

Oil Analyst

Firmer Prices for 2025; Keeping our 2026 Forecast for Lower Prices

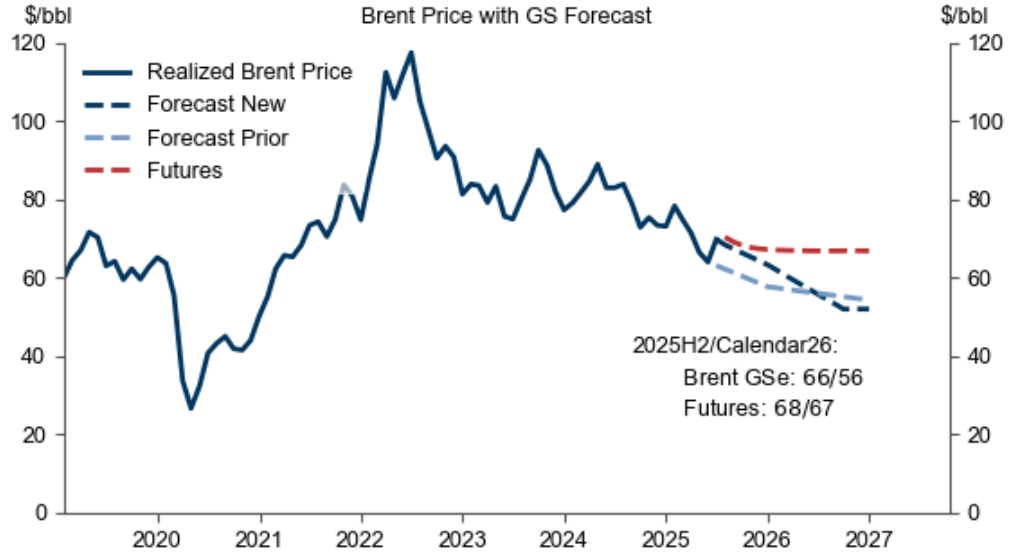
- The Brent oil price has risen over 10% to \$70 over the past three months as 1) market focus has shifted from recession to supply disruption risks, 2) OECD stocks remain low, and 3) perceived spare capacity is declining quickly, and concerns about Russia production constraints are rising. We are nudging up our Brent 2025H2 price forecast by \$5 to \$66, and keep our oversupply-driven forecast that Brent/WTI will decline to 2026 averages of \$56/52.
- **Nudging up our 2025 forecast.** First, while global inventories have risen in line with our expectations, and while we maintain our 1.0mb/d 2025 surplus forecast, OECD stocks—which matter more for prices in the short term than global stocks—remain lower than expected on large non-OECD and on water builds. Second, we are raising our fair value estimate of 3-year Brent prices by \$3 to \$68/bbl on a faster-than-expected reduction in spare capacity and a firmer global GDP outlook. We are also raising our 2025H2 WTI forecast to \$63 (vs. \$57 prior).
- **Keeping our forecast for lower prices in 2026.** Our unchanged 2026 price forecast (\$56/52 for Brent/WTI) reflects an offset between a boost from higher long-dated prices and a hit from a wider 1.7mb/d 2026 surplus (vs. 1.5mb/d prior) as we incorporate our recently updated assumption that OPEC8+ is likely to unwind all the 2.2mb/d of cuts with a final 0.55mb/d increase in September.
- **More balanced price risks.** The faster-than-expected normalization in spare capacity rebalances the risks around our price forecast. Lower Iran supply could boost Brent to a peak of \$90, and a higher share of inventory builds outside of the OECD (e.g. China strategic stockpiling or tanker redirections) could keep Brent in the \$60s in 2026. In contrast, a full unwind of the 1.65mb/d cuts OPEC announced in April 2023 would modestly reduce Brent below our baseline, while Brent could fall to around \$40 in 2026 in a recession scenario.
- **Higher prices later this decade.** Reduced spare capacity increases our confidence that prices will rebound after 2026. This constructive long-run view reflects a sharp drop in oil reserve life, declining capex, and a lack of new non-OPEC projects after 2026, and our view that demand will grow over the next decade.

Daan Struyven
+1(212)357-4172 |
daan.struyven@gs.com
Goldman Sachs & Co. LLC

Yulia Zhestkova Grigsby
+1(646)446-3905 | yulia.grigsby@gs.com
Goldman Sachs & Co. LLC

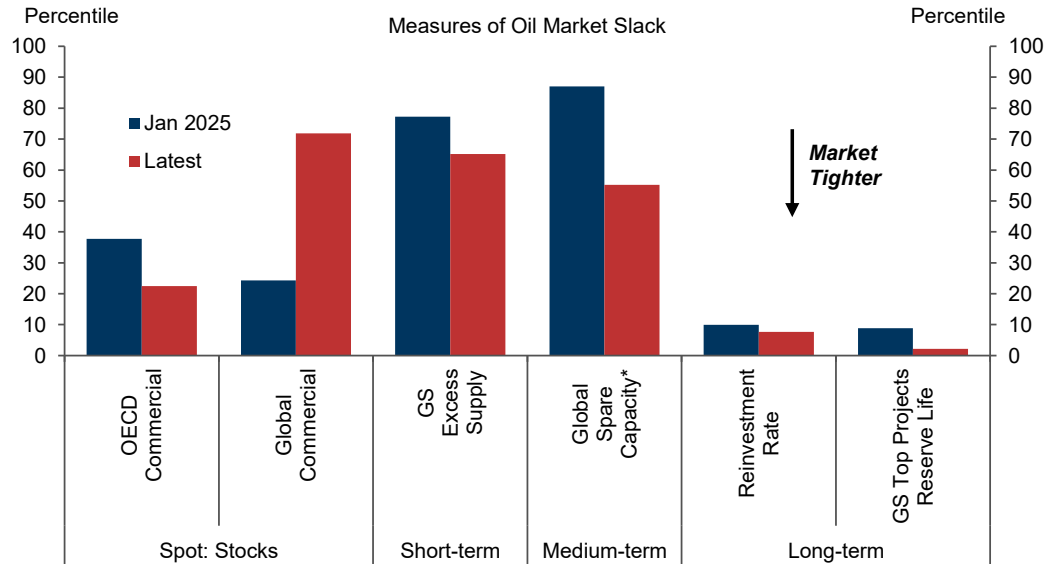
Ephraim Sutherland
+1(972)368-0395 |
ephraim.sutherland@gs.com
Goldman Sachs & Co. LLC

Exhibit 1: We Nudge Up Our 2025H2 Brent Forecast to \$66 But Still Expect Brent to Decline to \$56 in 2026



Source: ICE, Goldman Sachs Global Investment Research

Exhibit 2: The Normalization in Spare Capacity Increases Our Confidence That Prices Will Rebound After 2026 Given Low Oil Reserve Life and Low Capex



*We look at the percentile of global spare capacity (in % of global supply) for September 2025, assuming a full unwind of the 2.2mb/d OPEC8+ production cuts by then. We divide OECD commercial stocks by their monthly historical average. All stock, excess supply and spare capacity observations are monthly. We look at OECD commercial stocks and global spare capacity from 2000, GS top projects reserve life from 2005, GS excess supply and global commercial stocks from 2017.

