

## Synopsis

# Potential Ansys deal: long-term strategic, but with high regulatory, accretion hurdles

Maintain Rating: BUY | PO: 650.00 USD | Price: 492.40 USD

## Mixed views on potential Ansys takeover

We examine accretion scenarios as follow-up on our initial assessment of a potential takeover of Ansys (ANSS, covered by Andrew Obin) by Synopsis, suggested in various media reports on Dec-21. Neither company has commented on media reports that suggest multiple parties have expressed interest in Ansys. We are not commenting on whether any deal will come to fruition. We focus here on just the potential puts/takes of a possible combination between SNPS and Ansys. Our first take views are mixed assuming a deal were to occur: long-term synergy potential offset by near-medium term uncertainty related to muted accretion and high (US/China) regulatory hurdles. We maintain our Buy rating on SNPS on organic merits of rising chip design complexity especially for AI processors.

## Modest low-single digit accretion potential by CY26E

We considered a range of possible scenarios which all point to accretion in the 1%-5% range (at the midpoint). The middle of this range conceptually reflects a takeover price inline with media reports, a 50:50 mix of stock and cash (inline with recent AVGO/VMware deal, plus would keep SNPS debt leverage to manageable level), and contribution from SNPS planned divestiture of its SIG assets. The bull-case would be to assume greater revenue synergies, but those would take time to develop. Also, we ignore any potential Ansys asset divestures in our scenarios, which could come into play as part of the regulatory process.

## Why not just focus on organic improvements?

Since the media report appeared on Dec-21, SNPS stock price has declined -13%, 800bps worse than closest peer CDNS and the SOX index. Some investors could question the need to engage in potentially large M&A when SNPS new CEO just started his tenure, and when SNPS already has enough organic growth potential leveraged to AI chip design. Second, SNPS could be opening itself to renewed regulatory scrutiny around sales of design software to China, as part of any deal involving M&A of technology (Ansys) used by US aerospace/defense customers. Third, we note the 700bps pf-EBIT margin gap between SNPS and CDNS that provides fertile ground organically to help drive higher EPS and higher valuation, as opposed to time/resource consuming M&A.

Estimates (Oct) (US\$)	2022A	2023A	2024E	2025E	2026E
EPS	8.92	11.25	13.37	15.77	18.18
GAAP EPS	6.26	7.86	9.16	11.41	16.67
EPS Change (YoY)	30.2%	26.1%	18.8%	18.0%	15.3%
Consensus EPS (Bloomberg)			13.46	15.56	18.25
DPS	0	0	0	0	0
<b>Valuation (Oct)</b>					
P/E	55.2x	43.8x	36.8x	31.2x	27.1x
GAAP P/E	78.7x	62.6x	53.8x	43.2x	29.5x
EV / EBITDA*	41.3x	34.0x	28.8x	25.0x	22.5x
Free Cash Flow Yield*	2.1%	2.0%	1.7%	2.2%	3.2%

\* For full definitions of *IQmethod*<sup>SM</sup> measures, see page 8.

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## Stock Data

Price	492.40 USD
Price Objective	650.00 USD
Date Established	30-Nov-2023
Investment Opinion	B-1-9
52-Week Range	312.25 USD - 573.77 USD
Mrkt Val (mn) / Shares Out (mn)	74,838 USD / 152.0
Free Float	99.4%
Average Daily Value (mn)	511.90 USD
BofA Ticker / Exchange	SNPS / NAS
Bloomberg / Reuters	SNPS US / SNPS.OQ
ROE (2024E)	33.7%
Net Dbt to Eqty (Oct-2023A)	-23.0%
ESGMeter™	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"](#).

## Glossary

ANSS: Ansys

AVGO: Broadcom

CDNS: Cadence

SIG: Software Integrity

SNPS: Synopsis

SOX: Semiconductor Index

# iQprofile<sup>SM</sup> Synopsys

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

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Return on Capital Employed	22.5%	26.3%	27.6%	31.0%	31.4%
Return on Equity	25.7%	29.7%	33.7%	37.7%	37.4%
Operating Margin	33.0%	35.1%	36.6%	38.0%	38.7%
Free Cash Flow	1,602	1,514	1,263	1,644	2,407

