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Autos & Shared Mobility | North America

Global Auto Monitor: Mean Reversion, Stock Aversion?

Lithia's 3Q highlighted destruction in new and used markets, a precursor to large drops in GPUs. Consensus FY23 numbers should finally fall across the sector signaling a still-too-early buy signal.

What Others Are Reading - Our Most Read Reports

- [NORTH AMERICA] **[TSLA: 3Q Margins Beat, But FY23 Outlook Still at Risk \(Oct 19\)](#)** A clean 3Q earnings beat despite lower regulatory credits, rising input costs, FX headwinds, logistics/plant ramp-up inefficiencies. \$3.3bn of FCF was nearly 3x our forecast. A very strong quarter. Still... we wish FY23 consensus would allow more room for macro uncertainty.
- [NORTH AMERICA] **[LAD: 3Q Missed on Used, Inventory Up... New and F&I Misses Next? \(Oct 19\)](#)** The long-awaited dealer earnings mean reversion has begun. New GPUs (reflecting pre-orders) have yet to drop. FY23 cons has 50pct-type downside risk.
- [EUROPE] **[Auto production – another upward revision, driven by China \(Oct 14\)](#)** S&P Global production forecasts call for 6.1% YoY production growth in FY22, from 5.7% previously, with China the key driver of the upgrade. The forecast revision now calls for Q3 growth of 27.8% (low comps) with 3Q Chinese volumes lifted 400k units the key story. All major regions expected to grow 20%+ YoY.
- [INDIA] **[Bajaj Auto: F2Q23: Commodity Tailwinds Kick In; Remain EW \(Oct 16\)](#)** We have an Attractive view on the auto sector and believe the next leg of outperformance will be driven by upside surprises on the margin side as commodity tailwinds kick in. For Bajaj, part of the upside will be offset by weaker export volumes. EW.
- [S.KOREA] **[HMC and Kia: More Engine Provisions \(Oct 18\)](#)** After the market closed, HMC and KMC announced quality-related warranty provisions of W1.4trn and W1.5trn, respectively. We highlight key implications and our thoughts.
- [CHINA] **[Key Investor Questions on China Autos/EV \(Oct 19\)](#)** Despite the significant sell-off in the auto sector in recent weeks, investor attention continues to be high, particularly on EVs, covering thematic trades and stock-specific inquiries into 3Q prints. We summarize the most frequently asked questions from investors and our responses.
- [CHINA] **[China EV – 4Q off to a lukewarm start \(Oct 18\)](#)** Despite a sharp bounce from the week-long holiday, China's mid-October EV sales look reasonable but not exceptionally strong if considering seasonality.

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Disruptions from Covid restrictions linger as a key drawback. It will likely take stronger sales uptick in late Oct to reignite market excitement.

■ [CHINA] **Auto Lights: Smart Lighting Illuminates the Road Ahead (Oct 16)**

Adaptive driving beam (ADB) is the next evolution in auto lighting in China, driving future growth as LED penetration peaks. We upgrade Xingyu to OW as a key play on this emerging trend.

Global picks: FREY, Stellantis, Zhongsheng, Denso, Mando, MSIL, NIO and Global PMX are our preferred stocks from each major region.

Our global industry views: Our view on India auto is Attractive. We have In-Line views on the North America, Europe, China, Japan, and South Korea industries.

Exhibit 1: What Changed This Past Week?

Company	Rating	Price Target
Changzhou Xingyu	EW→OW	Rmb 140.00 → Rmb 196.00
Huayu	OW	Rmb 28.00 → Rmb 22.70
Keboda	NA→EW	NA → Rmb 62.00
Bajaj Auto	EW	RS 3,896 → RS 3,956

Global Auto Sales Summary

Exhibit 2: Global Auto Sales Summary

Country	LIGHT VEHICLE SALES FORECASTS								GROWTH %								CAGR '22-'25E
	2018	2019	2020	2021	2022e	2023e	2024e	2025e	2018	2019	2020	2021	2022e	2023e	2024e	2025e	
Asia																	
China	23.7	21.4	20.1	21.5	22.0	23.5	24.0	24.4	-4.2%	-9.5%	-6.1%	6.6%	2.6%	6.4%	2.3%	1.8%	3.5%
Japan	5.2	5.1	4.5	4.3	4.9	4.9	5.0	5.2	1.0%	-1.5%	-12.7%	-3.1%	13.7%	0.2%	0.8%	5.0%	2.0%
South Korea	1.6	1.5	1.6	1.4	1.4	1.4	1.5	1.5	5.0%	-2.0%	4.4%	-10.4%	-4.5%	5.0%	2.0%	2.0%	3.0%
India	3.4	3.0	2.4	3.1	3.3	3.6	4.0	4.4	5.1%	-12.7%	-17.9%	26.7%	6.1%	10.0%	10.0%	10.0%	10.0%
Indonesia	1.1	0.9	0.5	0.8	0.8	0.9	0.9	0.9	4.9%	-9.8%	-47.8%	59.7%	4.2%	5.3%	3.9%	2.4%	3.9%
Australia	1.1	1.0	0.9	1.0	1.1	1.1	1.1	1.1	-3.2%	-7.7%	-13.9%	15.7%	1.9%	4.0%	0.7%	-0.8%	1.3%
Thailand	1.0	1.0	0.8	0.7	0.8	0.8	0.9	0.9	19.9%	-3.1%	-21.3%	-5.4%	6.4%	6.2%	6.8%	3.9%	5.6%
Rest of Asia	2.5	2.7	2.2	1.4	1.1	1.2	1.3	1.4	14.1%	7.9%	-19.4%	-36.2%	-21.8%	7.2%	8.5%	8.2%	8.0%
Total Asia	39.6	36.8	33.0	34.3	35.4	37.4	38.6	39.8	-0.7%	-7.1%	-10.2%	3.9%	3.1%	5.8%	3.1%	3.3%	4%
North America																	
US	17.3	17.1	14.6	15.1	14.3	15.0	16.0	16.2	-0.2%	-1.3%	-14.5%	3.4%	-5.1%	4.9%	6.7%	1.0%	4.2%
Canada	2.0	1.9	1.6	1.7	1.7	1.8	1.9	1.9	-2.2%	-3.2%	-18.8%	6.4%	4.0%	7.1%	2.5%	0.4%	3.3%
Mexico	1.4	1.3	0.9	1.0	1.1	1.1	1.2	1.2	-7.3%	-7.2%	-28.1%	6.8%	4.0%	5.1%	5.9%	3.8%	4.9%
Total NAFTA	20.7	20.3	17.1	17.7	17.1	18.0	19.1	19.3	-0.9%	-1.9%	-15.8%	3.9%	-3.8%	5.1%	6.2%	1.1%	4.1%
South America																	
Brazil	2.5	2.7	2.0	2.0	2.0	2.1	2.2	2.2	13.7%	7.7%	-26.7%	0.9%	0.0%	5.0%	5.0%	3.0%	4.3%
Argentina	0.6	0.4	0.3	0.4	0.4	0.4	0.4	0.4	-17.4%	-27.1%	-27.2%	9.9%	0.0%	5.0%	0.0%	0.0%	1.6%
Rest of South America	1.2	1.0	0.7	1.0	1.1	1.1	1.2	1.2	10.2%	-18.4%	-30.9%	47.2%	5.0%	5.0%	3.0%	3.0%	3.7%
Total South America	4.3	4.1	3.0	3.3	3.4	3.6	3.7	3.8	7.0%	-4.7%	-27.8%	12.7%	1.5%	5.0%	3.8%	2.7%	3.8%
Eastern Europe																	
Russia	1.9	1.9	1.6	1.7	0.7	1.2	1.3	1.3	12.4%	-3.7%	-12.5%	4.4%	-58.8%	73.3%	9.1%	0.4%	23.8%
Turkey	0.8	0.6	0.9	0.7	0.9	0.9	0.9	0.9	-20.5%	-24.4%	63.4%	-21.3%	21.6%	0.0%	0.0%	0.0%	0.0%
Romania	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.2	5.4%	38.4%	-21.9%	-3.2%	3.0%	54.8%	1.2%	3.0%	17.3%
Poland	0.6	0.7	0.5	0.5	0.5	0.7	0.8	0.8	3.3%	10.9%	-22.1%	5.6%	0.4%	30.3%	15.0%	0.4%	14.6%
Other E Europe	0.6	0.7	0.6	0.9	0.9	0.8	0.8	0.9	-4.0%	13.2%	-21.3%	64.3%	-9.5%	-4.5%	1.9%	3.8%	0.4%
Total E. Europe	4.1	4.0	3.8	4.1	3.1	3.8	4.1	4.1	0.4%	-1.4%	-5.2%	7.0%	-22.7%	22.9%	6.1%	1.1%	9.6%
Western Europe																	
France	2.5	2.7	2.0	2.1	2.1	2.2	2.3	2.4	1.1%	4.8%	-23.9%	1.0%	3.4%	4.7%	4.9%	1.7%	3.8%
Germany	4.0	4.2	3.4	3.1	3.2	3.3	3.4	3.4	1.1%	4.6%	-17.8%	-9.5%	3.3%	2.6%	1.9%	0.8%	1.8%
Italy	2.2	2.1	1.5	1.6	1.6	1.6	1.7	1.7	-0.2%	-2.4%	-27.3%	5.7%	-4.0%	4.7%	3.3%	2.3%	3.4%
Spain	1.5	1.5	1.0	1.0	1.1	1.1	1.2	1.2	2.3%	0.5%	-31.5%	0.1%	5.0%	6.9%	5.0%	2.7%	4.9%
UK	2.9	2.7	1.9	2.0	2.1	2.2	2.3	2.3	-0.5%	-6.9%	-28.2%	3.7%	3.4%	4.8%	4.4%	2.1%	3.8%
Other	3.6	3.6	2.8	2.9	2.9	3.0	3.1	3.1	0.8%	-0.9%	-20.5%	1.0%	0.9%	3.5%	3.4%	2.2%	3.0%
Total W. Europe	16.7	16.7	12.8	12.7	12.9	13.5	13.9	14.2	0.7%	0.2%	-23.5%	-0.9%	2.0%	4.1%	3.6%	1.8%	3.2%
Total Europe (incl Russia & Turkey)	20.7	20.7	16.6	16.7	16.1	17.3	18.0	18.3	0.6%	-0.1%	-19.9%	0.9%	-4.0%	7.8%	4.1%	1.7%	4.5%
Rest of World	4.8	4.5	4.1	6.2	4.3	4.3	4.3	4.4	-0.1%	-6.5%	-9.3%	51.3%	-30.6%	0.0%	0.0%	1.6%	0.5%
Global LV Total	89.8	86.1	73.5	77.9	78.0	83.0	86.5	88.6	-0.4%	-4.2%	-14.6%	6.1%	0.1%	6.4%	4.3%	2.4%	4.3%
Global PC Total	81.7	78.1	66.9	68.8	68.4	72.5	75.2	79.8	-0.7%	-4.5%	-14.3%	2.9%	-0.7%	6.0%	3.7%	6.1%	5.3%
Global LCV Total	8.1	8.0	6.6	9.1	9.6	9.9	9.9	8.8	3.5%	-1.3%	-17.4%	37.7%	5.5%	3.1%	0.0%	-11.1%	-2.9%
ICE sales	88.5	84.5	71.2	71.2	70.5	73.6	74.1	72.8	-1.0%	-4.6%	-15.8%	0.0%	-1.0%	4.4%	0.7%	-1.7%	1.1%
EV sales	1.3	1.6	2.3	6.7	7.5	9.4	12.5	15.7	72.4%	21.0%	47.3%	189.6%	10.8%	25.5%	32.9%	26.3%	28.2%

