NVIDIA Corp. (NVDA)

HOLD: € 758.28 (-13.84%)

Equity Research Division

7th April 2024

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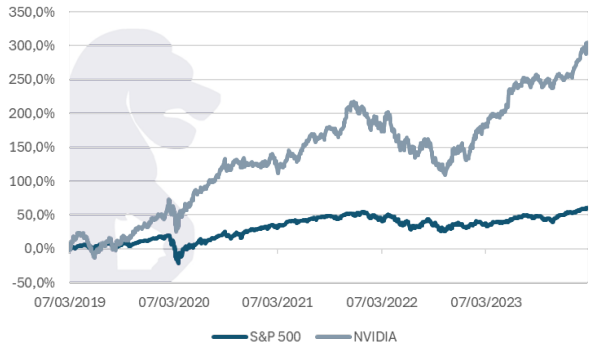
Basic Information	
Last Closing Price	$ 880.08
Target Price	$ 758.28
+/- Potential	-13.84%
Bloomberg Ticker	NVDA:US
GICS Sector	Information Technology
GICS Sub-Industry	Semiconductors

5Y Cumulative Returns



Market Cap	1.943bn
Basic Shares O/S	2.470bn
52-Wk High	876.95
52-Wk Low	222.97
Fiscal Year End	28 Jan. 2024

($million)	FY20A	FY21A	F22A	F23A
Gross profit	10,396	17,475	15,356	44,301
EBITDA	5,630	11,215	5,768	34,480
EBIT	4,532	10,041	4,224	32,972
Net Income	4,332	9,752	4,368	29,761

Key Executives	
Jen-Hsun Huang	Chief Executive Officer
Colette M. Kress	Chief Financial Officer

Company Description

NVIDIA Corp., headquartered in Santa Clara, California, and registered in Delaware, is a leading American multinational technology company. Specializing in software and chip design, NVIDIA is renowned for its provision of graphics processing units (GPUs), application programming interfaces (APIs) catering to data science and high-performance computing, as well as system on a chip units (SoCs) tailored for the mobile computing and automotive sectors. Moreover, NVIDIA holds a prominent position as a supplier of hardware and software for artificial intelligence (AI). Its range of professional GPUs finds extensive use in edge-to-cloud computing, supercomputers, and workstations across diverse fields such as architecture, engineering, media, automotive, scientific research, and manufacturing design. Furthermore, the company has made significant strides in the gaming industry. Competitors include AMD, Intel, Qualcomm, and various AI accelerator firms. NVIDIA also develops AI-powered software.

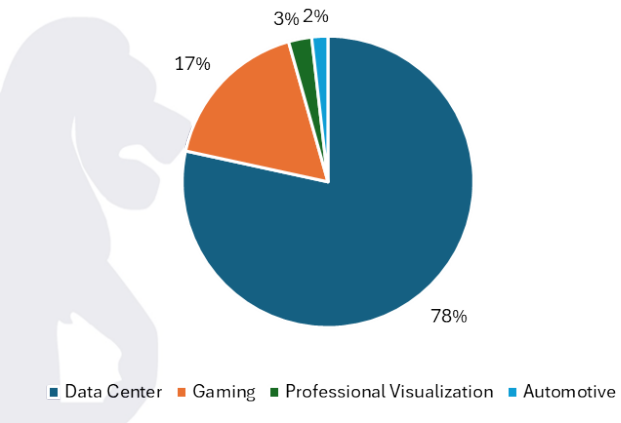
Summary

NVIDIA Corporation stands as a prominent force in the semiconductor industry, particularly renowned for its high-performance graphics processing units (GPUs), commanding a significant share, estimated at approximately 80%, of the global GPU semiconductor market as of 2023. Moreover, beyond its prowess in chip manufacturing, NVIDIA has strategically positioned itself as a key player in both AI hardware and software provision. From a valuation standpoint, we performed both absolute and relative valuation. For the absolute one, we used FCFF through 2033 plus TV, discounted at a WACC of 8.68%. The final DCF price per share of the company resulting from the analysis is $750.04, down 14.77% from the previous close price. A similar result is obtained through the relative analysis: using several multiples, we obtained a final average price per share of $770.60. Therefore, our recommendation is a HOLD.

