

Advanced Micro Devices (AMD) vs. NVIDIA

FIN 326-Fall 2019 Financial Analysis Project

By: Xian Zhao



Contents

Advanced Micro Devices (AMD) vs. NVIDIA.....	- 0 -
Client Letter	- 3 -
Introduction.....	- 4 -
Historical.....	- 5 -
Recent Developments: NVIDIA	- 7 -
Recent Developments: AMD (Advanced Micro Devices)	- 8 -
Appendix.....	- 9 -
TABLE 1-RETURN FOR AMD AND NVIDIA (OCT' 14-SEPT' 19)	- 10 -
TABLE 2-AMD-INCOME STATEMENT	- 12 -
TABLE 3-NVIDIA-INCOME STATEMENT	- 15 -
TABLE 4-AMD-BALANCE SHEET	- 18 -
TABLE 5-NVIDIA-BALANCE SHEET	- 25 -
Financial Statement Analysis	- 33 -
<u>Table 6-NVIDIA and AMD Current Ratio and Quick Ratio</u>	- 37 -
<u>Table 7-NVIDIA and AMD Debt/Equity</u>	- 37 -
Liquidity Ratios.....	- 37 -
<u>Table 8-NVIDIA and AMD Inventory, Accounts Receivable Days and Total Asset Turnover</u> -	38 -
Debt Management Ratio	- 37 -
Asset Management Ratio	- 38 -
<u>Table 9-NVIDIA and AMD Profit Margin, ROA and ROE</u>	- 39 -
Profitability Ratio.....	- 39 -
DuPont Analysis.....	- 40 -
<u>Table 10-NVIDIA and AMD DuPont Analysis.</u>	- 41 -
<u>Table 11-NVIDIA & AMD Bond Data</u>	- 42 -
<u>Table 12- NVIDIA &AMD Stock Price and Return</u>	- 43 -
CAPM & WACC.....	- 45 -
<u>Table 13-NVIDIA & AMD CAPM</u>	- 45 -
<u>Table 14-NVIDIA & AMD WACC</u>	- 47 -

Conclusion: - 47 -

Reference: - 49 -

Client Letter

Xian Zhao
West Chester University
700 South High Street
West Chester, PA 19383
Main phone: 610-909-6816
E-mail: XZ905820@wcupa.edu

September 9, 2019

Dear HR:

Today in the 21st century, computers have become an indispensable tool. Whether it is office, do pictures, games, medical, aerospace and other industries are inseparable from the computer. And now people's requirements for computers are not limited to input text, writing code, and simple entertainment this level, so the rapid development of computer technology also led to some computer-related industries, for example, in mathematical computing and processing data CPU is very important. For gamers and cartographic designers, GPUs (graphics cards) are essential, as well as a range of products such as storage technology. In this environment, there are also some very famous enterprises. The two companies I want to introduce and compare are similar in their corporate culture and products, they are the most authoritative GUP product manufacturers in the world, and every computer we use uses their products, which are NVIDIA and Advanced Micro Devices (AMD). Here's my analysis of the various aspects of these two companies. Includes financial statements, balance sheet income and statement. We can understand the differences between the two companies in electronic technology in a comprehensive way, but also a deeper understanding of the different advantages of the two companies.

I hope this is helpful, if you would like to talk further about this matter, please feel free to contact me and set up an appointment with me at (610)-909-6816. Or you may e-mail me at XZ905820@wcupa.edu. I will proceed as quickly as possible one I hear from you.

Sincerely yours,
Xian Zhao

Introduction

NVIDIA began to transform computer graphics technology 26 years ago. The booming gaming market and the continued demand for better 3D graphics in the market are driving NVIDIA to develop GPUs into the brains of computers, making a name for themselves in the intersection of virtual reality, high-performance computing and artificial intelligence. NVIDIA GPU computing has become a must-have tool for today's "Da Vinci" and "Einstein". For them, NVIDIA's creation is comparable to that of a time machine. NVIDIA revolutionized modern computer graphics technology. The GPU developed by NVIDIA in 1999 brings real-time programmable coloring to life, providing artists with a variety of palettes to create. In 2018, NVIDIA's Turing architecture and NVIDIA RTX ray-tracing technology enabled computer scientists to take another vision and pave the way for a new leap in art and realism in real-time graphics technology. For decades, NVIDIA has led the way in the field of visual computing. An NVIDIA RTX server is equipped with 40 Turing GPUs, allowing 320 users to run graphics applications simultaneously. The RTX server sits software optimized to deliver superior performance and high price/performance for the rendering, remote workstation, and cloud gaming markets. GeForce RTX has revolutionized the gaming market. Real-time ray tracing and neurography processing work together to create stunning graphics and take the realism of PC games to new heights.

AMD Radeon [™] ultra-high-performance embedded standalone GPUs to increase graphics processing performance to ultra-high levels, support 4K high-speed video, 3D visualization, and other compute-intensive graphics applications. Optimized for high-end systems such as amusement machines, arcades, medical imaging and conventional defense and aerospace applications. AMD ultra-high-performance embedded GPUs support efficient thermal design power (TDP) configurations while delivering stunning immersive visual experiences.

Brief company histories and recent developments. Whether it's gaming, virtual reality, augmented reality, artificial intelligence, or emerging cloud workloads, these applications require high performance, and AMD's expertise is to converge generation solutions. AMD Semiconductor, Inc. designs and manufactures innovative microprocessors (CPUs, GPUs, APUs, motherboard chipsets, TV card chips, etc.) and provides flash memory and low-power processor solutions for the computer, communications and consumer electronics industries, founded in 1969. AMD is committed to providing standards-based, customer-centric solutions to technology users, from businesses and government agencies to individual consumers. AMD is a global company with high-performance graphics and computing technology at the same time.

Historical

NVIDIA, founded in 1993, is headquartered in Santa Clara, California, USA. Jensen Huang is founder and CEO. In 1999, NVIDIA invented the GPU, which greatly promoted the development of the PC gaming market, redefined modern computer graphics technology, and revolutionized parallel computing. NVIDIA was listed on Nasdaq in January 1999 and sold 10 million drawing processors in May of the same year. NVIDIA invented GPU, which greatly promoted the development of the PC game market, redefined modern computer graphics technology, and revolutionized parallel computing. In 2000 it acquired the intellectual property rights of 3dfx, a generation of kings. 3dfx was one of the largest graphics processor manufacturers in the mid-1990s. NVIDIA has created close relationships with many OEMs and organizations. In February 2002, NVIDIA sold its first 100 million drawing processors. NVIDIA's most famous product line of GeForce graphics processors debuted in 1999. The GeForce product line has been expanded to cover desktop and mobile computers. For handheld devices, NVIDIA has a Tegra product line. It provides high efficiency while maintaining low power consumption. These products are typically used in wireless communication devices. On February 8, 2018, Nvidia reported fourth-quarter and full-year results. The results showed That Nvidia's full-year 2017 revenue hit a record high of \$9.71 billion, up 41% year-on-year and up 83% from profit. Nvidia earned \$4.82 per share per share for the full year, up 88% year-on-year. In the fourth quarter of 2017, Nvidia's revenue reached \$2.91 billion, up 34% year-on-year. GPU revenue rose 33% year-on-year to \$2.46 billion.

AMD: Founded in Silicon Valley in 1969 with a few dozen employees, AMD has been on the path to innovation and has been at the forefront of semiconductor products ever since. Starting with an obscure company in its inception, AMD has grown to become a global company with tens of thousands of employees and achieved breakthrough industry innovations. AMD is working hard today to develop high-performance computing and visualization products to solve the world's toughest and most interesting challenges. Today is the best time in the semiconductor industry, and we're ready to continue to innovate over the next 50 years, working to build high-performance computing and graphics technologies that will make life better. On July 24, 2006, AMD officially announced a \$5.4 billion cash and stock acquisition of ATI. On October 25th AMD announced that its acquisition of ATI had been completed and that ATI was a stand-alone brand. AMD also became the first company in PC history to offer both CPUs, GPUs, and chipsets, a milestone in PC history. In 2007, AMD (ATI) released the R600 Core. Inheriting the ATI tradition of focusing on video playback capabilities, all of the R600 series features a built-in 5.1-channel audio chip that delivers audio and video signals through the HDMI interface, and the R600, like the G80, is a full-strength DX10-enabled hardware design. With 64 US totals 320SPs, floating-point computing capabilities reach 475GFLOPS, significantly exceeding the G80 345GFLOPS level. The 512-bit loopback bus provides greater display bandwidth for the chip. A new UVD video scheme is used to support hardware decoding of VC-1 and AVC/H.264. Full support for Vista's HDMI audio and video output, the DVI-HDMI's turn interface delivers 5.1 surround audio and HDTV video signals at the same time. AMD demonstrated for the first time at the computex 2010 Taipei Computer

Show in June 2010 with its APU acceleration processor based on the CPU-GPU Fusion fusion concept. In January 2011, AMD officially released the world's first acceleration processor (APU). This is the only APU for embedded systems.