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

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Cash Realization Ratio	1.2x	1.0x	0.7x	0.7x	0.9x
Asset Replacement Ratio	0.7x	0.9x	0.6x	0.6x	0.6x
Tax Rate	12.3%	6.4%	15.8%	16.0%	16.0%
Net Debt-to-Equity Ratio	-25.1%	-23.0%	-22.4%	-24.4%	-32.9%
Interest Cover	NA	NA	NA	NA	NA

## Income Statement Data (Oct)

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Sales	5,082	5,843	6,590	7,374	8,199
% Change	20.9%	15.0%	12.8%	11.9%	11.2%
Gross Profit	4,159	4,792	5,403	6,041	6,717
% Change	20.6%	15.2%	12.8%	11.8%	11.2%
EBITDA	1,807	2,192	2,592	2,981	3,320
% Change	28.8%	21.3%	18.2%	15.0%	11.4%
Net Interest & Other Income	17	12	6	6	6
<b>Net Income (Adjusted)</b>	<b>1,394</b>	<b>1,742</b>	<b>2,086</b>	<b>2,426</b>	<b>2,743</b>
<b>% Change</b>	<b>29.5%</b>	<b>25.0%</b>	<b>19.7%</b>	<b>16.3%</b>	<b>13.1%</b>

## Free Cash Flow Data (Oct)

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Net Income from Cont Operations (GAAP)	985	1,218	1,429	1,754	2,516
Depreciation & Amortization	228	247	273	292	312
Change in Working Capital	(59)	(327)	(336)	(376)	(458)
Deferred Taxation Charge	(37)	(211)	(600)	(600)	(600)
Other Adjustments, Net	622	776	637	730	812
Capital Expenditure	(137)	(190)	(140)	(157)	(174)
<b>Free Cash Flow</b>	<b>1,602</b>	<b>1,514</b>	<b>1,263</b>	<b>1,644</b>	<b>2,407</b>
<b>% Change</b>	<b>14.6%</b>	<b>-5.5%</b>	<b>-16.5%</b>	<b>30.1%</b>	<b>46.4%</b>
Share / Issue Repurchase	(862)	(953)	(1,300)	(1,400)	(1,400)
Cost of Dividends Paid	0	0	0	0	0
Change in Debt	(77)	(3)	0	0	0

## Balance Sheet Data (Oct)

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Cash & Equivalents	1,418	1,439	1,402	1,646	2,654
Trade Receivables	796	947	1,040	1,265	1,515
Other Current Assets	799	1,045	1,130	1,285	1,495
Property, Plant & Equipment	483	557	536	513	487
Other Non-Current Assets	5,922	6,345	6,233	6,121	6,009
<b>Total Assets</b>	<b>9,418</b>	<b>10,333</b>	<b>10,342</b>	<b>10,830</b>	<b>12,160</b>
Short-Term Debt	0	0	0	0	0
Other Current Liabilities	2,775	2,985	2,988	2,992	2,994
Long-Term Debt	21	18	18	18	18
Other Non-Current Liabilities	1,064	1,145	1,145	1,145	1,145
<b>Total Liabilities</b>	<b>3,859</b>	<b>4,149</b>	<b>4,151</b>	<b>4,155</b>	<b>4,157</b>
<b>Total Equity</b>	<b>5,559</b>	<b>6,184</b>	<b>6,191</b>	<b>6,675</b>	<b>8,003</b>
<b>Total Equity &amp; Liabilities</b>	<b>9,418</b>	<b>10,333</b>	<b>10,342</b>	<b>10,830</b>	<b>12,160</b>

\* For full definitions of iQmethod<sup>SM</sup> measures, see page 8.

## Company Sector

Technical & Design Software

## Company Description

Synopsys is the largest provider of electronic design automation (EDA) software and tools used to design, verify and lay out semiconductor chips and electronics systems. Synopsys is also the 2nd largest supplier of semiconductor intellectual property, and a recognized leader in the nascent market for tools and services which help to improve the security and quality of software code for a wide variety of enterprises.

## Investment Rationale

We rate SNPS Buy. We like SNPS predictable and recurring revenue model, and believe the company can sustain growth even in the event of a downturn. Additionally, we see opportunities for SNPS as chip complexity rises, necessitating system/chip companies to give EDA a larger portion of R&D budget.

