

## Analog Devices Inc.

# Q1 preview: Sharp Q2 reset possible before 2H rebound

Reiterate Rating: BUY | PO: 225.00 USD | Price: 194.20 USD

## Lowering estimates in line with trends at peer MCHP

While ADI and MCHP are not exactly the same in terms of products and pricing/channel management, we do see MCHP's sharp n-t cyclical correction as a blueprint to assess trends at ADI. As such as lower ADI's FQ2 (Apr) sales to \$1.93bn, -23% QoQ and -41% YoY, well below (likely stale) consensus at \$2.4bn but in line with similar correction at MCHP. Further, we lower ADI's FY24/25E pf-EPS by -24%/-13% to \$5.15/\$6.47. Maintain Buy as we expect the sharp 1H correction to drive a rebound in the 2H and as ADI's profitability/cash flow could remain best in class. Maintain \$225 PO on 37x CY25E EV/FCF, up from 34x prior, but within upper end of peer group range of 16x-39x given ADI's higher FCF margins.

## Similarities and differences vs MCHP

Even though ADI is nearly all high-end analog while MCHP sells more microcontrollers, we do see a number of important similarities but also differences. First, both companies had nearly identical 75% or so trough (1HCY20) to peak (1HCY23) sales expansion and around 400-600bps GM lift, benefitting from strong pricing, tight supply and higher industrial/auto vs. consumer mix vs. peer TXN. Both companies used non-cancellable non-returnable (NCNR) and take-or-pay arrangements to varying degrees. Hence, stands to reason the downside risks could be similarly the same, around 40% or so (1HCY24E sales YoY), worse than consensus only modeling 26% correction at ADI. Our updated estimates now suggest that similar to MCHP's forecasts, ADI's FY25E pf-EPS of \$6.47 is reset back to FY21 (pre sharp supply constrain surge), with company unlikely to revisit recent \$10/sh cycle highs for a few more years.

## Weak outlook expected, reset could be positive catalyst

While EPS cuts are usually not good news, we do believe most investors are already expecting another and perhaps one last round of downward revision, helping clear any excess channel inventory. FCF margins likely stay at a solid 35%+ (vs TXN <25%) helping provide a cushion under the stock.

Estimates (Oct) (US\$)	2022A	2023A	2024E	2025E	2026E
EPS	9.57	10.09	5.15	6.47	7.84
GAAP EPS	5.25	6.55	2.26	3.91	5.33
EPS Change (YoY)	48.6%	5.4%	-49.0%	25.6%	21.2%
Consensus EPS (Bloomberg)			7.08	8.82	10.32
DPS	3.04	3.34	3.70	4.07	4.47
Valuation (Oct)					
P/E	20.3x	19.2x	37.7x	30.0x	24.8x
GAAP P/E	37.0x	29.6x	85.9x	49.7x	36.4x
Dividend Yield	1.6%	1.7%	1.9%	2.1%	2.3%
EV / EBITDA*	12.5x	12.4x	19.5x	17.6x	16.1x
Free Cash Flow Yield*	3.9%	3.7%	3.4%	3.3%	3.7%

\* For full definitions of *IQmethod*<sup>SM</sup> measures, see page 15.

12 February 2024

### Equity

#### Key Changes

(US\$)	Previous	Current
2024E Rev (m)	9,922.8	8,580.7
2025E Rev (m)	10,728.5	9,523.5
2026E Rev (m)	11,568.0	10,576.5
2024E EPS	6.72	5.15
2025E EPS	7.45	6.47
2026E EPS	8.46	7.84

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### Stock Data

Price	194.20 USD
Price Objective	225.00 USD
Date Established	15-Dec-2023
Investment Opinion	B-1-7
52-Week Range	154.99 USD - 202.77 USD
Mrkt Val (mn) / Shares Out (mn)	96,292 USD / 495.8
Free Float	99.6%
Average Daily Value (mn)	589.38 USD
BoFA Ticker / Exchange	ADI / NAS
Bloomberg / Reuters	ADI US / ADI.OQ
ROE (2024E)	7.2%
Net Dbt to Eqty (Oct-2023A)	16.8%
ESGMeter <sup>TM</sup>	High

ESGMeter is not indicative of a company's future stock price performance and is not an investment recommendation or rating. ESGMeter is independent of BoFA Global Research's equity investment rating, volatility risk rating, income rating, and price objective for that company. For full details, refer to "BoFA ESGMeter Methodology".

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Timestamp: 12 February 2024 04:10PM EST

# iQprofile<sup>SM</sup> Analog Devices Inc.

## iQmethod<sup>SM</sup> – Bus Performance\*

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Return on Capital Employed	10.6%	11.2%	6.0%	7.3%	8.6%
Return on Equity	13.4%	14.2%	7.2%	8.9%	10.6%
Operating Margin	49.4%	48.9%	37.3%	41.3%	44.2%
Free Cash Flow	3,776	3,556	3,262	3,171	3,564

## iQmethod<sup>SM</sup> – Quality of Earnings\*

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Cash Realization Ratio	0.9x	0.9x	1.5x	1.2x	1.1x
Asset Replacement Ratio	0.5x	0.9x	0.6x	0.7x	0.9x
Tax Rate	13.0%	11.8%	12.5%	12.5%	12.5%
Net Debt-to-Equity Ratio	13.9%	16.8%	15.2%	15.7%	16.2%
Interest Cover	31.4x	26.3x	12.4x	15.2x	18.0x

