NVIDIA CORP
Form 10-K
February 21, 2019
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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

[x] ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended January 27, 2019

OR

[_] TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

Commission file number: 0-23985

NVIDIA CORPORATION
(Exact name of registrant as specified in its charter)

Delaware	94-3177549
(State or other jurisdiction of Incorporation or Organization)	(I.R.S. Employer Identification No.)

2788 San Tomas Expressway
Santa Clara, California 95051
(408) 486-2000
(Address, including zip code, and telephone number, including area code, of principal executive offices)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Name of each exchange on which registered
Common Stock, $0.001 par value per share	The Nasdaq Global Select Market

Securities registered pursuant to Section 12(g) of the Act:
None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ý No o

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes o No ý

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ý No o

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ý No o

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant’s knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. o

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See definitions of “large accelerated filer”, “accelerated filer”, “smaller reporting company”, and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	Accelerated filer	Non-accelerated filer	Smaller reporting company	Emerging growth company
x	o	o	o	o

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. o

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes o No ý

The aggregate market value of the voting stock held by non-affiliates of the registrant as of July 27, 2018 was approximately $146.66 billion (based on the closing sales price of the registrant's common stock as reported by the Nasdaq Global Select Market on July 27, 2018). This calculation excludes 26 million shares held by directors and executive officers of the registrant. This calculation does not exclude shares held by such organizations whose ownership exceeds 5% of the registrant's outstanding common stock that have represented to the registrant that they are registered investment advisers or investment companies registered under section 8 of the Investment Company Act of 1940.

The number of shares of common stock outstanding as of February 15, 2019 was 606 million.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement for its 2019 Annual Meeting of Shareholders to be filed with the Securities and Exchange Commission pursuant to Regulation 14A not later than 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K are incorporated by reference into Part III, Items 10-14 of this Annual Report on Form 10-K.

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WHERE YOU CAN FIND MORE INFORMATION

Investors and others should note that we announce material financial information to our investors using our investor relations website, press releases, SEC filings and public conference calls and webcasts. We also use the following social media channels as a means of disclosing information about the company, our products, our planned financial and other announcements and attendance at upcoming investor and industry conferences, and other matters and for complying with our disclosure obligations under Regulation FD:

NVIDIA Twitter Account (https://twitter.com/nvidia)
NVIDIA Company Blog (http://blogs.nvidia.com)
NVIDIA Facebook Page (https://www.facebook.com/nvidia)
NVIDIA LinkedIn Page (http://www.linkedin.com/company/nvidia)
NVIDIA Instagram Page (https://www.instagram.com/nvidia)

In addition, investors and others can view NVIDIA videos on YouTube.

The information we post through these social media channels may be deemed material. Accordingly, investors should monitor these accounts and the blog, in addition to following our press releases, SEC filings and public conference calls and webcasts. This list may be updated from time to time. The information we post through these channels is not a part of this Annual Report on Form 10-K. These channels may be updated from time to time on NVIDIA's investor relations website.

Forward-Looking Statements

This Annual Report on Form 10-K contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, which are subject to the “safe harbor” created by those sections. Forward-looking statements are based on our management's beliefs and assumptions and on information currently available to our management. In some cases, you can identify forward-looking statements by terms such as “may,” “will,” “should,” “could,” “goal,” “would,” “expect,” “plan,” “anticipate,” “estimate,” “project,” “predict,” “potential” and similar expressions intended to identify forward-looking statements. These statements involve known and unknown risks, uncertainties and other factors, which may cause our actual results, performance, time frames or achievements to be materially different from any future results, performance, time frames or achievements expressed or implied by the forward-looking statements. We discuss many of these risks, uncertainties and other factors in this Annual Report on Form 10-K in greater detail under the heading “Risk Factors.” Given these risks, uncertainties and other factors, you should not place undue reliance on these forward-looking statements. Also, these forward-looking statements represent our estimates and assumptions only as of the date of this filing. You should read this Annual Report on Form 10-K completely and with the understanding that our actual future results may be materially different from what we expect. We hereby qualify our forward-looking statements by these cautionary statements. Except as required by law, we assume no obligation to update these forward-looking statements publicly, or to update the reasons actual results could differ materially from those anticipated in these forward-looking statements, even if new information becomes available in the future.

All references to “NVIDIA,” “we,” “us,” “our” or the “Company” mean NVIDIA Corporation and its subsidiaries.

In addition, statements that “we believe” and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information available to us as of the filing date of this Annual Report on Form 10-K , and while we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain and investors are cautioned not to unduly rely upon these statements.

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PART I

ITEM 1. BUSINESS

Our Company

Starting with a focus on PC graphics, NVIDIA invented the graphics processing unit, or GPU, to solve some of the most complex problems in computer science. We have extended our focus in recent years to the revolutionary field of artificial intelligence, or AI. Fueled by the sustained demand for better 3D graphics and the scale of the gaming market, NVIDIA has evolved the GPU into a computer brain at the intersection of virtual reality, or VR, high performance computing, or HPC, and AI.

The GPU was initially used to simulate human imagination, enabling the virtual worlds of video games and films. Today, it also simulates human intelligence, enabling a deeper understanding of the physical world. Its parallel processing capabilities, supported by up to thousands of computing cores, are essential to running deep learning algorithms. This form of AI, in which software writes itself by learning from data, can serve as the brain of computers, robots and self-driving cars that can perceive and understand the world. GPU-powered deep learning continues to be adopted by thousands of enterprises to deliver services and features that would have been impossible with traditional coding.

NVIDIA has a platform strategy, bringing together hardware, system software, programmable algorithms, libraries, systems, and services to create unique value for the markets we serve. While the requirements of these end markets are diverse, we address them with a unified underlying architecture leveraging our GPUs and Compute Unified Device Architecture, or CUDA, as the fundamental building blocks. The programmable nature of our architecture allows us to support several multi-billion dollar end markets with the same underlying technology by using a variety of software stacks developed either internally or by third party developers and partners. The large and growing number of developers across our platforms strengthens our ecosystem and increases the value of our platform to our customers.

Innovation is at our core. We have invested over $17 billion in research and development since our inception, yielding inventions that are essential to modern computing. Our invention of the GPU in 1999 defined modern computer graphics and established NVIDIA as the leader in visual computing. With our introduction of the CUDA programming model in 2006, we opened the parallel processing capabilities of the GPU for general purpose computing. This approach significantly accelerates the performance of the most demanding applications in HPC in fields such as aerospace, bio-science research, mechanical and fluid simulations, and energy exploration. Today, our GPUs power the fastest supercomputers across the world. In addition, the massively parallel compute architecture of our GPUs and associated software have proven to be well suited for deep learning and are now expanding into machine learning, powering the era of AI. As the laws of physics have begun to slow down Moore’s Law, we continue to deliver GPU performance improvements ahead of Moore’s Law, giving the industry a path forward.

Gamers choose NVIDIA GPUs to enjoy immersive, increasingly cinematic virtual worlds. GPUs also help underpin the world’s fastest growing spectator sport, eSports, which attracts hundreds of millions of viewers to watch top-quality gaming. A rapidly growing new genre of Battle Royale games, such as Fortnite, is also expanding the gaming market.

Researchers use our GPUs to accelerate a wide range of important applications, from simulating viruses to exploring the origins of the universe. With support for more than 550 applications - including the top 15 HPC applications - NVIDIA GPUs enable some of the most promising areas of discovery, from weather prediction to materials science and from wind tunnel simulation to genomics. In 2018, NVIDIA GPUs powered the top two supercomputers in the world, located at Oak Ridge and Lawrence Livermore National Laboratories in the United States, as well as the top supercomputers in Europe and Japan. Five of the six finalists for the Gordon Bell Prize, awarded by the Association for Computing Machinery for outstanding achievement in the field of computing for applications in science, engineering and large-scale data science, did their work on the NVIDIA-powered top-two supercomputers.

The world’s leading cloud service providers use our GPUs to enable, accelerate or enrich the services they deliver to billions of end-users, including search, social networking, online shopping, live video, translation, AI assistants, navigation, and cloud computing.

A rapidly growing number of enterprises and startups use our GPUs to facilitate deep learning that meets, and in several cases surpasses, human perception, in fields ranging from radiology to precision agriculture. For example, the transportation industry is turning to our GPUs and AI to enable autonomous vehicles, or AVs, with several hundred companies and organizations working with NVIDIA’s DRIVE platform.

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Professional designers use our GPUs to create visual effects in movies and design products ranging from soft drink bottles to commercial aircraft.

Headquartered in Santa Clara, California, NVIDIA was incorporated in California in April 1993 and reincorporated in Delaware in April 1998.

Our Businesses

Our two reportable segments - GPU and Tegra Processor - are based on a single underlying architecture. Our GPU product brands are aimed at specialized markets including GeForce for gamers; Quadro for designers; Tesla and DGX for AI data scientists and big data researchers; and GRID for cloud-based visual computing users. Our Tegra brand integrates an entire computer onto a single chip, and incorporates GPUs and multi-core CPUs to drive supercomputing for autonomous robots, drones, and cars, as well as for game consoles and mobile gaming and entertainment devices.

GPU	· GeForce for PC gaming and mainstream PCs · GeForce NOW for cloud-based game-streaming service · Quadro for design professionals working in computer-aided design, video editing, special effects, and other creative applications · Tesla for AI utilizing deep learning and accelerated computing, leveraging the parallel computing capabilities of GPUs for general purpose computing · GRID to provide the power of NVIDIA graphics through the cloud and datacenters · DGX for AI scientists, researchers and developers
Tegra Processor	· Tegra processors are primarily designed to enable branded platforms - DRIVE and SHIELD · DRIVE AGX automotive supercomputers and software stacks that provide self-driving capabilities · Clara AGX for intelligent medical instruments · SHIELD devices and services designed to harness the power of mobile-cloud to revolutionize home entertainment, AI and gaming · Jetson AGX is a power-efficient AI computing platform for robotics and other embedded use

Our Markets

We specialize in markets in which GPU-based visual computing and accelerated computing platforms can provide tremendous throughput for applications. These platforms incorporate processors, systems software, programmable algorithms, systems, and services to deliver value that is unique in the marketplace. From our proprietary processors, we have created platforms that address four large markets where our expertise is critical: Gaming, Professional Visualization, Datacenter, and Automotive.

Gaming

Computer gaming is the largest entertainment industry. Many factors propel computer gaming’s growth, including new high production value games and franchises, the rise of competitive online gaming, eSports, and the rise of virtual and augmented reality.

Our GPUs enhance the gaming experience by improving the visual quality of graphics, increasing the frame rate for smoother gameplay and improving realism by incorporating the behavior of light and physical objects. These can be enjoyed independently or together to extend the gaming experience across platforms.

Our gaming platforms utilize sophisticated 3D software and algorithms, including our GameWorks libraries that provide special effects for games. We further enhance gaming with GeForce Experience, our gaming application that optimizes the PC user’s settings for each title and enables players to record and share gameplay. It has been downloaded by more than 100 million users.

To enable VR, we provide developers with a suite of software libraries called VRWorks. VRWorks allows developers to create fully immersive experiences by enabling physically realistic visuals, sound, touch interactions, and simulated environments. VR requires advanced high-performance GPUs as the engine to simulate complete immersion.

Our products for the gaming market include GeForce RTX and GeForce GTX GPUs for PC gaming, SHIELD devices for gaming and streaming, GeForce NOW for cloud-based gaming, as well as platforms and development services for

specialized console gaming devices.

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Professional Visualization

We serve the Professional Visualization market by working closely with independent software vendors to optimize their offerings for NVIDIA GPUs. Our GPU computing solutions enhance productivity and introduce new capabilities for critical parts of the workflow for such major industries as automotive, media and entertainment, architectural engineering, oil and gas, and medical imaging.

Designers who build the products we use every day need the images that they view digitally to mirror reality. This requires simulating the physical behavior of light and materials, or physically-based rendering, an emerging trend in professional design. Our DesignWorks software delivers this to designers and enables an architect designing a building with a computer-aided design package to interact with the model in real time, view it in greater detail, and generate photorealistic renderings for the client. It also allows an automotive designer to create a highly realistic 3D image of a car, which can be viewed from all angles, reducing reliance on costly, time-consuming full-scale clay models.

Just as VR is becoming more important in gaming, it is also being incorporated in a growing number of enterprise applications, including within medicine, architecture, product design, and retail. Virtual car showrooms, surgical training, architectural walkthroughs, and bringing historical scenes to life all deploy this technology, powered by our GPUs.

Visual computing is vital to productivity in many environments, including design and manufacturing and digital content creation. Design and manufacturing includes computer-aided design, architectural design, consumer-products manufacturing, medical instrumentation, and aerospace. Digital content creation includes professional video editing and post production, special effects for films, and broadcast-television graphics.

Our brand for this market is Quadro for workstations. Quadro GPUs enhance the productivity of designers by improving performance and adding functionality, such as photorealistic rendering, high color fidelity, and advanced scalable display capabilities. During fiscal year 2019, we introduced the NVIDIA RTX platform, making it possible to render film-quality, photorealistic objects and environments with physically accurate shadows, reflections and refractions using ray tracing in real-time.

Datacenter

The NVIDIA accelerated computing platform addresses AI and HPC applications. The platform consists of our energy efficient GPUs, our CUDA programming language, specific libraries such as cuDNN and TensorRT, and innovations such as NVLink, which enables application scalability across multiple GPUs.

In the field of AI, NVIDIA’s platform accelerates both deep learning and machine learning workloads. Deep learning is a computer science approach where neural networks are trained to recognize patterns from massive amounts of data in the form of images, sounds and text - in some instances better than humans. Machine learning is a related approach that leverages algorithms as well as data to learn how to make determinations or predictions, often used in data science. HPC, also referred to as scientific computing, uses numerical computational approaches to solve large and complex problems. For both AI and HPC applications, the NVIDIA accelerated computing platform greatly increases the performance and power efficiency of high-performance computers and datacenters, as GPUs excel at parallel workloads. For example, an NVIDIA GPU-accelerated machine learning cluster for data science is 1/8 the cost, 1/15 the space, and 1/18 the power of a traditional CPU-based cluster.

