

Neutral

Tesla Inc. (TSLA)

1Q25 vehicle deliveries results takeaways; global Tesla consumer survey data

TSLA

12m Price Target: \$275.00

Price: \$282.76

Downside: 2.7%



Tesla delivered about 337k vehicles in 1Q25 - well below consensus

Tesla reported preliminary 1Q25 vehicle deliveries of about 337k (down 32% qoq and down 13% yoy), and production of about 363k (down 21% qoq and down 16% yoy). Model 3/Y deliveries in the quarter were about 324k (down 31% qoq and down 12% yoy), and other model deliveries (e.g. S/X/Cybertruck) were about 13k (down 46% qoq and down 24% yoy). Lease mix was 4% of deliveries in 1Q25 (vs. ~5% in 4Q24).

Tesla commented that the changeover of the Model Y lines led to several weeks of lost production (although we think inventory partly mitigated the effect on sales, and we note that sales lagged production overall).

Deliveries of about 337k in 1Q25 came in well below consensus, with more recent consensus estimates in the 350-360K range (per StreetAccounts), and below Visible Alpha Consensus Data at 392k and GSe at 375K. Recall that when we lowered our 1Q estimate on 3/4 to 375K (compared to Visible Alpha consensus at the time of 426K), we wrote that in order for Tesla to reach our forecast it would require a strong month of March driven by the new Model Y ramp, and we do not believe this materialized (driven primarily by downside in Europe and in the US).

Based on country level data, we believe weakness was most

Goldman Sachs does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. 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. Analysts employed by non-US affiliates are not registered/qualified as research analysts with FINRA in the U.S.

Mark Delaney, CFA

+1(212)357-0535 | mark.delaney@gs.com
Goldman Sachs & Co. LLC

Dan Duggan, Ph.D.

+1(212)902-4726 | dan.duggan@gs.com
Goldman Sachs & Co. LLC

Will Bryant

+1(212)934-4705 | will.bryant@gs.com
Goldman Sachs & Co. LLC

Morgan Leung

+1(212)934-4683 | morgan.leung@gs.com
Goldman Sachs & Co. LLC

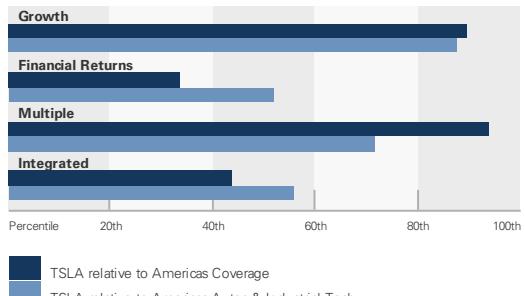
Key Data

Market cap: \$994.5bn
Enterprise value: \$981.8bn
3m ADTV: \$31.1bn
United States
Americas Autos & Industrial Tech
M&A Rank: 3

GS Forecast

	12/24	12/25E	12/26E	12/27E
Revenue (\$ mn) New	97,690.0	96,760.4	116,589.4	129,916.1
Revenue (\$ mn) Old	97,690.0	106,017.8	127,635.5	142,723.3
EBITDA (\$ mn)	16,013.0	16,138.0	22,390.2	27,313.7
EBIT (\$ mn)	7,076.0	5,629.0	9,611.9	12,703.4
EPS (\$) New	2.04	1.60	2.55	3.25
EPS (\$) Old	2.04	2.05	3.20	3.95
P/E (X)	113.0	NM	110.9	87.1
Dividend yield (%)	0.0	0.0	0.0	0.0
Net debt/EBITDA (X)	(0.7)	(0.8)	(0.8)	(1.1)
	12/24	3/25E	6/25E	9/25E
EPS (\$)	0.66	0.22	0.37	0.43

GS Factor Profile



Source: Company data, Goldman Sachs Research estimates.
See disclosures for details.

