

## US Autos &amp; Industrial Tech

## 3Q preview - Estimates likely moving lower on average

We expect 2023 consensus estimates (FactSet) to be revised lower for our covered companies on average given generally weaker industrial datapoints, the UAW strike, EV price competition, and a stronger USD. We see 2023 estimate risk for most auto OEMs (including GM, Ford, and Tesla) and several companies in the auto supply chain. We're more positive on companies this earnings season that have higher datacenter exposure (which we see as most positive for VRT and APH), or where we see select product cycles (e.g. MBLY).

The potential impact of the UAW strike on auto volumes has been a key focus for the industry as the strike began on 9/15 at targeted locations. The strike has been an overhang for the auto OEM stocks in particular with GM/F shares down 16%/19% over the last 3 months vs. the S&P 500 down 4%. We framed the potential strike impact in our notes from [9/17](#), [9/4](#), and [4/23](#). We believe that investors will continue to monitor how the strike impacts not just production but OEM profitability. As we previously framed, increases to wages alone could pressure EBIT margins by ~50-100 bps over four years, and we see this as more than priced into the stocks. However, if all of the UAW requests were largely granted (e.g. a four-day work week, defined benefit pensions with the impact to costs in line with reports from [Bloomberg](#)), then we estimate that it could pressure margins by 400-600 bps for Ford and GM. Therefore, how OEM stocks eventually trade will depend on the details of any agreement, in our view. With the strikes announced so far, we estimate roughly 20-35k of weekly production is being disrupted in total at the Detroit Three. We now assume for modeling purposes a ~100K unit impact at both Ford and GM in our 2023 estimates, roughly half the impact of the 2019 strike at GM given that it has been more targeted. We also believe the strike will negatively impact margins for several of the tier 1s.

Our US Autos & Industrial Tech coverage has traded down 9% at the median since the end of 2Q earnings season (8/7/23) vs. the S&P 500 down 5%. The average NTM P/E multiple for the established companies in our coverage is ~16X and has expanded from ~14X at the start of the year but has contracted from about 17X at the end of last earnings season.

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## Table of Contents

Stock Trading Recap — stocks in our coverage have traded up YTD driven by multiple expansion	3
Automotive supply and demand trends	8
UAW update	12
Key automotive input and commodity costs have declined	15
We continue to expect strong electric vehicle adoption	18
Mixed demand trends in key non-auto markets	20
Adjusting select estimates for auto OEMs in our coverage (TSLA, GM, F, RIVN)	21
Ratings summary, updated estimates, and price targets	24
GSe vs. the Street (FactSet)	25
Disclosure Appendix	27

We lower estimates for Tesla, GM, Ford and most of the auto tier 1 suppliers we cover in this note. We also adjust price targets for TSLA, F, GM, APTV, LAZR, QS, SYM, and AUR.

## Stock Trading Recap — stocks in our coverage have traded up YTD driven by multiple expansion

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Since the end of 2Q23 earnings season (8/7/23), the stocks in our coverage are down 9% at the median vs. the S&P 500 down 5%. Established companies in our coverage are down 8% while early-stage companies are down 30% at the median over this time period.

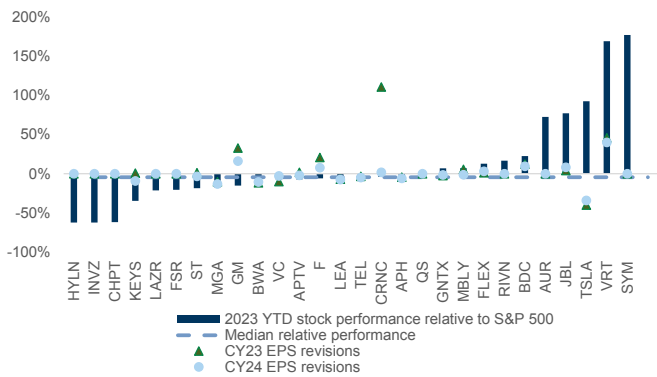
## Exhibit 1: Stock performance of covered companies since 2023 EPS reports and YTD

	Stock Performance			
	Since 2Q23 reports		YTD	
	Absolute	Relative to S&P 500	Absolute	Relative to S&P 500
<b>Auto OEMs</b>				
GM	-15.2%	-9.1%	-3.5%	-15.2%
F	-7.2%	-0.8%	5.8%	-5.8%
TSLA	-4.3%	1.1%	104.3%	92.6%
RIVN	5.9%	9.9%	28.4%	16.7%
<b>Tier 1 Suppliers</b>				
BWA	-3.7%	1.0%	12.6%	0.9%
LEA	-12.6%	-7.6%	7.0%	-4.7%
GNTX	-1.8%	4.6%	18.5%	6.8%
MGA	-13.2%	-9.0%	-5.9%	-17.6%
HYLN	-23.8%	-19.8%	-50.9%	-62.5%
APT	-8.9%	-4.7%	4.4%	-7.3%
VC	-7.8%	-3.6%	4.1%	-7.6%
<b>Electronic Components</b>				
APH	-6.9%	-1.4%	8.6%	-3.1%
TEL	-14.3%	-8.9%	7.3%	-4.4%
ST	-10.0%	-3.9%	-6.8%	-18.5%
BDC	10.6%	14.8%	34.2%	22.5%
<b>Lidar &amp; Autonomy</b>				
AUR	-27.6%	-22.9%	84.3%	72.6%
LAZR	-28.8%	-24.8%	-9.7%	-21.4%
INVZ	-50.1%	-45.4%	-50.6%	-62.3%
MBLY	10.6%	17.0%	18.8%	7.1%
<b>EMS</b>				
FLEX	-1.1%	4.3%	24.4%	12.7%
<b>Test &amp; Measurement</b>				
KEYS	1.8%	3.7%	-23.0%	-34.7%
<b>Power &amp; Thermal Management</b>				
VRT	11.3%	16.1%	181.2%	169.5%
<b>Voice Technology</b>				
CRNC	-24.0%	-20.0%	7.8%	-3.9%
<b>Warehouse Automation</b>				
SYM	-40.1%	-33.8%	189.1%	177.4%
<b>EV Battery</b>				
QS	-39.5%	-34.0%	14.3%	2.6%

Source: FactSet

Median stock performance YTD across our coverage is +7% vs. the S&amp;P 500 at +12%.

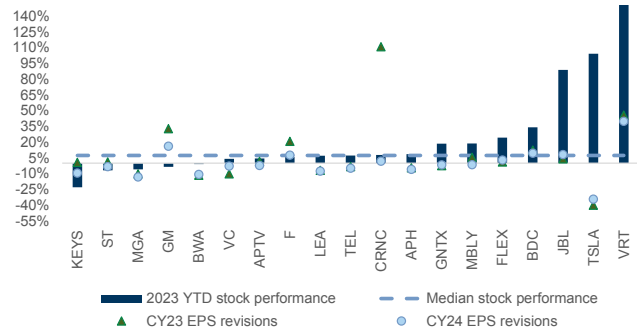
Exhibit 2: 2023 YTD stock performance relative to the S&P 500 and CY23 and CY24 EPS revisions for companies in our coverage



Source: FactSet

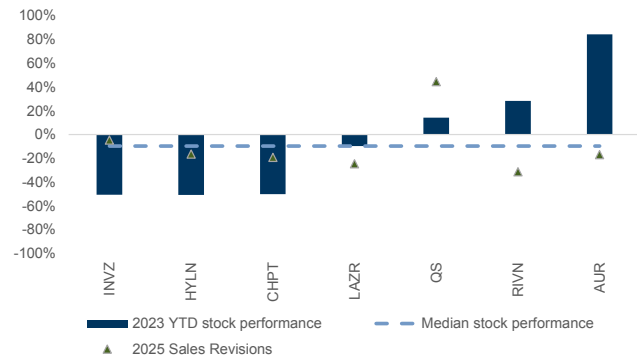
Notably, there was a significant divergence among established and early stage companies in our coverage. Established companies are up about 7% at the median while early-stage companies are down about 10% YTD at the median.

Exhibit 3: YTD stock performance and EPS revisions for established companies in our coverage



Source: FactSet

Exhibit 4: YTD stock performance and sales revisions for early-stage companies in our coverage



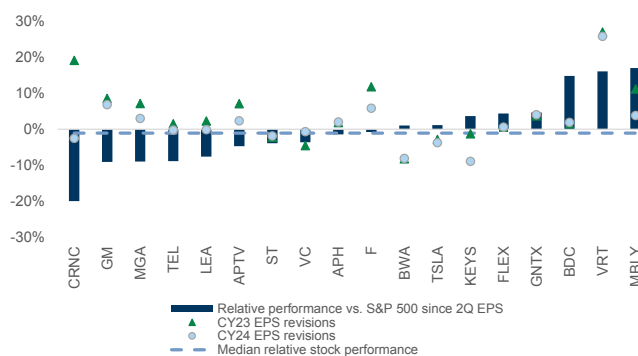
Source: FactSet

CY23/CY24 consensus EPS estimates for established companies in our coverage have been revised +1%/-2% YTD at the median, and by +2%/+2% at the median heading into results.