We are engaged with thousands of organizations working on AI in a multitude of industries, from automating tasks such as reading medical images, to enabling fraud detection in financial services, to optimizing oil exploration and drilling. These organizations include the world’s leading cloud services companies such as Amazon, Baidu, and Facebook, which are infusing AI in applications that enable highly accurate voice recognition and real-time translation; enterprises that are increasingly turning to AI to improve products and services; and startups seeking to implement AI in transformative ways across multiple industries. We have partnered with industry leaders such as IBM, Microsoft, Oracle, and SAP to bring AI to enterprise users. We also have partnerships in healthcare and manufacturing, among others, to accelerate the adoption of AI.

To enable deep learning and machine learning, we provide a family of GPUs designed to speed up training and inferencing of neural networks. They are available in industry standard servers from every major computer maker worldwide, including Cisco, Dell, HP, Inspur, and Lenovo; from every major cloud service provider such as Alicloud,

Amazon Web Services, Baidu Cloud, Google Cloud, IBM Cloud, Microsoft Azure, and Oracle Cloud; as well as in our DGX AI supercomputer, a purpose-built system for deep learning and GPU accelerated applications. DGX delivers performance equal to hundreds of conventional servers, comes fully integrated with hardware, software, development tools, support for AI frameworks, and runs popular accelerated applications. We also offer the NVIDIA GPU Cloud, or NGC, a comprehensive catalog of easy-to-use, optimized software stacks across a range of domains including scientific computing, deep learning, and machine learning. With NGC,

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AI developers, researchers and data scientists can get started with the development of AI and HPC applications and deploy them on DGX systems, NGC-ready workstations or servers from our systems partners, or with NVIDIA's cloud partners such as Amazon, Google Cloud, Microsoft Azure, or Oracle Cloud.

GPUs also increase the speed of applications used in such fields as aerospace, bio-science research, mechanical and fluid simulations, and energy exploration. They have already had a significant impact on scientific discovery, including improving heart surgery, mapping human genome folds, seismic modeling, and weather simulations.

Accelerated computing is recognized as the path forward for computing amid the slowing of Moore's Law. The proportion of supercomputers utilizing accelerators has grown sharply over the past five years, now accounting for a significant proportion of both the total systems on the TOP500 list, which ranks the 500 most powerful commercially available computer systems, and the list's total floating-point operations per second. Tesla GPU accelerators power many of the world's fastest supercomputers, including the U.S. Department of Energy's new generation of supercomputers, Summit and Sierra, at Oak Ridge and Lawrence Livermore National Laboratories, Europe's fastest supercomputer - Piz Daint - in Switzerland, and Japan's fastest supercomputer, ABCI.

We also serve the datacenter market with GRID for virtualized graphics. GRID makes it possible to run graphics-intensive applications remotely on a server in the datacenter. Applications include accelerating virtual desktop infrastructures and delivering graphics-intensive applications from the cloud for industries such as manufacturing, healthcare, and educational institutions, among others.

Automotive

NVIDIA's Automotive market is comprised of cockpit infotainment solutions, AV platforms, and associated development agreements. Leveraging our technology leadership in AI and building on our long-standing automotive relationships, we are delivering a full solution for the AV market under the DRIVE brand. NVIDIA has demonstrated multiple applications of AI within the car. AI can drive the car itself as a pilot, in either partial or fully autonomous mode. AI can also be a co-pilot, assisting the human driver in creating a safer driving experience.

NVIDIA is working with several hundred partners in the automotive ecosystem including automakers, truck makers, tier-one suppliers, sensor manufacturers, automotive research institutions, HD mapping companies, and startups to develop and deploy AI systems for self-driving vehicles. Our unified AI computing architecture starts with training deep neural networks using our Tesla GPUs, and then running them within the vehicle on the NVIDIA DRIVE computing platform. The platform consists of high-performance, energy efficient hardware - DRIVE AGX, and open, modular software - including DRIVE AV for autonomous driving and DRIVE IX for in-vehicle AI assistance. In addition, we offer a scalable simulation solution, NVIDIA DRIVE Constellation, for testing and validating a self-driving platform before commercial deployment. This end-to-end, software-defined approach allows cars to receive over-the-air updates to add new features and capabilities throughout the life of a vehicle.

NVIDIA DRIVE can perceive and understand in real-time what's happening around the vehicle, precisely locate itself on an HD map, and plan a safe path forward. This advanced self-driving car platform combines deep learning, sensor fusion, and surround vision to change the driving experience. Our DRIVE platform scales from a palm-sized, energy-efficient module for automated highway-driving capabilities to a configuration with multiple systems aimed at enabling driverless cars. Our Xavier SoC, which started shipping in 2018, enables vehicles to use deep neural networks to process data from multiple cameras and sensors. It powers the DRIVE AutoPilot, the first commercially available Level 2+ automated driving system, combining the DRIVE AV self-driving solution with the DRIVE IX cockpit software, including a visualization system for allowing the driver to see what the car sees and plans to do.

Business Strategies

NVIDIA's key strategies that shape our overall business approach include:

Advancing the GPU computing platform. The massive parallel processing capabilities of NVIDIA GPUs can solve complex problems in significantly less time and with lower power consumption than alternative computational approaches. Indeed, GPUs can help solve problems that were previously deemed unsolvable. We work to deliver continued GPU performance leaps that outpace Moore's Law by leveraging innovation across the architecture, chip design, system, and software layers. Our strategy is to target markets where GPUs deliver order-of-magnitude performance advantages relative to legacy approaches. Our target markets so far include gaming, professional visualization, datacenter, and automotive. While the requirements of these end markets are diverse, we address them

with a unified underlying architecture leveraging our GPUs and CUDA as the fundamental building blocks. The programmable nature of our architecture allows us to make leveraged investments in R&D: we can support several multi-billion dollar end markets with the same underlying technology

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by using a variety of software stacks developed either internally or by third party developers and partners. We utilize this platform approach in each of our target markets.

Extending our technology and platform leadership in AI. We provide a complete, end-to-end GPU computing platform for deep learning and machine learning, addressing both training and inferencing. This includes GPUs, our CUDA programming language, algorithms, libraries, and system software. GPUs are uniquely suited to AI, and we will continue to add AI-specific features to our GPU architecture to further extend our leadership position. Our AI technology leadership is reinforced by our large and expanding ecosystem in a virtuous cycle. Our GPU platforms are available from virtually every major server maker and cloud service provider, as well as on our own AI supercomputer. There are over 1.2 million developers worldwide using CUDA and our other software tools to help deploy our technology in our target markets. We evangelize AI through partnerships with hundreds of universities and more than 3,600 startups through our Inception program. Additionally, our Deep Learning Institute provides instruction on the latest techniques on how to design, train, and deploy neural networks in applications using our accelerated computing platform.

Extending our technology and platform leadership in visual computing. We believe that visual computing is fundamental to the continued expansion and evolution of computing. We apply our research and development resources to extending our leadership in visual computing, enabling us to enhance the user experience for consumer entertainment and professional visualization applications. Our technologies are instrumental in driving gaming forward, as developers leverage our libraries and algorithms to create near-cinematic and VR experiences. Our close collaboration with game developers allows us to deliver an optimized gaming experience on our GeForce platform. Our GeForce Experience gaming application further enhances each gamer’s experience by optimizing their PC’s settings, as well as enabling the recording and sharing of gameplay. We also enable interactive graphics applications - such as games, movie and photo editing and design software - to be accessed by almost any device, almost anywhere, through our cloud platforms such as GRID for enterprise and GeForce NOW for gaming.

Advancing the leading autonomous vehicle platform. We believe the advent of AV will soon revolutionize the transportation industry. In our view, AI is the key technology enabler of this opportunity, as the algorithms required for autonomous driving - such as perception, localization, and planning - are too complex for legacy hand-coded approaches, and will run on multiple trained neural networks instead. Therefore, we have provided a full functionally safe AI-based hardware and software solution for the AV market under the DRIVE brand, which we are bringing to market through our partnerships with automotive original equipment manufacturers, or OEMs, tier-1 suppliers, and start-ups. Our AV solution also includes the GPU-based hardware required to train the neural networks before their in-vehicle deployment, as well as to re-simulate their operation prior to any over-the-air software updates. We believe our comprehensive, top-to-bottom and end-to-end approach will enable the transportation industry to solve the complex problems arising from the shift to autonomous driving.

Leveraging our intellectual property. We believe our intellectual property is a valuable asset that can be accessed by our customers and partners through licenses and development agreements when they desire to build such capabilities directly into their own products, or have us do so through a custom development. Such license and development arrangements can further enhance the reach of our technology.

Sales and Marketing

Our sales strategy involves working with end customers and various industry ecosystems through our partner network. Our worldwide sales and marketing strategy is key to achieving our objective of providing markets with our high-performance and efficient GPU and embedded system-on-a-chip, or SOC, platforms. Our sales and marketing teams, located across our global markets, work closely with end customers in each industry. Our partner network incorporates each industry's respective OEMs, original device manufacturers, or ODMs, system builders, add-in board manufacturers, or AIBs, retailers/distributors, internet and cloud service providers, automotive manufacturers and tier-1 automotive suppliers, mapping companies, start-ups, and other ecosystem participants.

Members of our sales team have technical expertise and product and industry knowledge. We also employ a team of application engineers to assist our partner network in designing, testing, and qualifying system designs that incorporate our platforms. We believe that the depth and quality of our design support are key to improving our partner network’s time-to-market, maintaining a high level of customer satisfaction, and fostering relationships that

encourage our end customers and partner network to use the next generation of our products within each platform. To encourage the development of applications optimized for our GPUs, we seek to establish and maintain strong relationships in the software development community. Engineering and marketing personnel engage with key software developers to promote and discuss our platforms, as well as to ascertain individual product requirements and solve technical problems. Our developer program makes our products available to developers prior to launch in order to encourage the development of AI frameworks, Software Development Kits, and Application Programming Interfaces, or APIs, for software applications and game titles that are optimized for our platforms. Our Deep Learning Institute provides in-person and online training

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for developers in industries and organizations around the world to build AI and accelerated computing applications that leverage our GPU and CUDA platforms. We now have over 700 thousand registered developers across our platforms, including accelerated computing, gaming, deep learning, autonomous machines, and others.

As NVIDIA's business has evolved from a focus primarily on gaming products to broader markets, and from chips to platforms and complete systems, so, too, have our avenues to market. Thus, in addition to sales to customers in our partner network, certain of our platforms are also sold through e-tail channels, or direct to cloud service providers and enterprise customers.

Backlog

Our sales are primarily made pursuant to standard purchase orders. The quantity of products purchased by our customers as well as our shipment schedules are subject to revisions that reflect changes in both the customers' requirements and in manufacturing availability. Our industry is characterized by relatively short lead time orders and delivery schedules, thus, we believe that only a small portion of our backlog is non-cancelable and that the dollar amount associated with the non-cancelable portion is not significant.

Seasonality

Our GPU and Tegra processor platforms serve many markets from consumer PC gaming to enterprise workstations to government and cloud service provider datacenters, although a majority of our revenue stems from the consumer industry. Our consumer products have typically seen stronger revenue in the second half of our fiscal year. However, there can be no assurance that this trend will continue; for example, in fiscal year 2019 second half revenue was weaker than the first half.

Manufacturing

We do not directly manufacture semiconductors used for our products. Instead, we utilize a fabless manufacturing strategy, whereby we employ world-class suppliers for all phases of the manufacturing process, including wafer fabrication, assembly, testing, and packaging. This strategy uses the expertise of industry-leading suppliers that are certified by the International Organization for Standardization in such areas as fabrication, assembly, quality control and assurance, reliability, and testing. Additionally, we can avoid many of the significant costs and risks associated with owning and operating manufacturing operations. While we may directly procure certain raw materials used in the production of our products, such as substrates and a variety of components, our suppliers are responsible for procurement of the majority of the raw materials used in the production of our products. As a result, we can focus our resources on product design, additional quality assurance, marketing, and customer support.

We utilize industry-leading suppliers, such as Taiwan Semiconductor Manufacturing Company Limited and Samsung Electronics Co. Ltd, to produce our semiconductor wafers. We then utilize independent subcontractors, such as Advanced Semiconductor Engineering, Inc., Amkor Technology, BYD Auto Co. Ltd., Hon Hai Precision Industry Co., Ltd., JSI Logistics Ltd., King Yuan Electronics Co., Ltd., and Siliconware Precision Industries Company Ltd. to perform assembly, testing, and packaging of most of our products and platforms. We purchase substrates from IbidenCo. Ltd., Kinsus Interconnect Technology Corporation, and Unimicron Technology Corporation, and memory from Micron Technology, Samsung Semiconductor, Inc., and SK Hynix.

We typically receive semiconductor products from our subcontractors, perform incoming quality assurance and configuration, and then ship the semiconductors to contract equipment manufacturers, or CEMs, distributors, motherboard and AIB customers from our third-party warehouse in Hong Kong. Generally, these manufacturers assemble and test the boards based on our design kit and test specifications, and then ship our products to retailers, system builders, or OEMs as motherboard and AIB solutions.

We also utilize industry-leading contract manufacturers, or CMs, such as BYD and Hon Hai Precision Industry Co., and ODMs such as Quanta Computer and Wistron Corporation, to manufacture some of our products for sale directly to end customers. In those cases, key elements such as the GPU, SOC and memory are often consigned by us to the CMs, who are responsible for the procurement of other components used in the production process.

Working Capital

We focus considerable attention on managing our inventories and other working-capital-related items. We manage inventories by communicating with our customers and partners and then using our industry experience to forecast demand on a platform-by-platform basis. We then place manufacturing orders for our products that are based on

forecasted demand. We generally maintain substantial inventories of our products because the semiconductor industry is characterized by short lead time orders and quick delivery schedules. A substantial amount of our inventories is maintained as semi-finished products that can be leveraged across a wide range of our processors to balance our customer demands.