Source: Goldman Sachs Global Investment Research

For the exclusive use of MAFALDA.LAGALA@COMMUNITY.IT

Firmer Prices for 2025; Keeping Our 2026 Forecast for Lower Prices

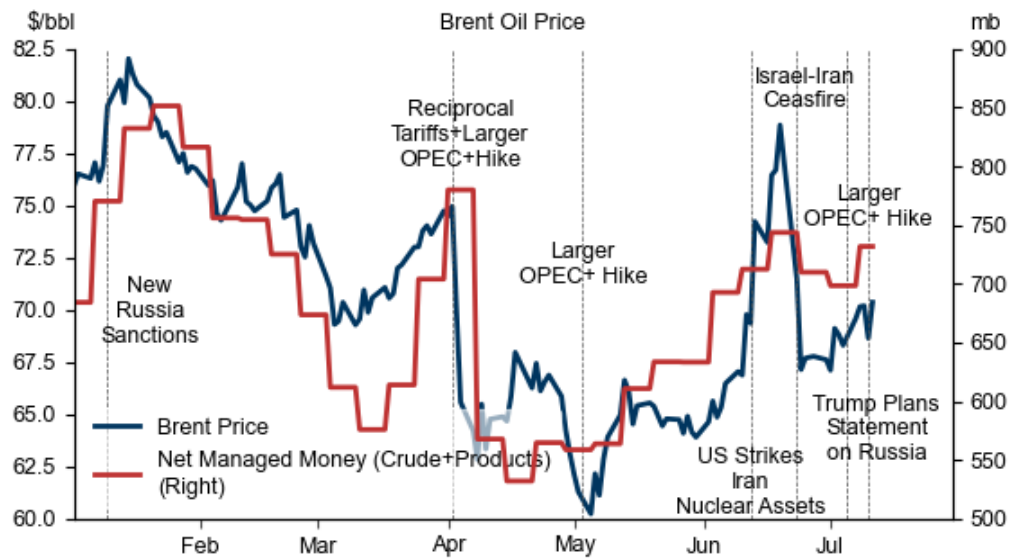
Since the early April announcement of reciprocal tariffs, the Brent oil price has risen 10% to \$70 following three developments.

First, speculative positioning—which is closely linked with prices ([Exhibit 3](#))—has recovered as market focus has shifted from recession risk to two-sided risks, including potential supply disruptions from the Middle East or Russia with President Trump threatening tariffs on Russia of 100%.

Second, while global inventories have risen in line with our expectations by 1.0mb/d year-to-date, OECD stocks remain low ([Exhibit 4](#), left panel), especially in the US and for diesel. Price proxies for physical tightness remain firm, including diesel margins ([Exhibit 4](#), right panel) and the premium of physical crude prices vs. futures prices.

Third, perceived spare capacity is declining quickly following faster-than-expected increases in OPEC8+ production quota and growing concerns about whether Russia production may be constrained.¹

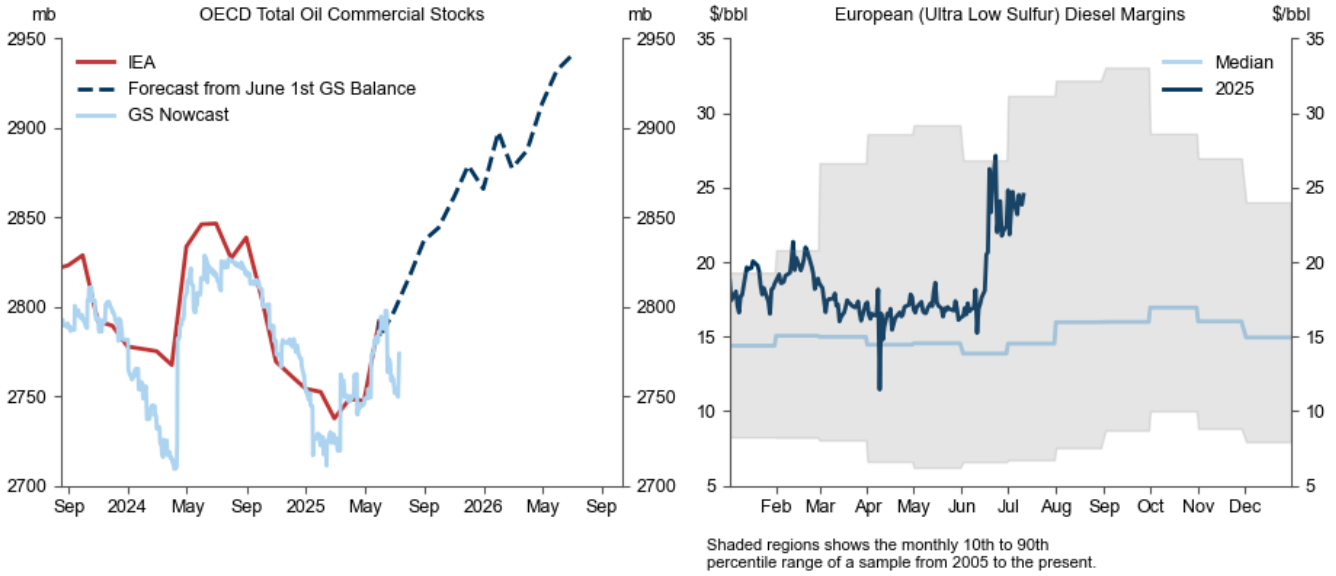
Exhibit 3: Speculative Positioning Has Recovered as Risks to Oil Prices Have Become More Balanced Than in April When Recession Risk Was in Focus



Source: ICE, CFTC, Refinitiv Eikon, Goldman Sachs Global Investment Research

¹ Our Russia total liquids supply nowcast has averaged 10.37mb/d in June 2025, down 0.23mb/d from 2024Q4 despite a 0.18mb/d increase in required crude production (without subtracting compensation cuts).

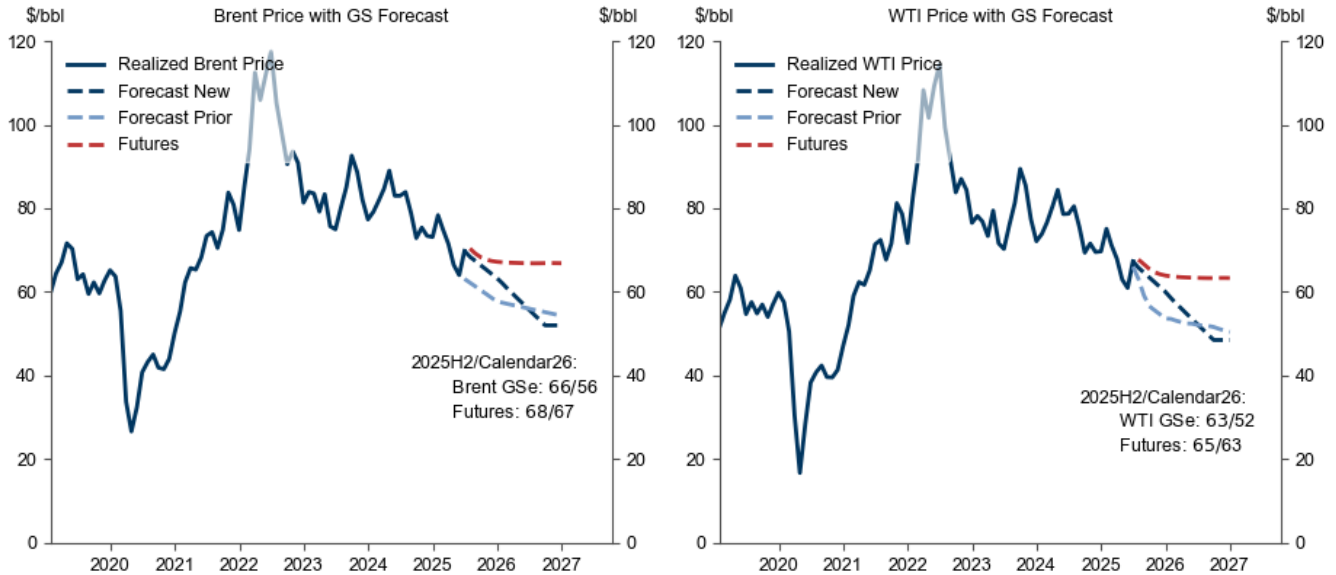
Exhibit 4: OECD Stocks Remain Lower than Expected; European Diesel Refining Margins Remain Strong



Source: IEA, Kpler, DOE, Euroilstocks, ARA PJK, PAJ, Haver, Goldman Sachs Global Investment Research

We are raising our Brent and WTI 2025H2 price forecast by around \$5 to \$66 and \$63, respectively. We keep our oversupply-driven forecast that Brent/WTI will decline to 2026 averages of \$56/52 (Exhibit 5).