## Income Statement Data (Oct)

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Sales	12,014	12,306	8,581	9,524	10,576
% Change	64.2%	2.4%	-30.3%	11.0%	11.1%
Gross Profit	8,842	8,925	5,847	6,726	7,607
% Change	70.5%	0.9%	-34.5%	15.0%	13.1%
EBITDA	8,237	8,308	5,283	5,823	6,387
% Change	97.1%	0.9%	-36.4%	10.2%	9.7%
Net Interest & Other Income	(189)	(229)	(259)	(259)	(259)
<b>Net Income (Adjusted)</b>	<b>5,005</b>	<b>5,104</b>	<b>2,577</b>	<b>3,218</b>	<b>3,860</b>
<b>% Change</b>	<b>93.1%</b>	<b>2.0%</b>	<b>-49.5%</b>	<b>24.9%</b>	<b>19.9%</b>

## Free Cash Flow Data (Oct)

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Net Income from Cont Operations (GAAP)	2,749	3,315	1,128	1,944	2,621
Depreciation & Amortization	2,297	2,293	2,079	1,886	1,717
Change in Working Capital	(884)	(646)	540	(135)	(140)
Deferred Taxation Charge	(327)	(453)	0	0	0
Other Adjustments, Net	640	308	215	190	212
Capital Expenditure	(699)	(1,261)	(700)	(714)	(846)
<b>Free Cash Flow</b>	<b>3,776</b>	<b>3,556</b>	<b>3,262</b>	<b>3,171</b>	<b>3,564</b>
<b>% Change</b>	<b>57.9%</b>	<b>-5.8%</b>	<b>-8.3%</b>	<b>-2.8%</b>	<b>12.4%</b>
Share / Issue Repurchase	(2,577)	(2,891)	(900)	(1,400)	(1,600)
Cost of Dividends Paid	(1,545)	(1,679)	(1,837)	(2,014)	(2,193)
Change in Debt	(223)	(2,158)	0	0	0

## Balance Sheet Data (Oct)

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Cash & Equivalents	1,471	958	1,483	1,240	1,011
Trade Receivables	1,800	1,470	1,157	1,316	1,441
Other Current Assets	1,667	1,956	1,623	1,628	1,676
Property, Plant & Equipment	2,401	3,219	3,640	4,069	4,598
Other Non-Current Assets	42,963	41,191	41,191	41,191	41,191
<b>Total Assets</b>	<b>50,302</b>	<b>48,794</b>	<b>49,095</b>	<b>49,444</b>	<b>49,917</b>
Short-Term Debt	0	1,046	1,046	1,046	1,046
Other Current Liabilities	2,443	2,155	2,049	2,077	2,110
Long-Term Debt	6,549	5,902	5,902	5,902	5,902
Other Non-Current Liabilities	4,846	4,126	4,126	4,126	4,126
<b>Total Liabilities</b>	<b>13,837</b>	<b>13,229</b>	<b>13,124</b>	<b>13,151</b>	<b>13,185</b>
<b>Total Equity</b>	<b>36,465</b>	<b>35,565</b>	<b>35,971</b>	<b>36,292</b>	<b>36,732</b>
<b>Total Equity &amp; Liabilities</b>	<b>50,302</b>	<b>48,794</b>	<b>49,095</b>	<b>49,444</b>	<b>49,917</b>

\* For full definitions of iQmethod<sup>SM</sup> measures, see page 15.

## Company Sector

Semiconductors

## Company Description

Analog Devices is a leading analog semiconductor company focused on high performance analog signal processing chips including data converters, amplifiers, interface, power management and digital signal processors. It is a highly diversified company with 60,000+ customers across the industrial, automotive, communications infrastructure and consumer end-markets.

## Investment Rationale

We rate ADI Buy on its growth projects in communications, automotive and industrial markets along with best in class free cash flow growth. We value ADI at the higher end of peer comps due to ADI's growth potential and free cash flow generation. Risks to our outlook are 1) macro/cycle risks related to potential China slowdown, 2) lumpy telecom capex, and 3) high operating expenses, which could limit free cash flow generation.

## Stock Data

Average Daily Volume 3,034,908

## Quarterly Earnings Estimates

	2023	2024
Q1	2.75A	1.70E
Q2	2.83A	1.02E
Q3	2.49A	1.05E
Q4	2.01A	1.38E

# Model changes

## Exhibit 1: Summary of model changes

We lower FY24/25E EPS estimates by -24%/-13% each

	Sales (\$mn)			Non-GAAP EPS		
	Old	NEW	delta	Old	NEW	delta
Jan-24E	\$2,500	\$2,500	\$0	\$1.70	\$1.70	\$0.00
Apr-24E	\$2,375	\$1,927	(\$448)	\$1.58	\$1.02	(\$0.56)
Jul-24E	\$2,496	\$1,951	(\$545)	\$1.70	\$1.05	(\$0.65)
Oct-24E	\$2,551	\$2,202	(\$349)	\$1.75	\$1.38	(\$0.38)
<b>FY24E</b>	<b>\$9,923</b>	<b>\$8,581</b>	<b>(\$1,342)</b>	<b>\$6.73</b>	<b>\$5.15</b>	<b>(\$1.58)</b>
<b>YoY%</b>	-19.4%	-30.3%	-13.5%	-33.2%	-48.9%	-23.5%
Jan-25E	\$2,472	\$2,217	(\$255)	\$1.58	\$1.40	(\$0.18)
Apr-25E	\$2,638	\$2,342	(\$296)	\$1.81	\$1.57	(\$0.24)
Jul-25E	\$2,773	\$2,451	(\$322)	\$1.99	\$1.72	(\$0.27)
Oct-25E	\$2,846	\$2,514	(\$333)	\$2.08	\$1.79	(\$0.29)
<b>FY25E</b>	<b>\$10,729</b>	<b>\$9,524</b>	<b>(\$1,205)</b>	<b>\$7.45</b>	<b>\$6.47</b>	<b>(\$0.98)</b>
<b>YoY%</b>	8.1%	11.0%	-11.2%	10.6%	25.6%	-13.1%
<b>CV24E</b>	<b>\$9,894</b>	<b>\$8,297</b>	<b>(\$1,597)</b>	<b>\$6.62</b>	<b>\$4.85</b>	<b>(\$1.78)</b>
<b>YoY%</b>	-14.4%	-28.2%	-16.1%	-26.7%	-46.4%	-26.8%
<b>CV25E</b>	<b>\$11,151</b>	<b>\$9,810</b>	<b>(\$1,341)</b>	<b>\$8.11</b>	<b>\$6.87</b>	<b>(\$1.24)</b>
<b>YoY%</b>	12.7%	18.2%	-12.0%	22.4%	41.8%	-15.2%

