

Hesai

Solid order/shipment outlook unchanged but unfavorable short-term sentiment

Reiterate Rating: BUY | PO: 6.00 USD | Price: 4.39 USD

Solid development in order gain

Hesai reported 4Q23 results on Mar 12 (see [Hesai: 4Q23 beat on GPM but lower-than-expected 1Q24 guidance; lower PO to \\$7.12 March 2024](#)). Overall, demand looks solid as management revised up the 2024 lidar shipment expectation, coming from ADAS. It also expanded its cooperation and deepened relationships with key Chinese and global OEMs for future orders. We also look forward to new lidar product / technology launch in coming 1-2 quarters which would deliver higher cost performance to OEM clients and increase Hesai's competitiveness. Such development would bring positive impact on its market share and order backlog in the longer term.

Reflecting weaker market sentiment / valuation

Positive development apart, we see the market sentiment is weaker in the lidar industry, which reflects on not only Hesai but also its peers – Robosense, Luminar, Ouster, Innoviz, Aeva, etc. We revise down our valuation and take a slightly more conservative multiple and assumption. Furthermore, we also believe Hesai short term sentiment will likely be impacted as 1Q24 would be the quarter which witnesses the lowest shipment and sales in 2024.

Revised PO US\$6, reiterate Buy

Our revised PO is US\$6 (US\$7 previously). For EV/sales, our implied fair value is US\$6.0 (from US\$7.7). We lower our target multiple from 2.0x to 1.5x, which is roughly in line with the target multiples for other companies in the auto/EV space under our coverage. The magnitude, moving from 2.0x to 1.5x, is also similar to the decline in magnitude of the industry average 2024E EV/sales over the past two months. We see Hesai's target multiple discount to industry average EV/sales (2.8x) also reflects a certain discount on liquidity. On DCF, implied fair value is US\$6 as well (lower from US\$6.3). We lower mid-term FCF growth and net margin and cut implied fair value by 5% as we maintain other parameters largely unchanged. Reiterate Buy as we see Hesai as the leader in the lidar industry with significant growth potential.

Estimates (Dec) (CNY)	2021A	2022A	2023E	2024E	2025E
Net Income (Adjusted - mn)	(2,456)	(747)	(476)	(185)	73
EPS	(23.39)	(6.47)	(3.79)	(1.47)	0.583
EPS Change (YoY)	NM	72.3%	41.5%	61.2%	NM
Dividend / Share	0	0	0	0	0
Free Cash Flow / Share	(4.68)	(8.03)	(8.22)	(12.13)	(0.647)
Valuation (Dec)					
P/E	NM	NM	NM	NM	54.18x
EV / EBITDA*	NM	NM	NM	NM	16.30x
Free Cash Flow Yield*	-12.39%	-23.37%	-26.03%	-38.43%	-2.05%

* For full definitions of *IQmethod*SM measures, see page 6.

15 March 2024

Equity

Key Changes

(CNY)	Previous	Current
Price Obj.	US\$7.00	US\$6.00

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Stock Data

Price	4.39 USD
Price Objective	6.00 USD
Date Established	15-Mar-2024
Investment Opinion	C-1-9
52-Week Range	3.28 USD-17.40 USD
Mrkt Val / Shares Out (mn)	552 USD / 125.7
Average Daily Value (mn)	5.25 USD
Free Float	7.9%
BofA Ticker / Exchange	HSAI / NAS
Bloomberg / Reuters	HSAI US / HSAIOQ
ROE (2023E)	-106.1%
Net Dbt to Eqty (Dec-2022A)	-64.77%

