



# NVIDIA Corp (NVDA US)

**Upgrade to Buy: All about AI pricing power and product mix**

- ◆ AI opportunity more than offsets our previous concerns over a datacentre slowdown and rising inventory levels
- ◆ In particular, we're shocked by Nvidia's pricing power on AI chips that we see driving earnings upside, higher valuation
- ◆ Upgrade to Buy from Reduce, TP hiked to USD355 (from USD175); EPS 12%/18% above consensus in FY24e/FY25e

## Why we were too cautious on Nvidia

We're throwing in the towel on our previous Reduce and double upgrade Nvidia to Buy. We were too focused on the slowdown in datacentres, but what really surprised us was its pricing power on AI chips. We provide a detailed analysis of the AI opportunity and raise our earnings so they're now well above consensus. And while the stock has rallied a hefty 90% this year, we spell out why there's more to go.

## Nvidia's incredible AI pricing power not fully priced in

For many companies in the AI supply chain, such as TSMC's foundry business, the AI opportunity will only provide a marginal contribution. But for Nvidia it will be a significant boost as the prices of its AI chips (GPUs) are USD10,000 for the A100 and USD20,000 for the H100, more than 10x-20x higher than the average gaming GPU price of USD1,000. Hence, Nvidia does not need see too much growth in AI GPU volumes to match our expected revenue growth, given the big ASP uplift.

## Well above consensus as we quantify the AI opportunity

We might be early but we're revising up our FY1/24e and FY1/25e sales and EPS by 18%/20% and 25%/33% to USD33.37bn/USD43.14bn and USD5.11/USD7.10 to reflect our higher AI chip price and unit growth assumptions. That leaves our FY1/24e/FY1/25e EPS 12%/18% above consensus as the street has yet to significantly raise revenue or earnings despite all the positive AI sentiment. Given the aggressive rollout of ChatGPT by Microsoft as well as other AI initiatives from US and Chinese cloud service providers, we expect AI GPUs could contribute additional revenue of USD5.2bn and USD11.1bn in FY1/24e and FY1/25e, leading to our overall datacentre revenue forecasts of USD20.3bn and USD26.1bn, exceeding consensus datacentre revenue forecasts of USD17.4bn and USD22.4bn.

**More than double TP to USD355 on higher target peak PE of 50x (from 43x).** We also acknowledge further re-rating potential on Nvidia's market dominance (>80% market share) and the fact that it is a prime beneficiary of the AI trend. Hence, we raise our TP to USD355, from USD175 previously, based on a PE of 50x which is higher than one standard deviation above its 5-year average given compelling earnings upside potential and the scarcity premium as it's the biggest potential hardware supplier leveraged to AI. We also provide a valuation sensitivity which shows a further 41% upside to our valuation in our most bullish scenario.

**This is our latest report on the Disruptive Technology theme. If you want to subscribe to any of our nine big themes, [click here](#).**

## Disclosures & Disclaimer

This report must be read with the disclosures and the analyst certifications in the Disclosure appendix, and with the Disclaimer, which forms part of it.

## Equities Semiconductors & Equipment

United States



UPGRADE TO BUY

TARGET PRICE (USD)

**355.00**

PREVIOUS TARGET (USD)

**175.00**

SHARE PRICE (USD)

**264.63**

(as of 13 Apr 2023)

UPSIDE/DOWNSIDE

**+34.1%**

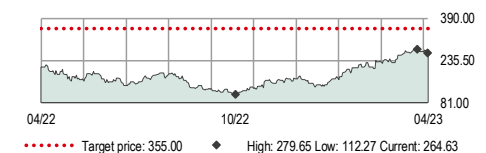
### MARKET DATA

Market cap (USDm)	653,636	Free float	96%
Market cap (USDm)	653,636	BBG	NVDA US
3M ADTV (USDm)	11,247	RIC	NVDA.OQ

### FINANCIALS AND RATIOS (USD)

Year to	01/2023a	01/2024e	01/2025e	01/2026e
HSBC EPS	3.34	5.11	7.10	8.68
HSBC EPS (prev)	3.34	4.09	5.34	na
Change (%)	0.0	24.9	33.0	na
Consensus EPS	3.27	4.55	6.00	7.49
PE (x)	79.3	51.8	37.3	30.5
Dividend yield (%)	0.1	0.1	0.1	0.1
EV/EBITDA (x)	111.5	50.8	35.6	28.4
ROE (%)	34.3	49.0	50.0	51.5

### 52-WEEK PRICE (USD)



Source: Refinitiv IBES, HSBC estimates

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**Issuer of report:** The Hongkong and Shanghai Banking Corporation Limited

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## Financials & valuation: NVIDIA Corp

Buy

### Financial statements

Year to	01/2023a	01/2024e	01/2025e	01/2026e
<b>Profit &amp; loss summary (USDm)</b>				
Revenue	26,974	33,366	43,136	52,006
EBITDA	5,769	12,458	17,476	21,597
Depreciation & amortisation	-1,544	-2,197	-2,840	-3,424
Operating profit/EBIT	4,225	10,261	14,636	18,172
Net interest	4	11	237	407
PBT	4,182	10,302	14,829	18,535
HSBC PBT	4,182	10,302	14,829	18,535
Taxation	186	-1,424	-2,076	-2,595
Net profit	4,368	8,878	12,753	15,940
HSBC net profit	8,365	12,663	17,592	21,510