Company Overview

Founded in 1993 and headquartered in Santa Clara, California, NVIDIA is a leading American software and fabless company that offers a full-stack computing infrastructure to help solve the most complex computational problems. This full-stack allows NVIDIA to meet specific demand from a wide range of customers thanks to the underlying foundational CUDA programming model that runs on all NVIDIA graphics processing units (GPUs), software development kits (SDKs), and Application Programming Interfaces (APIs).

Figure 1. Revenue Breakdown by Product



Source: Minerva Investment Society

Revenues

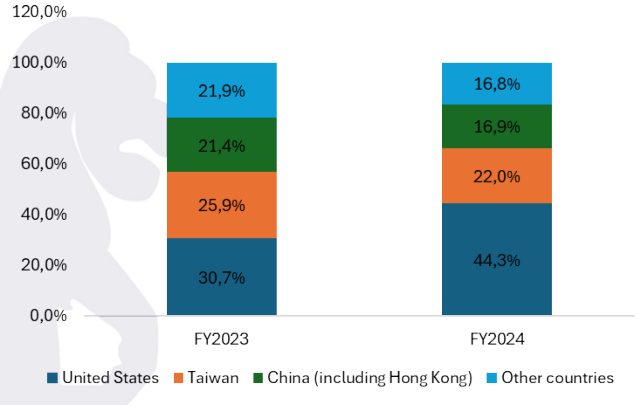
NVIDIA's revenues come from product sales of hardware and systems, license and development arrangements, software licensing, and cloud services provided on a subscription basis or a combination of subscription plus usage.

Segments Description and Geographic Reach

NVIDIA adopts a platform strategy which combines hardware, software, systems, and services to address customers' specific requirements. The programmable nature of the architecture allows the company to assist a wide range of end customers, particularly the four large markets including Data Center, Gaming, Professional Visualization, and Automotive.

- **Data Center**: Accounting for more than 75% of the revenues, this platform, lying on the foundation of GPU parallel programming, focuses on delivering significantly better performance and shorter processing time in AI, data analytics, and graphics relative to traditional CPU-only approaches. End customers include leading public cloud and consumer internet companies, while direct customers are original equipment manufacturers and original device manufacturers.
- **Gaming**: The gaming platforms leverage GPUs and sophisticated software to provide users with smoother, higher game quality graphics. Products range from GeForce RTX and GeForce GTX GPUs for gaming desktop and laptop PCs to GeForce NOW cloud gaming for PC games on underpowered devices, as well as SoCs and development services for game consoles.
- **Professional Visualization**: This segment enhances productivity and introduces new capabilities for design and manufacturing (architectural design, medical instrumentation, and aerospace) and digital content creation (professional video editing and post-production). The firm offers NVIDIA RTX platform for high-quality movie effects and NVIDIA Omniverse to create virtual world simulation applications.
- **Automotive**: Combining technology leadership in AI and partnerships with several hundred companies in the automotive ecosystem, NVIDIA provides solutions for automated driving and in-vehicle cockpit computing with the DRIVE Hyperion brand.

Figure 2. Revenue Breakdown by Geographic reach



Source: Minerva Investment Society

NVIDIA generated 44% and 31% of the revenue from sales to the United States, its main market, in fiscal years 2024 and 2023, respectively. The noticeable increase was primarily due to higher demand in Compute and Networking from U.S.-based companies. The remaining revenue is fairly distributed among Taiwan, China (including Hong Kong), and Other countries.

Industry Outlook

The aim of this industry analysis is to understand the dynamics faced by the companies operating within the field of semiconductor.