ADAS: Advanced driver assistance
systems; OEM: Original Equipment

Manufacturer

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Timestamp: 15 March 2024 03:09AM EDT

iQprofileSM Hesai

Key Income Statement Data (Dec)	2021A	2022A	2023E	2024E	2025E
(CNY Millions)					
Sales	721	1,203	1,877	3,155	4,360
Gross Profit	382	472	661	1,016	1,344
Sell General & Admin Expense	(306)	(306)	(469)	(521)	(627)
Operating Profit	(265)	(378)	(572)	(306)	(71)
Net Interest & Other Income	19	77	96	121	151
Associates	NA	NA	NA	NA	NA
Pretax Income	(246)	(301)	(475)	(185)	80
Tax (expense) / Benefit	1	0	(1)	0	(7)
Net Income (Adjusted)	(2,456)	(747)	(476)	(185)	73
Average Fully Diluted Shares Outstanding	105	116	126	126	126

Key Cash Flow Statement Data					
Net Income	(245)	(301)	(476)	(185)	73
Depreciation & Amortization	28	53	106	147	183
Change in Working Capital	(234)	(540)	(233)	(1,163)	(58)
Deferred Taxation Charge	NA	NA	NA	NA	NA
Other Adjustments, Net	223	92	0	0	0
Cash Flow from Operations	(228)	(696)	(602)	(1,201)	199
Capital Expenditure	(263)	(231)	(430)	(324)	(280)
(Acquisition) / Disposal of Investments	(1,699)	1,392	0	0	0
Other Cash Inflow / (Outflow)	(18)	(41)	0	0	0
Cash Flow from Investing	(1,980)	1,120	(430)	(324)	(280)
Shares Issue / (Repurchase)	NA	NA	NA	NA	NA
Cost of Dividends Paid	0	0	0	0	0
Cash Flow from Financing	2,404	15	2,362	1,000	1,000
Free Cash Flow	(492)	(927)	(1,032)	(1,525)	(81)
Net Debt	(2,792)	(1,841)	(2,170)	(646)	(565)
Change in Net Debt	1,758	(445)	(330)	1,525	81

Key Balance Sheet Data					
Property, Plant & Equipment	322	505	837	1,023	1,129
Other Non-Current Assets	137	199	191	182	173
Trade Receivables	86	485	399	1,087	967
Cash & Equivalents	2,792	1,859	3,189	2,664	3,583
Other Current Assets	615	791	1,162	1,938	2,151
Total Assets	3,952	3,839	5,779	6,895	8,004
Long-Term Debt	0	18	18	18	18
Other Non-Current Liabilities	10	24	24	24	24
Short-Term Debt	0	0	1,000	2,000	3,000
Other Current Liabilities	892	956	1,008	1,310	1,345
Total Liabilities	903	998	2,051	3,352	4,387
Total Equity	3,050	2,842	3,728	3,543	3,617
Total Equity & Liabilities	3,952	3,839	5,779	6,895	8,004

iQmethodSM - Bus Performance*					
Return On Capital Employed	-10.0%	-9.7%	-11.3%	-3.2%	1.2%
Return On Equity	NM	NM	-106.1%	-5.1%	2.0%
Operating Margin	-36.8%	-31.4%	-30.4%	-9.7%	-1.6%
EBITDA Margin	-33.0%	-27.1%	-24.8%	-5.1%	2.6%

iQmethodSM - Quality of Earnings*					
Cash Realization Ratio	NM	NM	NM	NM	2.7x
Asset Replacement Ratio	9.6x	4.4x	4.0x	2.2x	1.5x
Tax Rate (Reported)	0.5%	0%	NM	NM	8.2%
Net Debt-to-Equity Ratio	-91.5%	-64.8%	-58.2%	-18.2%	-15.6%
Interest Cover	NA	NA	NA	NA	NA

Key Metrics

* For full definitions of iQmethodSM measures, see page 6.

Company Sector

Auto Parts

Company Description

Hesai, set up in 2014, is a global leader in LiDAR, which generates high-resolution 3D image. By industries, Hesai's product lines and revenue could be divided into: 1) ADAS - applied in passenger/commercial vehicle, 2) autonomous mobility (robotaxi) - autonomous vehicles that provide passenger/freight mobility service, 3) robotics. Hesai have become a leading supplier in the global LiDAR market, securing 47% share in 2022.

