

## US Semiconductors

## What do your semis neighbors own? Jan'24 update

Industry Overview

## Semis rel. weighting falling from Jul-23 highs

We use BofA Equity Strategy data to examine breadth (what % of US active managers own) and depth (how much owned in portfolio relative to stock's weight in S&P 500 index) of semiconductor + EDA stocks in the S&P 500 index, as of the end of Jan'24). 1) Semis rel. weighting of 1.09x (-4% QoQ) has consistently fallen MoM from Jul-23 1.18x levels (-1% MoM in Jan-24), and remains below peak (1.36x in Mar-17); 2) NVDA maintains broadest ownership, owned by 67% of fund managers, growing consistently since June'23 (+30bps MoM in Jan'24) still at a historical peak and up 176bps QoQ, though rel. weighting of 1.01x below top 16 owned infotech/comm services peers (1.13x avg) despite 9x+ faster sales growth prospects, per cons. (68% CAGR vs. 8% peers); 3) Greatest expansion QoQ in ownership at AVGO, MU, AMAT, INTC, NVDA, and CDNS, while greatest decline QoQ at MCHP, FSLR, ENPH, NXPI, AMD, QCOM, and KLAC; 4) Greatest increase in depth/overweighting at INTC, ON, and AMD, while greatest decrease in weighting at FSLR, QRVO, TER, AMAT, QCOM; 5) Long-only (LO) investors most overweight MCHP, ON, ENPH, MPWR, AVGO, TXN, and NXPI, while hedge funds (HF) most overweight AMD, TER, SWKS, MU, CDNS, and QRVO.

## Highest owned semis still relatively underweight

Top 6 most widely owned semis in the SPX: 1) NVDA (67% of fund managers, +176bps QoQ, +880bps YoY), 2) AVGO (40.8%, +417bps QoQ, +1473bps YoY), 3) AMD (35.2%, down 145bps QoQ, +119bps YoY), 4) AMAT (35.2%, +207bps QoQ, +617bps YoY), 5) LRCX (31.4%, -2bps QoQ, +145bps YoY), and 6) TXN (28.4%, down 4bps QoQ, -767bps YoY). On the other hand, SPX chip stocks that were the most overweighted include: 1) KLAC (1.81x overweighted vs weight in SPX index), 2) AVGO (1.7x), 3) SNPS (1.55x), 4) NXPI (1.34x), and 5) MU (1.34x). Least overweighting vs SPX at QRVO, SWKS, QCOM and TER. Notably, despite confidence in NVDA's l-t growth prospects, the stock's weighting is relatively low at 1.01x, down from the 1.03x level cited in the last update (Nov'23), and down from 1.02x in Dec'23. AMD (3rd most owned) remains relatively underweight, although at 0.77x has seen an increase in weighting from 0.68x in Nov'23.

## Ownership trends in semicap, EDA, industrial/auto stocks

AMAT and LRCX owned by similar % of managers (35%/31%) +207/-2bps QoQ in Jan-24. LRCX weighting dropped 5% QoQ to 0.90x (vs 1.06x Jun-23), while AMAT higher at 1.25x (though fell 8% QoQ). KLAC most overweight among semicaps at 1.81x (-5% QoQ). Within EDA, SNPS more owned than CDNS (23% vs 22%), though SNPS more overweight at 1.55x vs CDNS at 1.25x. MCHP/NXPI ownership fell 195/191bps QoQ, while rel. weight fell -4%/-7% QoQ. ADI/TXN ownership fell only -8/-4bps QoQ, vs weight -7%/flat QoQ. ON ownership increased 11bps QoQ while weight grew 26% QoQ.

## LOs prefer ON, TXN, AVGO, MCHP relative to HFs

Rel. net weighting of semis in LO vs HF: MCHP, ON, AVGO, TXN, NXPI more overweighted across LO. AMD, TER, SWKS, MU, CDNS, QRVO more overweighted at HFs. Stocks overweight across Los/HFs: INTC, AMAT, KLAC, NVDA, ADI, SNPS, LRCX.

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### Exhibit 1: Summary of positioning

Ownership/weighting of semis stocks

Ticker	% funds holding	Relative Weight
NVDA	66.6%	1.01x
AVGO	40.8%	1.70x
AMD	35.2%	0.77x
INTC	14.8%	0.88x
QCOM	25.1%	0.53x
AMAT	35.2%	1.25x
TXN	28.4%	1.22x
LRCX	31.4%	0.90x
MU	13.9%	1.34x
KLAC	20.7%	1.81x
ADI	24.6%	1.17x
SNPS	22.8%	1.55x
CDNS	22.2%	1.25x
NXPI	16.6%	1.34x
MCHP	11.5%	0.80x
ON	12.1%	1.11x
SWKS	4.1%	0.07x
TER	5.3%	0.36x
QRVO	3.0%	0.05x

Source: BofA US Equity & US Quant Strategy  
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\*See page 10 for glossary

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Timestamp: 05 March 2024 11:49PM EST

## Semiconductor ownership analysis

Within semis, NVDA is the most-owned stock among active fund managers, with ownership of 67% in January '24 (up from 65% in last report – Dec '23), followed by Broadcom, AMD, and AMAT (35% - 41% ownership). Qorvo remains the least-owned semi stock with ownership of 3% (down from 3.2% in Dec'23) across all active manager funds in survey.

### Exhibit 2: Semiconductors & Semicap equipment - % holdings by active fund managers

NVDA is the most owned amongst semis by active fund managers while QRVO is least owned