Source: BofA Global Research estimates, company reports

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**Exhibit 2: ADI – Income Statement (\$mn)**

We now see ADI reaching \$5.15 in FY24E EPS, vs \$6.73 prior

	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1E	Q2E	Q3E	Q4E	FY22	FY23	FY24E	CY22	CY23E	CY24E
FY (Oct)	Jan-22	Apr-22	Jul-22	Oct-22	Jan-23	Apr-23	Jul-23	Oct-23	Jan-24E	Apr-24E	Jul-24E	Oct-24E	Oct-22	Oct-23	Oct-24E	Jan-23	Jan-24E	Jan-25E
<b>Revenues</b>	<b>\$2,684</b>	<b>\$2,972</b>	<b>\$3,110</b>	<b>\$3,248</b>	<b>\$3,250</b>	<b>\$3,263</b>	<b>\$3,076</b>	<b>\$2,716</b>	<b>\$2,500</b>	<b>\$1,927</b>	<b>\$1,951</b>	<b>\$2,202</b>	<b>\$12,014</b>	<b>\$12,306</b>	<b>\$8,581</b>	<b>\$12,579</b>	<b>\$11,556</b>	<b>\$8,297</b>
QoQ	15%	11%	5%	4%	0%	0%	-6%	-12%	-8%	-23%	1%	13%						
YoY	72%	79%	77%	39%	21%	10%	-1%	-16%	-23%	-41%	-37%	-19%	64%	2%	-30%	49%	-8%	-28%
Cost of Sales	1,282	1,028	1,067	1,105	1,125	1,118	1,115	1,070	1,025	861	869	918	4,481	4,428	3,673	4,324	4,328	3,523
Gross Profit	1,402	1,945	2,043	2,143	2,124	2,145	1,962	1,647	1,475	1,066	1,082	1,285	7,532	7,877	4,908	8,255	7,228	4,774
Non-GAAP Gross Profit	1,931	2,205	2,304	2,403	2,392	2,404	2,222	1,907	1,710	1,301	1,317	1,520	8,842	8,925	5,847	9,303	8,243	5,689
R&D Expense	427	421	432	421	414	416	424	407	380	373	373	384	1701	1660	1509	1688	1626	1513
SG&A Expense	297	305	327	337	326	324	334	289	272	258	255	263	1266	1274	1048	1295	1219	1037
Total Non-GAAP Opex	702	710	747	744	733	733	752	692	673	652	650	668	2903	2910	2644	2933	2851	2661
Non-GAAP Operating Income	1228	1495	1557	1659	1659	1671	1470	1215	1037	649	667	851	5939	6014	3204	6370	5392	3028
Interest/other Income	(41)	(39)	(45)	(54)	(57)	(40)	(55)	(63)	(63)	(63)	(63)	(63)	(180)	(215)	(251)	(196)	(220)	(251)
Pretax Income	1185	1454	1510	1602	1599	1623	1413	1150	972	584	603	786	5750	5786	2945	6165	5158	2769
Tax expense	(158)	(192)	(200)	(196)	(194)	(186)	(158)	(144)	(121)	(73)	(75)	(98)	(745)	(682)	(368)	(781)	(609)	(346)
Net Income (Non-GAAP)	1027	1262	1310	1406	1405	1438	1255	1006	850	511	527	688	5005	5104	2577	5384	4549	2423
<b>Diluted EPS (Non-GAAP)</b>	<b>\$1.94</b>	<b>\$2.40</b>	<b>\$2.52</b>	<b>\$2.73</b>	<b>\$2.75</b>	<b>\$2.83</b>	<b>\$2.49</b>	<b>\$2.01</b>	<b>\$1.70</b>	<b>\$1.02</b>	<b>\$1.05</b>	<b>\$1.38</b>	<b>\$9.57</b>	<b>\$10.09</b>	<b>\$5.15</b>	<b>\$10.38</b>	<b>\$9.04</b>	<b>\$4.85</b>
Diluted EPS (GAAP)	<b>\$0.53</b>	<b>\$1.49</b>	<b>\$1.44</b>	<b>\$1.82</b>	<b>\$1.88</b>	<b>\$1.92</b>	<b>\$1.74</b>	<b>\$1.00</b>	<b>\$0.98</b>	<b>\$0.30</b>	<b>\$0.33</b>	<b>\$0.65</b>	<b>\$5.25</b>	<b>\$6.55</b>	<b>\$2.26</b>	<b>\$6.62</b>	<b>\$5.65</b>	<b>\$2.04</b>
Diluted Shares	530	526	521	516	511	509	504	500	500	500	500	500	523	506	500	518	503	500
<b>Margin Analysis %</b>																		
<b>Gross Margin</b>	<b>71.9%</b>	<b>74.2%</b>	<b>74.1%</b>	<b>74.0%</b>	<b>73.6%</b>	<b>73.7%</b>	<b>72.2%</b>	<b>70.2%</b>	<b>68.4%</b>	<b>67.5%</b>	<b>67.5%</b>	<b>69.0%</b>	<b>73.6%</b>	<b>72.5%</b>	<b>68.1%</b>	<b>74.0%</b>	<b>71.3%</b>	<b>68.6%</b>
Opex	26.2%	23.9%	24.0%	22.9%	22.6%	22.5%	24.4%	25.5%	26.9%	33.8%	33.3%	30.4%	24.2%	23.6%	30.8%	23.3%	24.7%	32.1%
<b>Operating Income</b>	<b>45.8%</b>	<b>50.3%</b>	<b>50.1%</b>	<b>51.1%</b>	<b>51.1%</b>	<b>51.2%</b>	<b>47.8%</b>	<b>44.7%</b>	<b>41.5%</b>	<b>33.7%</b>	<b>34.2%</b>	<b>38.6%</b>	<b>49.4%</b>	<b>48.9%</b>	<b>37.3%</b>	<b>50.6%</b>	<b>46.7%</b>	<b>36.5%</b>
Tax rate	13.3%	13.2%	13.2%	12.2%	12.1%	11.4%	11.2%	12.5%	12.5%	12.5%	12.5%	12.5%	13.0%	11.8%	12.5%	12.7%	11.8%	12.5%
Net Income	38.3%	42.5%	42.1%	43.3%	43.3%	44.1%	40.8%	37.0%	34.0%	26.5%	27.0%	31.2%	41.7%	41.5%	30.0%	42.8%	39.4%	29.2%