Neutral

Tesla Inc. (TSLA)

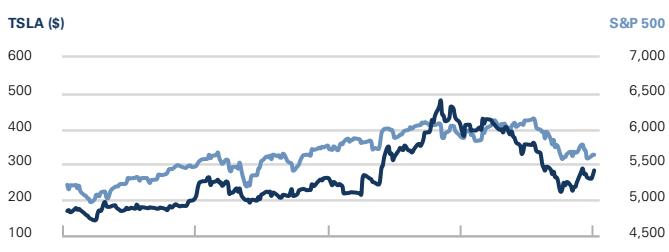
Rating since Jun 25, 2023

Ratios & Valuation

	12/24	12/25E	12/26E	12/27E
P/E (X)	113.0	NM	110.9	87.1
EV/EBITDA (X)	45.3	55.7	40.2	32.7
EV/sales (X)	7.4	9.3	7.7	6.9
FCF yield (%)	0.4	0.2	0.5	1.2
EV/DACF (X)	53.0	68.2	49.2	39.8
CROCI (%)	21.6	16.5	19.5	20.9
ROE (%)	10.5	7.4	10.6	11.9
Net debt/EBITDA (X)	(0.7)	(0.8)	(0.8)	(1.1)
Net debt/equity (%)	(15.3)	(15.6)	(19.1)	(27.4)
Interest cover (X)	20.2	13.6	21.8	27.6
Inventory days	58.3	60.8	63.7	67.3
Receivable days	14.8	17.2	15.7	15.7
Days payable outstanding	61.2	59.7	55.7	55.4

Growth & Margins (%)

	12/24	12/25E	12/26E	12/27E
Total revenue growth	0.9	(1.0)	20.5	11.4
EBITDA growth	(8.2)	3.1	45.9	24.7
EPS growth	(21.7)	(21.8)	59.9	27.3
DPS growth	NM	NM	NM	NM
Gross margin	17.9	16.1	17.1	18.0
EBIT margin	7.2	5.8	8.2	9.8

Price Performance

	3m	6m	12m
Absolute	(25.4)%	13.5%	69.7%
Rel. to the S&P 500	(22.3)%	15.1%	56.8%

Source: FactSet. Price as of 2 Apr 2025 close.

Income Statement (\$ mn)

	12/24	12/25E	12/26E	12/27E
Total revenue	97,690.0	96,760.4	116,589.4	129,916.1
Cost of goods sold	(80,240.0)	(81,136.7)	(96,640.4)	(106,523.0)
SG&A	(5,834.0)	(5,018.5)	(5,185.0)	(5,300.0)
R&D	(4,540.0)	(4,976.2)	(5,152.1)	(5,389.8)
Other operating inc./exp.)	—	—	—	—
EBITDA	12,444.0	12,833.0	18,719.2	23,346.7
Depreciation & amortization	(5,368.0)	(7,204.0)	(9,107.3)	(10,643.3)
EBIT	7,076.0	5,629.0	9,611.9	12,703.4
Net interest inc./exp.)	1,219.0	1,535.0	1,870.0	1,995.0
Income/(loss) from associates	—	—	—	—
Pre-tax profit	9,032.0	7,164.0	11,481.9	14,698.4
Provision for taxes	(1,837.0)	(1,432.8)	(2,296.4)	(2,939.7)
Minority interest	(65.0)	(73.0)	(79.0)	(100.0)
Preferred dividends	—	—	—	—
Net inc. (pre-exceptionals)	7,130.0	5,658.2	9,106.5	11,658.7
Net inc. (post-exceptionals)	7,130.0	5,658.2	9,106.5	11,658.7
EPS (basic, pre-except) (\$)	2.23	1.75	2.81	3.57
EPS (diluted, pre-except) (\$)	2.04	1.60	2.55	3.25
EPS (ex-ESO exp., dil.) (\$)	--	--	--	--
DPS (\$)	—	—	—	—
Div. payout ratio (%)	0.0	0.0	0.0	0.0
Wtd avg shares out. (basic) (mn)	3,197.0	3,225.1	3,245.1	3,265.1
Wtd avg shares out. (diluted) (mn)	3,494.8	3,546.8	3,570.1	3,590.1

Balance Sheet (\$ mn)