## Stock Data

Average Daily Volume 1,039,606

## Quarterly Earnings Estimates

	2023	2024
Q1	2.62A	3.43E
Q2	2.54A	2.83E
Q3	2.88A	3.43E
Q4	3.17A	3.79E

## Possible Scenario 1: SNPS acquires ANSS, no SNPS SIG divestment

We create one potential scenario to assess accretion/dilution impacts from any SNPS acquisition of Ansys. We assume no divestiture of SNPS software integrity (SIG) business to pay for the acquisition in exhibit 1, as well as: 1) Deal closes CY24 end, 2) Ansys acquisition price roughly \$425/shr, 3) financing would be ~50/50 debt/equity, and 4) Opex synergies would be roughly ~50% of ANSS current spend, realized over time. Under these conditions, ANSS would be dilutive in CY25E (5%-6%), though modestly accretive in CY26E.

### Exhibit 1: Possible scenario around accretion/dilution of SNPS-ANSS acquisition

Any M&A likely dilutive 12 months post close, potentially modestly accretive thereafter

	CY2024E		CY2025E				CY2026E			
	SNPS (BofA)	SNPS (BofA)	ANSS (Street)	Adj.	Pf-scenario	SNPS (BofA)	ANSS (Street)	Adj.	Pf-scenario	
<b>Sales (\$mn)</b>	<b>\$6,730</b>	<b>\$7,619</b>	<b>\$2,719</b>		<b>\$10,338</b>	<b>\$8,417</b>	<b>\$3,030</b>		<b>\$11,447</b>	
<b>COGS</b>	<b>\$1,213</b>	<b>\$1,377</b>	<b>\$232</b>	<b>\$0</b>	<b>\$1,609</b>	<b>\$1,521</b>	<b>\$268</b>	<b>\$0</b>	<b>\$1,789</b>	
<b>Gross profit</b>	<b>\$5,517</b>	<b>\$6,242</b>	<b>\$2,487</b>		<b>\$8,729</b>	<b>\$6,896</b>	<b>\$2,762</b>		<b>\$9,658</b>	
<b>Gross margin (%)</b>	<b>82.0%</b>	<b>81.9%</b>	<b>91.5%</b>		<b>84.4%</b>	<b>81.9%</b>	<b>91.2%</b>		<b>84.4%</b>	
<b>Opex</b>	<b>\$2,997</b>	<b>\$3,399</b>	<b>\$1,335</b>	<b>(\$375)</b>	<b>\$4,359</b>	<b>\$3,604</b>	<b>\$1,457</b>	<b>(\$600)</b>	<b>\$4,461</b>	
<b>Operating income</b>	<b>\$2,520</b>	<b>\$2,843</b>	<b>\$1,152</b>		<b>\$4,370</b>	<b>\$3,292</b>	<b>\$1,305</b>		<b>\$5,197</b>	
<b>Operating margin (%)</b>	<b>37.5%</b>	<b>37.3%</b>	<b>42.4%</b>		<b>42.3%</b>	<b>39.1%</b>	<b>43.1%</b>		<b>45.4%</b>	
Interest expense	\$6	\$6	(\$18)	(\$1,021)	(\$1,033)	\$6	(\$18)	(\$1,021)	(\$1,033)	
<b>Pre-tax income</b>	<b>\$2,526</b>	<b>\$2,849</b>			<b>\$3,338</b>	<b>\$3,298</b>			<b>\$4,164</b>	
Tax rate (%)	15.0%	15.0%			15.0%	15.0%			15.0%	
Tax expense	(\$379)	(\$427)			(\$501)	(\$495)			(\$625)	
NCI	(\$40)	(\$40)			(\$40)	(\$40)			(\$40)	
<b>Net income</b>	<b>\$2,187</b>	<b>\$2,462</b>			<b>\$2,877</b>	<b>\$2,843</b>			<b>\$3,580</b>	
Sharecount (mn)	156	153		37	190	150		37	187	
<b>EPS (\$)</b>	<b>\$14.04</b>	<b>\$16.10</b>			<b>\$15.14</b>	<b>\$18.91</b>			<b>\$19.10</b>	

Source: BofA Global Research estimates, company reports

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We broaden our analysis by displaying various possible scenarios, adjusting the acquisition price of any potential deal as well as total synergies that could be realized. At the midpoint of our scenarios, we see such scenarios supporting low-single digit % EPS accretion in CY26E.