Ticker	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24
NVDA	57.8%	59.9%	60.2%	60.8%	61.3%	60.1%	60.5%	63.0%	64.3%	64.8%	65.0%	66.3%	66.6%
AVGO	26.1%	25.3%	25.3%	26.3%	27.0%	28.7%	33.1%	36.1%	37.1%	36.7%	37.9%	37.9%	40.8%
AMD	34.0%	36.3%	36.9%	39.2%	40.1%	39.6%	39.0%	39.0%	38.6%	36.7%	34.1%	34.0%	35.2%
INTC	15.0%	16.0%	16.0%	15.5%	14.5%	14.3%	12.7%	13.3%	12.9%	12.9%	12.4%	13.3%	14.8%
QCOM	33.1%	35.2%	35.2%	34.5%	33.7%	31.2%	29.7%	29.5%	28.7%	27.9%	27.1%	26.3%	25.1%
AMAT	29.0%	28.2%	29.1%	29.2%	30.2%	30.6%	30.5%	32.4%	32.7%	33.1%	33.5%	34.3%	35.2%
TXN	36.1%	34.3%	34.0%	33.9%	33.1%	32.3%	31.1%	30.6%	28.9%	28.4%	27.6%	26.6%	28.4%
LRCX	29.9%	30.8%	31.1%	31.6%	30.8%	30.3%	29.7%	30.6%	31.0%	31.4%	31.8%	31.1%	31.4%
MU	12.6%	11.9%	12.8%	13.5%	13.1%	13.2%	14.1%	11.8%	11.7%	11.1%	10.6%	11.5%	13.9%
KLAC	21.1%	21.5%	22.4%	22.5%	23.3%	22.8%	22.6%	21.7%	21.9%	22.0%	21.8%	21.6%	20.7%
ADI	23.8%	23.3%	24.4%	24.6%	25.6%	25.6%	26.3%	25.7%	25.7%	24.6%	24.1%	23.7%	24.6%
SNPS	17.9%	17.7%	19.2%	19.6%	20.1%	19.9%	19.5%	21.1%	22.2%	22.9%	22.6%	23.1%	22.8%
CDNS	17.9%	18.0%	18.3%	18.4%	19.8%	19.7%	19.8%	19.9%	20.5%	21.1%	21.2%	22.2%	22.2%
NXPI	17.3%	17.7%	18.6%	19.3%	18.6%	17.1%	16.7%	17.9%	18.4%	18.5%	17.9%	17.2%	16.6%
MCHP	12.6%	13.4%	12.2%	13.2%	12.5%	14.3%	13.8%	15.0%	14.6%	13.5%	12.6%	12.4%	11.5%
ON	11.4%	12.8%	14.5%	15.2%	13.7%	13.8%	13.0%	12.4%	12.6%	12.0%	11.5%	10.9%	12.1%
SWKS	5.0%	4.4%	5.2%	7.3%	7.3%	6.5%	6.2%	5.5%	5.3%	4.1%	4.1%	4.1%	4.1%
TER	8.5%	7.6%	7.6%	8.2%	8.1%	7.6%	7.1%	6.6%	6.7%	6.2%	6.2%	5.3%	5.3%
QRVO	2.6%	2.9%	2.9%	3.5%	4.4%	3.9%	3.4%	3.2%	3.2%	3.2%	3.2%	3.3%	3.0%
<b>Median</b>	<b>19.5%</b>	<b>19.8%</b>	<b>20.8%</b>	<b>21.1%</b>	<b>21.7%</b>	<b>21.3%</b>	<b>21.2%</b>	<b>21.4%</b>	<b>22.1%</b>	<b>22.4%</b>	<b>22.2%</b>	<b>22.6%</b>	<b>22.2%</b>

Source: BofA Merrill Lynch US Equity & US Quant Strategy

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KLAC is still the most overweight stock in semis (1.81x), followed by AVGO (1.70x).

QRVO and SWKS (0.05x/0.07x each) are the most underweight stocks across semis.

### Exhibit 3: Semiconductors, Semicap – relative weighting (to index) by active fund managers

KLAC and AVGO are the most overweight semis stocks by active fund managers, while SWKS and QRVO are most underweight

Ticker	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24
NVDA	0.87x	1.00x	1.07x	1.07x	1.07x	1.08x	1.07x	1.07x	1.05x	1.03x	1.03x	1.02x	1.01x
AVGO	2.04x	2.02x	1.85x	1.85x	1.83x	1.76x	1.80x	1.80x	1.81x	1.81x	1.65x	1.69x	1.70x
AMD	0.86x	0.96x	1.01x	0.99x	1.06x	1.00x	1.03x	0.95x	0.86x	0.74x	0.68x	0.71x	0.77x
INTC	0.45x	0.45x	0.62x	0.65x	0.65x	0.75x	0.75x	0.75x	0.85x	0.82x	0.89x	0.86x	0.88x
QCOM	0.80x	0.77x	0.83x	0.83x	0.78x	0.75x	0.71x	0.69x	0.71x	0.70x	0.63x	0.65x	0.53x
AMAT	1.38x	1.38x	1.45x	1.40x	1.45x	1.41x	1.41x	1.39x	1.43x	1.35x	1.33x	1.35x	1.25x
TXN	1.29x	1.21x	1.21x	1.22x	1.16x	1.24x	1.21x	1.20x	1.28x	1.22x	1.22x	1.19x	1.22x
LRCX	1.00x	1.10x	1.11x	1.07x	1.09x	1.07x	1.06x	1.01x	1.01x	0.94x	0.94x	0.93x	0.90x
MU	1.48x	1.42x	1.58x	1.57x	1.59x	1.56x	1.57x	1.55x	1.46x	1.45x	1.45x	1.44x	1.34x
KLAC	2.01x	1.87x	1.88x	1.91x	1.98x	2.01x	1.98x	1.91x	1.96x	1.90x	1.89x	1.87x	1.81x
ADI	1.06x	1.07x	1.20x	1.21x	1.23x	1.24x	1.23x	1.18x	1.24x	1.25x	1.20x	1.15x	1.17x
SNPS	1.18x	1.29x	1.35x	1.39x	1.40x	1.48x	1.44x	1.48x	1.55x	1.53x	1.54x	1.60x	1.55x
CDNS	0.86x	1.06x	1.07x	1.14x	1.17x	1.27x	1.27x	1.27x	1.30x	1.30x	1.28x	1.30x	1.25x
NXPI	1.26x	1.33x	1.31x	1.38x	1.39x	1.43x	1.40x	1.27x	1.49x	1.44x	1.45x	1.43x	1.34x
MCHP	0.89x	0.91x	0.88x	0.38x	0.84x	0.88x	0.89x	0.89x	0.96x	0.83x	0.83x	0.83x	0.80x
ON	0.56x	0.72x	0.92x	0.97x	0.92x	0.91x	0.90x	0.86x	0.89x	0.88x	1.02x	0.90x	1.11x
SWKS	0.07x	0.07x	0.09x	0.23x	0.23x	0.22x	0.21x	0.20x	0.09x	0.08x	0.08x	0.07x	0.07x
TER	0.67x	0.68x	0.67x	0.70x	0.60x	0.59x	0.48x	0.48x	0.46x	0.42x	0.39x	0.36x	0.36x
QRVO	0.14x	0.14x	0.10x	0.11x	0.20x	0.19x	0.16x	0.08x	0.08x	0.08x	0.08x	0.08x	0.05x
<b>Median</b>	<b>0.94x</b>	<b>1.07x</b>	<b>1.09x</b>	<b>1.10x</b>	<b>1.12x</b>	<b>1.16x</b>	<b>1.14x</b>	<b>1.07x</b>	<b>1.15x</b>	<b>1.13x</b>	<b>1.11x</b>	<b>1.08x</b>	<b>1.11x</b>

Source: BofA US Equity & US Quant Strategy

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On a rolling forward basis (3-month average), we highlight positive sentiment (expanding ownership and rising weightage on rolling QoQ basis) across select names: SNPS and INTC. Conversely, more cautious sentiment (both declining ownership and weightage QoQ) exists at AMD, QCOM, TXN, ADI, KLAC, MCHP, SWKS, TER, and QRVO.