Recent Developments: NVIDIA

THE ERA OF AI, three converging forces brought about the era of AI: the availability of immense stores of data, the invention of deep learning algorithms, and the intense performance of GPU computing. New Internet Services, Like Google Assistant, have learned speech from sound. Self-driving cars use deep learning to recognize the space car inhabits and what to avoid. In, healthcare networks trained with millions of medical images can find clues in MRIs that until now can only be found through biopsies. AI will spur a wave of social progress unmatched since the industrial revolution. THE BRAIN OF AI CARS. Autonomous vehicles will modernize the \$10 trillion transportation industry. NVIDIA DRIVE™ is a scalable AI car platform that spans the entire range of autonomous driving. 225 companies around the world have adopted the platform, ranging from car companies and suppliers, to startups and research organizations. THE BRAIN OF INTELLIGENT MACHINES AND IoT, Deep learning and affordable sensors have created the conditions for a Cambrian explosion of autonomous machines — IoT with AI. NVIDIA Jetson TX2, an embedded AI supercomputer, delivers 1 teraflops of performance in a credit card-sized module. Such power will enable a new wave of automation in manufacturing, drones that can inspect hazardous places, and robots that can deliver the millions of packages shipped every day

. Recent Developments: AMD (Advanced Micro Devices)

AMD Radeon RX 5700 Series Graphics and AMD Ryzen 3000 Series Desktop Processors Worldwide Marketed.07/07/2019, AMD (NASDAQ: AMD) Announces New AMD Radeon RX 5700 Series Graphics and Third Generation AMD Ryzen desktop processor's top computer game platform is available worldwide simultaneously. Together, these products push game performance, immersive experiences, and visual fidelity to the next level. The AMD Radeon RX 5700 Series graphics card redefines the possibilities of 1440p games. The new graphics card is based on a groundbreaking new AMD RDNA game architecture and 7nm process technology that delivers superior visual fidelity, lightning-fast performance and advanced features to power the latest AAA-class and competitive games. The third-generation AMD Ryzen desktop processor is another powerful example of AMD's technological leadership, with a 12-core 24-thread design and the first high-performance 7nm processor in the consumer-grade desktop market. Designed based on the new "Zen2" microarchitecture architecture, the processor enhances multiple features while continuing the traditional high-performance "Zen" architecture, with an approximately 15% improvement in IPC (instructions per clock cycle), higher gaming performance and faster content creation.

Appendix

TABLE 1-RETURN FOR AMD AND NVIDIA (OCT' 14-SEPT' 19)

Date	AMD-Adj Close	AMD Return	NVIDIA-Adj Close	NVIDIA Return
Oct-14	2.80	-0.36%	18.77	7.32%
Nov-14	2.79	-4.30%	20.15	-3.98%
Dec-14	2.67	-3.75%	19.34	-4.24%
Jan-15	2.57	21.01%	18.52	14.90%
Feb-15	3.11	-13.83%	21.28	-4.76%
Mar-15	2.68	-15.67%	20.27	6.07%
Apr-15	2.26	0.88%	21.50	-0.32%
May-15	2.28	5.26%	21.43	-8.71%
Jun-15	2.40	-19.58%	19.57	-0.80%
Jul-15	1.93	-7.77%	19.41	12.68%
Aug-15	1.78	-3.37%	21.87	10.11%
Sep-15	1.72	23.26%	24.08	15.09%
Oct-15	2.12	11.32%	27.72	11.81%
Nov-15	2.36	21.61%	30.99	4.30%
Dec-15	2.87	-23.34%	32.33	-11.13%
Jan-16	2.20	-2.73%	28.73	7.07%
Feb-16	2.14	33.18%	30.76	14.03%
Mar-16	2.85	24.56%	35.07	-0.28%
Apr-16	3.55	28.73%	34.97	31.49%
May-16	4.57	12.47%	45.99	0.88%
Jun-16	5.14	33.46%	46.39	21.46%
Jul-16	6.86	7.87%	56.35	7.43%
Aug-16	7.40	-6.62%	60.54	11.91%
Sep-16	6.91	4.63%	67.75	3.85%
Oct-16	7.23	23.24%	70.36	29.57%
Nov-16	8.91	27.27%	91.16	15.94%
Dec-16	11.34	-8.55%	105.70	2.29%
Jan-17	10.37	39.44%	108.11	-7.05%
Feb-17	14.46	0.62%	100.49	7.48%
Mar-17	14.55	-8.59%	108.00	-4.25%
Apr-17	13.30	-15.86%	103.41	38.40%
May-17	11.19	11.53%	143.12	0.25%
Jun-17	12.48	9.05%	143.48	12.42%
Jul-17	13.61	-4.34%	161.29	4.26%
Aug-17	13.02	-2.07%	168.17	5.60%
Sep-17	12.75	-13.80%	177.59	15.68%
Oct-17	10.99	-0.91%	205.44	2.32%
Nov-17	10.89	-5.60%	210.21	-8.49%
Dec-17	10.28	33.66%	192.35	27.03%

Jan-18	13.74	-11.86%	244.34	-1.55%
Feb-18	12.11	-17.01%	240.57	-4.24%
Mar-18	10.05	8.26%	230.36	-2.89%
Apr-18	10.88	26.19%	223.71	12.13%
May-18	13.73	9.18%	250.85	-6.00%
Jun-18	14.99	22.28%	235.79	3.36%
Jul-18	18.33	37.32%	243.71	14.63%
Aug-18	25.17	22.73%	279.36	0.18%
Sep-18	30.89	-41.05%	279.85	-24.98%
Oct-18	18.21	16.97%	209.95	-22.48%
Nov-18	21.30	-13.33%	162.75	-18.23%
Dec-18	18.46	32.23%	133.08	7.68%
Jan-19	24.41	-3.61%	143.30	7.31%
Feb-19	23.53	8.46%	153.77	16.52%
Mar-19	25.52	8.27%	179.18	0.80%
Apr-19	27.63	-0.80%	180.61	-25.16%
May-19	27.41	10.80%	135.17	21.38%
Jun-19	30.37	0.26%	164.07	2.73%
Jul-19	30.45	3.28%	168.55	-0.72%
Aug-19	31.45	-2.83%	167.34	6.76%
Sep-19	30.56	-100.00%	178.65	-100.00%

TABLE 2-AMD-INCOME STATEMENT

AMD-INCOME STATEMENT	2014	2015	2016	2017	2018
Gross Profit	1,839,000,000	1,080,000,000	998,000,000	1,823,000,000	2,447,000,000
Total Revenue	5,506,000,000	3,991,000,000	4,272,000,000	5,329,000,000	6,475,000,000
Business Revenue	5,506,000,000	3,991,000,000	4,272,000,000	5,329,000,000	6,475,000,000
Other Revenue	0	0			
Cost of Revenue	-	-	-	-	-
	3,667,000,000	2,911,000,000	3,274,000,000	3,506,000,000	4,028,000,000
Cost of Goods and Services	-	-	-	-	-
	3,667,000,000	2,911,000,000	3,274,000,000	3,506,000,000	4,028,000,000
Operating Income/Expenses	-	-	-	-	-
	1,690,000,000	1,432,000,000	1,380,000,000	1,619,000,000	1,996,000,000
Selling, General and Administrative Expenses	-604,000,000	-482,000,000	-460,000,000	-511,000,000	-562,000,000
Research and Development Expenses	-	-947,000,000	-	-	-
	1,072,000,000		1,008,000,000	1,160,000,000	1,434,000,000
Other Income/Expense, Operating			88,000,000	52,000,000	0
Other Income, Operating			88,000,000	52,000,000	0
Depreciation, Amortization and Depletion	-14,000,000	-3,000,000	0		
Depreciation and Amortization	-14,000,000	-3,000,000	0		
Amortization	-14,000,000	-3,000,000	0		
Total Operating Profit/Loss	149,000,000	-352,000,000	-382,000,000	204,000,000	451,000,000
Non-Operating Income/Expenses, Total	-547,000,000	-294,000,000	-66,000,000	-135,000,000	-121,000,000
Total Net Finance Income/Expense	-174,000,000	-160,000,000	-154,000,000	-120,000,000	-103,000,000
Net Interest	-174,000,000	-160,000,000	-154,000,000	-120,000,000	-103,000,000

Income/Expense					
Interest Expense	Net of Capitalized Interest	-177,000,000	-160,000,000	-156,000,000	-126,000,000
Interest		3,000,000		2,000,000	6,000,000
Income					
Irregular Income/Expenses		-365,000,000	-129,000,000	-58,000,000	-12,000,000
Gain/Loss on Extinguishment of Debt		-61,000,000	0	-68,000,000	-12,000,000
Restructuring and Reorganization Income/Expense		-71,000,000	-129,000,000	10,000,000	0
Goodwill Impairment/Write Off		-233,000,000		0	
Impairment/Write Off/Write Down of Other Assets		0			
Litigation Income/Expense		0			
Other Irregular Income/Expenses					
Impairment/Write Off/Write Down of Capital Assets					
Other Income/Expense, Non-Operating		-8,000,000	-5,000,000	0	-6,000,000
Net Investment Income				146,000,000	3,000,000
Income from Associates, Joint Ventures and Other Participating Interests				146,000,000	3,000,000
Pretax Income		-398,000,000	-646,000,000	-448,000,000	69,000,000
Provision for Income Tax		-5,000,000	-14,000,000	-39,000,000	-19,000,000
					330,000,000
					9,000,000

Earnings from Equity Interest, Post-Tax				-10,000,000	-7,000,000	-2,000,000
Net Income from Continuing Operations		-403,000,000	-660,000,000	-497,000,000	43,000,000	337,000,000
Net Income after Extraordinary Items and Discontinued Operations		-403,000,000	-660,000,000	-497,000,000	43,000,000	337,000,000
Net Income after Non-Controlling/Minority Interests		-403,000,000	-660,000,000	-497,000,000	43,000,000	337,000,000
Net Income Available to Common Stockholders		-403,000,000	-660,000,000	-497,000,000	43,000,000	337,000,000
Diluted Net Income Available to Common Stockholders		-403,000,000	-660,000,000	-497,000,000	43,000,000	337,000,000
Discontinued Operations						
Non-Controlling/Minority Interests						
Preferred/Other Stock Distribution						
Preferred Stock Dividends						
Reported Revenue	Total	5,506,000,000	3,991,000,000	4,272,000,000	5,329,000,000	6,475,000,000
Reported Operating Profit/Loss	Total	-155,000,000	-481,000,000	-372,000,000	204,000,000	451,000,000

