

Nvidia	
Ticker Site BiG	NVDA
Ticker BiGlobal Trade	NVDA
Ticker BT24	NVDA
Ticker BiG Power Trade	NVDA
P/E Ratio 2019E	32.20
P/BV Ratio	10.75
EV/EBITDA	31.55

Source: BiG Research;

Price and Performance (Values in USD)	
Price	171.32
52 week high	292.76
52 week low	124.46
YTD	28.3%
Average daily volume (un)	13,318,024
Market Capitalization (mn)	104,334
Beta	1.59
Dividend	0.61
EPS	6.81

Source: BiG Research;

Analysts Consensus (last 3 months)	
Buy	26
Hold	10
Sell	4

Source: BiG Research;

Financial Data	
Sales (USD mn)	11,716
EBITDA (USD mn)	4,066
Number of Employees	9,486
ROA	25.8%
ROE	37.8%
D/E	0.21
Dividend Yield	0.37%

Source: BiG Research;

**Notes:**

All quotes were updated in Bloomberg at 09h45 of July 23<sup>rd</sup>, 2019.

**Relevant Information:**

Use the following link to view our most recent publications:

<https://www.big.pt/InformacaoMercados/TradingIdeas/Index/-1>

Use the following link to see our recommendation history:

<https://www.big.pt/pdf/Newsletters/nld.pdf>

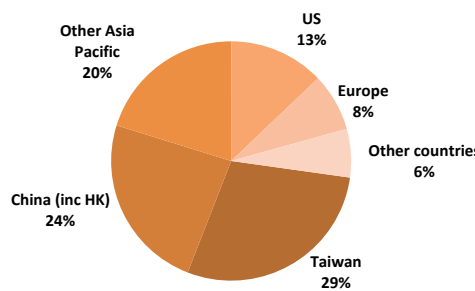
**NVIDIA (Ticker: NVDA US)**

▲ **Description**

NVIDIA is focused on the development and manufacturing of GPUs (Graphics processing units) which are used to display games, solve complex problems or even for mining cryptocurrencies. With the emergence of AI (Artificial Intelligence) and VR (Virtual Reality), NVIDIA intends now to focus on evolving the GPU into a computer brain that enables these new technologies. In the gaming sector, NVIDIA intends to develop further its streaming service GeForce NOW.

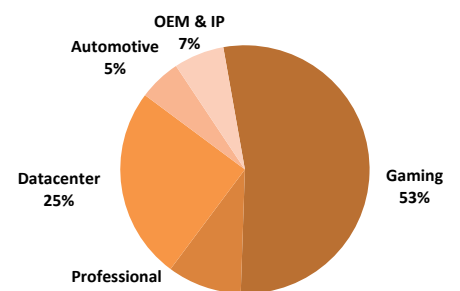
NVIDIA trades in the NYSE with a market capitalization of USD 104 bn.

**Revenues by geography % of total**



Source: Company's data

**Revenues by customer % of total**



Source: Company's data

▲ **Investment Case**

Nvidia is very well positioned in the GPU segment and it is expected to perform in line with the high growth in data centers. However its valuation is high and a significant part of that growth appears to be already discounted in the current price. We would wait for a correction in the price to consider a position in the stock.

▲ **Environmental, Social and Governance (ESG)**

**Environment:** In 2018, the company used 197,900 MWh of electricity, 320 mn liters of water and approximately 428,000 metric tons of CO2. In 2018 generated around 18 thousand tonnes of waste.

**Social:** 73% of its employees did voluntary work or held fundraising and the company committed USD 3.3 mn to charitable causes.