#### Exhibit 4: QoQ ownership and weightage changes on rolling 3 month basis

Several names in semis saw falling ownership and weightage QoQ

Rolling QoQ ownership/weightage changes		
Ticker	Ownership	Weightage
NVDA	190bps	-0.03x
AVGO	224bps	-0.13x
AMD	(364bps)	-0.13x
INTC	47bps	0.07x
QCOM	(249bps)	-0.10x
AMAT	160bps	-0.08x
TXN	(178bps)	-0.03x
LRCX	39bps	-0.06x
MU	45bps	-0.08x
KLAC	(51bps)	-0.07x
ADI	(125bps)	-0.05x
SNPS	77bps	0.04x
CDNS	134bps	-0.01x
NXPI	(105bps)	0.01x
MCHP	(218bps)	-0.07x
ON	(83bps)	0.13x
SWKS	(82bps)	-0.05x
TER	(90bps)	-0.09x
QRVO	(6bps)	-0.01x

Source: BofA US Equity & US Quant Strategy, Bloomberg

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Notably, Intel at 15% ownership is held below \$100bn+ market cap peers ranging 25% - 67% ownership. Furthermore, we also note stocks with >1% dividend yield have a 0.96x relative weighting versus the 1.03x average for stocks with no dividend (or have yield <1%).

#### Exhibit 5: Summary of ownership and weighting

INTC holds ownership levels below peers of similar size

Ticker	Bloomberg Ticker	Mkt Cap (\$bn)	Div Yield (%)	Ownership and Weighting	
				Ownership (%)	Weighting
NVDA	NVDA US EQUITY	\$2,130.9	0.0%	66.6%	1.01x
AVGO	AVGO US EQUITY	\$649.8	1.5%	40.8%	1.70x
AMD	AMD US EQUITY	\$331.8		35.2%	0.77x
INTC	INTC US EQUITY	\$192.8	1.1%	14.8%	0.88x
QCOM	QCOM US EQUITY	\$185.9	1.9%	25.1%	0.53x
AMAT	AMAT US EQUITY	\$174.1	0.6%	35.2%	1.25x
TXN	TXN US EQUITY	\$156.8	3.0%	28.4%	1.22x
LRCX	LRCX US EQUITY	\$128.2	0.8%	31.4%	0.90x
MU	MU US EQUITY	\$105.7	0.5%	13.9%	1.34x
KLAC	KLAC US EQUITY	\$97.1	0.8%	20.7%	1.81x
ADI	ADI US EQUITY	\$96.5	1.9%	24.6%	1.17x
SNPS	SNPS US EQUITY	\$90.7		22.8%	1.55x
CDNS	CDNS US EQUITY	\$86.4		22.2%	1.25x
NXPI	NXPI US EQUITY	\$65.2	1.6%	16.6%	1.34x
MCHP	MCHP US EQUITY	\$47.0	2.1%	11.5%	0.80x
ON	ON US EQUITY	\$34.1		12.1%	1.11x
SWKS	SWKS US EQUITY	\$16.8	2.6%	4.1%	0.07x
TER	TER US EQUITY	\$16.2	0.5%	5.3%	0.36x
QRVO	QRVO US EQUITY	\$11.6		3.0%	0.05x

Source: BofA US Equity & US Quant Strategy, Bloomberg

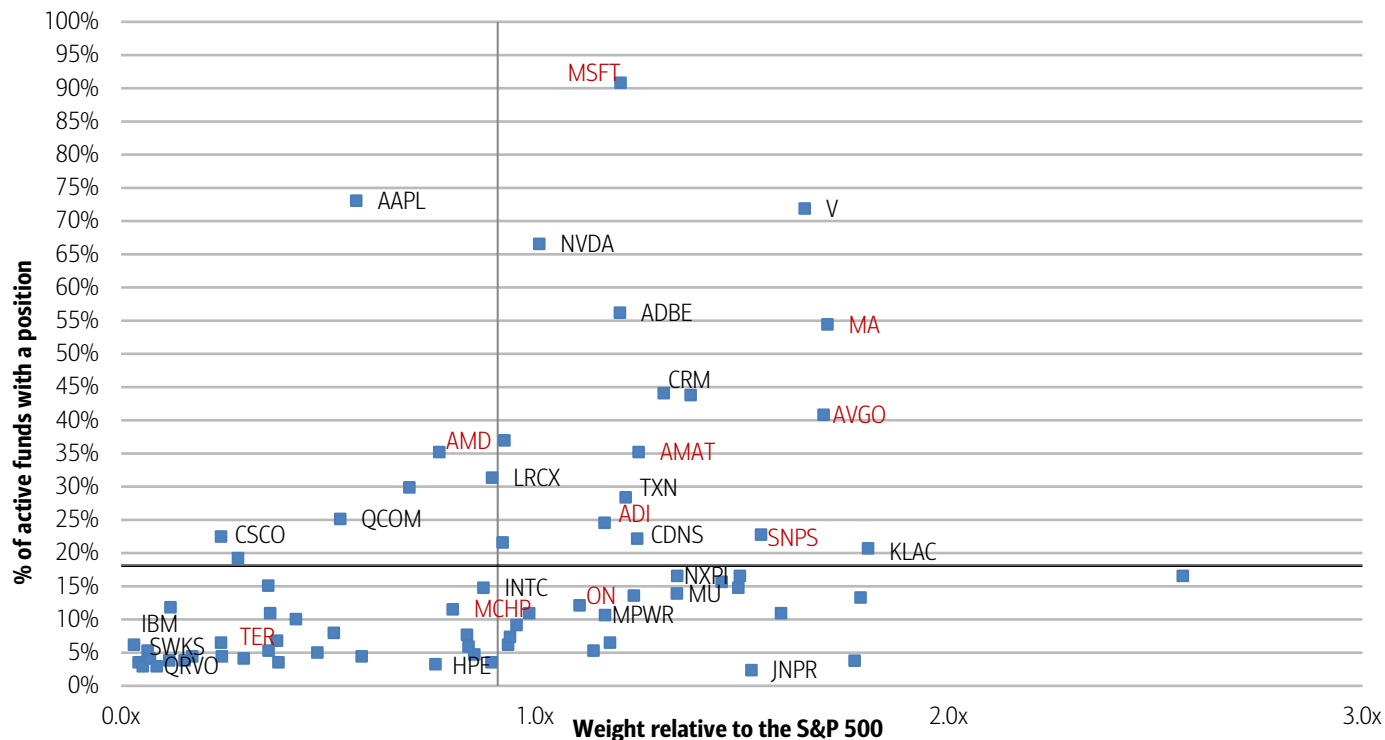
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Furthermore, assessing semis ownership/weighting relative to all infotech peers: (1) NVDA, AVGO, AMAT, TXN, ADI, CDNS, and SNPS are relatively well-owned and overweight; (2) TER, SWKS, and QRVO are both under-owned and underweight; (3) QCOM and AMD are well-owned but underweight; (4) NXPI, ON, and MU are relatively overweight but under-owned.