Source: BofA Global Research estimates, company reports

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**Exhibit 3: ADI – Segment Model (\$mn)**

We expect ADI's industrial sales to weaken in FY24E

<b>FY (Oct)</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>
<b>Sales by end-market</b>	<b>Jan-22</b>	<b>Apr-22</b>	<b>Jul-22</b>	<b>Oct-22</b>	<b>Jan-23</b>	<b>Apr-23</b>	<b>Jul-23</b>	<b>Oct-23</b>	<b>Jan-24E</b>	<b>Apr-24E</b>	<b>Jul-24E</b>	<b>Oct-24E</b>
Industrial	1,372	1,529	1,585	1,700	1,735	1,799	1,668	1,354	1,218	950	950	1,093
Automotive	540	618	642	643	691	754	739	731	702	527	527	606
Consumer	361	356	400	405	343	272	309	291	267	200	224	229
Communications	411	469	483	500	481	438	361	340	313	250	250	275
<b>Total</b>	<b>2,684</b>	<b>2,972</b>	<b>3,110</b>	<b>3,248</b>	<b>3,250</b>	<b>3,263</b>	<b>3,077</b>	<b>2,716</b>	<b>2,500</b>	<b>1,927</b>	<b>1,951</b>	<b>2,202</b>
<b>% of sales</b>												
Industrial	51%	51%	51%	52%	53%	55%	54%	50%	49%	49%	49%	50%
Automotive	20%	21%	21%	20%	21%	23%	24%	27%	28%	27%	27%	27%
Consumer	13%	12%	13%	12%	11%	8%	10%	11%	11%	10%	11%	10%
Communications	15%	16%	16%	15%	15%	13%	12%	13%	13%	13%	13%	12%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>QoQ% (Annual YoY%)</b>												
Industrial	16%	11%	4%	7%	2%	4%	-7%	-19%	-10%	-22%	0%	15%
Automotive	19%	14%	4%	0%	7%	9%	-2%	-1%	-4%	-25%	0%	15%
Consumer	1%	-1%	12%	1%	-15%	-21%	13%	-6%	-8%	-25%	12%	2%
Communications	17%	14%	3%	4%	-4%	-9%	-18%	-6%	-8%	-20%	0%	10%
<b>Total</b>	<b>15%</b>	<b>11%</b>	<b>5%</b>	<b>4%</b>	<b>0%</b>	<b>0%</b>	<b>-6%</b>	<b>-12%</b>	<b>-8%</b>	<b>-23%</b>	<b>1%</b>	<b>13%</b>

Source: BofA Global Research estimates, company reports

<b>FY22</b>	<b>FY23</b>	<b>FY24E</b>	<b>CY22</b>	<b>CY23E</b>	<b>CY24E</b>
<b>Oct-22</b>	<b>Oct-23</b>	<b>Oct-24E</b>	<b>Jan-23</b>	<b>Jan-24E</b>	<b>Jan-25E</b>
6,186	6,556	4,211	6,549	6,039	4,119
2,443	2,915	2,361	2,594	2,927	2,283
1,522	1,214	920	1,503	1,139	859
1,863	1,620	1,088	1,933	1,452	1,037
<b>12,014</b>	<b>12,305</b>	<b>8,581</b>	<b>12,579</b>	<b>11,556</b>	<b>8,297</b>
51%	53%	49%	52%	52%	50%
20%	24%	28%	21%	25%	28%
13%	10%	11%	12%	10%	10%
16%	13%	13%	15%	13%	13%
<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
54%	6%	-36%	45%	-8%	-32%
96%	19%	-19%	68%	13%	-22%
76%	-20%	-24%	43%	-24%	-25%
55%	-13%	-33%	46%	-25%	-29%
<b>64%</b>	<b>2%</b>	<b>-30%</b>	<b>49%</b>	<b>-8%</b>	<b>-28%</b>