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Our existing cash, cash equivalents and marketable securities balances increased by 4% to $7.42 billion at the end of fiscal year 2019 compared with the end of fiscal year 2018.

Competition

The market for our products is intensely competitive and is characterized by rapid technological change and evolving industry standards. We believe that the principal competitive factors in this market are performance, breadth of product offerings, access to customers and partners and distribution channels, software support, conformity to industry standard APIs, manufacturing capabilities, processor pricing, and total system costs. We believe that our ability to remain competitive will depend on how well we are able to anticipate the features and functions that customers and partners will demand and whether we are able to deliver consistent volumes of our products at acceptable levels of quality and at competitive prices. We expect competition to increase from both existing competitors and new market entrants with products that may be less costly than ours, or may provide better performance or additional features not provided by our products. In addition, it is possible that new competitors or alliances among competitors could emerge and acquire significant market share.

A significant source of competition comes from companies that provide or intend to provide GPUs, embedded SOCs, and accelerated and AI computing processor products. Some of our competitors may have greater marketing, financial, distribution and manufacturing resources than we do and may be more able to adapt to customer or technological changes.

Our current competitors include:

- suppliers or licensors of discrete and integrated GPUs and accelerated computing solutions, including chipsets that incorporate 3D graphics, or HPC or accelerated computing functionality as part of their solutions or platforms, such as Advanced Micro Devices, or AMD, Intel Corporation, or Intel, and Xilinx, Inc.; and
- suppliers of SOC products that are embedded into automobiles, autonomous machines, and gaming devices, such as Ambarella, Inc., AMD, Broadcom Inc., Intel, Qualcomm Incorporated, Renesas Electronics Corporation, Samsung, Texas Instruments Incorporated, and Xilinx Inc.

Patents and Proprietary Rights

We rely primarily on a combination of patents, trademarks, trade secrets, employee and third-party nondisclosure agreements, and licensing arrangements to protect our intellectual property in the United States and internationally. Our currently issued patents have expiration dates from February 2019 to February 2038. We have numerous patents issued, allowed, and pending in the United States and in foreign jurisdictions. Our patents and pending patent applications primarily relate to our products and the technology used in connection with our products. We also rely on international treaties, organizations, and foreign laws to protect our intellectual property. The laws of certain foreign countries in which our products are or may be manufactured or sold, including various countries in Asia, may not protect our products or intellectual property rights to the same extent as the laws of the United States. This decreased protection makes the possibility of piracy of our technology and products more likely. We continuously assess whether and where to seek formal protection for particular innovations and technologies based on such factors as:

- the location in which our products are manufactured;
- our strategic technology or product directions in different countries;
- the degree to which intellectual property laws exist and are meaningfully enforced in different jurisdictions; and
- the commercial significance of our operations and our competitors' operations in particular countries and regions.

We have also licensed technology from third parties for incorporation in some of our products and for defensive reasons, and expect to continue to enter into such license agreements.

Employees

As of January 27, 2019, we had 13,277 employees, 9,486 of whom were engaged in research and development and 3,791 of whom were engaged in sales, marketing, operations, and administrative positions.

Environmental Regulatory Compliance

To date, we have not incurred significant expenses related to environmental regulatory compliance matters.

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Executive Officers of the Registrant

The following sets forth certain information regarding our executive officers, their ages and positions as of February 15, 2019:

Name	Age	Position
Jen-Hsun Huang	55	President and Chief Executive Officer
Colette M. Kress	51	Executive Vice President and Chief Financial Officer
Ajay K. Puri	64	Executive Vice President, Worldwide Field Operations
Debora Shoquist	64	Executive Vice President, Operations
Timothy S. Teter	52	Executive Vice President and General Counsel

Jen-Hsun Huang co-founded NVIDIA in 1993 and has served as our President, Chief Executive Officer and a member of the Board of Directors since our inception. From 1985 to 1993, Mr. Huang was employed at LSI Logic Corporation, a computer chip manufacturer, where he held a variety of positions including as Director of Coreware, the business unit responsible for LSI's SOC. From 1983 to 1985, Mr. Huang was a microprocessor designer for Advanced Micro Devices, Inc., a semiconductor company. Mr. Huang holds a B.S.E.E. degree from Oregon State University and an M.S.E.E. degree from Stanford University.

Colette M. Kress joined NVIDIA in 2013 as Executive Vice President and Chief Financial Officer. Prior to NVIDIA, Ms. Kress most recently served as Senior Vice President and Chief Financial Officer of the Business Technology and Operations Finance organization at Cisco Systems, Inc., a networking equipment company, since 2010. At Cisco, Ms. Kress was responsible for financial strategy, planning, reporting and business development for all business segments, engineering and operations. From 1997 to 2010 Ms. Kress held a variety of positions at Microsoft Corporation, a software company, including, beginning in 2006, Chief Financial Officer of the Server and Tools division, where Ms. Kress was responsible for financial strategy, planning, reporting and business development for the division. Prior to joining Microsoft, Ms. Kress spent eight years at Texas Instruments Incorporated, a semiconductor company, where she held a variety of finance positions. Ms. Kress holds a B.S. degree in Finance from University of Arizona and an M.B.A. degree from Southern Methodist University.

Ajay K. Puri joined NVIDIA in 2005 as Senior Vice President, Worldwide Sales and became Executive Vice President, Worldwide Field Operations in 2009. Prior to NVIDIA, he held positions in sales, marketing, and general management over a 22-year career at Sun Microsystems, Inc., a computing systems company. Mr. Puri previously held marketing, management consulting, and product development positions at Hewlett-Packard Company, an information technology company, Booz Allen Hamilton Inc., a management and technology consulting company, and Texas Instruments Incorporated. Mr. Puri holds a B.S.E.E. degree from the University of Minnesota, an M.S.E.E. degree from the California Institute of Technology and an M.B.A. degree from Harvard Business School.

Debora Shoquist joined NVIDIA in 2007 as Senior Vice President of Operations and in 2009 became Executive Vice President of Operations. Her role has since expanded with responsibility added for Facilities in 2013, and for Information Technology in 2015. Prior to NVIDIA, Ms. Shoquist served from 2004 to 2007 as Executive Vice President of Operations at JDS Uniphase Corp., a provider of communications test and measurement solutions and optical products for the telecommunications industry. She served from 2002 to 2004 as Senior Vice President and General Manager of the Electro-Optics business at Coherent, Inc., a manufacturer of commercial and scientific laser equipment. Previously, she worked at Quantum Corp., a data protection company, as President of the Personal Computer Hard Disk Drive Division, and at Hewlett-Packard Corp. Ms. Shoquist holds a B.S. degree in Electrical Engineering from Kansas State University and a B.S. degree in Biology from Santa Clara University.

Timothy S. Teter joined NVIDIA in 2017 as Senior Vice President, General Counsel and Secretary and became Executive Vice President, General Counsel and Secretary in February 2018. Prior to NVIDIA, Mr. Teter spent more than two decades at the law firm of Cooley LLP. He was most recently a partner at Cooley, where he focused on litigating patent and technology related matters. Prior to attending law school, he worked as an engineer at Lockheed Missiles and Space Company. Mr. Teter holds a B.S. degree in Mechanical Engineering from the University of California at Davis and a J.D. degree from Stanford Law School.

Available Information

Our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and, if applicable, amendments to those reports filed or furnished pursuant to Section 13(a) of the Securities Exchange Act of 1934, as amended, are available free of charge on or through our web site, http://www.nvidia.com, as soon as reasonably practicable after we electronically file such material with, or furnish it to, the Securities and Exchange Commission, or the SEC. The SEC's website, http://www.sec.gov, contains reports, proxy and information statements, and other information regarding

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issuers that file electronically with the SEC. Our web site and the information on it or connected to it are not a part of this Annual Report on Form 10-K.

ITEM 1A. RISK FACTORS

In evaluating NVIDIA and our business, the following factors should be considered in addition to the other information in this Annual Report on Form 10-K. Before you buy our common stock, you should know that making such an investment involves risks including, but not limited to, the risks described below. Any one of the following risks could harm our business, financial condition, results of operations or reputation, which could cause our stock price to decline, and you may lose all or a part of your investment. Additional risks, trends and uncertainties not presently known to us or that we currently believe are immaterial may also harm our business, financial condition, results of operations or reputation.

Risks Related to Our Business, Industry and Partners

If we fail to meet the evolving needs of our markets, or identify new products, services or technologies, our revenue and financial results may be adversely impacted.

We have created GPU-based visual and accelerated computing platforms that address four large markets: Gaming, Professional Visualization, Datacenter, and Automotive. These markets often experience rapid technological change, changes in customer requirements, new product introductions and enhancements, and evolving industry standards. Our success depends on our ability to identify these emerging industry changes and to develop new (or enhance our existing) products, services and technologies that meet the evolving needs of these markets. Such activities may require considerable technical, financial, compliance, sales and marketing investments. We currently devote significant resources to the development of technologies and business offerings in markets where we have a limited operating history, such as the automotive and datacenter markets, which presents additional risks to our business. We must also continue to develop the infrastructure needed to appropriately scale our business in these areas, including customer service and customer support. We also must meet customer safety and compliance standards, which are subject to change. Additionally, we continue to make considerable investments in research and development, which may not produce significant revenue for several years, if at all. If our investments are unsuccessful and we fail to develop new products, services and technologies, or if we focus on technologies that do not become widely adopted, our business, revenue, financial condition and results of operations could be adversely affected. We cannot assure you that our strategic direction will result in innovative products and technologies that provide value to our customers, partners and ultimately, our shareholders. If we fail to anticipate the changing needs of our target markets and emerging technology trends, or if we do not appropriately adapt that strategy as market conditions evolve, in a timely manner to exploit potential market opportunities, our business will be harmed.

Competition in our current and target markets could prevent us from growing our revenue.

Our target markets remain extremely competitive, and we expect competition to intensify as current competitors expand their product and/or service offerings, industry standards continue to evolve, customer needs change and new competitors enter these markets. Our competitors' products, services and technologies may be less costly, or may offer superior functionality or better features, than ours, which may result, among other things, in lower than expected selling prices for our products. In addition, some of our competitors operate and maintain their own fabrication facilities, have longer operating histories, larger customer bases, more comprehensive intellectual property, or IP, portfolios and patent protections, and greater financial, sales, marketing and distribution resources than we do. These competitors may be able to more effectively identify and capitalize upon opportunities in new markets and end user customer trends, quickly transition their products, including semiconductor products, to increasingly smaller line width geometries, and obtain sufficient foundry capacity and packaging materials, which could harm our business. If we are unable to successfully compete in our target markets, respond to changes in our target markets or introduce new offerings to meet the needs of this competitive environment, including in significant international markets such as China, demand for our products, services and technologies could decrease, which would cause our revenue to decline and cause our results of operations to suffer. In addition, the competitive landscape in our target markets has changed and may continue to evolve due to a trend toward consolidation, which could lead to fewer customers, partners, or suppliers, any of which could negatively affect our financial results.

System security and data protection breaches, as well as cyber-attacks, could disrupt our operations, reduce our expected revenue and increase our expenses, which could adversely affect our stock price and damage our reputation. Security breaches, computer malware and cyber-attacks have become more prevalent and sophisticated in recent years. These threats are constantly evolving, making it increasingly difficult to successfully defend against them or implement adequate preventative measures. These attacks have occurred on our systems in the past and are expected to occur in the future. Experienced computer programmers, hackers and employees may penetrate our security controls and misappropriate or compromise our confidential information, or that of our employees or third parties. These attacks may

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create system disruptions or cause shutdowns. These hackers may also develop and deploy viruses, worms and other malicious software programs that attack or otherwise exploit security vulnerabilities in our products, including consumer and automotive products, where we utilize over-the-air updates to improve functionality over time. For portions of our IT infrastructure, including business management and communication software products, we rely on products and services provided by third parties. These providers may also experience breaches and attacks to their products which may impact our systems. Data security breaches may also result from non-technical means, such as actions by an employee with access to our systems. To defend against security threats, both to our internal systems and those of our customers, we must continuously engineer more secure products and enhance security and reliability features, which may result in increased expenses.

Actual or perceived breaches of our security measures or the accidental loss, inadvertent disclosure or unapproved dissemination of proprietary information or sensitive or confidential data about us, our partners, our customers or third parties could expose us and the parties affected to a risk of loss or misuse of this information, resulting in litigation and potential liability, paying damages, regulatory inquiries or actions, damage to our brand and reputation or other harm to our business. Our efforts to prevent and overcome these challenges could increase our expenses and may not be successful. We may experience interruptions, delays, cessation of service and loss of existing or potential customers. Such disruptions could adversely impact our ability to fulfill orders and interrupt other critical functions. Delayed sales, lower margins or lost customers as a result of these disruptions could adversely affect our financial results, stock price and reputation.

If our products contain significant defects, we could incur significant expenses to remediate such defects, our reputation could be damaged, and we could lose market share.

Our products are complex and may contain defects or security vulnerabilities, or experience failures or unsatisfactory performance due to any number of issues in design, fabrication, packaging, materials and/or use within a system. These risks may increase as our products are introduced into new devices, markets, technologies and applications, including into the automotive market, or as new versions are released. Some errors in our products or services may only be discovered after a product or service has been shipped or used by customers or the end users of such product. Undiscovered vulnerabilities in our products or services could expose our customers or end users to hackers or other unscrupulous third parties who develop and deploy viruses, worms and other malicious software programs that could attack our products or services. Failure of our products to perform to specifications, or other product defects, could lead to substantial damage to the products we sell directly to customers, the end product in which our device has been integrated by OEMs, ODMs, AIBs and Tier 1 automotive suppliers, and to the user of such end product. Any such defect may cause us to incur significant warranty, support and repair or replacement costs, write off the value of related inventory, cause us to lose market share, and divert the attention of our engineering personnel from our product development efforts to find and correct the issue. In addition, an error or defect in new products or releases or related software drivers after commencement of commercial shipments could result in failure to achieve market acceptance or loss of design wins, harm our relationships with customers and partners and harm consumers' perceptions of our brand. Also, we may be required to reimburse our customers, partners or consumers, including costs to repair or replace products in the field. A product recall, including automotive recalls or a recall due to a bug in our products, or a significant number of product returns could be expensive, damage our reputation, harm our ability to attract new customers, result in the shifting of business to our competitors and result in litigation against us, such as product liability suits. If a product liability claim is brought against us, the cost of defending the claim could be significant and would divert the efforts of our technical and management personnel, and harm our business. Further, our business liability insurance may be inadequate or future coverage may be unavailable on acceptable terms, which could adversely impact our financial results.