Exhibit 5: We Nudge Up Our 2025H2 Brent/WTI Forecast to \$66/63 But Still Expect Brent/WTI to Decline to \$56/52 in 2026



Source: ICE, NYMEX, Goldman Sachs Global Investment Research

For the exclusive use of MAFALDA.LAGALA@COMMUNITY.IT

Nudging Up Our 2025 Price Forecast

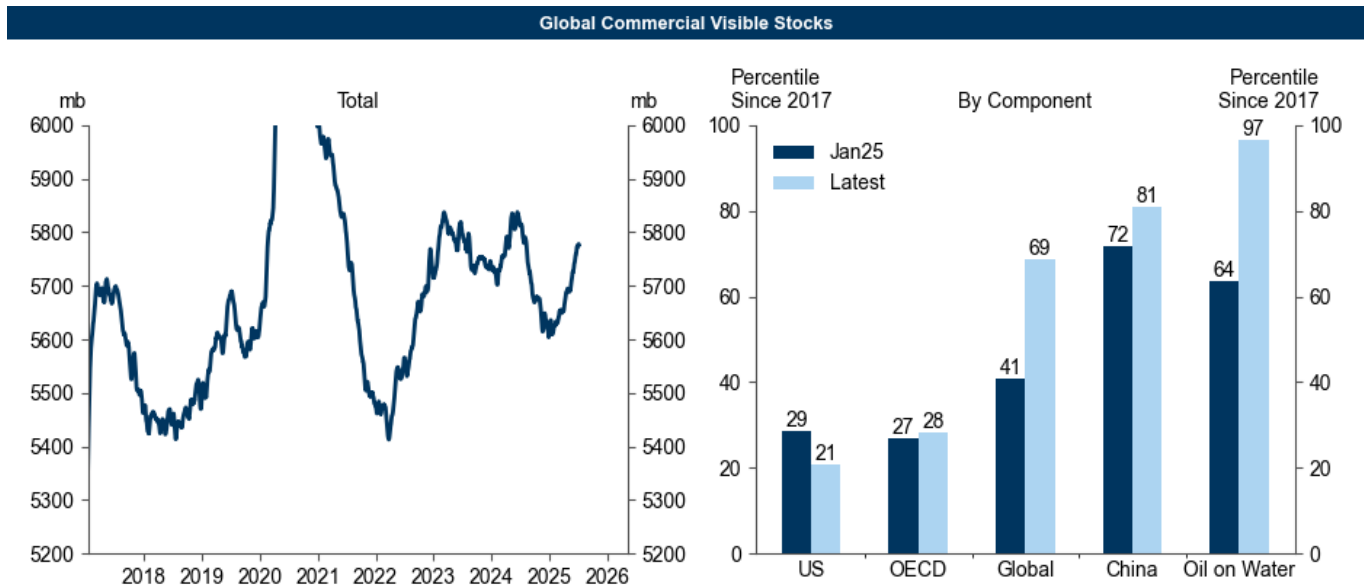
We are raising our 2025H2 Brent price forecast by \$5 on lower-than-expected OECD stocks (worth +\$2) and a higher fair value for long-dated prices (+\$3).

#1: Lower-Than-Expected OECD Stocks

While global commercial visible inventories have risen by 1.0mb/d year-to-date, and while we maintain our 1.0mb/d 2025 surplus (with global supply rising 3.3 times more quickly than global demand in 2025), OECD stocks remain lower than expected.

Mechanically, the 30mb miss in our OECD stocks nowcast is the flipside of the fact that a greater-than-expected share of the global inventory builds has shown up as outside the OECD and especially on water ([Exhibit 6](#)). In turn, higher oil on water builds likely reflect tensions in the Middle East—which had led to some shipping idling and ongoing shipping redirection away from the Red Sea—and the ramp-up in OPEC8+ production. The 30mb miss in our OECD stocks nowcast implies a \$2 upgrade to our near-term price forecast.² [Exhibit 7](#) confirms that stocks in the OECD and especially the US matter more for prices in the short term than global visible stocks do.³

Exhibit 6: US and OECD Landed Commercial Visible Stocks Remain Low While Global Inventories, and Especially Oil on Water, Have Built Substantially Year-to-Date



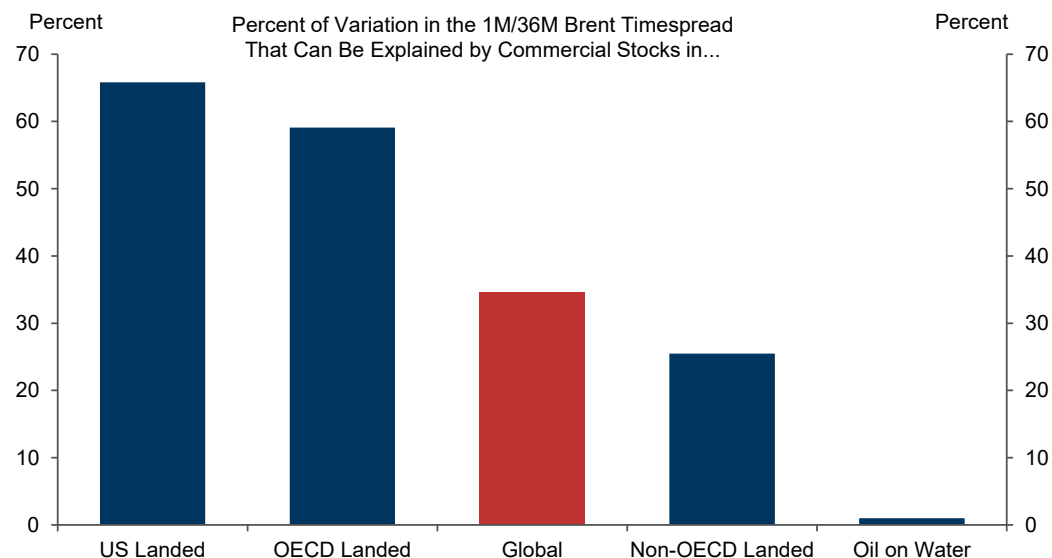
Global includes other EM commercial visible stocks. Percentiles are calculated over a 14-day moving average from 2017 through the most recent Department of Energy (DOE) reporting period. These percentiles measure how stocks deviate from historical monthly averages where monthly averages exclude observations from 2020

Source: Kpler, DOE, Euroilstocks, ARA PJK, PAJ, Singapore Enterprise, Fujairah, OilChem, Goldman Sachs Global Investment Research

² Every 100mb miss in OECD stocks boost our estimate of the fair value of timespreads by around 11% or \$7.

³ This likely reflects that OECD and especially US stocks are better measured, more salient, and closer to pricing hubs such as Cushing.