Source: Morgan Stanley Research estimates, IHS AutoInsight

Global Auto Stock Rankings

Exhibit 3: North America Coverage Rankings

North America			2023e EPS		
			MS	Cons	
1	FREYR Battery	OW	-1.92	-1.84	NM
2	Ferrari	OW	€ 5.80	€ 5.96	(2.7%)
3	Tesla	OW	4.47	5.90	(24.2%)
4	Rivian	OW	-7.49	-5.67	NM
5	American Axle	OW	1.17	1.28	(9.0%)
6	Magna International	OW	6.42	6.41	0.0%
7	APTIV	OW	4.75	5.04	(5.7%)
8	CarMax	OW	3.58	3.97	(9.7%)
9	Ford Motor	OW	1.30	1.86	(30.1%)
10	Hertz	EW	2.30	2.45	(6.1%)
11	Harley-Davidson	EW	4.66	4.68	(0.6%)
12	Lear	EW	11.09	14.46	(23.3%)
13	Tenneco	EW	4.71	3.84	22.8%
14	Fisker	EW	-0.81	-1.13	NM
15	AutoNation	EW	19.78	20.90	(5.4%)
16	Visteon	EW	7.35	7.54	(2.5%)
17	Li-Cycle	EW	-0.64	-0.59	NM
18	QuantumScape	EW	-0.96	-0.82	NM
19	Carvana	EW	-7.02	-5.37	NM
20	General Motors	EW	3.96	6.19	(36.1%)
21	BorgWarner Inc.	UW	4.40	4.95	(11.2%)
22	Penske Automotive Group	UW	13.71	14.99	(8.5%)
23	Lithia Motors	UW	40.04	37.62	6.5%
24	Sonic Automotive	UW	6.47	8.45	(23.4%)
25	Avis Budget	UW	23.43	21.74	7.8%
26	Adient	UW	2.75	2.77	(0.8%)
27	Lucid	UW	-0.95	-1.06	NM
28	Group 1 Automotive	UW	34.69	37.86	(8.4%)
29	Asbury Automotive	UW	29.98	32.30	(7.2%)

Source: Refinitiv, Morgan Stanley Research

Exhibit 4: Japan Coverage Rankings

Japan			2023e EPS		
			MS	Cons	
1	Denso	OW	677.25	638.23	6.1%
2	NHK Spring	OW	132.88	121.06	9.8%
3	Toyota Industries	OW	734.35	711.32	3.2%
4	NOK	OW	167.33	150.69	11.0%
5	Toyota Motor	OW	234.45	230.75	1.6%
6	Aisin Seiki	EW	656.74	655.33	0.2%
7	Toyo Tire & Rubber	EW	269.90	263.74	2.3%
8	EXEDY	EW	272.76	296.18	(7.9%)
9	Unipres	EW	166.73	60.93	173.6%
10	Bridgestone	EW	538.80	505.92	6.5%
11	Stanley Electric	EW	216.44	226.91	(4.6%)
12	Nifco	EW	238.36	260.89	(8.6%)
13	Musashi Seimitsu	EW	160.06	186.28	(14.1%)
14	Honda Motor	EW	484.18	505.57	(4.2%)
15	Toyoda Gosei	EW	271.89	295.70	(8.1%)
16	Yokohama Rubber	EW	286.40	314.72	(9.0%)
17	Toyota Boshoku	UW	230.11	277.28	(17.0%)
18	Koito Mfg.	UW	175.75	189.98	(7.5%)
19	Sumitomo Rubber	UW	143.12	115.19	24.3%
20	Nissan Motor	UW	71.38	82.86	(13.9%)

Source: Refinitiv, Morgan Stanley Research

Exhibit 5: Europe Coverage Rankings

Europe			2023e EPS		
			MS	Cons	
1	Stellantis	OW	3.96	4.56	(13.1%)
2	Daimler Truck Holding	OW	3.12	3.20	(2.5%)
3	Renault	OW	9.10	8.17	11.4%
4	Michelin	OW	2.88	3.12	(7.6%)
5	Aramis Autos	OW	-0.19	-0.12	NM
6	Valeo	OW	1.99	1.91	4.3%
7	Ebusco	EW	0.30	0.67	NM
8	Mercedes-Benz	EW	10.14	11.13	(8.8%)
9	Continental	EW	7.99	8.35	(4.4%)
10	EDAG	EW	1.44	1.33	8.7%
11	Pirelli	EW	0.60	0.54	11.6%
12	Autoliv	EW	6.59	6.95	(5.2%)
13	BMW	UW	13.30	13.82	(3.7%)
14	Volvo	UW	15.06	18.17	(17.1%)
Volkswagen			NA	32.01	NM