We depend on third parties and their technology to manufacture, assemble, test and/or package our products, which reduces our control over product quantity and quality, manufacturing yields, development, enhancement and product delivery schedule and could harm our business.

We do not manufacture the silicon wafers used for our GPUs and Tegra processors and do not own or operate a wafer fabrication facility. Instead, we are dependent on industry-leading foundries, such as Taiwan Semiconductor Manufacturing Company Limited and Samsung Electronics Co. Ltd., to manufacture our semiconductor wafers using

their fabrication equipment and techniques. Similarly, we do not directly assemble, test or package our products, but instead rely on independent subcontractors. We do not have long-term commitment contracts with these foundries or subcontractors. As a result, we face several significant risks which could have an adverse effect on our ability to meet customer demand and/or negatively impact our business operations, gross margin, revenue and/or financial results, including:

- a lack of guaranteed supply of wafers and other components and potential higher wafer and component prices due to supply constraints;
- a failure by our foundries to procure raw materials or to provide or allocate adequate or any manufacturing or test capacity for our products;

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- a failure to develop, obtain or successfully implement high quality, leading-edge process technologies, including transitions to smaller geometry process technologies such as advanced process node technologies and memory designs needed to manufacture our products profitably or on a timely basis;
- loss of a supplier and additional expense and/or production delays as a result of qualifying a new foundry or subcontractor and commencing volume production or testing in the event of a loss of or a decision to add or change a supplier;
- a lack of direct control over delivery schedules or product quantity and quality; and
- delays in product shipments, shortages, a decrease in product quality and/or higher expenses in the event our subcontractors or foundries prioritize our competitors' orders over our orders or otherwise.

In addition, low manufacturing yields could have an adverse effect on our ability to meet customer demand, increase manufacturing costs, harm customer or partner relationships, and/or negatively impact our business operations, gross margin, revenue and/or financial results. Manufacturing yields for our products are a function of product design, which is developed largely by us, and process technology, which typically is proprietary to the foundry. Low yields may result from either product design or process technology failure. We do not know whether a yield problem will exist until our design is actually manufactured by the foundry. As a result, yield problems may not be identified until well into the manufacturing process and require us and the foundry to cooperate to resolve the problem.

We also rely on third-party software development tools to assist us in the design, simulation and verification of new products or product enhancements, and to bring such new products and enhancements to market in a timely manner. In the past, we have experienced delays in the introduction of products and enhancements as a result of the inability of then available software development tools to fully simulate the complex features and functionalities of our products. The design requirements necessary to meet consumer demands for more features and greater functionality from our products may exceed the capabilities of available software development tools. If we miss design cycles or lose design wins due to the unavailability of such software development tools, we could lose market share and our revenues could decline. If we fail to achieve design wins for our products, our business will be harmed.

For our products that we do not sell directly to consumers, achieving design wins is an important success factor. Achieving design wins may involve a lengthy process in pursuit of a customer opportunity and depend on our ability to anticipate features and functionality that customers and consumers will demand. Failure to obtain a particular design win may prevent us from obtaining design wins in subsequent generations of a particular product. This could result in lost revenue and could weaken our position in future competitive bid selection processes.

Unanticipated changes in industry standards could render our products incompatible with products developed by major hardware manufacturers and software developers. Further, if our products are not in compliance with prevailing industry standards, including safety standards, our customers may not incorporate our products into their design strategies. Winning a product design does not guarantee sales to a customer or that we will realize as much revenue as anticipated, if any.

Business disruptions could harm our business, lead to a decline in revenues and increase our costs.

Our worldwide operations could be disrupted by earthquakes, telecommunications failures, power or water shortages, outages at cloud service providers, tsunamis, floods, hurricanes, typhoons, fires, extreme weather conditions, cyber-attacks, terrorist attacks, medical epidemics or pandemics and other natural or man-made disasters, catastrophic events or climate change. The occurrence of any of these disruptions could harm our business and result in significant losses, a decline in revenue and an increase in our costs and expenses. Any of these business disruptions could require substantial expenditures and recovery time in order to fully resume operations. Our corporate headquarters, and a portion of our research and development activities, are located in California, and other critical business operations, finished goods inventory, and some of our suppliers are located in Asia, near major earthquake faults known for seismic activity. In addition, a large portion of our current datacenter capacity is located in California, making our operations vulnerable to natural disasters or other business disruptions occurring in these geographical areas. The manufacture of product components, the final assembly of our products and other critical operations are concentrated in certain geographic locations, including Taiwan, China, and Korea. Geopolitical change or changes in government regulations and policies in the United States or abroad also may result in changing regulatory requirements, trade

policies, import duties and economic disruptions that could impact our operating strategies, product demand, access to global markets, hiring, and profitability. In particular, revisions to laws or regulations or their interpretation and enforcement could result in increased taxation, trade sanctions, the imposition of import duties or tariffs, restrictions and controls on imports or exports, or other retaliatory actions, which could have an adverse effect on our business plans. For example, regulations to implement the Export Control Reform Act of 2018 could have an adverse effect on our business plans. Catastrophic events can also have an impact on third-party vendors who provide us critical infrastructure services for IT and research and development systems and personnel. Our operations

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could be harmed if manufacturing, logistics or other operations in these locations are disrupted for any reason, including natural disasters, high heat events or water shortages, information technology system failures, military actions or economic, business, labor, environmental, public health, regulatory or political issues. The ultimate impact on us, our third-party foundries and other suppliers and our general infrastructure of being located near major earthquake faults and being consolidated in certain geographical areas is unknown. In the event a major earthquake or other disaster or catastrophic event affects us or the third-party systems on which we rely, our business could be harmed as a result of declines in revenue, increases in expenses, substantial expenditures and time spent to fully resume operations.

If we fail to estimate customer demand properly, our financial results could be harmed.

We manufacture our GPUs and Tegra processors based on estimates of customer demand and requirements. We sell many of our products through a channel model, and our channel customers sell to retailers, distributors, and/or end customers. As a result, the decisions made by our channel partners, retailers, and distributors in response to changing market conditions and the changing demand for our products could impact our financial results. In order to have shorter shipment lead times and quicker delivery schedules for our customers, we may build inventories for anticipated periods of growth which do not occur, may build inventory anticipating demand that does not materialize, or may build inventory to serve what we believe is pent-up demand. Such decisions may and have resulted in prolonged channel sell-through, as we experienced with our mid-range gaming GPUs in fiscal year 2019. In estimating demand, we make multiple assumptions, any of which may prove to be incorrect. Situations that may result in excess or obsolete inventory include:

- changes in business and economic conditions, including downturns in our target markets and/or overall economy;
- changes in consumer confidence caused by changes in market conditions, including changes in the credit market;
- a sudden and significant decrease in demand for our products;
- a higher incidence of inventory obsolescence because of rapidly changing technology or customer requirements;
- our introduction of new products resulting in lower demand for older products;
- less demand than expected for newly-introduced products; or
- increased competition, including competitive pricing actions.

The cancellation or deferral of customer purchase orders could result in our holding excess inventory, which could adversely affect our gross margins. In addition, because we often sell a substantial portion of our products in the last month of each quarter, we may not be able to reduce our inventory purchase commitments in a timely manner in response to customer cancellations or deferrals. We could be required to write-down our inventory to the lower of cost or market or write-off excess inventory, and we could experience a reduction in average selling prices if we incorrectly forecast product demand, any of which could harm our financial results.

Conversely, if we underestimate our customers' demand for our products, our foundry partners may not have adequate lead-time or capacity to increase production and we may not be able to obtain sufficient inventory to fill customers' orders on a timely basis. We may also face supply constraints caused by natural disasters or other events. In such cases, even if we are able to increase production levels to meet customer demand, we may not be able to do so in a cost-effective or timely manner. If we fail to fulfill our customers' orders on a timely basis, or at all, our customer relationships could be damaged, we could lose revenue and market share and our reputation could be damaged.

We are subject to risks and uncertainties associated with international operations, which may harm our business.

We conduct our business worldwide and we have offices in various countries outside of the United States. Our semiconductor wafers are manufactured, assembled, tested and packaged by third parties located outside of the United States. We also generate a significant portion of our revenue from sales outside the United States. We allocate revenue to individual countries based on the location to which the products are initially billed even if our customers’ revenue is attributable to end customers that are located in a different location. Revenue from sales outside of the United States accounted for 87% of total revenue for each of fiscal years 2019, 2018, and 2017. Revenue from billings to China, including Hong Kong, was 24% of our revenue for fiscal year 2019, even if our customers' revenue is attributable to end customers that are located in a different location. Additionally, as of January 27, 2019, approximately 46% of our employees were located outside of the United States. The global nature of our business subjects us to a number of risks and uncertainties, which could have a material adverse effect on our business, financial condition and results of

operations, including:

- international economic and political conditions, including as a result of the United Kingdom's vote to withdraw from the European Union, and other political tensions between countries in which we do business;
- unexpected changes in, or impositions of, legislative or regulatory requirements, including changes in tax laws;
- differing legal standards with respect to protection of intellectual property and employment practices;

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- local business and cultural factors that differ from our normal standards and practices, including business practices that we are prohibited from engaging in by the Foreign Corrupt Practices Act and other anticorruption laws and regulations;
- exporting or importing issues related to export or import restrictions, including deemed export restrictions, tariffs, quotas and other trade barriers and restrictions;
- disruptions of capital and trading markets and currency fluctuations; and
- increased costs due to imposition of climate change regulations, such as carbon taxes, fuel or energy taxes, and pollution limits.

If our sales outside of the United States are delayed or cancelled because of any of the above factors, our revenue may be negatively impacted.

If we are unable to attract, retain and motivate our executives and key employees, we may not be able to execute our business strategy effectively.

To be competitive and execute our business strategy successfully, we must attract, retain and motivate our executives and key employees. The market for highly skilled workers and leaders in our industry is extremely competitive. In particular, hiring qualified executives, scientists, engineers, technical staff and research and development personnel is critical to our business. Additionally, changes in immigration and work permit laws and regulations or the administration or interpretation of such laws or regulations could impair our ability to attract and retain highly qualified employees. If we are less successful in our recruiting efforts, or if we cannot retain key employees, our ability to develop and deliver successful products and services may be adversely affected. Additionally, competition for personnel results in increased costs in the form of cash and stock-based compensation. The interpretation and application of employment related laws to our workforce practices may result in increased operating costs and less flexibility in how we meet our workforce needs. Effective succession planning is also important to our long-term success. Failure to ensure effective transfer of knowledge and smooth transitions involving key employees could hinder our strategic planning and execution.

We may not be able to realize the potential financial or strategic benefits of business acquisitions or strategic investments and we may not be able to successfully integrate acquisition targets, which could hurt our ability to grow our business, develop new products or sell our products.

We have in the past acquired and invested in, and may continue to acquire and invest in, other businesses that offer products, services and technologies that we believe will help expand or enhance our existing products, strategic objectives and business. The risks associated with past or future acquisitions or investments could impair our ability to grow our business, develop new products or sell our products, and ultimately could have a negative impact on our growth or our financial results. Given that our resources are limited, our decision to pursue a transaction has opportunity costs; accordingly, if we pursue a particular transaction, we may need to forgo the prospect of entering into other transactions that could help us achieve our strategic objectives. Additional risks related to acquisitions or strategic investments include, but are not limited to:

- difficulty in combining the technology, products, operations or workforce of the acquired business with our business;
- diversion of capital and other resources, including management's attention;
- assumption of liabilities and incurring amortization expenses, impairment charges to goodwill or write-downs of acquired assets;
- difficulty in realizing a satisfactory return, if at all;
- difficulty in obtaining regulatory, other approvals or financing;
- failure and costs associated with the failure to consummate a proposed acquisition or other strategic investment;
- legal proceedings initiated as a result of an acquisition or investment;
- uncertainties and time needed to realize the benefits of an acquisition or strategic investment, if at all;
- the need to later divest acquired assets if an acquisition does not meet our expectations;
- potential failure of our due diligence processes to identify significant issues with the acquired assets or company; and
- impairment of relationships with, or loss of our or our target's, employees, vendors and customers, as a result of our acquisition or investment.

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Risks Related to Regulatory, Legal, Our Common Stock and Other Matters

Actions to adequately protect our IP rights could result in substantial costs to us and our ability to compete could be harmed if we are unsuccessful in doing so or if we are prohibited from making or selling our products.

We have in the past, currently are, and may in the future become involved in lawsuits or other legal proceedings alleging patent infringement or other intellectual property rights violations by us, our employees or parties that we have agreed to indemnify for certain claims of infringement. An unfavorable ruling in any such intellectual property related litigation could include significant damages, invalidation of a patent or family of patents, indemnification of customers, payment of lost profits, or, when it has been sought, injunctive relief. Claims that our products or processes infringe the IP rights of others, regardless of their merit, could cause us to incur significant costs to respond to, defend, and resolve such claims, and they may also divert the efforts and attention of management and technical personnel.

We may commence litigation or other legal proceedings in order to protect our intellectual property rights. Such proceedings may increase our operating expenses, which could negatively impact our operating results. Further, we could be subject to countersuits as a result of our initiation of litigation. If infringement claims are made against us or our products are found to infringe a third party's patent or intellectual property, we or one of our indemnitees may have to seek a license to the third party's patent or other intellectual property rights. However, we may not be able to obtain licenses at all or on terms acceptable to us particularly from our competitors. If we or one of our indemnitees is unable to obtain a license from a third party for technology that we use or that is used in one of our products, we could be subject to substantial liabilities or have to suspend or discontinue the manufacture and sale of one or more of our products. We may also have to make royalty or other payments, or cross license our technology. If these arrangements are not concluded on commercially reasonable terms, our business could be negatively impacted. Furthermore, the indemnification of a customer or other indemnitee may increase our operating expenses which could negatively impact our operating results.