Exhibit 7: Oil Inventories in the OECD and Especially the US Matter More For Oil Prices Than Stocks Elsewhere



We look at a monthly sample from January 2017 till recent excluding Feb 2020 - Feb 2021. We divide stocks by their monthly historical average and run a contemporaneous regression of the Brent 1M/36M timespread on the normalized stock measure with an intercept. The chart above reports R-squared of each regression.

Source: Goldman Sachs Global Investment Research

#2: Higher Long-Dated Prices

We are raising our fair value estimate of 3-year Brent prices by \$3 to \$68/bbl given faster-than-expected depletion in spare capacity and a firmer global GDP outlook.

The 0.6mb/d downgrade since mid-May in our 2026 forecast of spare capacity following the upgrade in our OPEC8+ production raises our 3-year Brent fair value by \$2.⁴ The 0.2/0.3% upgrades to global GDP/oil demand in 2026 since mid-May raise our 3 year-Brent fair value by \$1.⁵

⁴ We estimate a \$3-4 increase in Brent 3-year prices for every 1% decline in spare capacity as a share of global production.

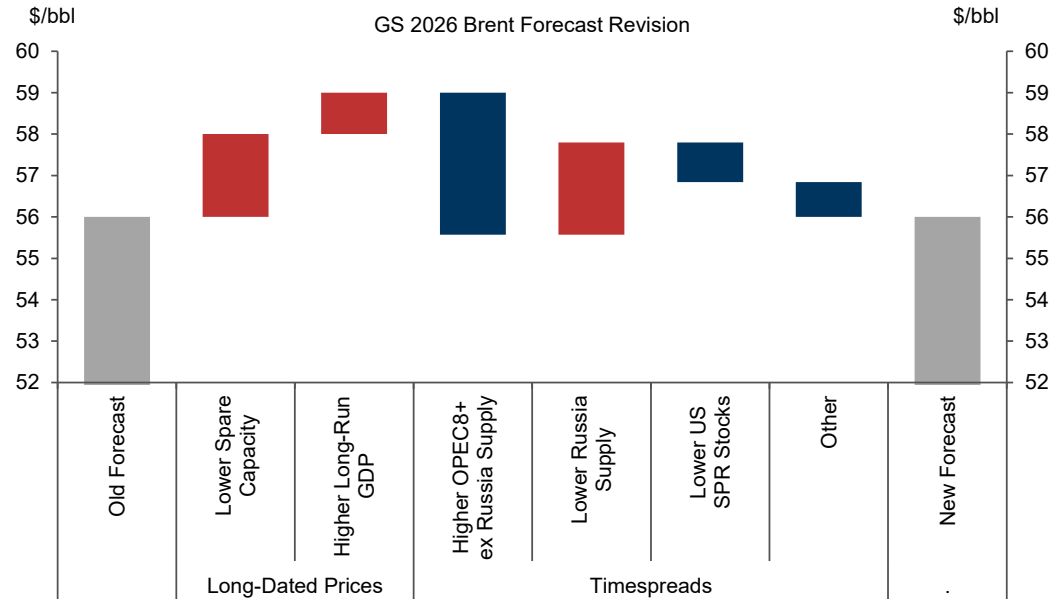
⁵ Based on our estimated 7% net elasticity of global oil supply and demand after 3 years, we estimate a \$3-4 boost to long-dated oil prices for every 1% upgrade to long-run oil demand.

For the exclusive use of MAFALDA.LAGALA@COMMUNITY.IT

Keeping Our 2026 Forecast for Lower Prices

Our unchanged 2026 price forecast (\$56/52 for Brent/WTI) reflects an offset between higher long-dated prices and lower timespreads, i.e. spot prices minus long-dates prices ([Exhibit 8](#)).

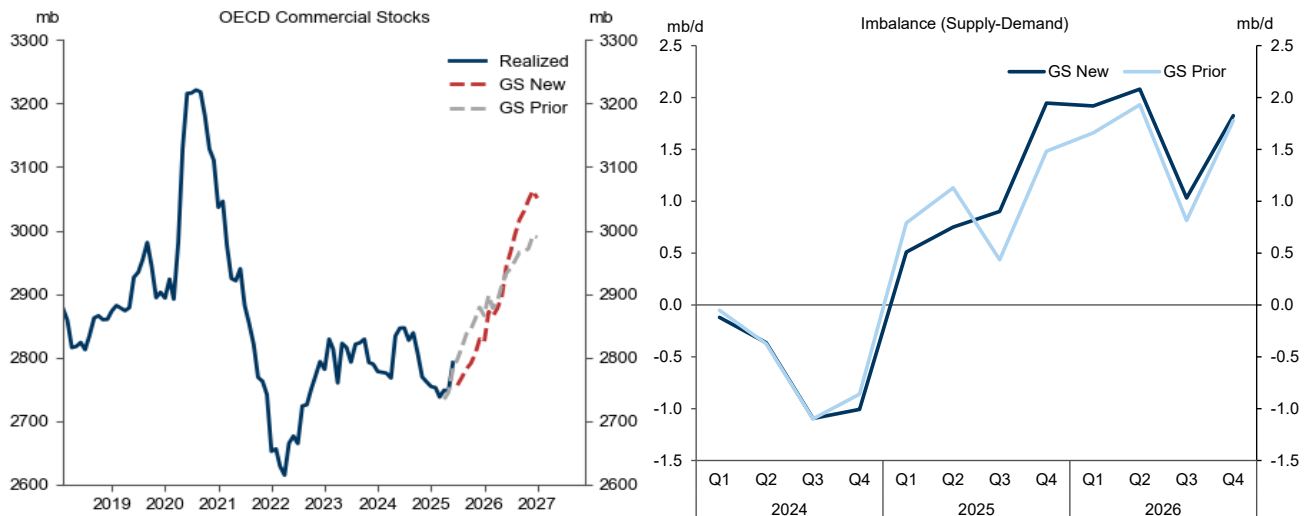
Exhibit 8: Our Unchanged 2026 Price Forecast Reflects an Offset Between Higher Long-Dated Prices and Lower Timespreads



Source: Goldman Sachs Global Investment Research

We downgrade our timespreads forecast as we raise our end-2026 forecast for OECD commercial stocks ([Exhibit 9](#), left panel) despite their lower starting point on 1) a wider surplus ([Exhibit 9](#), right panel) and 2) a normalization in the OECD commercial share in global inventory builds.

Exhibit 9: We Nudge Up Our End-2026 Forecast for OECD Commercial Stocks on a Wider Expected Surplus



Source: Goldman Sachs Global Investment Research

For the exclusive use of MAFALDA.LAGALA@COMMUNITY.IT

#1: A Wider Surplus

We now expect a wider surplus from 2025Q4 (1.9mb/d vs. 1.5mb/d prior) and in 2026 (1.7mb/d vs. 1.5mb/d prior).

