

Global Automobiles

LVS tracker Dec-23: Volume recovery continues, price war unfolds in EU

Industry Overview

FY23: c85.9m (9% y/y), global re-stocking by 4.2m units

Looking back at 2023: (1) S&P recorded 85.9m global sales (+9% y/y; +c7m units y/y) in 2023e, as supply shortages eased. (2) Global volumes are however still c4.5% below 2019 levels (=c4m units). By region, EU28 has the most (still well) below pre-Covid levels (c-19% = c-3.5m units), followed by North America (c-10% = c-1.8m units). (3) Production vs sales: We think that the market is back in equilibrium now, with c3.4m re-stocking in 2022 and c4.2m in 2023. (4) Dec Global LVS SAAR reached 89.8m (+5% y/y), the 9th straight month above the trailing 12m average.

TSLA & BYD take share from Japan/Korea & US OEMs

Market share highlights by OEM for 2023: (1) BYD grew volumes >50% y/y, gaining +1.1ppts global M/S in 23 (y/y), mainly coming from China. (2) Tesla is the 2nd largest M/S winner (+0.6ppts). (3) Japanese & Korean OEMs lost on average -0.2ppts of global M/S, with all OEMs underperforming on weaker regional mix. (4) Ford and GM both lost c0.3ppts of M/S as TSLA dominates the US BEV market (>50% sales). (5) EU mass market: VW and RNO maintained their market share y/y, albeit still c0.4-0.5ppts below 2021 levels. STLA lost 0.5ppts M/S for the 2nd consecutive year on pricing discipline. (6) EU Premium: MBG & BMW M/S was flattish, but BMW outperformed.

Other highlights: S&P forecast, re-stocking & new orders

(1) S&P released its new LV sales forecast, and we show major changes in Exhibit 17. Nissan was the most revised downwards for 24e (-1.5%) and even more for 25e (-5.6%). MBG (-2.2%) and GM (-1.7%) were also revised negatively. Volvo Cars (+2%) and Honda (+1.5%) outlook improved for 24e. (2) Re-stocking by OEM (Exhibit 16): GM, Ford and STLA re-stocked the most in 2023 (8%, 7%, & 7% of sales respectively), driven by the uncertainty of the UAW strikes and upbeat US market. Volvo Cars and Hyundai motors also re-stocked c7% of sales. TSLA (1%), RNO (1%) and BYD (2%) were the most effective in balancing sales and production. It is worth noting that MBG de-stocked 7% in Q4. (3) Order intake continued to move up in France in Dec (+11% y/y) but slumped in Germany (-14% y/y).

EU Special: Negative pricing everywhere, induced by BEVs

In Europe, pricing pressure is increasing for BEVs with a new round of cuts from several OEMs (Tesla, RNO, VW). It reminds us of China at the beginning of 2023. We show in Exhibit 1 that the price difference between BEVs and ICE equivalent models is now at c10%, whereby price parity has been already achieved for some mass market SUVs. The price difference remains more significant in the premium sector. In general, price rebates are increasing across the board, also for ICE vehicles. The average rebate in Germany is now >11% (Exhibit 2), with significant increases y/y for all OEMs (ex-MBG; Exhibit 4-5). We show in Exhibit 8 & 9 the incentive increase per xEV model in Germany. BMW and VW appear to be offering the highest incentives on BEVs.

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Refer to important disclosures on page 27 to 29.

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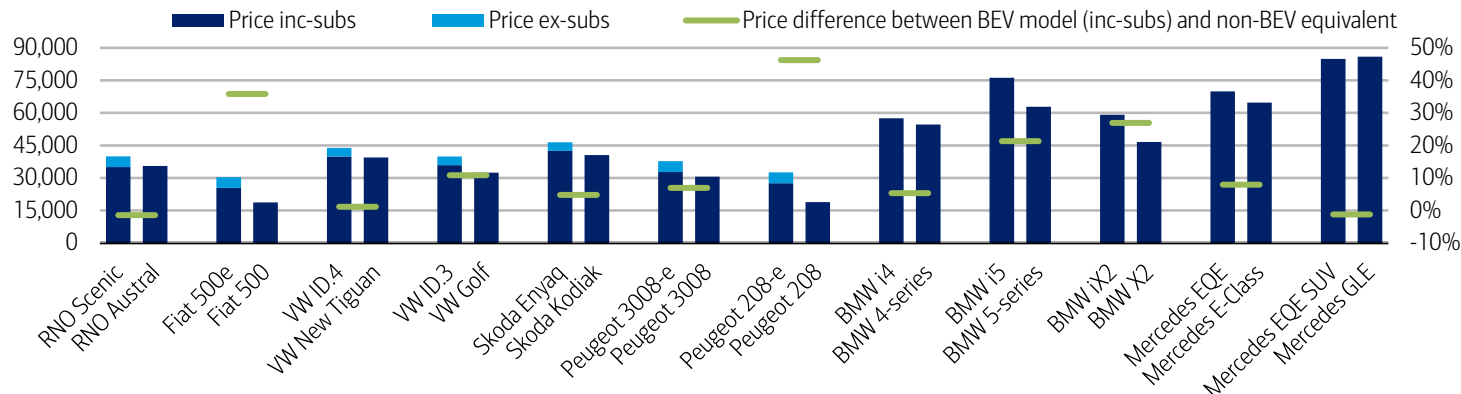
Jargon buster

SAAR = seasonally adjusted annualised rate
LV(S/P) = Light Vehicle (sales/production)
OEM = Original Equipment Manufacturer
(B)EV = (Battery) Electric Vehicle
ICE(V) = Internal combustion engine (vehicle)
ATP = Average Transaction Prices
M/S = Market Share; RNO: Renault
TSLA = Tesla, GM: General Motors
STLA = Stellantis, VW: Volkswagen
MBC/G = Mercedes Benz Cars/Group
YTD: year to date; FX: Foreign exchange
xEV: BEV + PHEV (= Plug in Hybrid EV)
UAW: United Automobile Workers

Focus on pricing: incentives rising

Exhibit 1: Cost of BEV and equivalent ICE in France (in €)

The price difference between ICE and BEV is shrinking, with a c10% price premium for BEVs when including the Government subsidy, and c17% without

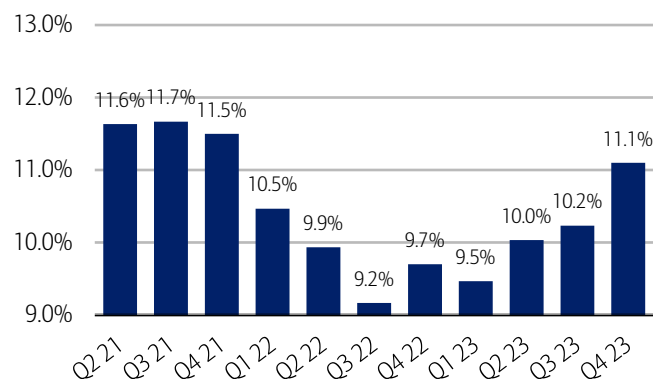


Source: Company website, BofA Global Research

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Exhibit 2: Average price rebate on list price – Germany

Rebates have risen to 11.1% in Q4 and are trending higher, back to 22 levels

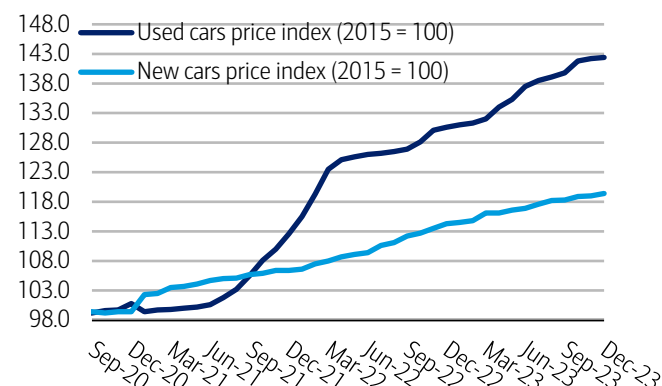


Source: BofA Global Research, Autohaus Pulsschlag

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Exhibit 3: New vs used car prices

Used and new car prices are still trending up but at a lower pace

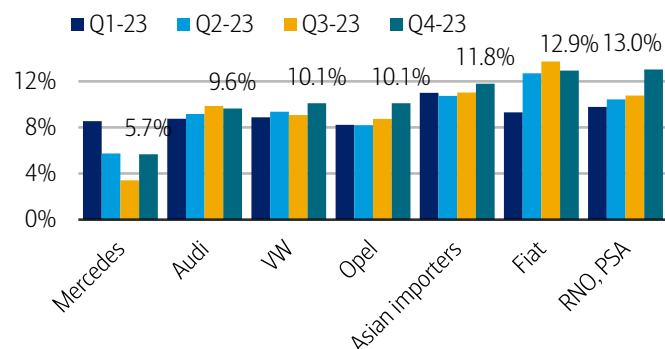


Source: Destatis

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Exhibit 4: Incentives for car sales in Germany

Incentives have come down Q4 for Audi and Fiat, but higher for others

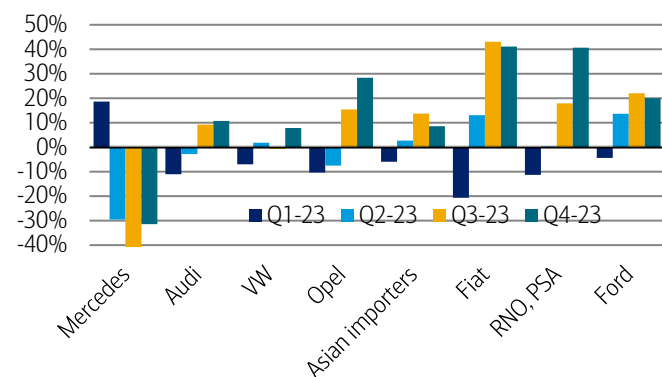


Source: BofA Global Research, Autohaus Pulsschlag

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Exhibit 5: Change in incentives y/y

Q4 incentives moved higher vs a year ago for all OEMs except Mercedes

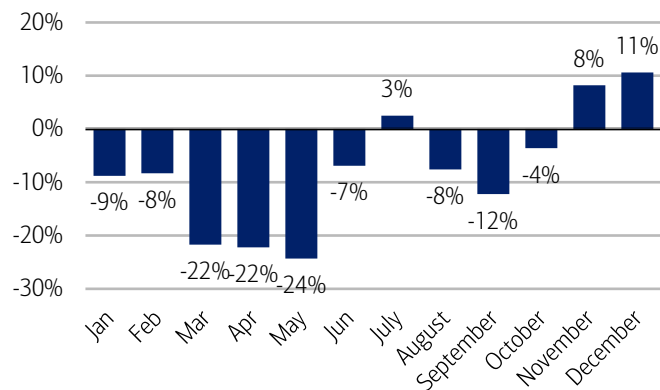


Source: BofA Global Research, Autohaus Pulsschlag

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Exhibit 6: Order intake in France (French OEMs) y/y growth

Order intake again grew in December in France

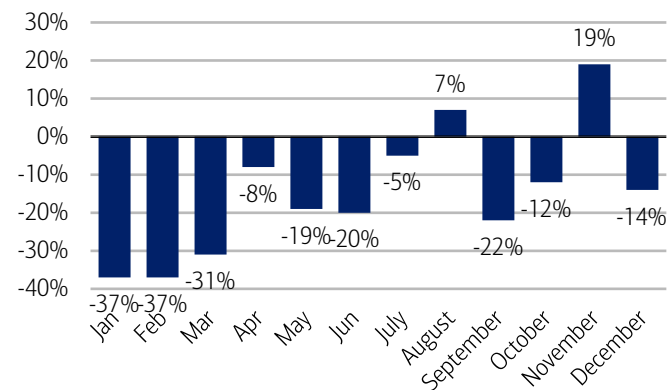


Source: BofA Global Research, CCFA

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Exhibit 7: Order intake in Germany (German OEMs) y/y growth

Order intake again declined in December after a strong uptake in Nov

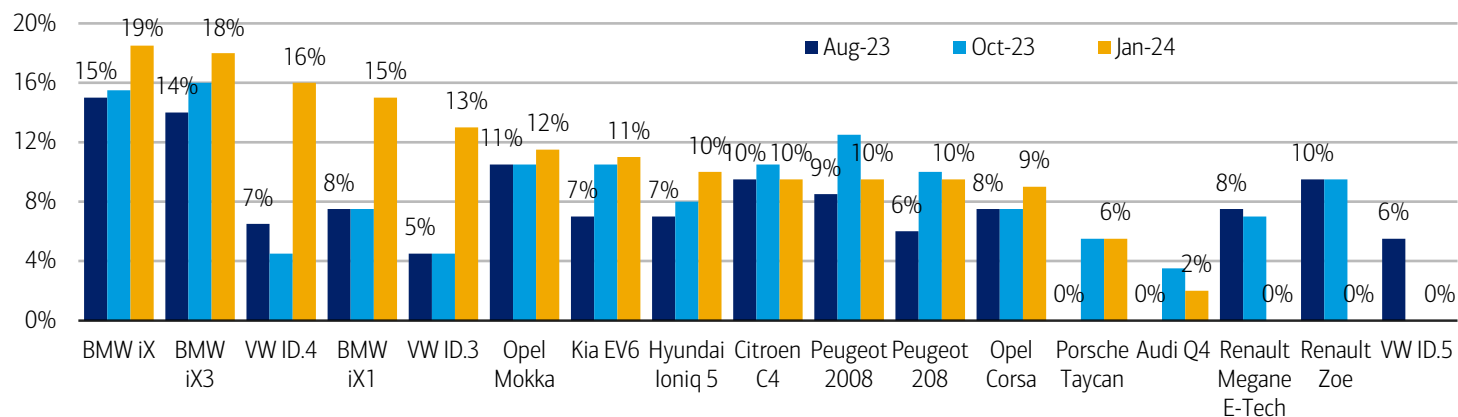


Source: BofA Global Research, VDA

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Exhibit 8: Average incentives on BEVs in Europe (sorted by Jan-24)

Models which saw the most increase in incentives over the past six months are BMW iX, BMW iX3, VW ID.4, BMW iX1, VW ID.3 and Kia EV 6. Average incentives overall have risen from 8.4% in Aug-23 to 8.9% in Oct-23 and to 11.3% in Jan-24

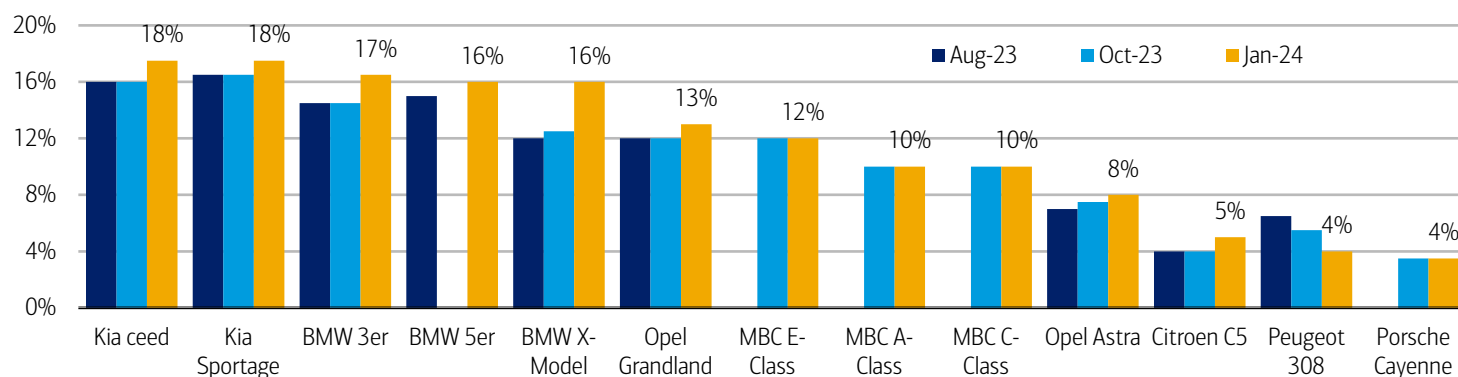


Source: BofA Global Research, carwow.de, *0 = Not available

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Exhibit 9: Average incentives on PHEVs in Europe (sorted by Jan-24)

Models which saw the most increase in incentives over the past six months are Kia ceed, BMW 3er and BMW X-Model. Average Incentives overall had dropped from 11.5% in Aug-23 to 10.3% in Oct-23, but rose to 11.5% in Jan-24

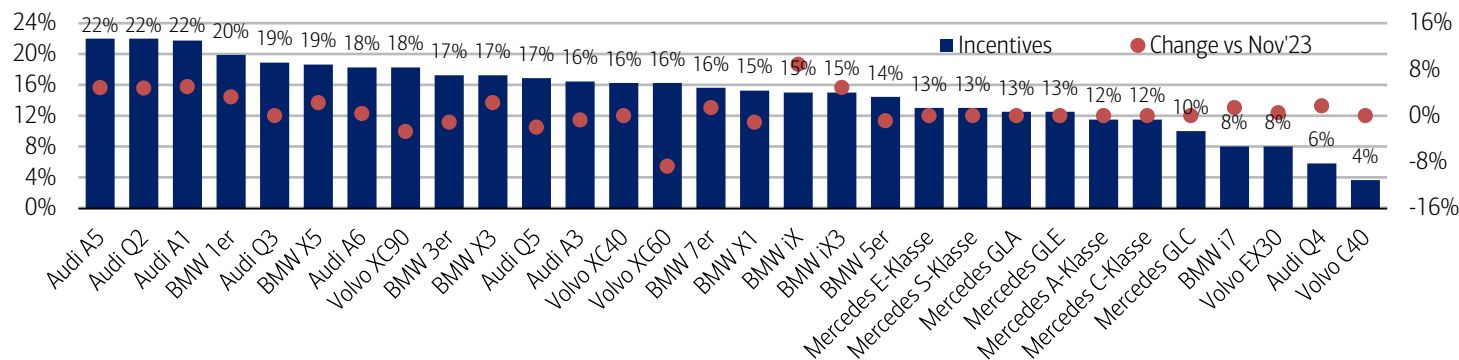


Source: BofA Global Research, carwow.de, *0 = Not available

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Exhibit 10: PKW-Rabatt premium cars rebates in Germany (January-24) and changes vs Nov-23 (rhs)

Audi Cars appear to be offering the highest level of rebates, followed by BMW and Volvo, with MBG giving the lowest rebates.