Our success depends in part on protecting our intellectual property. To accomplish this, we rely primarily on a combination of patents, trademarks, trade secrets, employee and third-party nondisclosure agreements, licensing arrangements, and the laws of the countries in which we operate to protect our intellectual property in the United States and internationally. We may be required to spend significant resources to monitor and protect our intellectual property rights, and even with significant expenditures we may not be able to protect our intellectual property rights that are valuable to our business. The laws of certain foreign countries may not protect our products or intellectual property rights to the same extent as the laws of the United States. This makes the possibility of piracy of our technology and products more likely. In addition, the theft or unauthorized use or publication of our trade secrets and other confidential business information could harm our competitive position and reduce acceptance of our products; as a result, the value of our investment in research and development, product development, and marketing could be reduced. We continuously assess whether and where to seek formal protection for existing and new innovations and technologies, but cannot be certain whether our applications for such protections will be approved, and, if approved, whether we will be able to enforce such protections.

Our operating results have in the past fluctuated and may in the future fluctuate, and if our operating results are below the expectations of securities analysts or investors, our stock price could decline.

Our operating results have in the past fluctuated and may in the future continue to fluctuate due to numerous factors. Therefore, investors should not rely on quarterly comparisons of our results of operations as an indication of our future performance.

Factors, other than those described elsewhere in these risk factors, that could affect our results of operations in the future include, but are not limited to:

- our ability to achieve volume production of our next-generation products;
- our inability to adjust spending to offset revenue shortfalls due to the multi-year development cycle for some of our products and services;
- fluctuations in the demand for our products related to cryptocurrencies;
- changes in the timing of product orders due to unexpected delays in the introduction of our partners' products;
- our ability to cover the manufacturing and design costs of our products through competitive pricing;
- our ability to comply and continue to comply with our customers' contractual obligations;

- product rates of return in excess of that forecasted or expected due to quality issues;
- our ability to secure appropriate safety certifications and meet industry safety standards;
- supply constraints for and changes in the cost of the other components incorporated into our products
- inventory write-downs;

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- our ability to continue generating revenue from our partner network, including by generating sales within our partner network and ensuring our products are incorporated into our partners product ecosystems, and our partner network's ability to sell products that incorporate our GPUs and Tegra processors;
- the inability of certain of our customers to make required payments to us, and our ability to obtain credit insurance over the purchasing credit extended to these customers;
- customer bad debt write-offs;
- any unanticipated costs associated with environmental liabilities;
- unexpected costs related to our ownership of real property;
- changes in financial accounting standards or interpretations of existing standards; and
- general macroeconomic or industry events and factors affecting the overall market and our target markets.

Any one or more of the factors discussed above could prevent us from achieving our expected future financial results. Any such failure to meet our expectations or the expectations of our investors or security analysts could cause our stock price to decline or experience substantial price volatility.

Privacy concerns relating to our products and services could damage our reputation, deter current and potential users from using our products and services, result in liability, or result in legal or regulatory proceedings.

Our products and services may provide us with access to sensitive, confidential or personal data or information that is subject to privacy and security laws and regulations. Concerns about our practices with regard to the collection, use, retention, security or disclosure of personal information or other privacy-related matters, even if unfounded, could damage our reputation and adversely affect our operating results. The theft, loss, or misuse of personal data collected, used, stored, or transferred by us to run our business or by one of our partners could result in significantly increased security costs, damage to our reputation, regulatory proceedings, disruption of our business activities or increased costs related to defending legal claims.

Worldwide regulatory authorities are considering and have approved various legislative proposals concerning data protection, which continue to evolve and apply to our business. For example, the European Union adopted the General Data Protection Regulation, or GDPR, which requires companies to meet new requirements beginning in May 2018 regarding the handling of personal data, including its use, protection and the ability of persons whose data is stored to correct or delete such data about themselves. Failure to meet GDPR requirements could result in penalties of up to 4% of worldwide revenue. In addition, the interpretation and application of consumer and data protection laws in the United States, Europe and elsewhere are often uncertain and fluid, and may be interpreted and applied in a manner that is inconsistent with our data practices. If so, we may be ordered to change our data practices and/or be fined. Complying with these changing laws has caused, and could continue to cause, us to incur substantial costs, which could have an adverse effect on our business and results of operations. Further, failure to comply with existing or new rules may result in significant penalties or orders to stop the alleged noncompliant activity.

We may have exposure to additional tax liabilities and our operating results may be adversely impacted by higher than expected tax rates.

As a multinational corporation, we are subject to income taxes as well as non-income based taxes, such as payroll, sales, use, value-added, net worth, property and goods and services taxes, in both the United States and various foreign jurisdictions. Our domestic and international tax liabilities are subject to the allocation of revenue and expenses in different jurisdictions. Significant judgment is required in determining our worldwide provision for income taxes and other tax liabilities. Further, changes in United States federal, and state or international tax laws applicable to multinational corporations or other fundamental law changes may materially impact our tax expense and cash flows, as we experienced in fiscal year 2018 with the passage of the Tax Cuts and Jobs Act, or TCJA.

Our future effective tax rate may be affected by such factors as changes in tax laws, changes in our business or statutory rates, changes in jurisdictions in which our profits are determined to be earned and taxed, changes in available tax credits, the resolution of issues arising from tax audits, changes in United States generally accepted accounting principles, adjustments to income taxes upon finalization of tax returns, increases in expenses not deductible for tax purposes, changes in the valuation of our deferred tax assets and liabilities and in deferred tax valuation allowances, changing interpretation of existing laws or regulations, the impact of accounting for stock-based compensation and the recognition of excess tax benefits and tax deficiencies within the income tax provision in the

period in which they occur, the impact of accounting for business combinations, shifts in the amount of earnings in the United States compared with other regions in the world and overall levels of income before tax, changes in our international organization, as well as the expiration of statute of limitations and settlements of audits. Any changes in our effective tax rate may reduce our net income.

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Our business is exposed to the risks associated with litigation, investigations and regulatory proceedings.

We currently and may in the future face legal, administrative and regulatory proceedings, claims, demands and/or investigations involving shareholder, consumer, competition and/or other issues relating to our business on a global basis. For example, multiple securities litigation claims have recently been filed against us and certain of our officers based on the dissemination of allegedly false and misleading statements related to channel inventory and the impact of cryptocurrency mining on GPU demand. In addition, a stockholder, purporting to act on behalf of the Company, filed a derivative lawsuit seeking to assert claims on behalf of the Company against the members of our board of directors and certain officers based on the dissemination of allegedly false and misleading statements related to channel inventory and the impact of cryptocurrency mining on GPU demand.

Litigation and regulatory proceedings are inherently uncertain, and adverse rulings could occur, including monetary damages, or an injunction stopping us from manufacturing or selling certain products, engaging in certain business practices, or requiring other remedies, such as compulsory licensing of patents. An unfavorable outcome or settlement may result in a material adverse impact on our business, results of operations, financial position, and overall trends. In addition, regardless of the outcome, litigation can be costly, time-consuming, and disruptive to our operations.

In addition, the laws and regulations our business is subject to are complex, and change frequently. We may be required to incur significant expense to comply with, or remedy violations of, these regulations.

Delaware law and provisions in our certificate of incorporation, our bylaws and our agreement with Microsoft Corporation could delay or prevent a change in control.

Our status as a Delaware corporation and the anti-takeover provisions of the Delaware General Corporation Law may discourage, delay, or prevent a change in control by prohibiting us from engaging in a business combination with an interested shareholder for a period of three years after the person becomes an interested shareholder, even if a change of control would be beneficial to our existing shareholders. In addition, our certificate of incorporation and bylaws contain provisions that could make it more difficult for a third party to acquire a majority of our outstanding voting stock. These provisions include the following:

- the ability of our Board of Directors to create and issue preferred stock without prior shareholder approval;
- the prohibition of shareholder action by written consent;
- advance notice requirements for director nominations and shareholder proposals;
- the ability of our Board of Directors to increase or decrease the number of directors without shareholder approval;
- a super-majority voting requirement to amend some provisions in our certificate of incorporation and bylaws;
- the inability of our shareholders to call special meetings of shareholders; and
- the ability of our Board of Directors to make, amend or repeal our bylaws.

On March 5, 2000, we entered into an agreement with Microsoft in which we agreed to develop and sell graphics chips and to license certain technology to Microsoft and its licensees for use in the Xbox. Under the agreement, if an individual or corporation makes an offer to purchase shares equal to or greater than 30% of the outstanding shares of our common stock, Microsoft may have first and last rights of refusal to purchase the stock. The Microsoft provision and the other factors listed above could also delay or prevent a change in control of NVIDIA. These provisions could also discourage proxy contests and make it more difficult for shareholders to elect directors of their choosing and to cause us to take other corporate actions they desire.

ITEM 1B. UNRESOLVED STAFF COMMENTS

Not applicable.

ITEM 2. PROPERTIES

Our headquarters complex is located in Santa Clara, California. It includes ten leased commercial buildings totaling 981,389 square feet, and real property that we own totaling 1,257,346 square feet. Our owned property consists of two commercial buildings on 36 acres of land. In addition, we also lease datacenter space in Santa Clara, California. Outside of Santa Clara, California, we lease facilities in Austin, Texas and a number of regional facilities in other U.S. locations that are used as research and development centers and/or sales and administrative offices. Outside of the United States, we own a building in Hyderabad, India, that is being used primarily as a research and development center. We also lease facilities in various international locations that are used as research and development centers and/or sales and

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administrative offices. These leased facilities are located primarily in Asia and Europe. In addition, we also lease datacenter space in various locations around the world.

We believe that we currently have sufficient facilities to conduct our operations for the next twelve months. For additional information regarding obligations under leases, refer to Note 12 of the Notes to the Consolidated Financial Statements in Part IV, Item 15 of this Annual Report on Form 10-K under the subheading “Lease Obligations,” which information is hereby incorporated by reference.

ITEM 3. LEGAL PROCEEDINGS

Please see Note 12 of the Notes to the Consolidated Financial Statements in Part IV, Item 15 of this Annual Report on Form 10-K for a discussion of our legal proceedings.

ITEM 4. MINE SAFETY DISCLOSURES

Not Applicable.

PART II

ITEM 5. MARKET FOR REGISTRANT’S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Our common stock is traded on the Nasdaq Global Select Market under the symbol NVDA. Public trading of our common stock began on January 22, 1999. Prior to that, there was no public market for our common stock. As of February 15, 2019, we had approximately 317 registered shareholders, not including those shares held in street or nominee name.

Issuer Purchases of Equity Securities

Beginning August 2004, our Board of Directors authorized us to repurchase our stock.

Since the inception of our share repurchase program, we have repurchased an aggregate of 260 million shares for a total cost of $7.08 billion through January 27, 2019. All shares delivered from these repurchases have been placed into treasury stock.

In November 2018, the Board authorized an additional $7.00 billion under our share repurchase program and extended it through the end of December 2022. As of January 27, 2019, we were authorized to repurchase additional shares of our common stock up to $7.24 billion.

We intend to return $3.00 billion to shareholders by the end of fiscal year 2020, including $700 million of share repurchases we made in the fourth quarter of fiscal year 2019.

The repurchases can be made in the open market, in privately negotiated transactions, or in structured share repurchase programs, and can be made in one or more larger repurchases, in compliance with Rule 10b-18 of the Securities Exchange Act of 1934, as amended, subject to market conditions, applicable legal requirements, and other factors. The program does not obligate NVIDIA to acquire any particular amount of common stock and the program may be suspended at any time at our discretion.

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The following table presents details of our share repurchase transactions during the fourth quarter of fiscal year 2019:

Period	Total Number of Shares Purchased (In thousands)	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Program (In thousands)	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Program (In billions)
October 29, 2018 - November 25, 2018	123	$195.72	123	$ 7.94
November 26, 2018 - December 23, 2018	3,304	$142.05	3,304	$ 7.47
December 24, 2018 - January 27, 2019	1,777	$129.87	1,777	$ 7.24
Total	5,204		5,204	

Transactions Related to our 1.00% Convertible Senior Notes Due 2018 and Note Hedges

During fiscal year 2019, we issued an aggregate of 714 thousand shares of our common stock upon settlement of $16 million in principal amount of 1.00% Convertible Senior Notes Due 2018, or the Convertible Notes, submitted for conversion. In connection with these conversions, we exercised a portion of our Note Hedges to acquire an equal number of shares of our common stock. The counterparty to the Note Hedges may be deemed an “affiliated purchaser” and may have purchased the shares of our common stock deliverable to us upon this exercise of our option. Refer to Note 11 of the Notes to the Consolidated Financial Statements in Part IV, Item 15 of this Annual Report on Form 10-K for further discussion regarding the Convertible Notes and the Note Hedges.

Restricted Stock Unit Share Withholding

We also withhold common stock shares associated with net share settlements to cover tax withholding obligations upon the vesting of restricted stock unit awards under our employee equity incentive program. During fiscal year 2019, we withheld approximately 4 million shares at a total cost of $1.03 billion through net share settlements. Refer to Note 3 of the Notes to the Consolidated Financial Statements in Part IV, Item 15 of this Annual Report on Form 10-K for further discussion regarding our equity incentive plans.

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Stock Performance Graphs

The following graph compares the cumulative total shareholder return for our common stock, the S&P 500 Index, and the Nasdaq 100 Index for the five years ended January 27, 2019. The graph assumes that $100 was invested on January 26, 2014 in our common stock and in each of the S&P 500 Index and the Nasdaq 100 Index. Our common stock is a component of each of the presented indices. Total return assumes reinvestment of dividends in each of the indices indicated. Total return is based on historical results and is not intended to indicate future performance.

*$100 invested on 1/26/14 in stock and in indices, including reinvestment of dividends.