**Exhibit 5: 2023 and 2024 estimate revisions since before 2023 EPS reports, intraquarter, and YTD**

	Change in consensus EPS estimates					
	2023			2024		
	Before 2Q23 reports	Intraquarter (EPS +7 days)	YTD	Before 2Q23 reports	Intraquarter (EPS +7 days)	YTD
<b>Auto OEMs</b>						
GM	8.6%	0.5%	32.9%	6.8%	1.8%	16.2%
F	11.8%	4.7%	20.8%	5.8%	1.7%	7.6%
TSLA	-2.8%	-1.8%	-40.0%	-3.7%	-2.3%	-34.3%
RIVN	--	--	--	--	--	--
<b>Tier 1 Suppliers</b>						
BWA	--	--	--	--	--	--
LEA	2.3%	0.4%	-6.9%	-0.1%	-1.0%	-7.5%
GNTX	3.7%	0.0%	-2.4%	4.0%	0.0%	-1.6%
MGA	7.1%	0.5%	-10.2%	3.0%	0.3%	-13.2%
HYLN	--	--	--	--	--	--
APTV	7.1%	0.7%	1.7%	2.4%	0.4%	-2.2%
VC	-4.6%	-0.9%	-10.2%	-0.7%	-0.8%	-2.8%
<b>Electronic Components</b>						
APH	1.9%	0.1%	-4.3%	2.0%	0.5%	-5.9%
TEL	1.5%	0.2%	-3.3%	-0.2%	-0.6%	-4.8%
ST	-2.3%	-0.9%	1.2%	-1.9%	-0.8%	-3.4%
BDC	1.5%	0.5%	12.4%	1.9%	1.6%	9.5%
<b>Lidar &amp; Autonomy</b>						
AUR	--	--	--	--	--	--
LAZR	--	--	--	--	--	--
INVZ	--	--	--	--	--	--
MBLY	11.2%	1.4%	5.5%	3.8%	0.3%	-1.4%
<b>EMS</b>						
FLEX	0.6%	-0.1%	1.1%	0.6%	-0.1%	3.0%
<b>Test &amp; Measurement</b>						
KEYS	-1.3%	0.0%	0.7%	-8.9%	0.1%	-9.4%
<b>Power &amp; Thermal Management</b>						
VRT	27.0%	2.0%	45.9%	25.8%	1.7%	39.9%
<b>Voice Technology</b>						
CRNC	19.1%	-0.8%	111.0%	-2.5%	-0.9%	1.8%
<b>Warehouse Automation</b>						
SYM	--	--	--	-6.8%	-3.1%	-18.0%
<b>EV Battery</b>						
QS	--	--	--	--	--	--

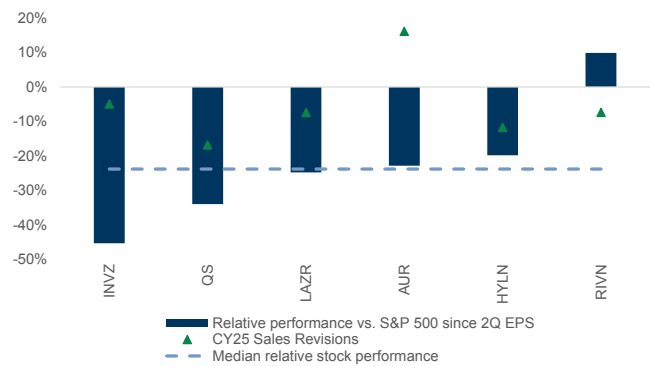
Source: FactSet

**Exhibit 6: Relative performance of established companies in our coverage and CY23 & CY24 EPS revisions since companies respectively reported 2Q results**

Source: FactSet

For early-stage companies in our coverage, consensus 2025 sales estimates were revised down by ~7% at the median.

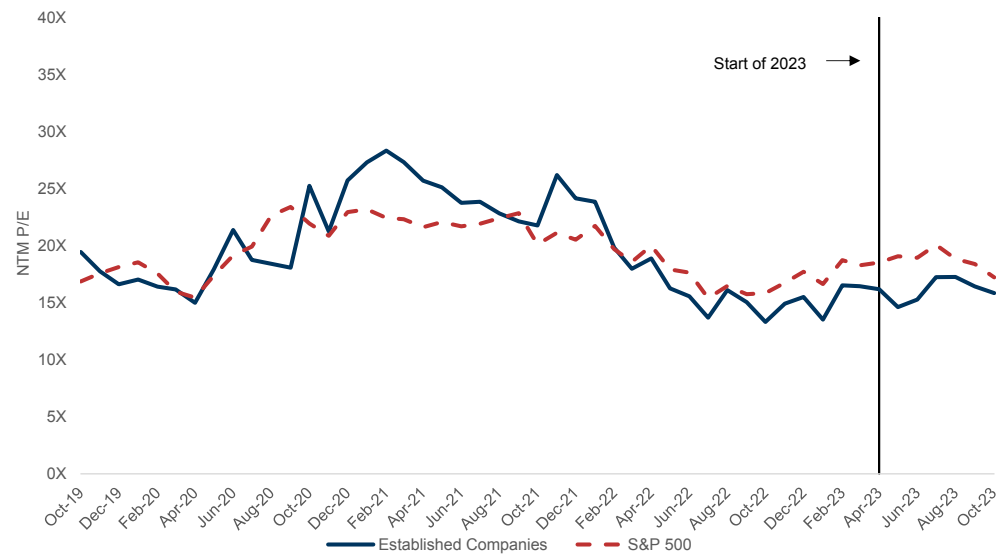
**Exhibit 7: Relative performance vs. S&P 500 since companies respectively reported 2Q results and sales revisions for early-stage companies in our coverage**



Source: FactSet

The average NTM P/E multiple for the established companies is ~16X, which is above the level from the start of the year (~14X).

**Exhibit 8: The average NTM P/E multiple of established companies in our coverage has expanded YTD to ~16X from ~14X**

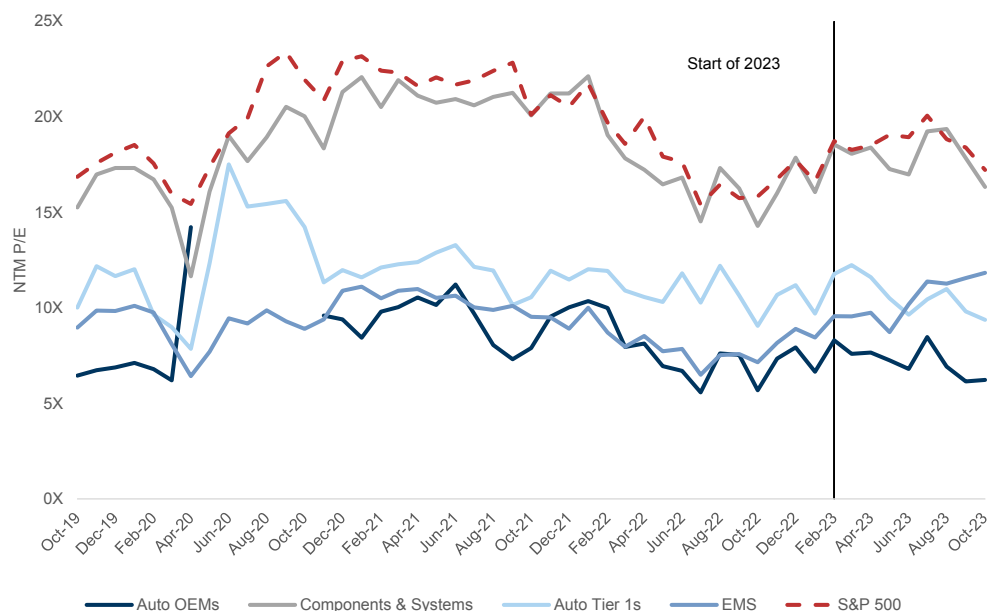


Source: FactSet

Companies in the EMS and components & systems parts of our coverage have seen the most multiple expansion, while auto OEMs in our coverage have seen multiple contraction since the start of 2023.

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Exhibit 9: NTM median P/E by subsector since 2019



Source: FactSet

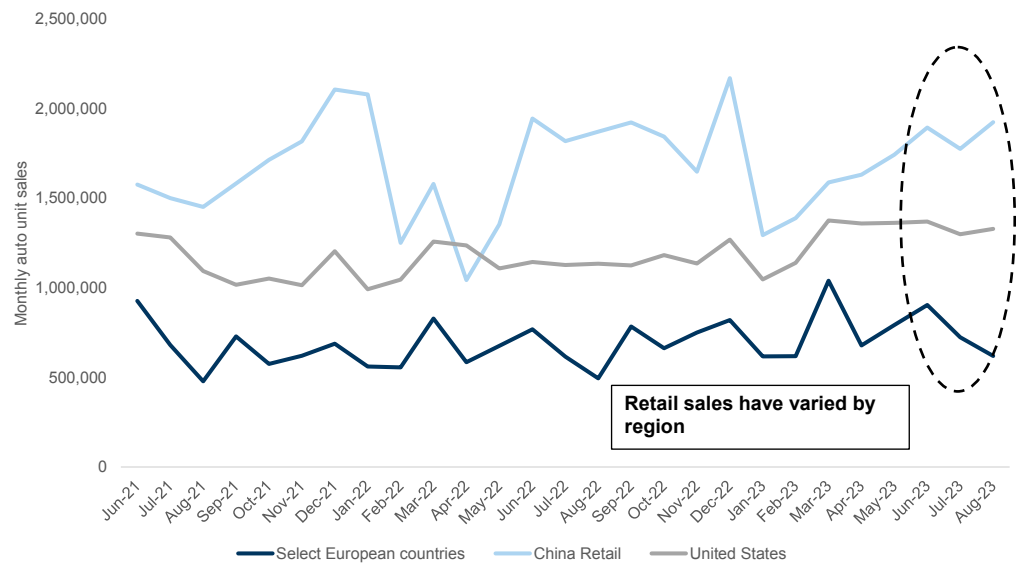
## Automotive supply and demand trends

### Auto sales have increased YTD in all key regions

Auto sales have risen YTD. The US SAAR is tracking to the mid 15 mn range, with sales in the US up 14% YTD yoy and up 17% yoy in August. European auto sales in key geographies were up 18% YTD and up 25% in August, and sales in China are up 2% YTD yoy and were up 3% yoy in August.