### Cash flow summary (USDm)

Cash flow from operations	5,641	14,027	15,837	13,644
Capex	-1,833	-2,257	-2,918	-3,518
Cash flow from investment	7,375	-2,297	-2,958	-3,558
Dividends	-398	-394	-394	-394
Change in net debt	7,919	-10,156	-11,305	-8,512
FCF equity	3,808	11,770	12,919	10,126

### Balance sheet summary (USDm)

Intangible fixed assets	6,048	6,048	6,048	6,048
Tangible fixed assets	3,807	3,867	3,945	4,038
Current assets	23,073	31,177	44,458	46,430
Cash & others	13,296	23,452	34,757	43,268
Total assets	41,182	49,386	62,785	64,890
Operating liabilities	8,128	8,869	11,082	11,173
Gross debt	10,953	10,953	10,953	10,953
Net debt	-2,343	-12,499	-23,804	-32,315
Shareholders' funds	22,101	29,564	40,749	42,764
Invested capital	11,504	8,771	8,612	2,075

### Ratio, growth and per share analysis

Year to	01/2023a	01/2024e	01/2025e	01/2026e
<b>Y-o-y % change</b>				
Revenue	0.2	23.7	29.3	20.6
EBITDA	-48.6	116.0	40.3	23.6
Operating profit	-57.9	142.9	42.6	24.2
PBT	-57.9	146.3	43.9	25.0
HSBC EPS	-24.9	53.2	38.9	22.3

### Ratios (%)

Revenue/IC (x)	2.5	3.3	5.0	9.7
ROIC	40.2	87.2	144.8	292.5
ROE	34.3	49.0	50.0	51.5
ROA	10.2	19.6	22.4	24.4
EBITDA margin	21.4	37.3	40.5	41.5
Operating profit margin	15.7	30.8	33.9	34.9
EBITDA/net interest (x)				
Net debt/equity	-10.6	-42.3	-58.4	-75.6
Net debt/EBITDA (x)	-0.4	-1.0	-1.4	-1.5

### Per share data (USD)

EPS Rep (diluted)	1.74	3.58	5.15	6.44
HSBC EPS (diluted)	3.34	5.11	7.10	8.68
DPS	0.16	0.16	0.16	0.16
Book value	8.89	12.00	16.54	17.36

Source: Company data, HSBC estimates

Note: FY23 numbers are preliminary unaudited numbers

### Valuation data

Year to	01/2023a	01/2024e	01/2025e	01/2026e
EV/sales	23.8	19.0	14.4	11.8
EV/EBITDA	111.5	50.8	35.6	28.4
EV/IC	55.9	72.1	72.2	295.4
PE*	79.3	51.8	37.3	30.5
PB	29.8	22.1	16.0	15.2
FCF yield (%)	0.6	1.8	2.0	1.5
Dividend yield (%)	0.1	0.1	0.1	0.1

\*Based on HSBC EPS (diluted)

Source: Company data, HSBC estimates

### ESG metrics

Environmental Indicators	01/2022a	Governance Indicators	01/2023a
GHG emission intensity*	3.1	Number of board members	13
Energy intensity*	15.8	Average board tenure (years)	14.0
CO <sub>2</sub> reduction policy	Yes	Female board members (%)	23.1
<b>Social Indicators</b>		Board members' independence (%)	38.5
<b>01/2022a</b>			
Employee costs as % of revenue	n/a		
Employee turnover (%)	4.9		
Diversity policy	Yes		

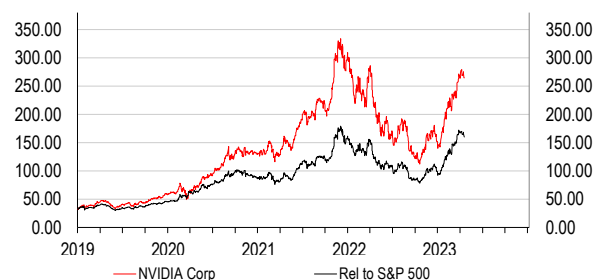
\*GHG intensity and energy intensity are measured in kg and kWh, respectively, against revenue in USD'000

Source: Company data, HSBC

### Issuer information

Share price (USD)	264.63	Free float	96%
Target price (USD)	355.00	Sector	Semiconductors
RIC (Equity)	NVDA.OQ	Country/Region	United States
Bloomberg (Equity)	NVDA US	Analyst	Frank Lee
Market cap (USDm)	653,636	Contact	+852 2996 6916

### Price relative



Note: Priced at close of 13 Apr 2023

Source: HSBC

## Why we were wrong in sticking to our cautious view on Nvidia

Nvidia's share price is up 90% year-to-date and has outperformed the NASDAQ by 74%. We got this wrong with a more cautious view when we initiated with a Reduce rating in December 2022 ([Initiate at Reduce: A tale of two narratives](#), 15 Dec 2022). However, we are now upgrading our rating on Nvidia shares to Buy despite the share price run-up this year and re-rating as we believe there's more earnings upside vs market expectations in FY24e and beyond. Overall we believe we were too cautious on Nvidia due to the following reasons:

- ◆ Overly focused on overall datacentre weakness and rising inventory levels
- ◆ Mismatch between TSMC wafer order momentum and Nvidia's sales growth
- ◆ Underestimated potential of AI earnings and a changing business model
- ◆ Expect to see further upside to sales and earnings relative to consensus earnings