	12/24	12/25E	12/26E	12/27E
Cash & cash equivalents	17,037.0	18,409.8	23,349.2	34,697.4
Accounts receivable	4,418.0	4,696.2	5,312.4	5,848.5
Inventory	12,017.0	15,027.7	18,688.1	20,570.5
Other current assets	25,268.0	25,268.0	25,268.0	25,268.0
Total current assets	58,740.0	63,401.7	72,614.7	86,384.4
Net PP&E	40,996.0	45,356.0	48,312.7	49,733.4
Net intangibles	394.0	330.0	266.0	202.0
Total investments	0.0	0.0	0.0	0.0
Other long-term assets	22,320.0	22,420.0	22,520.0	22,620.0
Total assets	122,070.0	131,127.7	143,333.4	158,559.8
Accounts payable	12,474.0	14,088.5	15,387.7	16,940.4
Short-term debt	—	—	—	—
Current lease liabilities	2,456.0	2,456.0	2,456.0	2,456.0
Other current liabilities	13,891.0	13,891.0	13,891.0	13,891.0
Total current liabilities	28,821.0	30,435.5	31,734.7	33,287.4
Long-term debt	5,757.0	5,757.0	5,757.0	5,757.0
Non-current lease liabilities	—	—	—	—
Other long-term liabilities	13,812.0	13,812.0	13,812.0	13,812.0
Total long-term liabilities	19,569.0	19,569.0	19,569.0	19,569.0
Total liabilities	48,390.0	50,004.5	51,303.7	52,856.4
Preferred shares	—	—	—	—
Total common equity	72,913.0	80,356.2	91,262.7	104,936.4
Minority interest	767.0	767.0	767.0	767.0
Total liabilities & equity	122,070.0	131,127.7	143,333.4	158,559.8
BVPS (\$)	20.86	22.66	25.56	29.23

Cash Flow (\$ mn)

	12/24	12/25E	12/26E	12/27E
Net income	7,153.0	5,658.2	9,106.5	11,658.7
D&A add-back	5,368.0	7,204.0	9,107.3	10,643.3
Minority interest add-back	—	—	—	—
Net (inc)/dec working capital	81.0	(1,674.4)	(2,974.4)	(868.7)
Others	2,321.0	1,785.0	1,800.0	2,015.0
Cash flow from operations	14,923.0	12,972.8	17,039.4	23,448.3
Capital expenditures	(11,339.0)	(11,500.0)	(12,000.0)	(12,000.0)
Acquisitions	(7,445.0)	—	—	—
Divestitures	—	—	—	—
Others	(3.0)	(100.0)	(100.0)	(100.0)
Cash flow from investing	(18,787.0)	(11,600.0)	(12,100.0)	(12,100.0)
Dividends paid	—	—	—	—
Share issuance/(repurchase)	—	—	—	—
Inc/(dec) in debt	2,469.0	—	—	—
Others	1,534.0	—	—	—
Cash flow from financing	3,712.0	0.0	0.0	0.0
Total cash flow	(152.0)	1,372.8	4,939.4	11,348.3
Free cash flow	3,584.0	1,472.8	5,039.4	11,448.3
Free cash flow per share (basic) (\$)	1.03	0.46	1.55	3.51

Source: Company data, Goldman Sachs Research estimates.

pronounced in Europe (with vehicle deliveries down >35% yoy in 1Q). We believe that US deliveries were somewhat lower yoy (despite an easy compare given the Model 3 transition in 2024 in Fremont), and that China deliveries were flattish yoy.

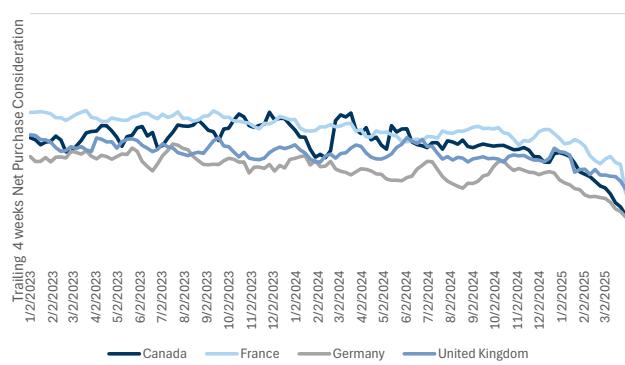
The regional sales data corresponds well with recent consumer surveys, and suggests that only a portion of the delivery weakness is due to the Model Y transition. Net purchase intent scores for Tesla have declined significantly in the US in recent months per surveys of US consumers across a wide demographic sample per HundredX ([Exhibit 1](#)). Similarly, with the help of the GS Data Works team, we looked at net purchase consideration in Canada and key European countries, and Tesla scores have also significantly declined in those geographies ([Exhibit 2](#)).