### Exhibit 2: CY25E EPS potential with ANSS acquisition (incl. SIG)

We expect SNPS acquisition of ANSS would be dilutive near-term

		Possible acquisition cost (per ANSS share)						
Opex Synergies (\$mn)		\$400	\$408	\$417	\$425	\$433	\$442	\$450
	\$450	\$14.91	\$14.76	\$14.62	\$14.47	\$14.33	\$14.18	\$14.04
	\$550	\$15.14	\$14.99	\$14.84	\$14.69	\$14.55	\$14.40	\$14.26
	\$650	\$15.36	\$15.21	\$15.06	\$14.92	\$14.77	\$14.63	\$14.48
	\$750	\$15.59	\$15.44	\$15.29	\$15.14	\$14.99	\$14.85	\$14.70
	\$850	\$15.82	\$15.66	\$15.51	\$15.36	\$15.22	\$15.07	\$14.92
	\$950	\$16.04	\$15.89	\$15.74	\$15.59	\$15.44	\$15.29	\$15.15
	\$1,050	\$16.27	\$16.11	\$15.96	\$15.81	\$15.66	\$15.51	\$15.37

Source: BofA Global Research estimates

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### Exhibit 3: CY25E EPS accretion with ANSS acquisition (incl. SIG)

We expect CY25E dilution would be mid-single % below our current est.

		Possible acquisition cost (per ANSS share)						
Opex Synergies (\$mn)		\$400	\$408	\$417	\$425	\$433	\$442	\$450
	\$450	(7.4%)	(8.3%)	(9.2%)	(10.1%)	(11.0%)	(11.9%)	(12.8%)
	\$550	(6.0%)	(6.9%)	(7.8%)	(8.7%)	(9.6%)	(10.5%)	(11.4%)
	\$650	(4.6%)	(5.5%)	(6.4%)	(7.3%)	(8.2%)	(9.1%)	(10.0%)
	\$750	(3.2%)	(4.1%)	(5.0%)	(5.9%)	(6.9%)	(7.8%)	(8.7%)
	\$850	(1.8%)	(2.7%)	(3.6%)	(4.6%)	(5.5%)	(6.4%)	(7.3%)
	\$950	(0.3%)	(1.3%)	(2.2%)	(3.2%)	(4.1%)	(5.0%)	(5.9%)
	\$1,050	1.1%	0.1%	(0.8%)	(1.8%)	(2.7%)	(3.6%)	(4.5%)

Source: BofA Global Research estimates

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**Exhibit 4: CY26E EPS potential with ANSS acquisition (incl. SIG)**

We expect SNPS acquisition of ANSS would be more accretive long-term

Opex Synergies (\$mm)	Possible acquisition cost (per ANSS share)						
	\$400	\$408	\$417	\$425	\$433	\$442	\$450
	\$450	\$18.50	\$18.33	\$18.17	\$18.01	\$17.85	\$17.69
	\$550	\$18.86	\$18.70	\$18.53	\$18.37	\$18.21	\$18.05
	\$650	\$19.23	\$19.06	\$18.90	\$18.73	\$18.57	\$18.41
	\$750	\$19.60	\$19.43	\$19.26	\$19.10	\$18.93	\$18.77
	\$850	\$19.97	\$19.80	\$19.63	\$19.46	\$19.29	\$19.13
	\$950	\$20.33	\$20.16	\$19.99	\$19.82	\$19.66	\$19.49
	\$1,050	\$20.70	\$20.53	\$20.36	\$20.19	\$20.02	\$19.85

Source: BofA Global Research estimates

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**Exhibit 5: CY26E EPS accretion with ANSS acquisition (incl. SIG)**

We expect CY26E accretion would be low-single % above our current est

Opex Synergies (\$mm)	Possible acquisition cost (per ANSS share)						
	\$400	\$408	\$417	\$425	\$433	\$442	\$450
	\$450	(2.2%)	(3.0%)	(3.9%)	(4.8%)	(5.6%)	(6.5%)
	\$550	(0.2%)	(1.1%)	(2.0%)	(2.8%)	(3.7%)	(4.5%)
	\$650	1.7%	0.8%	(0.1%)	(0.9%)	(1.8%)	(2.6%)
	\$750	3.6%	2.8%	1.9%	1.0%	0.1%	(0.7%)
	\$850	5.6%	4.7%	3.8%	2.9%	2.0%	1.2%
	\$950	7.5%	6.6%	5.7%	4.8%	3.9%	3.1%
	\$1,050	9.5%	8.6%	7.6%	6.7%	5.9%	5.0%

Source: BofA Global Research estimates

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**Possible Scenario 2: SNPS acquires ANSS, SIG divestment**

We assume another possible scenario similar to the above, though this time factor in possible divestiture of software integrity (SIG) business to pay for the acquisition. We assume SIG could be acquired for ~\$6bn (roughly 10x sales). Under these conditions, ANSS would be less dilutive in CY25E (2%-3%) and more accretive in CY26E (3%-4%).