Source: Refinitiv, Morgan Stanley Research

Exhibit 6: China Coverage Rankings

China			2023e EPS		
			MS	Cons	
1	Guangzhou Auto	OW	1.01	1.12	(9.8%)
2	Geely	OW	0.95	0.82	15.7%
3	Great Wall	OW	1.03	1.21	(14.7%)
4	Dongfeng	OW	1.29	1.41	(8.6%)
5	Yongda Auto	OW	1.24	1.35	(8.5%)
6	Minh Group	OW	2.15	1.73	24.3%
7	Nexteer Automotive	OW	0.09	0.07	28.6%
8	Baoxin Auto	EW	0.20	0.23	(13.9%)
9	BYD	EW	6.44	5.44	18.5%
10	Zhengtong Auto	UW	0.23	0.17	35.3%
11	BAIC Motor	UW	0.32	0.54	(40.5%)

Source: Refinitiv, Morgan Stanley Research

Exhibit 7: India Coverage Rankings

India		2023e EPS		
		MS	Cons	
1	Maruti Suzuki	OW	348.86	348.11 0.2%
2	Bharat Forge	OW	30.86	32.97 (6.4%)
3	Ashok Leyland	OW	6.18	7.23 (14.5%)
4	Mahindra & Mahindra	OW	74.56	67.32 10.8%
5	Tata Motors	OW	37.14	35.07 5.9%
6	Eicher Motors Ltd.	OW	93.23	103.27 (9.7%)
7	Exide Industries	OW	12.28	12.86 (4.5%)
8	Bajaj Auto	EW	234.66	226.43 3.6%
9	TVS Motor	UW	28.70	37.49 (23.4%)
10	Hero MotoCorp	UW	183.27	191.85 (4.5%)
11	Amara Raja	UW	39.73	35.98 10.4%
12	TVS Motor	UW	28.70	37.49 (23.4%)

Source: Refinitiv, Morgan Stanley Research

Exhibit 8: Taiwan Coverage Rankings

Taiwan		2023e EPS		
		MS	Cons	
1	Global PMX	OW	13.55	13.48 0.5%
2	Macauto Industrial	OW	9.78	9.38 4.3%
3	Hu Lane Associates	OW	12.09	11.65 3.8%
4	Macauto Industrial	OW	9.78	9.38 4.3%
5	Hota Industrial	OW	3.78	3.39 11.6%
6	Cub Elecparts	EW	NA	5.96 NM
7	Cheng Shin Rubber	UW	2.23	2.05 9.0%

Source: Refinitiv, Morgan Stanley Research

Exhibit 9: S.Korea Coverage Rankings

S.Korea		2023e EPS		
		MS	Cons	
1	Mando Corp	OW	4616.88	5195.51 (11.1%)
2	S&T Motiv	OW	5498.36	6212.87 (11.5%)
3	Kia Motors	OW	14739.55	15915.17 (7.4%)
4	Hyundai Motor	EW	32222.35	32116.56 0.3%
5	Hyundai MOBIS	EW	27763.71	32185.69 (13.7%)
6	Hankook Tire	UW	3436.69	4980.06 (31.0%)
7	Hanon Systems	UW	475.55	609.29 (22.0%)

Source: Refinitiv, Morgan Stanley Research

Note: Coverage Rankings are as of Oct 21, 2022

Global OEM Comps

Exhibit 10: Global OEM Comps - FREY, Stellantis, Guangzhou, Toyota Motors and MSIL are preferred stocks

Company	Currency	Price at	MS	Upside to	MS	Market Cap		MS EPS		Consensus EPS		P / E		EV / EBITDA ⁽¹⁾		EV / Sales ⁽¹⁾		P / B		
		24-Oct	Price Target	PT (%)	Rating	LC	US\$	2022e	2023e	2022e	2023e	2022e	2023e	2022e	2023e	2022e	2023e	2022e	2023e	
Europe																				
Volkswagen	EUR	130.34		NC	NA	NC	76.2	75.2	NA	NA	33.94	32.01	3.8x	4.1x	5.2x	5.2x	0.8x	0.8x	0.4x	0.4x
Mercedes-Benz	EUR	57.54	70.00	22%	EW	60.4	59.6	12.79	10.14	11.74	11.13	4.5x	5.7x	1.9x	2.9x	0.3x	0.5x	0.8x	0.7x	
Daimler Truck Holding	EUR	25.43	35.00	38%	OW	20.7	20.4	3.00	3.12	2.99	3.20	8.5x	8.2x	6.0x	5.8x	0.6x	0.6x	1.1x	1.0x	
Renault	EUR	32.76	38.00	16%	OW	9.6	9.5	7.05	9.10	5.54	8.17	4.6x	3.6x	NA	NA	NA	NA	0.3x	0.2x	
Stellantis	EUR	13.07	18.50	42%	OW	42.0	41.4	4.74	3.96	5.16	4.56	2.8x	3.3x	NA	NA	NA	NA	0.6x	0.6x	
BMW	EUR	77.60	90.00	16%	UW	46.2	45.6	16.36	13.30	21.67	13.82	4.7x	5.8x	0.8x	0.6x	0.1x	0.1x	0.6x	0.5x	
Europe Weighted Average												4.4x	5.0x	3.3x	3.5x	0.5x	0.5x	0.6x	0.6x	
North America																				
General Motors	USD	35.00	30.00	(14%)	EW	51.0	51.0	6.04	3.96	6.78	6.19	5.8x	8.8x	2.4x	2.9x	0.3x	0.3x	0.8x	0.7x	
Ford Motor	USD	12.19	14.00	15%	OW	49.0	49.0	1.95	1.30	1.99	1.86	6.3x	9.4x	2.1x	2.3x	0.2x	0.2x	1.1x	1.0x	
North America Weighted Average												6.0x	9.1x	2.3x	2.6x	0.3x	0.3x	0.9x	0.8x	
China																				
BYD	HKD	185.50	300.00	62%	EW	203.7	25.9	4.30	6.44	3.40	5.44	43.2x	28.8x	20.8x	14.8x	2.0x	1.7x	4.6x	3.9x	
SAIC Motor	CNY	13.91	22.00	58%	OW	163.1	22.5	2.17	2.50	1.92	2.22	6.4x	5.6x	4.1x	3.0x	0.1x	0.1x	0.6x	0.5x	
Geely	HKD	8.77	22.00	151%	OW	88.2	11.2	0.51	0.95	0.55	0.82	17.2x	9.2x	4.6x	2.3x	0.4x	0.2x	1.1x	1.0x	
Anhui Jianghuai	CNY	13.44	12.00	(11%)	UW	29.5	4.1	0.27	0.50	0.13	0.26	49.4x	NM	6.2x	4.3x	0.5x	0.4x	1.6x	1.5x	
Sinotruk	HKD	7.15	12.40	73%	EW	19.7	2.5	1.22	1.47	1.18	1.56	5.9x	NA	NM	NM	NM	NM	0.5x	0.5x	
Dongfeng	HKD	3.70	6.50	76%	OW	31.9	4.1	1.27	1.29	1.32	1.41	2.9x	NA	1.4x	1.4x	0.2x	0.2x	0.2x	0.2x	
Chongqing Changan	HKD	3.50	6.05	73%	OW	5.7	0.7	0.68	0.59	0.79	0.75	5.2x	5.9x	2.5x	1.7x	0.2x	0.1x	0.5x	0.5x	
Zhengzhou Yutong Bus C	CNY	6.98	14.00	101%	EW	15.5	2.1	0.99	1.24	0.22	0.43	7.1x	5.6x	1.7x	1.2x	0.2x	0.1x	0.9x	0.8x	
Guangzhou	HKD	5.28	10.50	99%	OW	16.4	2.1	1.42	1.56	0.97	1.12	3.7x	3.4x	29.2x	20.1x	0.9x	0.7x	0.5x	0.5x	
BAIC Motor	HKD	1.69	1.80	7%	UW	13.5	1.7	0.31	0.32	0.51	0.54	5.5x	5.2x	NM	NM	NM	NM	0.2x	0.2x	
Chongqing Changan	HKD	3.50	6.05	73%	OW	5.7	0.7	0.68	0.59	0.79	0.75	5.2x	5.9x	2.5x	1.7x	0.2x	0.1x	0.5x	0.5x	
Weichai Power	HKD	7.13	14.50	103%	EW	13.9	1.8	1.15	1.33	0.76	1.00	6.2x	5.3x	0.8x	0.9x	0.1x	0.1x	0.7x	0.6x	
Great Wall	HKD	7.81	16.00	105%	OW	23.4	3.0	0.92	1.03	1.03	1.21	8.5x	7.5x	16.3x	12.3x	1.0x	0.9x	1.0x	0.9x	
China Weighted Average												21.3x	14.5x	10.6x	7.5x	0.9x	0.7x	2.0x	1.7x	
South Korea																				
Hyundai Motor	KRW	161,500.00	220,000.00	36%	EW	34,507.4	24.2	43,533.90	32,222.35	33,296.05	32,116.56	3.7x	5.0x	7.8x	8.6x	0.9x	0.8x	0.4x	0.4x	
Kia Motors	KRW	65,300.00	100,000.00	53%	OW	26,470.2	18.5	17,000.34	14,739.55	15,963.38	15,915.17	3.8x	4.4x	1.8x	1.8x	0.2x	0.2x	0.7x	0.6x	
South Korea Weighted Average												3.8x	4.8x	5.2x	5.6x	0.6x	0.5x	0.5x	0.5x	
Japan																				
Toyota Motor	JPY	1,996.50	2,350.00	18%	OW	32,030.5	216.9	208.69	234.45	209.69	230.75	9.6x	8.5x	6.5x	5.5x	0.8x	0.7x	1.0x	0.9x	
Honda Motor	JPY	3,258.00	3,400.00	4%	EW	5,803.4	39.3	424.10	484.18	443.21	505.57	7.7x	6.7x	2.9x	2.3x	0.2x	0.2x	0.5x	0.5x	
Suzuki Motor	JPY	4,630.00	NC	NA	NC	2,236.1	15.1	NA	NA	393.68	465.41	11.8x	9.9x	4.9x	4.2x	0.5x	0.5x	1.1x	1.0x	
Japan Weighted Average												9.4x	8.3x	5.9x	5.0x	0.7x	0.6x	0.9x	0.8x	
India ⁽¹⁾																				
Maruti Suzuki	INR	8,699.9	9,839.0	13%	OW	2,619.9	31.7	231.2	348.9	240.4	348.1	37.6x	24.9x	20.8x	14.1x	1.9x	1.6x	4.5x	4.1x	
Bajaj Auto	INR	3,669.2	3,956.0	8%	EW	1,034.4	12.5	212.4	234.7	197.6	226.4	17.3x	15.6x	13.3x	11.7x	2.2x	2.0x	3.7x	3.5x	
TVS Motor	INR	1,140.7	535.0	(53%)	UW	540.5	6.5	24.7	28.7	29.5	37.5	46.1x	39.7x	23.2x	20.1x	2.2x	2.0x	9.7x	8.4x	
Hero MotoCorp	INR	2,569.8	2,216.0	(14%)	UW	511.7	6.2	152.1	183.3	153.8	191.9	16.9x	14.0x	9.3x	7.6x	1.1x	1.0x	3.0x	2.8x	
Tata Motors	INR	398.0	502.0	26%	OW	1,317.4	16.0	(6.2)	37.1	14.1	35.1	28.2x	11.3x	6.2x	3.9x	0.8x	0.6x	3.3x	2.5x	
Ashok Leyland	INR	143.0	175.0	22%	OW	418.4	5.1	2.2	6.2	3.6	7.2	64.1x	23.1x	23.5x	12.0x	1.4x	1.0x	5.3x	4.3x	
India Weighted Average												33.2x	20.9x	16.1x	11.5x	1.7x	1.4x	4.5x	4.0x	
Global Weighted Average												10.9x	8.9x	6.5x	5.4x	0.7x	0.7x	1.3x	1.1x	