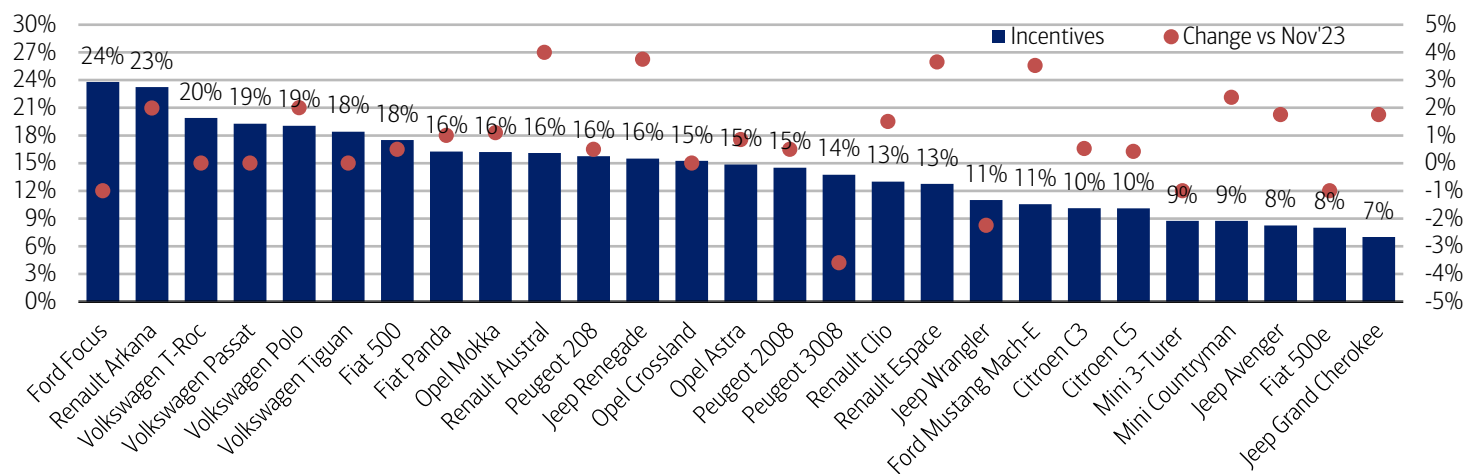


Source: BofA Global Research, PKW-Rabatt: <https://www.pkw-rabatt.de/de/Deutsche-Neuwagen.htm>

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Exhibit 11: PKW-Rabatt mass market car rebates in Germany (January-24) and changes vs Nov-23 (rhs)

VW non-BEV models have the highest rebates while STLA brands (ex-FIAT) seem to be more disciplined on pricing

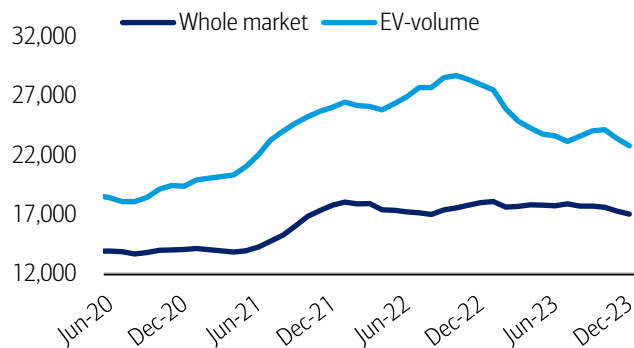


Source: BofA Global Research, PKW-Rabatt: <https://www.pkw-rabatt.de/de/Deutsche-Neuwagen.htm>

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Exhibit 12: Auto Trader Used Car Price Index for the UK market

Prices are trending down in the UK used car market

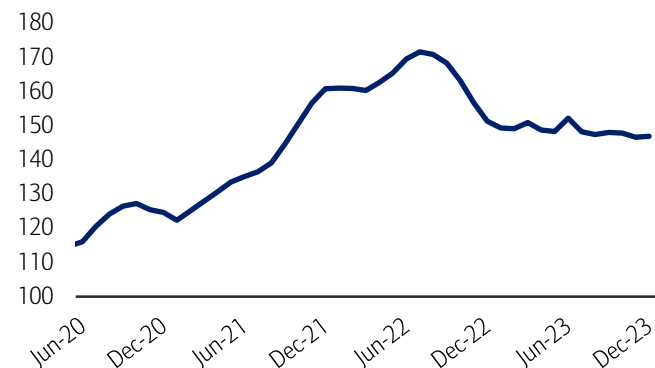


Source: Auto Trader

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Exhibit 13: AUTO1 EU Group price index for used cars (base = 2015)

Prices have been coming down since August-22 highs, but have stabilized



Source: AUTO1 (European Used Car Price Report), BofA Global Research

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BofA LVS & LVP forecast

Exhibit 14: BofAe Global sales forecast by region

We expect sales growth to decelerate in 2024, with flattish growth in EU while North America should outperform

Sales forecasts	2019	2020	2021	2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023e	2023E	2024E	2025E	2026E
West Europe	16,373,962	12,501,528	12,468,153	11,689,329	3,345,358	3,471,386	3,214,043	3,159,831	13,190,618	13,175,134	13,406,821	13,594,279
y-o-y %	0.9%	-23.6%	-0.3%	-6.2%	16.3%	18.3%	17.1%	0.8%	12.8%	-0.1%	1.8%	1.4%
Central Europe	1,730,852	1,336,649	1,390,917	1,305,720	368,820	380,904	352,763	359,309	1,461,796	1,443,135	1,455,263	1,498,841
y-o-y %	5.6%	-22.8%	4.1%	-6.1%	15.9%	10.1%	8.4%	13.7%	12.0%	-1.3%	0.8%	3.0%
EU 28	18,104,814	13,838,177	13,859,070	12,995,049	3,714,178	3,852,290	3,566,806	3,519,140	14,652,414	14,618,269	14,862,084	15,093,120
y-o-y %	1.3%	-23.6%	0.2%	-6.2%	16.3%	17.4%	16.2%	2.0%	12.8%	-0.2%	1.7%	1.6%
East Europe	2,741,677	2,901,033	2,895,735	1,963,809	543,435	725,712	761,257	844,088	2,874,492	2,670,567	2,647,260	2,638,669
y-o-y %	-3.3%	5.8%	-0.2%	-32.2%	-3.4%	69.2%	79.2%	54.2%	46.4%	-7.1%	-0.9%	-0.3%
North America	20,312,201	17,094,716	17,749,302	16,497,598	4,261,133	4,914,667	4,780,896	4,522,079	18,478,775	19,309,266	20,252,621	21,126,714
y-o-y %	-2.0%	-15.8%	3.8%	-7.1%	9.1%	16.5%	17.2%	5.3%	12.0%	4.5%	4.9%	4.3%
Asia ex-China	13,927,725	11,769,283	12,608,340	13,762,167	3,854,025	3,449,801	3,633,884	3,727,245	14,664,955	14,898,599	15,207,851	15,504,635
y-o-y %	-4.6%	-15.5%	7.1%	9.2%	9.8%	7.8%	4.2%	4.5%	6.6%	1.6%	2.1%	2.0%
China	25,276,975	24,134,856	24,367,831	24,556,538	5,225,873	6,170,042	6,797,770	7,603,946	25,797,631	26,298,633	27,322,230	27,961,322
y-o-y %	-8.2%	-4.5%	1.0%	0.8%	-13.6%	20.4%	0.3%	15.2%	5.1%	1.9%	3.9%	2.3%
Asia-Pacific (incl China)	39,204,700	35,904,139	36,976,171	38,318,705	9,079,898	9,619,843	10,431,654	11,331,191	40,462,586	41,197,232	42,530,081	43,465,957
y-o-y %	-6.9%	-8.4%	3.0%	3.6%	-5.0%	15.6%	1.6%	11.4%	5.6%	1.8%	3.2%	2.2%
South America	4,465,410	3,222,877	3,762,982	3,839,604	879,112	945,573	1,030,970	1,042,893	3,898,548	4,008,129	4,201,728	4,399,558
y-o-y %	-4.6%	-27.8%	16.8%	2.0%	6.1%	0.5%	-0.9%	1.3%	1.5%	2.8%	4.8%	4.7%
MEA	3,886,575	3,228,119	3,834,788	4,137,210	1,112,640	1,013,112	1,003,333	1,033,767	4,162,852	4,261,523	4,425,141	4,629,223
y-o-y %	-10.3%	-16.9%	18.8%	7.9%	6.3%	1.9%	-3.2%	-2.4%	0.6%	2.4%	3.8%	4.6%
Oceania	1,197,179	1,017,027	1,202,243	1,215,351	299,477	349,796	335,768	361,330	1,346,371	1,346,577	1,296,139	1,242,528
y-o-y %	-7.2%	-15.0%	18.2%	1.1%	-1.1%	15.9%	9.6%	18.8%	10.8%	0.0%	-3.7%	-4.1%
Global LV Sales	89,912,556	77,206,088	80,280,291	78,967,326	19,889,873	21,420,993	21,910,684	22,654,488	85,876,038	87,411,562	90,215,055	92,595,770
y-o-y %	-4.2%	-14.1%	4.0%	-1.6%	2.5%	15.8%	8.4%	8.6%	8.7%	1.8%	3.2%	2.6%

Source: BofA Global Research estimates, S&P

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Exhibit 15: Summary of BofA LV production forecasts (units)

We updated in our last LVP tracker our production forecast for 2024e to 1.2% y/y

Region	2020	2021	2022	2023E	S&P 2023E	2024E	S&P 2024E	2025E	2026E
Western Europe	10,050,263	9,420,503	9,886,735	11,173,606	11,162,444	10,829,594	10,884,014	10,583,169	10,407,820
Growth	-25.2%	-6.3%	4.9%	13.0%	12.9%	-3.1%	-2.5%	-2.3%	-1.7%
Central Europe	3,533,335	3,407,964	3,638,830	4,083,859	4,083,859	3,986,412	4,006,444	3,811,295	3,749,625
Growth	-18.7%	-3.5%	6.8%	12.2%	12.2%	-2.4%	-1.9%	-4.4%	-1.6%
EU 28	13,583,598	12,828,467	13,525,565	15,257,465	15,246,303	14,816,006	14,890,458	14,394,463	14,157,444
Growth	-23.6%	-5.6%	5.4%	12.8%	12.7%	-2.9%	-2.3%	-2.8%	-1.6%
Eastern Europe	2,987,443	3,062,886	2,301,114	2,559,541	2,559,541	2,493,736	2,552,495	2,634,477	2,696,851
Growth	-11.6%	2.5%	-24.9%	11.2%	11.2%	-2.6%	-0.3%	5.6%	2.4%
Total Europe	16,571,041	15,891,353	15,826,679	17,817,006	17,805,844	17,309,742	17,442,953	17,028,940	16,854,295
Growth	-21.7%	-4.1%	-0.4%	12.6%	12.5%	-2.8%	-2.0%	-1.6%	-1.0%
North America	13,024,058	13,047,059	14,296,207	15,650,000	15,647,830	16,569,340	15,822,871	17,228,897	18,001,663
Growth	-20.2%	0.2%	9.6%	9.5%	9.5%	5.9%	1.1%	4.0%	4.5%
China	23,349,584	24,585,919	26,150,230	28,621,233	28,621,233	29,287,351	28,656,899	28,239,713	28,751,521
Growth	-4.4%	5.3%	6.4%	9.4%	9.4%	2.3%	0.1%	-3.6%	1.8%
Asia ex-China	17,625,994	19,011,783	21,005,000	22,790,340	22,790,340	22,863,710	22,446,541	22,021,165	22,066,724
Growth	-19.1%	7.9%	10.5%	8.5%	8.5%	0.3%	-1.5%	-3.7%	0.2%
South America	2,245,570	2,606,481	2,824,287	2,912,479	2,912,479	2,954,826	2,999,823	3,140,607	3,263,676
Growth	-31.4%	16.1%	8.4%	3.1%	3.1%	1.5%	3.0%	6.3%	3.9%
Middle East	938,512	1,064,127	1,174,304	1,097,036	1,097,036	1,100,969	1,135,020	1,176,053	1,246,140
Growth	24.8%	13.4%	10.4%	-6.6%	-6.6%	0.4%	3.5%	6.8%	6.0%
Africa	841,021	988,536	1,067,465	1,190,868	1,190,868	1,110,404	1,133,065	1,159,035	1,295,787
Growth	-33.1%	17.5%	8.0%	11.6%	11.6%	-6.8%	-4.9%	4.4%	11.8%
World	74,595,780	77,195,258	82,344,172	90,078,962	90,065,630	91,196,342	89,637,172	89,994,409	91,479,808
Growth	-16.1%	3.5%	6.7%	9.4%	9.4%	1.2%	-0.5%	-1.3%	1.7%

Source: BofA Global Research estimates, S&P

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S&P production vs sales by OEM

Exhibit 16: Global production & retail sales by OEM (S&P)

In Q4, BYD and MBC de-stocked 5% and 7% respectively, while GM, Ford and Hyundai overproduced the most

OEM		Q1-22	Q2-22	Q3-22	Q4-22	2022	Q1-23	Q2-23	Q3-23	Q4-23	2023
BMW	Production	474,482	536,434	541,471	536,706	2,089,093	585,775	576,730	572,584	598,802	2,333,891
	Sales	502,487	507,315	515,487	561,709	2,086,998	527,814	554,163	552,225	592,261	2,226,463
	Delta prod/sales	-28,005	29,119	25,984	-25,003	2,095	57,961	22,567	20,359	6,541	107,428
	as % sales	-6%	6%	5%	-4%	0%	11%	4%	4%	1%	5%
BYD	Production	291,906	360,449	543,980	676,347	1,872,682	542,382	681,698	806,122	892,725	2,922,927
	Sales	290,464	353,333	524,591	653,624	1,822,012	509,836	657,351	746,556	937,992	2,851,735
	Delta prod/sales	1,442	7,116	19,389	22,723	50,670	32,546	24,347	59,566	-45,267	71,192
	as % sales	0%	2%	4%	3%	3%	6%	4%	8%	-5%	2%
Ford	Production	937,333	918,287	998,593	991,113	3,845,326	1,022,028	1,025,360	988,651	968,430	4,004,469
	Sales	828,233	892,608	901,718	938,845	3,561,404	912,323	993,502	957,824	897,469	3,761,118
	Delta prod/sales	109,100	25,679	96,875	52,268	283,922	109,705	31,858	30,827	70,961	243,351
	as % sales	13%	3%	11%	6%	8%	12%	3%	3%	8%	6%
GM	Production	1,179,332	1,168,223	1,303,036	1,297,002	4,947,593	1,112,059	1,324,529	1,270,120	1,221,649	4,928,357
	Sales	964,984	1,036,337	1,128,829	1,157,927	4,288,077	1,003,831	1,193,905	1,191,758	1,155,661	4,545,155
	Delta prod/sales	214,348	131,886	174,207	139,075	659,516	108,228	130,624	78,362	65,988	383,202
	as % sales	22%	13%	15%	12%	15%	11%	11%	7%	6%	8%
Hyundai motors	Production	1,638,209	1,744,359	1,754,979	1,885,247	7,022,794	1,845,081	1,888,841	1,791,193	1,815,563	7,340,678
	Sales	1,574,742	1,646,328	1,683,653	1,644,921	6,549,644	1,682,124	1,772,482	1,724,013	1,713,235	6,891,854
	Delta prod/sales	63,467	98,031	71,326	240,326	473,150	162,957	116,359	67,180	102,328	448,824
	as % sales	4%	6%	4%	15%	7%	10%	7%	4%	6%	7%
MBC	Production	619,423	617,117	638,296	609,609	2,484,445	690,383	626,634	611,996	585,495	2,514,508
	Sales	563,280	566,214	616,013	613,086	2,358,593	584,064	618,349	606,772	631,913	2,441,098
	Delta prod/sales	56,143	50,903	22,283	-3,477	125,852	106,319	8,285	5,224	-46,418	73,410
	as % sales	10%	9%	4%	-1%	5%	18%	1%	1%	-7%	3%
STLA	Production	1,536,230	1,547,904	1,482,160	1,551,969	6,118,263	1,694,571	1,710,962	1,536,389	1,571,323	6,513,245
	Sales	1,456,487	1,524,841	1,388,855	1,405,201	5,775,384	1,513,180	1,647,651	1,490,126	1,497,714	6,148,671
	Delta prod/sales	79,743	23,063	93,305	146,768	342,879	181,391	63,311	46,263	73,609	364,574
	as % sales	5%	2%	7%	10%	6%	12%	4%	3%	5%	6%
TSLA	Production	305,407	258,580	365,923	439,701	1,369,611	440,808	479,700	430,488	461,735	1,812,731
	Sales	307,055	263,959	348,621	402,062	1,321,697	414,461	478,097	444,854	460,453	1,797,865
	Delta prod/sales	-1,648	-5,379	17,302	37,639	47,914	26,347	1,603	-14,366	1,282	14,866
	as % sales	-1%	-2%	5%	9%	4%	6%	0%	-3%	0%	1%
VW Group	Production	1,963,367	2,036,047	2,179,317	2,236,338	8,415,069	2,187,513	2,332,200	2,096,733	2,246,417	8,862,863
	Sales	1,886,295	1,885,674	2,155,261	2,090,844	8,018,074	1,965,984	2,216,832	2,237,158	2,222,972	8,642,946
	Delta prod/sales	77,072	150,373	24,056	145,494	396,995	221,529	115,368	-140,425	23,445	219,917
	as % sales	4%	8%	1%	7%	5%	11%	5%	-6%	1%	3%
RNO Group	Production	448,670	513,273	496,778	596,847	2,055,568	587,374	561,323	469,525	540,789	2,159,011
	Sales	471,808	510,776	462,494	545,015	1,990,093	514,622	582,708	499,708	533,913	2,130,951
	Delta prod/sales	-23,138	2,497	34,284	51,832	65,475	72,752	-21,385	-30,183	6,876	28,060
	as % sales	-5%	0%	7%	10%	3%	14%	-4%	-6%	1%	1%
Volvo Cars	Production	162,438	139,077	153,352	194,094	648,961	185,545	193,707	171,557	171,753	722,562
	Sales	150,660	143,635	132,953	190,954	618,202	157,773	184,077	166,637	167,948	676,435
	Delta prod/sales	11,778	-4,558	20,399	3,140	30,759	27,772	9,630	4,920	3,805	46,127
	as % sales	8%	-3%	15%	2%	5%	18%	5%	3%	2%	7%

Source: S&P, BofA Global Research

BofA GLOBAL RESEARCH

Global Sales forecasts of OEMs by S&P

Exhibit 17: Light vehicle sales forecast by S&P and recent changes in forecast by OEMs (January-24 vs December-23)

Volvo Cars and Honda benefitted from the greatest positive revision, while MBG, GM and Nissan saw the most negative one