Exhibit 1: Tesla NPI in the US has decreased meaningfully relative to the peer group



Source: HundredX

Exhibit 2: Tesla Net Purchase Consideration scores have decreased in recent months for key international geographies



Source: Morning Consult, GS Data Works, Goldman Sachs Global Investment Research

Separately, Energy storage deployments were 10.4 GWh in 1Q25, up a strong 157% yoy, and above our estimate of 9.1 GWh.

Implications and analysis

We expect key focus items for investors from here to be on the following topics:

1) When can the auto business return to growth? - 1Q25 volumes were down 13% yoy, which we believe can be attributed in part to factory downtime from the Y transition, in part to weaker underlying demand (as illustrated by the HundredX data for the US and Morning Consult data for international regions), and partly to competition (especially in China).

We think that one debate in the market from here will be when can Tesla return to growth in its auto business (and recall Tesla guided to grow volumes this year). We believe that the success that Tesla has with new model launches will be a key factor in this, including the timing of these launches, and the degree that the features/costs of new models are differentiated enough vs. what Tesla currently provides. While Tesla may somewhat cannibalize sales of the current 3/Y with new variants depending on the degree of differentiation, net net as new models fully ramp we'd expect them to add at least 100K to Tesla's annual volumes (as we discussed in our note "[Framing the market size for lower cost vehicles](#)"). Tesla intends to launch a lower cost model in 1H25, per its 4Q24 shareholder letter. If this is simply a decontented version of the Model Y as some

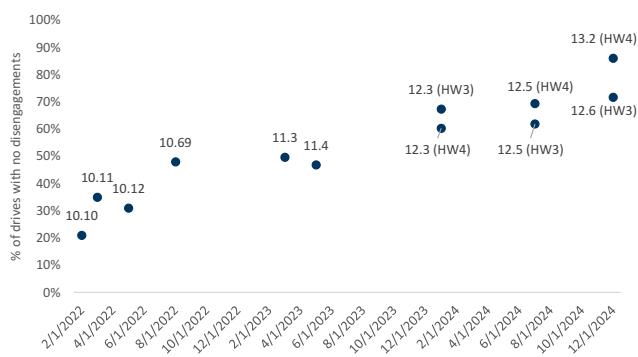
media outlets have suggested, rather than a vehicle with a new form factor, then we believe this would be viewed as a disappointment to the market. Our base case view is that the lower cost vehicle that Tesla plans to launch in 1H is a product with a somewhat different design, albeit one that starts shipping later in 2H (and this doesn't mean Tesla couldn't also offer a lower cost variant of the Model Y). Separately, we believe Tesla's brand and net purchase intent scores will be another key factor to monitor.

Given the weaker 1Q delivery results, as well as the continued decline in Tesla's brand scores per consumer survey data, we are lowering our delivery estimates for 2025-2027. We now expect deliveries to decline by 4% yoy in 2025, and assume 1.71 mn (from 1.91 prior). We now model 2026/2027 deliveries at 2.03 mn/2.25 mn compared to 2.25 mn/2.50 mn prior (and our estimates for 2026/27 are below Visible Alpha Consensus at 2.28 mn/2.55 mn). The main driver of volume growth in our revised forecast is from new models.