**Exhibit 6: Possible scenario around accretion/dilution of SNPS-ANSS acquisition**

If SNPS were to divest its software integrity business, M&amp;A could be less dilutive in CY25E and more accretive in CY26E

	CY2024E		CY2025E				CY2026E				
	SNPS (BofA)	SNPS (BofA)	ANSS (Street)	SIG Adj.	M&A Adj.	pf-scenario	SNPS (BofA)	ANSS (Street)	SIG Adj.	M&A Adj.	Pf-scenario
Sales (\$mm)	\$6,730	\$7,619	\$2,719	(\$583)		\$9,756	\$8,417	\$3,030	(\$645)		\$10,802
COGS	\$1,213	\$1,377	\$232	(\$58)	\$0	\$1,551	\$1,521	\$268	(\$65)	\$0	\$1,724
Gross profit	\$5,517	\$6,242	\$2,487	(\$524)		\$8,205	\$6,896	\$2,762	(\$581)		\$9,077
Gross margin (%)	82.0%	81.9%	91.5%	90.0%		84.1%	81.9%	91.2%	90.0%		84.0%
Opex	\$2,997	\$3,399	\$1,335	(\$478)	(\$375)	\$3,881	\$3,604	\$1,457	(\$516)	(\$600)	\$3,945
Operating income	\$2,520	\$2,843	\$1,152	(\$105)		\$4,324	\$3,292	\$1,305	(\$129)		\$5,132
Operating margin (%)	37.5%	37.3%	42.4%	18.0%		44.3%	39.1%	43.1%	20.0%		47.5%
Interest expense	\$6	\$6	(\$18)		(\$860)	(\$872)	\$6	(\$18)		(\$860)	(\$872)
Pre-tax income	\$2,526	\$2,849				\$3,451	\$3,298				\$4,260
Tax rate (%)	15.0%	15.0%				15.0%	15.0%				15.0%
Tax expense	(\$379)	(\$427)				(\$518)	(\$495)				(\$639)
NCI	(\$40)	(\$40)				(\$40)	(\$40)				(\$40)
Net income	\$2,187	\$2,462				\$2,974	\$2,843				\$3,661
Sharecount (mn)	156	153			37	190	150			37	188
EPS (\$)	\$14.04	\$16.10				\$15.64	\$18.91				\$19.52

Source: BofA Global Research estimates

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We broaden our analysis by displaying various possible scenarios, again adjusting the acquisition price of any potential deal as well as total synergies that could be realized. At the midpoint of our scenarios, we see such scenarios supporting 3%-4% EPS accretion in CY26E.

**Exhibit 7: CY25E EPS potential with ANSS acquisition (SIG divested)**

Divesting SIG could make any ANSS acquisition less dilutive

Opex Synergies (\$mm)	Possible acquisition cost (per ANSS share)						
	\$400	\$408	\$417	\$425	\$433	\$442	\$450
	\$450	\$15.41	\$15.27	\$15.12	\$14.97	\$14.82	\$14.68
	\$550	\$15.64	\$15.49	\$15.34	\$15.19	\$15.05	\$14.90
	\$650	\$15.87	\$15.72	\$15.57	\$15.42	\$15.27	\$15.12
	\$750	\$16.09	\$15.94	\$15.79	\$15.64	\$15.49	\$15.34
	\$850	\$16.32	\$16.17	\$16.01	\$15.86	\$15.71	\$15.56
	\$950	\$16.55	\$16.39	\$16.24	\$16.09	\$15.94	\$15.79
	\$1,050	\$16.77	\$16.62	\$16.46	\$16.31	\$16.16	\$16.01

Source: BofA Global Research estimates

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**Exhibit 8: CY25E EPS accretion with ANSS acquisition (SIG divested)**

If SIG divested, CY25E EPS would still be modestly dilutive (2%-3%)