Retail sales (units)	2020	2021	2022	2023	2024e	2025e	2026e	2027e	2028e
Latest IHS forecasts									
VW Group	8,792,139	8,220,624	7,697,434	8,386,746	8,002,967	8,279,656	8,220,737	8,284,045	8,176,605
y-o-y %		-6.5%	-6.4%	9.0%	-4.6%	3.5%	-0.7%	0.8%	-1.3%
Mercedes Benz Cars	2,128,041	2,005,972	2,003,190	2,081,410	2,250,930	2,246,475	2,354,363	2,406,890	2,424,371
y-o-y %		-5.7%	-0.1%	3.9%	8.1%	-0.2%	4.8%	2.2%	0.7%
BMW Group	2,327,912	2,494,393	2,378,431	2,566,655	2,594,892	2,668,137	2,663,294	2,596,554	2,586,144
y-o-y %		7.2%	-4.6%	7.9%	1.1%	2.8%	-0.2%	-2.5%	-0.4%
Stellantis	6,282,254	6,527,127	5,775,380	6,119,787	6,211,867	6,504,031	6,640,690	6,641,954	6,503,580
y-o-y %		3.9%	-11.5%	6.0%	1.5%	4.7%	2.1%	0.0%	-2.1%
Renault Group	2,361,166	2,238,502	2,045,694	2,193,311	2,268,262	2,252,557	2,487,652	2,631,534	2,586,683
y-o-y %		-5.2%	-8.6%	7.2%	3.4%	-0.7%	10.4%	5.8%	-1.7%
Volvo Cars	661,005	679,483	618,202	696,724	706,888	732,795	795,982	831,739	817,109
y-o-y %		2.8%	-9.0%	12.7%	1.5%	3.7%	8.6%	4.5%	-1.8%
EU Car Makers in total	22,552,517	22,166,101	20,518,331	22,044,633	22,035,806	22,683,651	23,162,718	23,392,716	23,094,492
y-o-y %		-1.7%	-7.4%	7.4%	0.0%	2.9%	2.1%	1.0%	-1.3%
Ford	4,251,976	3,966,297	3,736,528	3,947,313	3,824,860	3,976,301	3,825,273	3,738,147	3,649,418
y-o-y %		-6.7%	-5.8%	5.6%	-3.1%	4.0%	-3.8%	-2.3%	-2.4%
GM	5,004,125	4,348,432	4,288,070	4,534,121	4,402,537	4,309,113	4,272,133	4,176,205	4,133,602
y-o-y %		-13.1%	-1.4%	5.7%	-2.9%	-2.1%	-0.9%	-2.2%	-1.0%
Tesla	499,550	927,255	1,321,697	1,804,370	2,254,674	2,842,397	3,493,713	4,179,142	4,512,967
y-o-y %		85.6%	42.5%	36.5%	25.0%	26.1%	22.9%	19.6%	8.0%
Toyota	8,519,161	9,422,584	9,375,559	10,001,690	9,748,031	9,684,072	9,695,416	9,712,704	9,746,594
y-o-y %		10.6%	-0.5%	6.7%	-2.5%	-0.7%	0.1%	0.2%	0.3%
Honda	4,471,860	4,454,016	3,798,392	3,933,474	4,160,780	4,179,382	3,974,754	3,881,972	3,951,287
y-o-y %		-0.4%	-14.7%	3.6%	5.8%	0.4%	-4.9%	-2.3%	1.8%
Nissan	4,638,957	4,632,063	3,924,822	3,990,040	3,884,699	3,718,838	3,765,592	3,948,735	3,996,759
y-o-y %		-0.1%	-15.3%	1.7%	-2.6%	-4.3%	1.3%	4.9%	1.2%
Hyundai Group	6,253,431	6,795,068	6,549,730	6,901,517	6,970,443	6,846,648	6,917,616	7,041,711	6,953,996
y-o-y %		8.7%	-3.6%	5.4%	1.0%	-1.8%	1.0%	1.8%	-1.2%
Changes in IHS forecasts (December vs October)	2020	2021	2022	2023	2024e	2025e	2026e	2027e	2028e
VW Group				94,627	2,894	-78,896	-77,260	-114,609	-80,812
% change				1.1%	0.0%	-0.9%	-0.9%	-1.4%	-1.0%
Mercedes-Benz				-17,855	-50,060	-32,415	-26,337	-28,997	-24,280
% change				-0.9%	-2.2%	-1.4%	-1.1%	-1.2%	-1.0%
BMW Group				51,946	15,803	7,015	-9,794	16,735	-3,679
% change				2.1%	0.6%	0.3%	-0.4%	0.6%	-0.1%
Stellantis				-28,884	-23,827	-54,309	-37,345	-47,669	-9,424
% change				-0.5%	-0.4%	-0.8%	-0.6%	-0.7%	-0.1%
Renault Group				33,455	10,419	-2,842	-2,654	1,121	-7,078
% change				1.5%	0.5%	-0.1%	-0.1%	0.0%	-0.3%
Volvo Cars				20,289	13,591	-19,949	3,465	10,760	18,435
% change				3.0%	2.0%	-2.7%	0.4%	1.3%	2.3%
Ford				22,565	-15,678	-12,078	-15,497	468	-13,673
% change				0.6%	-0.4%	-0.3%	-0.4%	0.0%	-0.4%
GM				-11,034	-75,811	-845	17,935	-24,558	-58,856
% change				-0.2%	-1.7%	0.0%	0.4%	-0.6%	-1.4%
Tesla				6,505	16,700	-37,741	-48,741	-96,058	-87,631
% change				0.4%	0.7%	-1.3%	-1.4%	-2.2%	-1.9%
Toyota				108,357	-127,184	-134,276	-128,510	-124,418	-126,046
% change				1.1%	-1.3%	-1.4%	-1.3%	-1.3%	-1.3%
Honda				53,909	61,271	51,340	-20,379	-33,398	-27,474
% change				1.4%	1.5%	1.2%	-0.5%	-0.9%	-0.7%
Nissan				16,669	-57,403	-219,618	-156,444	-52,308	-10,816
% change				0.4%	-1.5%	-5.6%	-4.0%	-1.3%	-0.3%
Hyundai Group				9,663	86,661	34,776	8,985	11,855	12,828
% change				0.1%	1.3%	0.5%	0.1%	0.2%	0.2%

Source: S&P; all the numbers above are NOT BofA estimates, but reflect the S&P view; we consider S&P as the most used data source in the automotive industry (by suppliers, OEMs, consultants, etc)

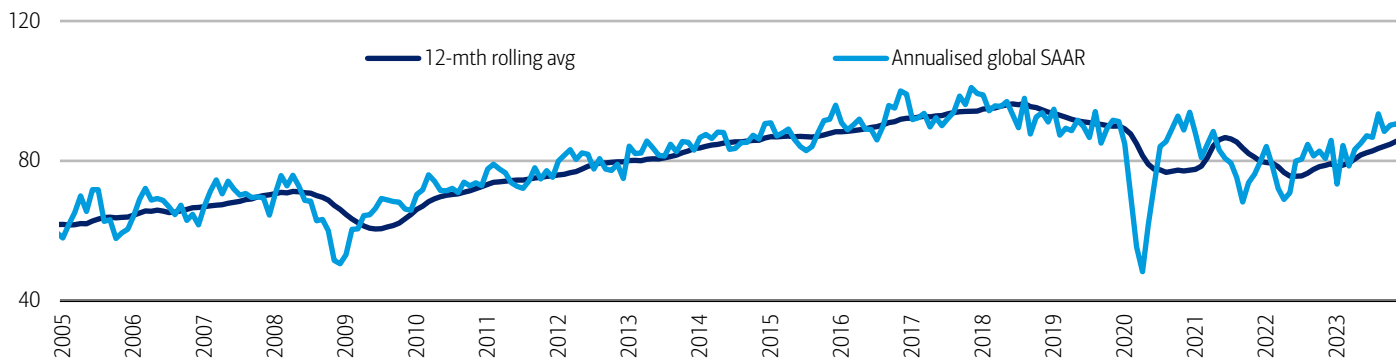
BofA GLOBAL RESEARCH

BofA Global Auto Sales SAAR

We have built a global SAAR indicator from our analysis of over 70% of global auto sales tracked market by market, assuming that the rest of the world markets develop similarly to countries we track. Following the supply shortage in 2021/22, the situation now normalized and shifting to being more demand driven. Dec 23 continued to trend above the 12 month rolling average with a SAAR of 89.8m (5% y/y, -1% m/m). OEMs are still benefitting from slightly higher backlogs accumulated during the supply shortage in the last 2 years. As demand and supply reach equilibrium, demand becomes a greater concern, particularly for BEVs.

Exhibit 18: Global autos sales SAAR based on tracked sales (light vehicles)

Global SAAR up 9% y/y to 90m and down 1% on m/m in December-23

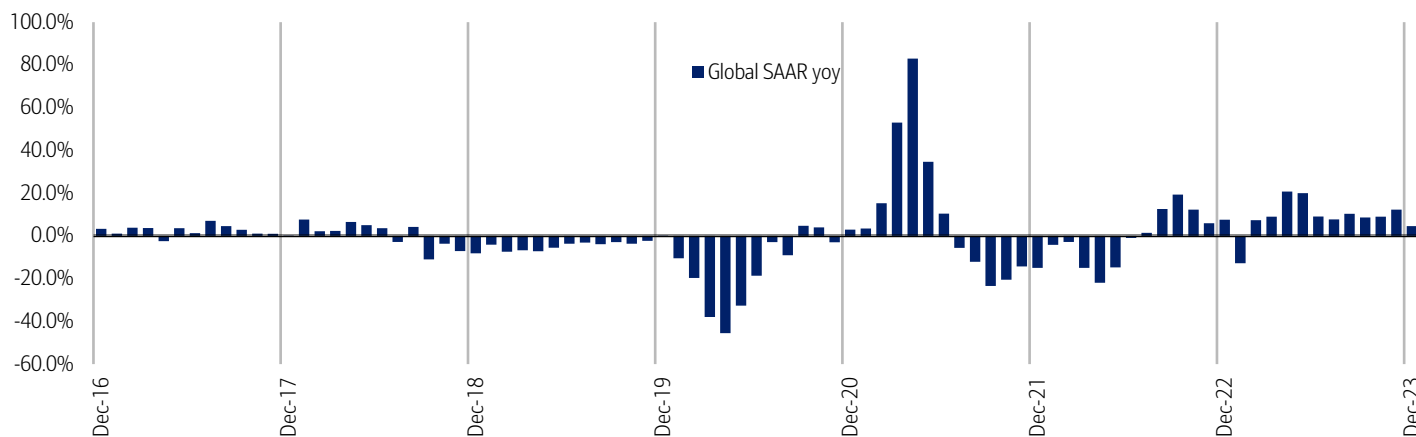


Source: BofA Global Research. The indicator identified as Global auto sales SAAR above is intended to be an indicative metric only and may not be used for reference purposes or as a measure of performance for any financial instrument or contract, or otherwise relied upon by third parties for any other purpose, without the prior written consent of BofA Global Research. This indicator was not created to act as a benchmark. Note: data is estimate for Europe sales for July

BofA GLOBAL RESEARCH

Exhibit 19: Global auto SAAR based on tracked sales (y/y%)

December SAAR confirms positive volume uptake 9% y/y



Source: BofA Global Research. The indicator identified as Global auto sales SAAR above is intended to be an indicative metric only and may not be used for reference purposes or as a measure of performance for any financial instrument or contract, or otherwise relied upon by third parties for any other purpose, without the prior written consent of BofA Global Research. This indicator was not created to act as a benchmark. Note: data is estimate for Europe sales for July

BofA GLOBAL RESEARCH

Global Sales & Market share (I) by OEM

Exhibit 20: Sales and market share of key OEMs (Monthly)

EU and US OEMs (especially Mercedes, VW and Ford) gained market share m/m in December mainly over Korean and Japanese OEMs (especially Suzuki, Hyundai, Kia and Geely).

Units Sales	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23
BMW	192,377	139,331	134,892	189,823	156,931	178,892	178,413	166,627	160,006	174,746	172,114	191,488	210,835
Mercedes-Benz	163,865	111,232	128,040	163,320	131,152	142,445	159,466	137,654	139,398	160,524	130,035	134,623	165,529
Stellantis	384,277	316,615	354,721	485,755	383,315	432,871	443,991	378,375	352,204	396,370	360,811	353,982	368,835
RNO	180,286	142,130	143,689	186,554	154,153	160,482	198,103	157,683	145,192	167,042	139,292	132,217	152,197
VW	690,015	511,592	498,516	676,103	594,736	633,719	701,692	648,020	615,096	673,117	626,354	671,784	770,369
Ford	251,344	201,386	218,660	250,938	247,055	238,820	248,818	244,285	220,269	242,608	207,943	210,815	258,907
GM	360,238	258,778	255,126	319,450	328,294	331,735	341,084	323,776	338,153	334,017	292,281	302,858	320,254
Tesla	142,708	90,198	117,697	196,388	109,851	128,893	181,453	109,078	157,214	129,038	97,315	152,753	171,259
TOYOTA	577,408	459,723	511,943	621,888	537,702	553,489	596,150	563,186	563,249	615,026	576,201	574,860	610,880
NISSAN	197,188	172,327	197,960	265,213	198,657	201,589	219,730	199,666	189,159	226,182	211,605	203,146	239,385
HONDA	296,941	211,702	222,876	296,347	266,987	273,728	287,973	268,217	277,186	304,709	319,218	295,015	336,484
SUZUKI	196,771	220,231	222,005	230,078	202,551	232,121	223,263	244,102	242,278	255,154	230,947	228,140	193,498
Hyundai	292,746	241,135	247,589	312,930	274,236	288,259	294,949	281,975	269,647	278,202	266,309	299,178	291,388
KIA	182,190	180,399	191,860	224,726	209,021	207,987	214,685	202,992	185,590	203,607	185,849	187,460	165,115
Chang'An	165,877	117,023	92,802	93,073	100,637	109,710	118,057	117,424	120,002	124,619	137,521	118,370	125,088
BYD	223,678	139,755	176,662	192,289	193,902	220,735	231,230	230,882	241,592	257,736	258,011	263,066	300,215
Geely	152,045	108,730	109,887	115,846	108,850	119,041	130,412	125,242	127,622	149,121	154,732	169,061	137,053
Global sales	5,625,930	4,302,603	4,550,577	5,722,203	4,987,831	5,280,983	5,707,145	5,313,160	5,323,198	5,777,084	5,548,889	5,627,322	5,985,262
YoY growth	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23
BMW	25.4%	-20.9%	8.1%	21.8%	24.0%	20.4%	9.9%	10.4%	12.2%	7.3%	10.6%	12.2%	9.6%
Mercedes-Benz	11.3%	-23.0%	18.5%	10.6%	5.5%	11.4%	4.8%	-0.3%	5.3%	10.2%	-2.2%	-2.8%	1.0%
Stellantis	-5.3%	-6.2%	2.1%	19.2%	6.6%	10.4%	3.2%	3.6%	7.0%	6.2%	2.5%	-2.4%	-4.0%
RNO	-7.1%	9.1%	7.7%	19.9%	40.1%	35.7%	8.8%	23.2%	22.1%	19.3%	1.3%	-11.4%	-15.6%
VW	10.9%	-15.6%	9.5%	23.8%	44.3%	14.4%	3.3%	7.0%	6.0%	9.4%	8.7%	18.1%	11.6%
Ford	1.9%	-5.4%	16.3%	8.5%	4.7%	8.0%	14.8%	8.5%	-0.5%	6.1%	-8.5%	-4.5%	3.0%
GM	20.4%	-5.3%	1.7%	8.9%	21.0%	24.4%	10.7%	8.7%	5.0%	5.6%	-8.4%	2.4%	-11.1%
Tesla	-7.0%	49.4%	43.7%	25.6%	123.8%	145.6%	26.1%	104.8%	78.4%	-21.5%	47.0%	10.7%	20.0%
TOYOTA	-1.7%	-5.0%	11.6%	2.0%	12.5%	13.7%	9.3%	5.1%	12.2%	12.6%	5.9%	13.7%	5.8%
NISSAN	-17.5%	-22.1%	4.6%	7.1%	7.8%	21.9%	6.2%	0.5%	-1.1%	10.0%	1.1%	19.0%	21.4%
HONDA	-13.1%	-27.7%	-15.9%	-3.5%	7.0%	25.5%	2.2%	-2.0%	4.9%	19.1%	27.0%	28.8%	13.3%
SUZUKI	2.7%	14.0%	7.7%	1.4%	10.0%	13.4%	7.4%	10.3%	16.0%	5.4%	2.9%	2.4%	-1.7%
Hyundai	8.7%	-2.9%	2.3%	23.7%	9.4%	8.8%	5.5%	4.1%	2.3%	-0.7%	1.6%	10.6%	-0.5%
KIA	7.9%	1.3%	9.0%	8.7%	6.9%	10.6%	2.7%	0.1%	0.4%	4.4%	1.2%	-2.2%	-9.4%
Chang'An	131.8%	-18.4%	58.5%	-19.5%	113.8%	73.7%	22.2%	17.0%	33.4%	19.7%	12.1%	17.7%	-24.6%
BYD	128.6%	47.1%	98.3%	86.3%	85.1%	94.0%	74.4%	45.2%	43.1%	34.8%	25.4%	20.9%	34.2%
Geely	-2.6%	-24.5%	27.6%	-2.3%	55.8%	35.3%	9.3%	2.2%	15.7%	23.5%	4.5%	20.6%	-9.9%
Global sales	4.5%	-11.8%	9.4%	10.4%	23.2%	22.0%	10.7%	8.6%	11.9%	10.3%	10.7%	14.4%	6.4%
Market Share	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23
BMW	3.4%	3.2%	3.0%	3.3%	3.1%	3.4%	3.1%	3.1%	3.0%	3.0%	3.1%	3.4%	3.5%
Mercedes-Benz	2.9%	2.6%	2.8%	2.9%	2.6%	2.7%	2.8%	2.6%	2.6%	2.8%	2.3%	2.4%	2.8%
Stellantis	6.8%	7.4%	7.8%	8.5%	7.7%	8.2%	7.8%	7.1%	6.6%	6.9%	6.5%	6.3%	6.2%
RNO	3.2%	3.3%	3.2%	3.3%	3.1%	3.0%	3.5%	3.0%	2.7%	2.9%	2.5%	2.3%	2.5%
Total VW	12.3%	11.9%	11.0%	11.8%	11.9%	12.0%	12.3%	12.2%	11.6%	11.7%	11.3%	11.9%	12.9%
Ford	4.5%	4.7%	4.8%	4.4%	5.0%	4.5%	4.4%	4.6%	4.1%	4.2%	3.7%	3.7%	4.3%
GM	6.4%	6.0%	5.6%	5.6%	6.6%	6.3%	6.0%	6.1%	6.4%	5.8%	5.3%	5.4%	5.4%
Tesla	2.5%	2.1%	2.6%	3.4%	2.2%	2.4%	3.2%	2.1%	3.0%	2.2%	1.8%	2.7%	2.9%
TOYOTA	10.3%	10.7%	11.3%	10.9%	10.8%	10.5%	10.4%	10.6%	10.6%	10.6%	10.4%	10.2%	10.2%
NISSAN	3.5%	4.0%	4.4%	4.6%	4.0%	3.8%	3.9%	3.8%	3.6%	3.9%	3.8%	3.6%	4.0%
HONDA	5.3%	4.9%	4.9%	5.2%	5.4%	5.2%	5.0%	5.0%	5.2%	5.3%	5.8%	5.2%	5.6%
SUZUKI	3.5%	5.1%	4.9%	4.0%	4.1%	4.4%	3.9%	4.6%	4.6%	4.4%	4.2%	4.1%	3.2%
Hyundai	5.2%	5.6%	5.4%	5.5%	5.5%	5.5%	5.2%	5.3%	5.1%	4.8%	4.8%	5.3%	4.9%
KIA	3.2%	4.2%	4.2%	3.9%	4.2%	3.9%	3.8%	3.8%	3.5%	3.5%	3.3%	3.3%	2.8%
Chang'An	2.9%	2.7%	2.0%	1.6%	2.0%	2.1%	2.1%	2.2%	2.3%	2.2%	2.5%	2.1%	2.1%
BYD	4.0%	3.2%	3.9%	3.4%	3.9%	4.2%	4.1%	4.3%	4.5%	4.5%	4.6%	4.7%	5.0%
Geely	2.7%	2.5%	2.4%	2.0%	2.2%	2.3%	2.3%	2.4%	2.4%	2.6%	2.8%	3.0%	2.3%