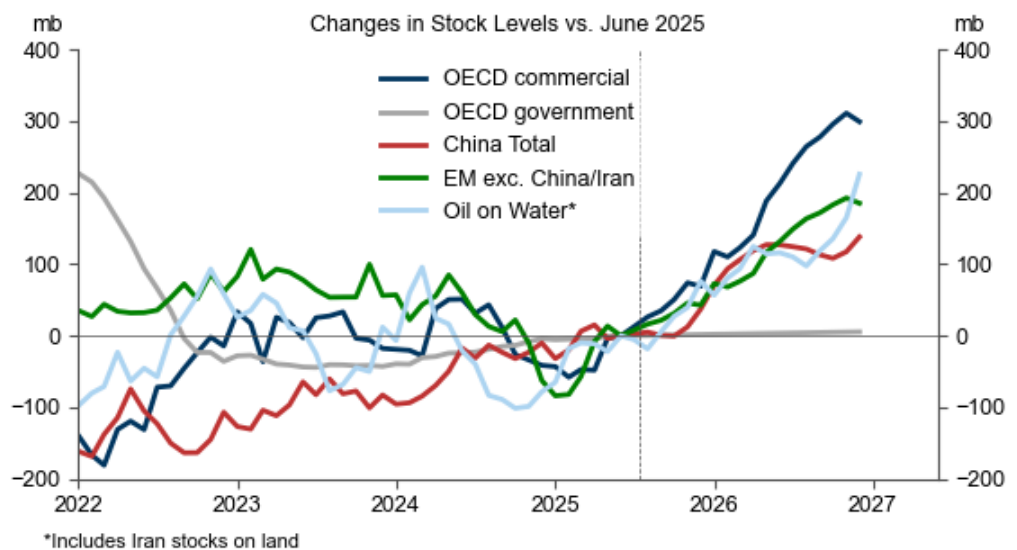
We incorporate our recently updated assumption that OPEC8+ is likely to unwind all the 2.2mb/d of cuts with a final 0.55mb/d increase in September. We expect global supply to be 2.5mb/d higher in 2025Q4 than in 2025Q2, with big increases from OPEC (1.2mb/d) and non-OPEC ex US (1.4mb/d).⁶

For the 2026 supply level, the largest revisions are in Saudi Arabia (+280kb/d to 9.98mb/d; higher quota assumption), Brazil (+70kb/d; solid execution), the UAE (+60kb/d; higher quota assumption), US liquids (-90kb/d; rig count miss), and Russia (-270kb/d; supply nowcast miss and currency concerns). The demand revisions are small and mostly positive, with a ~50kbd upgrade to China demand in 2025-2026 following the beat in our nowcast. We now expect global oil demand to grow 0.7mb/d in 2025 (vs. 0.6mb/d prior) and 0.9mb/d in 2026 (vs.1.0mb/d prior).

#2: Normalization in the OECD Commercial Share in Global Builds

We expect the share of OECD commercial stocks in global inventory builds to pick up to 1/3 in 2025H2-2026 (Exhibit 10).⁷ This reflects our downgrade to US SPR refilling and our assumption that oil on water builds only moderately.

Exhibit 10: We Expect the Share of OECD Commercial Stocks in Global Inventory Builds to Recover



Source: Goldman Sachs Global Investment Research

We are downgrading our assumption for the pace of OECD SPR refilling in 2025H2-2026 to 10kb/d (vs. 200kb/d prior) as the US Big Beautiful Bill sharply reduced planned

⁶ The 2025Q4-Q2 increases in non-OPEC supply are led by Canada (0.67mb/d; seasonality and recovery from wildfires), Brazil (0.18mb/d), Guyana (0.17mb/d), and Kazakhstan (0.17mb/d).

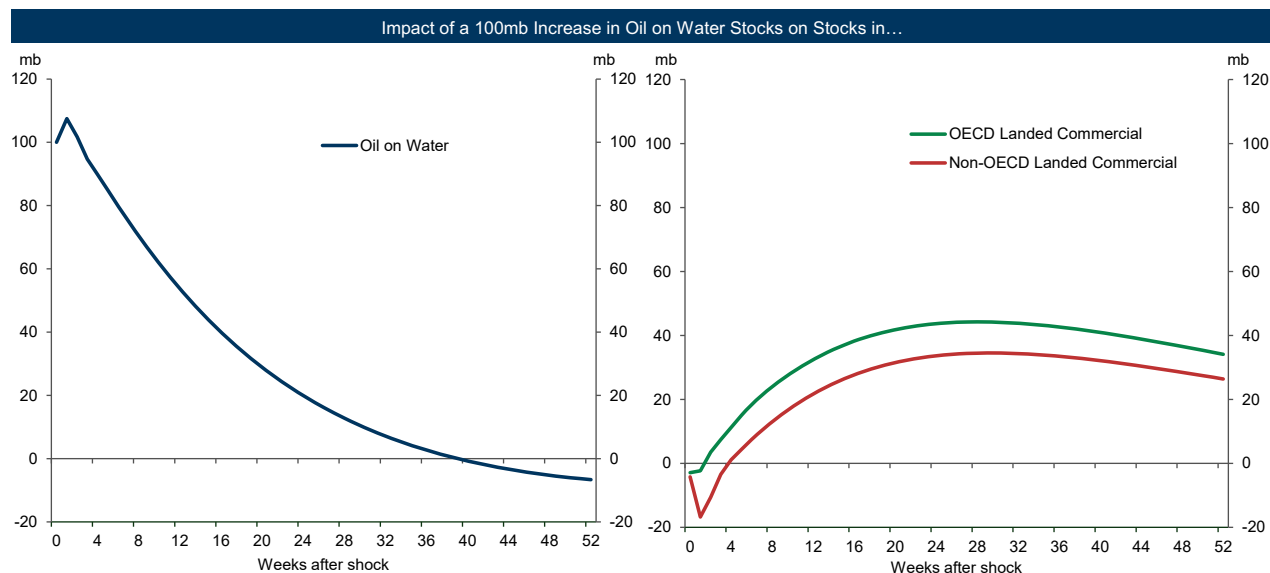
⁷ We expect OECD commercial and global inventories to rise by 295mb and 885mb, respectively, in 2025H2-2026. This 1/3 OECD commercial share remains below our historical 40-45% rule of thumb.

For the exclusive use of MAFALDA.LAGALA@COMMUNITY.IT

spending on SPR repurchases.⁸

We assume that oil on water builds only moderately because the current level of oil on water is high ([Exhibit 6](#)) and because increases in oil on water tend to normalize and be followed by increases in inventories on land, including in the OECD, within 3 quarters ([Exhibit 11](#)).

Exhibit 11: Increases in Oil on Water Tend to Normalize and Be Followed by Increases in Oil on Land Within 3 Quarters



We run a VAR analysis of weekly oil on water, OECD landed commercial oil stocks, and non-OECD landed commercial oil stocks, with the corresponding order of the Cholesky decomposition for impulse responses. The results are robust to changing the decomposition order to oil on water, non-OECD landed commercial, and OECD landed commercial stocks and to aggregating the data to the monthly frequency. We include all observations from Jan 2017 till recent.

Source: Goldman Sachs Global Investment Research

More Balanced Price Risks in 2025-2026

The faster-than-expected normalization in spare capacity rebalances the risks around price forecast. [Exhibit 12](#) shows the estimated path for Brent oil prices under our baseline (dashed black line), under two upside and two downside scenarios.