Opex Synergies (\$mm)	Possible acquisition cost (per ANSS share)						
	\$400	\$408	\$417	\$425	\$433	\$442	\$450
	\$450	(4.2%)	(5.2%)	(6.1%)	(7.0%)	(7.9%)	(8.8%)
	\$550	(2.8%)	(3.8%)	(4.7%)	(5.6%)	(6.5%)	(7.4%)
	\$650	(1.4%)	(2.4%)	(3.3%)	(4.2%)	(5.2%)	(6.1%)
	\$750	(0.0%)	(1.0%)	(1.9%)	(2.8%)	(3.8%)	(4.7%)
	\$850	1.4%	0.4%	(0.5%)	(1.5%)	(2.4%)	(3.3%)
	\$950	2.8%	1.8%	0.9%	(0.1%)	(1.0%)	(1.9%)
	\$1,050	4.2%	3.2%	2.3%	1.3%	0.4%	(0.6%)

Source: BofA Global Research estimates

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**Exhibit 9: CY26E EPS potential with ANSS acquisition (SIG divested)**

Divesting SIG provides even further upside in CY26E

Opex Synergies (\$mm)	Possible acquisition cost (per ANSS share)						
	\$400	\$408	\$417	\$425	\$433	\$442	\$450
\$450	\$18.92	\$18.76	\$18.59	\$18.43	\$18.27	\$18.11	\$17.95
\$550	\$19.29	\$19.12	\$18.96	\$18.79	\$18.63	\$18.47	\$18.31
\$650	\$19.66	\$19.49	\$19.32	\$19.16	\$18.99	\$18.83	\$18.67
\$750	\$20.03	\$19.86	\$19.69	\$19.52	\$19.35	\$19.19	\$19.03
\$850	\$20.39	\$20.22	\$20.05	\$19.88	\$19.71	\$19.55	\$19.38
\$950	\$20.76	\$20.59	\$20.41	\$20.24	\$20.08	\$19.91	\$19.74
\$1,050	\$21.13	\$20.95	\$20.78	\$20.61	\$20.44	\$20.27	\$20.10

Source: BofA Global Research estimates

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**Exhibit 10: CY26E EPS accretion with ANSS acquisition (SIG divested)**

If SIG divested, CY26E EPS post-M&amp;A could see 3%-4% accretion

Opex Synergies (\$mm)	Possible acquisition cost (per ANSS share)						
	\$400	\$408	\$417	\$425	\$433	\$442	\$450
\$450	0.1%	(0.8%)	(1.7%)	(2.5%)	(3.4%)	(4.2%)	(5.1%)
\$550	2.0%	1.1%	0.3%	(0.6%)	(1.5%)	(2.3%)	(3.2%)
\$650	4.0%	3.1%	2.2%	1.3%	0.4%	(0.4%)	(1.3%)
\$750	5.9%	5.0%	4.1%	3.2%	2.3%	1.5%	0.6%
\$850	7.8%	6.9%	6.0%	5.1%	4.3%	3.4%	2.5%
\$950	9.8%	8.9%	8.0%	7.1%	6.2%	5.3%	4.4%
\$1,050	11.7%	10.8%	9.9%	9.0%	8.1%	7.2%	6.3%