**Exhibit 6: Tech stocks in S&P 500 – rel. weight vs. % ownership (axis intersects relative weight and % ownership for overall sector)**

KLAC has the highest relative weighting to the S&P 500 while NVDA has the highest ownership within semis



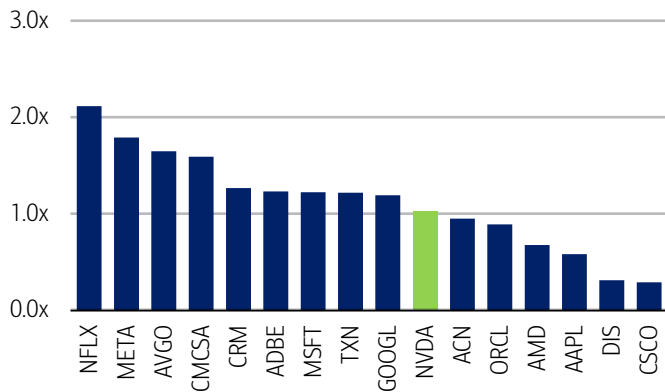
Source: BofA US Equity & US Quant Strategy

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We also put NVDA's ownership in context. Despite being held by ~67% of funds in the survey (>2570bps higher than the next semis company), breadth of ownership remains modest compared to high market cap infotech/comms peers. Indeed, NVDA's 1.01x relative weighting trails tech customers/peers at a 1.13x (avg of top 15), suggesting room for expansion.

### Exhibit 7: Rel. Weightage of Top Market Cap Infotech/Comms Stocks

NVDA relative weightage in the back half of high mkt cap tech peers

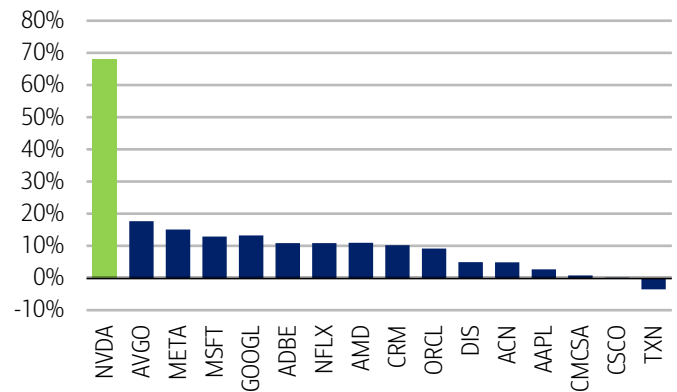


**Source:** BofA US Equity & US Quant Strategy

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**Exhibit 8: Cons. CY22-25 sales CAGR of top infotech/comms stocks**

NVDA is growing 8-9x the peer group



**Source:** BofA Global Research, Bloomberg

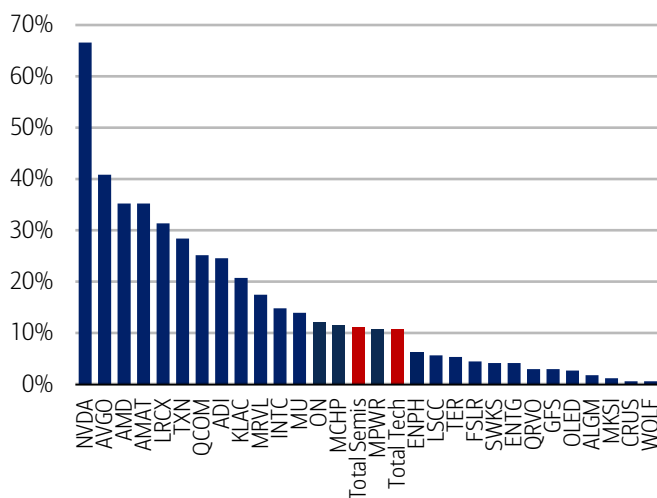
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## Russell 1000 analysis

NVDA, AVGO, and AMD have the largest percentage of holdings by active fund managers for Russell 1000 stocks; CRUS, MKSI, WOLF, ALGM have the lowest. At the median, Russell 1000 semis are held by 11% of active fund managers, about 50bps above overall tech. Overall, semis are slightly overweight (at 0.88x) relative to the Russell 1000 index, although better relative to all of tech (0.66x). WOLF, GFS, MRVL have the highest weighting while ENPH, CRUS, and QRVO have the lowest weighting.

### Exhibit 9: % holdings of Russell 1000 stocks by active fund managers

NVDA has largest % of holdings by Russell 1000 managers

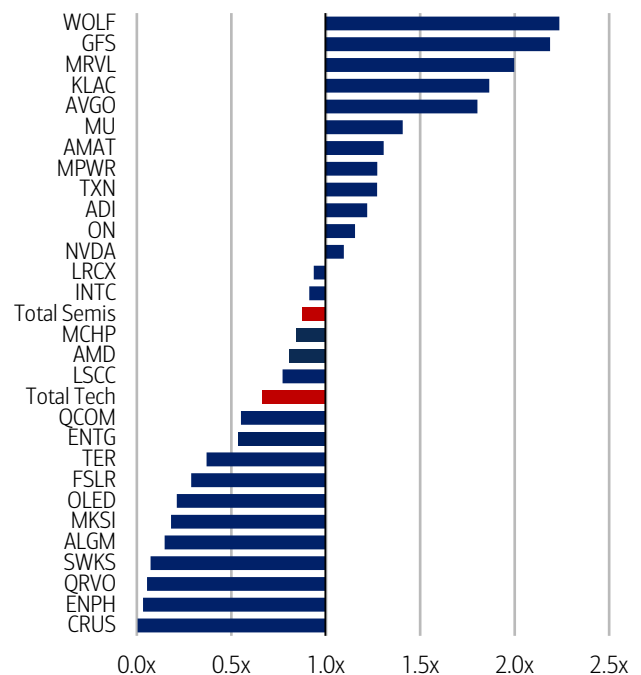


**Source:** BofA US Equity & US Quant Strategy

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### Exhibit 10: Semis are underweight relative to Russell 1000 index