### Too focused on datacentre weakness and rising inventory levels

Given Nvidia has over 60% of sales from datacentres, we saw a potential downside risk to earnings in FY1/24e as we expected to see a slowdown in overall datacentre momentum. Overall, we did see downside to FY1/24e server growth expectations, supporting our previous thesis, as we have continued to see US cloud service providers (CSP) continue to lower FY1/24e unit growth forecasts. HSBC's Asia PC and server analyst, Carol Juan, is now expecting to see an overall 2023e datacentre server unit shipment decline of 1% YoY (vs consensus estimates of 0% to +5% YoY), with most CSP vendors now looking for low-single-digit YoY growth. However, there remains debate among investors over whether there is room for further datacentre revisions going into 2Q23 or into 2H23. HSBC remains more cautious about the potential room for further weakness in datacentres, especially from CSP vendors like Microsoft which remains among the most aggressive CSPs and which has the highest server procurement target. We don't rule out a more conservative procurement policy for Microsoft into C3Q23 given its order and forecast volatility. We were also previously concerned about Nvidia's rising inventory days which continued to increase significantly QoQ to over 200 days in 4Q22. However, we now believe Nvidia should be able to more than offset the impact of weaker datacentre momentum with the strong upside momentum from its AI GPUs. The majority of its inventory build is also attributed to new AI related GPUs where there is strong demand and which should reduce the risk of a significant inventory correction.

### Mismatch between TSMC wafer order momentum and Nvidia sales growth

Another reason we were more cautious on Nvidia was due to the slower TSMC wafer order momentum, especially in 1H23 from Nvidia which we had believed was a good leading indicator of Nvidia's earnings momentum. However, we now believe the mismatch between TSMC's wafer order momentum and Nvidia's sales growth will likely to continue to grow given Nvidia's changing revenue business model and product portfolio beyond traditional gaming GPUs. The significantly higher ASP of its AI GPUs – USD10,000 for its A100 and USD20,000 for its H100 – is more 10x-20x higher than the average gaming GPU ASP of USD1,000. Hence, Nvidia does not need to see as much GPU unit growth to match its revenue growth given the big ASP uplift from its AI GPUs, nor does Nvidia need to consume as much TSMC wafer capacity. For example, assuming a gross die of 35 chips per wafer and a yield rate of 80%, each 1K wafers at TSMC can translate into 28,000 AI GPU which can then translate into potential revenue of USD280m-USD560m assuming an A100 and H100 ASP range of USD10,000 to USD20,000. We estimate that Nvidia only needs to consume about 40k-50k wafers a year at TSMC to meet Nvidia's potential FY1/24e annual AI GPU target of 1.3m units. Therefore, the AI GPU opportunity, while a significant boost to Nvidia's overall sales, is only a marginal contribution to the TSMC foundry business. Nevertheless, we do believe TSMC has seen an incremental boost of 5k-6k chip-on-wafer-on-substrate (COWOS) wafers in in FY23e for Nvidia that will be primarily be allocated for H series AI GPU.

### Underestimated potential of AI earnings and changing business model

We acknowledge we underestimated the potential of Nvidia's AI business and speed of ramp-up post Microsoft's ChatGPT launch. We believe the motivation to adopt more generative AI, especially by both China and US cloud service providers, has exceeded what we initially thought. While the overall TAM of generative AI still remains difficult to forecast, Nvidia has the highest potential leverage from a hardware perspective given the significant AI GPU ASP boost and content growth with up to 8 GPUs per generative AI server. We also expect Nvidia to be the dominant player with more than 90% market share in FY1/24e. However, we do see an opportunity for Microsoft to adopt AMD's MI300 AI APU (CPU + GPU) with its potential 2H23 product launch and potentially competitive ASP of less than USD10,000. However, we do not expect to see any meaningful contribution in FY23e to AMD and it remains too early to assess FY24e earnings contribution.

Nvidia is also now extending its revenue business model toward more downstream businesses such as its DGX product line-up, used for machine learning, which will significantly increase its ASP beyond traditional GPU ASPs. Nvidia also announced a computational lithography (cuLitho) library at its GTC 2023 keynote that can help accelerate advanced fab semiconductor manufacturing via more efficient lithography with more output and less power consumption. It is working with all the key advanced fab supply chain participants such as TSMC in fab manufacturing, ASML in lithography equipment, and Synopsys in EDA software.

### Expect to see further upside to sales and earnings relative to consensus earnings

Despite the significant share price appreciation year-to-date and positive sentiment around AI, we have not yet seen any significant consensus revenue or earnings upward revisions over the past three months. Ahead of FY1Q24e earnings, we expect Nvidia to meet their initial expectations for the quarter driven by the mix-shift in the datacentre segment towards AI GPUs.

### Exhibit 1: Q1FY24e earnings preview

(USDm)	Guidance	HSBCe	Diff	Consensus	Diff
Sales	6,500	6,628	2%	6,496	0%
QoQ %	7%	10%		7%	
Gross Profit	4,323	4,441	3%	4,323	0%
GM %	66.5%	67.0%		66.5%	
Operating income	2,543	2,662	5%	2,546	0%
OPM %	39.1%	40.2%		39.2%	

Source: Company data, HSBC estimates, Visible Alpha consensus forecasts

We are revising up our FY1/24e and FY1/25e sales and EPS by 18%/20% and 25%/33% to USD33.37bn/USD43.14bn and USD5.11/USD7.10, respectively, to reflect higher ASP and AI GPU unit growth assumptions compared to our previous assumptions. Our revised FY24e/FY25e EPS are now 12%/18% higher than consensus expectations as we now believe there still remains upside to market expectations despite the share price rally. We also introduce our full FY1/26e estimates in this note.