	1/26/2014	1/25/2015	1/31/2016	1/29/2017	1/28/2018	1/27/2019
NVIDIA Corporation	$ 100.00	$ 135.49	$ 194.78	$ 750.36	$1,639.87	$1,082.30
S&P 500	$ 100.00	$ 111.92	$ 108.84	$ 127.84	$158.41	$151.70
Nasdaq 100	$ 100.00	$ 119.26	$ 124.52	$ 150.83	$207.18	$208.13

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ITEM 6. SELECTED FINANCIAL DATA

The following selected financial data should be read in conjunction with our financial statements and the notes thereto, and with Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations.” The Consolidated Statements of Income data for fiscal years 2019, 2018, and 2017 and the Consolidated Balance Sheets data as of January 27, 2019 and January 28, 2018 have been derived from and should be read in conjunction with our audited consolidated financial statements and the notes thereto included in Part IV, Item 15 in this Annual Report on Form 10-K. We operate on a 52- or 53-week year, ending on the last Sunday in January. Fiscal years 2019, 2018, 2017, and 2015 were 52-week years and fiscal year 2016 was a 53-week year.

	Year Ended				
	January 27, 2019	January 28, 2018	January 29, 2017	January 31, 2016 (A)	January 25, 2015
Consolidated Statements of Income Data:	(In millions, except per share data)				
Revenue	$11,716	$9,714	$6,910	$5,010	$4,682
Income from operations	$3,804	$3,210	$1,934	$747	$759
Net income	$4,141	$3,047	$1,666	$614	$631
Net income per share:					
Basic	$6.81	$5.09	$3.08	$1.13	$1.14
Diluted	$6.63	$4.82	$2.57	$1.08	$1.12
Weighted average shares used in per share computation:					
Basic	608	599	541	543	552
Diluted	625	632	649	569	563

	Year Ended				
	January 27, 2019 (B,C)	January 28, 2018 (B,C)	January 29, 2017 (B,C)	January 31, 2016 (B)	January 25, 2015
Consolidated Balance Sheets Data:	(In millions, except per share data)				
Cash, cash equivalents and marketable securities	$7,422	$7,108	$6,798	$5,037	$4,623
Total assets	$13,292	$11,241	$9,841	$7,370	$7,201
Debt obligations	$1,988	$2,000	$2,779	$1,413	$1,384
Convertible debt conversion obligation	$—	$—	$31	$87	$—
Total shareholders’ equity	$9,342	$7,471	$5,762	$4,469	$4,418
Cash dividends declared and paid per common share (D)	$0.610	$0.570	$0.485	$0.395	$0.340

(A) In fiscal year 2016, we began the wind down of our Icera modem operations. As a result, our income from operations for fiscal year 2016 included $131 million of restructuring and other charges.

(B) In fiscal year 2014, we issued Convertible Notes in the aggregate principal amount of $1.50 billion. The Convertible Notes first became convertible as of February 1, 2016 and matured on December 1, 2018. Refer to Note 11 of the Notes to the Consolidated Financial Statements in Part IV, Item 15 of this Annual Report on Form 10-K for additional information.

(C) In fiscal year 2017, we issued $1.00 billion of the Notes Due 2021, and $1.00 billion of the Notes Due 2026. Interest on the Notes is payable on March 16 and September 16 of each year, beginning on March 16, 2017. Refer to Note 11 of the Notes to the Consolidated Financial Statements in Part IV, Item 15 of this Annual Report on Form 10-K for additional information.

(D) In November 2012, we initiated a quarterly dividend payment of $0.075 per share, or $0.30 per share on an annual basis. In May 2015, we increased the quarterly cash dividend to $0.0975 per share, or $0.39 per share on an annual basis. In November 2015, we increased the quarterly cash dividend to $0.115 per share, or $0.46 per share on an

annual basis. In November 2016, we increased the quarterly cash dividend to $0.14 per share, or $0.56 per share on an annual basis. In November 2017, we increased the quarterly cash dividend to $0.15 per share, or $0.60 per share on an annual basis. In November 2018, we increased the quarterly cash dividend to $0.16 per share, or $0.64 per share on an annual basis.

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with "Item 1A. Risk Factors", "Item 6. Selected Financial Data", our Consolidated Financial Statements and related Notes thereto, as well as other cautionary statements and risks described elsewhere in this Annual Report on Form 10-K, before deciding to purchase, hold or sell shares of our common stock.

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Overview

Our Company and Our Businesses

Starting with a focus on PC graphics, NVIDIA invented the GPU to solve some of the most complex problems in computer science. We have extended our focus in recent years to the revolutionary field of AI. Fueled by the sustained demand for better 3D graphics and the scale of the gaming market, NVIDIA has evolved the GPU into a computer brain at the intersection of VR, HPC, and AI.

Our two reportable segments - GPU and Tegra Processor - are based on a single underlying architecture. From our proprietary processors, we have created platforms that address four large markets where our expertise is critical: Gaming, Professional Visualization, Datacenter, and Automotive.

Our GPU product brands are aimed at specialized markets including GeForce for gamers; Quadro for designers; Tesla and DGX for AI data scientists and big data researchers; and GRID for cloud-based visual computing users. Our Tegra brand integrates an entire computer onto a single chip, and incorporates GPUs and multi-core CPUs to drive supercomputing for autonomous robots, drones, and cars, as well as for game consoles and mobile gaming and entertainment devices.

Headquartered in Santa Clara, California, NVIDIA was incorporated in California in April 1993 and reincorporated in Delaware in April 1998.

Recent Developments, Future Objectives and Challenges

Fiscal Year 2019 Summary

	Year Ended				
	January 27, 2019		January 28, 2018		Change
	($ in millions, except per share data)				
Revenue	$11,716		$ 9,714		Up 21%
Gross margin	61.2	%	59.9	%	Up 130 bps
Operating expenses	$3,367		$ 2,612		Up 29%
Income from operations	$3,804		$ 3,210		Up 19%
Net income	$4,141		$ 3,047		Up 36%
Net income per diluted share	$6.63		$ 4.82		Up 38%

Revenue for fiscal year 2019 increased 21% year over year, reflecting growth in each of our market platforms - gaming, professional visualization, datacenter, and automotive. GPU business revenue was $10.17 billion, up 25% from a year earlier. Tegra Processor business revenue - which includes automotive, SOC modules for gaming platforms, and embedded edge AI platforms - was $1.54 billion, up slightly from a year ago.

Gaming revenue was $6.25 billion, up 13% from a year ago driven by growth in gaming GPUs. Gaming GPU growth was fueled by Turing-based GPUs for desktops and by gaming notebooks based on our Max-Q technology. We experienced significant volatility in our Gaming revenue during fiscal year 2019. We believe demand for our desktop gaming GPU products used by end users for cryptocurrency mining and its after-effects have distorted trends in Gaming revenue. We also believe that deteriorating macroeconomic conditions, particularly in China have impacted consumer demand for our GeForce gaming GPU products. In addition, sales of certain high-end GeForce gaming GPUs using our new Turing architecture that we released during fiscal year 2019 were lower than we expected for the launch of a new architecture. As a result, during a portion of fiscal year 2019, we shipped a higher amount of desktop gaming GPU products relative to where end user demand turned out to be and subsequently compensated by shipping a lower amount of desktop gaming GPU products relative to end user demand to allow the channel to work down that inventory. For fiscal year 2020, we expect our Gaming revenue to be slightly down compared to fiscal year 2019, with expected growth from sales of Turing-based GPU products and notebook GPU products partially offsetting decreases that we believe were caused by the previously-noted factors.

Professional visualization revenue was $1.13 billion, up 21% from a year earlier driven by strength across both desktop and mobile workstation products.

Datacenter revenue was $2.93 billion, up 52% from a year ago, led by strong sales of our Volta architecture-based products, including NVIDIA Tesla V100 and DGX systems. Toward the end of fiscal year 2019, we believe that customers across broad-based vertical markets and geographies became increasingly cautious due to economic uncertainty, and a number of

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Datacenter deals did not close. While we believe the pause is temporary, our visibility remains relatively low and we do not expect a meaningful recovery in the Datacenter market until later in fiscal year 2020.

Automotive revenue of $641 million was up 15% from a year earlier, driven by infotainment modules, production DRIVE platforms, and development agreements with automotive companies.

OEM and IP revenue was $767 million, down 1% from a year ago, driven by the absence of Intel licensing revenue, which concluded in the first quarter of fiscal year 2018. Revenue from cryptocurrency-specific products in fiscal years 2019 and 2018 was $306 million and $273 million, respectively. We expect revenue from cryptocurrency-specific products to be negligible going forward.

Gross margin for fiscal year 2019 was 61.2%, compared with 59.9% a year earlier, which reflects our continued shift toward higher-value platforms, which more than offset the impact of approximately $128 million in charges for excess DRAM and other components we recorded in the fourth quarter of fiscal year 2019 and a charge of $57 million we recorded during the third quarter of fiscal year 2019 related to prior architecture components and chips.

Operating expenses for fiscal year 2019 were $3.37 billion, up 29% from a year earlier, reflecting primarily employee additions and increases in employee compensation and other related costs, including infrastructure costs.

Income from operations for fiscal year 2019 was $3.80 billion, up 19% from a year earlier. Net income and net income per diluted share for fiscal year 2019 were $4.14 billion and $6.63, respectively, up 36% and 38%, respectively, from a year earlier, fueled primarily by revenue growth and improved gross margin, as well as the impact of the U.S. tax reform benefit.

During fiscal year 2019, we returned $1.95 billion to shareholders through a combination of $1.58 billion in share repurchases and $371 million in quarterly cash dividends. We intend to return $3.00 billion to shareholders by the end of fiscal year 2020, including $700 million of share repurchases we made in the fourth quarter of fiscal year 2019.

Cash, cash equivalents and marketable securities were $7.42 billion as of January 27, 2019, compared with $7.11 billion as of January 28, 2018. The increase was primarily related to the increase in net income, partially offset by changes in working capital and the increases in stock repurchases, dividends and taxes paid related to restricted stock units.

GPU Business

During fiscal year 2019, for gaming, we announced NVIDIA RTX - a computer graphics technology using our Turing architecture that produces movie-quality images in real time using ray tracing and AI. During the year, we released many new GeForce RTX desktop gaming GPU products, including RTX 2080Ti, 2080, 2070 and 2060, as well as many new Max-Q GeForce gaming notebook GPU products - the most recent of which are powered by RTX GPUs.

For our professional visualization platform, we announced the Quadro GV100 GPU with RTX technology, making real-time ray tracing possible on professional design and content creation applications. We also unveiled the Quadro RTX series, which is designed to revolutionize the workflow of designers and artists on the desktop, and announced the NVIDIA CUDA-accelerated REDCODE RAW decode SDK, enabling developers and studios to edit 8K video.

For our datacenter platform, we unveiled many advances to our deep learning computing platform - including NVIDIA Tesla V100 GPUs with 32GB memory, NVIDIA NVSwitch GPU interconnect fabric, the NVIDIA DGX-2 and HGX-2 for AI and HPC, the NVIDIA RTX Server, and TensorRT 4 AI inference accelerator software. In addition, we introduced RAPIDS, an open-source GPU-acceleration platform for data science and machine learning, launched the NVIDIA T4 cloud GPU and NVIDIA TensorRT Hyperscale Inference Platform for advanced acceleration in hyperscale datacenters, announced GPU acceleration for Kubernetes to facilitate enterprise inference deployment on multi-cloud GPU clusters, and announced that five of the world’s seven fastest supercomputers are powered by NVIDIA GPUs.

Tegra Processor Business

During fiscal year 2019, for the automotive market, we introduced the NVIDIA DRIVE AutoPilot Level 2+ automated driving system, announced NVIDIA DRIVE AGX design wins with Toyota, Volvo Cars and Isuzu Motors, and announced that Daimler and Bosch have selected NVIDIA’s DRIVE platform to bring automated and driverless vehicles to city streets. We also began production of our Xavier single-chip autopilot SOC, started shipping the NVIDIA DRIVE AGX Xavier developer kit, and introduced the NVIDIA DRIVE Constellation server with DRIVE Sim software to safely test drive autonomous vehicles over billions of miles in virtual reality by leveraging NVIDIA

GPUs and NVIDIA DRIVE Pegasus.
In addition, we launched the NVIDIA Jetson AGX Xavier module to help build the next-generation of autonomous machines and announced that Yamaha Motor Co. will use NVIDIA to power its upcoming lineup of autonomous machines.

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Critical Accounting Policies and Estimates

Management's discussion and analysis of financial condition and results of operations are based upon our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States, or U.S. GAAP. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenue, cost of revenue, expenses and related disclosure of contingencies. On an on-going basis, we evaluate our estimates, including those related to revenue recognition, inventories, income taxes, goodwill, cash equivalents and marketable securities, stock-based compensation, and litigation, investigation and settlement costs and other contingencies. We base our estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities.

We believe the following critical accounting policies affect our significant judgments and estimates used in the preparation of our consolidated financial statements. Our management has discussed the development and selection of these critical accounting policies and estimates with the Audit Committee of our Board of Directors. The Audit Committee has reviewed our disclosures relating to our critical accounting policies and estimates in this Annual Report on Form 10-K.

Revenue Recognition

We derive our revenue from product sales, including hardware and systems, license and development arrangements, and software licensing. We determine revenue recognition through the following steps: (1) identification of the contract with a customer; (2) identification of the performance obligations in the contract; (3) determination of the transaction price; (4) allocation of the transaction price to the performance obligations in the contract; and (5) recognition of revenue when, or as, we satisfy a performance obligation.

Product Sales Revenue

Revenue from product sales is recognized upon transfer of control of promised products to customers in an amount that reflects the consideration we expect to receive in exchange for those products. Revenue is recognized net of allowances for returns, customer programs and any taxes collected from customers.

For products sold with a right of return, we record a reduction to revenue by establishing a sales return allowance for estimated product returns at the time revenue is recognized, based primarily on historical return rates. However, if product returns for a fiscal period are anticipated to exceed historical return rates, we may determine that additional sales return allowances are required to properly reflect our estimated exposure for product returns.