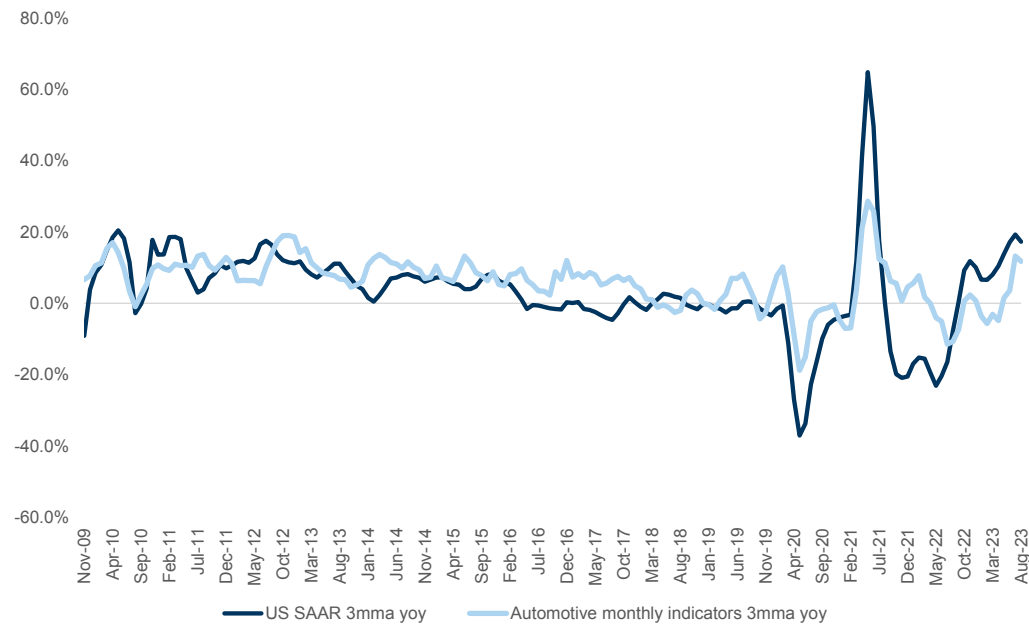
Exhibit 10: Monthly regional auto sales



Source: Goldman Sachs Global Investment Research, IHS, CPCA

If the ongoing strike doesn't overly impact supply, we believe US auto sales could remain at a higher level throughout the rest of the year, albeit due in part to higher incentives. Our auto monthly indicators index (AMI) tracks key inputs including Google search traffic, housing starts, and consumer sentiment, and has an R-squared of 0.6 on a 2-month lead vs. the US SAAR yoy. It has recently shown signs of improvement (Exhibit 11).

Exhibit 11: Auto monthly indicators have begun to show signs of improvement  
US SAAR vs. Auto Monthly Indicators

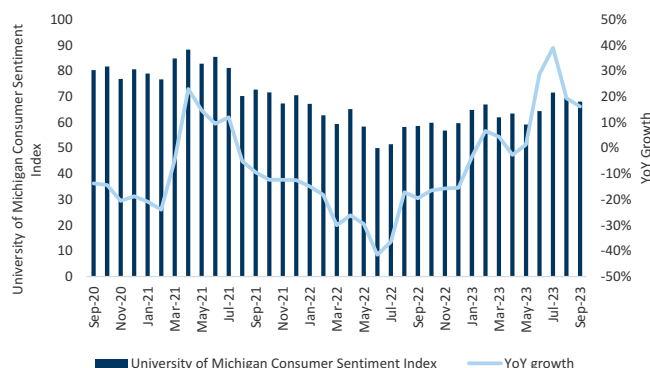


Source: Company data, Goldman Sachs Global Investment Research, University of Michigan, The Conference Board, St. Louis Federal Reserve

For example, the University of Michigan Consumer Sentiment index has been solid in recent months. Consumer sentiment is up significantly yoy in June, July, August, and September albeit from a low base. While consumer sentiment is up yoy, we note that the index fell mom in both August and September but remains at a solid level. (Exhibit 12).

#### Exhibit 12: US consumer confidence increased by ~16% yoy in September

University of Michigan Consumer Sentiment Index

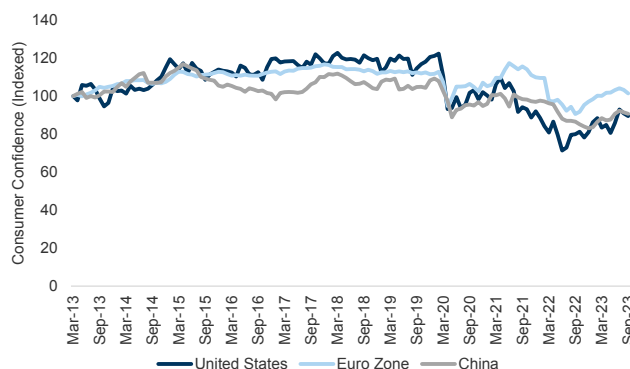


Source: University of Michigan

Consumer confidence continues to improve globally off the bottom, but is still at lower levels vs. history in key regions.

#### Exhibit 13: Consumer confidence remains low in key regions but has improved in recent months

Consumer Confidence Indexed to 100



Source: FactSet

Our US SAAR forecast for 2023/2024 is 15.75 mn/16.25 mn as YTD sales have remained strong (with SAAR averaging in the mid 15 mn range YTD) and key macro indicators of US auto demand (e.g. housing starts and consumer sentiment) continue to improve. Importantly, we assume incentives/discounts will play a role in sustaining higher auto volumes throughout the rest of 2023 as we expect vehicle supply/demand to moderate.

#### Auto production trending higher, in part on easing supply constraints

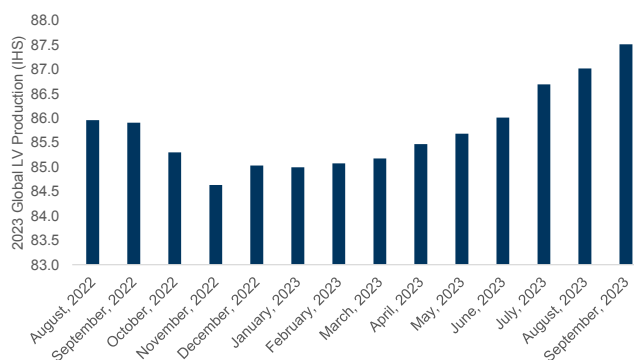
The sales growth is driven in part by reduced supply chain constraints allowing for

higher production. We believe that 3Q23 production was tracking to up 5% yoy in North America, up 8% yoy in Europe, and down 8% yoy in China.

IHS has increased its global auto production outlook for 2023 in each month since the start of 2023 with some variation by region. Additionally, IHS is now forecasting that 2023 auto production will be up 6% yoy in North America, up 13% yoy in Europe, and up 2% yoy in China vs. its June 2023 outlook of +7%/+9%/-1% in North America/Europe/China. IHS now expects 2023 global production to be +6% yoy, compared to +4% as of its June update.

**Exhibit 14: 2023 IHS production estimates have been revised higher the last several months**

2023 Global LV production



Source: IHS

In a September update, IHS commented that it has now integrated a five-week long strike into its forecast (IHS revised production down by ~165K units at GM, ~175K units at Ford, and ~84K units at Stellantis in 2023, with part of the loss made up for at other OEMs) and now expects 15.15 mn for the year in North America (vs. 15.46 mn prior). Importantly, IHS assumes some strike recovery through the first half of 2024, and raised its 2024 forecast to 16.32 mn units (v. 15.85 mn prior).

Tier 1 suppliers continue to have conservative production outlooks relative to IHS. We attribute this conservatism from tier 1s to the protracted period of supply driven production weakness, macro demand uncertainty, and a desire to have achievable guidance, in addition to some caution around the UAW strike.

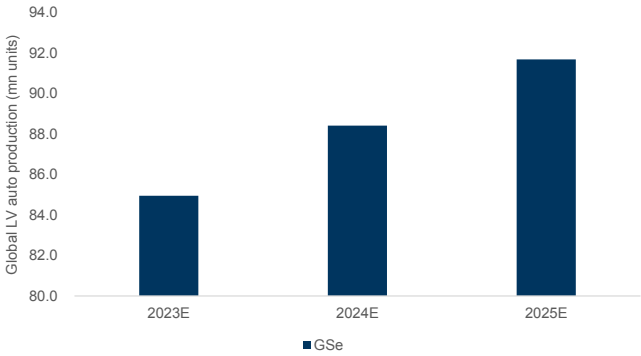
Exhibit 15: Select auto suppliers' LVP updated outlooks vs. IHS August September update

Auto suppliers light vehicle production outlook vs. IHS				
Company	CY23 LVP most recent outlooks (YoY)		IHS forecast (YoY; as of September '23)	Δ
Aptiv				
^*	North America	+4%	+6%	-2 pp
^*	Europe	+5%	+13%	-8 pp
^*	China	-1%	+2%	-3 pp
^*	Global	+3.5%	+6%	-2.5 pp
BorgWarner				
^	North America	+5%	+6%	-1 pp
^	Europe	+6%	+13%	-7 pp
^	China	-2%	+2%	-4 pp
^	Global	+2%	+6%	-4 pp
Lear				
	North America	+5%	+6%	-1 pp
	Europe and Africa	+8%	+13%	-5 pp
	China	-1%	+2%	-3 pp
	Global	+4%	+6%	-2 pp
Magna				
	North America	+6%	+6%	flat
	Europe	+8%	+13%	-5 pp
	China	-1%	+2%	-3 pp
Visteon				
*	Global	low single-digit growth		+6%
*Adjusted for market exposure				
^Midpoint of outlook				

Source: Company data, Goldman Sachs Global Investment Research, IHS

Our 2023/2024/2025 global production estimates are 85.0 mn/88.4 mn/91.7 mn.