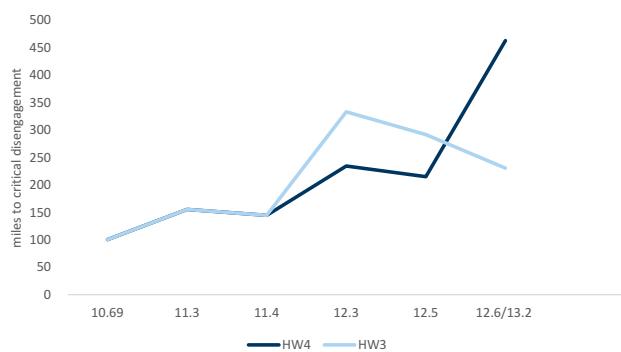
2) Margins and tariffs - We expect Tesla's automotive non-GAAP gross margin excluding regulatory credits to remain a key focus for investors, and we are now modeling the automotive non-GAAP gross margin to be 13.0% in 1Q, down from 13.6% in 4Q24, with the sequential decline due to lower volumes (and partly offset by a benefit from what we expect will be a deferred revenue release related to some FSD-like features in China being enabled). However, we expect pricing and tariffs to remain headwinds to margins going forward. For example, Tesla recently extended 0% financing in China on Model 3 and offered it on the refreshed Model Y for units delivered before April 30. In addition, while Tesla vehicles for the domestic market are assembled in the USA and have a high level of US parts content (per NHTSA filings), we expect tariffs to be a margin headwind for both the Auto and Energy segments.

3) Progress with FSD and AI-related efforts - We believe investors will be looking for management commentary and data on progress with FSD (full self driving), including the performance of v13 and the robotaxi launch this summer.

Crowdsourced data for v13.2 from Tesla's FSDtracker shows improvement relative to v12.5, especially on highways, with miles to critical intervention up to ~450-500 miles. This compares to ~200-300 miles for v12.5.x. Moreover, ~98% of drives using v13 have no critical disengagement (vs. v12.5.x at ~92%), although we acknowledge that the crowdsourced data has limitations related to control and sample size.

Exhibit 3: % drives with no disengagements by version

Source: TeslaFSDtracker

Exhibit 4: Miles to critical disengagement has improved with v13

Source: TeslaFSDtracker

On robotaxis specifically, Tesla is targeting to deploy a robotaxi service in Texas in June and additional regions (e.g. California) later this year using Model 3/Y vehicles, and expects to start production of its Cybercab robotaxi in 2026 (although we note that the company has historically been optimistic with its timelines). We would also look for additional comments or details related to Tesla's robotaxi business on the upcoming earnings call, including progress with the Austin launch.

We continue to believe the FSD data suggests that Tesla is among the leaders with its AI technology for the AV market (especially given the wide operating domain of FSD relative to a geofenced robotaxi service), but also that Tesla is unlikely to reach its goal of being safer than a human driver in 2Q25. However, it's possible in our opinion that Tesla could begin a robotaxi service in a narrow geographic area this year in part by actively making use of remote assistance (which could help improve performance relative to the current FSD consumer product). Note that robotaxi deployments currently on the road (e.g. from Waymo, Pony.ai, and Apollo Go) make use of remote assistance and geofencing.

We also believe that given the improving FSD performance especially on highways, that Tesla can grow its FSD business in the coming years at least in North America, enabled by a situationally eyes off product (e.g. on highways in good weather) in the coming years. If FSD subscription revenue becomes more material, then we believe Tesla could begin to disclose this. However, we believe monetizing FSD in China could be more challenging given the competitive landscape (with several domestic OEMs in China now offering L2+ or L2++ ADAS as an included feature on premium or even mainstream vehicles, as we wrote in our note "[Global Automobiles: China for Global - automotive and autonomy takeaways](#)").

4) Growth in other segments, including Services and Energy - Tesla deployed 10.4 GWh of energy storage products in 1Q25 vs 1Q24 at 4.1 GWh and 4Q24 at 11.0 GWh. Recall Tesla expects Energy deployments to grow at least 50% yoy for the full year 2025. Recall Tesla has previously noted that given the large-scale nature of some projects, deployments by quarter could be lumpy.

5) Progress with Optimus and expectations on ramp timing - Tesla has highlighted

improved dexterity of its Optimus robot, and per an X post at the end of November, Optimus' new hand and forearm have double the number of degrees of freedom (DoFs) compared to previous robots (there are now 22 DoFs on the hand and 3 on the wrist/arm). Recall that in an X post from June 2024, Tesla said that it had deployed two Optimus robots performing tasks in the factory autonomously. Furthermore, on its 2Q24 EPS call and recent X posts, Tesla commented that it expects to have the first version of Optimus in limited production starting in early 2025 (for Tesla consumption) and then to produce up to 5-10k Optimus robots by the end of the year and deployed in the Tesla factories. The company also said that it expects to ramp up production and begin to provide Optimus robots to outside customers in 2026. We expect that investors will continue to gauge the progress Tesla is making with Optimus.