Source: BofA Global Research, ACEA, Autodata, CPCA, Anfavea, S&P, local car authorities. Note: Market share is calculated as total sales of each OEM in tracked regions divide by total sales of all the tracked regions. These include EU, US, China, Korea, Japan, Russia, India, Türkiye, Singapore. Note: Europe sales figure are estimated for July for market share calculation

Global Sales & Market share (II) by OEM

Exhibit 21: Sales and market share of key OEMs (Quarterly and Annually)

BYD and Tesla growth in 2023 outpaced competition (+50% & +37%) with strong M/S gains. (1.1 ppts & 0.6 ppts)

Unit Sales	4Q21	1Q22	2Q22	3Q22	4Q22	1Q23	2Q23	3Q23	4Q23	FY 2021	FY 2022	FY 2023
BMW	442,203	456,877	437,615	456,425	518,642	464,046	514,236	501,379	574,437	1,908,298	1,869,559	2,054,098
Mercedes-Benz	390,453	400,075	404,219	416,199	435,344	402,592	433,063	437,576	430,187	1,602,878	1,655,837	1,703,418
Stellantis	1,137,727	1,092,145	1,181,805	1,067,801	1,098,988	1,157,091	1,260,177	1,126,949	1,083,628	4,935,157	4,440,739	4,627,845
RNO	499,235	419,297	410,393	386,999	467,002	472,373	512,738	469,917	423,706	1,976,194	1,683,691	1,878,734
VW	1,643,972	1,607,468	1,645,543	1,801,112	1,835,136	1,686,211	1,930,147	1,936,233	2,068,507	7,467,895	6,889,259	7,621,098
Ford	717,126	632,073	673,860	675,106	699,407	670,984	734,693	707,162	677,665	2,877,970	2,680,446	2,790,504
GM	812,730	817,456	845,970	936,342	975,022	833,354	1,001,113	995,946	915,393	3,707,406	3,574,790	3,745,806
Tesla	283,416	298,667	245,477	305,796	346,874	404,283	420,197	395,330	421,327	825,716	1,196,814	1,641,137
TOYOTA	1,543,777	1,552,044	1,510,542	1,583,916	1,626,961	1,593,554	1,687,341	1,741,461	1,761,941	6,630,130	6,273,463	6,784,297
NISSAN	667,739	657,928	556,382	595,435	577,150	635,500	619,976	615,007	654,136	2,941,091	2,386,895	2,524,619
HONDA	940,716	864,817	749,195	793,808	777,386	730,925	828,688	850,112	950,717	3,894,066	3,185,206	3,360,442
SUZUKI	548,658	626,166	596,701	672,237	644,062	672,314	657,935	741,534	652,585	2,198,466	2,539,166	2,724,368
Hyundai	784,976	743,338	795,358	814,581	825,489	801,654	857,444	829,824	856,875	3,385,251	3,178,766	3,345,797
KIA	528,621	560,875	592,819	582,687	557,647	596,985	631,693	592,189	538,424	2,344,478	2,294,028	2,359,291
Chang'An	258,151	317,535	206,842	294,448	389,187	302,898	328,404	362,045	380,979	1,116,033	1,208,012	1,374,326
BYD	282,266	287,363	351,091	519,079	647,091	508,706	645,867	730,210	821,292	723,697	1,804,624	2,706,075
Geely	405,402	348,717	277,226	353,553	440,351	334,463	358,303	401,985	460,846	1,466,725	1,419,847	1,555,597
Global sales	14,684,740	14,217,236	13,533,093	14,881,510	15,556,361	14,575,383	15,975,959	16,413,442	17,161,473	59,896,782	58,188,200	64,126,257
YoY growth	4Q21	1Q22	2Q22	3Q22	4Q22	1Q23	2Q23	3Q23	4Q23	FY 2021	FY 2022	FY 2023
BMW	-16.3%	-6.1%	-19.4%	4.5%	17.3%	1.6%	17.5%	9.8%	10.8%	6.5%	-2.0%	9.9%
Mercedes-Benz	-21.5%	-10.1%	-10.2%	31.2%	11.5%	0.6%	7.1%	5.1%	-1.2%	-9.5%	3.3%	2.9%
Stellantis	-20.0%	-16.8%	-15.5%	-1.7%	-3.4%	5.9%	6.6%	5.5%	-1.4%	0.9%	-10.0%	4.2%
RNO	-20.2%	-12.5%	-26.2%	-12.3%	-6.5%	12.7%	24.9%	21.4%	-9.3%	-5.6%	-14.8%	11.6%
VW	-31.3%	-22.0%	-22.4%	9.5%	11.6%	4.9%	17.3%	7.5%	12.7%	-6.3%	-7.7%	10.6%
Ford	-18.7%	-21.1%	-7.4%	6.8%	-2.5%	6.2%	9.0%	4.7%	-3.1%	-9.6%	-6.9%	4.1%
GM	-39.8%	-23.2%	-22.0%	25.5%	20.0%	1.9%	18.3%	6.4%	-6.1%	-14.7%	-3.6%	4.8%
Tesla	77.2%	75.6%	39.8%	55.6%	22.4%	35.4%	71.2%	29.3%	21.5%	87.4%	44.9%	37.1%
TOYOTA	-14.4%	-11.3%	-14.6%	1.0%	5.4%	2.7%	11.7%	9.9%	8.3%	8.8%	-5.4%	8.1%
NISSAN	-22.8%	-23.8%	-26.5%	-8.9%	-13.6%	-3.4%	11.4%	3.3%	13.3%	-1.5%	-18.8%	5.8%
HONDA	-19.0%	-12.8%	-30.9%	-9.6%	-17.4%	-15.5%	10.6%	7.1%	22.3%	1.3%	-18.2%	5.5%
SUZUKI	4.2%	-7.0%	22.4%	37.5%	17.4%	7.4%	10.3%	10.3%	1.3%	32.5%	15.5%	7.3%
Hyundai	-10.7%	-12.6%	-13.5%	-1.9%	5.2%	7.8%	7.8%	1.9%	3.8%	12.9%	-6.1%	5.3%
KIA	-1.7%	-1.1%	-10.5%	-0.6%	5.5%	6.4%	6.6%	1.6%	-3.4%	17.4%	-2.2%	2.8%
Chang'An	-15.7%	-8.8%	-22.0%	20.3%	50.8%	-4.6%	58.8%	23.0%	-2.1%	18.5%	8.2%	13.8%
BYD	82.6%	182.8%	157.0%	155.4%	129.2%	77.0%	84.0%	40.7%	26.9%	73.5%	149.4%	50.0%
Geely	-16.9%	-10.0%	-20.6%	8.9%	8.6%	-4.1%	29.2%	13.7%	4.7%	-4.5%	-3.2%	9.6%
Global sales	-16.9%	-9.7%	-14.4%	9.0%	5.9%	2.5%	18.1%	10.3%	10.3%	2.7%	-2.9%	10.2%
Market Share	4Q21	1Q22	2Q22	3Q22	4Q22	1Q23	2Q23	3Q23	4Q23	FY 2021	FY 2022	FY 2023
BMW	3.0%	3.2%	3.2%	3.1%	3.3%	3.2%	3.2%	3.1%	3.3%	3.2%	3.2%	3.2%
Mercedes-Benz	2.7%	2.8%	3.0%	2.8%	2.8%	2.8%	2.7%	2.9%	2.5%	2.7%	2.8%	2.7%
Stellantis	7.7%	7.7%	8.7%	7.2%	7.1%	7.9%	7.9%	6.9%	6.3%	8.2%	7.7%	7.2%
RNO	3.4%	2.9%	3.0%	2.6%	3.0%	3.2%	3.2%	2.9%	2.5%	3.3%	2.9%	2.9%
Total VW	11.2%	11.3%	12.2%	12.1%	11.8%	11.6%	12.1%	11.8%	12.1%	12.4%	11.8%	11.9%
Ford	4.9%	4.4%	5.0%	4.5%	4.5%	4.6%	4.6%	4.3%	3.9%	4.8%	4.6%	4.4%
GM	5.5%	5.7%	6.3%	6.3%	6.3%	5.7%	6.3%	6.1%	5.3%	6.2%	6.2%	5.8%
Tesla	1.9%	2.1%	1.8%	2.1%	2.2%	2.8%	2.6%	2.4%	2.5%	1.4%	2.0%	2.6%
TOYOTA	10.5%	10.9%	11.2%	10.6%	10.5%	10.9%	10.6%	10.6%	10.3%	11.1%	10.8%	10.6%
NISSAN	4.5%	4.6%	4.1%	4.0%	3.7%	4.4%	3.9%	3.7%	3.8%	4.9%	4.1%	3.9%
HONDA	6.4%	6.1%	5.5%	5.3%	5.0%	5.0%	5.2%	5.2%	5.5%	6.5%	5.5%	5.2%
SUZUKI	3.7%	4.4%	4.4%	4.5%	4.1%	4.6%	4.1%	4.5%	3.8%	3.7%	4.4%	4.2%
Hyundai	5.3%	5.2%	5.9%	5.5%	5.3%	5.5%	5.4%	5.1%	5.0%	5.7%	5.5%	5.2%
KIA	3.6%	3.9%	4.4%	3.9%	3.6%	4.1%	4.0%	3.6%	3.1%	3.9%	4.0%	3.7%
Chang'An	1.8%	2.2%	1.5%	2.0%	2.5%	2.1%	2.1%	2.2%	2.2%	1.9%	2.0%	2.1%
BYD	1.9%	2.0%	2.6%	3.5%	4.2%	3.5%	4.0%	4.4%	4.8%	1.2%	3.1%	4.2%
Geely	2.8%	2.5%	2.0%	2.4%	2.8%	2.3%	2.2%	2.4%	2.7%	2.5%	2.4%	2.4%

Source: BofA Global Research. ACEA, Autodata, CPCA, Anfavea, S&P, local car authorities. Note: Market share is calculated as total sales of each OEM in tracked regions divide by total sales of all the tracked regions. These include EU, US, China, Korea, Japan, Russia, India, Turkey, Singapore. Note: Europe sales figure are estimated for July for market share calculation

Global auto sales by country

Exhibit 22: Monthly Sales by Country (PV)

Growth momentum took a hit in Dec-23 y/y as the comparable base is getting higher and Germany and Korea drag

Sales	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23
Europe	1,090,393	911,064	902,775	1,422,147	964,932	1,121,644	1,265,678	1,022,468	904,509	1,166,728	1,039,253	1,075,755	1,048,727
Germany	314,318	179,247	206,210	281,361	202,947	246,966	280,139	243,277	273,417	224,502	218,959	245,701	241,883
Italy	104,965	128,301	130,365	168,294	125,805	149,111	138,927	119,207	79,756	136,283	139,052	139,278	111,136
France	158,027	111,940	126,237	182,713	132,509	145,538	190,848	128,947	113,599	156,304	152,383	152,710	181,011
Spain	73,910	64,147	74,001	99,524	74,749	92,025	101,085	81,205	55,957	68,803	77,892	78,314	81,772
UK	128,462	131,994	74,441	287,825	132,990	145,204	177,266	143,921	85,657	272,610	153,529	156,525	141,092
USA	1,287,280	1,065,938	1,160,895	1,375,518	1,361,289	1,375,248	1,385,862	1,322,447	1,341,169	1,339,581	1,209,805	1,243,695	1,464,293
Korea	131,143	100,448	125,151	140,814	128,360	130,300	133,803	114,818	106,482	106,386	117,012	132,021	114,290
Japan	344,365	382,338	426,726	572,494	349,592	326,730	392,719	379,053	340,342	437,493	397,672	411,089	362,839
Brazil	164,191	103,894	95,867	146,244	118,177	127,508	142,037	176,769	153,500	145,717	163,198	160,718	187,783
Russia	64,072	32,499	41,851	48,414	54,270	51,466	87,357	100,343	111,272	116,324	119,864	110,935	70,922
India	343,572	401,933	381,554	405,281	372,277	387,590	385,229	409,804	423,531	422,304	443,934	388,297	347,362
China	2,200,914	1,304,489	1,415,758	1,611,291	1,638,934	1,760,497	1,914,460	1,787,458	1,942,393	2,042,551	2,058,151	2,104,812	2,389,046
Total	5,625,930	4,302,603	4,550,577	5,722,203	4,987,831	5,280,983	5,707,145	5,313,160	5,323,198	5,777,084	5,548,889	5,627,322	5,985,262
YoY (%)	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23
Europe	14.8%	10.8%	12.2%	26.1%	16.1%	18.2%	18.7%	16.9%	20.7%	11.1%	14.1%	6.0%	-3.8%
Germany	38.1%	-2.6%	2.8%	16.6%	12.6%	19.2%	24.8%	18.1%	37.3%	-0.1%	4.9%	-5.7%	-23.0%
Italy	21.1%	19.0%	17.6%	40.8%	29.2%	22.9%	9.2%	8.8%	12.0%	22.8%	20.0%	16.2%	5.9%
France	-0.1%	8.8%	9.4%	24.2%	21.9%	14.8%	11.6%	19.9%	24.3%	10.7%	21.9%	14.0%	14.5%
Spain	-14.1%	51.4%	19.2%	66.1%	8.2%	8.3%	13.3%	10.7%	7.8%	2.3%	18.1%	7.0%	10.6%
UK	18.3%	14.7%	26.2%	18.2%	11.6%	16.7%	25.8%	28.3%	24.4%	21.0%	14.3%	9.5%	9.8%
USA	5.4%	6.3%	9.6%	8.7%	8.0%	22.9%	20.8%	15.4%	16.2%	19.2%	1.9%	8.9%	13.8%
Korea	1.4%	7.0%	21.2%	26.8%	7.4%	8.8%	10.5%	-5.8%	1.5%	-6.2%	-2.3%	4.1%	-12.9%
Japan	2.4%	16.0%	20.3%	11.6%	16.7%	25.0%	19.8%	8.5%	17.3%	10.7%	10.7%	9.0%	5.4%
Brazil	5.1%	12.6%	-1.8%	35.1%	7.7%	-8.6%	6.2%	30.5%	-0.8%	1.8%	19.2%	1.3%	14.4%
Russia	-52.0%	-64.5%	-63.4%	-12.2%	65.9%	112.1%	214.7%	209.6%	166.9%	149.1%	165.0%	139.1%	10.7%
India	10.9%	19.9%	7.7%	5.7%	9.5%	10.3%	2.0%	3.6%	10.5%	3.0%	15.5%	3.1%	1.1%
China	2.5%	-38.1%	11.5%	-0.5%	55.3%	29.0%	-2.0%	-2.6%	3.4%	4.6%	10.1%	25.7%	8.5%
YoY (%)	4.5%	-11.8%	9.4%	10.4%	23.2%	22.0%	10.7%	8.6%	11.9%	10.3%	10.7%	14.4%	6.4%
YTD (%)	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23
Europe	-4.1%	10.8%	11.5%	17.5%	17.2%	17.4%	17.6%	17.5%	17.8%	17.0%	16.7%	15.6%	13.8%
Germany	1.1%	-2.6%	0.2%	6.5%	7.9%	10.2%	12.8%	13.6%	16.5%	14.5%	13.5%	11.4%	7.3%
Italy	-9.6%	19.0%	18.3%	26.3%	26.9%	26.0%	22.9%	20.9%	20.2%	20.5%	20.5%	20.0%	18.9%
France	-7.8%	8.8%	9.1%	15.2%	16.7%	16.3%	15.3%	15.8%	16.6%	15.9%	16.5%	16.2%	16.1%
Spain	-5.4%	51.4%	32.2%	44.6%	33.8%	27.0%	24.0%	21.9%	20.6%	18.5%	18.5%	17.3%	16.7%
UK	-2.0%	14.7%	18.6%	18.4%	16.9%	16.8%	18.4%	19.6%	20.0%	20.2%	19.6%	18.6%	17.9%
USA	-7.5%	6.3%	8.0%	8.3%	8.2%	11.1%	12.7%	13.1%	13.5%	14.1%	12.8%	12.5%	12.6%
Korea	-3.3%	7.0%	14.4%	18.9%	15.7%	14.2%	13.5%	10.5%	9.5%	7.7%	6.7%	6.4%	4.6%
Japan	-5.6%	16.0%	18.2%	15.4%	15.7%	17.0%	17.5%	16.2%	16.3%	15.6%	15.1%	14.5%	13.8%
Brazil	1.0%	12.6%	5.2%	16.1%	13.8%	8.1%	7.7%	11.5%	9.5%	8.5%	9.7%	8.8%	9.3%
Russia	-60.4%	-64.5%	-63.9%	-53.0%	-39.8%	-28.2%	-8.7%	10.0%	25.6%	38.0%	49.2%	56.6%	51.9%
India	22.6%	19.9%	13.6%	10.8%	10.5%	10.5%	9.0%	8.1%	8.5%	7.8%	8.6%	8.1%	7.5%
China	1.6%	-38.1%	-19.5%	-13.3%	-1.4%	4.2%	2.9%	2.0%	2.2%	2.5%	3.4%	5.4%	5.7%
YTD (%)	-2.9%	-11.8%	-2.0%	2.5%	7.1%	10.0%	10.1%	9.9%	10.1%	10.2%	10.2%	10.6%	10.2%

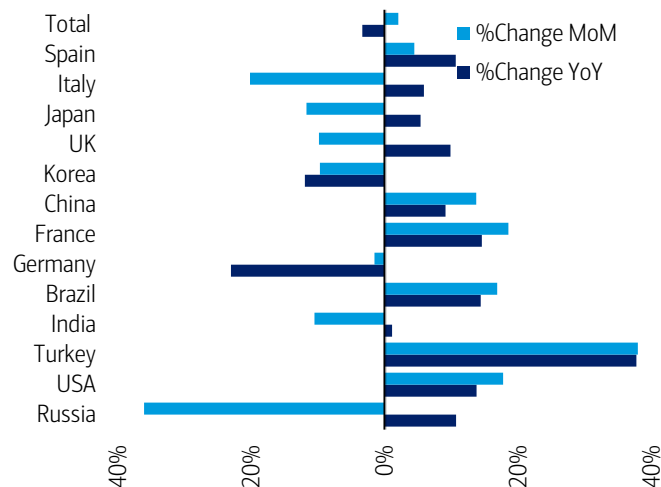
Source: BofA Global Research. ACEA, Autodata, CPCA, Anfavea, S&P, local car authorities. *Note: Europe sales figure are estimated for July

BofA GLOBAL RESEARCH

Global sales summary by country

Exhibit 23: Sales % Change YoY & MoM in December-23

All regions except Korea and Germany reported positive YoY growth

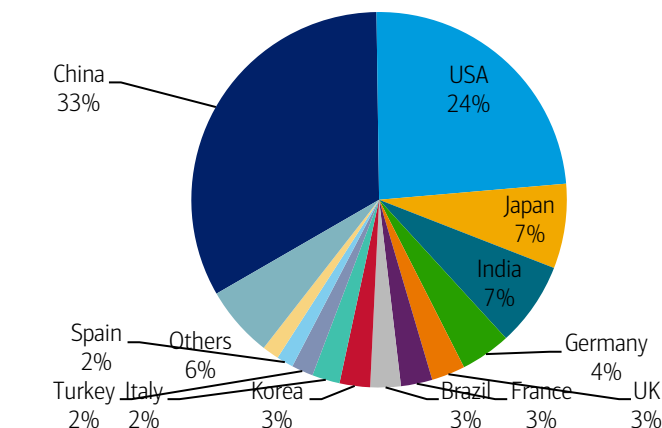


Source: BofA Global Research.