Source: Refinitiv, Morgan Stanley Research

Notes: 1) For Renault EV calculation, Nissan and Volvo stakes are subtracted at 20% discount to their current market cap. (2) For Indian companies, 2020 and 2021 estimates refer to the fiscal years ending March 2021 and March 2022, respectively. (3) EV/EBITDA excludes the impact from pension and healthcare liabilities with the exception of Ford. Ford is calculated on an EV/EBITDAP and includes pension and healthcare liabilities. Notes: e = Morgan Stanley Research est, O = Overweight, E = Equal-weight, U = Underweight, NC = Not Covered. Valuation multiples are based on MS est. unless a company is restricted or NC, in which case cons. est. are used 4) PTs & Ratings are as of Oct 21, 2022

EV OEMs Comps

Exhibit 11: EV OEM Comps

Company	Currency	Price at 28-Oct	MS Price Target	Upside to PT (%)	MS Rating	Market Cap	Current EV	MS EPS	Consensus EPS	P / E	EV / EBITDA	EV / Sales	P / B								
														2023e	2024e	2023e	2024e	2023e	2024e	2023e	2024e
North America																					
Tesla	USD	214.44	350.00	63%	OW	671.9	671.9	708.9	3.54	4.81	5.78	7.01	60.6x	44.6x	22.6x	16.5x	6.6x	4.7x	13.4x	10.1x	
Lucid	USD	13.31	12.00	(10%)	UW	22.3	22.3	22.6	-0.95	-0.63	-1.05	-0.70	NM	NM	105.1x	38.5x	9.8x	4.3x	6.3x	5.3x	
Fisker	USD	7.62	10.00	33%	EW	2.2	2.2	2.7	-0.81	-0.58	-1.13	-0.33	NM	NM	NM	9.7x	1.5x	0.7x	4.3x	4.3x	
Rivian	USD	31.92	60.00	88%	OW	29.2	29.2	24.8	-7.49	-4.61	-5.67	-3.91	NM	NM	NM	NM	5.8x	3.5x	3.4x	4.3x	
North America Weighted Average														60.6x	44.6x	25.2x	17.1x	6.7x	4.6x	12.8x	9.7x
China																					
NIO Inc.	USD	11.21	25.00	123%	OW	18.7	18.7	214.1	1.81	5.10	-1.50	1.92	6.2x	2.2x	22.8x	8.8x	2.0x	1.4x	3.6x	2.8x	
Li Auto Inc.	USD	17.77	35.00	97%	OW	18.5	18.5	98.0	1.56	5.62	1.55	4.07	11.4x	3.2x	11.4x	6.0x	1.1x	0.5x	2.2x	1.9x	
BYD Company	HKD	185.50	300.00	62%	EW	203.7	25.9	605.6	6.44	9.13	5.44	7.33	28.8x	20.3x	11.6x	NA	1.7x	1.4x	3.9x	3.3x	
Xpeng Inc.	USD	6.13	18.00	121%	OW	7.0	7.0	57.2	-14.43	-7.01	-5.34	-1.04	NM	NM	NM	NM	1.0x	0.8x	2.1x	2.3x	
China Weighted Average														17.5x	9.5x	14.5x	7.4x	1.5x	1.1x	3.2x	2.7x
Global Weighted Average														56.8x	41.6x	24.4x	16.6x	6.2x	4.3x	11.9x	9.1x

Source: Refinitiv, Morgan Stanley Research Note: PTs & Ratings are as of Oct 21, 2022

Global Supplier Comps

Exhibit 12: Global Supplier Comps: APTV, Valeo, Huayu, Denso, Mando and Tata Motors are preferred stocks