**Governance:** The company only has 18.9% of women in its employees.

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**Analyst:**  
João Calado, CFA

**Research:**  
research@big.pt

Income Statement (USD mn)	2019	2018	2017
Revenues	11,716	9,714	6,910
Cost of goods sold	4,545	3,892	2,847
Research & Development	2,376	1,797	1,463
Marketing, General and admin.	991	815	663
Other expenses	0	0	3
Operating Expenses	7,912	6,504	4,976
EBIT	3,804	3,210	1,934
Interest expenses	-92	14	29
EBT	3,896	3,196	1,905
Taxes	-245	149	239
Net Income	4,141	3,047	1,666
Earnings Per Share	6.81	5.09	3.08

Source: Company's data

Free Cash Flow (USD mn)	2019	2018	2017
Operational Cash Flow	3,743	3,502	1,672
Business Net Income	4,141	3,047	1,666
Depreciation and Amortization	262	199	187
Changes in Working Capital	-857	185	-679
Others	197	71	498
Investment Cash Flow	-4,097	1,278	-793
Capex	-609	-627	-174
Financial investments & others	-3,488	1,905	-619
Financial Cash Flow	-2,866	-2,544	291
Debt change	-16	-812	1,315
Share buyback	-1,579	-909	-739
Dividends	-371	-341	-261
Others	-900	-482	-24
Change in free cash flow	-3,220	2,236	1,170
Cash at the end of period	782	4,002	1,766

Source: Company's data

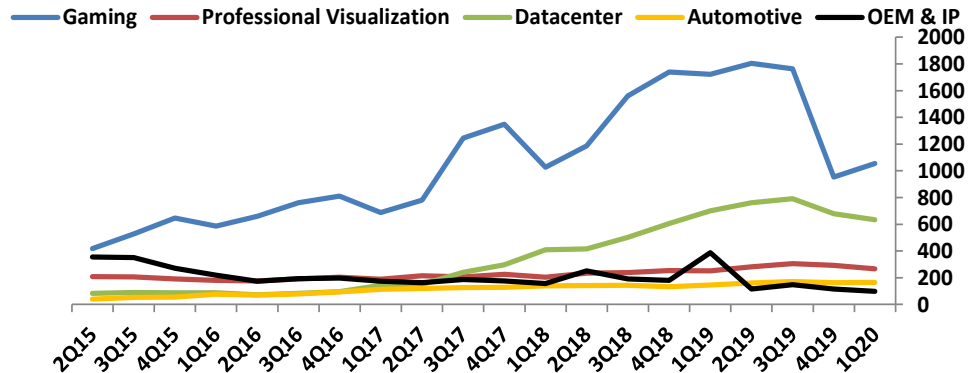
Balance Sheet (USD mn)	2019	2018
<b>Assets</b>	<b>13,292</b>	<b>11,241</b>
Cash & Equivalents	782	4,002
Short term investments	6,640	3,106
Receivables	1,424	1,265
Inventories	1,575	796
Property and equipment	1,404	997
Intangible Assets & Goodwill	663	670
Other Assets	804	405
<b>Liabilities</b>	<b>3,950</b>	<b>3,770</b>
Short term Debt	0	15
Long term Debt	1,988	1,985
Payables	511	596
Other liabilities	1,451	1,174
<b>Total Shareowner's Equity</b>	<b>9,342</b>	<b>7,471</b>
<b>Total Equity and Liabilities</b>	<b>13,292</b>	<b>11,241</b>

Source: Company's data

### Income Statement

In the 2019 fiscal year which ended on January 27 of 2019, NVIDIA grew around 21% its revenues, mostly from the rise of 25% in GPUs business, while Tegra processor revenues were flat. GeForce GPU products for gaming increased 18% while datacenter revenues increased 52%. Quadro GPUs also increased revenues by 21%. In Tegra, the increase of 15% in automotive revenue was offset by a decline of 15% in SoCs for gaming.

### Quarterly revenues by market (USD mn)



### Free Cash Flow

In the fiscal year of 2020 which will end in January 2020, the company intends to return around USD 3bn to shareholders, including dividends and share buybacks, which represent a shareholder yield of around 3%.

### Balance Sheet

NVIDIA had net cash of around USD 5.3bn at end of last fiscal year, however it announced in March of 2019 the acquisition of Mellanox for USD 6.9bn.

### First quarter earnings and guidance

Revenues in the quarter were USD 2.22bn vs est. USD 2.19bn. NVIDIA expects revenue in the second quarter to be between USD 2.5bn to USD 2.6bn, anticipating a recovery of the graphics card market. NVIDIA launched in the quarter the new GeForce GTX 1660 Ti, 1660 and 1650.