Exhibit 16: We maintain our 2023/2024/2025 global production estimates



Source: Goldman Sachs Global Investment Research

# UAW update

The UAW strike has been top of mind for investors given the potential to impact volumes (IHS estimates that GM could lose about 55K vehicles per week and Ford about 65K vehicles per week if there is a full walk out) and profitability of the auto OEMs going forward (both from the production impact and the potential new labor agreement).

Importantly, the UAW contract with General Motors, Ford, and Stellantis expired on

9/14/23, and the UAW strike began the following day at 3 plants: 1) the GM Wentzville assembly plant in Missouri, which makes GMC models such as the Canyon and Colorado, 2) Ford's Wayne assembly plant in Michigan, which makes the Bronco and Ranger, and 3) Stellantis' Toledo assembly complex in Ohio, which makes the Jeep Gladiator and Wrangler. GM told media outlets on 9/20 that it had idled its Fairfax Assembly plant in Kansas, which makes the Cadillac XT4 and Chevrolet Malibu. On 9/22, UAW announced they were striking at 38 parts distribution centers for Stellantis and GM. On 9/29, the UAW announced additional strikes at 1) the GM Lansing Delta Assembly plant in Michigan, which makes the Buick Enclave and Chevrolet Traverse, and 2) the Ford Chicago Assembly plant in Illinois, which makes the Ford Explorer and Lincoln Aviator. We note that strikes have the potential to impact production more broadly when considering supply chain impacts (e.g. the strike in Missouri forced GM to idle its Fairfax Kansas location, as it sources stampings from the Wentzville factory per GM).

The plants affected by the UAW strike as of the end of September are shown in Exhibit 17.

#### Exhibit 17: Plants impacted by the 2023 UAW strike

UAW 2023 Strike Plants	UAW workers	Average weekly production
GM Wentzville Missouri	3600	3650
Ford Wayne	3300	4000
Stellantis Toledo	5800	6600
GM Fairfax (idled bc of Wentzville)	2000	3700
GM Lansing Delta Township	1300	4150
Ford Chicago assembly plant	5700	5050

Source: Company data, IHS, Goldman Sachs Global Investment Research

We estimate that the strike impacted about 10-15K vehicles at GM and 5-10K vehicles at Ford in 3Q23, based on weekly production estimates per IHS. We show the estimated revenue and EBIT impact in 3Q23 in Exhibit 18, assuming ASPs of \$40K and decremental margins of 40%. We note that the impact was larger at GM in 3Q given that the Wentzville strike also idled the Fairfax plant, per the company.

#### Exhibit 18: Revenue/EBIT impact to GM and Ford in 3Q based on lost production at the GM Wentzville and Fairfax plants and Ford's Wayne plant

Impact in 3Q23 (\$ mn)	Revenue	EBIT
GM	\$375 - \$650	\$125 - \$325
Ford	\$200 - \$475	\$50 - \$250

Source: Company data, Goldman Sachs Global Investment Research, IHS

Given the additional strikes at the GM Lansing Delta Assembly plant in Michigan and the Ford Chicago Assembly plant in Illinois announced on 9/29, we also sized the potential per week impact to revenue and EBIT based on the plants where the UAW announced a strike (GM Wentzville and Lansing Delta Township; Ford Wayne and Chicago assembly plant) in addition to the Fairfax plant that was idled.

We estimate that currently GM is losing 10-15K vehicles per week, and Ford is losing 5-15K vehicles per week.

**Exhibit 19: Revenue and EBIT loss per week based on plants impacted by the 2023 UAW strike**

Impact per week (\$ mn)	Revenue		EBIT
GM	\$300	- \$550	\$100 - \$300
Ford	\$250	- \$450	\$50 - \$250

Source: Company data, Goldman Sachs Global Investment Research, IHS

We believe the UAW strike poses some risk to 2023 supplier estimates, as some companies did not include the strike in their 2023 guidance. We detail tier 1 commentary on the strike below:

**Visteon:** Visteon commented that it did not include a strike in its guidance (albeit it has low North America exposure from Stellantis). Visteon also said that GM is a growing customer in North America but is still not at the level of Ford.

**Lear:** Lear said on its 2Q earnings call that it included \$350 mn disruption from UAW at the midpoint of its guidance (\$300 mn in seating and \$50 mn in E-Systems) as Lear's Seating revenue is more weighted to North America than its E-systems (about 45% of seating revenue and 30% of E-Systems revenue come from North America). Lear added additional color at an investor conference in September, saying that the \$350 mn revenue impact assumes a 2.5 week strike, so the impact is about \$140 mn per week if the entire North America production is shut down for all three customers. The company believes that it could make up a portion of that in 4Q through overtime and in the first part of 2024. Lear also said that its 4% global production growth and 5% on a Lear sales-weighted basis has a modest strike impact embedded in the outlook.

**Gentex:** Gentex included a similar strike to the one at GM in 2019 in its 2023 guidance. The company talked about how a 45 day strike at GM, Stellantis, and Ford would be about a \$40-\$65 mn impact. We note that Gentex has higher exposure to GM than to Stellantis and Ford.

**Magna:** We note that Magna has the most exposure to the Detroit 3 of our tier 1 supplier coverage. Magna commented that ~75% of its business in North America is related to the D3. Magna commented that it did not factor in a UAW disruption into its guidance.

**BorgWarner:** The company commented that for its North America exposure the Detroit 3 is a little less than \$250 mn a month.

**Aptiv:** At its 2Q earnings call Aptiv commented that its updated outlook does not take into account any labor disruptions in North America. At an industry conference in September, Aptiv commented that North America is roughly 30% of revenues, and the Detroit 3 directly account for a bit more than 50% of that overall business (and potentially 60-65% including the tiers that sell to the D3). Aptiv also said in September that it was tracking well to its guidance, but that was prior to a strike.

We framed the potential strike impact in our notes from 9/17, 9/4, and 4/23.

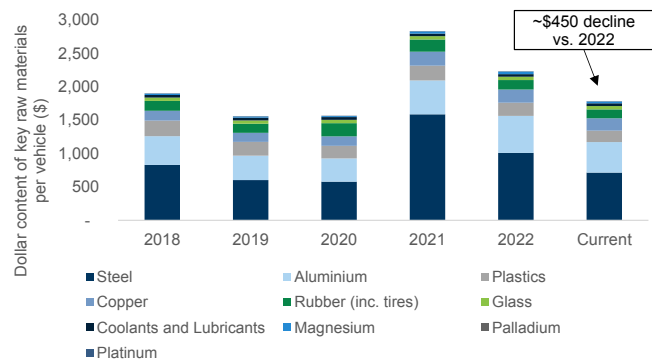
# Key automotive input and commodity costs have declined

Pricing for key auto-related commodities — such as steel, aluminum, plastics, and copper — has declined substantially from 2021 levels based on the spot market. Given contract timing, costs were up materially to most auto OEMs in 2022.

Steel and aluminum are some of the largest raw materials inputs in the automotive industry. Other key commodities include rubber, plastics/polymer composites, and copper. In [Exhibit 20](#), we detail our estimates for dollar content for key raw materials in a vehicle over the last several years.

We highlight that the dollar content of raw materials per vehicle is currently about \$400 lower than in 2Q23 and \$450 lower than the 2022 average.

**Exhibit 20: The cost of raw materials per vehicle continues to decline**  
Dollar content of raw materials per vehicle (\$)



Source: FactSet, Goldman Sachs Global Investment Research

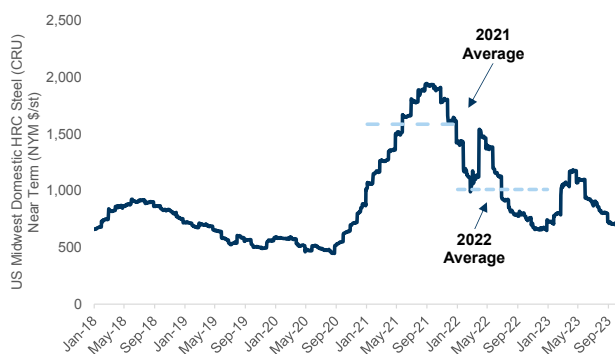
Importantly, both steel and aluminum pricing is below prior year levels driving a significant portion of the decline in raw material costs per vehicle ([Exhibit 21](#) & [Exhibit 22](#)). We note that OEMs purchase some raw materials through contracts in advance and some on spot pricing, so even though spot prices have declined, some materials may still be purchased on contracts with higher prices. Directionally, we believe OEMs will benefit from lower spot pricing.

Steel pricing is down about 30% from the 2Q23 average while aluminum pricing is down a low-to-mid single-digit percentage from 2Q23 levels.

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**Exhibit 21: Steel pricing is down materially from 2021/2022 levels**

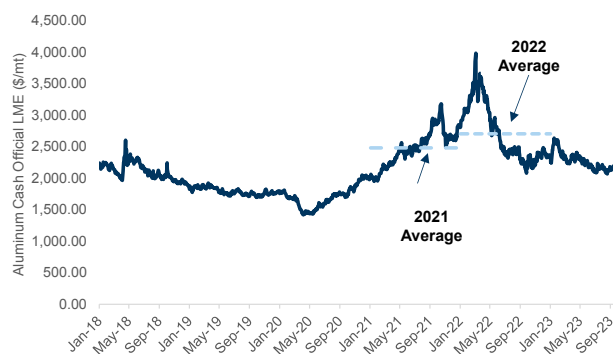
US Midwest Domestic HRC Steel (CRU) Near Term (NTM \$/st)



Source: FactSet

**Exhibit 22: Aluminum pricing is down modestly from 2022 levels**

Aluminum Cash Official LME (\$/mt)



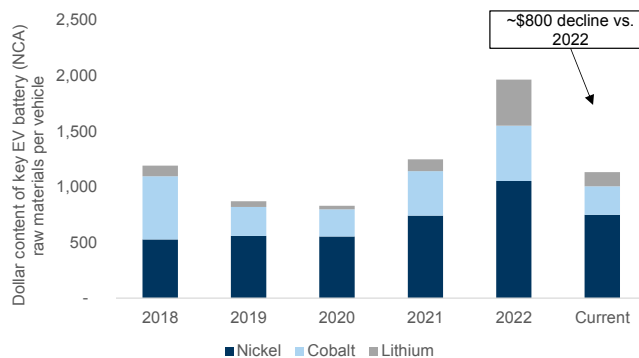
Source: FactSet

**Key Battery Raw Materials**

Given the focus on EV profitability, we note that the dollar content of key EV battery raw materials have declined significantly since 2022. For an NCA battery chemistry, the dollar content of key battery raw materials per vehicle is down about \$550 vs. 2Q23 and down about \$800 vs. the average in 2022.