### Exhibit 2: HSBC estimate revisions

(USD m)	New		Old		Diff	
	FY1/24e	FY1/25e	FY1/24e	FY1/25e	FY1/24e	FY1/25e
Sales	33,366	43,136	28,250	35,880	18%	20%
- y-o-y chg	24%	29%	5%	27%		
Adjusted gross profits	22,562	29,430	18,828	24,124	20%	22%
- Adjusted GM	67.6%	68.2%	66.6%	67.2%		
Adjusted operating profits	14,164	19,475	11,368	14,736	25%	32%
- Adjusted OPM	42.4%	45.1%	40.2%	41.1%		
Adjusted Net income	12,663	17,592	10,137	13,223	25%	33%
Adjusted EPS	5.11	7.10	4.09	5.34	25%	33%
- y-o-y chg	53%	39%	23%	30%		

Source: HSBC estimates

**Exhibit 3: HSBCe vs consensus**

(USD m)	HSBCe			Consensus			Diff		
	FY1/24e	FY1/25e	FY1/26e	FY1/24e	FY1/25e	FY1/26e	FY1/24e	FY1/25e	FY1/26e
Sales	33,366	43,136	52,006	29,913	37,211	44,946	12%	16%	16%
- y-o-y chg	24%	29%	21%	11%	24%	21%			
Adjusted gross profits	22,562	29,430	35,891	19,928	25,096	30,929	13%	17%	16%
- Adjusted GM	67.6%	68.2%	69.0%	66.6%	67.4%	68.8%			
Adjusted operating profits	14,164	19,475	23,742	12,549	16,753	20,943	13%	16%	13%
- Adjusted OPM	42.4%	45.1%	45.7%	42.0%	45.0%	46.6%			
Adjusted Net income	12,663	17,592	21,510	11,259	14,871	18,550	12%	18%	16%
Adjusted EPS	5.11	7.10	8.68	4.55	6.00	7.49	12%	18%	16%
- y-o-y chg	53%	39%	22%	36%	32%	25%			

Source: HSBC estimates, Visible Alpha consensus forecasts

The overall market TAM for generative AI remains difficult to forecast but we have broken down our AI GPU assumptions into three major customer categories: Microsoft, US cloud service providers (CSP) including Amazon, Oracle, Meta, and Google, and lastly Chinese cloud providers.

Some market research firms such as Semianalysis have highlighted potential AI capex of USD100bn by assuming ChatGPT will be used in every search done by Google, which would require more than 500,000 A100 HGX servers with a total of more than four million A100 GPUs. We think that the timing or potential to reach that AI GPU TAM remains difficult to quantify, especially with the fast growing adoption of H series AI GPU in FY1/24e. Nevertheless, we do expect potentially a TAM of 162,500 AI servers in FY1/23e which implies YoY unit growth of 8% vs an FY1/22 AI server base of 150,000.

In particular, we expect Microsoft to be the biggest potential AI GPU customer for Nvidia in FY1/24e, accounting for up 31% of total AI GPUs given it is an early adopter of ChatGPT technology with its MS Office platform. However, we also see the potential for strong growth opportunities for both US CSPs and Chinese cloud providers that could help Nvidia continue to surprise the market on the upside in 2H23 or into FY1/25e.

Based on TSMC's COWOS annual capacity of 36,000 wafers, that should translate into annual production of around 1,000,000 AI GPUs (based on a gross die of 35 GPUs per wafer yield of 80%) with an additional shipment of 300,000 AI GPUs from Nvidia's inventory which was more than six months by end of FY4Q23. Therefore, we expect Nvidia to ship about 1,300,000 AI GPU units in FY1/24e which only implies YoY unit growth of 8% vs FY1/23.

However, we expect to see a significant mix shift towards the H series (H100/H800), accounting for 42% total AI GPU which carries a much higher ASP which should drive a much higher YoY increase of 25% in overall blended AI GPU ASP. We also expect to see overall AI GPI unit growth of 13% YoY in FY1/25e, or an implied unit shipment target of 1.47m units as the mix of H series continues to increase to 55% of total AI GPU shipments.

Hence, we now expect AI GPUs could collectively contribute additional revenue of USD5.2bn and USD11.1bn in FY1/24e and FY1/25e, leading to overall datacentre revenue forecasts of USD20.3bn and USD26.1bn which exceed consensus datacentre revenue forecasts of USD17.4bn and USD22.5bn by 16%/16%. In our AI GPU forecast assumptions, we have not even factored in potential revenue upside from Nvidia's increasing mix of more downstream businesses such as its DGX product line-up which will significantly increase its ASP beyond traditional GPU ASPs.