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**Exhibit 4: ADI – Balance Sheet (\$mn)**

ADI's net cash/share is increasing YoY in FY24E

FY (Oct)	Q1 Jan-22	Q2 Apr-22	Q3 Jul-22	Q4 Oct-22	Q1 Jan-23	Q2 Apr-23	Q3 Jul-23	Q4 Oct-23	Q1E Jan-24E	Q2E Apr-24E	Q3E Jul-24E	Q4E Oct-24E	FY22 Oct-22	FY23 Oct-23	FY24E Oct-24E	CY22 Jan-23	CY23E Jan-24E	CY24E Jan-25E
<b>Assets</b>																		
Cash & equivalents	1,790	1,738	1,525	1,471	1,670	1,178	1,149	958	1,014	1,463	1,481	1,483	1,471	958	1,483	1,670	1,014	1,405
Short term investments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Accounts receivable	1,637	1,608	1,743	1,800	1,630	1,616	1,616	1,470	1,290	1,001	1,025	1,157	1,800	1,470	1,157	1,630	1,290	1,156
<b>Inventory</b>	<b>973</b>	<b>1,075</b>	<b>1,203</b>	<b>1,400</b>	<b>1,523</b>	<b>1,648</b>	<b>1,709</b>	<b>1,642</b>	<b>1,602</b>	<b>1,304</b>	<b>1,251</b>	<b>1,309</b>	<b>1,400</b>	<b>1,642</b>	<b>1,309</b>	<b>1,523</b>	<b>1,602</b>	<b>1,275</b>
Other current assets	237	213	219	267	338	303	360	314	314	314	314	314	267	314	314	338	314	314
<b>Total current assets</b>	<b>4,637</b>	<b>4,634</b>	<b>4,690</b>	<b>4,938</b>	<b>5,162</b>	<b>4,745</b>	<b>4,835</b>	<b>4,384</b>	<b>4,219</b>	<b>4,082</b>	<b>4,071</b>	<b>4,264</b>	<b>4,938</b>	<b>4,384</b>	<b>4,264</b>	<b>5,162</b>	<b>4,219</b>	<b>4,150</b>
Property, plant & equipment	2,037	2,094	2,180	2,401	2,525	2,742	2,923	3,219	3,313	3,425	3,537	3,640	2,401	3,219	3,640	2,525	3,313	3,740
Investments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Goodwill	26,941	26,924	26,920	26,913	26,913	26,913	26,913	26,913	26,913	26,913	26,913	26,913	26,913	26,913	26,913	26,913	26,913	26,913
<b>Total Assets</b>	<b>51,216</b>	<b>50,801</b>	<b>50,346</b>	<b>50,302</b>	<b>50,235</b>	<b>49,545</b>	<b>49,347</b>	<b>48,794</b>	<b>48,724</b>	<b>48,698</b>	<b>48,800</b>	<b>49,095</b>	<b>50,302</b>	<b>48,794</b>	<b>49,095</b>	<b>50,235</b>	<b>48,724</b>	<b>49,082</b>
<b>Liabilities &amp; Shareholders Equity</b>																		
Accounts payable	436	451	545	582	535	569	569	569	524	422	429	464	582	569	464	535	524	448
Deferred Income	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Income taxes payable	400	337	446	266	514	309	0	0	0	0	0	0	266	0	0	514	0	0
Other current liabilities	1,385	1,537	1,450	1,595	1,385	1,768	2,262	2,155	2,155	2,155	2,155	2,155	1,595	2,155	2,155	1,385	2,155	2,155
<b>Total current liabilities</b>	<b>2,222</b>	<b>2,326</b>	<b>2,441</b>	<b>2,443</b>	<b>2,434</b>	<b>2,646</b>	<b>2,831</b>	<b>3,770</b>	<b>3,725</b>	<b>3,623</b>	<b>3,630</b>	<b>3,665</b>	<b>2,443</b>	<b>3,770</b>	<b>3,665</b>	<b>2,434</b>	<b>3,725</b>	<b>3,649</b>
Long-term debt	6,254	6,253	6,253	6,549	6,543	6,476	6,438	5,902	5,902	5,902	5,902	5,902	6,549	5,902	5,902	6,543	5,902	5,902
Deferred income taxes	3,952	3,873	3,764	3,623	3,477	3,325	3,151	3,128	3,128	3,128	3,128	3,128	3,623	3,128	3,128	3,477	3,128	3,128
Total non-current liabilities	11,566	11,375	11,266	11,394	11,269	10,885	10,612	10,028	10,028	10,028	10,028	10,028	6,644	6,584	11,559	11,269	10,028	10,028
Total shareholders' equity	37,427	37,100	36,639	36,465	36,531	36,013	35,904	35,565	34,970	35,047	35,141	35,402	36,465	35,565	35,402	36,531	34,970	35,405
<b>Total Liab. &amp; Equity</b>	<b>51,216</b>	<b>50,801</b>	<b>50,346</b>	<b>50,302</b>	<b>50,235</b>	<b>49,545</b>	<b>49,347</b>	<b>49,363</b>	<b>48,724</b>	<b>48,698</b>	<b>48,800</b>	<b>49,095</b>	<b>50,302</b>	<b>49,363</b>	<b>49,095</b>	<b>50,235</b>	<b>48,724</b>	<b>49,082</b>
<b>Cash and Liquidity Ratios</b>																		
Total Cash	1,790	1,738	1,525	1,471	1,670	1,178	1,149	958	1,014	1,463	1,481	1,483	1,471	958	1,483	1,670	1,014	1,405
Short-term debt	0	0	0	0	0	0	0	1,046	1,046	1,046	1,046	1,046	0	1,046	1,046	0	1,046	1,046
Long-term debt	6,254	6,253	6,253	6,549	6,543	6,476	6,438	5,902	5,902	5,902	5,902	5,902	6,549	5,902	5,902	6,543	5,902	5,902
Total debt	6,254	6,253	6,253	6,549	6,543	6,476	6,438	6,949	6,949	6,949	6,949	6,949	6,549	6,949	6,949	6,543	6,949	6,949
Net Cash	-4,463	-4,515	-4,728	-5,078	-4,873	-5,298	-5,288	-5,991	-5,934	-5,486	-5,467	-5,465	-5,078	-5,991	-5,465	-4,873	-5,934	-5,544
<b>Net Cash/dil. share</b>	<b>-\$8.42</b>	<b>-\$8.58</b>	<b>-\$9.08</b>	<b>-\$9.85</b>	<b>-\$9.53</b>	<b>-\$10.41</b>	<b>-\$10.50</b>	<b>-\$11.97</b>	<b>-\$11.87</b>	<b>-\$10.97</b>	<b>-\$10.93</b>	<b>-\$10.93</b>	<b>-\$9.71</b>	<b>-\$11.84</b>	<b>-\$10.93</b>	<b>-\$9.40</b>	<b>-\$11.79</b>	<b>-\$11.09</b>
<b>Cash conversion ratios</b>																		
Days Sales Outstanding (DSO)	55.5	49.2	51.0	50.4	45.6	45.1	47.8	49.2	46.9	47.3	47.8	47.8						
Payable Days (DPO)	52.7	53.6	61.5	62.7	56.7	60.3	60.6	63.9	60.4	61.3	61.6	61.8						
Inventory Turns	2.8	3.0	2.8	2.6	2.3	2.2	2.0	1.9	2.0	1.9	2.0	2.1						
<b>Inventory Days</b>	<b>131.6</b>	<b>121.8</b>	<b>129.0</b>	<b>140.5</b>	<b>155.5</b>	<b>168.4</b>	<b>179.3</b>	<b>188.8</b>	<b>185.0</b>	<b>190.0</b>	<b>180.0</b>	<b>175.0</b>						
Cash Conversion Days	134.4	117.5	118.4	128.3	144.4	153.2	166.5	174.1	171.6	176.0	166.3	161.0						