Investment Rationale

We have a Buy rating on Hesai. We expect 1) Hesai to post 52% revenue CAGR in 2023-25E, driven by solid new client/project lineup, 2) GPM to sustain at 30-32% in 2024-25, owing to new in-house capacity ramp-up and ASICs design upgrade and scale economies for further cost down, 3) a visible breakeven timeline.

Stock Data

Price to Book Value

1.1x

Estimates and valuation

Exhibit 1: Quarterly P&L

1Q24 is expected to be the quarter that see the lowest shipment and sales among 2024

(RMB mn)	1Q23	2Q23	3Q23	4Q23	FY '23	1Q24	2Q24	3Q24	4Q24	FYE '24
Revenue	430	440	446	561	1,877	321	735	917	1,182	3,155
Total cost of goods sold	267	309	309	330	1,216	225	503	621	790	2,139
Gross profit	163	131	136	231	661	96	231	296	392	1,016
Promotion exp	35	27	37	50	149	16	37	47	71	171
G&A exp	50	57	80	133	320	35	80	99	136	350
R&D exp	208	161	193	228	791	89	204	252	307	853
Other operating income, net	3	0	7	17	27	2	0	13	36	52
Operating expenses	291	245	303	394	1,233	138	322	384	478	1,322
Operating profit / Loss from operations	-128	-113	-167	-163	-572	-42	-90	-88	-86	-306
Pretax income / Loss before income taxes	-119	-74	-142	-140	-475	-12	-60	-58	-55	-185
Net income (loss)	-119	-74	-142	-141	-476	-12	-60	-58	-55	-185
Net income (loss) attribute to ordinary shareholder	-119	-74	-142	-141	-476	-12	-60	-58	-55	-185
Non-GAAP net income (loss) attributable to ordinary shareholders	2	-41	-102	-100	-241	18	-15	-13	-10	-20
Net income (loss) per ADS attributable to ordinary shareholders (RMB)	-0.95	-0.59	-1.13	-1.12	-3.79	-0.09	-0.48	-0.46	-0.44	-1.47
Fully diluted shares (mn)	126	126	126	126	126	126	126	126	126	126
Operating Ratios										
Gross margins	37.8%	29.8%	30.6%	41.2%	35.2%	30.0%	31.5%	32.3%	33.2%	32.2%
Promotion	8.2%	6.1%	8.3%	8.8%	7.9%	5.0%	5.1%	5.1%	6.0%	5.4%
SG&A	11.5%	12.9%	18.1%	23.8%	17.1%	10.9%	10.9%	10.8%	11.5%	11.1%
R&D	48.5%	36.6%	43.2%	40.7%	42.1%	27.8%	27.8%	27.5%	26.0%	27.0%
Operating margin	-29.8%	-25.8%	-37.5%	-29.0%	-30.4%	-13.1%	-12.3%	-9.6%	-7.2%	-9.7%
Pre-tax margin	-27.7%	-16.9%	-31.8%	-25.0%	-25.3%	-3.6%	-8.2%	-6.3%	-4.7%	-5.9%
Tax rate	0.0%	0.0%	0.0%	-0.5%	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Net margin	-27.7%	-16.9%	-31.8%	-25.1%	-25.4%	-3.6%	-8.2%	-6.3%	-4.7%	-5.9%
YoY %										
Net revenues	73.0%	108.5%	33.5%	37.1%	56.1%	-25.2%	66.8%	105.8%	110.7%	68.1%
Gross profit	28.6%	32.6%	10.0%	88.4%	40.1%	-40.7%	76.4%	117.5%	69.5%	53.7%
QoQ %										
Net revenues	5.1%	2.4%	1.2%	25.9%		-42.7%	128.5%	24.8%	29.0%	
Gross profit	32.4%	-19.4%	3.8%	70.0%		-58.3%	139.9%	28.0%	32.5%	