TABLE 3-NVIDIA-INCOME STATEMENT

NVIDIA-INCOME STATEMENT	2015	2016	2017	2018	2019
Gross Profit	2,599,477,000	2,811,000,00	4,063,000,00	5,822,000,00	7,171,000,000
		0	0	0	
Total Revenue	4,681,507,000	5,010,000,00	6,910,000,00	9,714,000,00	11,716,000,00
		0	0	0	0
Business Revenue	4,681,507,000	5,010,000,00	6,910,000,00	9,714,000,00	11,716,000,00
		0	0	0	0
Cost of Revenue	-	-	-	-	-
	2,082,030,000	2,199,000,00	2,847,000,00	3,892,000,00	4,545,000,000
		0	0	0	
Operating Income/Expenses	-	-	-	-	-
	1,840,488,000	1,933,000,00	2,126,000,00	2,612,000,00	3,367,000,000
		0	0	0	
Selling, General and Administrative Expenses	-480,763,000	-	-	-	-991,000,000
		602,000,000	663,000,000	815,000,000	
Research and Development Expenses	-	-	-	-	-
	1,359,725,000	1,331,000,00	1,463,000,00	1,797,000,00	2,376,000,000
		0	0	0	
Other Income/Expense, Operating					
Total Operating Profit/Loss	758,989,000	878,000,000	1,937,000,00	3,210,000,00	3,804,000,000
			0	0	
Non-Operating Income/Expenses, Total	-4,153,000	-	-32,000,000	-14,000,000	92,000,000
		135,000,000			
Total Net Finance Income/Expense	-18,043,000	-8,000,000	-4,000,000	8,000,000	78,000,000
Net	-18,043,000	-8,000,000	-4,000,000	8,000,000	78,000,000
Interest Income/Expense					
	-46,133,000	-47,000,000	-58,000,000	-61,000,000	-58,000,000
Interest Expense Net of Capitalized Interest					
	28,090,000	39,000,000	54,000,000	69,000,000	136,000,000
Interest Income					
Irregular Income/Expenses		-	-3,000,000	0	0
		131,000,000			

		-	-3,000,000	0	0	
Restructuring and Reorganization Income/Expense		131,000,000				
Litigation Income/Expense						
Other Irregular Income/Expenses						
Other Income/Expense, Non-Operating	13,890,000	4,000,000	-25,000,000	-22,000,000	14,000,000	
Pretax Income	754,836,000	743,000,000	1,905,000,000	3,196,000,000	3,896,000,000	
			0	0		
Provision for Income Tax	-124,249,000	-	-	-	245,000,000	
		129,000,000	239,000,000	149,000,000		
Net Income from Continuing Operations	630,587,000	614,000,000	1,666,000,000	3,047,000,000	4,141,000,000	
			0	0		
Net Income after Extraordinary Items and Discontinued Operations	630,587,000	614,000,000	1,666,000,000	3,047,000,000	4,141,000,000	
			0	0		
Net Income after Non-Controlling/Minority Interests	630,587,000	614,000,000	1,666,000,000	3,047,000,000	4,141,000,000	
			0	0		
Net Income Available to Common Stockholders	630,587,000	614,000,000	1,666,000,000	3,047,000,000	4,141,000,000	
			0	0		
Diluted Net Income Available to Common Stockholders	630,587,000	614,000,000	1,666,000,000	3,047,000,000	4,141,000,000	
			0	0		
Reported Total Revenue	4,681,507,000	5,010,000,000	6,910,000,000	9,714,000,000	11,716,000,000	
		0	0	0	0	
Reported Operating Expense	-	-	-	-	-	
	1,840,488,000	2,064,000,000	2,129,000,000	2,612,000,000	3,367,000,000	
		0	0	0		
Reported Operating Profit/Loss	758,989,000	747,000,000	1,934,000,000	3,210,000,000	3,804,000,000	
			0	0		

Reported	800,988,000	929,000,000	1,851,000,00	3,085,000,00	4,143,000,000
Normalized			0	0	
Income					
Reported Effective Tax Rate	0	0	0	0	0
Reported		1,125,000,00	2,221,000,00	3,617,000,00	4,407,000,000
Normalized		0	0	0	
Operating Profit					

TABLE 4-AMD-BALANCE SHEET

AMD-BALANCE SHEET	2014	2015	2016	2017	2018
Total Assets	3,767,000,000	3,109,000,000	3,321,000,000	3,540,000,000	4,556,000,000
	0	0	0	0	0
Total Current Assets	2,736,000,000	2,320,000,000	2,530,000,000	2,622,000,000	3,540,000,000
	0	0	0	0	0
Cash, Cash Equivalents and Short-Term Investments	1,040,000,000	785,000,000	1,264,000,000	1,185,000,000	1,156,000,000
	0		0	0	0
Cash and Cash Equivalents	805,000,000	785,000,000	1,264,000,000	1,185,000,000	1,078,000,000
			0	0	0
Cash		409,000,000	67,000,000	108,000,000	315,000,000
Cash Equivalents		376,000,000	1,197,000,000	1,077,000,000	763,000,000
			0	0	
Short Term Investments	235,000,000	0			78,000,000
Inventories	685,000,000	678,000,000	751,000,000	739,000,000	845,000,000
Raw Materials, Consumables and Supplies	40,000,000	16,000,000	11,000,000	34,000,000	134,000,000
Work-in-Process	431,000,000	482,000,000	564,000,000	468,000,000	354,000,000
Finished Goods and Merchandise	214,000,000	180,000,000	176,000,000	237,000,000	357,000,000
Trade and Other Receivables, Current	818,000,000	533,000,000	311,000,000	400,000,000	1,235,000,000
					0
Trade/Accounts Receivable, Current	818,000,000	533,000,000	311,000,000	400,000,000	1,235,000,000
					0
Gross Trade/Accounts Receivable, Current					
Allowance/Adjustments for Trade/Accounts Receivable, Current					

		193,000,000	76,000,000	95,000,000	110,000,000	109,000,000
Prepayments and Deposits, Current						
Other Current Assets			65,000,000	109,000,000	188,000,000	195,000,000
Assets Held for Sale/Discontinued Operations, Current			183,000,000	0		
Deferred Tax Assets, Current						
Deferred Costs/Assets, Current						
Total Current Assets	Non-	1,031,000,000	789,000,000	791,000,000	918,000,000	1,016,000,000
		0				0
Net Property, Plant and Equipment		302,000,000	188,000,000	164,000,000	261,000,000	348,000,000
Gross Property, Plant and Equipment		1,680,000,000	984,000,000	881,000,000	1,001,000,000	1,055,000,000
		0			0	0
		250,000,000	146,000,000	148,000,000	187,000,000	179,000,000
Properties						
Leasehold and Improvements				148,000,000	187,000,000	179,000,000
		4,000,000	1,000,000			
Land and Improvements						
Buildings and Improvements		246,000,000	145,000,000			
Machinery, Furniture and Equipment		1,416,000,000	821,000,000	714,000,000	758,000,000	798,000,000
		0				
Other Equipment		1,416,000,000	821,000,000	714,000,000	758,000,000	798,000,000
		0				
Construction in Progress and Advance Payments		14,000,000	17,000,000	19,000,000	56,000,000	78,000,000
		-	-	-	-	-
Accumulated Depreciation and Impairment		1,378,000,000	796,000,000	717,000,000	740,000,000	707,000,000
		0				

	-	-	-	-	-
Accumulated Depreciation	1,378,000,000	796,000,000	717,000,000	740,000,000	707,000,000
Net Intangible Assets	604,000,000	467,000,000	521,000,000	528,000,000	515,000,000
Gross Goodwill and Other Intangible Assets	1,008,000,000	936,000,000	521,000,000	528,000,000	515,000,000
Goodwill	320,000,000	278,000,000	289,000,000	289,000,000	289,000,000
Intangibles other than Goodwill	688,000,000	658,000,000	232,000,000	239,000,000	226,000,000
Software and Technology	477,000,000	447,000,000	232,000,000	239,000,000	226,000,000
Trademarks and Patents	37,000,000	37,000,000			
Research and Development	6,000,000	6,000,000			
Customer Relationships	168,000,000	168,000,000			
Licenses and Rights					
Other Intangible Assets					
Accumulated Amortization and Impairment	-404,000,000	-	469,000,000		
Accumulated Amortization of Intangible Assets	-404,000,000	-	407,000,000		
Accumulated Amortization of Intangibles other than Goodwill	-404,000,000	-	407,000,000		
	-36,000,000	-36,000,000			

