document contains any financial product advice, it is general advice only and has been prepared by Goldman Sachs without taking into account a client's objectives, financial situation or needs. A client should, before acting on any such advice, consider the appropriateness of the advice having regard to the client's own objectives, financial situation and needs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests and a copy of Goldman Sachs' Australian Sell-Side Research Independence Policy Statement are available at: <https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html>. **Brazil:** Disclosure information in relation to CVM Resolution n. 20 is available at <https://www.gs.com/worldwide/brazil/area/gir/index.html>. Where applicable, the Brazil-registered analyst primarily responsible for the content of this research report, as defined in Article 20 of CVM Resolution n. 20, is the first author named at the beginning of this report, unless indicated otherwise at the end of the text. **Canada:** This information is being provided to you for information purposes only and is not, and under no circumstances should be construed as, an advertisement, offering or solicitation by Goldman Sachs & Co. LLC for purchasers of securities in Canada to trade in any Canadian security. Goldman Sachs & Co. LLC is not registered as a dealer in any jurisdiction in Canada under applicable Canadian securities laws and generally is not permitted to trade in Canadian securities and may be prohibited from selling certain securities and products in certain jurisdictions in Canada. If you wish to trade in any Canadian securities or other products in Canada please contact Goldman Sachs Canada Inc., an affiliate of The Goldman Sachs Group Inc., or another registered Canadian dealer. **Hong Kong:** Further information on the securities of covered companies referred to in this research may be obtained on request from Goldman Sachs (Asia) L.L.C. **India:** Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (India) Securities Private Limited, Research Analyst - SEBI Registration Number INH000001493, 10th Floor, Ascent-Worli, Sudam Kalu Ahire Marg, Worli, Mumbai-400 025, India, Corporate Identity Number U74140MH2006FTC160634, Phone +91 22 6616 9000, Fax +91 22 6616 9001. Goldman Sachs may beneficially own 1% or more of the securities (as such term is defined in clause 2 (h) the Indian Securities Contracts (Regulation) Act, 1956) of the subject company or companies referred to in this research report. Investment in securities market are subject to market risks. Read all the related documents carefully before investing. Registration granted by SEBI and certification from NISM in no way guarantee performance of the intermediary or provide any assurance of returns to investors. Goldman Sachs (India) Securities Private Limited compliance officer and investor grievance contact details can be found at: <https://www.goldmansachs.com/worldwide/india/documents/Grievance-Redressal-and-Escalation-Matrix.pdf>, and a copy of the annual audit compliance report can be found at this link: <https://publishing.gs.com/content/site/india-annual-compliance-report.html>. **Japan:** See below. **Korea:** This research, and any access to it, is intended only for "professional investors" within the meaning of the Financial Services and Capital Markets Act, unless otherwise agreed by Goldman Sachs. Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (Asia) L.L.C., Seoul Branch. **New Zealand:** Goldman Sachs New Zealand Limited and its affiliates are neither "registered banks" nor "deposit takers" (as defined in the Reserve Bank of New Zealand Act 1989) in New Zealand. This research, and any access to it, is intended for "wholesale clients" (as defined in the Financial Advisers Act 2008) unless otherwise agreed by Goldman Sachs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests is available at: <https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html>. **Russia:** Research reports distributed in the Russian Federation are not advertising as defined in the Russian legislation, but are information and analysis not having product promotion as their main purpose and do not provide appraisal within the meaning of the Russian legislation on appraisal activity. Research reports do not constitute a personalized investment recommendation as defined in Russian laws and regulations, are not addressed to a specific client, and are prepared without analyzing the financial circumstances, investment profiles or risk profiles of clients. Goldman Sachs assumes no responsibility for any investment decisions that may be taken by a client or any other person based on this research report. **Singapore:** Goldman Sachs (Singapore) Pte. (Company Number: 198602165W), which is regulated by the Monetary Authority of Singapore, accepts legal responsibility for this research, and should be contacted with respect to any matters arising from, or in connection with, this research. **Taiwan:** This material is for reference only and must not be reprinted without permission. Investors should carefully consider their own investment risk. Investment results are the responsibility of the individual investor. **United Kingdom:** Persons who would be categorized as retail clients in the United Kingdom, as such term is defined in the rules of the Financial Conduct Authority, should read this research in conjunction with prior Goldman Sachs research on the covered

companies referred to herein and should refer to the risk warnings that have been sent to them by Goldman Sachs International. A copy of these risks warnings, and a glossary of certain financial terms used in this report, are available from Goldman Sachs International on request.

**European Union and United Kingdom:** Disclosure information in relation to Article 6 (2) of the European Commission Delegated Regulation (EU) (2016/958) supplementing Regulation (EU) No 596/2014 of the European Parliament and of the Council (including as that Delegated Regulation is implemented into United Kingdom domestic law and regulation following the United Kingdom's departure from the European Union and the European Economic Area) with regard to regulatory technical standards for the technical arrangements for objective presentation of investment recommendations or other information recommending or suggesting an investment strategy and for disclosure of particular interests or indications of conflicts of interest is available at <https://www.gs.com/disclosures/europeanpolicy.html> which states the European Policy for Managing Conflicts of Interest in Connection with Investment Research.

**Japan:** Goldman Sachs Japan Co., Ltd. is a Financial Instrument Dealer registered with the Kanto Financial Bureau under registration number Kinsho 69, and a member of Japan Securities Dealers Association, Financial Futures Association of Japan Type II Financial Instruments Firms Association, and Investment Management Association of Japan. 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](mailto: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](mailto: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](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.

**© 2026 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.