Price target and estimate changes

We lower our 2025/26/27 vehicle delivery estimates to ~1.71 mn/2.03 mn/2.25 mn from ~1.91 mn/2.25 mn/2.50 mn prior reflecting the weaker 1Q deliveries and what we believe is softer consumer demand. We lower our 2025/26/27 EPS estimates including SBC to \$1.60/\$2.55/\$3.25, from \$2.05/\$3.20/\$3.95 reflecting the lower deliveries and lower margins (in part from tariffs). Our CY25/26/27 non-GAAP EPS estimates (ex. SBC) are now \$2.00/\$2.95/\$3.70.

We lower our 12-month price target to \$275 from \$320, which is based on 100X (unchanged) applied to our updated Q5-Q8E EPS estimate including SBC.

We remain Neutral rated on the stock. We expect Tesla will face difficult fundamental conditions in the near-term, and our EPS estimates are below consensus (we'd expect Street estimates to be revised lower prior to the 1Q25 EPS report reflecting the delivery results and tariffs). We continue to expect Tesla's earnings growth to improve over the longer-term due in part to increased software revenue with FSD (although we have a more balanced view of Tesla's monetization potential than we believe the company is targeting), and due in part to new product launches.

Key downside risks to our view relate to potentially larger vehicle price reductions than we expect, increased competition in EVs, a larger than expected tariff impact, slower EV demand, delays with products/capabilities like FSD/4680, key person risk, the internal control environment, margins, and operational risks associated with Tesla's high degree of vertical integration. Upside risks include faster EV adoption and/or share gain by Tesla, a stronger macroeconomic environment for new vehicle sales more generally, earlier new product launches than we expect, an earlier/larger impact from AI enabled products (e.g., FSD, Optimus and robotaxis), and a smaller than expected tariff impact than we currently anticipate.

GS DataWorks leverages alternative data sources and advanced analysis techniques to create unique data-driven insights across Global Investment Research.

GS DataWorks analysis provided by Dan Duggan, Ph.D. and Parag Agrawal.

Disclosure Appendix

Reg AC

We, Mark Delaney, CFA, Will Bryant, Morgan Leung and Aman Gupta, hereby certify that all of the views expressed in this report accurately reflect our personal views about the subject company or companies and its or their securities. We also certify that no part of our compensation was, is or will be, directly or indirectly, related to the specific recommendations or views expressed in this report.

We, Dan Duggan, Ph.D. and Parag Agrawal, 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.

GS Factor Profile

The Goldman Sachs Factor Profile provides investment context for a stock by comparing key attributes to the market (i.e. our universe of rated stocks) and its sector peers. The four key attributes depicted are: Growth, Financial Returns, Multiple (e.g. valuation) and Integrated (a composite of Growth, Financial Returns and Multiple). Growth, Financial Returns and Multiple are calculated by using normalized ranks for specific metrics for each stock. The normalized ranks for the metrics are then averaged and converted into percentiles for the relevant attribute. The precise calculation of each metric may vary depending on the fiscal year, industry and region, but the standard approach is as follows:

Growth is based on a stock's forward-looking sales growth, EBITDA growth and EPS growth (for financial stocks, only EPS and sales growth), with a higher percentile indicating a higher growth company. **Financial Returns** is based on a stock's forward-looking ROE, ROCE and CROCI (for financial stocks, only ROE), with a higher percentile indicating a company with higher financial returns. **Multiple** is based on a stock's forward-looking P/E, P/B, price/dividend (P/D), EV/EBITDA, EV/FCF and EV/Debt Adjusted Cash Flow (DACP) (for financial stocks, only P/E, P/B and P/D), with a higher percentile indicating a stock trading at a higher multiple. The **Integrated** percentile is calculated as the average of the Growth percentile, Financial Returns percentile and (100% - Multiple percentile).

Financial Returns and Multiple use the Goldman Sachs analyst forecasts at the fiscal year-end at least three quarters in the future. Growth uses inputs for the fiscal year at least seven quarters in the future compared with the year at least three quarters in the future (on a per-share basis for all metrics).