BofA GLOBAL RESEARCH

Exhibit 24: 2023 YTD sales volume split

US and China accounts for c57% of volumes in 2023 – China share down from 36% in FY22 to 33% in 2023



Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 25: Global markets monthly sales (in units)

All countries except Korea and Germany posted y/y growth in December -23

Country	Dec-23	Dec-22	Nov-23	% YoY	% MoM
Russia	70,922	64,072	110,935	10.7%	-36.1%
USA	1,464,293	1,287,280	1,243,695	13.8%	17.7%
Turkey	158,653	115,220	115,040	37.7%	37.9%
India	347,362	343,572	388,297	1.1%	-10.5%
Brazil	187,783	164,191	160,718	14.4%	16.8%
Germany	241,883	314,318	245,701	-23.0%	-1.6%
France	181,005	158,027	152,711	14.5%	18.5%
China	2,364,201	2,166,824	2,079,301	9.1%	13.7%
Korea	141,513	160,783	156,761	-12.0%	-9.7%
UK	141,092	128,462	156,525	9.8%	-9.9%
Japan	362,839	344,365	411,089	5.4%	-11.7%
Italy	111,111	104,961	139,249	5.9%	-20.2%
Spain	81,772	73,910	78,314	10.6%	4.4%
Total	5,691,532	5,890,047	5,578,058	-3.4%	2.0%

Source: BofA Global Research

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Exhibit 26: Global markets YTD sales (in units)

Volume recovery underway, we are trending back above 2021 levels

Country	Dec-23	Dec-22	% YoY	Dec-21	% YoY
Russia	945,517	622,386	51.9%	1,572,515	-60.4%
USA	15,645,740	13,893,619	12.6%	15,027,739	-7.5%
Turkey	1,227,225	783,283	56.7%	761,152	2.9%
Brazil	1,721,412	1,574,240	9.3%	1,558,466	1.0%
Germany	2,844,609	2,651,357	7.3%	2,597,537	2.1%
France	1,774,723	1,529,035	16.1%	1,652,746	-7.5%
China	21,713,580	20,464,333	6.1%	20,074,043	1.9%
India	4,769,096	4,434,588	7.5%	3,616,360	22.6%
Korea	1,720,919	1,674,895	2.7%	1,709,760	-2.0%
UK	1,903,054	1,614,063	17.9%	1,686,118	-4.3%
Japan	4,779,087	4,201,321	13.8%	4,448,340	-5.6%
Italy	1,565,596	1,316,781	18.9%	1,448,420	-9.1%
Spain	949,474	813,375	16.7%	843,167	-3.5%
Total	65,581,406	60,586,491	8.2%	62,595,873	-3.2%

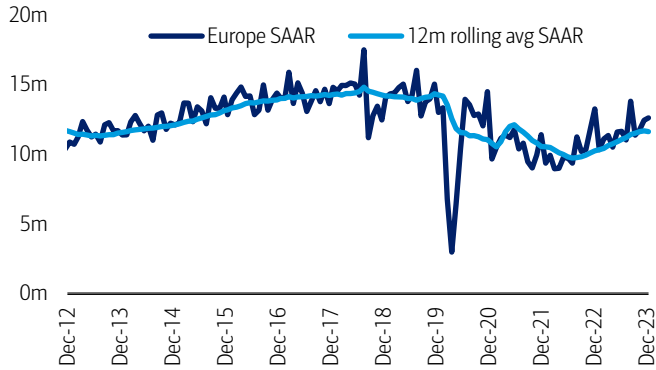
Source: BofA Global Research

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Regional Auto SAARs

Exhibit 27: Europe SAAR trend

EU SAAR rose by 1% m/m while down 5% y/y in Dec-23

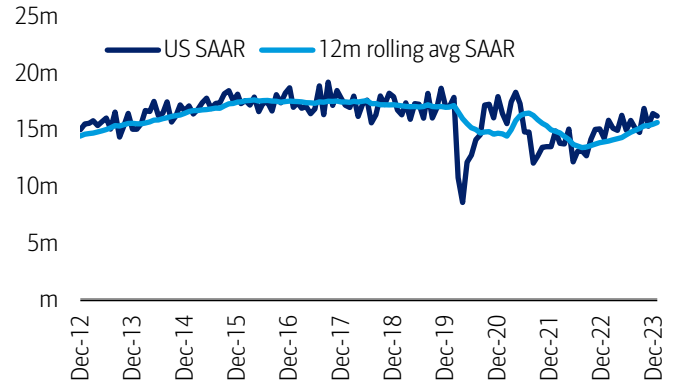


Source: BofA Global Research

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Exhibit 28: US SAAR trend

US SAAR rose by 14% y/y while down 1% m/m in Dec-23



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Exhibit 29: China SAAR trend

China SAAR grew by 9% y/y and 2% m/m in Dec-23

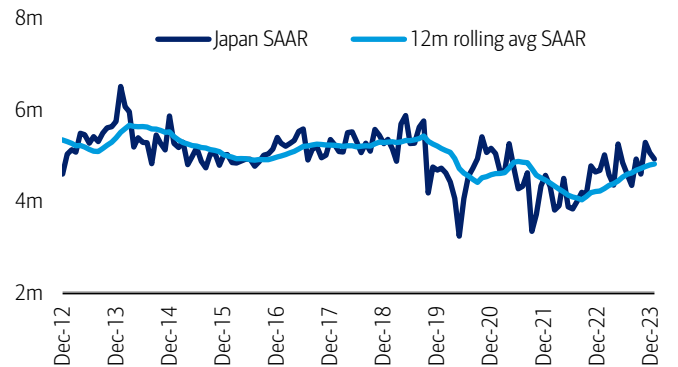


Source: BofA Global Research

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Exhibit 30: Japan SAAR trend

Japan SAAR rose by 5% y/y while down 3% m/m in Dec-23



Source: BofA Global Research

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Exhibit 31: Russia SAAR trend

Russia SAAR grew by 11% y/y while down 43% m/m in Dec-23



Source: BofA Global Research

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Exhibit 32: Brazil SAAR trend

Brazil SAAR rose by 14% y/y and 4% m/m in Dec-23



Source: BofA Global Research

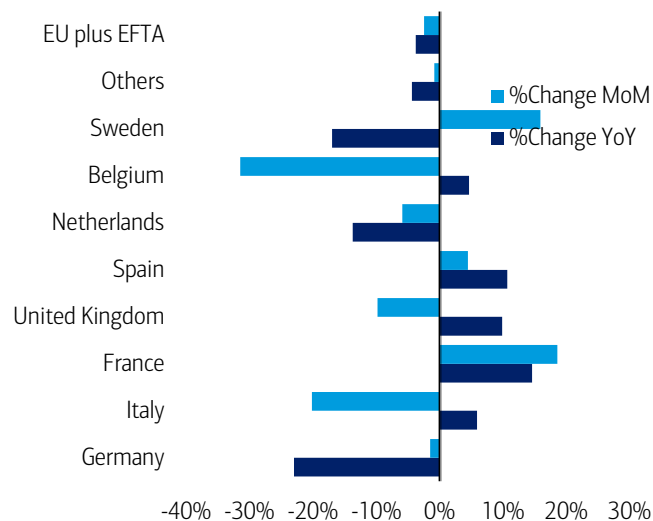
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Sales: Major geographies

Europe by Country: New passenger car registrations

Exhibit 33: Europe monthly sales % Change y/y & MoM in Dec-23

Both YoY and MoM sales are down in EU

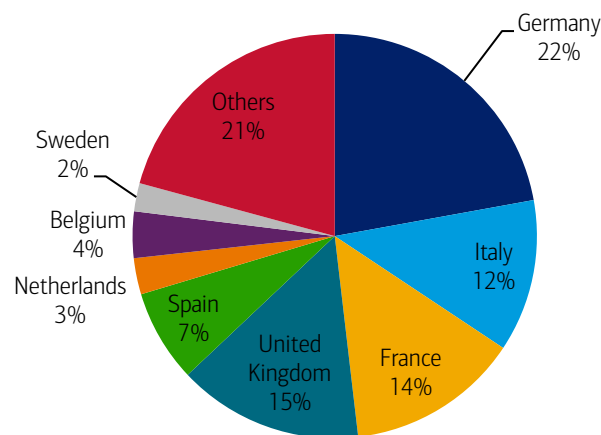


Source: www.acea.be, BofA Global Research.

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Exhibit 34: YTD sales volume split

Top 5 countries account for c70% of European sales



Source: BofA Global Research, ACEA, LMC

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Exhibit 35: European countries monthly new passenger car registration (in units)

Weak European sales (c-4% y/y) underpinned by negative growth across major markets

Country	Dec-23	Dec-22	Nov-23	% YoY	% MoM
Germany	241,883	314,318	245,701	-23.0%	-1.6%
Italy	111,111	104,961	139,249	5.9%	-20.2%
France	181,005	158,027	152,711	14.5%	18.5%
United Kingdom	141,092	128,462	156,525	9.8%	-9.9%
Spain	81,772	73,910	78,314	10.6%	4.4%
Netherlands	26,577	30,818	28,256	-13.8%	-5.9%
Belgium	25,715	24,584	37,552	4.6%	-31.5%
Sweden	29,436	35,476	25,406	-17.0%	15.9%
Others	210,136	219,837	212,041	-4.4%	-0.9%
EU plus EFTA	1,048,727	1,090,393	1,075,755	-3.8%	-2.5%

Source: BofA Global Research, www.acea.be..

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Exhibit 36: European countries 2023 new passenger car registration (in units)

EU performance is also improving in 2023 across countries

Country	Dec-23	Dec-22	% YoY	Dec-21	% YoY
Germany	2,844,609	2,651,357	7.3%	2,597,537	2.1%
Italy	1,565,596	1,316,781	18.9%	1,448,420	-9.1%
France	1,774,723	1,529,035	16.1%	1,652,746	-7.5%
United Kingdom	1,903,054	1,614,063	17.9%	1,686,118	-4.3%
Spain	949,474	813,375	16.7%	843,167	-3.5%
Netherlands	372,156	312,478	19.1%	336,923	-7.3%
Belgium	476,675	366,333	30.1%	384,322	-4.7%
Sweden	289,827	288,087	0.6%	298,742	-3.6%
Others	2,669,566	2,400,808	11.2%	2,519,116	-4.7%
EU plus EFTA	12,845,680	11,292,317	13.8%	11,767,091	-4.0%

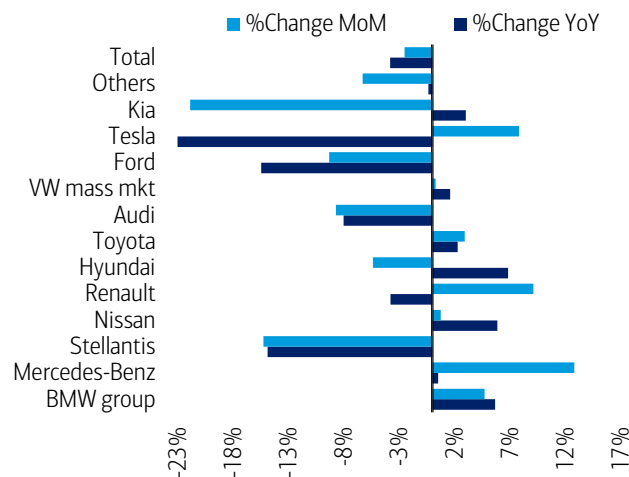
Source: BofA Global Research, www.acea.be.

BofA GLOBAL RESEARCH

Europe

Exhibit 37: Monthly sales % change YoY & MoM – Dec-23

Overall y/y sales declined in Dec-23 driven by Tesla, Ford and STLA

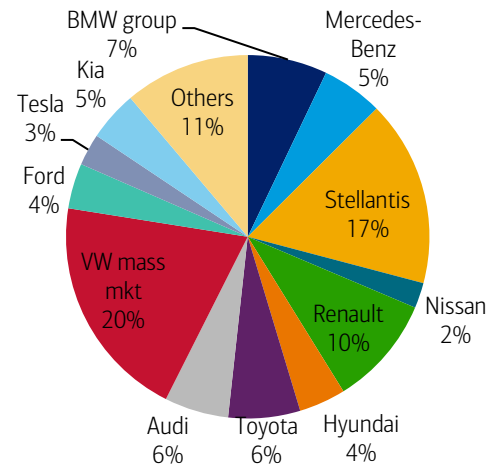


Source: BofA Global Research, ACEA. Note: Tesla grew 30.2% y/y

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Exhibit 38: YTD sales volume split

Stellantis, VW Group, & RNO accounts for c 47% of sales in Europe



Source: BofA Global Research, ACEA

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Exhibit 39: Europe OEM monthly passenger car registrations

Overall m/m sales declined in Dec-23 driven by Kia and STLA

OEM	Dec-23	Dec-22	Nov-23	% YoY	% MoM
BMW group	90,663	85,804	86,587	5.7%	4.7%
Mercedes-Benz	70,223	69,864	62,255	0.5%	12.8%
Stellantis	136,016	159,793	160,499	-14.9%	-15.3%
Nissan	25,041	23,656	24,854	5.9%	0.8%
Renault	111,635	116,022	102,312	-3.8%	9.1%
Hyundai	42,807	40,072	45,238	6.8%	-5.4%
Toyota	65,637	64,178	63,781	2.3%	2.9%
Audi	56,272	61,180	61,639	-8.0%	-8.7%
VW mass mkt	216,904	213,491	216,271	1.6%	0.3%
Ford	35,318	41,775	38,946	-15.5%	-9.3%
Tesla	38,973	55,859	36,149	-30.2%	7.8%
Kia	34,252	33,251	43,838	3.0%	-21.9%
Others	124,986	125,448	133,386	-0.4%	-6.3%
Total	1,048,727	1,090,393	1,075,755	-3.8%	-2.5%

Source: BofA Global Research

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Exhibit 40: Europe OEM YTD passenger car registrations (in units)

Tesla and Nissan sales growth stand out in 2023

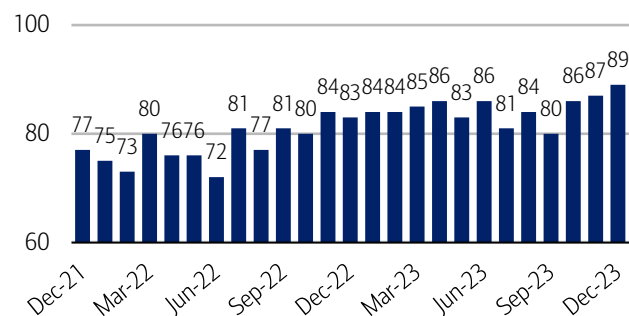
OEM	Dec-23	Dec-22	% YoY	Dec-21	% YoY
BMW group	911,213	818,076	11.4%	857,591	-4.6%
Mercedes-Benz	699,887	656,046	6.7%	680,879	-3.6%
Stellantis	2,128,288	2,048,590	3.9%	2,379,610	-13.9%
Nissan	290,544	238,028	22.1%	247,649	-3.9%
Renault	1,259,141	1,074,164	17.2%	1,093,067	-1.7%
Hyundai	534,785	518,082	3.2%	515,741	0.5%
Toyota	820,843	772,254	6.3%	758,600	1.8%
Audi	733,134	614,880	19.2%	597,498	2.9%
VW mass mkt	2,579,019	2,187,620	17.9%	2,344,770	-6.7%
Ford	517,896	516,458	0.3%	523,546	-1.4%
Tesla	364,186	233,483	56.0%	170,115	37.3%
Kia	572,297	542,799	5.4%	502,677	8.0%
Others	1,434,447	1,071,837	33.8%	1,102,848	-2.8%
Total	12,845,680	11,292,317	13.8%	11,774,591	-4.1%

Source: BofA Global Research

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Exhibit 41: How many days used cars remain at the dealer lot?

Number of days has increased since Jun-22 lows, but remains low

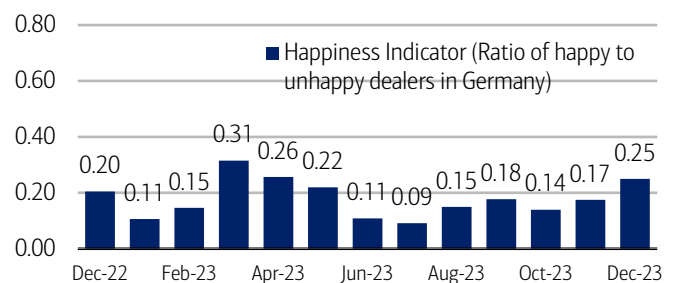


Autohaus Pulsschlag, Sample size : 1,000 BofA Global Research Note: Q4 22 includes Oct-22 and Nov-22

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Exhibit 42: Dealers happiness indicator in Germany (Monthly)

Dealers happiness remains depressed; majority of dealers unhappy

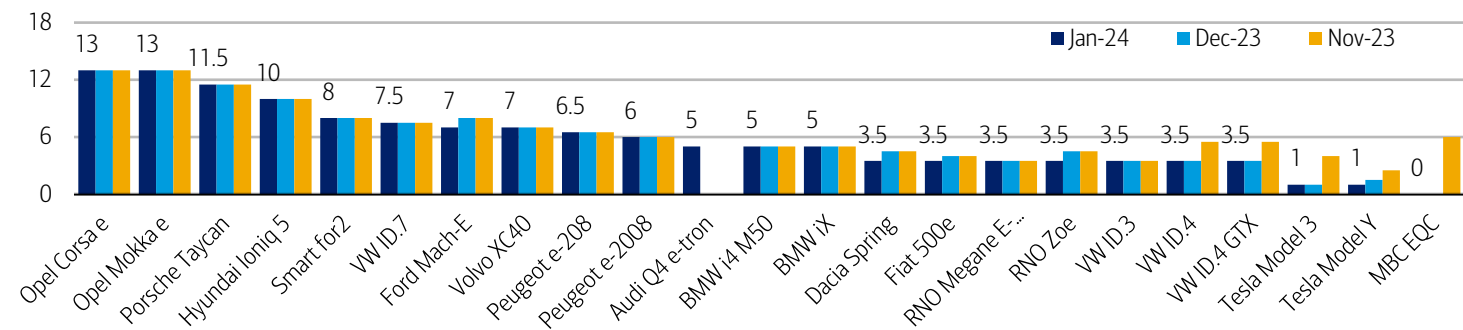


Autohaus Pulsschlag, Sample size : 1,000 BofA Global Research

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Exhibit 43: Germany: Waiting periods for new EV (months)

Waiting periods for new EVs remains in-line with previous months

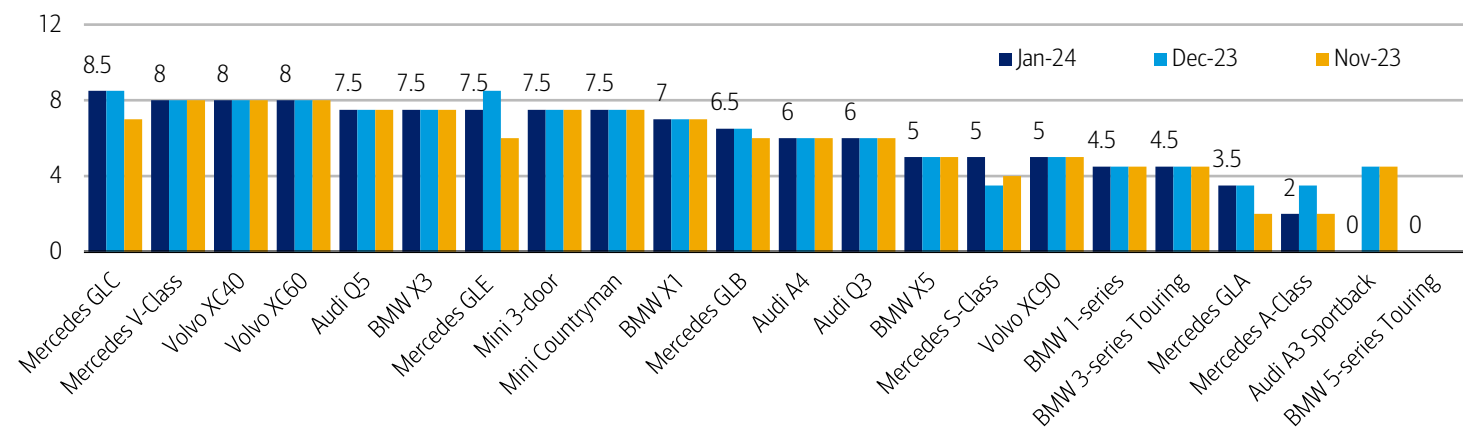


Source: BofA Global Research, carwow.de, *0 = Not available

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Exhibit 44: Germany: How many months you need to wait until you get your ICE premium car ...