Company	Currency	Price at 24-Oct	MS Price Target	MS Upside to PT (%)	MS Rating	Market Cap		MS EPS		Consensus EPS		P / E		EV / EBITDA		EV / Sales		P / B	
						LC	US\$	2022e	2023e	2022e	2023e	2022e	2023e	2022e	2023e	2022e	2023e	2022e	2023e
Europe																			
Autoliv	USD	76.69	NC	NA	NC	6.7	6.7	NA	NA	4.35	6.95	17.6x	11.0x	8.1x	6.2x	0.9x	0.8x	2.5x	2.3x
Valeo S.A.	EUR	16.78	22.00	31%	OW	4.0	4.0	0.98	1.99	0.87	1.91	17.2x	8.4x	4.2x	3.6x	0.5x	0.5x	1.0x	0.9x
Continental	EUR	50.18	70.00	39%	EW	10.1	9.9	5.59	7.99	5.58	8.35	9.0x	6.3x	4.3x	3.7x	0.5x	0.4x	0.9x	0.8x
EDAG Engineering	EUR	9.68	14.00	45%	EW	0.3	0.2	1.25	1.44	1.21	1.33	7.8x	6.7x	3.9x	3.4x	0.5x	0.5x	1.7x	1.5x
Schaeffler AG	EUR	5.19	NC	NA	NC	0.9	0.8	NA	NA	0.88	1.05	5.9x	5.0x	1.9x	1.7x	0.2x	0.2x	1.0x	0.9x
Hella KGaA Hueck	EUR	70.65	NC	NA	NC	8.0	7.8	NA	NA	2.01	3.16	35.2x	22.3x	12.0x	9.1x	1.3x	1.1x	3.1x	2.7x
Faurecia	EUR	13.29	25.00	88%	OW	2.6	2.6	0.76	3.00	1.09	3.07	17.5x	4.4x	4.3x	3.3x	0.5x	0.4x	0.6x	0.6x
Europe Weighted Average												18.8x	11.3x	6.9x	5.4x	0.8x	0.7x	1.8x	1.6x
North America ¹																			
APTIV	USD	87.04	120.00	38%	OW	23.6	23.6	3.55	4.75	3.17	5.04	24.5x	18.3x	12.1x	10.1x	1.6x	1.4x	2.8x	2.4x
Magna International	USD	51.69	79.00	53%	OW	14.7	14.7	4.87	6.42	4.59	6.41	10.6x	8.1x	4.0x	3.3x	0.4x	0.3x	1.1x	1.1x
BorgWarner Inc.	USD	34.54	32.00	(7%)	UW	8.2	8.2	4.25	4.40	4.23	4.95	8.1x	7.9x	4.6x	4.1x	0.7x	0.6x	1.1x	1.0x
Lear	USD	129.07	140.00	8%	EW	7.7	7.7	8.55	11.09	8.35	14.46	15.1x	11.6x	5.6x	4.7x	0.4x	0.4x	3.4x	3.1x
Tenneco	USD	18.25	20.00	10%	EW	1.5	1.5	1.72	4.71	0.55	3.84	10.6x	3.9x	2.5x	1.7x	0.2x	0.1x	NM	9.0x
Visteon	USD	123.85	107.00	(14%)	EW	3.5	3.5	5.53	7.35	5.08	7.54	22.4x	16.9x	12.8x	9.1x	1.1x	0.9x	NM	NM
Adient	USD	32.95	27.00	(18%)	UW	3.1	3.1	0.13	2.75	0.13	2.77	245.3x	12.0x	6.6x	5.4x	0.3x	0.3x	1.2x	1.3x
American Axle	USD	7.98	12.00	50%	OW	0.9	0.9	0.97	1.17	0.88	1.28	8.2x	6.8x	4.2x	3.6x	0.6x	0.5x	1.8x	1.5x
North America Weighted Average												28.2x	12.9x	7.9x	6.5x	0.9x	0.8x	2.1x	2.1x
Japan																			
Denso	JPY	7,135	9,500	33%	OW	5,528	37.4	511	677	513	638	14.0x	10.5x	6.8x	5.2x	0.9x	0.8x	1.2x	1.1x
Toyota Industries	JPY	7,280	9,300	28%	OW	2,333	15.8	641	734	640	711	11.4x	9.9x	8.9x	7.9x	1.1x	1.0x	0.6x	0.5x
Aisin Seiki	JPY	3,845	4,600	20%	EW	1,114	7.5	568	657	562	655	6.8x	5.9x	3.7x	3.3x	0.4x	0.4x	0.6x	0.6x
Koito Mfg.	JPY	2,059	2,100	2%	UW	651	4.4	124	176	125	190	16.5x	11.7x	3.8x	3.1x	0.5x	0.4x	1.1x	1.0x
Toyota Boshoku	JPY	1,857	1,850	(0%)	UW	343	2.3	208	230	221	277	8.9x	8.1x	2.3x	1.7x	0.2x	0.1x	0.8x	0.7x
Nifco	JPY	3,095	3,100	0%	EW	327	2.2	242	238	235	261	12.8x	13.0x	5.8x	5.2x	0.8x	0.7x	1.4x	1.3x
Stanley Electric	JPY	2,428	2,600	7%	EW	413	2.8	167	216	165	227	14.6x	11.2x	4.3x	3.4x	0.8x	0.7x	0.9x	0.8x
NOK	JPY	1,117	1,500	34%	OW	190	1.3	118	167	116	151	9.4x	6.7x	3.5x	2.8x	0.3x	0.3x	0.4x	0.4x
NHK Spring	JPY	823	1,200	46%	OW	198	1.3	125	133	118	121	6.6x	6.2x	2.3x	1.9x	0.2x	0.2x	0.5x	0.5x
GS Yuasa	JPY	2,193	NC	NA	NC	174	1.2	NA	NA	178	212	12.3x	10.3x	5.8x	5.3x	0.6x	0.5x	0.8x	0.7x
Musashi Seimitsu	JPY	1,648	1,600	(3%)	EW	106	0.7	116	160	120	186	14.2x	10.3x	6.7x	5.3x	0.6x	0.6x	1.1x	1.0x
EXEDY	JPY	1,723	1,900	10%	EW	82	0.6	237	273	257	296	7.3x	6.3x	2.3x	2.0x	0.3x	0.3x	0.4x	0.4x
Unipres	JPY	859	1,000	16%	EW	41	0.3	51	153	61	167	16.8x	5.6x	3.6x	2.8x	0.4x	0.3x	0.3x	0.3x
Japan Weighted Average												12.5x	9.9x	6.3x	5.2x	0.8x	0.7x	0.9x	0.9x
China ¹																			
Huayu Automotive	CNY	15.51	22.70	46%	OW	49.1	6.8	1.98	1.98	2.13	2.43	7.8x	7.8x	2.9x	2.5x	0.2x	0.2x	0.9x	0.9x
Changzhou Xingyu	HKD	15.36	196.00	1176%	OW	38.5	5.3	3.96	5.48	4.37	5.75	33.9x	24.5x	24.2x	17.5x	4.0x	3.2x	4.4x	4.0x
Fuyao Glass	HKD	28.50	32.00	12%	EW	18.7	2.4	1.82	2.01	1.77	1.96	15.6x	14.2x	11.2x	9.6x	3.0x	2.7x	2.5x	2.5x
Minh Group Limited	HKD	15.36	28.00	82%	OW	19.3	2.5	1.44	2.15	1.32	1.73	10.7x	7.1x	6.8x	4.5x	0.9x	0.7x	0.9x	0.8x
Nexteer Automotive Group	HKD	3.98	8.40	111%	OW	78.4	10.0	0.03	0.09	0.03	0.07	129.6x	43.9x	3.6x	2.6x	0.4x	0.4x	0.7x	0.6x
China Weighted Average												59.1x	25.0x	8.4x	6.3x	1.3x	1.1x	1.7x	1.5x
South Korea																			
Hyundai MOBIS	KRW	198,000	250,000	26%	EW	18,668	13.1	27,851	27,764	28,844	32,186	7.1x	7.1x	6.7x	5.6x	0.4x	0.3x	0.5x	0.5x
Hyundai WIA	KRW	58,600	NC	NA	NC	1,594	1.1	NA	NA	8,442	7,063	6.9x	8.3x	5.4x	4.9x	0.4x	0.3x	0.5x	0.4x
Hanon Systems	KRW	7,450	8,000	7%	UW	3,977	2.8	349	476	358	609	21.3x	15.7x	7.7x	6.6x	0.8x	0.7x	1.7x	1.6x
Mando Corp	KRW	44,600	74,000	66%	OW	2,094	1.5	3,114	4,617	4,095	5,196	14.3x	9.7x	6.6x	5.7x	0.5x	0.5x	1.0x	0.9x
South Korea Weighted Average												9.8x	8.7x	6.7x	5.7x	0.4x	0.4x	0.7x	0.7x
Taiwan																			
Hu Lane Associate Inc.	TWD	147	200	36%	OW	15	0.5	8.84	12.09	2.00	2.62	16.6x	12.2x	11.0x	8.2x	2.6x	2.2x	2.7x	2.4x
Cub Eieparts Inc	TWD	150	205	37%	OW	17	0.5	12.37	13.55	2.71	3.04	12.1x	11.1x	7.7x	6.5x	1.9x	1.7x	2.1x	1.9x
Hota Industrial Mfg.	TWD	75	90	20%	OW	21	0.7	2.88	3.78	0.56	0.76	26.0x	19.8x	11.4x	8.4x	2.8x	2.4x	1.7x	1.6x
Macauto Industrial	TWD	58	90	54%	OW	4	0.1	8.61	9.78	1.65	2.05	6.8x	6.0x	3.0x	2.3x	0.5x	0.4x	1.2x	1.1x
Taiwan Weighted Average												17.9x	14.1x	9.5x	7.3x	2.3x	2.0x	2.1x	1.9x
India																			
Exide Industries	INR	159	191	20%	OW	135	1.6	10.48	12.28	10.79	11.53	15.2x	13.0x	7.6x	6.4x	0.9x	0.8x	1.6x	1.5x
Amara Raja	INR	492	513	4%	UW	84	1.0	39.73	42.75	35.98	43.23	12.4x	11.5x	6.2x	5.4x	0.8x	0.7x	1.6x	1.5x
India Weighted Average												14.1x	12.4x	7.1x	6.0x	0.9x	0.8x	1.6x	1.5x
Global Weighted Average												23.3x	12.7x	7.2x	5.8x	0.9x	0.8x	1.5x	1.4x