**Exhibit 23: The dollar content of EV battery raw materials has declined significantly from 2022 levels**

Dollar content of key EV battery (NCA chemistry) raw materials per vehicle



Source: FactSet, Goldman Sachs Global Investment Research

**Other input costs, including labor and shipping/logistics**

Labor has also been a key inflationary driver for auto input costs over the last couple years. Per the US Bureau of Labor Statistics, the growth rate for hourly earnings of automotive manufacturing workers in the United States has increased in the low-to-mid single-digit range historically, but accelerated in 2021/2022.



**Exhibit 24: Per the BLS, the hourly earnings of automotive manufacturing workers are rising**

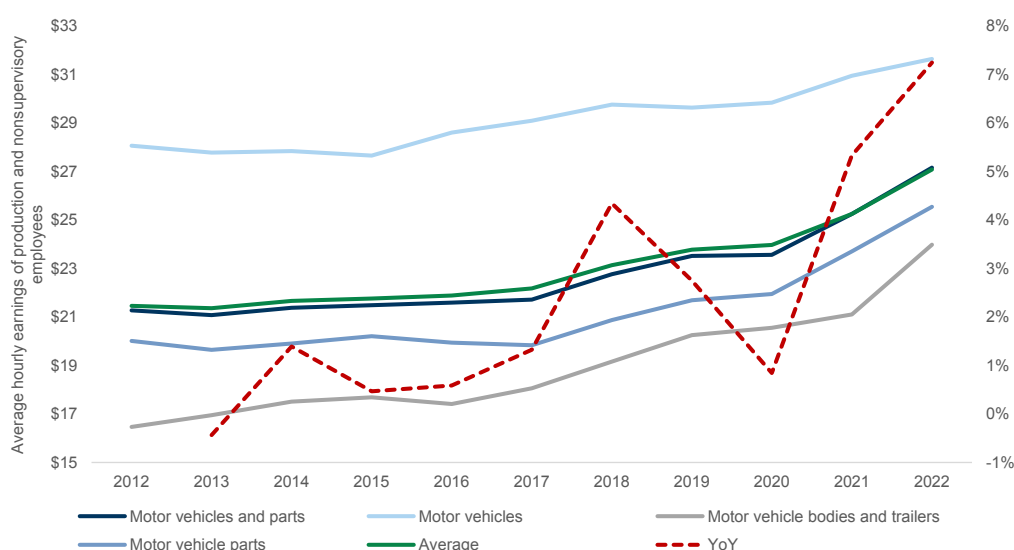
Average hourly earnings of production and nonsupervisory employees

Labor Costs							
	2017	2018	2019	2020	2021	2022	Current
<b>Average hourly earnings of production and nonsupervisory employees (\$/hr)</b>							
Motor vehicles and parts	21.72	22.76	23.51	23.56	25.25	27.15	27.99
Motor vehicles	29.08	29.75	29.62	29.83	30.94	31.63	32.80
Motor vehicle bodies and trailers	18.06	19.16	20.25	20.55	21.10	23.98	22.76
Motor vehicle parts	19.84	20.87	21.69	21.94	23.70	25.54	26.33
<b>Average</b>	<b>22.17</b>	<b>23.13</b>	<b>23.77</b>	<b>23.97</b>	<b>25.25</b>	<b>27.08</b>	<b>27.47</b>
<b>YoY</b>		<b>4%</b>	<b>3%</b>	<b>1%</b>	<b>5%</b>	<b>7%</b>	<b>1%</b>

Source: US Bureau of Labor Statistics

**Exhibit 25: Per the BLS, the growth rate for hourly earnings of automotive manufacturing workers accelerated in 2021 and 2022**

Average hourly earnings of production and nonsupervisory employees



Source: US Bureau of Labor Statistics

Wages remain a key focus item with the UAW currently negotiating a new labor contract with GM, Ford, and Stellantis.

**Exhibit 26: Auto rail pricing rates are expected to increase slightly in 2023, following meaningful growth in 2022**

Historical Auto Rail Pricing Rates

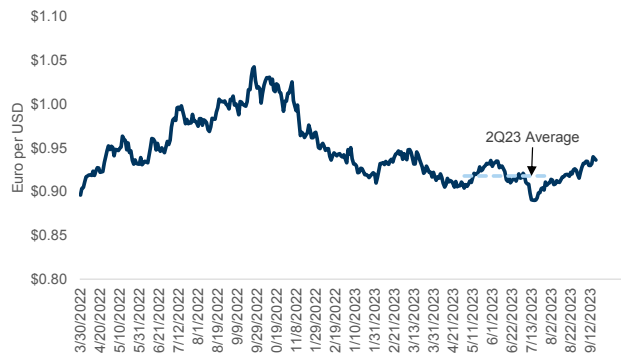
Shipping Costs							
	2017	2018	2019	2020	2021	2022	2023E
<b>Historical Auto Rail Pricing Rates (average revenue/automotive carload)</b>							
CSX	2,614	2,736	2,710	2,672	2,788	3,114	3,186
CNI	3,073	3,155	3,182	3,177	3,228	3,824	3,989
UNP		2,438	2,474	2,427	2,511	2,902	3,000
NSC	2,258	2,455	2,517	2,518	2,621	3,059	3,199
<b>Average</b>	<b>2,648</b>	<b>2,696</b>	<b>2,721</b>	<b>2,698</b>	<b>2,787</b>	<b>3,224</b>	<b>3,344</b>
<b>YoY Growth</b>			<b>1%</b>	<b>-1%</b>	<b>3%</b>	<b>16%</b>	<b>4%</b>

Source: Company data, Goldman Sachs Global Investment Research

**Currency movement**

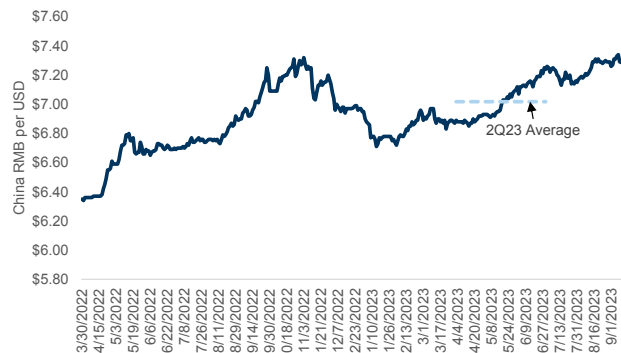
The USD has strengthened vs. the Euro ([Exhibit 27](#)) and Chinese RMB ([Exhibit 28](#)) in recent months.

Exhibit 27: Euro per USD



Source: FactSet

Exhibit 28: RMB per USD



Source: FactSet

## We continue to expect strong electric vehicle adoption

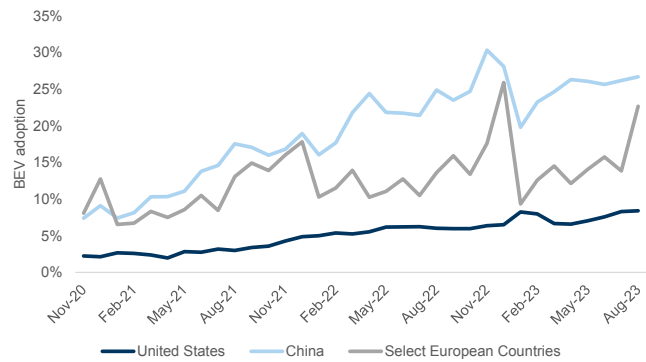
While some auto OEMs have recently adjusted auto production plans (e.g. Ford and VW), we expect that EV adoption will continue to increase longer-term, driven by consumer interest, OEM investments/product launches, and government support such as the IRA. We believe that OEMs will need to continue to invest for EVs as we view them as critical to long-term global competitiveness, in part due to government mandates for EVs to be 100% of new sales by 2035 in some regions.

We believe EV economics will improve over time driven by other factors including IRA credits (including point of sale deductability in the US starting in 2024) and economies of scale.

We also note that charging agreements amongst major OEMs in North America could support increased EV adoption (i.e. Tesla opening parts of its Supercharger network to other EV customers including those of Ford, General Motors, and Rivian).

EV adoption in the US has been gradually increasing, and EV adoption is running at about 8% in the US currently per Motor Intelligence. BEV adoption in Europe and China also continues to trend higher.

**Exhibit 29: BEV adoption has grown in recent years**  
Monthly BEV mix by geography



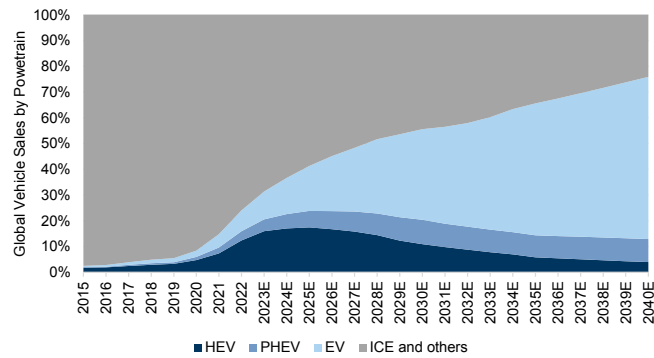
Source: Goldman Sachs Global Investment Research, IHS, CPA

BEV mix in the US has been tracking to 7-8% YTD up from 6% in 2022, and we expect 2023 EV mix for the US to be 8.0%. We continue to expect EV mix to reach 20% of US sales in 2025 and 50% in 2030.