Accumulated Amortization of Trademarks and Patents						
		-201,000,000	-			
Accumulated Amortization of Software and Technology			204,000,000			
		0	0			
Accumulated Amortization of Research and Development						
		-167,000,000	-			
Accumulated Amortization of Customer Relationships			167,000,000			
			-62,000,000			
Accumulated Impairment of Intangible Assets						
			-62,000,000			
Accumulated Impairment of Other Intangible Assets						
Total	Long	0		59,000,000	58,000,000	58,000,000
Term Investments						
Term	Long Equity			59,000,000	58,000,000	58,000,000
Investments						
		0				
Investment in Financial Assets, Non-Current						
Other	Non-	125,000,000	134,000,000	47,000,000	71,000,000	95,000,000
Current Assets						
Total Liabilities		3,580,000,00	3,521,000,00	2,905,000,00	2,929,000,00	3,290,000,00
		0	0	0	0	0
Total	Current	1,440,000,00	1,403,000,00	1,346,000,00	1,486,000,00	1,984,000,00
Liabilities		0	0	0	0	0
Payables		1,052,000,00	901,000,000	1,098,000,00	1,131,000,00	1,588,000,00
and	Accrued	0		0	0	0

Expenses, Current						
Trade and Other Payables, Current	672,000,000	574,000,000	847,000,000	837,000,000	1,089,000,000	
	415,000,000	279,000,000	440,000,000	384,000,000	528,000,000	
Trade/Accounts Payable, Current						
Amount Due to Related Parties/Shareholders, Current	218,000,000	245,000,000	383,000,000	412,000,000	533,000,000	
	39,000,000	50,000,000	24,000,000	41,000,000	28,000,000	
Other Payable, Current						
Accrued Expenses, Current	380,000,000	327,000,000	251,000,000	294,000,000	499,000,000	
Financial Liabilities, Current	177,000,000	230,000,000	0	70,000,000	136,000,000	
Current Debt and Capital Lease Obligation	177,000,000	230,000,000	0	70,000,000	136,000,000	
	177,000,000	230,000,000	0	70,000,000	136,000,000	
Current Debt						
Current Portion of Long Term Debt and Capital Lease						
Provisions, Current	139,000,000	95,000,000	116,000,000	206,000,000	236,000,000	
Provision for Employee Entitlements, Current	139,000,000	95,000,000	116,000,000	206,000,000	236,000,000	
Other Current Liabilities		45,000,000	69,000,000	57,000,000	24,000,000	
Deferred Liabilities, Current	72,000,000	53,000,000	63,000,000	22,000,000		
	72,000,000	53,000,000	63,000,000	22,000,000		
Deferred Income/Customer						

Advances/Billings in Excess of Cost, Current						
Liabilities Held for Sale/Discontinued Operations, Current			79,000,000	0		
Total Current Liabilities	Non-	2,140,000,00	2,118,000,00	1,559,000,00	1,443,000,00	1,306,000,00
		0	0	0	0	0
Financial Liabilities, Current		2,035,000,00	2,032,000,00	1,435,000,00	1,325,000,00	1,114,000,00
	Non-	0	0	0	0	0
Long Term Debt and Capital Lease Obligation		2,035,000,00	2,032,000,00	1,435,000,00	1,325,000,00	1,114,000,00
		0	0	0	0	0
Long Term Debt		2,035,000,00	2,032,000,00	1,435,000,00	1,325,000,00	1,114,000,00
		0	0	0	0	0
				1,459,000,00		
Notes Payables, Non-Current				0		
Bank/Credit Facilities, Non-Current				0		
				-24,000,000		
Other Loans, Non-Current						
Other Current Liabilities		105,000,000	86,000,000	124,000,000	118,000,000	192,000,000
Tax Liabilities, Non-Current						
Deferred Liabilities, Non-Current						
Total Equity		187,000,000	-	416,000,000	611,000,000	1,266,000,00
			412,000,000			0
Equity Attributable to Parent Stockholders		187,000,000	-	416,000,000	611,000,000	1,266,000,00
			412,000,000			0
Paid in Capital		6,838,000,00	6,902,000,00	8,224,000,00	8,365,000,00	8,710,000,00
		0	0	0	0	0

Capital Stock	6,957,000,000	7,025,000,000	8,343,000,000	8,473,000,000	8,760,000,000
	0	0	0	0	0
	8,000,000	8,000,000	9,000,000	9,000,000	10,000,000
Common Stock					
	8,000,000	8,000,000	9,000,000	9,000,000	10,000,000
Common Stock, with Par Value					
	6,949,000,000	7,017,000,000	8,334,000,000	8,464,000,000	8,750,000,000
Additional Paid in Capital/Share Premium	0	0	0	0	0
	-119,000,000	-	-	-	-50,000,000
Treasury Stock		123,000,000	119,000,000	108,000,000	
Retained Earnings/Accumulated Deficit	-	-	-	-	-
	6,646,000,000	7,306,000,000	7,803,000,000	7,760,000,000	7,436,000,000
	0	0	0	0	0
	-5,000,000	-8,000,000	-5,000,000	6,000,000	-8,000,000
Reserves/Accumulated Comprehensive Income/Losses					
Non-Controlling/Minority Interests					
Common Shares Issued	776,000,000	792,397,854	935,000,000	967,000,000	1,005,000,000
					0
Common Shares Outstanding	776,000,000	792,397,854	935,000,000	967,000,000	1,005,000,000
					0
Common Shares Treasury	12,000,000	14,000,000	14,000,000	12,000,000	5,000,000

TABLE 5-NVIDIA-BALANCE SHEET

NVIDIA-BALANCE SHEET		2015	2016	2017	2018	2019
Total Assets		7,201,368,000	7,370,000,000	9,841,000,000	11,241,000,000	13,292,000,000
Total	Current Assets	5,713,297,000	6,053,000,000	8,536,000,000	9,255,000,000	10,557,000,000
	Cash, Cash Equivalents and Short-Term Investments	4,623,339,000	5,037,000,000	6,798,000,000	7,108,000,000	7,422,000,000
	Cash and Cash Equivalents	496,654,000	596,000,000	1,766,000,000	4,002,000,000	782,000,000
	Short Term Investments	4,126,685,000	4,441,000,000	5,032,000,000	3,106,000,000	6,640,000,000
	Available-for-Sale Securities, Current	4,126,685,000	4,441,000,000	5,032,000,000	3,106,000,000	6,640,000,000
	Inventories	482,893,000	418,000,000	794,000,000	796,000,000	1,575,000,000
	Raw Materials, Consumables and Supplies	156,846,000	105,000,000	252,000,000	227,000,000	613,000,000
	Work-in-Process	91,778,000	103,000,000	176,000,000	192,000,000	238,000,000
	Finished Goods and Merchandise	234,269,000	210,000,000	366,000,000	377,000,000	724,000,000
	Trade and Other Receivables, Current	473,637,000	505,000,000	826,000,000	1,265,000,000	1,424,000,000
	Trade/Accounts Receivable, Current	473,637,000	505,000,000	826,000,000	1,265,000,000	1,424,000,000
	Gross Trade/Accounts Receivable, Current	490,619,000	516,000,000	839,000,000	1,278,000,000	
	Allowance/Adjustments for Trade/Accounts	-16,982,000	-11,000,000	-13,000,000	-13,000,000	

Receivable, Current						
		70,174,000	93,000,000	118,000,000	86,000,000	136,000,000
Prepayments and Deposits, Current						
	Deferred	63,254,000	0			
Tax Assets, Current						
Other						
Current Assets						
Deferred						
Costs/Assets, Current						
Total	Non-	1,488,071,000	1,317,000,000	1,305,000,000	1,986,000,000	2,735,000,000
Current Assets						
Net		557,282,000	466,000,000	521,000,000	997,000,000	1,404,000,000
Property, Plant and Equipment						
	Gross	1,179,257,000	1,100,000,000	1,191,000,000	1,737,000,000	2,171,000,000
Property, Plant and Equipment						
		411,455,000	405,000,000	407,000,000	764,000,000	820,000,000
Properties						
		218,496,000	218,000,000	218,000,000	218,000,000	218,000,000
Land and Improvements						
		19,268,000	13,000,000	13,000,000	348,000,000	339,000,000
Buildings and Improvements						
		173,691,000	174,000,000	176,000,000	198,000,000	263,000,000
Leasehold and Improvements						
		711,711,000	655,000,000	727,000,000	914,000,000	1,216,000,000
Machinery, Furniture and Equipment						
		314,392,000	301,000,000	300,000,000	452,000,000	700,000,000
Furniture, Fixtures and Office Equipment						
		397,319,000	354,000,000	427,000,000	462,000,000	516,000,000
Other Equipment						
		27,610,000	12,000,000	29,000,000	31,000,000	107,000,000
Construction in Progress and Advance Payments						

	28,481,000	28,000,000	28,000,000	28,000,000	28,000,000
Leased Property, Plant and Equipment					
	-	-	-	-740,000,000	-767,000,000
Accumulated Depreciation and Impairment	621,975,000	634,000,000	670,000,000		
	-	-	-	-740,000,000	-767,000,000
Accumulated Depreciation	621,975,000	634,000,000	670,000,000		
Net Intangible Assets	839,893,000	784,000,000	722,000,000	670,000,000	663,000,000
Gross Goodwill and Other Intangible Assets	1,256,291,000	1,273,000,000	1,279,000,000	1,282,000,000	1,304,000,000
	618,179,000	618,000,000	618,000,000	618,000,000	618,000,000
Goodwill					
	638,112,000	655,000,000	661,000,000	664,000,000	686,000,000
Intangibles other than Goodwill					
	448,873,000	462,000,000	468,000,000	469,000,000	491,000,000
Trademarks and Patents					
	189,239,000	193,000,000	193,000,000	195,000,000	195,000,000
Other Intangible Assets					
Licenses and Rights					
	-	-	-	-612,000,000	-641,000,000
Accumulated Amortization and Impairment	416,398,000	489,000,000	557,000,000		
	-	-	-	-612,000,000	-641,000,000
Accumulated Amortization of Intangible Assets	416,398,000	489,000,000	557,000,000		
	-	-	-	-612,000,000	-641,000,000
Accumulated Amortization of Intangibles other than Goodwill	416,398,000	489,000,000	557,000,000		
	-	-	-	-432,000,000	-453,000,000
Accumulated Amortization of	282,336,000	337,000,000	390,000,000		