Waiting times are fairly stable for ICE

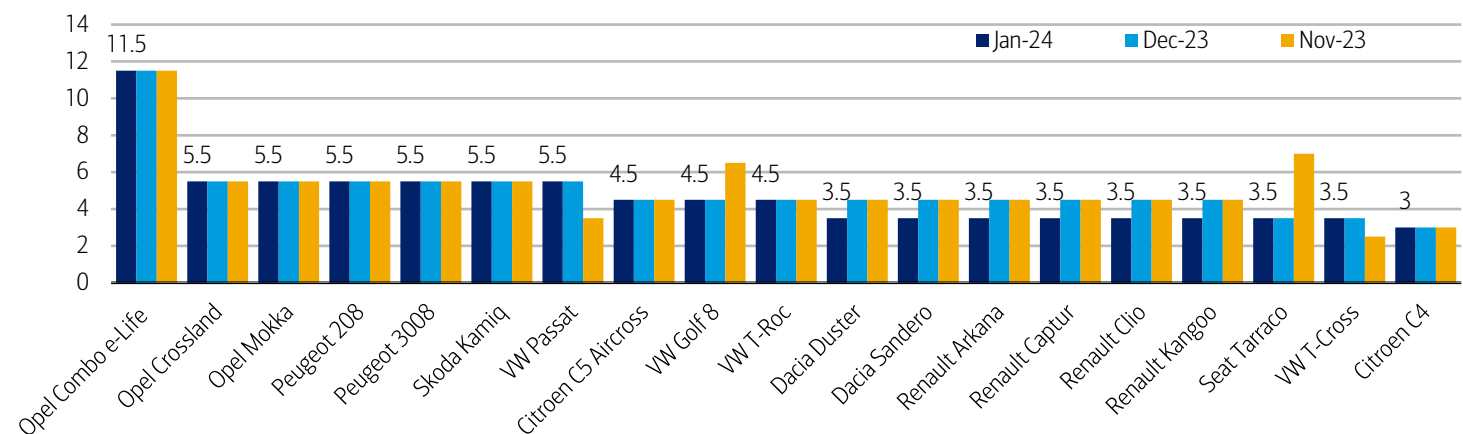


Source: BofA Global Research, carwow.de, *0 = Not available

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Exhibit 45: Germany: How many months you need to wait until you get your ICE mass market car

Waiting times have fairly stabilized for mass market since Jan-23



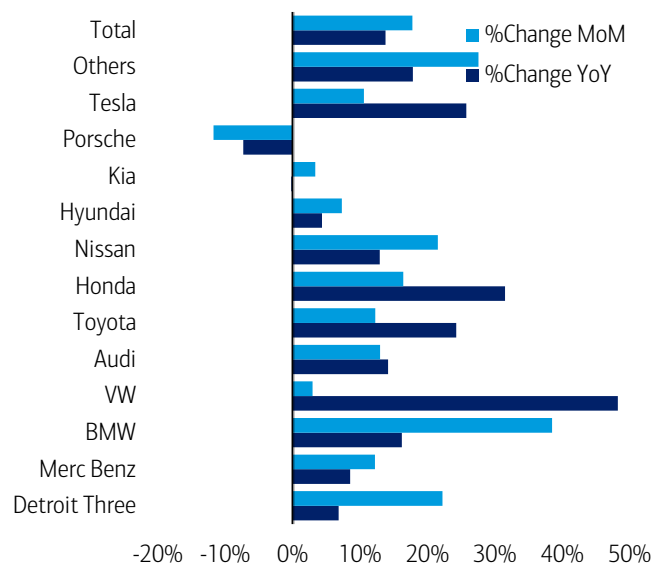
Source: BofA Global Research, carwow.de, *0 = Not available

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US

Exhibit 46: US monthly sales % Change YoY & MoM in Dec-23

Y/Y and M/M sales are up for all OEMs in US (except Porsche)

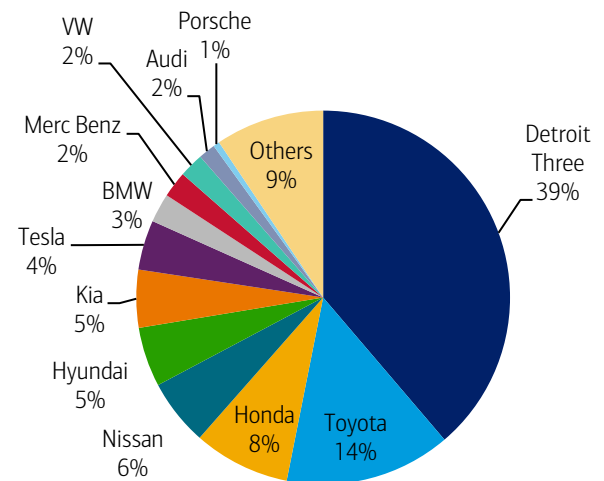


Source: AutoWards

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Exhibit 47: YTD sales volume split

Detroit 3 and Toyota accounts for >50% of US volumes



Source: AutoWards

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Exhibit 48: US monthly registrations by OEM in Jan-24

VW, Honda, Tesla and Toyota grew the most y/y

OEM	Dec-23	Dec-22	Nov-23	% YoY	% MoM
Detroit Three	551,443	516,362	451,264	6.8%	22.2%
Merc Benz	34,020	31,355	30,325	8.5%	12.2%
BMW	49,561	42,661	35,796	16.2%	38.5%
VW	32,602	21,999	31,674	48.2%	2.9%
Audi	22,940	20,100	20,314	14.1%	12.9%
Toyota	224,753	180,906	200,284	24.2%	12.2%
Honda	123,388	93,843	106,035	31.5%	16.4%
Nissan	73,500	65,103	60,488	12.9%	21.5%
Hyundai	75,164	72,058	70,079	4.3%	7.3%
Kia	60,275	60,422	58,338	-0.2%	3.3%
Porsche	6,869	7,415	7,785	-7.4%	-11.8%
Tesla	56,481	44,923	51,100	25.7%	10.5%
Others	153,297	130,133	120,213	17.8%	27.5%
Total	1,464,293	1,287,280	1,243,695	13.8%	17.7%

Source: AutoWards

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Exhibit 49: US OEM YTD registrations (in units)

Honda and Tesla are growing the most in 2023, followed by Porsche

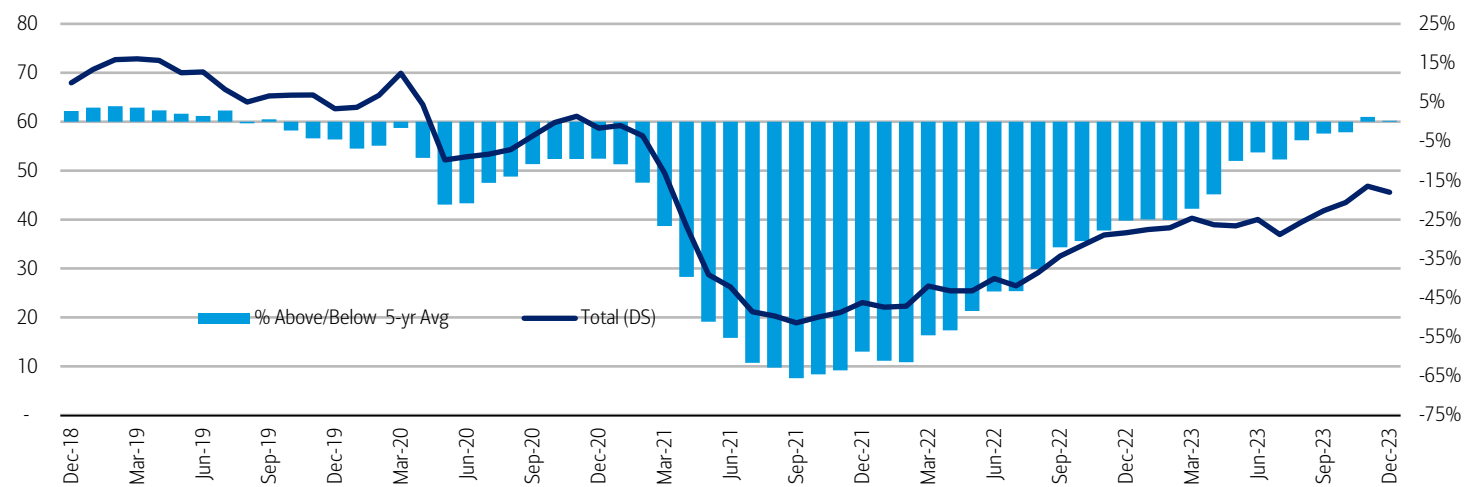
OEM	Dec-23	Dec-22	% YoY	Dec-21	% YoY
Detroit Three	6,063,740	5,634,408	7.6%	5,879,443	-4.2%
Merc Benz	352,721	345,112	2.2%	292,413	18.0%
BMW	393,101	361,892	8.6%	366,574	-1.3%
VW	330,925	309,710	6.8%	375,031	-17.4%
Audi	228,550	186,875	22.3%	196,038	-4.7%
Toyota	2,249,059	2,108,457	6.7%	2,332,137	-9.6%
Honda	1,308,186	983,507	33.0%	1,466,630	-32.9%
Nissan	898,796	729,350	23.2%	977,639	-25.4%
Hyundai	806,800	728,665	10.7%	738,081	-1.3%
Kia	782,451	693,549	12.8%	701,416	-1.1%
Porsche	86,147	68,897	25.0%	65,909	4.5%
Tesla	673,287	523,561	28.6%	334,858	56.4%
Others	1,471,977	1,219,636	20.7%	1,301,570	-6.3%
Total	15,645,740	13,893,619	12.6%	15,027,739	-7.5%

Source: AutoWards

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Exhibit 50: US inventory – total (DS)

December days' supply of 46DS came in above the 5-year average of 45DS



Source: WardsAuto InfoBank

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Exhibit 51: December 2023 inventory summary

December inventory was ~2.30mm units, with days' supply of 46 above the 5-year avg. of 45

	Inventory	Days	5-yr	% Above	
	Units	Supply	Avg DS	/Below	Note
Detroit 3 -- Cars	105,918	79	53	49%	Detroit 3 OEM's total inventory was up 14k MoM and increased 225k units YoY. Aggregate supply remains less constrained than the industry average, across both cars and light trucks.
Detroit 3 -- Lt Trucks	1,177,308	64	59	8%	
Detroit 3 -- Total	1,283,226	65	59	12%	
Japanese -- Cars	168,964	34	38	-11%	Supply at Japanese OEMs was down 43k MoM but increased 276k units YoY. Aggregate supply is more constrained than the industry average across both cars and light trucks.
Japanese -- Lt Trucks	455,554	35	36	-2%	
Japanese -- Total	624,518	35	36	-5%	
European -- Cars	58,663	45	46	-2%	European OEM's inventory was up 6k units MoM and increased 68k units YoY. Aggregate supply is less constrained than the industry average across both cars and light trucks.
European -- Lt Trucks	166,701	52	47	11%	
European -- Total	225,364	50	47	6%	
Korean -- Cars	32,604	20	31	-36%	Inventory at Korean OEMs declined 9k units MoM but increased 56k units YoY. Both car and truck inventories remain well below the industry average.
Korean -- Lt Trucks	98,044	26	36	-27%	
Korean -- Total	130,648	24	34	-28%	
Industry -- Cars	370,289	37	38	-4%	Total inventory was down 31k units MoM, but up 631k units YoY. Car supply tighter than light truck, as OEMs continue to prioritize production and inventory build of high ASP/margin vehicles.
Industry -- Lt Trucks	1,931,067	48	48	0%	
Industry -- Total	2,301,356	46	45	0%	

Source: WardsAuto InfoBank, BofA Global Research

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Exhibit 52: Most recent month US incentive and ATP trends – major automakers

Industry average incentive was up 134.4% YoY in November, while the average transaction price was down 1.5% YoY

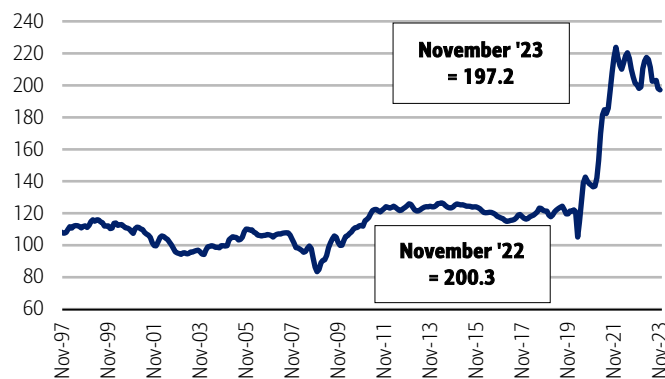
AutoData/KBB	Average Incentive					Average Transaction Price				
	Nov-23	Oct-23	MoM % Chg	Nov-22	YoY % Chg	Nov-23	Oct-23	MoM % Chg	Nov-22	YoY % Chg
GM	\$2,441	\$2,244	8.8%	\$1,381	76.8%	\$52,671	\$53,776	-2.1%	\$52,278	0.8%
Ford	\$1,956	\$1,960	-0.2%	\$1,599	22.3%	\$55,058	\$55,514	-0.8%	\$55,923	-1.5%
Stellantis	\$4,402	\$4,532	-2.9%	\$1,631	169.9%	\$60,085	\$58,373	2.9%	\$55,738	7.8%
Toyota	\$1,235	\$1,094	12.9%	\$611	102.1%	\$41,013	\$40,716	0.7%	\$40,935	0.2%
Honda	\$1,608	\$1,672	-3.8%	\$983	63.6%	\$38,337	\$38,160	0.5%	\$37,796	1.4%
Nissan	\$2,762	\$2,695	2.5%	\$1,500	84.1%	\$35,916	\$36,201	-0.8%	\$37,496	-4.2%
Hyundai	\$2,649	\$2,273	16.5%	\$980	170.3%	\$37,444	\$37,124	0.9%	\$35,960	4.1%
BMW	\$4,327	\$3,716	16.4%	\$1,335	224.1%	\$69,140	\$69,488	-0.5%	\$69,098	0.1%
Volkswagen	\$3,863	\$3,247	19.0%	\$1,531	152.3%	\$58,665	\$55,298	6.1%	\$58,599	0.1%
Tesla	\$3,663	\$1,191	207.6%	\$567	546.0%	\$53,756	\$53,606	0.3%	\$67,639	-20.5%
Industry	\$2,546	\$2,322	9.6%	\$1,086	134.4%	\$48,247	\$47,944	0.6%	\$48,969	-1.5%

Source: Kelley Blue Book (ATPs do not include applied incentives), AutoData

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Exhibit 53: NADA Used Vehicle Price Index

NADA Used Vehicle Price Index was down 1.6% YoY in November 2023 and decreased 0.5% on a MoM basis

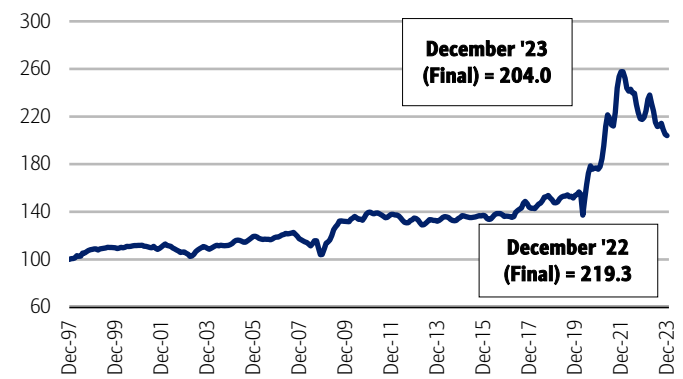


Source: NADA

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Exhibit 54: Manheim Used Vehicle Value Index

Manheim Used Vehicle Value Index was down 7.0% YoY in December 2023 (Final) and decreased 0.5% on a MoM basis