- In a scenario where Iran production is down 1.75mb/d during 6 months before recovering by 50% linearly over an additional 12 months, and where OPEC8+ producers make up a third of the peak Iranian shortfall, we estimate that Brent could reach a peak around \$90 and average \$86/69 in Bal25/Cal26 (red line).
- In a scenario where the OECD share of inventory builds in 2025H2-2026 remains low at 20% on faster China strategic stockpiling and tanker redirections, we estimate that Brent would average \$73/61 in Bal25/Cal26 (orange line).⁹
- Assuming our GDP baseline and a full unwind of the 1.65mb/d cuts OPEC+ announced in April 2023, which would be additive to the ongoing 2.2mb/d OPEC+

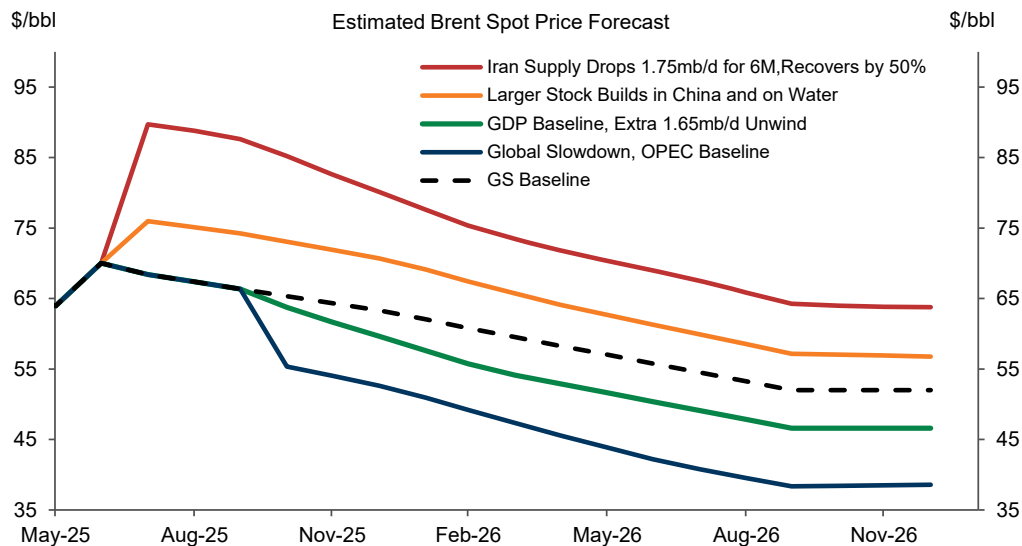
⁸ Planned spending on SPR repurchases was reduced to \$171 million from \$1.3 billion in an earlier iteration (with another \$218 million earmarked for maintenance).

⁹ We assume that oil on water stocks continue to build at their year-to-date pace of 450kb/d (150kb/d higher than our average 2025H2-2026 builds on water). We also assume that China landed stocks build 500kb/d faster from July 2025 till March 2026 and 250kb/d faster afterwards.

cut unwind, we estimate that Brent would average \$65/50 in Bal25/Cal26 (green line).¹⁰

- In a global GDP slowdown scenario and keeping our OPEC baseline unchanged, we estimate that Brent would decline to \$61/43 in Bal25/Cal26 (blue line).¹¹

Exhibit 12: We See Risks to Our Oil Price Forecast as Balanced for 2026 But as Skewed to the Upside for 2025



We assume 95th percentile of risk premium in case of the Iran supply disruption scenario (red line).

Source: Goldman Sachs Global Investment Research

Higher Prices Later This Decade

Exhibit 13 updates our oil market slack framework—which defines the level of inventories vs. demand as the level of slack—and highlights four key trends year-to-date:

- **Spot:** The spot global oil market has eased somewhat year-to-date globally with a rise in global inventories, but the market-sensitive spot OECD and US inventory levels remain low (i.e. tight).
- **Short-term:** As the market remains in excess supply, the spot oil market is likely to ease further in 2025H2-2026 with rises in inventories.
- **Medium-term:** Spare capacity has normalized much quicker than expected following rapid OPEC+ supply increases and concerns about production constraints in Russia.
- **Long-term:** The supply-drivers of future slack have tightened even further with drops in the oil reserve life and oil capex to very low levels, partially following the decline in prices year-to-date and ongoing US investor discipline.

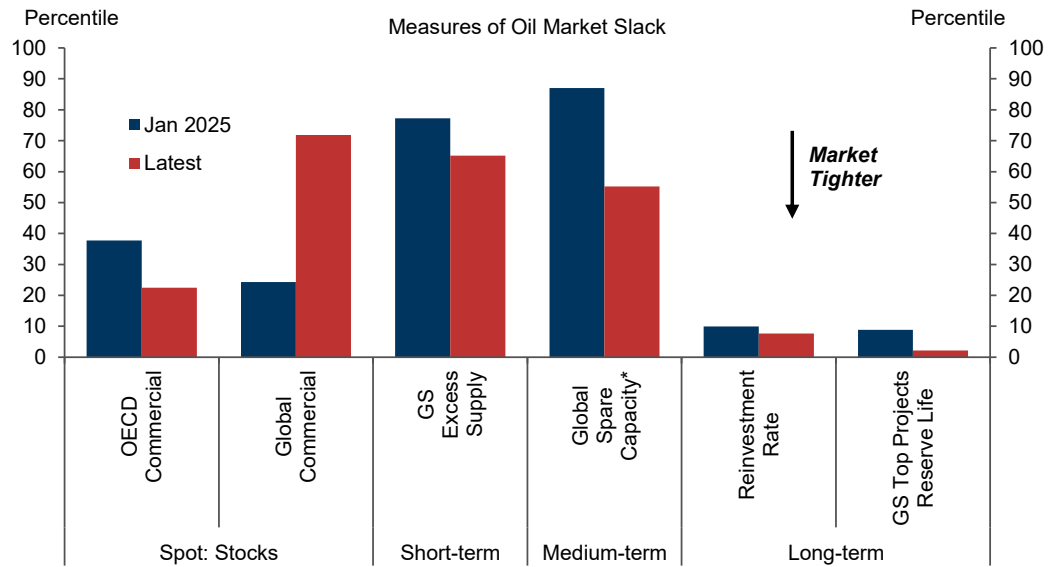
Taken together, the faster-than-expected normalization in spare capacity increases our

¹⁰ This scenario assumes that production increases are entirely concentrated in Saudi Arabia, the UAE, and Kuwait and sum to the full unwind of their respective cuts, i.e. 0.77mb/d.

¹¹ We assume a US-driven global recession, where US quarterly annualized real GDP growth decreases by 3pp for 4 quarters, with half of this hit translating into global ex-US real GDP growth.

confidence that prices will rebound after 2026. This constructive long-run view, supported by our equity analysts' Top Projects, reflects a sharp drop in oil reserve life, declining capex, and a lack of new non-OPEC projects after 2026, and our view that global oil demand will grow over the next decade.

Exhibit 13: The Normalization in Spare Capacity Increases Our Confidence That Prices Will Rebound After 2026 Given Low Oil Reserve Life and Low Capex



*We look at the percentile of global spare capacity (in % of global supply) for September, assuming a full unwind of the 2.2mb/d OPEC8+ production cuts by then. We divide OECD commercial stocks by their monthly historical average. All observations are monthly. We look at OECD commercial stocks and global spare capacity from 2000, GS top projects reserve life from 2005, GS excess supply and global commercial stocks from 2017.

Source: Goldman Sachs Global Investment Research

Recommendation

We continue to think that oil prices are likely to decline substantially by 2026. However, we note that, while the rally has provided a more attractive entry point to express cautious 2026 price views, our risk analysis suggests that there remain important upside risks to our price forecast in 2025H2. We thus continue to focus our trade recommendations on 2026 as opposed to 2025H2, and still recommend buying oil puts (or put spreads) and selling calls as a hedge against 2026 price downside to oil producers. We reiterate our recommendation to sell a Jun26 \$75/bbl Brent call to fund buying a Jun26 \$55/45 Brent put spread.