**Exhibit 4: HSBC AI GPU assumptions**

	FY1/23	FY1/24e	FY1/25e	FY1/26e	FY1/27e
AI servers	150,000	162,500	183,625	206,395	229,098
YoY %		8%	13%	12%	11%
GPUs per server	8	8	8	8	8
<b>GPUs</b>	<b>1,200,000</b>	<b>1,300,000</b>	<b>1,469,000</b>	<b>1,651,156</b>	<b>1,832,783</b>
YoY %		8%	13%	12%	11%
Nvidia wafers	43,000	46,500	52,464	58,970	65,457
Gross die per wafer	35	35	35	35	35
Yield	80%	80%	80%	80%	80%
<b>Mix units</b>					
A series (A100/A800)	600,000	400,000	293,800	165,116	91,639
H series (H100/H800)	120,000	540,000	807,950	1,073,251	1,466,227
Others	480,000	360,000	367,250	412,789	274,917
Total	1,200,000	1,300,000	1,469,000	1,651,156	1,832,783
<b>Mix units YoY</b>					
A series (A100/A800)		-33%	-27%	-44%	-45%
H series (H100/H800)		350%	50%	33%	37%
Others		-25%	2%	12%	-33%
Total					
<b>Mix %</b>					
A series (A100/A800)	50%	31%	20%	10%	5%
H series (H100/H800)	10%	42%	55%	65%	80%
Others	40%	28%	25%	25%	15%
Total	100%	100%	100%	100%	100%
<b>ASP</b>					
A series (A100/A800)	10,000	10,000	9,500	9,025	8,574
H series (H100/H800)	20,000	20,500	21,625	22,058	22,367
Others	13,760	14,448	15,893	17,085	17,940
Blended	12,504	15,593	17,767	19,511	21,013
<b>ASP YoY</b>					
A series (A100/A800)		0%	-5%	-5%	-5%
H series (H100/H800)		3%	5%	2%	1%
Others		5%	10%	8%	5%
Blended		25%	14%	10%	8%
<b>Revenue bifurcation</b>					
A series (A100/A800)	6,000	4,000	2,791	1,490	786
H series (H100/H800)	2,400	11,070	17,472	23,674	32,795
Others	6,605	5,201	5,837	7,053	4,932
<b>Datacentre revenue</b>	<b>15,005</b>	<b>20,271</b>	<b>26,100</b>	<b>32,217</b>	<b>38,512</b>
YoY %	41%	35%	29%	23%	20%
<b>Consensus</b>	<b>15,005</b>	<b>17,515</b>	<b>22,561</b>	<b>28,988</b>	<b>35,888</b>
YoY %	41%	17%	29%	28%	24%
<b>Difference vs cons</b>	<b>0%</b>	<b>16%</b>	<b>16%</b>	<b>11%</b>	<b>7%</b>

Source: HSBC estimates



**Exhibit 5: Scenario analysis**

(in USDm)	Base Case		Scenario I		% difference		Scenario II		% difference		Scenario III		% difference	
	FY1/24e	FY1/25e	FY1/24e	FY1/25e	FY1/24e	FY1/25e	FY1/24e	FY1/25e	FY1/24e	FY1/25e	FY1/24e	FY1/25e	FY1/24e	FY1/25e
Revenue	33,366	43,136	34,732	46,151	4%	7%	35,414	48,354	6%	12%	36,097	50,636	8%	17%
Adjusted GP	22,562	29,430	23,490	31,481	4%	7%	23,954	32,983	6%	12%	24,419	34,538	8%	17%
Adjusted GM	67.6%	68.2%	67.6%	68.2%			67.6%	68.2%			67.6%	68.2%		
Adjusted OP	14,164	19,475	14,763	20,816	4%	7%	15,063	21,799	6%	12%	15,363	22,817	8%	17%
Adjusted OPM	42.4%	45.1%	42.5%	45.1%			42.5%	45.1%			42.6%	45.1%		
Adjusted Net income	12,663	17,592	13,203	18,806	4%	7%	13,472	19,693	6%	12%	13,739	20,613	8%	17%
Adjusted EPS	5.11	7.10	5.33	7.59	4%	7%	5.44	7.95	6%	12%	5.54	8.32	8%	17%
<b>Assumption</b>														
GPUs (000s)	1,300	1,469	1,300	1,534	0%	4%	1,300	1,599	0%	9%	1,300	1,664	0%	13%
YoY %	8%	13%	8%	18%	0bps	500bps	8%	23%	0bps	1000bps	8%	28%	0bps	1500bps
<b>Mix units (000s)</b>														
A series	400	294	270	153	-33%	-48%	205	80	-49%	-73%	140	-	-65%	-100%
H series	540	808	670	997	24%	23%	735	1,119	36%	39%	800	1,248	48%	54%
Others	360	367	360	384	0%	4%	360	400	0%	9%	360	416	0%	13%
Total	1,300	1,469	1,300	1,534	0%	4%	1,300	1,599	0%	9%	1,300	1,664	0%	13%
<b>Mix %</b>														
A series	31%	20%	21%	10%	-1000bps	-1000bps	16%	5%	-1500bps	-1500bps	11%	0%	-2000bps	-2000bps
H series	42%	55%	52%	65%	1000bps	1000bps	57%	70%	1500bps	1500bps	62%	75%	2000bps	2000bps
Others	28%	25%	28%	25%	0bps	0bps	28%	25%	0bps	0bps	28%	25%	0bps	0bps
Total	100%	100%	100%	100%	0bps	0bps	100%	100%	0bps	0bps	100%	100%	0bps	0bps
<b>ASP (USD)</b>														
A series	10,000	9,500	10,000	9,500	0%	0%	10,000	9,500	0%	0%	10,000	9,500	0%	0%
H series	20,500	21,625	20,500	21,625	0%	0%	20,500	21,625	0%	0%	20,500	21,625	0%	0%
Others	14,448	15,893	14,448	15,893	0%	0%	14,448	15,893	0%	0%	14,448	15,893	0%	0%
Blended	15,593	17,767	16,643	18,980	7%	7%	17,168	19,586	10%	10%	17,693	20,192	13%	14%
<b>ASP YoY</b>														
A series	0%	-5%	0%	-5%			0%	-5%			0%	-5%		
H series	3%	5%	3%	5%			3%	5%			3%	5%		
Others	5%	10%	5%	10%			5%	10%			5%	10%		
Blended	25%	14%	33%	14%			37%	14%			42%	14%		
<b>Revenue bifurcation</b>														
A series	4,000	2,791	2,700	1,457	-32%	-48%	2,050	760	-49%	-73%	1,400	-	-65%	-100%
H series	11,070	17,472	13,735	21,563	24%	23%	15,068	24,205	36%	39%	16,400	26,989	48%	54%
Others	5,201	5,837	5,201	6,095	0%	4%	5,201	6,353	0%	9%	5,201	6,612	0%	13%
Datacentre revenue	20,271	26,100	21,636	29,115	7%	12%	22,319	31,318	10%	20%	23,001	33,600	13%	29%
<b>Revenue YoY</b>														
A series	-33%	-30%	-55%	-46%			-66%	-63%			-77%	-100%		
H series	361%	58%	129%	57%			151%	61%			173%	65%		
Others	-21%	12%	-13%	17%			-13%	22%			-13%	27%		
Datacentre revenue	35%	29%	261%	35%			272%	40%			283%	46%		