WOLF most overweight vs. Russell 1000 Index



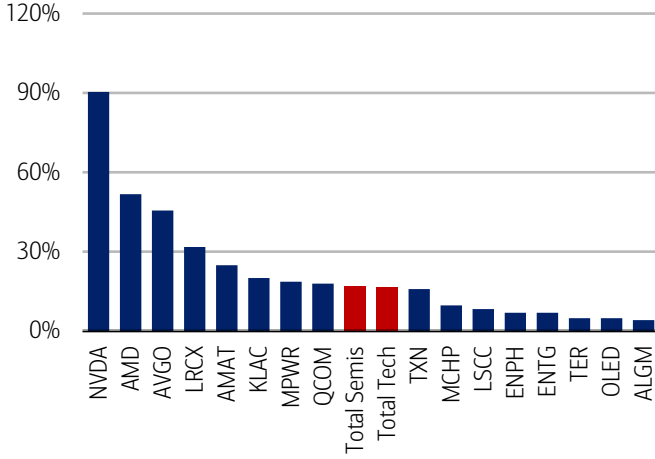
**Source:** BofA US Equity & US Quant Strategy

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NVDA, AMD, AVGO have the largest percentage of active manager holdings for Russell 1000 growth stocks while ALGM, TER, OLED, are least held. ADI, TXN, and INTC have the largest percentage of active manager for Russell 1000 value stocks; FLSR, MKSI, and WOLF have the lowest holding.

#### Exhibit 11: % holdings of Russell 1000 growth by active funds

NVDA has largest % of holdings by Russell 1000 growth managers

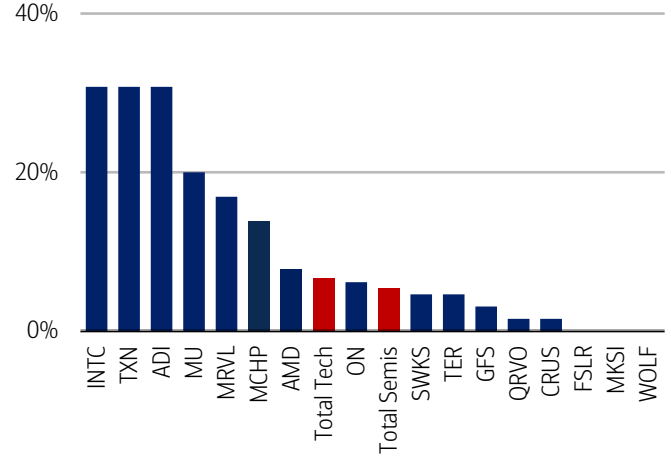


Source: BofA US Equity & US Quant Strategy

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#### Exhibit 12: % holdings of Russell 1000 value by active funds

INTC has largest % of holdings by Russell 1000 value managers



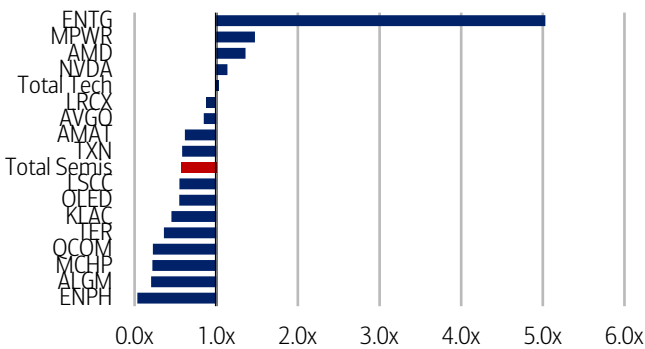
Source: BofA US Equity & US Quant Strategy

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Semis are underweight (0.57x) relative to the Russell 1000 Growth index, while overall tech is slightly overweight (1.03x). ENTG, AMD, MPWR, and NVDA have the highest weighting while ALGM, ENPH, and MCHP have the lowest. For the Russell 1000 Value index, semis are well underweight at the median (0.13x) while overall tech is just also underweight (0.82x). MCHP is by far the most overweight in this index.

#### Exhibit 13: Semis are underweight relative to Russell 1000 growth

ENTG is most overweight relative to Russell 1000 growth Index

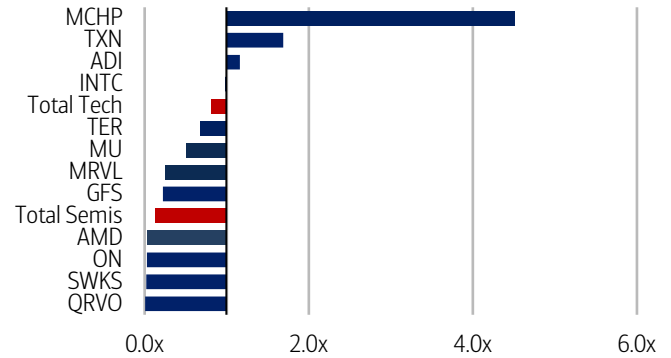


Source: BofA US Equity & US Quant Strategy

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#### Exhibit 14: Semis are underweight relative to Russell 1000 value

MCHP is the overweight relative to the Russell 1000 value index



Source: BofA US Equity & US Quant Strategy

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## Sell-side sentiment

In terms of sell-side ratings, NVDA and CAMT have the highest % of buy ratings; while INTC, TXN, and QRVO have the lowest.