**Semiconductor industry overview by NVIDIA:** The company affirmed that in the 2H2018 hyperscalers (giant datacenter companies like Amazon or Microsoft) may have built too much inventories and consequently had to slowdown orders which impacted the 1H19. However NVIDIA anticipates the 2H19 to be better. Regarding cryptocurrency market, NVIDIA expects that from now on the contribution to revenues will be negligible.

### Management Team

**Jen-Hsun Huang (CEO and co-founder):** Huang has been the CEO of NVIDIA since its foundation in 1993. He was born in Taiwan but his family moved to US and he ended up graduating in electrical engineering from Oregon State University and completing a master degree in Stanford. He started as a microprocessor designer at AMD.

In 2019 fiscal year, Huang received from NVIDIA USD 13.6 mn, of which USD 1 mn as base salary, USD 11.6 mn in stock awards and other benefits.



Source: Company's data

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▲ **Main segments**

**GPUs (Graphic Processing Units):**

- **GeForce:** Gaming and PCs
- **GeForce NOW:** Cloud based game streaming services
- **Quadro:** Computer aided design, video editing, special effects etc.
- **Tesla:** AI deep learning and accelerated computing
- **GRID:** Cloud and datacenters
- **DGX:** AI scientists, researchers and developers

**Tegra Processor:**

- **Tegra:** processors to enable branded platforms – DRIVE and SHIELD
- **DRIVE AGX:** automotive supercomputers and software stacks for self driving capabilities
- **Clara AGX:** intelligent medical instruments
- **SHIELD:** revolutionize home entertainment, AI and gaming through mobile-cloud
- **Jetson AGX:** AI computing platform for robotics

▲ **Main markets**

**Gaming:** NVIDIA supplies the GPUs which are fundamental for the visual quality of graphics. This market is growing thanks to the rise of competitive online gaming, eSports and virtual and augmented reality. The main products are GeForce RTX and GeForce GTX GPUs.

Name	Platform	ROPs	Stream processors	Boost Frequency	Max memory size	Memory type	Price USD
GeForce RTX 2080 Ti	Desktop	76	4352	Up to 1545 MHz	11GB	GDDR6	1199
GeForce RTX 2080 Super	Desktop	63	3072	Up to 1815 MHz	8GB	GDDR6	699
GeForce RTX 2060 Super	Desktop	41	2176	Up to 1650 MHz	8GB	GDDR6	399
GeForce GTX 1660 Ti	Laptop	n.a.	1536	Up to 1770 MHz	6GB	GDDR6	280
GeForce GTX 1660	Laptop	n.a.	1408	Up to 1785 MHz	6GB	GDDR5	230

Nvidia also developed a new product, the GeForce Now which is a streaming service for games. It is still in a beta phase.

**Professional Visualization:** NVIDIA supplies GPUs for industries like the automotive, media, entertainment, architectural design, oil and gas and medical imaging, through the brand Quadro.

**Datacenter:** In AI, NVIDIA GPUs accelerate deep learning and machine learning workloads. These are fundamental for the recognition of patterns in massive amounts of data in the form of images, sounds and text. According to NVIDIA, a GPU-accelerated machine learning cluster for data science is 1/8 of the cost, 1/15 the space, 1/18 the power of traditional CPU-based cluster. Main products are the Tesla V100 GPUs and the DGX architecture based on the Tesla v100 GPUs. The GRID product enables to run graphics intensive applications remotely on a server in a datacenter.

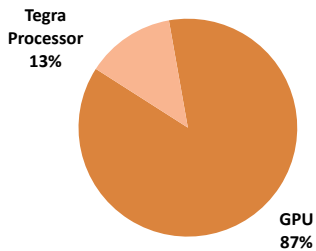
Name	Platform	ROPs	Stream processors	Boost Frequency	Max memory size	Memory type	Approximate Price USD
Quadro RTX 6000	Desktop	72	4608	n.a.	24GB	GDDR6	4000
Tesla V100 PCIe	Servers / Cloud	n.a.	5120	n.a.	32GB	HBM2	10000

**Automotive:** NVIDIA DRIVE is developing through AI, autonomous driving. NVIDIA has Audi, Mercedes-Benz, Toyota, Volvo and VW as partners.