Trademarks and Patents					
	-	-	-	-180,000,000	-188,000,000
Accumulated Amortization of Other Intangible Assets	134,062,000	152,000,000	167,000,000		
Accumulated Amortization of Licences and Rights					
Other Non-Current Assets	90,896,000	67,000,000	62,000,000	319,000,000	668,000,000
Total Long Term Investments					
Other Investments, Non-Current					
Prepayments and Deposits, Non-Current					
Prepayments, Non-Current					
Deposits Paid for Business and Fixed Assets, Non-Current					
Deferred Tax Assets, Non-Current					
Total Liabilities	2,783,386,000	2,901,000,000	4,079,000,000	3,770,000,000	3,950,000,000
Total Current Liabilities	896,030,000	2,438,000,000	1,819,000,000	1,153,000,000	1,329,000,000
Payables and Accrued Expenses, Current	435,296,000	437,000,000	696,000,000	884,000,000	1,176,000,000
Trade and Other Payables, Current	298,575,000	301,000,000	518,000,000	658,000,000	622,000,000
Trade/Accounts	293,223,000	296,000,000	485,000,000	596,000,000	511,000,000

Payable, Current						
		2,542,000	3,000,000	21,000,000	20,000,000	20,000,000
Interest Payable, Current						
		2,810,000	2,000,000	4,000,000	33,000,000	91,000,000
Taxes Payable, Current						
				8,000,000	9,000,000	
Other Payable, Current						
		136,721,000	136,000,000	178,000,000	226,000,000	554,000,000
Accrued Expenses, Current						
Financial Liabilities, Current			1,500,000,000	827,000,000	15,000,000	0
Current Debt and Capital Lease Obligation			1,500,000,000	827,000,000	15,000,000	0
Current Portion of Long Term Debt and Capital Lease			1,500,000,000	827,000,000	15,000,000	0
Current Portion of Long Term Debt			1,500,000,000	827,000,000	15,000,000	0
Convertible Loans/Debentures, Current Portion of LT Debt			1,500,000,000	827,000,000	15,000,000	0
Deferred Liabilities, Current		292,735,000	322,000,000	85,000,000	53,000,000	92,000,000
		292,735,000	322,000,000	85,000,000	53,000,000	92,000,000
Deferred Income/ Customer Advances/Billings in Excess of Cost, Current						
Other Current Liabilities		167,999,000	179,000,000	211,000,000	201,000,000	61,000,000
Total Current Liabilities	Non-	1,887,356,000	463,000,000	2,260,000,000	2,617,000,000	2,621,000,000
Financial		1,398,428,000	17,000,000	1,989,000,000	1,985,000,000	1,988,000,000

Liabilities, Current	Non-	00		00	0	0
Term Debt and Capital Obligation	Long Debt and Lease	1,398,428,00	10,000,000	1,989,000,00	1,985,000,00	1,988,000,00
Long Term Debt		1,384,342,00	0	1,983,000,00	1,985,000,00	1,988,000,00
Convertible Debentures/Loans, Non-Current		1,384,342,00	0			1,988,000,00
Notes Payables, Non-Current				1,983,000,00	1,985,000,00	
Capital Obligations, Current	Lease Non-	14,086,000	10,000,000	6,000,000		
Derivative and Hedging Liabilities, Non-Current			7,000,000			
Provisions, Non-Current		7,428,000	1,000,000		12,000,000	20,000,000
Provision for Employee Entitlements, Non-Current					12,000,000	20,000,000
Provision for Asset Retirement Obligation/Site Restoration and Rehabilitation, Non-Current		7,428,000	1,000,000			
Tax Liabilities, Current	Non-	232,307,000	301,000,000	141,000,000	18,000,000	19,000,000
Deferred Liabilities, Current	Tax Non-	232,307,000	301,000,000	141,000,000	18,000,000	19,000,000

Deferred Liabilities, Non-Current	107,838,000	44,000,000	4,000,000	24,000,000	67,000,000
	107,838,000	44,000,000	4,000,000	15,000,000	46,000,000
Deferred Income/ Customer Advances/Billings in Excess of Cost, Non-Current					
Other Deferred Liabilities, Non-Current				9,000,000	21,000,000
Payables and Accrued Expenses, Non-Current	120,961,000	78,000,000	106,000,000	576,000,000	513,000,000
Trade and Other Payables, Non-Current	120,961,000	78,000,000	106,000,000	576,000,000	513,000,000
	120,961,000	78,000,000	96,000,000	559,000,000	513,000,000
Taxes Payable, Non-Current					
Other Payables, Non-Current			10,000,000	17,000,000	
Other Non-Current Liabilities	20,394,000	22,000,000	20,000,000	2,000,000	14,000,000
Total Equity	4,417,982,000	4,469,000,000	5,762,000,000	7,471,000,000	9,342,000,000
Equity Attributable to Parent Stockholders	4,417,982,000	4,469,000,000	5,762,000,000	7,471,000,000	9,342,000,000
Paid in Capital	461,261,000	123,000,000	- 330,000,000	- 1,298,000,000	- 3,211,000,000
Capital Stock	3,855,846,000	4,171,000,000	4,709,000,000	5,352,000,000	6,052,000,000
Common Stock	754,000	1,000,000	1,000,000	1,000,000	1,000,000
Common Stock, with Par Value	754,000	1,000,000	1,000,000	1,000,000	1,000,000
Preferred Stock	0	0	0	0	0

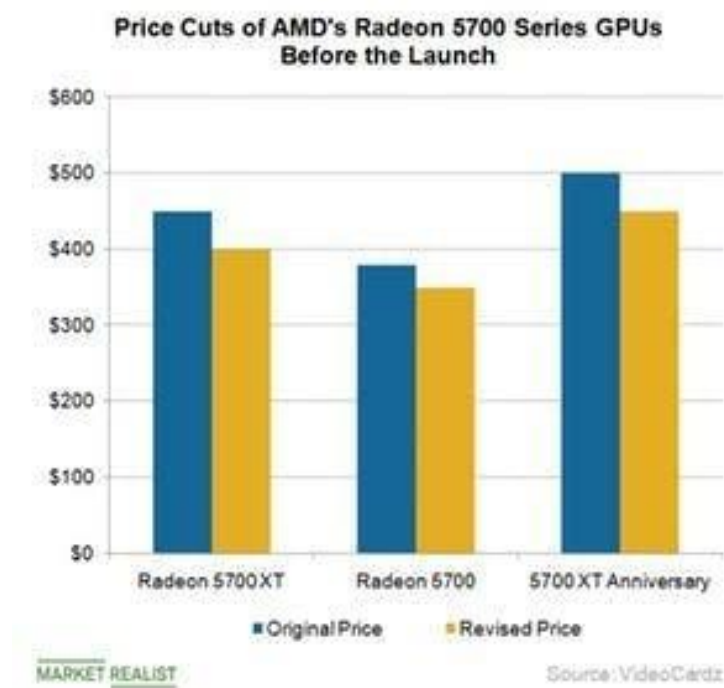
	3,855,092,000	4,170,000,000	4,708,000,000	5,351,000,000	6,051,000,000
Additional Paid in Capital/Share Premium					
	-	-	-	-	-
Treasury Stock	3,394,585,000	4,048,000,000	5,039,000,000	6,650,000,000	9,263,000,000
Retained Earnings/Accumulated Deficit	3,948,877,000	4,350,000,000	6,108,000,000	8,787,000,000	12,565,000,000
Reserves/Accumulated Comprehensive Income/Losses	7,844,000	-4,000,000	-16,000,000	-18,000,000	-12,000,000
Common Shares Issued	544,913,000	538,000,000	585,000,000	606,000,000	606,000,000
Common Shares Outstanding	544,913,000	538,000,000	585,000,000	606,000,000	606,000,000
Common Shares Treasury	213,959,000	242,000,000	283,000,000	326,000,000	0

Financial Statement Analysis

AMD and Nvidia's financial earnings contrast sharply. Nvidia has made significant progress in revenue growth and profitability, while AMD's computing and graphics divisions have stagnated and continued to lose money. AMD's performance this year is in stark contrast to the expectations and beliefs of its supporters and investors. AMD has launched a war with Polaris architecture GPUs as its main weapon and Nvidia, not just for PC users and gamers, but also for investors to regain confidence in AMD. Adm's financial position is not as optimistic as NVIDIA's, according to the company's recent earnings reports.