### Exhibit 15: Semiconductors & Semicap equipment - Street (sell-side) buy ratings as a % of total (as of end of Feb)

CAMT holds the most Buy ratings as a percentage of total ratings

Ticker	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24
INTC	21.7%	18.2%	19.1%	19.6%	22.2%	20.5%	19.6%	20.8%	20.8%	20.8%	22.9%	25.0%	19.6%
NVDA	70.6%	72.5%	75.0%	76.8%	84.5%	87.7%	88.1%	93.5%	95.3%	95.3%	92.3%	92.2%	90.6%
TXN	25.7%	26.5%	25.7%	23.5%	23.5%	23.5%	23.5%	29.7%	31.6%	33.3%	30.8%	30.8%	31.6%
AVGO	76.0%	76.0%	75.9%	76.7%	76.7%	77.4%	75.0%	75.8%	76.5%	73.5%	73.5%	75.0%	75.0%
AMAT	72.7%	72.7%	72.2%	68.6%	68.6%	62.2%	62.2%	63.2%	64.1%	67.5%	67.5%	67.5%	61.5%
ADI	72.4%	70.0%	65.6%	65.6%	65.6%	65.6%	63.6%	61.8%	61.8%	64.7%	64.7%	70.6%	66.7%
LRCX	65.4%	63.0%	63.0%	64.3%	59.3%	59.3%	59.3%	60.7%	62.1%	70.0%	70.0%	62.5%	58.1%
MCHP	65.4%	64.0%	61.5%	64.0%	68.0%	68.0%	65.4%	61.5%	61.5%	65.4%	69.2%	69.2%	68.0%
SWKS	62.1%	63.3%	64.5%	59.4%	56.3%	56.3%	54.5%	51.5%	48.5%	48.5%	45.5%	48.5%	46.9%
NXPI	48.4%	51.6%	51.6%	54.8%	54.8%	56.3%	51.5%	51.5%	54.5%	54.5%	54.5%	51.5%	62.5%
KLAC	66.7%	63.6%	59.1%	56.5%	56.5%	52.2%	47.8%	50.0%	52.0%	53.8%	51.9%	53.6%	51.9%
AMD	72.3%	65.2%	66.7%	67.4%	65.9%	66.7%	66.7%	73.1%	75.0%	75.0%	70.9%	71.4%	73.7%
WOLF	63.6%	63.6%	65.2%	52.2%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	47.8%	50.0%	42.9%
AMBA	76.2%	75.0%	68.2%	66.7%	63.6%	63.6%	63.6%	61.9%	59.1%	63.6%	63.6%	61.9%	57.1%
CRUS	72.7%	72.7%	66.7%	66.7%	58.3%	58.3%	58.3%	63.6%	63.6%	72.7%	81.8%	81.8%	81.8%
NVMI	100.0%	100.0%	100.0%	100.0%	85.7%	71.4%	71.4%	71.4%	71.4%	71.4%	71.4%	71.4%	75.0%
COHR	83.3%	83.3%	83.3%	83.3%	83.3%	66.7%	61.1%	66.7%	66.7%	72.2%	73.7%	68.4%	68.4%
MRVL	90.6%	90.6%	87.5%	87.5%	90.6%	87.9%	88.2%	88.6%	89.2%	91.9%	89.5%	86.8%	86.5%
ON	68.8%	68.8%	65.6%	68.8%	68.8%	68.8%	63.6%	68.8%	68.8%	56.3%	60.6%	58.8%	63.6%
TER	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	57.1%	61.9%	61.9%	66.7%	66.7%	65.0%
MTSI	61.5%	53.8%	50.0%	50.0%	50.0%	50.0%	42.9%	50.0%	57.1%	57.1%	57.1%	64.3%	57.1%
QRVO	26.9%	25.0%	24.1%	20.0%	30.0%	30.0%	32.3%	37.5%	37.5%	37.5%	37.5%	40.6%	38.7%
CDNS	80.0%	75.0%	76.5%	76.5%	76.5%	73.3%	80.0%	81.3%	81.3%	81.3%	81.3%	80.0%	73.3%
SNPS	81.3%	86.7%	86.7%	87.5%	87.5%	80.0%	80.0%	81.3%	82.4%	82.4%	82.4%	82.4%	83.3%
GFS	77.8%	77.8%	77.8%	75.0%	80.0%	80.0%	76.5%	72.2%	72.2%	82.4%	82.4%	72.2%	73.7%
LITE	62.5%	56.3%	58.8%	52.9%	47.1%	47.1%	47.1%	52.9%	52.9%	58.8%	55.6%	61.1%	61.1%
CRDO	100.0%	75.0%	77.8%	77.8%	77.8%	80.0%	80.0%	81.8%	81.8%	83.3%	83.3%	83.3%	83.3%
CAMT	57.1%	57.1%	57.1%	62.5%	62.5%	62.5%	75.0%	75.0%	75.0%	75.0%	75.0%	87.5%	100.0%
MU	68.4%	71.1%	74.4%	73.7%	71.1%	71.1%	71.8%	69.2%	74.4%	74.4%	73.7%	80.0%	81.6%
<b>Median</b>	<b>68.8%</b>	<b>68.8%</b>	<b>65.6%</b>	<b>66.7%</b>	<b>65.6%</b>	<b>63.6%</b>	<b>63.6%</b>	<b>63.2%</b>	<b>63.6%</b>	<b>67.5%</b>	<b>69.2%</b>	<b>68.4%</b>	<b>66.7%</b>

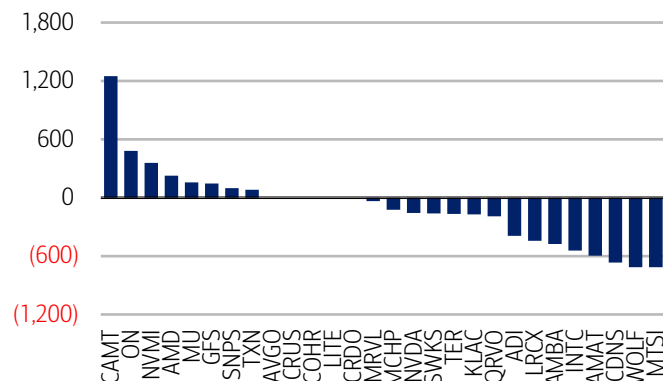
Source: BofA Global Research, Bloomberg

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Below, we examine the MoM and YoY changes in Buy ratings as a % of total sell-side ratings. On a MoM basis, CAMT and ON saw the largest increases, while WOLF and MTSI experienced the largest declines. On a YoY basis, NVDA, CAMT, NXPI increased the most while NVMI, WOLF decreased the most.