We believe BEV market share will be a key topic on upcoming earnings calls.

Our global estimates for EV penetration are 17%/35%/51%/63% in 2025/30/35/2040.

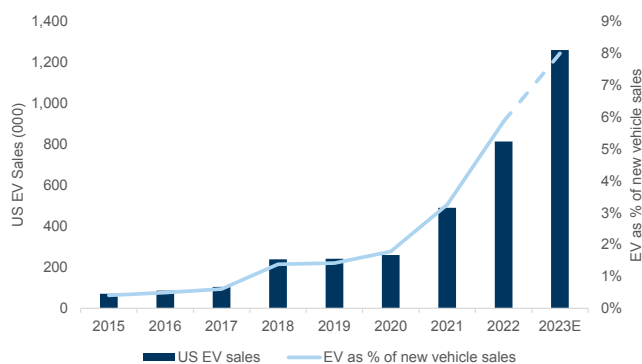
**Exhibit 30: We expect a continued increase in adoption of EVs**  
Global Vehicle Sales by Powertrain



Source: Goldman Sachs Global Investment Research

We expect EVs to make up about 8% of new car sales in the US in 2023, up from about 6% in 2022.

**Exhibit 31: We expect growth in EV sales on a unit and percent basis in 2023E**



Source: DOE, Autodata, Goldman Sachs Global Investment Research

## Mixed demand trends in key non-auto markets

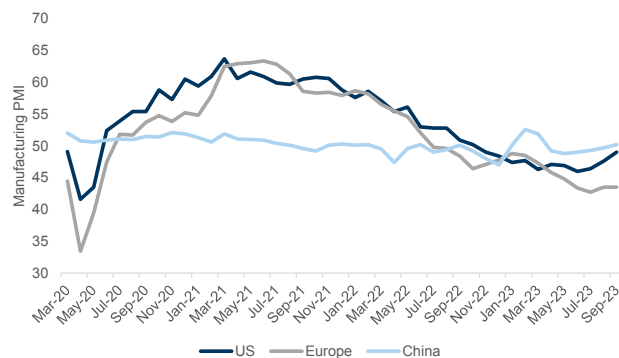
The US ISM PMI has increased sequentially in July, August, and September. Manufacturing PMI in Europe had declined mom each month since the start of 2023 but increased mom in August (up to 43.5 from 42.7 in July) and remained flat in September while manufacturing PMI in China increased slightly mom in September after declining moderately from its highest level in February 2023 since 2020.

**Exhibit 32: US ISM PMI**



Source: FactSet

**Exhibit 33: Manufacturing PMI in US, China, and Europe**

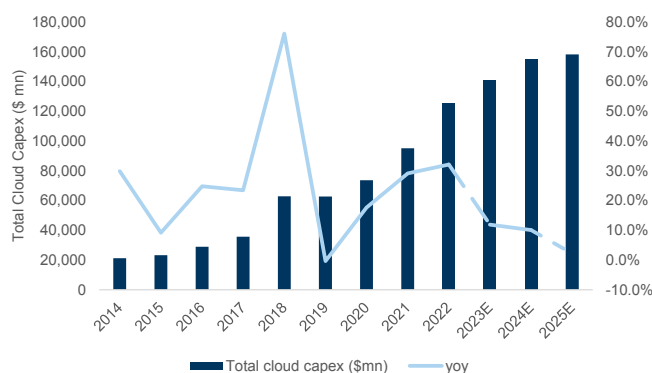


Source: FactSet

Separately, GS estimates for total capex from major cloud providers show low double digit yoy growth in 2023E-2024E and single digit growth in 2025E, albeit from a higher base as companies increased capex spending in 2022 by ~36% yoy.

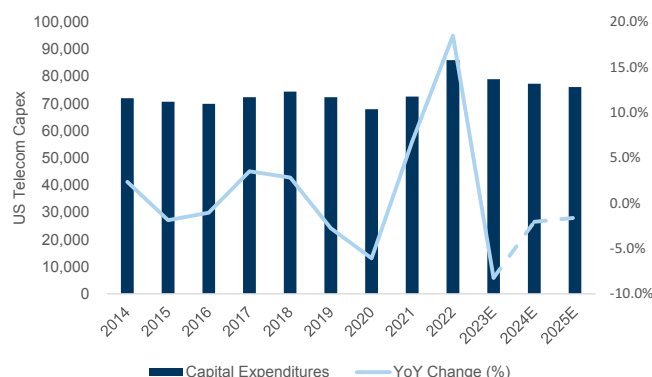
**Exhibit 34: GS analysts expect low double digit growth yoy in total cloud capex in 2023E and 2024E**

Total cloud capex (\$ mn) of select hyperscale companies



Source: Company data, Goldman Sachs Global Investment Research

Our US Telecom, Cable & Satellite analysts expect capex of key telecom companies to decline in the single digit percentage range yoy each year from 2023E-2025E.

**Exhibit 35: Our colleagues expect US telecom capex to decline in 2023, 2024, and 2025**


Source: Company data, Goldman Sachs Global Investment Research

## Adjusting select estimates for auto OEMs in our coverage (TSLA, GM, F, RIVN)

**We adjust select estimates and price targets for the auto OEMs in our coverage reflecting the 3Q23 deliveries reports from TSLA and RIVN on 10/2 and the UAW strike at GM and F.**

We update our 2023 estimates for TSLA and RIVN to reflect the 3Q23 deliveries reports (additional details below).

Despite what we believe was strong 3Q pricing in North America, we are lowering our F and GM estimates to reflect an assumed ~100K unit impact from the UAW strike at both Ford and GM in 2023, which is roughly half the impact of the 2019 strike at GM

given that it has been more targeted. Our updated estimates also reflect our expectation for higher labor costs in 4Q23/2024/2025, given that recent offers from the OEMs include double digit wage increases as well as other benefits, per media reports.

We show our updated revenue and EPS estimates for OEMs below.

**Exhibit 36: 2023/24/25 revenue and EPS estimate changes for TSLA, GM, F, and RIVN**

	2023 Revs (Old) \$mn	2023 Revs (New) \$mn	Δ%	2024 Revs (Old) \$mn	2024 Revs (New) \$mn	Δ%	2025 Revs (Old) \$mn	2025 Revs (New) \$mn	Δ%
<b>Auto OEMs</b>									
F	\$177,597	\$172,158	(3.06%)	\$184,122	\$186,903	1.51%	\$194,942	\$197,596	1.36%
GM	\$171,874	\$167,618	(2.48%)	\$173,709	\$173,678	(0.02%)	\$180,504	\$180,471	(0.02%)
TSLA	\$99,407	\$98,431	(0.98%)	\$122,821	\$122,819	(0.00%)	\$148,886	\$148,886	(0.00%)
RIVN	\$4,165	\$4,318	3.66%	\$6,669	\$6,671	0.03%	\$11,486	\$11,488	0.02%

	2023 EPS (Old)	2023 EPS (New)	Δ%	2024 EPS (Old)	2024 EPS (New)	Δ%	2025 EPS (Old)	2025 EPS (New)	Δ%
<b>Auto OEMs</b>									
F	\$2.15	\$2.00	(7.00%)	\$1.90	\$1.85	(2.56%)	\$2.15	\$2.10	(2.46%)
GM	\$7.40	\$6.70	(9.50%)	\$6.65	\$6.25	(6.01%)	\$7.50	\$7.05	(5.89%)
TSLA	\$2.90	\$2.75	(5.26%)	\$4.15	\$4.15	--	\$5.60	\$5.60	--
RIVN	-\$5.95	-\$5.95	--	-\$4.15	-\$4.15	--	-\$3.00	-\$3.00	--

Source: Goldman Sachs Global Investment Research

**Tesla delivered about 435k vehicles and produced about 430k vehicles in 3Q23**

Tesla reported preliminary 3Q23 vehicle deliveries of about 435k (down 7% qoq and up 27% yoy), and production of about 430k vehicles. This compares to 2Q23 deliveries of about 466K and production of about 480K.

Deliveries of about 435k in 3Q23 were below Visible Alpha Consensus Data at about 453k, FactSet at about 461k, and GSe at 460k.

Model 3/Y deliveries in the quarter were about 419k (down 6% qoq and up 29% yoy), and Model S/X deliveries were about 16k (down 17% qoq and down 14% yoy).

Tesla attributed the reduced production to downtime for factory upgrades (and we believe a key driver of this was the Model 3 changeover in Shanghai). Tesla typically produces 20-30K Model 3 units per month in China per CPCA data.

As we wrote in our 10/2 first take, we believe key debates will shift to:

1) What is the margin impact in 2H23 from the reduced production levels (recall that last quarter Tesla's non-GAAP automotive gross margin ex. credits was 18.1%, and the lower production/deliveries and price cuts imply 3Q will be down sequentially).

2) To what extent can new models (Model 3 Highland, Cybertruck) help drive stronger volumes in 4Q23 and 2024? Consensus, per Visible Alpha Consensus Data, is at 499K in 4Q and 2.358 mn in 2024. We model a pick-up to 494K in 4Q and 2.275 mn in 2024, in line to modestly below the Street.

3) Price-cost in 2023 and 2024. We expect Tesla to benefit from lower costs in 4Q23/2024, although we believe that it may further lower prices to drive volume next year and mitigate margin improvement.

4) Tesla's opportunity and timelines with technology and new products, including FSD. We see Tesla as a leader in autonomy technology, although we think it will take time for

Tesla to be able to offer an eyes-off and hands-off (L3/4) capable vehicle.