Our customer programs involve rebates, which are designed to serve as sales incentives to resellers of our products in various target markets, and marketing development funds, or MDFs, which represent monies paid to our partners that are earmarked for market segment development and are designed to support our partners' activities while also promoting NVIDIA products. We account for customer programs as a reduction to revenue and accrue for potential rebates and MDFs based on the amount we expect to be claimed by customers.

License and Development Arrangements

Our license and development arrangements with customers typically require significant customization of our intellectual property components. As a result, we recognize the revenue from the license and the revenue from the development services as a single performance obligation over the period in which the development services are performed. We measure progress to completion based on actual cost incurred to date as a percentage of the estimated total cost required to complete each project. If a loss on an arrangement becomes probable during a period, we record a provision for such loss in that period.

Software Licensing

Our software licenses provide our customers with a right to use the software when it is made available to the customer. Customers may purchase either perpetual licenses or subscriptions to licenses, which differ mainly in the duration over which the customer benefits from the software. Software licenses are frequently sold along with post-contract customer support, or PCS. For such arrangements, we allocate revenue to the software license and PCS on a relative standalone selling price basis by maximizing the use of observable inputs to determine the standalone selling price for each performance obligation. Revenue from software licenses is recognized up front when the software is made available to the customer. PCS revenue is recognized ratably over the service period, or as services

are performed.

Refer to Note 1 of the Notes to the Consolidated Financial Statements in Part IV, Item 15 of this Annual Report on Form 10-K for additional information.

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Inventories

Inventory cost is computed on an adjusted standard basis, which approximates actual cost on an average or first-in, first-out basis. We charge cost of sales for inventory provisions to write down our inventory to the lower of cost or net realizable value or to completely write off obsolete or excess inventory. Most of our inventory provisions relate to the write-off of excess quantities of products, based on our inventory levels and future product purchase commitments compared to assumptions about future demand and market conditions.

Situations that may result in excess or obsolete inventory include changes in business and economic conditions, changes in market conditions, sudden and significant decreases in demand for our products, inventory obsolescence because of changing technology and customer requirements, failure to estimate customer demand properly, or unexpected competitive pricing actions by our competition. In addition, cancellation or deferral of customer purchase orders could result in our holding excess inventory.

The overall net effect on our gross margin from inventory provisions and sales of items previously written down was an unfavorable impact of 2.0% in fiscal year 2019 and insignificant in fiscal years 2018 and 2017. The higher amount of charges we took to cost of sales for inventory provisions during fiscal year 2019 were primarily related to excess DRAM, other components, and prior architecture components and chips, whereas the charges we took during fiscal years 2018 and 2017 were primarily related to the write-off of excess quantities of GPU and Tegra products whose inventory levels were higher than our updated forecasts of future demand for those products. As a fabless semiconductor company, we must make commitments to purchase inventory based on forecasts of future customer demand. In doing so, we must account for our third-party manufacturers' lead times and constraints. We also adjust to other market factors, such as product offerings and pricing actions by our competitors, new product transitions, and macroeconomic conditions - all of which may impact demand for our products.

Refer to the Gross Profit and Gross Margin discussion below in this Management's Discussion and Analysis for further discussion.

Income Taxes

We recognize federal, state and foreign current tax liabilities or assets based on our estimate of taxes payable or refundable in the current fiscal year by tax jurisdiction. We recognize federal, state and foreign deferred tax assets or liabilities, as appropriate, for our estimate of future tax effects attributable to temporary differences and carryforwards; and we record a valuation allowance to reduce any deferred tax assets by the amount of any tax benefits that, based on available evidence and judgment, are not expected to be realized.

Our calculation of deferred tax assets and liabilities is based on certain estimates and judgments and involves dealing with uncertainties in the application of complex tax laws. Our estimates of deferred tax assets and liabilities may change based, in part, on added certainty or finality to an anticipated outcome, changes in accounting standards or tax laws in the United States, or foreign jurisdictions where we operate, or changes in other facts or circumstances. In addition, we recognize liabilities for potential United States and foreign income tax contingencies based on our estimate of whether, and the extent to which, additional taxes may be due. If we determine that payment of these amounts is unnecessary or if the recorded tax liability is less than our current assessment, we may be required to recognize an income tax benefit or additional income tax expense in our financial statements accordingly.

As of January 27, 2019, we had a valuation allowance of $562 million related to state and certain foreign deferred tax assets that management determined are not likely to be realized due to projections of future taxable income and potential utilization limitations of tax attributes acquired as a result of stock ownership changes. To the extent realization of the deferred tax assets becomes more-likely-than-not, we would recognize such deferred tax asset as an income tax benefit during the period.

We recognize the benefit from a tax position only if it is more-likely-than-not that the position would be sustained upon audit based solely on the technical merits of the tax position. Our policy is to include interest and penalties related to unrecognized tax benefits as a component of income tax expense.

The TCJA, which was enacted in December 2017, significantly changed U.S. tax law, including a reduction of the U.S. federal corporate income tax rate from 35% to 21%, a requirement for companies to pay a one-time transition tax on the earnings of certain foreign subsidiaries that were previously tax deferred, and the creation of new taxes (global intangible low-taxed income, or GILTI) on certain foreign-source earnings. As a fiscal year-end taxpayer, certain

provisions of the TCJA began to impact us in the fourth quarter of fiscal year 2018, while other provisions impacted us beginning in fiscal year 2019. The SEC had provided guidance in Staff Accounting Bulletin No. 118, Income Tax Accounting Implications of the Tax Cuts and Jobs Act (SAB 118), which allowed companies to record provisional amounts during a measurement period up to one year

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from the enactment date. As of January 27, 2019, we completed our accounting for all of the enactment-date income tax effects of the TCJA and elected to account for GILTI in deferred taxes. Refer to Note 13 of the Notes to the Consolidated Financial Statements in Part IV, Item 15 of this Annual Report on Form 10-K for additional information specific to accounting for income taxes and the impacts from the enactment of the TCJA.

Goodwill

Goodwill is subject to our annual impairment test during the fourth quarter of our fiscal year, or earlier, if indicators of potential impairment exist, using either a qualitative or a quantitative assessment. Our impairment review process compares the fair value of the reporting unit in which the goodwill resides to its carrying value. We have identified two reporting units, GPU and Tegra Processor, for the purposes of completing our goodwill analysis. Goodwill assigned to the GPU and Tegra Processor reporting units as of January 27, 2019 was $210 million and $408 million, respectively. Determining the fair value of a reporting unit requires us to make judgments and involves the use of significant estimates and assumptions. We also make judgments and assumptions in allocating assets and liabilities to each of our reporting units. We base our fair value estimates on assumptions we believe to be reasonable but that are unpredictable and inherently uncertain.

During the fourth quarter of fiscal year 2019, we used the qualitative assessment to test goodwill for impairment for each reporting unit and concluded there was no impairment.

Refer to Note 5 of the Notes to the Consolidated Financial Statements in Part IV, Item 15 of this Annual Report on Form 10-K for additional information.

Cash Equivalents and Marketable Securities

Cash equivalents consist of financial instruments which are readily convertible into cash and have original maturities of three months or less at the time of acquisition. Marketable securities consist of highly liquid debt investments with maturities greater than three months when purchased. We measure our cash equivalents and marketable securities at fair value. The fair values of our financial assets are determined using quoted market prices of identical assets or quoted market prices of similar assets from active markets. All of our available-for-sale debt investments are subject to a periodic impairment review. We record a charge to earnings when a decline in fair value is significantly below cost basis and judged to be other-than-temporary, or have other indicators of impairments.

We performed an impairment review of our debt investment portfolio as of January 27, 2019. We concluded that our debt investments were appropriately valued and that no other-than-temporary impairment charges were necessary on our portfolio of available-for-sale debt investments as of January 27, 2019.

Refer to Notes 7 and 8 of the Notes to the Consolidated Financial Statements in Part IV, Item 15 of this Annual Report on Form 10-K for additional information.

Stock-based Compensation

Our stock-based compensation expense is associated with restricted stock units, or RSUs, performance stock units that are based on our corporate financial performance targets, or PSUs, performance stock units that are based on market conditions, or market-based PSUs, and our employee stock purchase plan. The number of PSUs and market-based PSUs that will ultimately be awarded is contingent on the Company’s level of achievement compared with the corporate financial performance target established by our Compensation Committee in the beginning of each fiscal year.

Refer to Notes 1 and 3 of the Notes to the Consolidated Financial Statements in Part IV, Item 15 of this Annual Report on Form 10-K for additional information.

Litigation, Investigation and Settlement Costs

From time to time, we are involved in legal actions and/or investigations by regulatory bodies. We are aggressively defending our current litigation matters. However, there are many uncertainties associated with any litigation or investigations, and we cannot be certain that these actions or other third-party claims against us will be resolved without costly litigation, fines and/or substantial settlement payments. If that occurs, our business, financial condition and results of operations could be materially and adversely affected. If information becomes available that causes us to determine that a loss in any of our pending litigation, investigations or settlements is probable, and we can reasonably estimate the loss associated with such events, we will record the loss in accordance with U.S. GAAP. However, the actual liability in any such litigation or investigation may be materially different from our estimates, which could

require us to record additional costs.

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Results of Operations

The following table sets forth, for the periods indicated, certain items in our Consolidated Statements of Income expressed as a percentage of revenue.

	Year Ended		
	January 27, 2019	January 28, 2018	January 29, 2017
Revenue	100.0 %	100.0 %	100.0 %
Cost of revenue	38.8	40.1	41.2
Gross profit	61.2	59.9	58.8
Operating expenses:			
Research and development	20.3	18.5	21.2
Sales, general and administrative	8.5	8.4	9.6
Total operating expenses	28.7	26.9	30.8
Income from operations	32.5	33.0	28.0
Interest income	1.2	0.7	0.8
Interest expense	(0.5)	(0.6)	(0.8)
Other, net	0.1	(0.2)	(0.4)
Total other income (expense)	0.8	(0.1)	(0.4)
Income before income tax expense	33.3	32.9	27.6
Income tax expense (benefit)	(2.1)	1.5	3.5
Net income	35.3 %	31.4 %	24.1 %

Revenue

Revenue by Reportable Segments

	Year Ended				Year Ended			
	January 27, 2019	January 28, 2018	$ Change	% Change	January 28, 2018	January 29, 2017	$ Change	% Change
	($ in millions)				($ in millions)			
GPU	$10,175	$ 8,137	$2,038	25 %	$8,137	$ 5,822	$2,315	40 %
Tegra Processor	1,541	1,534	7	— %	1,534	824	710	86 %
All Other	—	43	(43)	(100)%	43	264	(221)	(84)%
Total	$11,716	$ 9,714	$2,002	21 %	$9,714	$ 6,910	$2,804	41 %

GPU Business. GPU business revenue increased by 25% in fiscal year 2019 compared to fiscal year 2018. This increase was due primarily to 18% growth in sales of GeForce GPU products for gaming, driven by initial sales of Turing-based GPUs for desktops and by high-performance notebooks based on our Max-Q technology. Datacenter revenue, including Tesla, GRID and DGX, increased 52%, reflecting strong sales of our Volta architecture products, including NVIDIA Tesla V100 and DGX systems. Revenue from Quadro GPUs for professional visualization increased 21% due primarily to higher sales across desktop and mobile workstation products. Our PC OEM revenue decreased by 1% driven by the absence of Intel licensing revenue in fiscal year 2019. Revenue from cryptocurrency-specific products in fiscal years 2019 and 2018 was $306 million and $273 million, respectively. We expect cryptocurrency-related revenue to be negligible going forward.

GPU business revenue increased by 40% in fiscal year 2018 compared to fiscal year 2017 led by growth in gaming, datacenter and professional visualization. Revenue from sales of GeForce GPU products for gaming increased over 20%, reflecting continued strong demand for our Pascal-based GPU products. Datacenter revenue, including Tesla, GRID and DGX, increased 133%, reflecting strong demand from hyperscale and cloud customers for deep learning training and accelerated GPU computing as well as demand for HPC, DGX AI supercomputing and GRID virtualization platforms. Revenue from Quadro GPUs for professional visualization increased by 12% due primarily to higher sales in both high-end desktop and mobile

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workstation products. Revenue from GeForce GPU products for mainstream PC OEMs increased by over 90% due primarily to strong demand for GPU products targeted for cryptocurrency mining.

Tegra Processor Business. Tegra Processor business revenue was up slightly in fiscal year 2019 compared to fiscal year 2018. This was driven by an increase of over 15% in automotive revenue, primarily from infotainment modules, production DRIVE PX platforms, and development agreements with automotive companies, offset by a decline of approximately 15% in SOC modules for gaming platforms and related development services.

Tegra Processor business revenue increased by 86% in fiscal year 2018 compared to fiscal year 2017. This was driven by an increase of over 300% in revenue from SOC modules for gaming platforms and development services, and an increase of 15% in automotive revenue, primarily from infotainment modules, DRIVE PX platforms and development agreements for self-driving cars.

All Other. Our patent license agreement with Intel concluded in the first quarter of fiscal year 2018. For fiscal year 2018, we recognized related revenue of $43 million, down from $264 million for fiscal year 2017.

Concentration of Revenue

Revenue from sales to customers outside of the United States accounted for 87% of total revenue for each of fiscal years 2019, 2018, and 2017. Revenue by geographic region is allocated to individual countries based on the location to which the products are initially billed even if the revenue is attributable to end customers in a different location.

No single customer represented more than 10% of total revenue for fiscal years 2019 and 2018. In fiscal year 2017, we had one customer that represented 12% of our total revenue.

Gross Profit and Gross Margin

Gross profit consists of total revenue, net of allowances, less cost of revenue. Cost of revenue consists primarily of the cost of semiconductors purchased from subcontractors, including wafer fabrication, assembly, testing and packaging, board and device costs, manufacturing support costs, including labor and overhead associated with such purchases, final test yield fallout, inventory and warranty provisions, memory and component costs, and shipping costs. Cost of revenue also includes development costs for license and service arrangements and stock-based compensation related to personnel associated with manufacturing.