For a more detailed description of how we calculate the GS Factor Profile, please contact your GS representative.

M&A Rank

Across our global coverage, we examine stocks using an M&A framework, considering both qualitative factors and quantitative factors (which may vary across sectors and regions) to incorporate the potential that certain companies could be acquired. We then assign a M&A rank as a means of scoring companies under our rated coverage from 1 to 3, with 1 representing high (30%-50%) probability of the company becoming an acquisition target, 2 representing medium (15%-30%) probability and 3 representing low (0%-15%) probability. For companies ranked 1 or 2, in line with our standard departmental guidelines we incorporate an M&A component into our target price. M&A rank of 3 is considered immaterial and therefore does not factor into our price target, and may or may not be discussed in research.

Quantum

Quantum is Goldman Sachs' proprietary database providing access to detailed financial statement histories, forecasts and ratios. It can be used for in-depth analysis of a single company, or to make comparisons between companies in different sectors and markets.

Disclosures

The rating(s) for Tesla Inc. is/are relative to the other companies in its/their coverage universe: Amphenol Corp., Aurora Innovation Inc., Belden Inc., BorgWarner Inc., Cerence Inc., ChargePoint Holdings, Flex, Ford Motor Co., General Motors Co., Gentex Corp., Innoviz Technologies, Jabil Circuit Inc., Keysight Technologies Inc., Lear Corp., Luminar Technologies Inc., Magna International Inc., Mobileye Global Inc., QuantumScape Corp., Rivian Automotive Inc., Sensata Technologies Holding, Symbotic Inc., TE Connectivity Plc, Tesla Inc., Vertiv Holdings, Visteon Corp.

Company-specific regulatory disclosures

The following disclosures relate to relationships between The Goldman Sachs Group, Inc. (with its affiliates, "Goldman Sachs") and companies covered by Goldman Sachs Global Investment Research and referred to in this research.

Goldman Sachs has received compensation for investment banking services in the past 12 months: Tesla Inc. (\$282.76)

Goldman Sachs expects to receive or intends to seek compensation for investment banking services in the next 3 months: Tesla Inc. (\$282.76)

Goldman Sachs has received compensation for non-investment banking services during the past 12 months: Tesla Inc. (\$282.76)

Goldman Sachs had an investment banking services client relationship during the past 12 months with: Tesla Inc. (\$282.76)

Goldman Sachs had a non-investment banking securities-related services client relationship during the past 12 months with: Tesla Inc. (\$282.76)

Goldman Sachs had a non-securities services client relationship during the past 12 months with: Tesla Inc. (\$282.76)

Goldman Sachs makes a market in the securities or derivatives thereof: Tesla Inc. (\$282.76)

Distribution of ratings/investment banking relationships

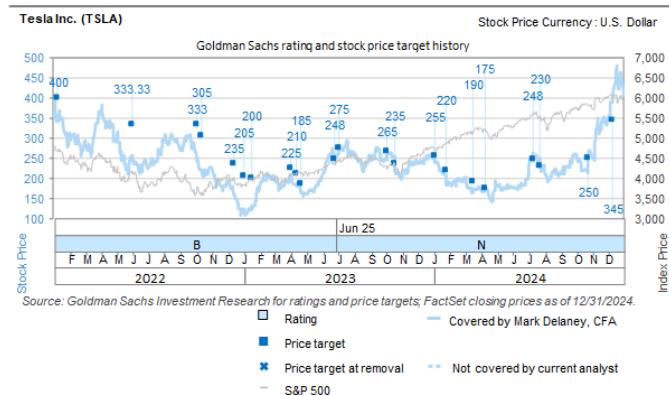
Goldman Sachs Investment Research global Equity coverage universe

	Rating Distribution			Investment Banking Relationships		
	Buy	Hold	Sell	Buy	Hold	Sell
Global	48%	34%	18%	64%	57%	43%

As of January 1, 2025, Goldman Sachs Global Investment Research had investment ratings on 3,021 equity securities. Goldman Sachs assigns stocks as Buys and Sells on various regional Investment Lists; stocks not so assigned are deemed Neutral. Such assignments equate to Buy, Hold and Sell for the purposes of the above disclosure required by the FINRA Rules. See 'Ratings, Coverage universe and related definitions' below. The Investment

Banking Relationships chart reflects the percentage of subject companies within each rating category for whom Goldman Sachs has provided investment banking services within the previous twelve months.