#### Exhibit 16: MoM change in Buy ratings as a % of total (bps)

CAMT had largest increase in Buy ratings MoM, AMD largest decrease

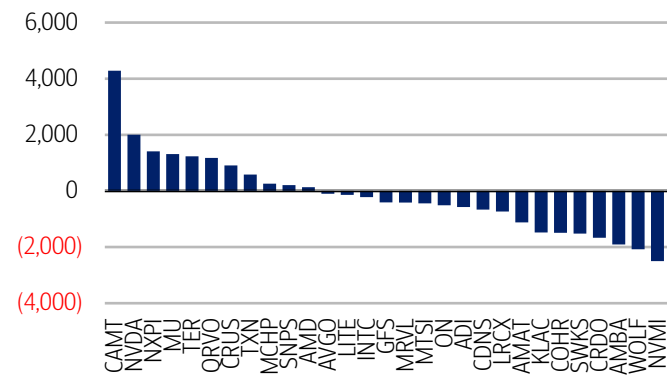


Source: Bloomberg

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#### Exhibit 17: YoY change in Buy ratings as a % of total (bps)

CAMT has largest increase in Buy ratings YoY, NVMI has largest decrease



Source: Bloomberg

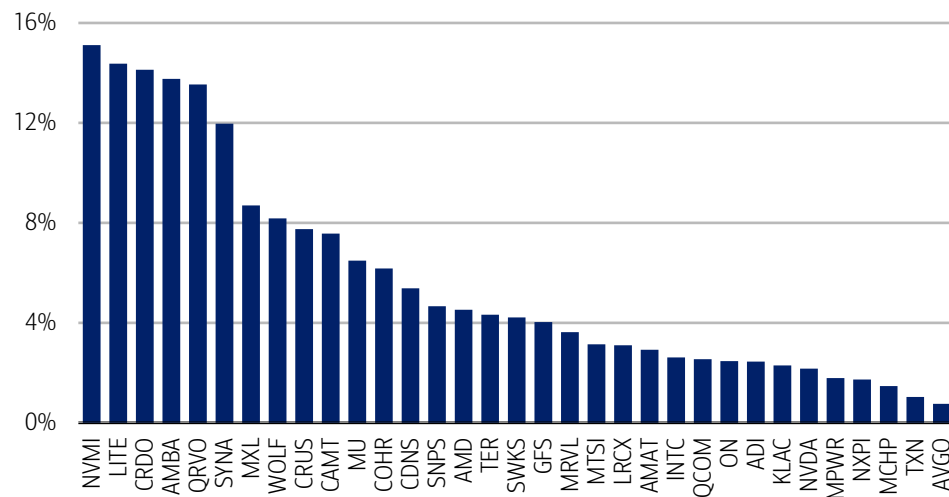
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## Hedge fund ownership

NVMI, LITE, and CRDO have the highest proportion of hedge fund ownership; AVGO, TXN, and MCHP have the lowest. Note this analysis also includes semi companies that are excluded from the S&P 500 index.

#### Exhibit 18: Percentage of shares outstanding held by hedge fund managers – as of 02/29/2024

AMBA, SYNA, NVMI most owned amongst hedge funds, while AVGO, TXN, INTC are least owned



Source: FactSet

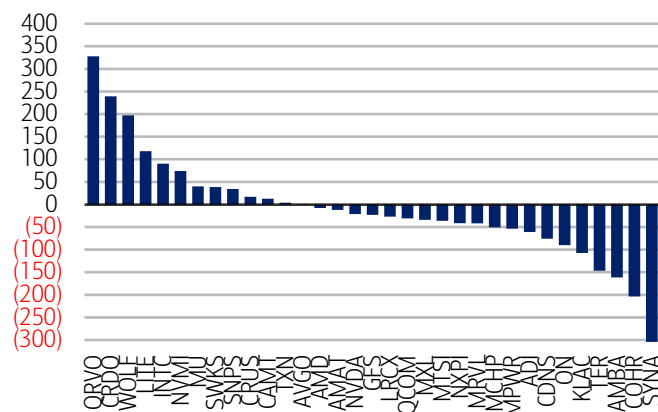
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Below, we examine the QoQ and YoY changes in relative hedge fund ownership (as % of shares outstanding). On a QoQ basis, QRVO and CRDO saw the largest increases in hedge fund ownership, while COHR and SYNA experienced the most significant decreases. On a YoY basis, LITE and CRDO hedge fund ownership increased the most while SWKS and MPWR saw the greatest declines.



**Exhibit 19: QoQ change in % of shares outstanding held by hedge fund managers (bps)**

QRVO had the highest change in HF ownership on a quarterly basis

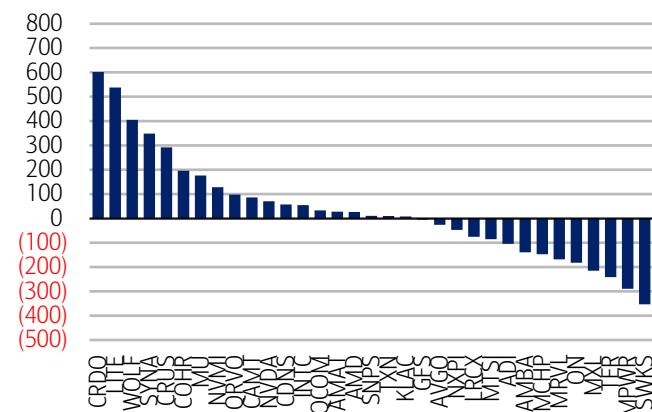


**Source:** Factset

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**Exhibit 20: YoY change in % of shares outstanding held by hedge fund managers (bps)**

CRDO also had the highest change in HF ownership on a YoY basis



**Source:** Factset

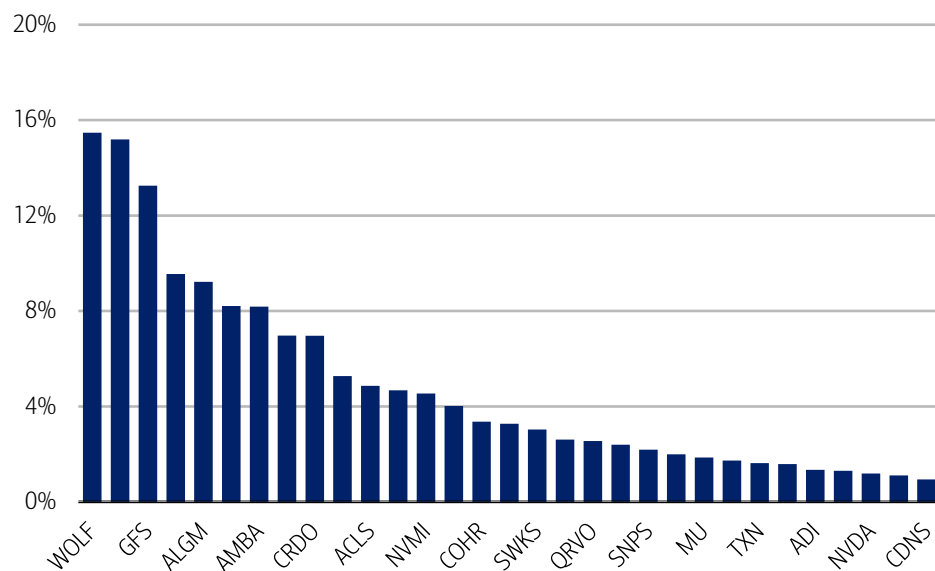
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## Short interest update

WOLF and LITE have the highest short interest as a percentage of total float while AVGO and CDNS have the lowest.