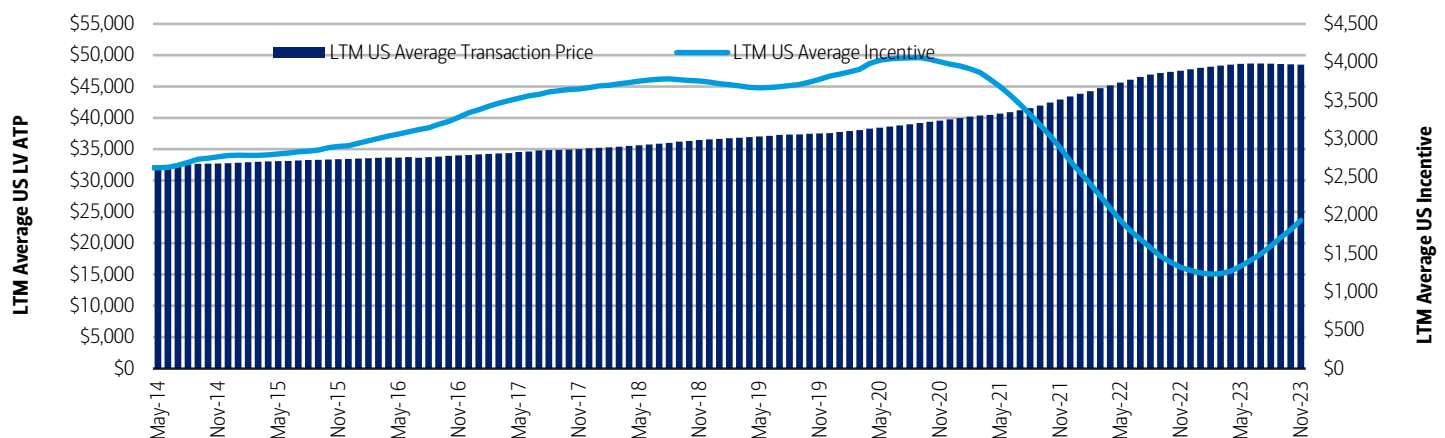


Source: Manheim

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Exhibit 55: Industry average transaction price & average incentive

US average ATPs fall from record highs in November, Incentives climb



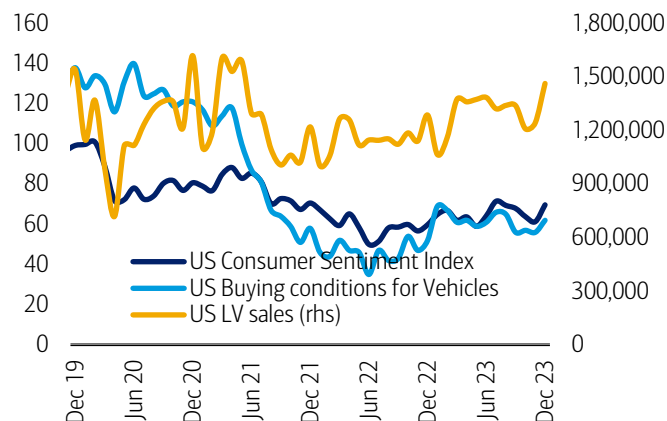
Source: Kelley Blue Book (ATPs do not include applied incentives), AutoData

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US consumer confidence (University of Michigan)

Exhibit 56: US Consumer Confident Index vs LV Sales (rhs)

US Consumer confidence index remains low relative to historical levels, but has shown signs of improvement in the recent months

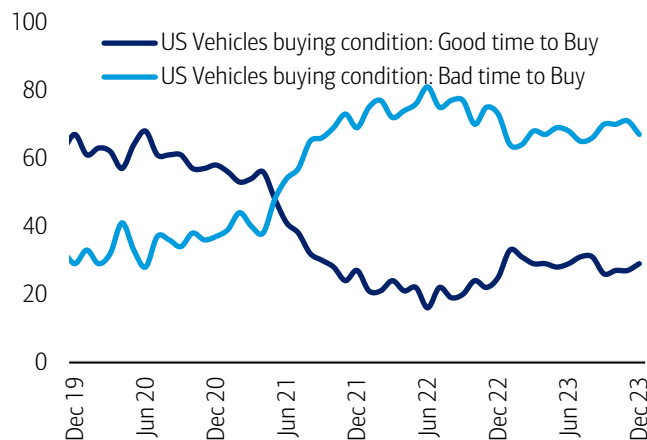


Bloomberg, AutoWards, BofA Global Research

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Exhibit 57: Good time vs Bad time to buy Vehicles

Consensus is that it is a bad time to buy vehicle

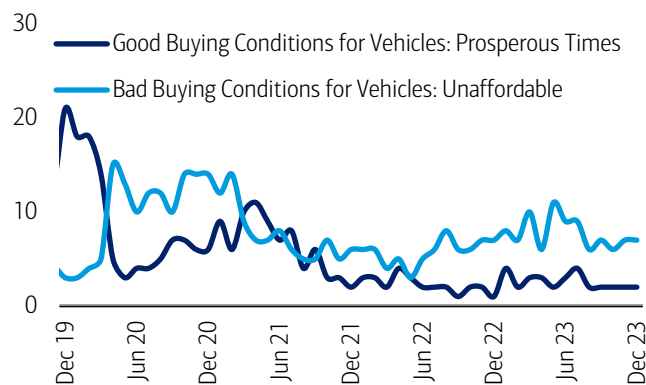


Bloomberg, BofA Global Research

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Exhibit 58: Prosperous Times vs Unaffordable times

Vehicles are becoming more unaffordable for consumers

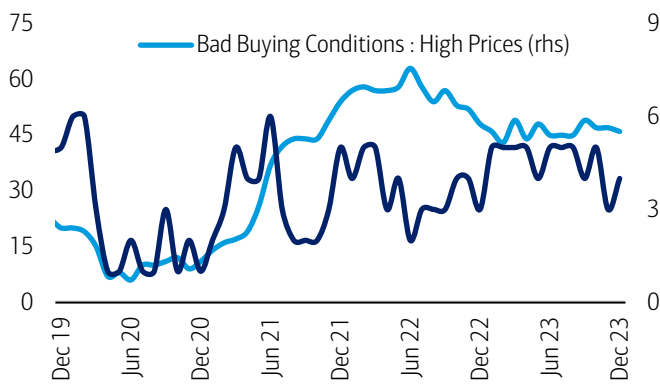


Bloomberg, BofA Global Research

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Exhibit 59: Vehicle Pricing expectations

Consumers believing that car prices will remain high is on a declining trend

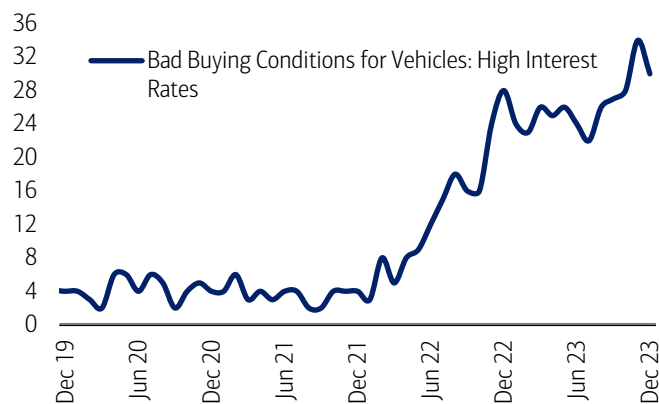


Bloomberg, BofA Global Research

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Exhibit 60: Rising Interest rates further hurting buying sentiment

Rising interest rates becoming more of a problem for car sales

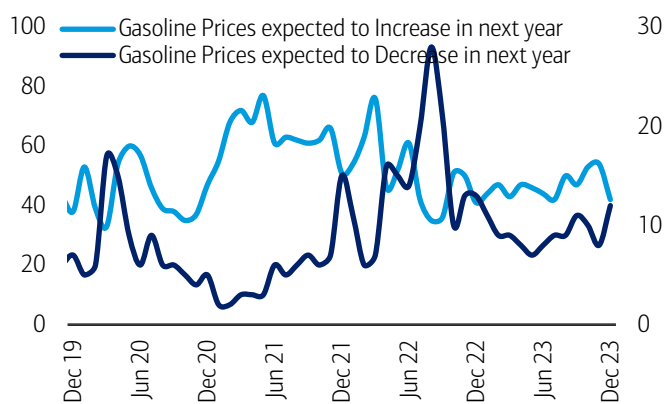


Bloomberg, BofA Global Research

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Exhibit 61: Gasoline Prices

Most consumers now think gas prices could increase in 2024



Bloomberg, BofA Global Research

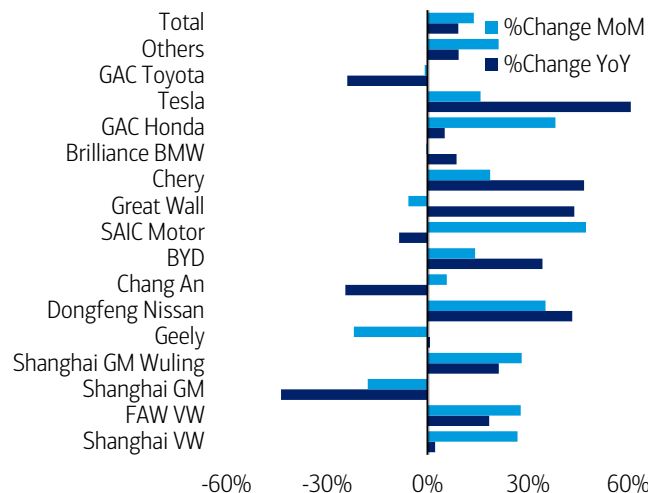
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China

Passenger Car sales including Mini bus

Exhibit 62: China monthly sales % Change YoY & MoM in Dec -23

BYD, Chery and Tesla are driving the overall market growth

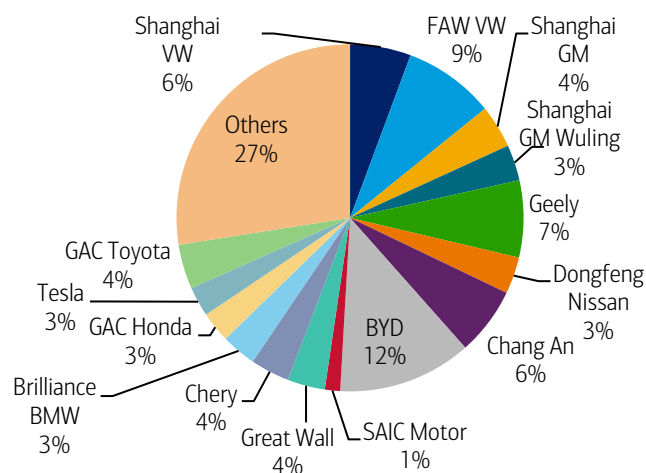


Source: BofA Global Research, Company data.

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Exhibit 63: YTD sales volume split

China market is very competitive, but BYD remains the undisputed market leader



Source: BofA Global Research, Bloomberg

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Exhibit 64: China PC monthly sales (in units)

Sales improved y/y in Dec mainly driven by BYD, Chery and Tesla

OEM	Dec-23	Dec-22	Nov-23	% YoY	% MoM
Shanghai VW	146,969	143,868	115,933	2.2%	26.8%
FAW VW	213,433	180,385	167,105	18.3%	27.7%
Shanghai GM	62,380	111,004	76,021	-43.8%	-17.9%
Shanghai GM Wuling	93,749	77,356	73,235	21.2%	28.0%
Geely	142,700	141,762	183,177	0.7%	-22.1%
Dongfeng Nissan	94,924	66,344	70,253	43.1%	35.1%
Chang An	125,088	165,877	118,370	-24.6%	5.7%
BYD	300,215	223,678	263,066	34.2%	14.1%
SAIC Motor	36,761	40,211	24,973	-8.6%	47.2%
Great Wall	69,961	48,683	74,267	43.7%	-5.8%
Chery	109,985	75,028	92,731	46.6%	18.6%
Brilliance BMW	64,609	59,501	64,892	8.6%	-0.4%
GAC Honda	73,939	70,394	53,561	5.0%	38.0%
Tesla	75,805	41,926	65,504	80.8%	15.7%
GAC Toyota	76,150	100,245	76,880	-24.0%	-0.9%
Others	677,533	620,562	559,333	9.2%	21.1%
Total	2,364,201	2,166,824	2,079,301	9.1%	13.7%

Source: BofA Global Research, CAAM

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Exhibit 65: China PC YTD sales (in units)

Strong momentum in BYD and Tesla sales help Chinese market back to growth in 2023

OEM	Dec-23	Dec-22	% YoY	Dec-21	% YoY
Shanghai VW	1,231,433	1,243,460	-1.0%	1,432,412	-13.2%
FAW VW	1,846,617	1,779,077	3.8%	1,778,389	0.0%
Shanghai GM	870,011	1,036,851	-16.1%	1,277,260	-18.8%
Shanghai GM Wuling	723,176	786,267	-8.0%	966,932	-18.7%
Geely	1,556,859	1,376,182	13.1%	1,359,866	1.2%
Dongfeng Nissan	745,768	895,654	-16.7%	1,134,889	-21.1%
Chang An	1,374,326	1,208,012	13.8%	1,116,033	8.2%
BYD	2,706,075	1,804,624	50.0%	723,697	149.4%
SAIC Motor	308,658	417,714	-26.1%	564,436	-26.0%
Great Wall	760,081	758,691	0.2%	948,793	-20.0%
Chery	791,687	695,063	13.9%	582,126	19.4%
Brilliance BMW	705,158	653,976	7.8%	651,236	0.4%
GAC Honda	620,512	722,362	-14.1%	770,406	-6.2%
Tesla	603,664	439,770	37.3%	320,743	37.1%
GAC Toyota	901,027	971,462	-7.3%	840,396	15.6%
Others	5,968,528	5,675,168	5.2%	5,606,429	1.2%
Total	21,713,580	20,464,333	6.1%	20,074,043	1.9%

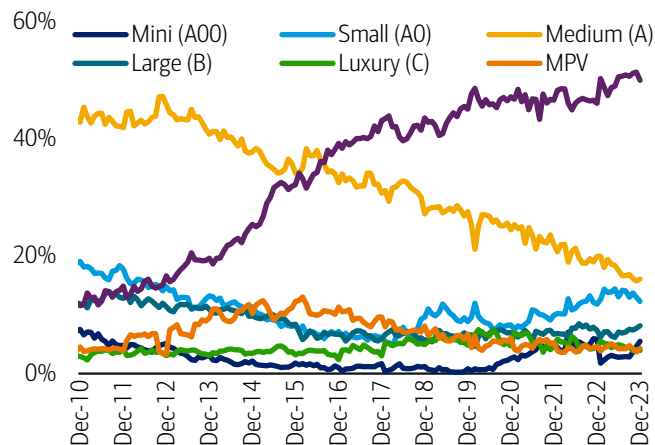
Source: BofA Global Research, CAAM

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China sales break-up by segment and price

Exhibit 66: Break-up by Segment

SUV share remains the highest but small cars (A0) are gaining the most share since 2021

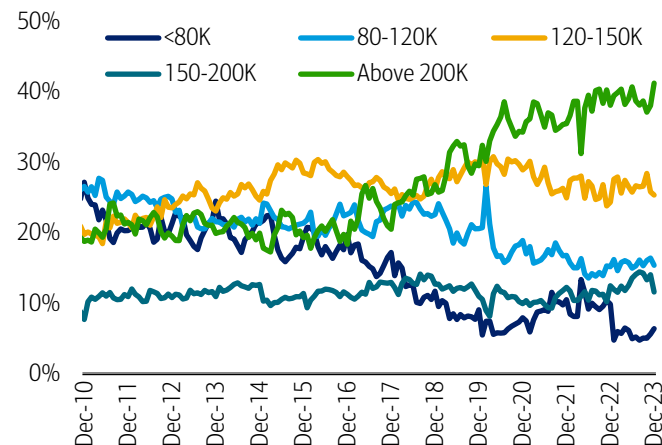


Source: BofA Global Research, Company data, China Auto Market

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Exhibit 67: Break-up by Price

Share of cars sold with price of CNY >200k remains high relative to historical levels

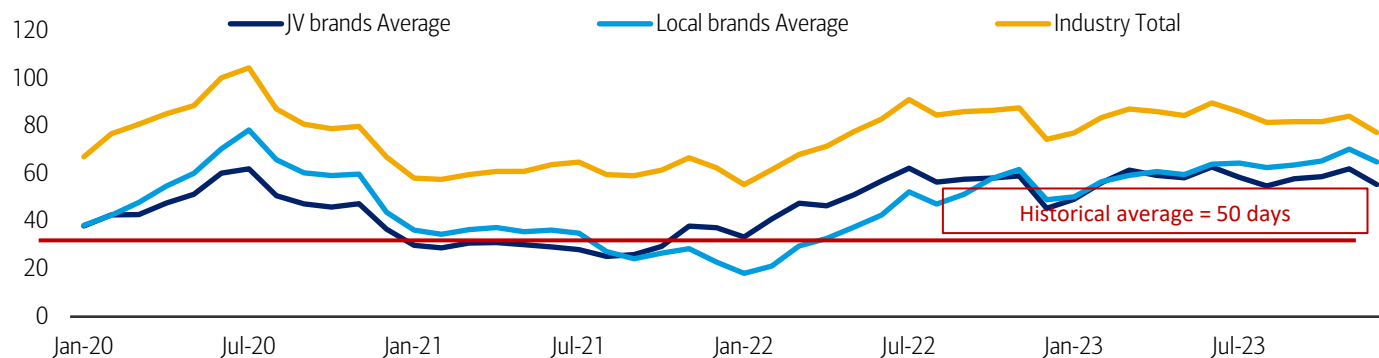


Source: BofA Global Research, Company data, China Auto Market

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Exhibit 68: China inventories level rising

Current inventories levels remain too high and further de-stocking is necessary in China



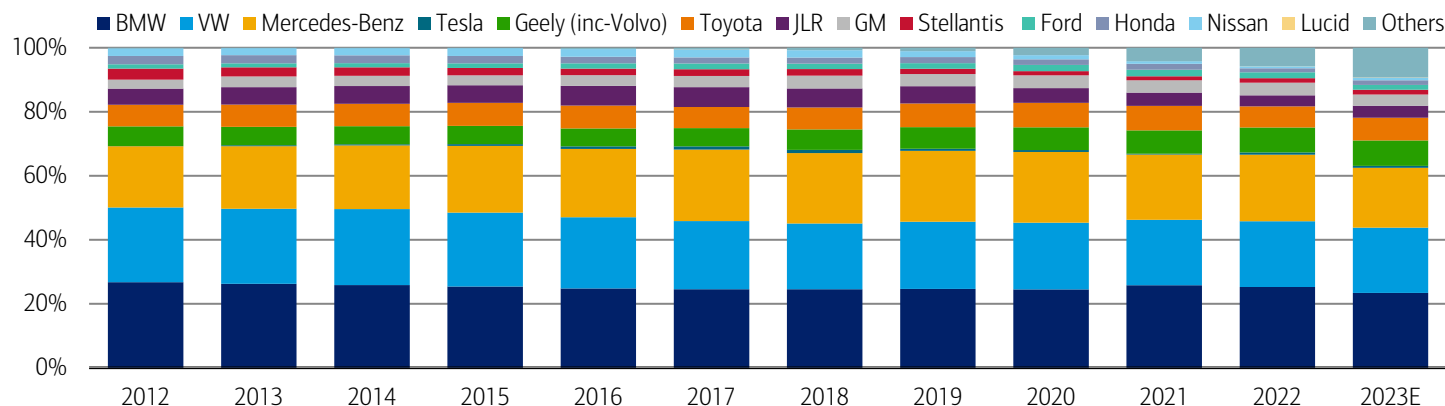
Source: China Auto Market

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Premium Market segment

Exhibit 69: Global Premium market share

Traditional OEMs share in premium cars segment falling due to rise of Tesla, China OEMs – the trend should continue in 2023e