Source: BofA Global Research estimates, company report

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Exhibit 2: Valuation summary

Our revised PO is US\$6

Valuation methodology	Implied value (USD)	Potential upside/downside	Parameters
DCF fair value	6.0		12.5% WACC, 3.5% perpetual growth
EV/sales fair value	6.0		1.5x 2024 EV/sales
PO	6.0	37%	

Source: BofA Global Research estimates

BofA GLOBAL RESEARCH

Exhibit 3: Lidar peer valuation comparison

The average EV/sales is 2.8x in 2024E

Company	Ticker	Last	Market	ADTV	EV/Sales			P/S			Revenue growth			PER		
		Price	Cap (\$ mn)	(\$mn)	23E	24E	25E	23E	24E	25E	23E	24E	25E	23E	24E	25E
Greater China																
Hesai	HSAI US	4.4	552	4	1.1	0.7	0.5	2.1	1.3	0.9	56%	68%	38%	NA	NA	57.5
Robosense	2498 HK	34.6	1,992	0	10.8	5.4	3.5	12.6	6.3	4.1	101%	100%	55%	NA	NA	NA
Luminar	LAZR US	1.8	745	21	16.0	8.1	3.5	10.7	5.4	2.3	71%	96%	133%	NA	NA	NA
Innoviz	INVZ US	1.3	216	7	4.7	1.8	0.6	10.3	3.9	1.2	246%	167%	213%	NA	NA	NA
Ouster	OUST US	4.7	192	4	0.7	0.5	0.4	2.3	1.7	1.1	102%	39%	48%	NA	NA	NA
Cepton	CPTN US	2.6	41	0	2.6	0.6	0.3	1.5	0.3	0.2	NA	320%	79%	NA	NA	NA
Industry average					6.0	2.8	1.4	6.6	3.2	1.6						

Source: BofA Global Research estimates, company report, Bloomberg

BofA GLOBAL RESEARCH



Price objective basis & risk

Hesai (HSAI)

Our PO of USD6 is based on average of DCF valuation and EV/sales valuation.

DCF valuation methodology:

The fair value of USD6.0 is derived from our DCF calculation, with an assumption of 3.5% FCF perpetuity growth and 12.5% WACC. We come up with WACC of 12.5%, consisting of 2.7% risk free rate and 12% expected market return. Lastly, we assigned 3.5% perpetual growth rate to the company, which is reasonable, in our view, given the overall LiDAR penetration in ADAS is still relatively low and CAGR growth could be sustained in longer term.

EV/Sales methodology:

The fair value of USD6.0 is derived from our EV/sales valuation, as we assign 1.5x EV/sales to Hesai's 2024E sales, lower than its peers' average (3x) but higher than some peers who do not have comparable shipment volume, client lineup/order backlog and financials. We believe that Hesai deserves a valuation premium considering its leading position in the industry (market share in terms of shipment, order gain), superior margins, faster breakeven timeline, and stronger B/S management. This characteristic set Hesai a solid foundation to survive through industry shuffling and remain as one of the top suppliers in the segment. However, this is offset by the stock's low liquidity, resulting in a peers' average multiple.

Risk: client concentration, ASP/GPM downside, slower EV/ smart vehicle growth

Analyst Certification

I, Jessie Lo, hereby certify that the views expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