It's not optimistic, but AMD's last-minute move surprised NVIDIA. In July 2019, the game world will see the war between GPUs, but it's likely that we'll only see two separate GPU giants, Nvidia and AMD. On the E3 on June 10, AMD announced that July 7 will be an important day in its history as it will launch the industry's first 7nm gaming CPU and GPU, which says the 7nm Navi GPU will have a price and performance advantage over Nvidia's mid-range RTX 2070 GPU. The announcement pushed AMD shares to a 13-year high. Less than a month later, on July 2nd Nvidia announced an upgrade to its Turing-based VERSION of the RTX GPU, which improved performance by an average of 15% compared to the standard version of the same price. This new Super series is superior to AMD's Radeon RX 5700 series in terms of performance and price. It seems AMD is ready for this. On July 5, two days before the Launch of the Nvidia GPU, it cut the price of the Radeon RX 5700 series by \$50, offsetting the impact of the Nvidia "Super" version, according to foreign media. In June, AMD said its first Navi 10 would include two game GPUs-- the Radeon RX 5700 and 5700 XT, as well as a

special 50th anniversary edition. At the time, it priced the GPUs \$450, \$380 and \$500, respectively. However, a report by VideoCardz says AMD has reduced the price of its RX 5700 XT and anniversary version by \$50 to \$400 and \$450, respectively, while the RX 5700 has been reduced by \$30 to \$350. The rumor sent Nvidia shares down 1.55 per cent on July 5. These price cuts will once again bring price and performance benefits to AMD's RX 5700 series GPUs, even surpassing Nvidia's upcoming super GPUs. On the E3, AMD says its Radeon RX 5700 XT performs better in game performance than Nvidia's mid-range RTX 2070 GPU and is \$50 less expensive. However, AMD's GPUs lack real-time ray-tracing technology from The Vita RTX GPU.



However, ray tracing has not yet been widely adopted, so this technical disadvantage should not have any impact on the sales of the RX 5700 GPU. To maintain its price and performance advantage, Nvidia has introduced the RTX 2060, 2070 and 2080 GPUs. The RTX 2060 Super GPU costs \$50 more than the standard version. In response to Nvidia's super GPU,

AMD reduced the price of its RX 5700 XT by \$50. If we combine these two performance assessments, we can conclude that AMD's RTX 5700 XT GPU will provide better performance than NVIDIA's RTX 2060 Super (except for ray-tracing technology) for the equivalent of \$399. AMD's RX 5700 graphics card went on sale on July 7, while Nvidia's RTX 2060 Super and 2070 Super cards were available on July 9. The mid-range GPU segment will show fierce competition in July. The ultimate winner of this price war will be gamers, who will perform better with less. Nvidia strategically launches its mid-range super card near AMD's 7nm Navi card to mitigate the latter's competitive impact in the mid-market.

Price War Between AMD's and NVIDIA's GPUs		
AMD GPUs	Competing NVIDIA GPUs	Price
Radeon 5700	RTX 2060	\$349
Radeon 5700 XT	RTX 2060 Super	\$399
5700 XT Anniversary	-	\$449
-	RTX 2070, 2070 Super	\$499
Radeon VII	RTX 2080, 2080 Super	\$699

MARKET REALIST Source: Companies' Websites

Nvidia set a release date for its high-end RTX 2080 Super card on July 23rd, priced at \$699. The company has been rolling out this card because it will not face competitive pressure from AMD's graphics cards in this area. AMD's only high-end GPU, the Radeon VII (\$699), matches the performance of the Nvidia Standard RTX 2080 GPU. Nvidia's RTX 2080 Super Card will offer a 15% performance improvement at the same price, providing a better price/performance ratio. AMD is touting its upcoming products. Its 7Nm Navi GPU has been the subject of rumors since last year. It confirmed its Navi GPU on Computex 2019 on May 27 and announced it on E3 on June 10. Nvidia remained silent on the news of the Super GPU lineup until July 2. Nvidia's super GPU trailer is planned to be released to spoil AMD's Navi

debut and steal some of the limelight. It deliberately retains its additional performance gains, giving it the opportunity to roll out a refreshed version against AMD. It may launch a new super GPU lineup within one to two months of its announcement. AMD's GPU shipments grew from strong demand in the laptop space, especially gaming notebooks. AMD went further after the launch of its first graphics card in July. As one of the market front-market leaders, Nvidia was snapped up by AMD in the second quarter of 2019. However, in addition to integrating graphics processors and laptop graphics chips, it still dominates the discrete desktop graphics card market. AMD's share of the discrete desktop graphics market was 32.1% in the second quarter of 2019, according to Jon Peddie. Nvidia continues to dominate with a 67.9 per cent market share. However, Nvidia has been in trouble since October 2018 when the encryption bubble burst. Despite the losses, the company's share price quickly "rebounded" as it focused on high-demand markets such as automotive, artificial intelligence, data centers and professional visualization. Many institutional investors have also increased their stakes in Nvidia. The company's shares are up about 25.8 percent so far this year.

Liquidity Ratios

Table 6-NVIDIA and AMD Current Ratio and Quick Ratio

	Current Assets	Current Liabilities	Inventory	Current Ratio	Quick Ratio
NVIDIA					
2015	\$5,713,297,000	\$896,030,000	\$482,893,000	6.38	5.84
2016	\$6,053,000,000	\$2,438,000,000	\$418,000,000	2.48	2.31
2017	\$8,536,000,000	\$1,819,000,000	\$794,000,000	4.69	4.26
2018	\$9,255,000,000	\$1,153,000,000	\$796,000,000	8.03	7.34
AMD					
2015	\$2,320,000,000	\$1,403,000,000	\$678,000,000	1.65	1.17
2016	\$2,530,000,000	\$1,346,000,000	\$751,000,000	1.88	1.32
2017	\$2,622,000,000	\$1,486,000,000	\$739,000,000	1.76	1.27
2018	\$3,540,000,000	\$1,984,000,000	\$845,000,000	1.78	1.36

Debt Management Ratio

Table 7-NVIDIA and AMD Debt/Equity

	Total Debt	Total Equity	Debt/Equity
NVIDIA			
2015	\$2,783,386,000	\$4,417,982,000	0.63
2016	\$2,901,000,000	\$4,469,000,000	0.65
2017	\$4,079,000,000	\$5,762,000,000	0.71
2018	\$3,770,000,000	\$7,471,000,000	0.50
AMD			
2015	\$3,521,000,000	\$-412,000,000	(8.55)
2016	\$2,905,000,000	\$416,000,000	6.98
2017	\$2,929,000,000	\$611,000,000	4.79
2018	\$3,290,000,000	\$1,266,000,000	2.60

Asset Management Ratio

Table 8-NVIDIA and AMD Inventory, Accounts Receivable Days and Total Asset Turnover

	COGS	Inventory	Accounts Receivable	Sales
NVIDIA				
2015	\$-2,082,030,000	\$482,893,000	\$473,637,000	\$4,681,507,000
2016	\$-2,199,000,000	\$418,000,000	\$505,000,000	\$5,010,000,000
2017	\$-2,847,000,000	\$794,000,000	\$826,000,000	\$6,910,000,000
2018	\$-3,892,000,000	\$796,000,000	\$1,265,000,000	\$9,714,000,000
AMD				
2015	\$-2,911,000,000	\$678,000,000	\$533,000,000	\$3,991,000,000
2016	\$-3,274,000,000	\$751,000,000	\$311,000,000	\$4,272,000,000
2017	\$-3,506,000,000	\$739,000,000	\$400,000,000	\$5,329,000,000
2018	\$-4,028,000,000	\$845,000,000	\$1,235,000,000	\$6,475,000,000
	Total Assets	Inventory Turnover	Accounts Receivable Days	Total Asset Turnover
NVIDIA				
2015	\$7,201,368,000	(4.31)	36.93	0.65
2016	\$7,370,000,000	(5.26)	36.79	0.68
2017	\$9,841,000,000	(3.59)	43.63	0.70
2018	\$11,241,000,000	(4.89)	47.53	0.86
AMD				
2015	\$3,109,000,000	(4.29)	48.75	1.28
2016	\$3,321,000,000	(4.36)	26.57	1.29
2017	\$3,540,000,000	(4.74)	27.40	1.51
2018	\$4,556,000,000	(4.77)	69.62	1.42

Profitability Ratio

Table 9-NVIDIA and AMD Profit Margin, ROA and ROE

	Net Income	Sales	Total Asset	Total Equity
NVIDIA				
2015	\$1509672000	\$4,681,507,000	\$7,201,368,000	\$4,417,982,000
2016	\$614000000	\$5,010,000,000	\$7,370,000,000	\$4,469,000,000
2017	\$1666000000	\$6,910,000,000	\$9,841,000,000	\$5,762,000,000
2018	\$3047000000	\$9,714,000,000	\$11,241,000,000	\$7,471,000,000
AMD				
2015	\$-660000000	\$3,991,000,000	\$3,109,000,000	\$-412,000,000
2016	\$-487000000	\$4,272,000,000	\$3,321,000,000	\$416,000,000
2017	\$50000000	\$5,329,000,000	\$3,540,000,000	\$611,000,000
2018	\$339000000	\$6,475,000,000	\$4,556,000,000	\$1,266,000,000
	Profit Margin	ROA	ROE	
NVIDIA				
2015	0.32	0.21	0.34	
2016	0.12	0.08	0.14	
2017	0.24	0.17	0.29	
2018	0.31	0.27	0.41	
AMD				
2015	(0.17)	(0.21)	1.60	
2016	(0.11)	(0.15)	(1.17)	
2017	0.01	0.01	0.08	
2018	0.05	0.07	0.27	

DuPont Analysis

DuPont Analysis uses the relationship between several major financial ratios to analyze the financial position of a business in a comprehensive manner. It is a classic method used to evaluate the profitability and shareholder equity return level of the company and evaluate the performance of the company from a financial point of view. Its basic idea is to break down the return on net assets of enterprises into multiple financial ratios, which helps to analyze the business performance of enterprises in depth. The return on net assets is the starting point and core of the whole analysis system. The level of this indicator reflects the size of the investor's net asset profitability. The return on net assets is determined by the rate of return on sales, the turnover rate of total assets and the multiplier of equity. The equity factor indicates the degree of liability of the enterprise. The larger the indicator, the higher the liability of the enterprise, which is the inverse of the equity ratio of assets. The total asset return is the product of sales profit margin and total asset turnover rate, is the comprehensive reflection of the enterprise's sales achievement and asset operation, in order to improve the total asset return, we must increase the sales revenue and reduce the capital occupation. The turnover rate of total assets reflects the comprehensive ability of the enterprise's assets to achieve sales revenue. In the analysis, it is necessary to analyze the reasonable structure of enterprise assets, that is, the structural ratio relationship between current assets and long-term assets. At the same time, we should analyze the efficiency index of the use of assets such as current asset turnover rate, inventory turnover rate, accounts receivable turnover rate, etc., and find out the exact reason for the change in the turnover rate of total assets

Table 10-NVIDIA and AMD DuPont Analysis.