Source: HSBC estimates

**Exhibit 6: FY1/25e base case and scenarios versus consensus estimates**

(in USDm)	Consensus	Base case	% difference	Scenario I	% difference	Scenario II	% difference	Scenario III	% difference
Revenue	37,211	43,136	16%	46,151	24%	48,354	30%	50,636	36%
Datacentre revenue	22,561	26,100	16%	29,115	29%	31,318	39%	33,600	49%
Adjusted GM	25,096	29,430	17%	31,481	25%	32,983	31%	34,538	38%
Adjusted GM %	67.4%	68.2%		68.2%		68.2%		68.2%	
Adjusted OP	16,753	19,475	16%	20,816	24%	21,799	30%	22,817	36%
Adjusted OPM%	45.0%	45.1%		45.1%		45.1%		45.1%	
Adjusted Net income	14,871	17,592	18%	18,806	26%	19,693	32%	20,613	39%
Adjusted EPS	6.00	7.10	18%	7.59	26%	7.95	32%	8.32	39%

Source: HSBC estimates, Visible Alpha consensus forecasts

As we highlighted earlier, it is difficult to quantify the overall TAM of the AI GPU market for Nvidia but we have also conducted scenario analysis (Exhibit 5 above) assuming more aggressive AI GPU unit growth of +18% to +28% YoY in FY1/25e or implied AI GPU unit target shipment of 1.53m to 1.67m vs our base case assumption of +13% YoY unit growth. We have also assumed a high mix of H series AI GPU of 65% to 75% vs our base case of 55% mix in FY1/25e. This would imply potential additional revenue upside of 7% to 17% in FY1/25e relative to our base assumption of USD43.14bn and even more potential upside of 24% to 36% compared to the consensus forecast of USD37.2bn.

#### **Revised TP of USD355 based on a higher target PE of 50x**

Nvidia's share price has seen a significant re-rating YTD and currently trades at forward consensus FY1/25e PE of 44x, which is approaching its FY20 peak PE of 47x but below its FY21 peak PE of 60x. Our previous TP of USD175 was based on a target current PE of 43x which is in line with the stock's average PE over the FY20-FY22e period applied to our FY1/24e EPS. However, we now acknowledge further re-rating potential given Nvidia's market dominance (>80% market share) and because it is a beneficiary of the AI trend. Therefore, we are raising our TP to USD355 based on our FY1/25e EPS of USD7.10 (from FY1/24e EPS of USD4.09) and a target PE of 50x (from 43x) which is higher than 1 standard deviation above the 5-year average PE given compelling earnings upside potential and a scarcity premium as the biggest potential hardware supplier leveraged to AI. Nvidia is also transforming from a hardware GPU player to incorporate other revenue streams such as its computational lithography (cuLitho) library, a downstream DGX platform, and potential software businesses especially with its professional visualization market which we think will drive the stock to continue to re-rate back or even to exceed its previous peak PE multiples.

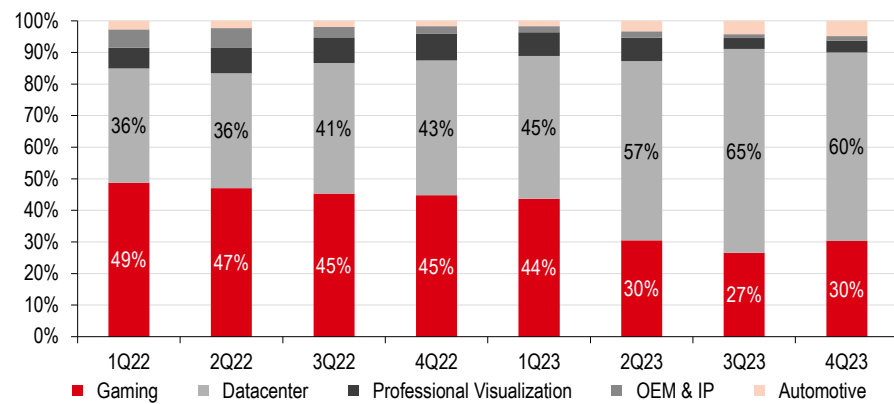
Hence, we also see the possibility of a further PE re-rating beyond our target PE of 50x as our target price sensitivity analysis (see Exhibit 7 below) implies a valuation range of USD380 to USD499 or potential upside of 7% to 41% on top of our target price assuming both a higher target FY1/25 EPS range of USD7.59-USD8.32 and PE range of 55x-60x.