APR - Autos Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY	Aima Technology	XIHF	603529 CH	Joey Yang, CFA
	Bajaj Auto	XBJF	BJAUT IN	Gunjan Prithyani
	BYD	BYDDF	1211 HK	Ming Hsun Lee, CFA
	BYD	XYMPF	002594 CH	Ming Hsun Lee, CFA
	BYD	BYDDY	BYDDY US	Ming Hsun Lee, CFA
	CATL	XMOQF	300750 CH	Ming Hsun Lee, CFA
	DENSO	DNZOF	6902 JP	Kentaro Hosoda
	Fuyao Glass	XFGIF	600660 CH	Edward Leung, CFA
	Fuyao Glass	FIGIF	3606 HK	Edward Leung, CFA
	Great Wall Motor	GWLLF	2333 HK	Ming Hsun Lee, CFA
	GS Yuasa	GYUAF	6674 JP	Kentaro Hosoda
	Guangzhou Automobile Group	GNZUF	2238 HK	Ming Hsun Lee, CFA
	Hankook Tire	XHTRF	161390 KS	KJ Hwang
	Hero Motocorp	HRHDF	HMCL IN	Gunjan Prithyani
	Hesai	HSAI	HSAI US	Jessie Lo
	HL Mando	XMADF	204320 KS	KJ Hwang
	Honda Motor	HMC	HMC US	Kentaro Hosoda
	Honda Motor	HNDAF	7267 JP	Kentaro Hosoda
	Huayu	XHASF	600741 CH	Jessie Lo
	Hyundai Motor	HYMLF	005380 KS	KJ Hwang
	Joyson	XQMWF	600699 CH	Jessie Lo
	Leapmotor	XZSSF	9863 HK	Ming Hsun Lee, CFA
	Li Auto	LI	LI US	Ming Hsun Lee, CFA
	Li Auto	LAAOF	2015 HK	Ming Hsun Lee, CFA

APR - Autos Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
	Maruti	MUDGF	MSIL IN	Gunjan Prithyani
	Mazda Motor	MZDAF	7261 JP	Kentaro Hosoda
	Minth	MNTHF	425 HK	Jessie Lo
	Ningbo Tuopu	XNCGF	601689 CH	Joey Yang, CFA
	Nissan Motor	NSANF	7201 JP	Kentaro Hosoda
	Nissan Motor	NSANY	NSANY US	Kentaro Hosoda
	SAMIL (Motherson International)	XMSUF	MOTHERSO IN	Gunjan Prithyani
	Shenzhen Kedali	XWCSF	002850 CH	Jessie Lo
	Shuanghuan Driveline	XZSHF	002472 CH	Jessie Lo
	Sumitomo Rubber Industries	SMTUF	5110 JP	Kentaro Hosoda
	Suzuki Motor	SZKMF	7269 JP	Kentaro Hosoda
	Tata Motors	XTTSF	TTMT IN	Gunjan Prithyani
	Toyo Tire	TOTTF	5105 JP	Kentaro Hosoda
	Toyota Motor	TM	TM US	Kentaro Hosoda
	Toyota Motor	TOYOF	7203 JP	Kentaro Hosoda
	Wencan	XSCDF	603348 CH	Joey Yang, CFA
	XPeng Inc	XPEV	XPEV US	Ming Hsun Lee, CFA
	XPeng Inc.	XPNGF	9868 HK	Ming Hsun Lee, CFA
	Yadea	YADGF	1585 HK	Joey Yang, CFA
	Zhejiang Sanhua	XZSIF	002050 CH	Jessie Lo
	Zhongsheng Auto	ZHSHF	881 HK	Joey Yang, CFA