Source: BofA Global Research estimates, company reports

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**Exhibit 5: ADI – Cash Flow Statement (\$mn)**

We see FCF margin increasing (TTM) through FY24E

	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1E	Q2E	Q3E	Q4E	FY22	FY23	FY24E	CY22	CY23E	CY24E
FY (Oct)	Jan-22	Apr-22	Jul-22	Oct-22	Jan-23	Apr-23	Jul-23	Oct-23	Jan-24E	Apr-24E	Jul-24E	Oct-24E	Oct-22	Oct-23	Oct-24E	Jan-23	Jan-24E	Jan-25E
<b>Operating Activities - Cash Flow</b>																		
Net income	280	783	749	936	961	978	877	498	488	149	165	326	2749	3315	1128	3430	2841	1018
Depreciation	65	72	76	71	85	80	86	83	81	63	63	72	283	335	279	303	331	264
Amortization	505	504	503	502	502	502	501	453	450	450	450	450	2014	1958	1800	2012	1906	1750
Stock compensation expenses	87	71	85	81	75	69	83	73	63	48	49	55	323	300	215	312	287	196
Excess tax benefits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deferred income taxes	(35)	(88)	(82)	(122)	(146)	(134)	(151)	(22)	0	0	0	0	(327)	(453)	0	(438)	(307)	0
Operating assets/liabilities changes	(315)	(84)	(183)	(301)	(81)	(406)	(270)	112	176	484	36	(156)	(884)	(646)	540	(649)	(389)	383
<b>Cash From Operations</b>	<b>856</b>	<b>1222</b>	<b>1248</b>	<b>1149</b>	<b>1406</b>	<b>1082</b>	<b>1142</b>	<b>1187</b>	<b>1258</b>	<b>1193</b>	<b>763</b>	<b>747</b>	<b>4475</b>	<b>4818</b>	<b>3962</b>	<b>5025</b>	<b>4669</b>	<b>3612</b>
<b>Investing Activities - Cash Flow</b>																		
<b>Capex</b>	<b>(111)</b>	<b>(119)</b>	<b>(165)</b>	<b>(305)</b>	<b>(176)</b>	<b>(284)</b>	<b>(325)</b>	<b>(476)</b>	<b>(175)</b>	<b>(175)</b>	<b>(175)</b>	<b>(175)</b>	<b>(699)</b>	<b>(1261)</b>	<b>(700)</b>	<b>(764)</b>	<b>(1260)</b>	<b>(691)</b>
Security purchases	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Security sales	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Cash From Investing</b>	<b>(103)</b>	<b>(114)</b>	<b>(134)</b>	<b>(306)</b>	<b>(176)</b>	<b>(285)</b>	<b>(327)</b>	<b>(479)</b>	<b>(175)</b>	<b>(175)</b>	<b>(175)</b>	<b>(175)</b>	<b>(657)</b>	<b>(1266)</b>	<b>(700)</b>	<b>(730)</b>	<b>(1265)</b>	<b>(691)</b>
<b>Financing Activities - Cash Flow</b>																		
Stock Repurchases	(76)	(777)	(906)	(818)	(655)	(1153)	(687)	(470)	(600)	(100)	(100)	(100)	(2577)	(2964)	(900)	(3156)	(2909)	(650)
Stock issuance	0	0	0	0	41	26	0	6	0	0	0	0	0	73	0	41	31	0
Debt Repayments	(519)	0	0	0	0	(66)	0	0	0	0	0	0	(519)	(66)	0	0	(66)	0
Debt Issuance	0	0	0	296	0	254	0	0	0	0	0	0	296	254	0	296	254	0
Dividend Payments	(363)	(398)	(394)	(390)	(385)	(435)	(430)	(428)	(427)	(470)	(470)	(470)	(1545)	(1679)	(1837)	(1567)	(1721)	(1880)