#### **Exhibit 7: Valuation sensitivity analysis**

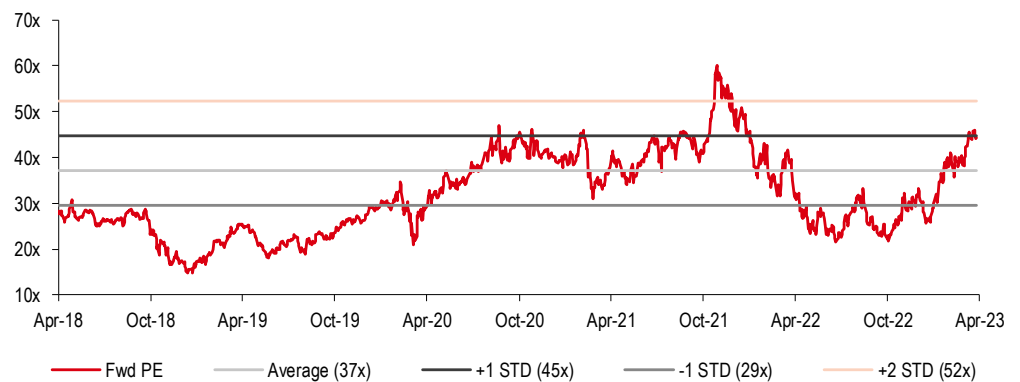
	<b>Base Case</b>	<b>Scenario I</b>	<b>Diff</b>	<b>Scenario II</b>	<b>Diff</b>	<b>Scenario III</b>	<b>Diff</b>
FY1/2025 EPS	7.10	7.59	7%	7.95	12%	8.32	17%
FY1/2025 PE multiple	50						
Implied valuation	355	380	7%	398	12%	416	17%
FY1/2025 PE multiple	55						
Implied valuation		418	18%	437	23%	458	29%
FY1/2025 PE multiple	60						
Implied valuation		456	28%	477	34%	499	41%

Source: HSBC estimates



**Exhibit 8: Revenue breakdown by platform**


Source: Company data

**Exhibit 9: NVIDIA forward PE trend**


Source: Bloomberg

**Exhibit 10: NVDA annual and quarterly P&L**

(USDm)	1Q24e	2Q24e	3Q24e	4Q24e	2024e	1Q25e	2Q25e	3Q25e	4Q25e	2025e	2026e
Sales	6,628	7,738	8,871	10,130	33,366	10,481	10,864	11,114	10,677	43,136	52,006
- YoY	-20%	15%	50%	67%	24%	58%	40%	25%	5%	29%	21%
- QoQ	10%	17%	15%	14%		3%	4%	2%	-4%		
Gross profits	4,283	5,066	5,830	6,681	21,860	6,914	7,182	7,363	7,089	28,548	34,814
Gross margin	65%	65%	66%	66%	66%	66%	66%	66%	66%	66%	67%
- YoY	-21%	74%	83%	74%	42%	61%	42%	26%	6%	31%	22%
- QoQ	12%	18%	15%	15%		3%	4%	3%	-4%		
Operating profits	1,751	2,358	2,814	3,339	10,261	3,533	3,678	3,779	3,646	14,636	18,172
OP margin	26%	30%	32%	33%	31%	34%	34%	34%	34%	34%	35%
- YoY	-6%	373%	368%	166%	143%	102%	56%	34%	9%	43%	24%
- QoQ	39%	35%	19%	19%		6%	4%	3%	-4%		
Net income	1,580	2,021	2,413	2,864	8,878	3,080	3,205	3,291	3,177	12,753	15,940
- YoY	-2%	208%	255%	103%	103%	95%	59%	36%	11%	44%	25%
- QoQ	12%	28%	19%	19%		8%	4%	3%	-3%		
Net margin	24%	26%	27%	28%	27%	29%	29%	30%	30%	30%	31%
EPS (USD)	0.64	0.82	0.97	1.16	3.58	1.24	1.29	1.33	1.28	5.15	6.44
- YoY	0%	213%	258%	103%	106%	95%	59%	36%	11%	44%	25%
- QoQ	12%	28%	19%	19%		8%	4%	3%	-3%		
Non-GAAP											
Gross profit	4,441	5,223	6,010	6,888	22,562	7,127	7,404	7,591	7,308	29,430	35,891
Gross margin	67.0%	67.5%	67.8%	68.0%	67.6%	68.0%	68.2%	68.3%	68.5%	68.2%	69.0%
Operating profit	2,662	3,246	3,808	4,448	14,164	4,710	4,896	5,024	4,845	19,475	23,742
Operating margin	40.2%	42.0%	42.9%	43.9%	42.4%	44.9%	45.1%	45.2%	45.4%	45.1%	45.7%
Net income	2,374	2,909	3,407	3,973	12,663	4,257	4,423	4,537	4,376	17,592	21,510
EPS	0.96	1.17	1.38	1.60	5.11	1.72	1.79	1.83	1.77	7.10	8.68
- YoY	-29%	129%	136%	83%	53%	79%	52%	33%	10%	39%	22%
- QoQ	9%	23%	17%	17%		7%	4%	3%	-4%		