We lower our 2023 EPS estimate including SBC to \$2.75 (from \$2.90 prior) primarily on lower revenue and lower margins. We maintain our 2024/2025 EPS estimates including SBC of \$4.15/\$5.60. Excluding SBC we model \$3.25/\$4.65/\$6.10 in 2023/2024/2025.

We lower our 12-month price target to \$265 from \$275 prior, which is now based on 50X (from 55X prior to better reflect market multiples) applied to our updated Q5-Q8 EPS estimate including SBC.

We maintain our Neutral rating on the stock, with our positive view of Tesla's long-term growth potential and position in the market offset by what we believe will be additional pricing reductions and full valuation.

Key downside risks to our view relate to potentially larger vehicle price reductions than we expect, increased competition in EVs, delays with products/capabilities like FSD/the third generation platform/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 from Tesla, a stronger macroeconomic environment for new vehicle sales more generally, earlier new product launches than we expect (e.g. a vehicle using the third generation platform), and an earlier/larger impact from AI enabled products (e.g. FSD and Optimus) than we currently anticipate.

### **Rivian delivered 15,564 vehicles and produced 16,304 vehicles in 3Q23**

Rivian announced that it delivered about 15.6K vehicles in 3Q23 (up about 23% qoq and up significantly yoy), above GSe at 14K and Visible Alpha Consensus Data at 14.7K. Rivian produced about 16.3K vehicles (up about 17% qoq and up significantly yoy) during the same period at its manufacturing facility in Normal, Illinois. Recall that on its 2Q23 earnings call, Rivian increased its production guidance to 52K units in 2023 (from 50K prior).

Per the press release, the company believes these figures remain in line with its expectations, and Rivian believes it is on track to reach its 52K annual production guidance that it previously provided.

We raise our assumption for 2023 deliveries to 48.4K from 46.6K, although our EPS estimates are unchanged.

While we believe Rivian is one of if not the best positioned among EV OEM start-ups, we remain Neutral rated on the stock given the long path to profitability (and price competition in the broader market) and ongoing cash use.

We maintain our 12-month price target of \$23, which is based on 2X (unchanged) applied to our Q5-Q8 revenue estimate. Key upside/downside risks to our view relate to volumes, the production ramp, the competitive landscape, Rivian's high degree of vertical integration, cash burn, and the supply chain.

## Ratings summary, updated estimates, and price targets

We update select estimates for tier 1 suppliers (APTV, BWA, LEA, MGA, VC) to reflect the UAW strike and what we expect to be margin headwinds as a result.

### Exhibit 37: We revise 2023 revenue and EPS estimates for Tier 1s

	Revs (Old) \$mn	Revs (New) \$mn	Δ%	EPS (Old)	EPS (New)	Δ%
<b>Tier 1 Suppliers</b>						
APTV	\$20,022	\$20,022	--	\$4.75	\$4.65	(2.28%)
BWA	\$14,352	\$14,352	--	\$3.75	\$3.70	(1.29%)
LEA	\$22,971	\$23,030	0.26%	\$11.85	\$11.50	(2.95%)
MGA	\$42,735	\$42,735	--	\$5.25	\$5.15	(1.89%)
VC	\$4,081	\$4,081	--	\$6.80	\$6.65	(2.16%)

Source: Goldman Sachs Global Investment Research

We also update our TEL estimates to reflect slightly lower revenue in 2024/2025, offset by higher margins. Our FY2023/FY2024/FY2025 EPS estimates of \$6.71/\$7.50/\$8.75 are unchanged. We maintain our 12-month price target of \$168, based on 21X our normalized EPS estimate of \$8.00 (unchanged). We are Buy-rated on TEL shares (on Americas Conviction List). Key downside risks to our Buy thesis relate to automotive end demand, TE executing on its margin expansion plan, the impact of EVs and new car architectures on automotive content for TE, unfavorable commodity pricing, macroeconomic demand trends, and TE successfully expanding into the sensor market.

We update target multiples and price targets for QS, LAZR, SYM, and AUR given a pullback in sales multiples of early-stage startups since 2Q earnings season.

### Exhibit 38: We adjust multiples for some of the early-stage companies in our coverage

	New					Old				
	Price Target	Target Multiples			Discounted Period	Price Target	Target Multiples			Discounted Period
	Blended	Bear	Base	Bull		Blended	Bear	Base	Bull	
QuantumScape	\$5.00	1.5X	2.0X	3.0X	2028	\$6.00	2X	3X	4X	2028
Luminar	\$3.50	2.0X	3.0X	5.0X	2025	\$4.50	2.5X	3.5X	8.0X	2025
Symbotic	\$36.00	20X	35X	40X	2026	\$41.00	25X	40X	45X	2026
Aurora	\$2.50	2.5X	3.5X	4.0X	2027	\$3.00	3X	4X	5X	2027

\*Symbotic uses EBITDA estimates; other companies use sales

PTs are on a 12-month horizon

Source: Goldman Sachs Global Investment Research



In Exhibit 39, we detail upside/downside scenarios for our coverage group

Exhibit 39: Upside/downside scenarios for select companies in our coverage

Upside/Downside Scenario									
	Current Price (10/2/2023)	Trough Multiple (NTM P/E)	NTM EPS (GSe)	Downside Valuation (Trough Multiple on NTM EPS)	Downside %	Upside Multiple (NTM P/E)	FY2025 EPS (GSe)	Upside Valuation (Trailing Typical Median Multiple on FY25 EPS)	Upside %
Tier-1 Suppliers									
BWA	\$40	7X	\$3.85	\$27	(32%)	12X	\$4.75	\$57	43%
GNTX	\$32	12X	\$1.85	\$22	(31%)	17X	\$2.40	\$40	23%
LEA	\$133	7X	\$12.20	\$85	(36%)	12X	\$20.00	\$230	73%
MGA	\$53	7X	\$5.35	\$37	(29%)	11X	\$8.00	\$84	59%
VC	\$136	14X	\$8.60	\$120	(12%)	23X	\$12.50	\$284	109%
APTV	\$97	15X	\$5.25	\$79	(19%)	24X	\$8.00	\$191	96%
Component Suppliers									
APH	\$83	19X	\$3.00	\$57	(31%)	33X	\$3.30	\$109	32%
APTV	\$97	15X	\$5.25	\$79	(19%)	24X	\$8.00	\$191	96%
BDC	\$96	7X	\$7.20	\$50	(48%)	15X	\$8.50	\$128	32%
ST	\$38	9X	\$3.80	\$34	(9%)	14X	\$4.50	\$63	67%
TEL	\$123	14X	\$7.25	\$102	(18%)	23X	\$8.75	\$201	63%
EMS									
* FLEX	\$27	6X	\$2.50	\$15	(44%)	13X	\$2.65	\$34	29%
Test & Measurement									
* KEYS	\$132	15X	\$7.40	\$111	(16%)	22X	\$9.00	\$198	50%
Power & Thermal Management									
VRT	\$38	7X	\$1.75	\$12	(68%)	25X	\$2.05	\$51	33%

\* EPS estimates exclude SBC

Upside/Downside Scenario									
	Current Price (10/2/2023)	Downside Multiple	NTM GSe	Downside Valuation	Downside %	Upside Multiple	2025 GSe	Upside Valuation	Upside %
		Trough NTM P/E	NTM EPS	Trough Multiple on NTM EPS		Upside P/E View	2025 EPS	Upside Multiple on 2025 EPS	
Auto OEMs									
F	\$12	4X	\$1.50	\$6	(51%)	8X	\$2.10	\$16	29%
GM	\$32	4X	\$5.50	\$22	(32%)	8X	\$7.05	\$56	74%
TSLA	\$252	25X	~\$3.00-\$3.80	~\$75-\$100	~(75%)-(65%)	55X	~\$5.60-\$6.10	~\$305-\$340	~20%-40%

TSLA shows range for EPS including and excluding SBC

Source: FactSet, Goldman Sachs Global Investment Research

Price targets and key risks

In Exhibit 40 we present our price targets and key risks.

Exhibit 40: Price targets and key risks

Company	Ticker	GS Rating	Current Price	Price Target	PT Methodology	Target Multiple	Key upside/downside risks
Auto OEMs							
Tesla	TSLA	Neutral	\$252	\$265	Q5-Q8 EPS	50X	EV adoption, margins, market share, the auto cycle, operational execution, key person risk
General Motors	GM	Buy	\$32	\$47	Norm. EPS	7X	The auto cycle, market share, margins, FCF, and the ability to pivot to growth areas such as EVs and AVs
Ford	F	Neutral	\$12	\$13	Norm. EPS	7X	The auto cycle, market share, margins, and the ability to pivot to growth areas such as EVs and AVs
Rivian	RIVN	Neutral	\$24	\$23	Q5-Q8 Sales	2X	Pre-orders/sales volumes, production ramp, market share, margins, software/services mix, the auto cycle, and EV adoption
Tier 1 Suppliers							
BorgWarner	BWA	Neutral	\$40	\$48	Norm. EPS	11X	Revenue growth including ability to outgrow market due to EV portfolio, diesel exposure, the auto cycle, margins, and market share
Lear	LEA	Buy	\$133	\$176	Norm. EPS	11X	The auto cycle, ability to benefit from increasing EV industry mix, margins, market share
* Magna	MGA	Buy	\$53	\$68	Norm. EPS	10X	The auto cycle, market share, ability to outgrow production and capitalize on secular growth themes, capital allocation, and FCF
Visteon	VC	Buy	\$136	\$200	Norm. EPS	20X	Ability to capitalize on EVs and AVs, margins, revenue, market share, general macroeconomic risk, multiple expansion/contraction
Apiv	APTV	Buy	\$97	\$142	Norm. EPS	20X	Ability to grow CPV, the auto cycle, market share, margins, debt
Electronic Components							
** TE Connectivity	TEL	Buy	\$123	\$168	Norm. EPS	21X	Revenue growth and auto demand, margins, and M&A
Lidar and Autonomy							
Aurora	AUR	Neutral	\$2.23	\$2.50	2027 Sales (Discounted)	3.5X	Time to market, industry pricing per mile, ability to expand geographic reach, competition, balance sheet
Luminar	LAZR	Sell	\$4.47	\$3.50	2025 Sales (Discounted)	3X	Lidar adoption and ASPs, margins, market share, M&A, balance sheet
EV Battery							
QuantumScape	QS	Sell	\$6	\$5	2028 Sales (Discounted)	2X	Ability to hit its targeted battery specs and ramp production, technological breakthroughs in today's lithium-ion batteries
Warehouse Automation							
Symbolic	SYM	Neutral	\$35	\$36	FY2026 EBITDA (Discounted)	35X	Customer concentration, industry competition, warehouse automation investment trends, revenue growth

\*Our 12-month PT for MG.TO listed in Canada is 91 CAD  
\*\*TEL is on the US American Correction List  
Base case multiples shown for AUR, LAZR, QS, and SYM

12-month price target

Source: Goldman Sachs Global Investment Research

GSe vs. the Street (FactSet)

In Exhibit 41 we show our coverage estimates versus the Street (FactSet).