Source: Refinitiv, Morgan Stanley Research

Notes: (1) EV/EBITDA excludes the impacts from pension and healthcare liabilities with the exception of our North American coverage, which are calculated using EV/EBITDAP and do include pension and healthcare liabilities. (2) North America weighted averages are calculated without Mobileye. e = Morgan Stanley Research est; O = Overweight; E = Equal-weight; U = Underweight; NC = Not Covered. Valuation multiples are based on MS est. unless a company is restricted or NC, in which case cons. est. are used 3) PTs & Ratings are as of Oct 21, 2022

Global Tire Comps

Exhibit 13: Global Tire Comps: Michelin, Bridgestone and Mando are our preferred stocks

Company	Currency	Price at 24-Oct	MS Price Target	Upside to PT (%)	MS Rating	Market Cap		MS EPS		Consensus EPS		P / E		EV / EBITDA		EV / Sales		P / B	
						LC	US\$	2022e	2023e	2022e	2023e	2022e	2023e	2022e	2023e	2022e	2023e	2022e	2023e
Europe																			
Continental	EUR	50.18	70.00	39%	EW	10.1	9.9	5.59	7.99	5.58	8.35	9.0x	6.3x	4.3x	3.7x	0.5x	0.4x	0.9x	0.8x
Pirelli & C. SpA	EUR	3.52	5.90	68%	EW	3.5	3.4	0.54	0.60	0.51	0.54	6.5x	5.8x	4.4x	3.9x	1.1x	0.9x	0.7x	0.6x
Michelin	EUR	23.64	34.00	44%	OW	16.6	16.4	2.97	2.88	2.95	3.12	8.0x	8.2x	4.3x	4.3x	0.8x	0.8x	1.1x	1.0x
Europe Weighted Average												8.1x	7.3x	4.3x	4.1x	0.7x	0.7x	1.0x	0.9x
Japan																			
Bridgestone	JPY	5,164	5,400	5%	EW	3,624	24.5	383	539	395	506	13.5x	9.6x	4.7x	4.1x	0.9x	0.8x	1.3x	1.2x
Toyo Tire & Rubber Co	JPY	1,676	1,900	13%	EW	254	1.7	297	270	327	264	5.6x	6.2x	4.7x	4.1x	0.7x	0.7x	0.8x	0.8x
Sumitomo Rubber	JPY	1,244	1,000	(20%)	UW	322	2.2	96	143	102	115	12.9x	8.7x	6.5x	4.8x	0.5x	0.5x	0.6x	0.6x
Yokohama Rubber	JPY	2,315	2,000	(14%)	EW	386	2.6	286	286	272	315	8.1x	8.1x	5.4x	4.9x	0.7x	0.6x	0.7x	0.6x
Japan Weighted Average												12.6x	9.2x	4.8x	4.2x	0.8x	0.8x	1.2x	1.1x
Korea																			
Hankook Tire	KRW	35,800	32,000	(11%)	UW	4,435	3.1	3,160	3,437	4,956	4,980	11.3x	NA	3.3x	2.9x	0.5x	0.5x	0.5x	0.5x
Korea Weighted Average												11.3x	NA	3.3x	2.9x	0.5x	0.5x	0.5x	0.5x
Taiwan																			
Cheng Shin Rubber	TWD	32.00	30.00	(6%)	UW	103.7	3.2	1.91	2.23	1.80	2.05	16.7x	14.3x	6.0x	5.4x	1.0x	1.0x	1.2x	1.2x
Taiwan Weighted Average												16.7x	14.3x	6.0x	5.4x	1.0x	1.0x	1.2x	1.2x
Global Weighted Average												10.9x	8.7x	4.6x	4.2x	0.8x	0.7x	1.1x	1.0x

Source: Refinitiv, Morgan Stanley Research.

Notes: 1) e = Morgan Stanley Research est; O = Overweight; E = Equal-weight; U = Underweight; NC = Not Covered. Valuation multiples are based on MS est. unless a company is restricted or NC, in which case cons. est. are used. 2) ++Rating and price target for this company have been removed from consideration in this report because, under applicable law and/or Morgan Stanley policy, Morgan Stanley may be precluded from issuing such information with respect to this company at this time 3) PTs & Ratings are as of Oct 21, 2022

Global Dealer Comps

Exhibit 14: Global Dealer Comps: CVNA and Zhongsheng are preferred stocks

Company	Currency	Price at 24-Oct	MS Price Target	Upside to PT (%)	MS Rating	Market Cap		Current EV	MS EPS		Consensus EPS		P / E		EV / EBITDA		EV / Sales		P / B	
						LC	US\$		2022e	2023e	2022e	2023e	2022e	2023e	2022e	2023e	2022e	2023e	2022e	2023e
Europe																				
Aramis Autos	EUR	4.35	8.00	84%	OW	0.4	0.4	0.4	-0.39	-0.19	-0.39	-0.12	NM	NM	NM	NM	0.2x	0.2x	1.4x	1.6x
North America																				
CarMax	USD	55.69	90.00	62%	OW	8.8	8.8	14.9	6.97	3.58	7.18	3.97	8.0x	15.5x	12.7x	10.7x	0.5x	0.5x	2.4x	2.1x
Penske Automotive Group	USD	97.45	93.00	(5%)	UW	7.2	7.2	8.5	18.33	13.71	17.90	14.99	5.3x	7.1x	5.0x	5.1x	0.3x	0.3x	1.6x	1.4x
AutoNation	USD	96.90	104.00	7%	EW	5.4	5.4	8.0	25.03	19.78	24.20	20.90	3.9x	4.9x	4.2x	4.5x	0.3x	0.3x	1.8x	1.3x
Carvana	USD	14.25	68.00	377%	EW	2.7	2.7	11.5	-5.05	-3.75	-8.75	-5.37	NM	NM	NM	NM	0.8x	0.9x	NM	NM
Asbury	USD	143.15	135.00	(6%)	UW	3.2	3.2	6.2	36.08	29.98	37.16	32.30	4.0x	4.8x	5.4x	5.4x	0.4x	0.4x	1.1x	0.9x
Lithia Motors	USD	185.63	220.00	19%	UW	5.1	5.1	10.2	47.27	40.04	45.54	37.62	3.9x	4.6x	5.3x	6.0x	0.4x	0.4x	1.0x	0.8x
Sonic Automotive	USD	41.71	35.00	(16%)	UW	1.6	1.6	3.9	9.15	6.47	9.67	8.45	4.6x	6.4x	5.7x	6.1x	0.3x	0.3x	1.7x	1.4x
Group 1 Automotive	USD	155.16	142.00	(8%)	UW	2.4	2.4	4.1	44.99	34.69	45.18	37.86	3.4x	4.5x	4.4x	4.7x	0.3x	0.2x	1.1x	0.9x
North America Weighted Average													5.3x	8.1x	7.0x	6.6x	0.4x	0.4x	1.7x	1.4x
China																				
China Yongda Auto	HKD	4.61	8.60	87%	OW	9.1	1.2	9.5	1.00	1.24	1.10	1.35	4.6x	3.7x	2.6x	2.2x	0.1x	0.1x	0.6x	0.5x
MeiDong	HKD	10.78	24.00	123%	OW	13.7	1.8	11.1	0.90	1.20	0.90	1.31	12.0x	9.0x	5.4x	4.1x	0.4x	0.3x	2.9x	2.6x
Beoxin Auto	HKD	0.36	0.60	67%	EW	1.0	0.1	3.9	0.25	0.20	0.26	0.24	1.4x	1.8x	1.7x	1.9x	0.1x	0.1x	0.1x	0.1x
Zhongsheng Group	HKD	32.10	65.00	102%	OW	77.5	9.9	79.1	3.53	4.22	3.62	4.42	9.1x	7.6x	5.2x	4.2x	0.4x	0.3x	1.5x	1.3x
China Zhengtong Auto	HKD	0.32	0.41	28%	UW	0.9	0.1	16.1	0.05	0.16	0.11	0.10	5.9x	2.0x	7.5x	6.8x	0.6x	0.5x	1.2x	0.7x
China Weighted Average													9.0x	7.3x	5.0x	4.0x	0.4x	0.3x	1.6x	1.4x
Global Weighted Average													6.3x	7.9x	6.4x	5.9x	0.4x	0.4x	1.6x	1.4x