NEUTRAL

	Aisin	ASEKF	7259 JP	Kentaro Hosoda
	Ashok Leyland	XDBVF	AL IN	Gunjan Prithyani
	Bridgestone	BRDCF	5108 JP	Kentaro Hosoda
	Bridgestone	BRDCY	BRDCY US	Kentaro Hosoda
	CALB	XCLSF	3931 HK	Ming Hsun Lee, CFA
	Dong Feng	DNFGF	489 HK	Ming Hsun Lee, CFA
	Eicher Motors	XEIMF	EIM IN	Gunjan Prithyani
	Hyundai Mobis	HYPLF	012330 KS	KJ Hwang
	Kia Corp	KIMTF	000270 KS	KJ Hwang
	Mahindra & Mahindra (M&M)	XKQRF	MM IN	Gunjan Prithyani
	MeiDong Auto	CMEIF	1268 HK	Joey Yang, CFA
	Motherson Sumi Wiring	XMWDF	MSUMI IN	Gunjan Prithyani
	NIO	NIO	NIO US	Ming Hsun Lee, CFA
	NIO	XLTWF	NIO SP	Ming Hsun Lee, CFA
	NIO	NIOIF	9866 HK	Ming Hsun Lee, CFA
	Shenzhen Senior	XHYRF	300568 CH	Jessie Lo
	Subaru Corp	FUJHF	7270 JP	Kentaro Hosoda
	Subaru Corp	FUJHY	FUJHY US	Kentaro Hosoda
	Toyota Industries Corporation	TYIDF	6201 JP	Kentaro Hosoda
	Toyota Industries Corporation	TYIDY	TYIDY US	Kentaro Hosoda
	TVS Motors	XFKMF	TVSL IN	Gunjan Prithyani
	Wuxi Lead	XZSRF	300450 CH	Ming Hsun Lee, CFA
	Yokohama Rubber	YORUF	5101 JP	Kentaro Hosoda
	Yongda	CYHFF	3669 HK	Joey Yang, CFA
	Yunnan Energy	XLGFF	002812 CH	Jessie Lo

UNDERPERFORM

	Astra International	PTAIF	ASII IJ	Paul Dewberry
	BAIC Motor	BMCLF	1958 HK	Ming Hsun Lee, CFA
	Bharat Forge	XUUVF	BHFC IN	Gunjan Prithyani
	China Grand Auto	XMURF	600297 CH	Joey Yang, CFA
	Desay SV	XGDFF	002920 CH	Jessie Lo
	Escorts Kubota	XSCOF	ESCORTS IN	Gunjan Prithyani
	EVE	XEVEF	300014 CH	Ming Hsun Lee, CFA
	GAC	XGNHF	601238 CH	Ming Hsun Lee, CFA
	Great Wall Motor	XGWMF	601633 CH	Ming Hsun Lee, CFA
	Hyundai Wia	XWHYF	011210 KS	KJ Hwang
	Mitsubishi Motors	MMTOF	7211 JP	Kentaro Hosoda
	Nextage	NXAGF	3186 JP	Kentaro Hosoda
	Nexteer	NTXVF	1316 HK	Jessie Lo
	Putailai	XVHGF	603659 CH	Jessie Lo
	SAIC Motor	XZNJF	600104 CH	Ming Hsun Lee, CFA
	Sona Comstar	XBNXF	SONACOMS IN	Gunjan Prithyani



APR - Autos Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
	Tinci Materials	XCVHF	002709 CH	Miriam Chan, CFA
RVW	Geely	GELYF	175 HK	Ming Hsun Lee, CFA

iQmethodSM Measures Definitions**Business Performance**

Return On Capital Employed

Return On Equity
Operating Margin
Earnings Growth
Free Cash Flow

Quality of Earnings

Cash Realization Ratio
Asset Replacement Ratio
Tax Rate
Net Debt-To-Equity Ratio
Interest Cover

Valuation Toolkit

Price / Earnings Ratio
Price / Book Value
Dividend Yield
Free Cash Flow Yield
Enterprise Value / Sales

EV / EBITDA

Numerator

NOPAT = (EBIT + Interest Income) × (1 – Tax Rate) + Goodwill Amortization

Net Income
Operating Profit
Expected 5 Year CAGR From Latest Actual
Cash Flow From Operations – Total Capex

Numerator

Cash Flow From Operations
Capex
Tax Charge
Net Debt = Total Debt – Cash & Equivalents
EBIT

Numerator

Current Share Price
Current Share Price
Annualised Declared Cash Dividend
Cash Flow From Operations – Total Capex
EV = Current Share Price × Current Shares + Minority Equity + Net Debt + Other LT Liabilities
Enterprise Value