Our overall gross margin was 61.2%, 59.9%, and 58.8% for fiscal years 2019, 2018, and 2017, respectively. The increase in fiscal year 2019 reflects our continued shift toward higher-value platforms, which more than offset the impact of approximately $128 million in charges for excess DRAM and other components we recorded in the fourth quarter of fiscal year 2019 and a charge of $57 million we recorded during the third quarter of fiscal year 2019 related to prior architecture components and chips. The increase in fiscal year 2018 was driven primarily by a favorable shift in mix, the growth of our GeForce gaming GPU revenue, and the growth of our datacenter revenue for cloud, deep learning, AI, and graphics virtualization. The increase in fiscal year 2018 was partially offset by the conclusion of our patent license agreement with Intel in the first quarter of fiscal year 2018.

Inventory provisions totaled $270 million, $48 million, and $62 million for fiscal years 2019, 2018, and 2017, respectively. Sales of inventory that was previously written-off or written-down totaled $41 million, $35 million, and $51 million for fiscal years 2019, 2018, and 2017, respectively. As a result, the overall net effect on our gross margin was an unfavorable impact of 2.0% in fiscal year 2019 and insignificant in fiscal years 2018 and 2017.

A discussion of our gross margin results for each of our reportable segments is as follows:

GPU Business. The gross margin of our GPU business increased during fiscal year 2019 when compared to fiscal year 2018, primarily due to strong sales of high-end GeForce gaming GPUs and revenue growth in Datacenter, including Tesla, GRID and DGX, for cloud, deep learning, AI, and graphics virtualization. The gross margin of our GPU business increased during fiscal year 2018 when compared to fiscal year 2017 primarily due to strong sales of our GeForce gaming GPU products and revenue growth in datacenter, including Tesla, GRID and DGX, for cloud, deep learning, AI, and graphics virtualization.

Tegra Processor Business. The gross margin of our Tegra Processor business increased during fiscal year 2019 when compared to fiscal year 2018, primarily due to a favorable mix shift. The gross margin of our Tegra Processor business increased during fiscal year 2018 when compared to fiscal year 2017, primarily due to revenue growth in gaming development platforms and automotive.

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Operating Expenses

	Year Ended				Year Ended			
	January 27, 2019	January 28, 2018	$ Change	% Change	January 28, 2018	January 29, 2017	$ Change	% Change
	($ in millions)				($ in millions)			
Research and development expenses	$2,376	$ 1,797	$ 579	32 %	$1,797	$ 1,463	$ 334	23 %
% of net revenue	20.3 %	18.5 %			18.5 %	21.2 %		
Sales, general and administrative expenses	991	815	176	22 %	815	663	152	23 %
% of net revenue	8.5 %	8.4 %			8.4 %	9.6 %		
Restructuring and other charges	—	—	—	— %	—	3	(3)	(100)%
% of net revenue	— %	— %			— %	— %		
Total operating expenses	$3,367	$ 2,612	$ 755	29 %	$2,612	$ 2,129	$ 483	23 %

Research and Development

Research and development expenses increased by 32% in fiscal year 2019 compared to fiscal year 2018 and increased by 23% in fiscal year 2018 compared to fiscal year 2017, driven primarily by employee additions and increases in employee compensation and other related costs, including infrastructure costs and stock-based compensation expense.

Sales, General and Administrative

Sales, general and administrative expenses increased by 22% in fiscal year 2019 compared to fiscal year 2018 and increased by 23% in fiscal year 2018 compared to fiscal year 2017, driven primarily by employee additions and increases in employee compensation and other related costs, including infrastructure costs and stock-based compensation expense.

Total Other Income (Expense)

Interest Income and Interest Expense

Interest income consists of interest earned on cash, cash equivalents and marketable securities. Interest income was $136 million, $69 million, and $54 million in fiscal years 2019, 2018, and 2017, respectively. The increase in interest income was primarily due to higher average invested balances and higher rates from our floating rate securities and the purchase of new securities.

Interest expense is primarily comprised of coupon interest and debt discount amortization related to the 2.20% Notes Due 2021 and 3.20% Notes Due 2026 issued in September 2016, and the Convertible Notes issued in December 2013. Interest expense was $58 million, $61 million, and $58 million in fiscal years 2019, 2018, and 2017, respectively.

Other, Net

Other, net, consists primarily of realized or unrealized gains and losses from non-affiliated investments, losses on early debt conversions of the Convertible Notes, and the impact of changes in foreign currency rates. Other, net, was $14 million of income during fiscal year 2019, consisting primarily of $12 million unrealized gains from non-affiliated investments. Other, net, was $22 million and $25 million of expense in fiscal years 2018 and 2017, respectively, consisting primarily of $19 million and $21 million of losses recognized from early conversions of the Convertible Notes during fiscal years 2018 and 2017, respectively.

Income Taxes

The TCJA, which was enacted in December 2017, significantly changed U.S. tax law, including a reduction of the U.S. federal corporate income tax rate from 35% to 21%, a requirement for companies to pay a one-time transition tax on the earnings of certain foreign subsidiaries that were previously tax deferred and the creation of new taxes (GILTI) on certain foreign-source earnings. As a fiscal year-end taxpayer, certain provisions of the TCJA began to impact us in the fourth quarter of fiscal year 2018, while other provisions impacted us beginning in fiscal year 2019.

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We recognized income tax benefit of $245 million for fiscal year 2019, and income tax expense of $149 million and $239 million for fiscal years 2018, and 2017, respectively. Our annual effective tax rate was (6.3)%, 4.7%, and 12.5% for fiscal years 2019, 2018, and 2017, respectively. The decrease in our effective tax rate in fiscal year 2019 as compared to fiscal years 2018 and 2017 was primarily due to a decrease in the U.S. statutory tax rate from 33.9% to 21%, the finalization of the enactment-date income tax effects of the TCJA, higher U.S federal research tax credits and excess tax benefits related to stock-based compensation in fiscal year 2019.

The decrease in our effective tax rate in fiscal year 2018 as compared to fiscal year 2017 was primarily due to the provisional impact of the tax law changes and recognition of excess tax benefits related to stock-based compensation.

Our effective tax rate for fiscal year 2019 was lower than the U.S. federal statutory rate of 21% due primarily to income earned in jurisdictions, including British Virgin Islands, Hong Kong, China, Taiwan and United Kingdom, where the tax rate was lower than the U.S. federal statutory tax rates, the finalization of the enactment-date income tax effects of the TCJA, favorable recognition of U.S. federal research tax credits, and excess tax benefits related to stock-based compensation.

Our effective tax rate for fiscal years 2018 and 2017 was lower than the blended U.S. federal statutory rate of 33.9% for fiscal year 2018 and 35% for fiscal year 2017 due primarily to income earned in jurisdictions, including British Virgin Islands, Hong Kong, China, Taiwan and United Kingdom, where the tax rate was lower than the U.S. federal statutory tax rates, favorable recognition of U.S. federal research tax credits, the provisional impact of the tax law changes in 2018, and excess tax benefits related to stock-based compensation.

In fiscal year 2018 and the first nine months of fiscal year 2019, we recorded provisional amounts for certain enactment-date effects of the TCJA by applying the SEC guidance in SAB 118 because we had not yet completed our accounting for these effects. Furthermore, under U.S. GAAP, we can make an accounting policy election to either treat taxes due on the GILTI as a current period expense or factor such amounts into our measurement of deferred taxes. Because we were still evaluating the GILTI provisions as of January 28, 2018, we recorded no GILTI-related deferred balances. After further evaluation, we elected to account for GILTI deferred taxes. As of January 27, 2019, we completed our accounting for all of the enactment-date income tax effects of the TCJA and recognized a reduction of $368 million to the provisional amount recorded at January 28, 2018, primarily relating to the effects of electing to account for GILTI in deferred taxes.

Refer to Note 13 of the Notes to the Consolidated Financial Statements in Part IV, Item 15 of this Annual Report on Form 10-K for additional information.

Liquidity and Capital Resources

	January 27, 2019	January 28, 2018
	(In millions)	
Cash and cash equivalents	$782	$ 4,002
Marketable securities	6,640	3,106
Cash, cash equivalents, and marketable securities	$7,422	$ 7,108

	Year Ended		
	January 27, 2019	January 28, 2018	January 29, 2017
	(In millions)		
Net cash provided by operating activities	$3,743	$ 3,502	$ 1,672
Net cash provided by (used in) investing activities	$(4,097)	$ 1,278	$ (793)
Net cash provided by (used in) financing activities	$(2,866)	$ (2,544)	$ 291

As of January 27, 2019, we had $7.42 billion in cash, cash equivalents and marketable securities, an increase of $314 million from the end of fiscal year 2018. Our investment policy requires the purchase of highly rated fixed income securities, the diversification of investment types and credit exposures, and certain limits on our portfolio duration.

Cash provided by operating activities increased in fiscal year 2019 compared to fiscal year 2018, primarily due to higher net income, partially offset by changes in working capital. Cash provided by operating activities increased in fiscal year 2018 compared to fiscal year 2017, primarily due to higher net income and changes in working capital.

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Cash used in investing activities increased in fiscal year 2019 compared to fiscal year 2018, due to higher purchases and lower sales of marketable securities, partially offset by higher maturities of marketable securities. Cash provided by investing activities for fiscal year 2018 increased from fiscal year 2017, primarily due to a reduction in purchases of marketable securities, partially offset by the purchase of our previously-financed Santa Clara campus building.
Cash used in financing activities increased in fiscal year 2019 compared to fiscal year 2018, due to higher share repurchases and higher tax payments related to employee stock plans, partially offset by lower repayments of Convertible Notes. Cash used in financing activities in fiscal year 2018 increased from fiscal year 2017, primarily due to cash provided from the issuance of $2.00 billion of Notes in fiscal year 2017 as well as higher repayments of Convertible Notes, tax payments related to employee stock plans, share repurchases and dividend payments in fiscal year 2018.

Liquidity

Our primary sources of liquidity are our cash and cash equivalents, our marketable securities, and the cash generated by our operations. As of January 27, 2019 and January 28, 2018, we had $7.42 billion and $7.11 billion, respectively, in cash, cash equivalents and marketable securities. Our marketable securities consist of debt securities issued by the U.S. government and its agencies, highly rated corporations and financial institutions, asset-backed issuers, mortgage-backed securities by government-sponsored enterprises, and foreign government entities. These marketable securities are denominated in United States dollars. Refer to Critical Accounting Policies and Estimates in Part II, Item 7, Quantitative and Qualitative Disclosures About Market Risk in Part II, Item 7A and Note 7 of the Notes to the Consolidated Financial Statements in Part IV, Item 15 of this Annual Report on Form 10-K for additional information.
As a result of the TCJA, substantially all of our cash, cash equivalents and marketable securities held outside of the United States as of January 27, 2019 are available for use in the United States without incurring additional U.S. federal income taxes. Refer to Note 13 of the Notes to the Consolidated Financial Statements in Part IV, Item 15 of this Annual Report on Form 10-K for additional information.

Capital Return to Shareholders

We previously announced our plan to return $1.25 billion to shareholders in fiscal year 2019 and an additional $3.00 billion by the end of fiscal year 2020 - some of which would begin in the fourth quarter of fiscal year 2019. During fiscal year 2019, we repurchased a total of 9 million shares for $1.58 billion, including $700 million of the $3.00 billion, and paid $371 million in cash dividends.
We intend to return the remaining $2.30 billion of the $3.00 billion to shareholders by the end of fiscal year 2020 through a combination of share repurchases and cash dividends.
In November 2018, the Board authorized an additional $7.00 billion under our share repurchase program and extended it through the end of December 2022. As of January 27, 2019, we were authorized to repurchase additional shares of our common stock up to $7.24 billion.
In November 2018, we also announced a 7% increase in our quarterly cash dividend to $0.16 per share from $0.15 per share.
Our cash dividend program and the payment of future cash dividends under that program are subject to our Board's continuing determination that the dividend program and the declaration of dividends thereunder are in the best interests of our shareholders. Refer to Note 14 of the Notes to the Consolidated Financial Statements in Part IV, Item 15 of this Annual Report on Form 10-K for further discussion.

Notes Due 2021 and Notes Due 2026

In fiscal year 2017, we issued $1.00 billion of the Notes Due 2021 and $1.00 billion of the Notes Due 2026, collectively, the Notes. The net proceeds from the Notes were $1.98 billion, after deducting debt discounts and issuance costs.

Revolving Credit Facility

We have a Credit Agreement under which we may borrow up to $575 million for general corporate purposes and can obtain revolving loan commitments up to $425 million. As of January 27, 2019, we had not borrowed any amounts under this agreement.

Commercial Paper

We have a $575 million commercial paper program to support general corporate purposes. As of January 27, 2019, we had not issued any commercial paper.

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Refer to Note 11 of the Notes to the Consolidated Financial Statements in Part IV, Item 15 of this Annual Report on Form 10-K for further discussion.

Operating Capital and Capital Expenditure Requirements

In fiscal year 2019, we began construction on a 750 thousand square foot building on our Santa Clara campus, which is currently targeted for completion in fiscal year 2022. We believe that our existing cash balances and anticipated cash flows from operations will be sufficient to meet our operating requirements for at least the next twelve months.

Off-Balance Sheet Arrangements

As of January 27, 2019, we had no material off-balance sheet arrangements as defined by applicable SEC regulations.

Contractual Obligations

The following table summarizes our contractual obligations as of January 27, 2019:

	Payment Due By Period					
Contractual Obligations	Total	Less than 1 Year	1-3 Years	4-5 Years	More than 5 Years	All Other
	(In millions)					
Long-term debt (1)	$2,302	$ 54	$1,100	$ 64	$1,084	$ —
Inventory purchase obligations	912	912	—	—	—	—
Transition tax payable (2)	384	33	67	96	188	—
Uncertain tax positions, interest and penalties (3)	163	—	—	—	—	163
Operating leases	683	100	187	131	265	—