For the exclusive use of MAFALDA.LAGALA@COMMUNITY.IT

Appendix

Exhibit 14: We Forecast Surpluses of 1.0mb/d and 1.7mb/d (vs. 1.5mb/d Prior) in 2025/2026

GS Oil Supply and Demand Outlook (mb/d)	2024		2025				2026				Quarterly Levels 2025			
	Level	YoY	Level	YoY	Q4-Q4	Δ	Level	YoY	Q4-Q4	Δ	Q1	Q2	Q3	Q4
World Supply	102.7	0.4	105.1	2.4	3.6	0.2	106.8	1.6	0.3	0.2	103.2	104.4	106.0	106.9
Non-OPEC ex. Russia Supply	59.6	1.1	60.8	1.2	1.6	0.1	61.6	0.8	0.3	0.1	59.8	60.5	61.1	61.6
Total US	21.4	0.8	21.8	0.4	-0.1	0.1	21.8	0.0	0.1	-0.1	21.5	22.0	21.8	21.9
Canada	6.1	0.3	6.1	0.0	0.0	-0.1	6.4	0.3	0.2	0.0	6.3	5.7	6.1	6.4
Non-OPEC Latam	6.5	0.2	6.9	0.4	0.7	0.1	7.3	0.4	0.3	0.0	6.6	6.8	7.0	7.2
Russia	10.6	-0.3	10.5	-0.1	-0.1	-0.2	10.5	0.0	0.0	-0.3	10.5	10.5	10.5	10.5
OPEC Supply	32.5	-0.4	33.9	1.3	2.1	0.3	34.7	0.8	0.0	0.4	32.9	33.5	34.4	34.7
Saudi crude	9.0	-0.6	9.5	0.5	1.0	0.1	10.0	0.5	0.0	0.3	9.0	9.2	9.8	10.0
OPEC liq. ex. Saudi crude	23.6	0.2	24.4	0.8	1.1	0.2	24.7	0.3	0.0	0.1	24.0	24.3	24.6	24.8
World Demand	103.4	0.6	104.1	0.7	0.7	0.2	105.0	0.9	0.4	0.1	102.7	103.7	105.0	105.0
OECD Demand	45.7	0.0	45.8	0.1	0.0	0.1	45.7	-0.1	-0.3	0.1	45.2	45.3	46.4	46.1
US	20.4	0.0	20.6	0.2	0.0	0.0	20.6	0.0	0.0	0.0	20.4	20.5	20.8	20.7
OECD Europe	13.5	0.1	13.6	0.0	0.1	0.1	13.5	-0.1	-0.2	0.0	13.0	13.6	14.1	13.6
Non-OECD Demand	57.7	0.7	58.3	0.6	0.6	0.1	59.3	1.0	0.7	0.0	57.5	58.3	58.7	58.9
China	16.7	-0.1	16.7	0.0	0.1	0.1	16.7	0.0	-0.2	0.0	16.6	16.8	16.7	16.7
India	5.6	0.2	5.8	0.1	0.2	0.0	6.1	0.3	0.3	0.0	5.8	5.8	5.5	5.9
Other non-OECD Asia	9.3	0.3	9.5	0.2	0.2	0.0	9.8	0.3	0.3	0.0	9.4	9.5	9.5	9.6
Imbalance (=Supply-Demand)	-0.6	-0.2	1.0	1.7	3.0	0.1	1.7	0.7	-0.1	0.2	0.5	0.7	0.9	1.9
Change in OECD Comm. Stocks	-0.1	-	0.2	-	-	-	0.6	-	-	-	-0.1	0.1	0.4	0.4

Delta shows revisions to our June 1st balance

Source: Goldman Sachs Global Investment Research

Exhibit 15: We Nudge Up Our 2025H2 Brent/WTI Forecast to \$66/63 But Still Expect Brent/WTI to Decline to \$56/52 in 2026

	GS Forecasts (\$/bbl)						Brent Futures	WTI Futures
	Brent Prior	Brent New	Brent 1/36M Timespread New	Brent 36M New	WTI New	WTI Prior		
2025	66	68	1	67	65	62	70	67
Bal25	61	66	-2	68	63	57	68	65
2026	56	56	-12	68	52	52	67	63
3Q25	63	67	0	68	65	60	69	67
4Q25	59	64	-4	68	61	55	67	64
1Q26	57	61	-7	68	57	53	67	64
2Q26	56	57	-11	68	54	52	67	63
3Q26	55	53	-15	68	50	52	67	63
4Q26	55	52	-16	68	48	51	67	63
Jul-25	67	68	1	67	66	63	70	68
Aug-25	63	67	0	68	65	59	69	67
Sep-25	60	66	-1	68	63	57	68	66
Oct-25	60	65	-3	68	62	56	68	65
Nov-25	59	64	-4	68	61	55	67	64
Dec-25	58	63	-5	68	60	54	67	64

Source: ICE, NYMEX, Goldman Sachs Global Investment Research

Disclosure Appendix

Reg AC

We, Daan Struyven, Yulia Zhestkova Grigsby and Ephraim Sutherland, hereby certify that all of the views expressed in this report accurately reflect our personal views, which have not been influenced by considerations of the firm's business or client relationships.

Unless otherwise stated, the individuals listed on the cover page of this report are analysts in Goldman Sachs' Global Investment Research division.

Disclosures

Regulatory disclosures

Disclosures required by United States laws and regulations

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

The following are additional required disclosures: **Ownership and material conflicts of interest:** Goldman Sachs policy prohibits its analysts, professionals reporting to analysts and members of their households from owning securities of any company in the analyst's area of coverage.