<b>Cash From Financing</b>	<b>(937)</b>	<b>(1148)</b>	<b>(1318)</b>	<b>(887)</b>	<b>(1030)</b>	<b>(1289)</b>	<b>(844)</b>	<b>(899)</b>	<b>(1027)</b>	<b>(570)</b>	<b>(570)</b>	<b>(570)</b>	<b>(4291)</b>	<b>(4063)</b>	<b>(2737)</b>	<b>(4384)</b>	<b>(4060)</b>	<b>(2530)</b>
Net Change in Cash/Eqv.	(188)	(53)	(213)	(54)	200	(492)	(28)	(191)	55	449	19	2	(507)	(512)	524	(120)	(656)	391
Cash/Eqv. at beginning of period	1978	1790	1738	1525	1471	1670	1178	1150	959	1014	1463	1481	3979	4499	4890	1790	1670	1014
<b>Cash/Eqv. at end of period</b>	<b>1790</b>	<b>1738</b>	<b>1525</b>	<b>1471</b>	<b>1670</b>	<b>1178</b>	<b>1150</b>	<b>959</b>	<b>1014</b>	<b>1463</b>	<b>1481</b>	<b>1483</b>	<b>3472</b>	<b>3988</b>	<b>5414</b>	<b>1670</b>	<b>1014</b>	<b>1405</b>
<b>Free Cash Flow</b>	<b>745</b>	<b>1103</b>	<b>1083</b>	<b>845</b>	<b>1230</b>	<b>797</b>	<b>818</b>	<b>711</b>	<b>1083</b>	<b>1018</b>	<b>588</b>	<b>572</b>	<b>3776</b>	<b>3556</b>	<b>3262</b>	<b>4261</b>	<b>3409</b>	<b>2920</b>
Trailing 4Q FCF	2776	3202	3741	3776	4261	3955	3690	3556	3409	3630	3401	3262						
4Q FCF/Dil Share	\$5.24	\$6.08	\$7.19	\$7.32	\$8.34	\$7.77	\$7.33	\$7.11	\$6.82	\$7.26	\$6.80	\$6.52	\$7.22	\$7.03	\$6.52	\$8.22	\$6.78	\$5.84
FCF/Sales (ttm)	32.9%	32.8%	33.7%	31.4%	33.9%	30.7%	28.7%	28.9%	29.5%	35.5%	37.4%	38.0%	31.4%	28.9%	38.0%	33.9%	29.5%	35.2%
Capex/Sales %	4.1%	4.0%	5.3%	9.4%	5.4%	8.7%	10.6%	17.5%	7.0%	7.0%	7.0%	7.0%	5.8%	10.3%	8.2%	6.1%	10.9%	8.3%
Depreciation/Sales %	2.4%	2.4%	2.4%	2.2%	2.6%	2.5%	2.8%	3.1%	3.3%	3.3%	3.3%	3.3%	2.4%	2.7%	3.3%	2.4%	2.9%	3.2%
Dividends as % of FCF (ttm)	44.8%	43.3%	40.8%	40.9%	36.8%	40.6%	44.5%	47.2%	50.5%	48.4%	52.8%	56.3%	40.9%	47.2%	56.3%	36.8%	50.5%	64.4%
Repurchases as % of FCF (ttm)	108.9%	112.8%	116.4%	68.2%	74.1%	89.3%	89.8%	83.3%	85.3%	51.1%	37.3%	27.6%	68.2%	83.3%	27.6%	74.1%	85.3%	22.3%
Total return as a % of FCF (ttm)	153.7%	156.1%	157.2%	109.1%	110.8%	129.9%	134.2%	130.6%	135.8%	99.5%	90.1%	83.9%	109.1%	130.6%	83.9%	110.8%	135.8%	86.6%

Source: BofA Global Research estimates, company reports

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## Price objective basis & risk

### Analog Devices Inc. (ADI)

Our \$225 PO is based on 37x CY2025E EV/FCF, within its historical 15x-37x range, and justified based on ADI's best in class profitability and differentiated/secular comms exposure.

Downside risks to our price objective: 1) Economic downturn, which could reduce demand for automotive, industrial products, impacting gross margins, especially given recent capital expenditures and higher fixed cost footprint. 2) Inability to realize the planned cost synergies from the Maxim combination. 3) Competition from larger vendors, such as TXN, which have lower-cost production facilities.

## Analyst Certification

I, Vivek Arya, 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.