**Tegra processors:** These are called systems on a chip (SoC) which aggregate a CPU, GPU and memory into one package for mobile devices. The CPU is manufactured by ARM and is being used in the Nintendo Switch consoles as well as in vehicles for infotainment and driving automation.

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**Revenues by segment % of total**



Source: NVIDIA



RTX 2080 Super (\$699)

Source: NVIDIA



Tesla V100 (\$10,000)

Source: NVIDIA



NVIDIA Tegra

Source: NVIDIA

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Income Statement (USD mn)	2018	2017	2016
Revenues	1,089	864	857
Cost of goods sold	389	300	302
Research & Development	360	366	323
Marketing, General and admin.	217	203	202
Other expenses	10	12	0
Operating Expenses	977	881	827
EBIT	112	-17	31
Interest expenses	-0	5	6
EBT	112	-22	24
Taxes	-22	-2	6
Net Income	134	-19	19
Earnings Per Share	2.54	-0.39	0.38

Source: Mellanox data

Free Cash Flow (USD mn)	2018	2017	2016
Operational Cash Flow	265	161	196
Business Net Income	134	-19	19
Depreciation and Amortization	102	104	98
Changes in Working Capital	-15	2	14
Others	44	75	65
Investment Cash Flow	-226	2	-664
Capex	-60	-60	-750
Financial investments & others	-166	62	85
Financial Cash Flow	-45	-150	262
Debt change	-74	-172	246
Share buyback	37	30	23
Dividends	0	0	0
Others	-8	-7	-7
Change in free cash flow	-6	14	-206
Cash at the end of period	65	70	57

Source: Mellanox data

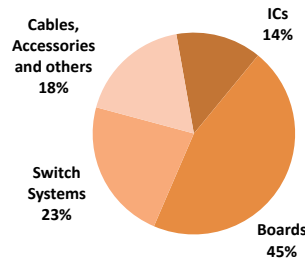
Balance Sheet (USD mn)	2018	2017
<b>Assets</b>	<b>1,587</b>	<b>1,402</b>
Cash & Equivalents	57	62
Short term investments	382	211
Receivables	151	154
Inventories	104	65
Property and equipment	105	110
Intangible Assets & Goodwill	653	701
Other Assets	135	99
<b>Liabilities</b>	<b>286</b>	<b>344</b>
Short term Debt	0	0
Long term Debt	0	73
Payables & deferred revenues	110	100
Other liabilities	176	171
<b>Total Shareowner's Equity</b>	<b>1,302</b>	<b>1,057</b>
<b>Total Equity and Liabilities</b>	<b>1,587</b>	<b>1,402</b>

Source: Mellanox data

## M&A

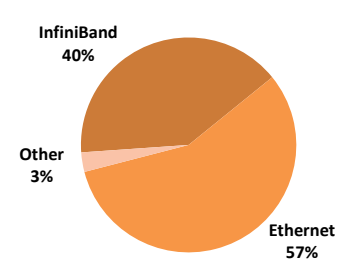
**Acquisition of Mellanox:** On March 2019, Nvidia announced the acquisition of Mellanox for USD 6.9bn. Mellanox is specialized in interconnections (based on Ethernet and InfiniBand standards). It will enable Nvidia to position itself as a major supplier of hardware to optimize datacenter-scale workloads by connecting a vast number of fast computing nodes over intelligent networking fabrics. The demand for this solution will grow with the emergence of AI and data analytics. The transaction has been approved by both board of directors but it is still waiting for regulators and Mellanox shareholders approval. We expect this transaction to be approved as it is a vertical consolidation and there are examples of similar companies with both businesses like Intel which has CPUs and interconnect solutions.

Revenues by segment % of total



Source: Mellanox data

Revenues by segment % of total



Source: Mellanox data

**InfiniBand:** This is a computer networking communications standard used for data interconnect among and within computers being also used to connect servers and storage.

## Suppliers

NVIDIA is a fabless company, which means it only focus on design of the chips and relies on Taiwan Semiconductor Manufacturing Company and Samsung Electronics for the manufacturing of silicon wafers used in GPUs and Tegra processors. After it has some independent companies that assemble and package the final product.