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

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

The following disclosures are those required by the jurisdiction indicated, except to the extent already made above pursuant to United States laws and regulations. **Australia:** Goldman Sachs Australia Pty Ltd and its affiliates are not authorised deposit-taking institutions (as that term is defined in the Banking Act 1959 (Cth)) in Australia and do not provide banking services, nor carry on a banking business, in Australia. This research, and any access to it, is intended only for "wholesale clients" within the meaning of the Australian Corporations Act, unless otherwise agreed by Goldman Sachs. In producing research reports, members of Global Investment Research of Goldman Sachs Australia may attend site visits and other meetings hosted by the companies and other entities which are the subject of its research reports. In some instances the costs of such site visits or meetings may be met in part or in whole by the issuers concerned if Goldman Sachs Australia considers it is appropriate and reasonable in the specific circumstances relating to the site visit or meeting. To the extent that the contents of this document contains any financial product advice, it is general advice only and has been prepared by Goldman Sachs without taking into account a client's objectives, financial situation or needs. A client should, before acting on any such advice, consider the appropriateness of the advice having regard to the client's own objectives, financial situation and needs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests and a copy of Goldman Sachs' Australian Sell-Side Research Independence Policy Statement are available at: <https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html>. **Brazil:** Disclosure information in relation to CVM Resolution n. 20 is available at <https://www.gs.com/worldwide/brazil/area/gir/index.html>. Where applicable, the Brazil-registered analyst primarily responsible for the content of this research report, as defined in Article 20 of CVM Resolution n. 20, is the first author named at the beginning of this report, unless indicated otherwise at the end of the text. **Canada:** This information is being provided to you for information purposes only and is not, and under no circumstances should be construed as, an advertisement, offering or solicitation by Goldman Sachs & Co. LLC for purchasers of securities in Canada to trade in any Canadian security. Goldman Sachs & Co. LLC is not registered as a dealer in any jurisdiction in Canada under applicable Canadian securities laws and generally is not permitted to trade in Canadian securities and may be prohibited from selling certain securities and products in certain jurisdictions in Canada. If you wish to trade in any Canadian securities or other products in Canada please contact Goldman Sachs Canada Inc., an affiliate of The Goldman Sachs Group Inc., or another registered Canadian dealer. **Hong Kong:** Further information on the securities of covered companies referred to in this research may be obtained on request from Goldman Sachs (Asia) L.L.C. **India:** Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (India) Securities Private Limited, Research Analyst - SEBI Registration Number INH000001493, 951-A, Rational House, Appasaheb Marathe Marg, Prabhadevi, Mumbai 400 025, India, Corporate Identity Number U74140MH2006FTC160634, Phone +91 22 6616 9000, Fax +91 22 6616 9001. Goldman Sachs may beneficially own 1% or more of the securities (as such term is defined in clause 2 (h) the Indian Securities Contracts (Regulation) Act, 1956) of the subject company or companies referred to in this research report. Investment in securities market are subject to market risks. Read all the related documents carefully before investing. Registration granted by SEBI and certification from NISM in no way guarantee performance of the intermediary or provide any assurance of returns to investors. Goldman Sachs (India) Securities Private Limited compliance officer and investor grievance contact details can be found at this link: <https://publishing.gs.com/disclosures/hedge.html#/general/equity>. **Japan:** See below. **Korea:** This research, and any access to it, is intended only for "professional investors" within the meaning of the Financial Services and Capital Markets Act, unless otherwise agreed by Goldman Sachs. Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (Asia) L.L.C., Seoul Branch. **New Zealand:** Goldman Sachs New Zealand Limited and its affiliates are neither "registered banks" nor "deposit takers" (as defined in the Reserve Bank of New Zealand Act 1989) in New Zealand. This research, and any access to it, is intended for "wholesale clients" (as defined in the Financial Advisers Act 2008) unless otherwise agreed by Goldman Sachs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests is available at: <https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html>. **Russia:** Research reports distributed in the Russian Federation are not advertising as defined in the Russian legislation, but are information and analysis not having product promotion as their main purpose and do not provide appraisal within the meaning of the Russian legislation on appraisal activity. Research reports do not constitute a personalized investment recommendation as defined in Russian laws and regulations, are not addressed to a specific client, and are prepared without analyzing the financial circumstances, investment profiles or risk profiles of clients. Goldman Sachs assumes no responsibility for any investment decisions that may be taken by a client or any other person based on this research report. **Singapore:** Goldman Sachs (Singapore) Pte. (Company Number: 198602165W), which is regulated by the Monetary Authority of Singapore, accepts legal responsibility for this research, and should be contacted with respect to any matters arising from, or in connection with, this research. **Taiwan:** This material is for reference only and must not be reprinted without permission. Investors should carefully consider their own investment risk. Investment results are the responsibility of the individual investor. **United Kingdom:** Persons who would be categorized as retail clients in the United Kingdom, as such term is defined in the rules of the Financial Conduct Authority, should read this research in conjunction with prior Goldman Sachs research on the covered companies referred to herein and should refer to the risk warnings that have been sent to them by Goldman Sachs International. A copy of these risks warnings, and a glossary of certain financial terms used in this report, are available from Goldman Sachs International on request.

European Union and United Kingdom: Disclosure information in relation to Article 6 (2) of the European Commission Delegated Regulation (EU) (2016/958) supplementing Regulation (EU) No 596/2014 of the European Parliament and of the Council (including as that Delegated Regulation is

implemented into United Kingdom domestic law and regulation following the United Kingdom's departure from the European Union and the European Economic Area) with regard to regulatory technical standards for the technical arrangements for objective presentation of investment recommendations or other information recommending or suggesting an investment strategy and for disclosure of particular interests or indications of conflicts of interest is available at <https://www.gs.com/disclosures/europeanpolicy.html> which states the European Policy for Managing Conflicts of Interest in Connection with Investment Research.

Japan: Goldman Sachs Japan Co., Ltd. is a Financial Instrument Dealer registered with the Kanto Financial Bureau under registration number Kinsho 69, and a member of Japan Securities Dealers Association, Financial Futures Association of Japan Type II Financial Instruments Firms Association, The Investment Trusts Association, Japan, and Japan Investment Advisers Association. Sales and purchase of equities are subject to commission pre-determined with clients plus consumption tax. See company-specific disclosures as to any applicable disclosures required by Japanese stock exchanges, the Japanese Securities Dealers Association or the Japanese Securities Finance Company.

Global product; distributing entities

Goldman Sachs Global Investment Research produces and distributes research products for clients of Goldman Sachs on a global basis. Analysts based in Goldman Sachs offices around the world produce research on industries and companies, and research on macroeconomics, currencies, commodities and portfolio strategy. This research is disseminated in Australia by Goldman Sachs Australia Pty Ltd (ABN 21 006 797 897); in Brazil by Goldman Sachs do Brasil Corretora de Títulos e Valores Mobiliários S.A.; Public Communication Channel Goldman Sachs Brazil: 0800 727 5764 and / or contatogoldmanbrasil@gs.com. Available Weekdays (except holidays), from 9am to 6pm. Canal de Comunicação com o Público Goldman Sachs Brasil: 0800 727 5764 e/ou contatogoldmanbrasil@gs.com. Horário de funcionamento: segunda-feira à sexta-feira (exceto feriados), das 9h às 18h; in Canada by Goldman Sachs & Co. LLC; in Hong Kong by Goldman Sachs (Asia) L.L.C.; in India by Goldman Sachs (India) Securities Private Ltd.; in Japan by Goldman Sachs Japan Co., Ltd.; in the Republic of Korea by Goldman Sachs (Asia) L.L.C., Seoul Branch; in New Zealand by Goldman Sachs New Zealand Limited; in Russia by OOO Goldman Sachs; in Singapore by Goldman Sachs (Singapore) Pte. (Company Number: 198602165W); and in the United States of America by Goldman Sachs & Co. LLC. Goldman Sachs International has approved this research in connection with its distribution in the United Kingdom.

Goldman Sachs International ("GSI"), authorised by the Prudential Regulation Authority ("PRA") and regulated by the Financial Conduct Authority ("FCA") and the PRA, has approved this research in connection with its distribution in the United Kingdom.

European Economic Area: GSI, authorised by the PRA and regulated by the FCA and the PRA, disseminates research in the following jurisdictions within the European Economic Area: the Grand Duchy of Luxembourg, Italy, the Kingdom of Belgium, the Kingdom of Denmark, the Kingdom of Norway, the Republic of Finland and the Republic of Ireland; GSI - Succursale de Paris (Paris branch) which is authorised by the French Autorité de contrôle prudentiel et de 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.goldmansachs.com/disclosures/cftc_fcm_disclosures. Transaction costs may be significant in option strategies calling for multiple purchase and sales of options such as spreads. Supporting documentation will be supplied upon request.

Differing Levels of Service provided by Global Investment Research: The level and types of services provided to you by Goldman Sachs Global Investment Research may vary as compared to that provided to internal and other external clients of GS, depending on various factors including your individual preferences as to the frequency and manner of receiving communication, your risk profile and investment focus and perspective (e.g., marketwide, sector specific, long term, short term), the size and scope of your overall client relationship with GS, and legal and regulatory constraints. As an example, certain clients may request to receive notifications when research on specific securities is published, and certain clients may request that specific data underlying analysts' fundamental analysis available on our internal client websites be delivered to them electronically through data feeds or otherwise. No change to an analyst's fundamental research views (e.g., ratings, price targets, or material changes to earnings estimates for equity securities), will be communicated to any client prior to inclusion of such information in a research report broadly disseminated through electronic publication to our internal client websites or through other means, as necessary, to all clients who are entitled to receive such reports.

All research reports are disseminated and available to all clients simultaneously through electronic publication to our internal client websites. Not all research content is redistributed to our clients or available to third-party aggregators, nor is Goldman Sachs responsible for the redistribution of our research by third party aggregators. For research, models or other data related to one or more securities, markets or asset classes (including related services) that may be available to you, please contact your GS representative or go to <https://research.gs.com>.

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

© 2025 Goldman Sachs.

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