Denominator

Total Assets – Current Liabilities + ST Debt + Accumulated Goodwill
Amortization
Shareholders' Equity
Sales
N/A
N/A

Denominator

Net Income
Depreciation
Pre-Tax Income
Total Equity
Interest Expense

Denominator

Diluted Earnings Per Share (Basis As Specified)
Shareholders' Equity / Current Basic Shares
Current Share Price
Market Cap = Current Share Price × Current Basic Shares
Sales

Basic EBIT + Depreciation + Amortization

iQmethodSM is the set of BofA Global Research standard measures that serve to maintain global consistency under three broad headings: Business Performance, Quality of Earnings, and validations. The key features of iQmethod are: A consistently structured, detailed, and transparent methodology. Guidelines to maximize the effectiveness of the comparative valuation process, and to identify some common pitfalls.

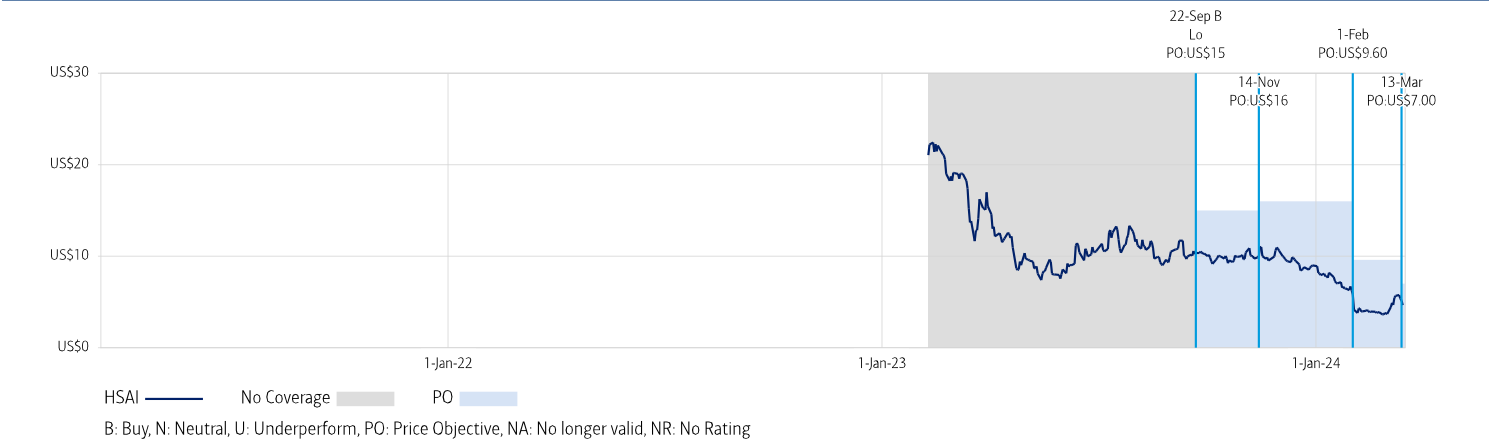
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Disclosures

Important Disclosures

Hesai (HSAI) Price Chart



The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

Equity Investment Rating Distribution: Autos Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships ^{R1}	Count	Percent
Buy	67	55.83%	Buy	39	58.21%
Hold	30	25.00%	Hold	15	50.00%
Sell	23	19.17%	Sell	12	52.17%

Equity Investment Rating Distribution: Global Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships ^{R1}	Count	Percent
Buy	1895	53.62%	Buy	1083	57.15%
Hold	832	23.54%	Hold	454	54.57%
Sell	807	22.84%	Sell	383	47.46%

^{R1} Issuers that were investment banking clients of BofA Securities or one of its affiliates within the past 12 months. For purposes of this Investment Rating Distribution, the coverage universe includes only stocks. A stock rated Neutral is included as a Hold, and a stock rated Underperform is included as a Sell.

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Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster ^{R2}
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

^{R2} 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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