Source: BofA Global Research estimates

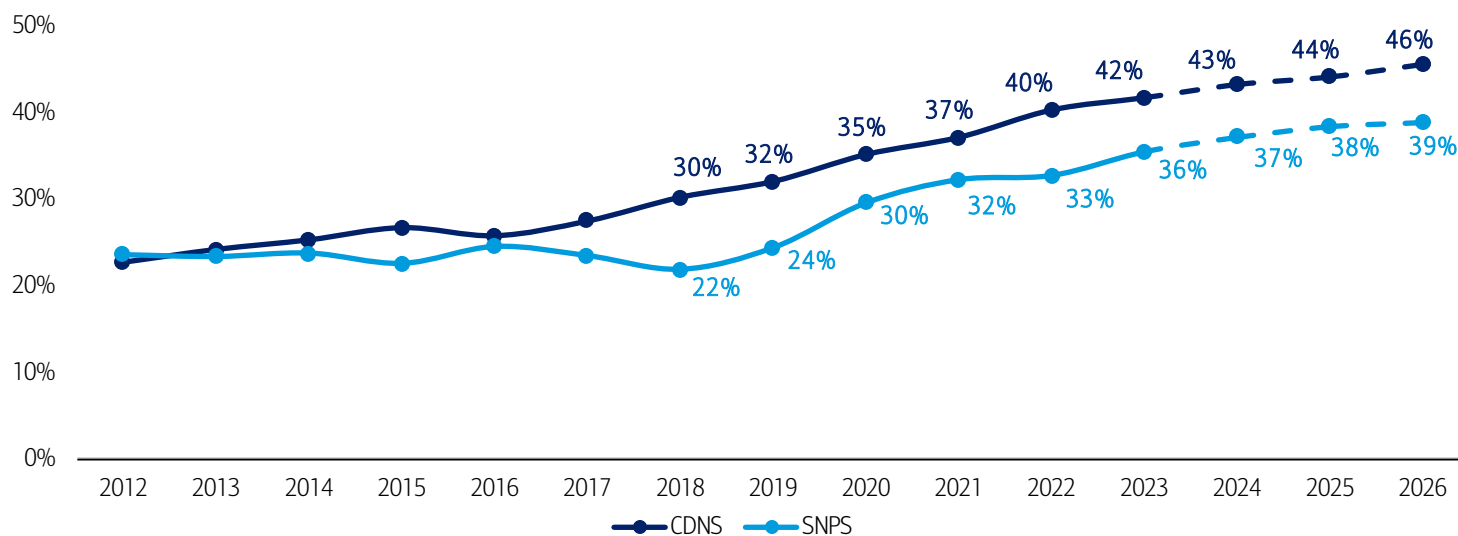
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**Closing operating margin gap key focus**

SNPS historically trades at a 4x-5x turn discount to peer CDNS (on a P/E basis), partially due to its lower operating margin profile. Indeed, SNPS operating margins have trailed Cadence by 600bp-700bp over the last 5 years, with a similar delta expected to continue over the next several years (per consensus). While M&A could help provide margin upside for SNPS with synergies, integration risks could result in less focus on elevating organic margins, in our view.