Source: Refinitiv, Morgan Stanley Research

Note: 1) e = Morgan Stanley Research est; O = Overweight; E = Equal-weight; U = Underweight; NC = Not Covered. Valuation multiples are based on MS est. unless a company is restricted or NC, in which case cons. est. are used 2) PTs & Ratings are as of Oct 21, 2022

Exhibit 15: Auto companies under Morgan Stanley coverage not shown in the comps tables are listed below (with current share price):

Company Name	Volvo	China Motor Corp.	Hotai Motor	Porsche	Avis Budget
Price at Oct 21	171.26	41.70	557.00	57.20	183.35
Currency	SEK	TWD	TWD	EUR	USD

Company Name	Tong Yang Industry	Yulon Motor	Zhongsheng Group	Tesla	Hertz
Price at Oct 21	45.65	45.05	35.25	8.10	17.30
Currency	TWD	TWD	CNY	USD	USD

Source: Refinitiv, Morgan Stanley Research.

Morgan Stanley Global Auto Team

Morgan Stanley Global Auto Team

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Global Stock Ratings Distribution

(as of September 30, 2022)

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STOCK RATING CATEGORY	COVERAGE UNIVERSE		INVESTMENT BANKING CLIENTS (IBC)			OTHER MATERIAL INVESTMENT SERVICES CLIENTS (MISC)	
	COUNT	% OF TOTAL	COUNT	% OF TOTAL IBC	% OF RATING CATEGORY	COUNT	% OF TOTAL OTHER MISC
Overweight/Buy	1342	38%	295	41%	22%	590	39%
Equal-weight/Hold	1582	45%	335	47%	21%	702	46%
Not-Rated/Hold	0	0%	0	0%	0%	0	0%
Underweight/Sell	610	17%	84	12%	14%	219	14%
TOTAL	3,534		714			1511	

Data include common stock and ADRs currently assigned ratings. Investment Banking Clients are companies from whom Morgan Stanley received investment banking compensation in the last 12 months. Due to rounding off of decimals, the percentages provided in the "% of total" column may not add up to exactly 100 percent.

Analyst Stock Ratings

Overweight (O). The stock's total return is expected to exceed the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Equal-weight (E). The stock's total return is expected to be in line with the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Not-Rated (NR). Currently the analyst does not have adequate conviction about the stock's total return relative to the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Underweight (U). The stock's total return is expected to be below the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Unless otherwise specified, the time frame for price targets included in Morgan Stanley Research is 12 to 18 months.

Analyst Industry Views

Attractive (A): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be attractive vs. the relevant broad market benchmark, as indicated below.

In-Line (I): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be in line with the relevant broad market benchmark, as indicated below.

Cautious (C): The analyst views the performance of his or her industry coverage universe over the next 12-18 months with caution vs. the relevant broad market benchmark, as indicated below.

Benchmarks for each region are as follows: North America - S&P 500; Latin America - relevant MSCI country index or MSCI Latin America Index; Europe - MSCI Europe; Japan - TOPIX; Asia - relevant MSCI country index or MSCI sub-regional index or MSCI AC Asia Pacific ex Japan Index.

Stock Price, Price Target and Rating History (See Rating Definitions)

Hyundai MOBIS (012330.KS) - As of 10/23/22 in KRW
Industry : S. Korea Autos & Shared Mobility

Stock Rating History: 10/1/17 : O/I; 3/29/18 : E/I; 7/24/19 : O/I; 1/12/21 : E/I; 10/14/21 : O/I; 4/22/22 : E/I

Price Target History: 9/8/17 : 280000; 10/30/17 : 300000.03; 3/29/18 : 260000.02; 6/23/18 : 250000; 10/11/18 : 230000;
10/29/18 : 210000; 1/9/19 : 200000; 4/29/19 : 220000; 7/24/19 : 280000; 3/9/20 : 260000; 4/8/20 : 210000; 4/27/20 : 200000;
7/10/20 : 230000; 7/24/20 : 250000; 8/24/20 : 260000; 10/29/20 : 300000; 1/12/21 : 360000; 4/13/21 : 340000; 4/23/21 : 310000;
10/14/21 : 330000; 1/14/22 : 320000; 3/17/22 : 260000; 4/11/22 : 270000; 4/22/22 : 230000; 7/8/22 : 220000; 7/22/22 : 250000

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target -- No Price Target Assigned (NA)

Stock Price (Not Covered by Current Analyst) — Stock Price (Covered by Current Analyst) —

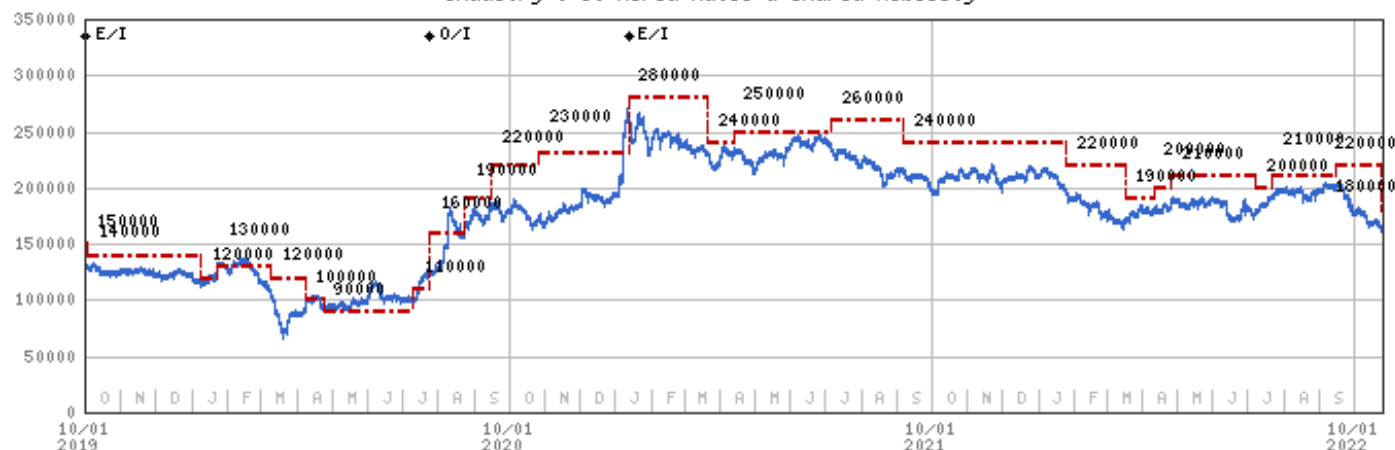
Stock and Industry Ratings (abbreviations below) appear as ♦ Stock Rating/Industry View

Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) No Rating Available (NA)

Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

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Hyundai Motor (005380.KS) - As of 10/24/22 in KRW
Industry : S. Korea Autos & Shared Mobility

Stock Rating History: 10/1/17 : E/I; 11/30/17 : O/I; 10/11/18 : E/I; 7/24/20 : O/I; 1/12/21 : E/I

Price Target History: 9/8/17 : 140000; 11/30/17 : 200000; 1/26/18 : 190000; 6/23/18 : 170000; 10/11/18 : 135000; 10/25/18 : 120000;
4/24/19 : 150000; 10/3/19 : 140000; 1/9/20 : 120000; 1/23/20 : 130000; 3/9/20 : 120000; 4/8/20 : 100000; 4/24/20 : 90000;
7/10/20 : 110000; 7/24/20 : 160000; 8/24/20 : 190000; 9/16/20 : 220000; 10/27/20 : 230000; 1/12/21 : 280000; 3/22/21 : 240000;
4/13/21 : 250000; 7/7/21 : 260000; 9/7/21 : 240000; 1/25/22 : 220000; 3/17/22 : 190000; 4/11/22 : 200000; 4/26/22 : 210000;
7/8/22 : 200000; 7/22/22 : 210000; 9/15/22 : 220000; 10/24/22 : 180000

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target -- No Price Target Assigned (NA)

Stock Price (Not Covered by Current Analyst) — Stock Price (Covered by Current Analyst) —

Stock and Industry Ratings (abbreviations below) appear as ♦ Stock Rating/Industry View

Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) No Rating Available (NA)

Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

Effective January 13, 2014, the stocks covered by Morgan Stanley Asia Pacific will be rated relative to the analyst's industry (or industry team's) coverage.

Effective January 13, 2014, the industry view benchmarks for Morgan Stanley Asia Pacific are as follows: relevant MSCI country index or MSCI sub-regional index or MSCI AC Asia Pacific ex Japan Index.

Kia Corp. (000270.KS) - As of 10/23/22 in KRW
Industry : S. Korea Autos & Shared Mobility



Stock Rating History: 10/1/17 : E/I; 1/9/20 : U/I; 3/26/20 : E/I; 6/2/20 : O/I; 1/28/21 : E/I; 4/26/22 : O/I

Price Target History: 9/8/17 : 35000; 1/26/18 : 30000; 10/11/18 : 35000; 10/26/18 : 31000; 1/9/19 : 34000; 4/9/19 : 37000; 4/25/19 : 40000; 10/24/19 : 45000; 1/9/20 : 34000; 3/9/20 : 32000; 3/26/20 : 29000; 4/8/20 : 28000; 6/2/20 : 40000; 7/24/20 : 45000; 8/24/20 : 52000; 9/14/20 : 64000; 10/27/20 : 85000; 1/12/21 : 80000; 1/28/21 : 90000; 6/18/21 : 100000; 9/7/21 : 95000; 10/28/21 : 100000; 1/14/22 : 95000; 1/26/22 : 90000; 3/17/22 : 80000; 4/11/22 : 85000; 4/26/22 : 100000; 7/6/22 : 90000; 7/22/22 : 100000

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target -- No Price Target Assigned (NA)
Stock Price (Not Covered by Current Analyst) — Stock Price (Covered by Current Analyst) —
Stock and Industry Ratings (abbreviations below) appear as ♦ Stock Rating/Industry View
Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) No Rating Available (NA)
Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

Effective January 13, 2014, the stocks covered by Morgan Stanley Asia Pacific will be rated relative to the analyst's industry (or industry team's) coverage.

Effective January 13, 2014, the industry view benchmarks for Morgan Stanley Asia Pacific are as follows: relevant MSCI country index or MSCI sub-regional index or MSCI AC Asia Pacific ex Japan Index.

Korea Electric Power (015760.KS) - As of 10/23/22 in KRW
Industry : S. Korea Energy & Materials



Stock Rating History: 10/1/17 : O/A; 11/8/17 : E/A; 12/7/18 : O/A; 5/14/19 : E/A; 11/5/21 : O/A; 8/12/22 : E/A

Price Target History: 7/9/17 : 60000; 11/8/17 : 40000; 2/13/18 : 34000; 8/13/18 : 33000; 12/7/18 : 39000; 1/4/19 : 45000; 5/14/19 : 30000; 8/15/19 : 28000; 3/2/20 : 24000; 2/20/21 : 26000; 5/14/21 : 25000; 11/5/21 : 33000; 11/12/21 : 32000; 5/13/22 : 29000; 8/12/22 : 22000

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target -- No Price Target Assigned (NA)
Stock Price (Not Covered by Current Analyst) — Stock Price (Covered by Current Analyst) —
Stock and Industry Ratings (abbreviations below) appear as ♦ Stock Rating/Industry View
Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) No Rating Available (NA)
Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

Effective January 13, 2014, the stocks covered by Morgan Stanley Asia Pacific will be rated relative to the analyst's industry (or industry team's) coverage.

Effective January 13, 2014, the industry view benchmarks for Morgan Stanley Asia Pacific are as follows: relevant MSCI country index or MSCI sub-regional index or MSCI AC Asia Pacific ex Japan Index.

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INDUSTRY COVERAGE: Autos & Shared Mobility

COMPANY (TICKER)	RATING (AS OF)	PRICE* (10/21/2022)
Adam Jonas, CFA		
Adient PLC (ADNT.N)	U (03/17/2021)	\$32.95
American Axle & Manufacturing Holdings Inc (AXL.N)	O (02/28/2022)	\$7.98
Aptiv Plc (APT.V.N)	O (03/30/2020)	\$87.04
Asbury Automotive Group Inc (ABG.N)	U (05/20/2022)	\$143.15
AutoNation Inc. (AN.N)	E (09/28/2021)	\$96.90
Avis Budget Group Inc (CAR.O)	U (10/13/2021)	\$189.35
BorgWarner Inc. (BWA.N)	U (11/09/2020)	\$34.54
Carmax Inc (KMX.N)	O (07/10/2018)	\$55.69
Carvana Co (CVNA.N)	E (05/04/2022)	\$14.25
Ferrari NV (RACE.N)	O (05/09/2019)	\$188.37
Fisker Inc (FSR.N)	E (08/04/2022)	\$7.52
Ford Motor Company (F.N)	O (10/05/2022)	\$12.19
FREYR Battery SA (FREY.N)	O (08/03/2021)	\$12.58
General Motors Company (GM.N)	E (02/08/2022)	\$35.00
Group 1 Automotive, Inc (GPI.N)	U (05/20/2022)	\$155.16
Harley-Davidson Inc (HOG.N)	E (02/01/2022)	\$35.90
Hertz Global Holdings Inc (HTZ.O)	E (12/06/2021)	\$17.90
Lear Corporation (LEA.N)	E (02/28/2022)	\$129.07
Li-Cycle Holdings Corp. (LICY.N)	E (02/10/2022)	\$5.39
Lithia Motors Inc. (LAD.N)	U (02/09/2021)	\$185.63
Lucid Group Inc (LCID.O)	U (09/13/2021)	\$13.31
Magna International Inc. (MGAN)	O (10/14/2021)	\$51.69
Penske Automotive Group, Inc (PAG.N)	U (11/17/2021)	\$97.45
QuantumScape Corp (QS.N)	E (11/15/2021)	\$8.10
Rivian Automotive, Inc. (RIVN.O)	O (12/05/2021)	\$31.92
Sonic Automotive Inc (SAH.N)	U (11/17/2021)	\$41.71
Tenneco Inc. (TEN.N)	E (02/23/2022)	\$18.25
Tesla Inc (TSLA.O)	O (11/18/2020)	\$214.44
Visteon Corporation (VC.O)	E (06/01/2022)	\$123.85

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* Historical prices are not split adjusted.