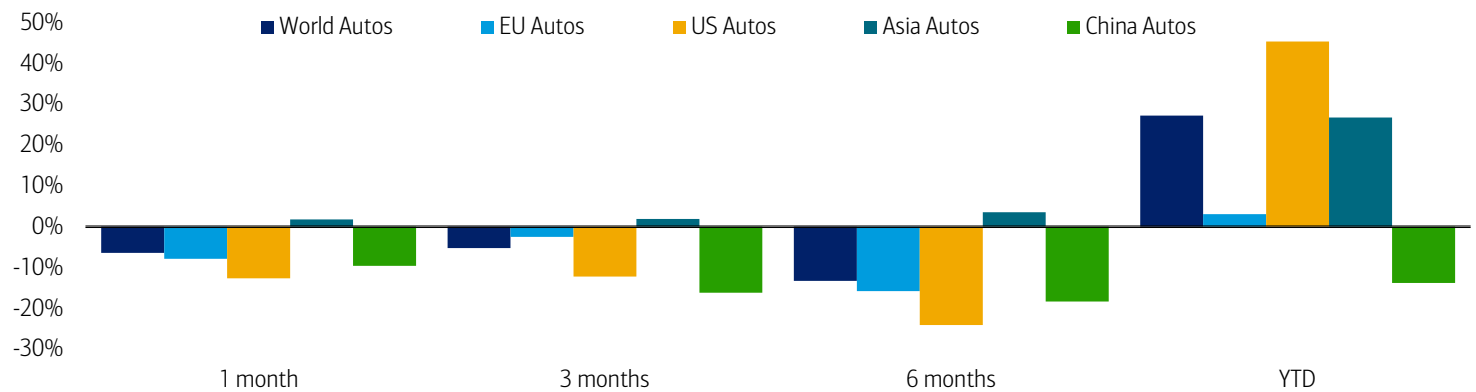
Source: BofA Global Research, S&P

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Global auto share price performance

Exhibit 70: Global Auto stock performance

Autos Worldwide have declined in the last month

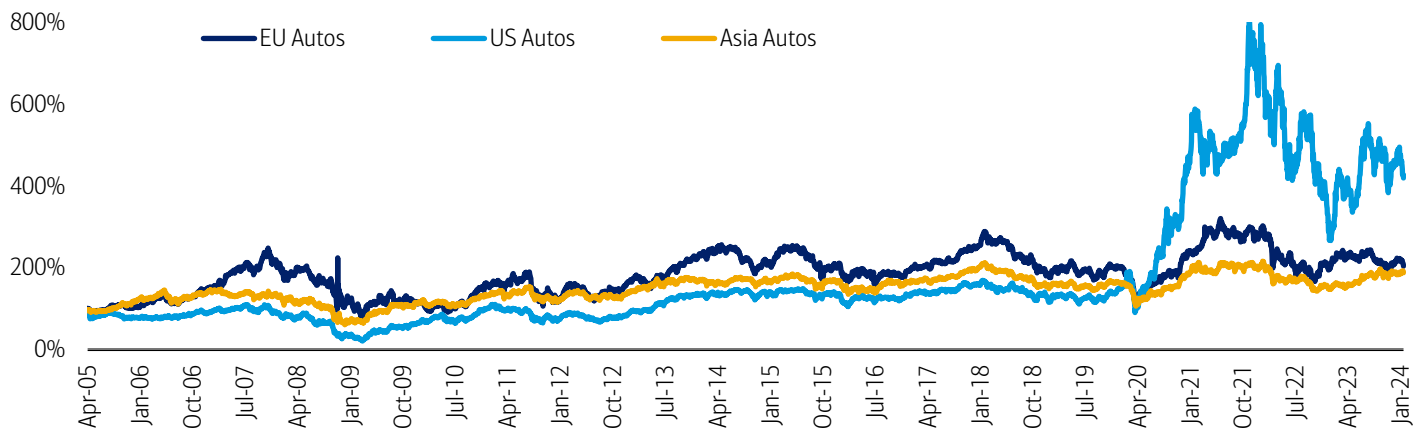


Source: BofA Global Research, Refinitiv Eikon

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Exhibit 71: EU Autos index vs US and Asia

US Auto index remains volatile

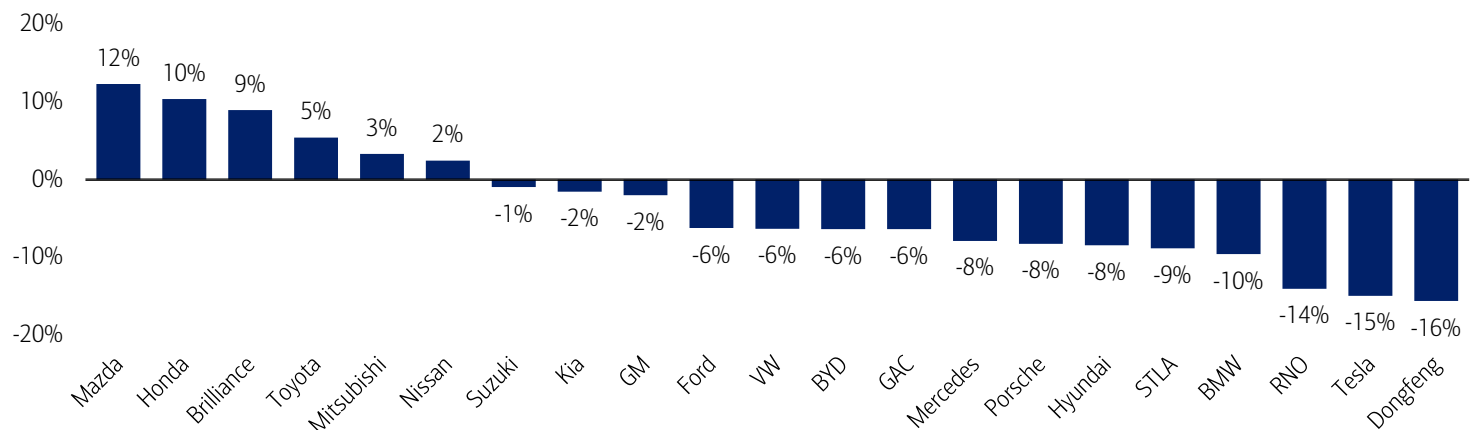


Source: BofA Global Research, Refinitiv Eikon

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Exhibit 72: Auto OEMs stock price change in the last month

Mazda, Honda and Brilliance have outperformed, while share price of Dongfeng, Tesla and RNO has declined the most



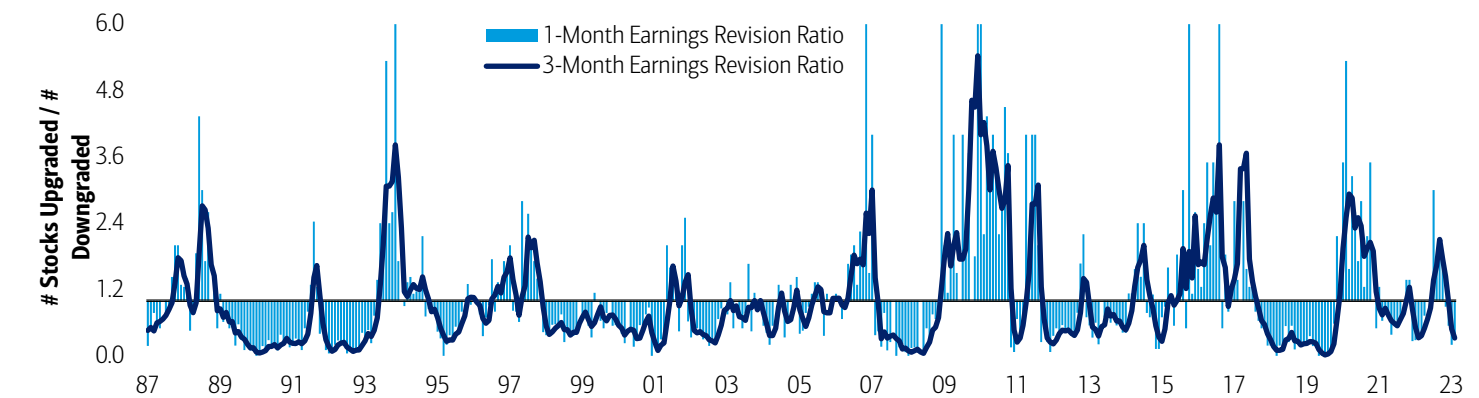
Source: BofA Global Research, Refinitiv Eikon

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EU Autos: Estimate revision trend & Investor sentiment

Exhibit 73: European Autos: 12m forward EPS revision trend

EPS revision are still positive in Auto but momentum has deteriorated

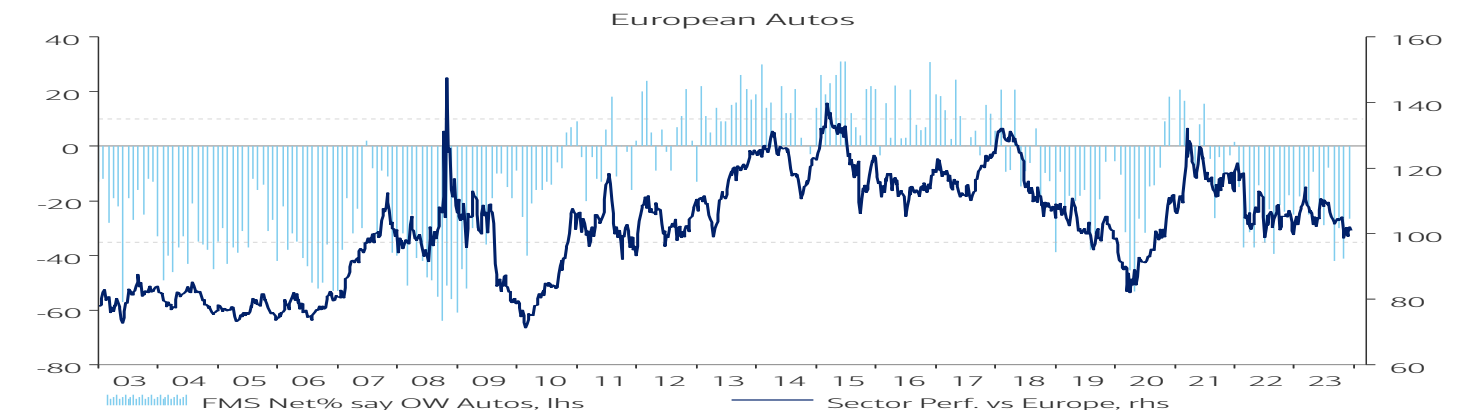


Source: BofA European Equity Quant Strategy

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Exhibit 74: Net % saying they are overweight European Autos

Net 26% of managers said they are overweight the sector and net 15% of them see it as undervalued

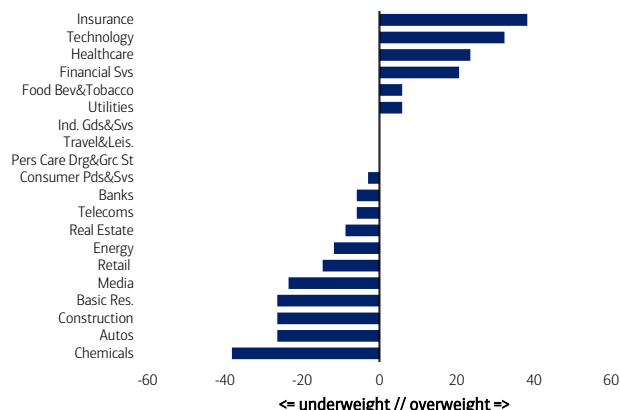


Source: BofA Regional Fund Manager Survey, DataStream

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Exhibit 75: Current European sector snapshot

% saying overweight-% saying underweight

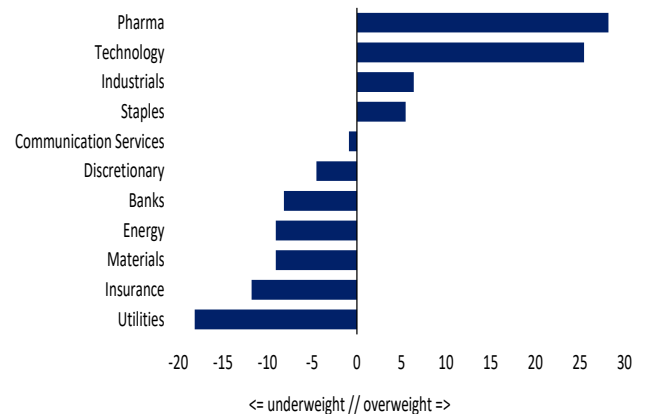


Source: BofA Regional Fund Manager Survey

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Exhibit 76: Global sector sentiment

% saying overweight - % saying underweight



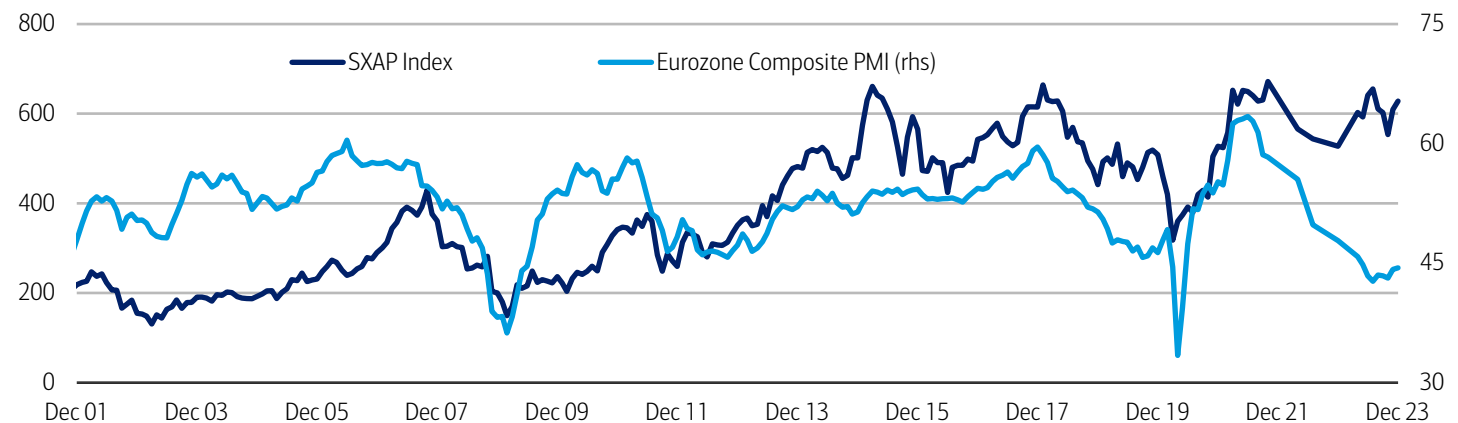
Source: BofA Global Fund Manager Survey

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EU share prices & valuation still in crisis mode

Exhibit 77: SXAP Index (=EU Autos) vs PMI

Historically, the SXAP index moves in tandem with the PMI, but has recently decoupled

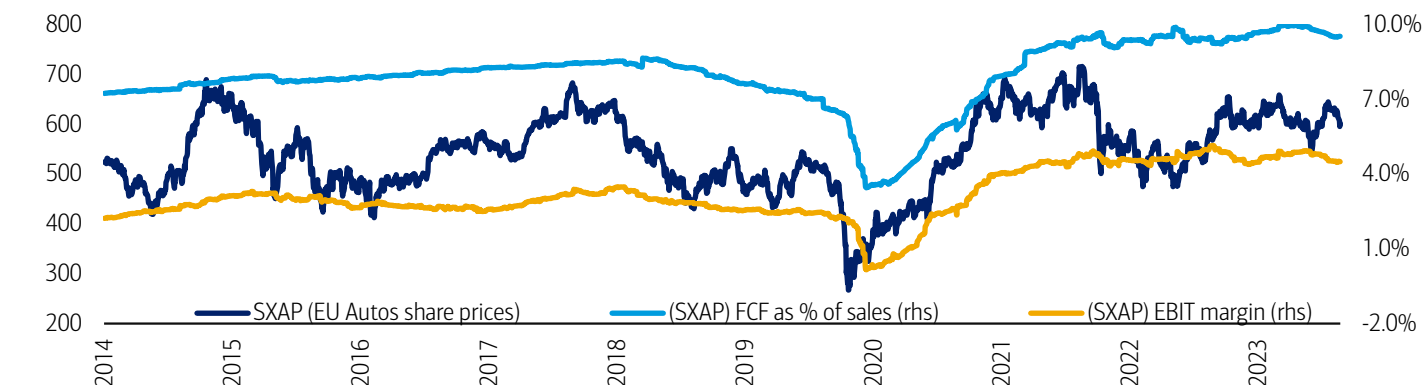


Source: Bloomberg, BofA Global Research

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Exhibit 78: SXAP performance relative to margin

The SXAP remains resilient as EBIT margins are not dropping off yet

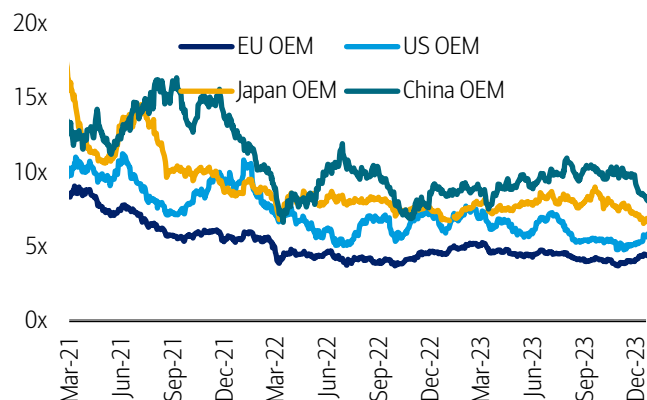


Source: BofA Global Research, FactSet

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Exhibit 79: 12m fwd PE valuation by region for car makers (OEMs)

European Autos now valued so low that they hardly can de-rate further

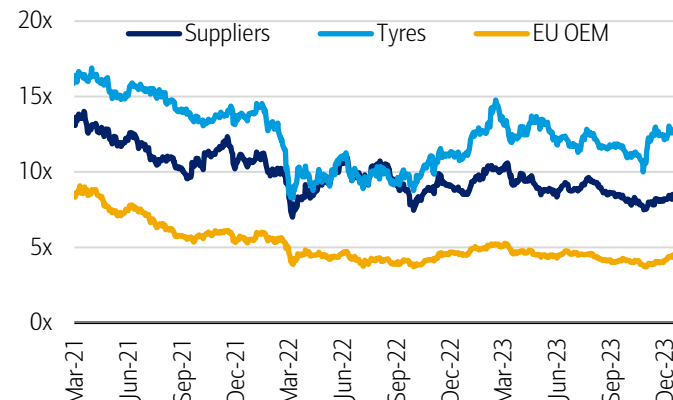


Source: FactSet, BofA Global Research

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Exhibit 80: 12m fwd PE by auto sub-segment in Europe

Car makers at trough levels, suppliers and tires are de-rating



Source: FactSet, BofA Global Research

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Underperform	N/A	≥ 20%

^{R1} Ratings dispersions may vary from time to time where BofA Global Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

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