**Exhibit 11: Cadence and Synopsys operating margin profiles**

Cadence operating margins have recently been 600bp-700bp above SNPS

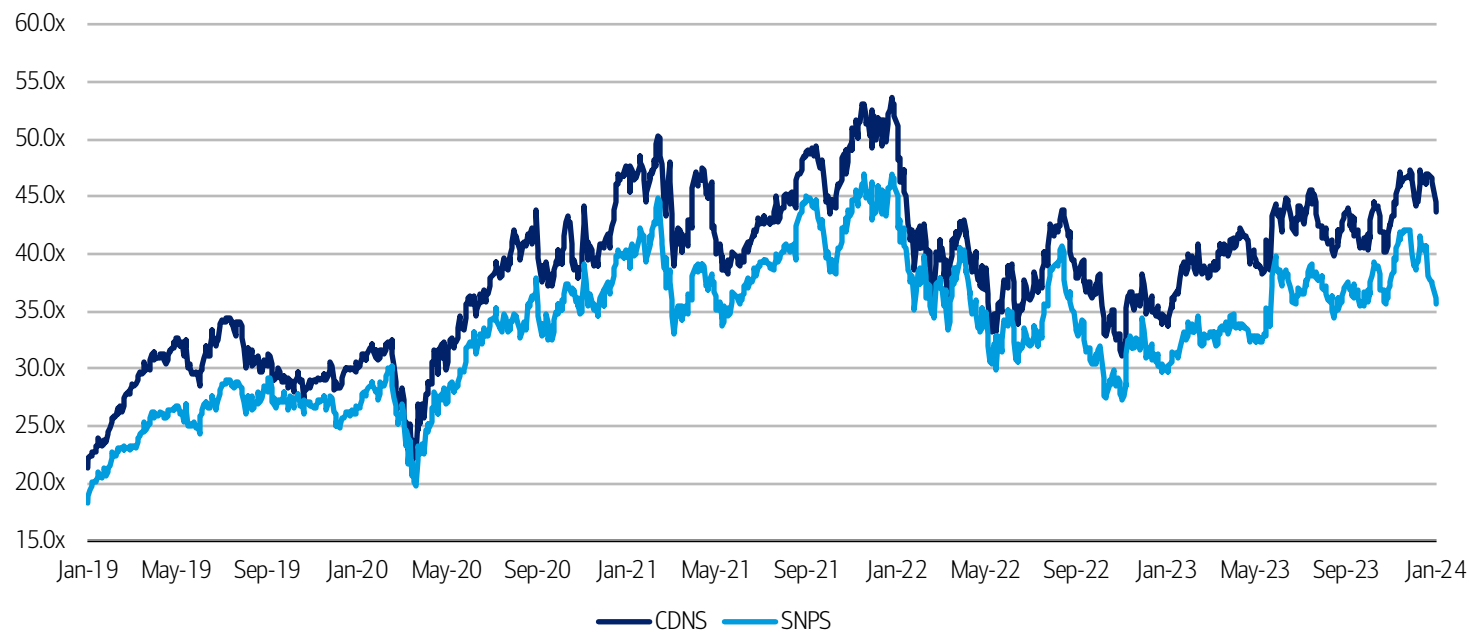


Source: BofA Global Research, Bloomberg

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**Exhibit 12: CDNS vs. SNPS historical NTM P/E trading multiple**

Cadence has traded at a 4x-5x premium to SNPS over the last 5 years



Source: Bloomberg

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## Price objective basis & risk

### Synopsys (SNPS)

Our \$650 PO is based on 40x 2025E P/E, at upper end of company's historical trading range (19x-49x), justified in our view as EDA investment accelerates as chip complexity rises.

Downside risks are: (1) Variability in IP/hardware sales creates issues in timing of revenue recognition, (2) competitors develop unique software capabilities displacing SNPS at core customers, (3) heightened geopolitical tensions lead to further restrictions on supplying firms in China with EDA technology.

Upside risks are: (1) Share gains in existing markets vs primary competitors, (2) increased government investment in semiconductor R&D and development as nations develop internal ecosystems, (3) material M&A that enables consistent margin expansion or further accelerates sales CAGR, (4) faster than expected cost improvements driving higher operating margin.

## 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



## US - Semiconductors and Semiconductor Capital Equipment Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
	Skyworks Solutions, Inc.	SWKS	SWKS US	Vivek Anya
	Teradyne	TER	TER US	Vivek Anya
	Wolfspeed Inc	WOLF	WOLF US	Vivek Anya

**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

EV / EBITDA

Basic EBIT + Depreciation + Amortization

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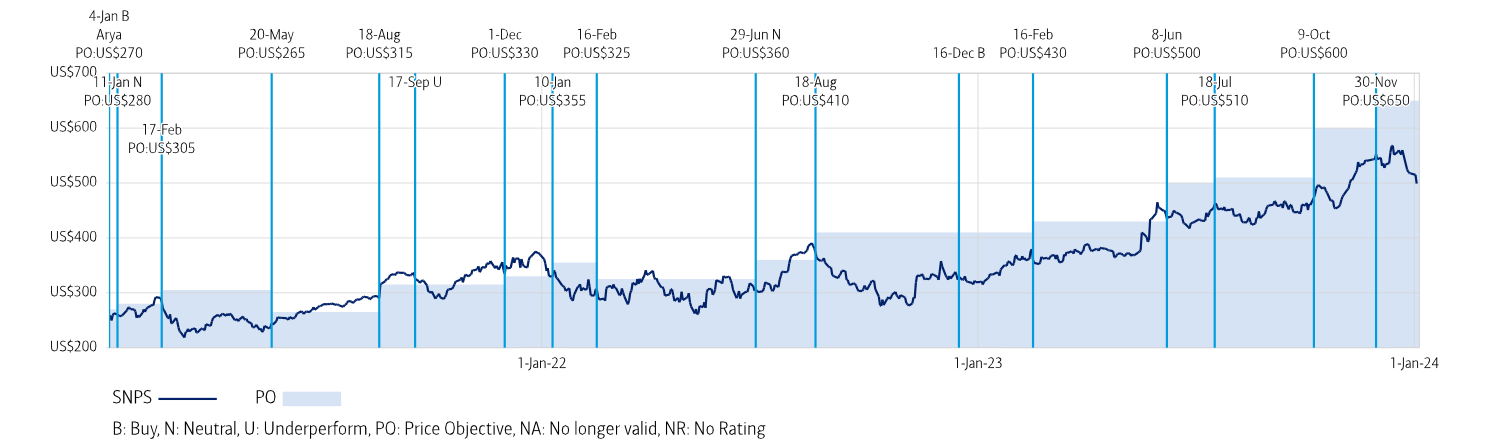
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### Equity Investment Rating Distribution: Technology Group (as of 31 Dec 2023)

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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