Source: Company data, HSBC estimates

**Exhibit 11. Companies mentioned in this note**

Company name	Bloomberg ticker	Share price	HSBC rating
Amazon	AMZN US	USD102.40	NR
AMD	AMD US	USD92.09	Hold
ASML	ASML NA	USD666.20	NR
Google	GOOGL US	USD107.43	NR
Meta	META US	USD221.49	Reduce
Microsoft	MSFT US	USD289.84	NR
Oracle	ORCL US	USD95.55	NR
Synopsys	SNPS US	USD381.56	NR
TSMC	2330 TT	TWD517.00	Buy

Source: Bloomberg, HSBC estimates. Note: share prices are as at 13 Apr 2023. NR = not rated by HSBC.

## Valuation and risks

	Methodology, target price, and rating	Risks to our view
<b>NVIDIA</b> <b>NVDA US</b>  <b>Buy (Upgrade from Reduce)</b>	<p>Current price: <b>USD264.63</b></p> <p>Target price: <b>USD355.00</b></p> <p>Up/downside: <b>34.1%</b></p> <p>Our revised target price of USD355 (from USD175) is based on our target FY1/25e PE of 50x (from FY1/24e PE of 43x) applied to our FY1/25e EPS of USD7.10. Our target PE of 50x is higher than 1 standard deviation above the 5-year average PE. We believe 50x PE is reasonable given compelling earnings upside potential and a scarcity premium as the biggest potential hardware supplier leveraged to AI. We upgrade our rating on Nvidia to Buy, from Reduce, as we believe there remains more earnings upside vs market expectations in FY1/24e and beyond.</p> <p><b>Frank Lee*</b>   <a href="mailto:frank.lee@hsbc.com.hk">frank.lee@hsbc.com.hk</a>   +852 29966916</p>	<p><b>Key downside risks</b> include: 1) slower-than-expected mix shift towards higher ASP AI GPUs; 2) lower investment from CSPs towards generative AI; and 3) weaker-than-expected overall datacentre momentum.</p>

Note: Priced at close of 13 Apr 2023

\*Employed by a non-US affiliate of HSBC Securities (USA) Inc. and not registered/qualified pursuant to FINRA regulations

Source: Bloomberg, HSBC estimates

# Disclosure appendix

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Our ratings are re-calibrated against these bands at the time of any 'material change' (initiation or resumption of coverage, change in target price or estimates).

Upside/Downside is the percentage difference between the target price and the share price.

### Prior to this date, HSBC's rating structure was applied on the following basis:

For each stock we set a required rate of return calculated from the cost of equity for that stock's domestic or, as appropriate, regional market established by our strategy team. The target price for a stock represented the value the analyst expected the stock to reach over our performance horizon. The performance horizon was 12 months. For a stock to be classified as Overweight, the potential return, which equals the percentage difference between the current share price and the target price, including the forecast dividend yield when indicated, had to exceed the required return by at least 5 percentage points over the succeeding 12 months (or 10 percentage points for a stock classified as Volatile\*). For a stock to be classified as Underweight, the stock was expected to underperform its required return by at least 5 percentage points over the succeeding 12 months (or 10 percentage points for a stock classified as Volatile\*). Stocks between these bands were classified as Neutral.

\*A stock was classified as volatile if its historical volatility had exceeded 40%, if the stock had been listed for less than 12 months (unless it was in an industry or sector where volatility is low) or if the analyst expected significant volatility. However, stocks which we did not consider volatile may in fact also have behaved in such a way. Historical volatility was defined as the past month's average of the daily 365-day moving average volatilities. In order to avoid misleadingly frequent changes in rating, however, volatility had to move 2.5 percentage points past the 40% benchmark in either direction for a stock's status to change.

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<b>Hold</b>	33%	(12% of these provided with Investment Banking Services in the past 12 months)
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For the purposes of the distribution above the following mapping structure is used during the transition from the previous to current rating models: under our previous model, Overweight = Buy, Neutral = Hold and Underweight = Sell; under our current model Buy = Buy, Hold = Hold and Reduce = Sell. For rating definitions under both models, please see "Stock ratings and basis for financial analysis" above.

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### Share price and rating changes for long-term investment opportunities

#### NVIDIA Corp (NVDA.OQ) share price performance USD

#### Vs HSBC rating history



#### Rating & target price history

From	To	Date	Analyst
N/A	Reduce	14 Dec 2022	Frank Lee
Target price	Value	Date	Analyst
Price 1	136.00	14 Dec 2022	Frank Lee
Price 2	175.00	23 Feb 2023	Frank Lee

Source: HSBC

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### HSBC & Analyst disclosures

#### Disclosure checklist

Company	Ticker	Recent price	Price date	Disclosure
NVIDIA CORP	NVDA.OQ	267.58	14 Apr 2023	5, 7

Source: HSBC

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