Price target and rating history chart(s)



The price targets shown should be considered in the context of all prior published Goldman Sachs research, which may or may not have included price targets, as well as developments relating to the company, its industry and financial markets.

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.

Distribution of ratings: See the distribution of ratings disclosure above. **Price chart:** See the price chart, with changes of ratings and price targets in prior periods, above, or, if electronic format or if with respect to multiple companies which are the subject of this report, on the Goldman Sachs website at <https://www.gs.com/research/hedge.html>.

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.

Ratings, coverage universe and related definitions

Buy (B), Neutral (N), Sell (S) Analysts recommend stocks as Buys or Sells for inclusion on various regional Investment Lists. Being assigned a Buy or Sell on an Investment List is determined by a stock’s total return potential relative to its coverage universe. Any stock not assigned as a Buy or a Sell on an Investment List with an active rating (i.e., a stock that is not Rating Suspended, Not Rated, Early-Stage Biotech, Coverage Suspended or Not Covered), is deemed Neutral. Each region manages Regional Conviction Lists, which are selected from Buy rated stocks on the respective region’s Investment Lists and represent investment recommendations focused on the size of the total return potential and/or the likelihood of the realization of the return across their respective areas of coverage. The addition or removal of stocks from such Conviction Lists are managed by the Investment Review Committee or other designated committee in each respective region and do not represent a change in the analysts’ investment rating for such stocks.

Total return potential represents the upside or downside differential between the current share price and the price target, including all paid or anticipated dividends, expected during the time horizon associated with the price target. Price targets are required for all covered stocks. The total return potential, price target and associated time horizon are stated in each report adding or reiterating an Investment List membership.

Coverage Universe: A list of all stocks in each coverage universe is available by primary analyst, stock and coverage universe at <https://www.gs.com/research/hedge.html>.

Not Rated (NR). The investment rating, target price and earnings estimates (where relevant) are removed pursuant to Goldman Sachs policy when Goldman Sachs is acting in an advisory capacity in a merger or in a strategic transaction involving this company, when there are legal, regulatory or policy constraints due to Goldman Sachs’ involvement in a transaction, and in certain other circumstances. **Early-Stage Biotech (ES).** An investment rating and a target price are not assigned pursuant to Goldman Sachs policy when this company neither has a drug, treatment or medical device that has passed a Phase II clinical trial nor a license to distribute a post-Phase II drug, treatment or medical device. **Rating Suspended (RS).** Goldman Sachs Research has suspended the investment rating and price target for this stock, because there is not a sufficient fundamental basis for determining an investment rating or target price. The previous investment rating and target price, if any, are no longer in effect for this stock and should not be relied upon. **Coverage Suspended (CS).** Goldman Sachs has suspended coverage of this company. **Not Covered (NC).** Goldman Sachs does not cover this 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 Públíco 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 resolution (“ACPR”) and regulated by the Autorité de contrôle prudentiel et de resolution 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 (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 (<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.

The analysts named in this report may have from time to time discussed with our clients, including Goldman Sachs salespersons and traders, or may discuss in this report, trading strategies that reference catalysts or events that may have a near-term impact on the market price of the equity securities discussed in this report, which impact may be directionally counter to the analyst's published price target expectations for such stocks. Any such trading strategies are distinct from and do not affect the analyst's fundamental equity rating for such stocks, which rating reflects a stock's return potential relative to its coverage universe as described herein.

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

Certain transactions, including those involving futures, options, and other derivatives, give rise to substantial risk and are not suitable for all investors. Investors should review current options and futures disclosure documents which are available from Goldman Sachs sales representatives or at <https://www.theocc.com/about/publications/character-risks.jsp> and <https://www.fiadocumentation.org/fia/regulatory-disclosures/fia-uniform-futures-and-options-on-futures-risk-disclosures-booklet-pdf-version-2018>. Transaction costs may be significant in option strategies calling for multiple purchase and sales of options such as spreads. Supporting documentation will be supplied upon request.

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

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

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

© 2025 Goldman Sachs.

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