## Relative Valuation

Name	Country	Market Cap (mn)	Currency	P/E 2019E	YTD	Div. Yield	NetDebt/ EBITDA	Margin EBITDA
CABOT MICROELECTRONICS CORP	UNITED STATES	3,346	USD	17.1	20.8%	1.4%	3.7	27.5%
TERADYNE INC	UNITED STATES	8,028	USD	19.9	49.3%	0.8%	-0.9	28.8%
AMKOR TECHNOLOGY INC	UNITED STATES	1,857	USD	96.9	18.1%	0.0%	1.1	19.1%
INFICON HOLDING AG-REG	SWITZERLAND	1,369	CHF	23.6	14.3%	3.9%	-0.7	22.3%
ENTEGRIS INC	UNITED STATES	5,247	USD	20.1	38.8%	0.7%	1.6	25.2%
ASML HOLDING NV	NETHERLANDS	88,069	EUR	33.8	50.8%	1.0%	0.3	27.0%
MKS INSTRUMENTS INC	UNITED STATES	4,515	USD	16.6	28.6%	1.0%	1.2	24.8%
KLA CORP	UNITED STATES	22,166	USD	16.4	53.3%	2.2%	0.9	38.0%
APPLIED MATERIALS INC	UNITED STATES	47,489	USD	17.1	54.9%	1.6%	0.4	27.7%
ADVANCED MICRO DEVICES	UNITED STATES	35,531	USD	51.5	78.0%	0.0%	0.3	9.7%
INTEL CORP	UNITED STATES	229,894	USD	12.0	9.4%	2.4%	0.4	46.2%
MICRON TECHNOLOGY INC	UNITED STATES	52,088	USD	7.6	48.7%	0.0%	-0.2	60.8%
NVIDIA CORP	UNITED STATES	104,334	USD	32.2	28.3%	0.4%	-1.6	30.5%
Average exc. Nvidia				27.7	38.75%	1.25%	0.7	29.8%

Source: BiG Research

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**Risks**

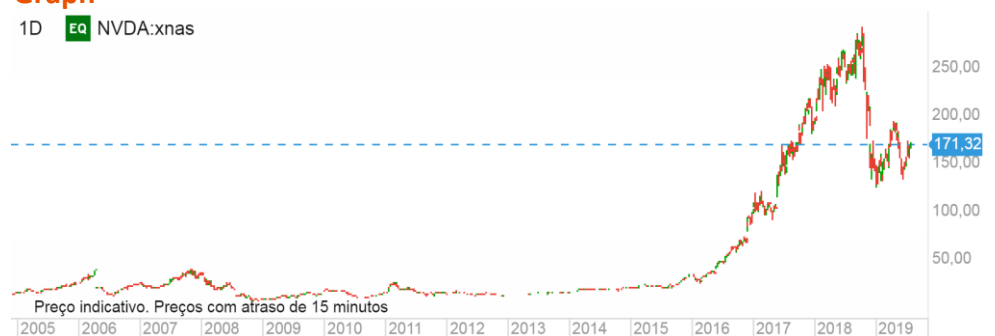
**Changes in industry difficult to predict:** The semiconductors industry is changing constantly due to the development of new technologies and shift in consumer trends. Consequently it is difficult to accurately predict these patterns and may lead to a decrease in sales if the company products fail to address the industry needs.

Rating		
Agency	Rating	Outlook
S&P	BBB+u	POS
Moody's	A3	POS
Fitch	A-	POS

Source: BiG Research

**Graph**

1D  NVDA:xnas



Source: BiGlobal Trade (partner Saxo Bank); BiG Research

**Calendar**

**August 15<sup>th</sup>, 2019:** 2Q19 earnings

**August 29<sup>th</sup>, 2019:** Ex-date dividends

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- Clarification of the qualitative terms implied in the recommendations:
  - Buy, expected absolute return above 15%;
  - Accumulate, expected absolute return between +5% and +15%;
  - Keep/Neutral, expected absolute return between -5% and +5%;
  - Reduce, expected absolute return between -5% and -15%;
  - Sell, expected absolute return below -15%;The investment framework aforementioned is merely indicative and not globally strict.
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