### US - Semiconductors and Semiconductor Capital Equipment Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
<b>BUY</b>				
	Advanced Micro Devices, Inc	AMD	AMD US	Vivek Arya
	Analog Devices Inc.	ADI	ADI US	Vivek Arya
	Applied Materials, Inc.	AMAT	AMAT US	Vivek Arya
	Arm Holdings	ARM	ARM US	Vivek Arya
	Broadcom Inc	AVGO	AVGO US	Vivek Arya
	Cadence	CDNS	CDNS US	Vivek Arya
	Camtek	CAMT	CAMT US	Vivek Arya
	KLA Corporation	KLAC	KLAC US	Vivek Arya
	Lam Research Corp.	LRCX	LRCX US	Vivek Arya
	M/A-Com	MTSI	MTSI US	Vivek Arya
	Marvell Technology Group Ltd.	MRVL	MRVL US	Vivek Arya
	Microchip	MCHP	MCHP US	Vivek Arya
	Micron Technology, Inc	MU	MU US	Vivek Arya
	Nova	NVMI	NVMI US	Vivek Arya
	NVIDIA Corporation	NVDA	NVDA US	Vivek Arya
	NXP Semiconductors NV	NXPI	NXPI US	Vivek Arya
	onsemi	ON	ON US	Vivek Arya
	Synopsys	SNPS	SNPS US	Vivek Arya
<b>NEUTRAL</b>				
	Advanced Energy Industries	AEIS	AEIS US	Duksan Jang
	Allegro MicroSystems	ALGM	ALGM US	Blake Friedman
	Axcelis Technologies	ACLS	ACLS US	Duksan Jang
	Coherent Corp	COHR	COHR US	Vivek Arya
	GlobalFoundries	GFS	GFS US	Vivek Arya
	Intel	INTC	INTC US	Vivek Arya
	Lattice Semiconductor	LSCC	LSCC US	Blake Friedman
	Texas Instruments Inc.	TXN	TXN US	Vivek Arya
<b>UNDERPERFORM</b>				
	Ambarella	AMBA	AMBA US	Vivek Arya
	Credo Technology	CRDO	CRDO US	Vivek Arya
	Lumentum Holdings	LITE	LITE US	Vivek Arya
	Qorvo Inc.	QRVO	QRVO US	Vivek Arya
	Skyworks Solutions, Inc.	SWKS	SWKS US	Vivek Arya
	Teradyne	TER	TER US	Vivek Arya
	Wolfspeed Inc	WOLF	WOLF US	Vivek Arya

## iQmethod<sup>SM</sup> Measures Definitions

### Business Performance

Return On Capital Employed

Return On Equity

Operating Margin

Earnings Growth

Free Cash Flow

### 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

### Denominator

Total Assets – Current Liabilities + ST Debt + Accumulated Goodwill

Amortization

Shareholders' Equity

Sales

N/A

N/A

### Quality of Earnings

Cash Realization Ratio

Asset Replacement Ratio

Tax Rate

Net Debt-To-Equity Ratio

Interest Cover

### Numerator

Cash Flow From Operations

Capex

Tax Charge

Net Debt = Total Debt – Cash &amp; Equivalents

EBIT

### Denominator

Net Income

Depreciation

Pre-Tax Income

Total Equity

Interest Expense

### Valuation Toolkit

Price / Earnings Ratio

Price / Book Value

Dividend Yield

Free Cash Flow Yield

Enterprise Value / Sales

### 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

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

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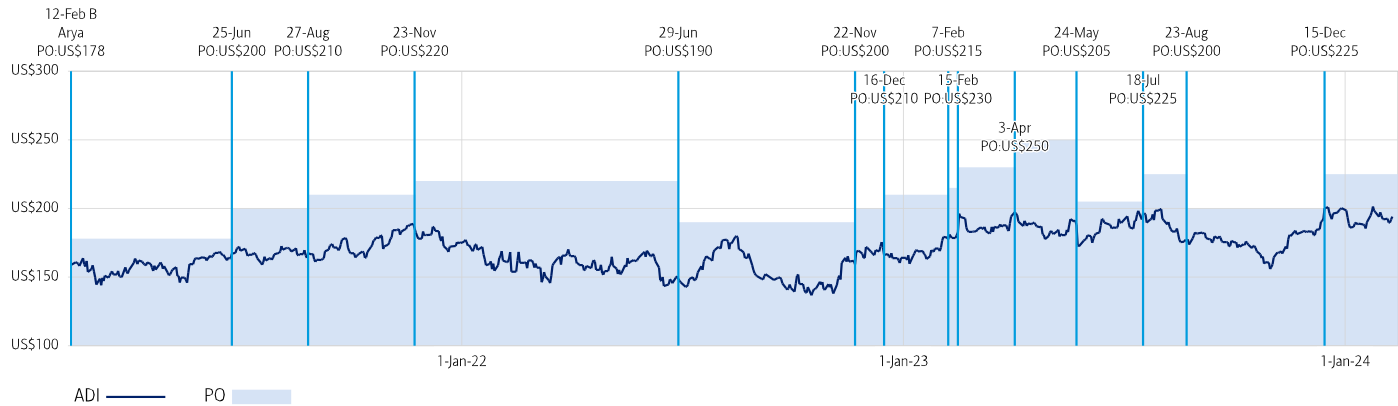
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B: Buy, N: Neutral, U: Underperform, PO: Price Objective, NA: No longer valid, NR: No Rating

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: Technology Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships <sup>R1</sup>	Count	Percent
Buy	215	53.09%	Buy	111	51.63%
Hold	97	23.95%	Hold	45	46.39%
Sell	93	22.96%	Sell	24	25.81%

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

Coverage Universe	Count	Percent	Inv. Banking Relationships <sup>R1</sup>	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%

<sup>R1</sup> 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 <sup>R2</sup>
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

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