Exhibit 41: GSe vs. The Street (FactSet)

	3QCY23E					4QCY23E					CY23E					CY24E						
Ticker	YoY Revenues		EPS			YoY Revenues		EPS			Revenue		EPS			Revenue		EPS				
Auto OEMs	GS	Street	GS	Street	% Diff	GS	Street	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff			
F	11%	14%	\$0.46	\$0.45	2%	(4%)	0%	\$0.20	\$0.33	(39%)	\$172.158	\$173.890	(1%)	\$2.00	\$2.11	(5%)	\$186.903	\$177.624	5%	\$1.85	\$1.93	(4%)
GM	4%	2%	\$1.72	\$1.90	(9%)	(9%)	(1%)	\$0.84	\$1.68	(50%)	\$167.618	\$169.583	(1%)	\$6.70	\$7.72	(13%)	\$173.678	\$172.709	1%	\$6.25	\$6.89	(9%)
TSLA	11%	10%	\$0.65	\$0.77	(16%)	8%	12%	\$0.85	\$0.88	(3%)	\$98.431	\$99.830	(1%)	\$3.25	\$3.32	(2%)	\$122.819	\$126.809	(3%)	\$4.65	\$4.65	0%
RIVN	—	—	(\$1.50)	(\$1.34)	—	—	—	(\$1.27)	(\$1.32)	—	\$4.318	\$4.338	(0%)	(\$5.10)	(\$5.13)	—	\$6.671	\$6.896	(3%)	(\$3.10)	(\$3.56)	—
Average	9%	11%	—	—	(8%)	(2%)	4%	—	—	(31%)	—	—	(1%)	—	—	(7%)	—	—	(0%)	—	—	(4%)
Tier 1 Suppliers	GS	Street	GS	Street	% Diff	GS	Street	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff
GNTX	17%	15%	\$0.44	\$0.44	0%	15%	14%	\$0.43	\$0.44	(2%)	\$2.278	\$2.266	1%	\$1.75	\$1.77	(1%)	\$2.489	\$2.510	(1%)	\$2.15	\$2.20	(2%)
LEA	7%	6%	\$2.50	\$2.75	(9%)	4%	3%	\$2.88	\$3.02	(5%)	\$23.030	\$22.939	0%	\$11.59	\$11.91	(3%)	\$24.462	\$24.623	(1%)	\$15.60	\$16.25	(4%)
MGA	13%	13%	\$1.24	\$1.34	(7%)	11%	11%	\$1.29	\$1.41	(9%)	\$42.735	\$42.812	(0%)	\$5.15	\$5.31	(3%)	\$45.242	\$45.212	0%	\$6.35	\$6.63	(4%)
VC	1%	1%	\$1.96	\$1.97	(1%)	3%	3%	\$2.26	\$2.25	0%	\$4.081	\$4.090	(0%)	\$6.65	\$6.68	(0%)	\$4.436	\$4.473	(1%)	\$10.25	\$9.65	6%
APTV	7%	9%	\$1.16	\$1.20	(3%)	9%	1%	\$1.32	\$1.37	(4%)	\$20.022	\$20.106	(0%)	\$4.65	\$4.72	(1%)	\$22.207	\$22.087	1%	\$6.25	\$6.20	1%
HYLN	—	—	(\$0.18)	(\$0.18)	—	—	—	(\$0.21)	(\$0.20)	—	\$10	\$11	(9%)	(\$0.75)	(\$0.74)	—	\$69	\$103	(34%)	(\$0.90)	(\$0.80)	—
Average	9%	9%	—	—	(4%)	8%	6%	—	—	(4%)	—	—	(1%)	—	—	(2%)	—	—	(0%)	—	—	(1%)
Components & Systems	QoQ Revenue	EPS			QoQ Revenue	EPS			Revenue	EPS			Revenue	EPS								
GS	Street	GS	Street	% Diff	GS	Street	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff	
APH	1%	1%	\$0.74	\$0.74	0%	2%	3%	\$0.78	\$0.77	(1%)	\$12.380	\$12.316	(0%)	\$2.90	\$2.92	(1%)	\$12.917	\$13.130	(2%)	\$3.10	\$3.22	(4%)
BDC	(1%)	(1%)	\$1.80	\$1.82	(1%)	2%	1%	\$1.86	\$1.87	(1%)	\$2.718	\$2.712	0%	\$7.25	\$7.28	(0%)	\$2.769	\$2.815	(2%)	\$7.40	\$7.68	(4%)
ST	(0%)	(0%)	\$0.90	\$0.90	0%	1%	1%	\$0.93	\$0.94	(1%)	\$4.078	\$4.075	0%	\$3.72	\$3.73	(0%)	\$4.241	\$4.293	(1%)	\$4.00	\$4.20	(5%)
TEL	(1%)	0%	\$1.76	\$1.76	0%	(2%)	(2%)	\$1.65	\$1.70	(3%)	\$16.050	\$16.185	(1%)	\$6.88	\$6.91	(0%)	\$16.842	\$17.070	(1%)	\$7.80	\$7.81	(0%)
Average	(1%)	(1%)	—	—	(0%)	0%	1%	—	—	(1%)	—	—	(0%)	—	—	(0%)	—	—	(1%)	—	—	(3%)
Lidar and Autonomy	GS	Street	GS	Street	% Diff	GS	Street	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff
LAZR	17%	21%	(\$0.19)	—	—	111%	74%	(\$0.18)	(\$0.16)	—	\$80	\$84	7%	(\$0.82)	(\$0.80)	—	\$280	\$244	15%	(\$0.60)	(\$0.53)	—
INVZ	105%	105%	(\$0.21)	(\$0.22)	—	300%	293%	(\$0.18)	(\$0.21)	—	\$17	\$17	5%	(\$0.80)	(\$0.89)	—	\$50	\$80	(38%)	(\$0.73)	(\$0.83)	—
MBLY	17%	16%	\$0.17	\$0.17	0%	25%	24%	\$0.27	\$0.23	17%	\$2.105	\$2.103	0%	\$0.75	\$0.71	6%	\$2.692	\$2.713	(1%)	\$0.85	\$0.87	(2%)
Average	2%	2%	\$0.57	\$0.58	(2%)	6%	7%	\$0.61	\$0.64	(5%)	\$30.539	\$30.739	(1%)	\$2.37	\$2.42	(2%)	\$31.905	\$32.137	(1%)	\$2.59	\$2.66	(3%)
Test & Measurement	GS	Street	GS	Street	% Diff	GS	Street	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff
KEYS	(6%)	(6%)	\$1.86	\$1.87	(1%)	(4%)	(4%)	\$1.75	\$1.71	2%	\$5.420	\$5.448	(1%)	\$8.07	\$8.12	(1%)	\$5.412	\$5.462	(1%)	\$7.81	\$7.89	(1%)
Power & Thermal Management	GS	Street	GS	Street	% Diff	GS	Street	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff
VRT	1%	1%	\$0.44	\$0.44	0%	3%	4%	\$0.46	\$0.46	0%	\$6.812	\$6.827	(0%)	\$1.60	\$1.60	0%	\$7.238	\$7.330	(1%)	\$1.95	\$1.91	2%
Voice Technology	GS	Street	GS	Street	% Diff	GS	Street	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff
CRNC	18%	19%	\$0.16	\$0.12	33%	7%	7%	\$0.22	\$0.23	(4%)	\$301	\$305	(1%)	\$0.69	\$0.62	11%	\$355	\$379	(6%)	\$1.59	\$1.50	6%
EV Battery	GS	Street	GS	Street	% Diff	GS	Street	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff
QS	—	—	(\$0.26)	(\$0.20)	—	—	—	(\$0.25)	(\$0.19)	—	\$0	\$0	—	(\$1.00)	(\$0.83)	—	\$0	\$2	—	(\$1.00)	(\$0.85)	—
Charging	GS	Street	GS	Street	% Diff	GS	Street	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff	GS	Street	% Diff
CHPT	4%	6%	(\$0.14)	(\$0.14)	—	17%	14%	(\$0.11)	(\$0.10)	—	\$606	\$606	(0%)	(\$0.65)	(\$0.64)	—	\$841	\$840	0%	(\$0.33)	(\$0.21)	—
* Estimates adjusted to exclude stock based compensation to compare to the Ticker (TSLA, RIVN, FLEX, KEYS, CRNC, LAZR, INVZ, MBLY, CHPT)																						

\* Estimates adjusted to exclude stock based compensation to compare to the Street (TSLA, RIVN, FLEX, KEYS, CRNC, LAZR, INVZ, MBLY, CHPT)

Source: Goldman Sachs Global Investment Research, FactSet

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