**Exhibit 21: Short interest as a percentage of total float (%)**

WOLF has the highest short interest as % of total float



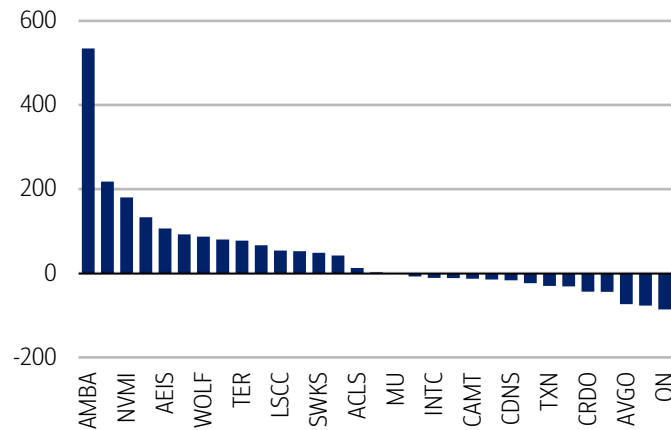
**Source:** Bloomberg

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As compared to three months ago, AMBA, LITE, and NVMI had the greatest increases in short interest as a percentage of total float while GFS and ON had the greatest decrease. On a YoY basis, CAMT had the largest increase in short interest as a percentage of total float while GFS had the largest decrease.

**Exhibit 22: QoQ change in Short Int/Float % (bps)**

AMBA saw the largest increase in short int/float on a quarterly basis

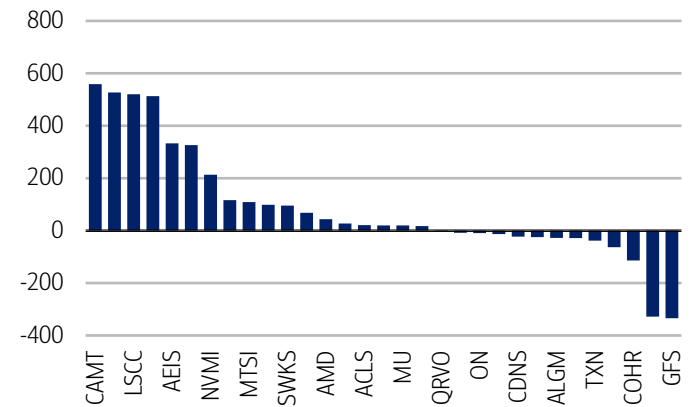


Source: Bloomberg

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**Exhibit 23: YoY Change in Short Int/Float (bps)**

CAMT also saw the largest increase in short int/float on a YoY basis



Source: Bloomberg

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## Relative weighting: HF vs. LO

We compare relative weighting (fund ownership vs. SPX ownership of semi stocks) in Long Only (LOs) and Hedge Funds (HFs) and compare the difference in ownership by fund type. On a relative basis, MCHP, ON, AVGO, TXN, and NXPI are more over-weighted across LOs versus HFs. Conversely, AMD, TER, SWKS, MU, CDNS, and QRVO are more overweight by HFs. We note INTC, AMAT, KLAC, and NVDA are overweight at both LOs and HFs.

**Exhibit 25: Summary of positioning at HFs and LOs**

ON, TXN, AVGO, MCHP are significantly overweight at LOs

Ticker	LO Rel Wt to SP500	HF Rel Wt to SP500	LO vs HF Net
High LO Weighting			
MCHP	0.80	-3.21	4.01
ON	1.11	-2.51	3.62
ENPH	0.03	-3.52	3.55
MPWR	1.17	-1.55	2.72
AVGO	1.70	-0.63	2.33
TXN	1.22	-1.05	2.27
NXPI	1.34	-0.23	1.57
Balanced LO/HF Weighting			
INTC	0.88	0.12	0.75
AMAT	1.25	0.60	0.65
KLAC	1.81	1.18	0.62
NVDA	1.01	0.80	0.21
QCOM	0.53	0.41	0.11
ADI	1.17	1.25	-0.08
SNPS	1.55	1.93	-0.38
LRCX	0.90	1.56	-0.66
High HF Weighting			
AMD	0.77	1.83	-1.06
TER	0.36	1.67	-1.32
SWKS	0.07	1.41	-1.34
MU	1.34	3.55	-2.20
CDNS	1.25	3.85	-2.60
QRVO	0.05	13.82	-13.76

Source: BofA US Equity &amp; US Quant Strategy

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## Glossary

### Companies:

ADBE: Adobe  
ADI: Analog Devices  
ADSK: Autodesk  
ALGM: Allegro MicroSystems  
AMAT: Applied Materials  
AMBA: Ambarella  
AMD: Advanced Micro Devices  
ANSS: ANSYS  
AVGO: Broadcom  
CDNS: Cadence  
CRM: Salesforce  
CRUS: Cirrus Logic  
CTXS: Citrix  
EDA: Electronic design automation  
ENPH: Enphase Energy  
ENTG: Entegris  
FTNT: Fortinet  
FSLR: First Solar  
HF: hedge fund  
INTC: Intel  
INTU: Intuit  
KLAC: KLA  
LSCC: Lattice Semiconductor  
LO: long only  
MCHP: Microchip  
MKSI: MKS Instruments  
MPWR: Monolithic Power  
MRVL: Marvell  
MTSI: M/A-com  
MSFT: Microsoft  
NLOK: NortonLifeLock  
NOW: ServiceNow  
NVDA: Nvidia  
NXPI: NXP Semiconductor  
ORCL: Oracle  
PAYC: Paycom  
QCOM: Qualcomm  
QRVO: Qorvo  
SEDG: SolarEdge  
SWKS: Skyworks  
SYNA: Synaptics  
TXN: Texas Instruments  
WOLF: Wolfspeed  
HF: Hedge Fund  
LO: Long-Only  
RF: Radio Frequency  
TAM: Total Addressable Market



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Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster <sup>R1</sup>
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

<sup>R1</sup> 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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