	ROA	ROE	Total Asset/Total Equity	DuPont Identity
NVIDIA				
2015	0.21	0.34	1.63	0.12
2016	0.08	0.14	1.65	0.02
2017	0.17	0.29	1.71	0.08
2018	0.27	0.41	1.50	0.17
AMD				
2015	(0.21)	1.60	1.63	(0.55)
2016	(0.15)	(1.17)	1.65	0.28
2017	0.01	0.08	1.71	0.00
2018	0.07	0.27	1.50	0.03

From DuPont analysis data, NVIDIA's ROE from 2015 to 2018 is positive, while AMD's ROE in 2016 is negative. According to the 2015 NVIDIA and AMD ROE, AMD's ROE value is much higher than NVIDIA's, indicating that AMD's profitability was greater in 2015. Using the DuPont identity value, we can know that NVIDIA from 2015 to 2018 is on the rise, while AMD is the overall trend of decline, to increase the return on total assets, increase or decrease sales revenue, reduce the amount of capital occupied.

Table 11-NVIDIA & AMD Bond Data

Issuer Name	Maturity	Price	Yield	Amount Outstanding (\$ Million)	MV Debt	Weight	WA YTM
AMD	08/15/2022	111.500	3.686%	37.00	\$ 41.26	0.000012325	0.0000454%
AMD	08/15/2022	112.750	2.762%	346784.00	\$ 390,998.96	0.116814713	0.3226422%
AMD	07/01/2024	104.000	4.420%	231000.00	\$ 240,240.00	0.071774018	0.3172412%
AMD	09/01/2026	400.000	- 18.135%	678973.00	\$ 2,715,892.00	0.811398944	- 14.7147198%
				Total	\$ 3,347,172.22	1	-14.07%
Issuer Name	Maturity	Price	Yield	Amount Outstanding (\$ Million)	MV Debt	Weight	WA YTM
NVIDIA	09/16/2021	100.529	1.90%	1000000.00	\$ 1,005,290.00	0.488104371	0.92837%
NVIDIA	09/16/2026	105.429	2.32%	1000000.00	\$ 1,054,290.00	0.511895629	1.18504%
				Total	\$ 2,059,580.00	1	2.11%

Table 12- NVIDIA &AMD Stock Price and Return

Date	NVIDIA		AMD		S&P 500		Risk Free
	NVIDIA Adj Close	NVIDIA Return	AMD Adj Close	AMD Return	S&P Adj Close	S&P Return	
2019/8/1	167.3443	-0.72%	31.4500	3.28%	2926.4600	-1.81%	-0.1520%
2019/7/1	168.5531	2.73%	30.4500	0.26%	2980.3799	1.31%	0.1087%
2019/6/1	164.0676	21.38%	30.3700	10.80%	2941.7600	6.89%	0.5570%
2019/5/1	135.1718	-25.16%	27.4100	-0.80%	2752.0601	-6.58%	-0.5654%
2019/4/1	180.6149	0.80%	27.6300	8.27%	2945.8301	3.93%	0.3219%
2019/3/1	179.1779	16.52%	25.5200	8.46%	2834.3999	1.79%	0.1482%
2019/2/1	153.7733	7.31%	23.5300	-3.61%	2784.4900	2.97%	0.2444%
2019/1/1	143.2964	7.68%	24.4100	32.23%	2704.1001	7.87%	0.6332%
2018/12/1	133.0788	-18.23%	18.4600	-13.33%	2506.8501	-9.18%	-0.7990%
2018/11/1	162.7515	-22.48%	21.3000	16.97%	2760.1699	1.79%	0.1476%
2018/10/1	209.9547	-24.98%	18.2100	-41.05%	2711.7400	-6.94%	-0.5976%
2018/9/1	279.8533	0.18%	30.8900	22.73%	2913.9800	0.43%	0.0357%
2018/8/1	279.3619	14.63%	25.1700	37.32%	2901.5200	3.03%	0.2488%
2018/7/1	243.7101	3.36%	18.3300	22.28%	2816.2900	3.60%	0.2953%
2018/6/1	235.7875	-6.00%	14.9900	9.18%	2718.3701	0.48%	0.0403%
2018/5/1	250.8506	12.13%	13.7300	26.19%	2705.2700	2.16%	0.1783%
2018/4/1	223.7055	-2.89%	10.8800	8.26%	2648.0500	0.27%	0.0226%
2018/3/1	230.3600	-4.24%	10.0500	-17.01%	2640.8701	-2.69%	-0.2268%
2018/2/1	240.5652	-1.55%	12.1100	-11.86%	2713.8301	-3.89%	-0.3305%
2018/1/1	244.3427	27.03%	13.7400	33.66%	2823.8101	5.62%	0.4565%
2017/12/1	192.3528	-8.49%	10.2800	-5.60%	2673.6101	3.43%	0.2818%
2017/11/1	210.2093	2.32%	10.8900	-0.91%	2584.8401	0.37%	0.0309%
2017/10/1	205.4411	15.68%	10.9900	-13.80%	2575.2600	2.22%	0.1830%
2017/9/1	177.5867	5.60%	12.7500	-2.07%	2519.3601	1.93%	0.1595%
2017/8/1	168.1704	4.26%	13.0200	-4.34%	2471.6499	0.05%	0.0046%
2017/7/1	161.2923	12.42%	13.6100	9.05%	2470.3000	1.93%	0.1598%
2017/6/1	143.4768	0.25%	12.4800	11.53%	2423.4099	0.48%	0.0400%
2017/5/1	143.1177	38.40%	11.1900	-15.86%	2411.8000	1.16%	0.0960%
2017/4/1	103.4096	-4.25%	13.3000	-8.59%	2384.2000	0.91%	0.0754%
2017/3/1	108.0000	7.48%	14.5500	0.62%	2362.7200	-0.04%	-0.0032%
2017/2/1	100.4868	-7.05%	14.4600	39.44%	2363.6399	3.72%	0.3048%
2017/1/1	108.1115	2.29%	10.3700	-8.55%	2278.8701	1.79%	0.1478%

2016/12/1	105.6953	15.94%	11.3400	27.27%	2238.8301	1.82%	0.1504%
2016/11/1	91.1611	29.57%	8.9100	23.24%	2198.8101	3.42%	0.2804%
2016/10/1	70.3582	3.85%	7.2300	4.63%	2126.1499	-1.94%	-0.1633%
2016/9/1	67.7480	11.91%	6.9100	-6.62%	2168.2700	-0.12%	-0.0103%
2016/8/1	60.5373	7.43%	7.4000	7.87%	2170.9500	-0.12%	-0.0102%
2016/7/1	56.3528	21.46%	6.8600	33.46%	2173.6001	3.56%	0.2920%
2016/6/1	46.3948	0.88%	5.1400	12.47%	2098.8601	0.09%	0.0076%
2016/5/1	45.9892	31.49%	4.5700	28.73%	2096.9500	1.53%	0.1268%
2016/4/1	34.9742	-0.28%	3.5500	24.56%	2065.3000	0.27%	0.0225%
2016/3/1	35.0727	14.03%	2.8500	33.18%	2059.7400	6.60%	0.5340%
2016/2/1	30.7574	7.07%	2.1400	-2.73%	1932.2300	-0.41%	-0.0345%
2016/1/1	28.7272	-11.13%	2.2000	- 23.34%	1940.2400	-5.07%	-0.4330%
2015/12/1	32.3267	4.30%	2.8700	21.61%	2043.9399	-1.75%	-0.1473%
2015/11/1	30.9928	11.81%	2.3600	11.32%	2080.4099	0.05%	0.0042%
2015/10/1	27.7196	15.09%	2.1200	23.26%	2079.3601	8.30%	0.6665%
2015/9/1	24.0849	10.11%	1.7200	-3.37%	1920.0300	-2.64%	-0.2231%
2015/8/1	21.8726	12.68%	1.7800	-7.77%	1972.1801	-6.26%	-0.5371%
2015/7/1	19.4110	-0.80%	1.9300	- 19.58%	2103.8401	1.97%	0.1630%
2015/6/1	19.5666	-8.71%	2.4000	5.26%	2063.1101	-2.10%	-0.1768%
2015/5/1	21.4329	-0.32%	2.2800	0.88%	2107.3899	1.05%	0.0870%
2015/4/1	21.5007	6.07%	2.2600	- 15.67%	2085.5100	0.85%	0.0707%
2015/3/1	20.2707	-4.76%	2.6800	- 13.83%	2067.8899	-1.74%	-0.1461%
2015/2/1	21.2831	14.90%	3.1100	21.01%	2104.5000	5.49%	0.4463%
2015/1/1	18.5238	-4.24%	2.5700	-3.75%	1994.9900	-3.10%	-0.2624%
2014/12/1	19.3439	-3.98%	2.6700	-4.30%	2058.8999	-0.42%	-0.0350%
2014/11/1	20.1462	7.32%	2.7900	-0.36%	2067.5601	2.45%	0.2022%
2014/10/1	18.7724	5.91%	2.8000	- 17.89%	2018.0500	2.32%	0.1913%
2014/9/1	17.7252	-4.72%	3.4100	- 18.23%	1972.2900	-1.55%	-0.1302%
2014/8/1	18.6037	11.14%	4.1700	6.65%	2003.3700	3.77%	0.3085%
2014/7/1	16.7385		3.9100		1930.6700		

CAPM & WACC

Table 13-NVIDIA & AMD CAPM

	Beta	Risk Free Average Return	S&P 500 Average Return	Expected Return (CAPM)	CAPM Annual Return
NVIDIA	2.01978722 4	0.0572%	0.74%	1.4423%	17.3077%
AMD	2.99964505 8	0.0572%	0.74%	2.1142%	25.3710%
My data is from 8/1/2014 to 8/12/2019					

Capital Asset Model (CAPM), which focuses on the relationship between the expected rate of return on assets and risk assets in the securities market and how equilibrium prices are formed, is the backbone of the price theory of modern financial markets and is widely used in the field of investment decision-making and corporate finance. The capital asset pricing model assumes that all investors invest according to Markowitz's asset selection theory, and that the estimates of expected returns, variances are identical, allowing investors to borrow freely. Based on this assumption, the focus of the capital asset pricing model research is to explore the quantitative relationship between risk assets returns and risks, that is, how much return investors should receive in order to compensate for a particular level of risk.

$$E(r_i) = r_f + \beta_{im}(E(r_m) - r_f)$$

The size of the risk premium depends on the size of the beta value. The higher the beta value, the higher the risk to a single security, the higher the compensation. AMD's beta value is greater than NVIDIA's beta value, which can indicate that AMD is taking more risk than

NVIDIA, and AMD's final return is greater than NVIDIA. CAPM has a very simple conclusion: there is only one reason why investors get higher returns: investing in risky stocks. The beta factor reflects the sensitivity of a security or portfolio to market changes, and when there is a good grasp of predicting the arrival of a bull market, those securities or portfolios with high beta coefficients should be selected. These high-beta-factor securities will multiply market yields, resulting in higher returns. Instead, when the bear market comes, you should choose those with low beta factors or combinations to reduce losses from the market's decline.

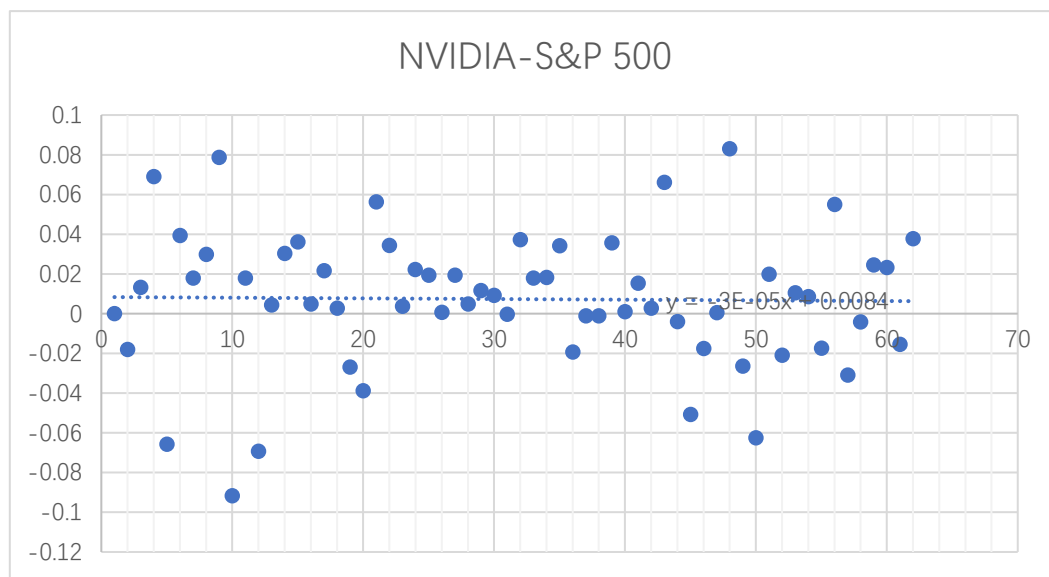


Figure 1-NVIDIA & S&P 500

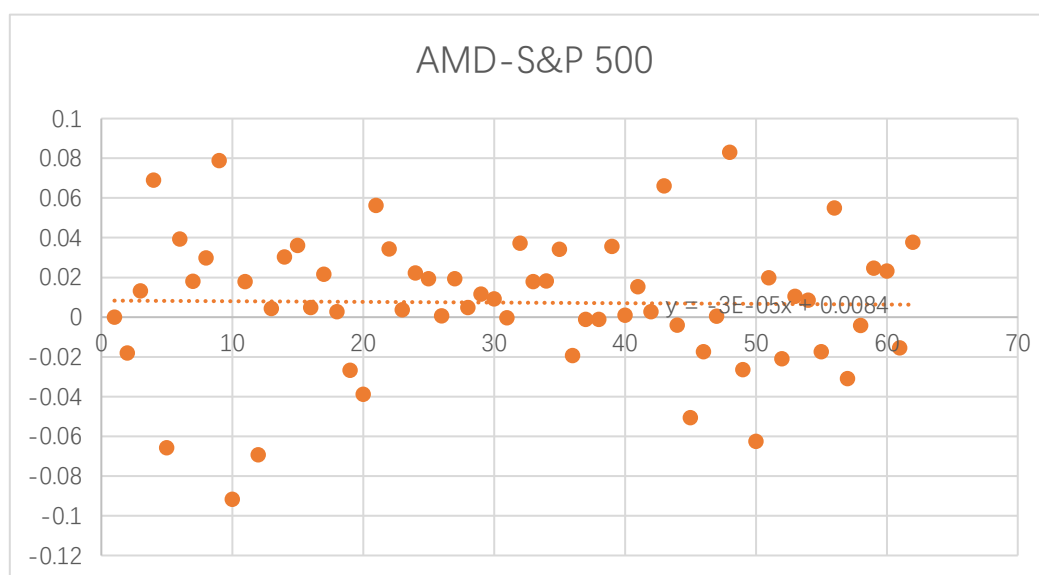


Figure 2- AMD-S&P 500

Weighted average cost of capital (WACC) is a method of calculating the company's capital cost according to the weighted average of the total capital sources of various types of capital. When measuring the expected cost of capital, we use the market value of each component, the particularity of the financing method, and the difference between its cost and common equity bonds.

Table 14-NVIDIA & AMD WACC

	Market Price Per Share	Share of outstanding	MV Debt
NVIDIA	\$210.18	612000000	\$3,347,172.22
AMD	\$40.70	440100000	\$2,059,580.00
	MV Equity	MV Assets	
NVIDIA	\$128,630,160,000.00	\$3,347,172.22	
AMD	\$17,912,070,000.00	\$2,059,580.00	
	We	Re	Wd
NVIDIA	38429.5016	17.31%	1.000E+00
AMD	8696.9528	25.37%	1
	Eff. Tax	Rd	WACC
NVIDIA	-3.48%	-14.07%	665113.58%
AMD	-12.76%	2.11%	220652.68%

Conclusion:

Through the analysis and comparison of each data of AMD and NVIDIA, the electronics industry is growing faster and more important in other industries. AMD and NVIDIA have made very important contributions with the development of artificial AI technology. AMD's

CPU technology is already able to compete with the CPU leader Intel, while NVIDIA has reached its limits in GPU technology. They really do to serve people with high technology. Back in terms of market value and finance between the two companies, we can see that NVIDIA is generally higher than AMD, especially in terms of stock prices and market earnings in 2018. Because NVIDIA has improved its graphics performance, it has helped both gamers and regular users.

Reference:

NVIDIA Income Statement, Balance Sheet, and Cash Flow

<https://www.morningstar.com/stocks/xnas/nvda/financials>

AMD Income Statement, Balance Sheet, and Cash Flow

<https://www.morningstar.com/stocks/xnas/amd/financials>

NVIDIA Historical Data

<https://finance.yahoo.com/quote/NVDA/history?period1=1417496400&period2=1575262800>

[https://finance.yahoo.com/quote/NVDA/history?period1=1417496400&period2=1575262800](https://finance.yahoo.com/quote/NVDA/history?period1=1417496400&period2=1575262800&interval=1mo&filter=history&frequency=1mo)

AMD Historical Data

<https://finance.yahoo.com/quote/AMD/history?period1=1417496400&period2=1575262800>

[https://finance.yahoo.com/quote/AMD/history?period1=1417496400&period2=1575262800](https://finance.yahoo.com/quote/AMD/history?period1=1417496400&period2=1575262800&interval=1mo&filter=history&frequency=1mo)

NVIDIA Bond Data

<http://finra-markets.morningstar.com/BondCenter/Results.jsp>

AMD Bond Data

<http://finra-markets.morningstar.com/BondCenter/Results.jsp>

About NVIDIA

<https://www.nvidia.com/en-us/about-nvidia/>

About AMD

<https://www.amd.com/zh-hans/corporate/about-amd>

NVIDIA Picture

<https://twitter.com/nvidia>

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<https://logoeps.com/amd-logo-vector/5397/>

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