Semiconductor Industry

The semiconductor industry, rooted in the transistor's invention, has evolved into a driving force behind modern electronics. Pioneers like Fairchild Semiconductor and Texas Instruments paved the way for miniaturization, leading to complex integrated circuits. With the rise of personal computing, internet expansion, and mobile technology, companies like Qualcomm and NVIDIA emerged as leaders in communication and graphics processing. Now integral to various sectors, from consumer electronics to automotive, the industry boasts segments like Integrated Circuits, Optoelectronics, and Sensors & Actuators, all contributing to its remarkable growth. Valued at US$520.10bn in 2023, with a year-on-year decline rate in 2023 equated to 9.4%, and projected to reach US$613.10 by 2024, the semiconductor market demonstrates an expansion driven by innovation and adaptability. This anticipated recovery is propelled by advancements in generative AI, yet it is essential to acknowledge the potential complications arising from geopolitical factors. Despite challenges, the industry thrives on progress, poised to remain the cornerstone of electronic technology, charting a course for innovation in the digital age. The projected 17.9% growth over 2023 figures and a 6.8% increase compared to the record revenues of US$574 billion in 2022 signify a promising outlook for the industry. This substantial growth is anticipated to be primarily driven by the integrated circuit sector, which is anticipated to climb to approximately US$500.70bn in 2024 and to US$675.85bn in 2028, with a CAGR of 8.9%. The industry's upward trajectory is underscored by its remarkable adaptability and innovation, exemplified in prominent markets like China. Projections indicate that China alone is expected to yield a substantial revenue of US$198.90 billion in 2024, with Integrated Circuits emerging as the dominant force, anticipated to achieve a market volume of US$160.10 billion within the same period. Looking ahead, the forecast suggests a steady growth pattern, with revenue expected to exhibit an annual growth rate (CAGR) of 6.16% from 2024 to 2027, reaching a market volume of US$238bn by 2027. On a global scale, China takes center stage as the primary revenue generator, boasting an estimated US$198.90 billion in revenue for the year 2024. This dominance is further underscored by China's ambitious plans to construct 18 new fabs in 2024, illustrating the government's unwavering commitment to fortifying domestic chip development in response to ongoing U.S. sanctions. The surge in fab construction promises to significantly bolster China's production capacity, particularly in mature node technologies, thereby amplifying its presence in the global semiconductor landscape. However, this increased chip supply is expected to intensify competition, especially in crucial sectors such as automotive and industrial, where analog and discrete chips play extremely important roles. The ramifications of this increased competition will reshape market dynamics and drive innovation across various industries. The industry's strategic focus for 2024 revolves around key themes including the imperative for increased assembly and test capacity, the expansion of generative AI accelerator chips, trends in smart manufacturing, increasingly sophisticated cyber-attacks, and geopolitical considerations. The thriving market for gen AI chips is expected to exceed US$50bn in 2024, with anticipated sales growth of approximately 8.5% of total chip sales. This segment represents a significant growth opportunity, supported by advancements in AI-driven technologies and applications. Moreover, end markets such as PC and smartphone sales are anticipated to rebound, with projected growth of 4% in 2024 following declines in the previous year. These sectors play a pivotal role in driving semiconductor demand and are expected to contribute to the industry's rebound. The growing demand for semiconductor chips necessitates an increase in assembly and test capacity to meet market demand. Semiconductor companies are poised to invest in expanding their manufacturing capabilities to enhance production efficiency and scalability. Trends in smart manufacturing, coupled with the necessities for enhanced technological capabilities and to develop solutions tailored to the evolving needs of the sector, may lead to increasing opportunities for strategic M&A in the following years.

Porter's 5 Forces

Buyer Power: moderate. The bargaining power of buyers in the Nvidia market is moderate due to several reasons. Firstly, the company's products are unique and highly sought after, backed by a solid reputation for innovation and quality. Additionally, many of Nvidia's customers are large corporations that require significant volumes of chips, which reduces their individual bargaining power. However, certain customers, particularly major players in gaming or cloud computing sectors, may wield more influence due to their size and importance in the market. To further mitigate the bargaining power of buyers, Nvidia could improve strategies in terms of differentiation, strengthen customer relationships, vertical integration and expand customer base. Despite the moderate bargaining power of buyers, Nvidia must remain vigilant. In the semiconductor industry, buyers wield considerable influence due to the presence of competitors and substitute products. To counter this, Nvidia can continue investing in research and development to maintain its technological lead, offer competitive pricing, and establish robust brand recognition to foster customer loyalty and reduce the impact of buyer bargaining power.

Supplier Power: low. Nvidia faces a low bargaining power from its suppliers, primarily because it sources components from a wide array of suppliers and has established enduring partnerships with many of them. One of Nvidia's core strengths lies in its capacity to incorporate state-of-the-art technology into its products. This necessitates a consistent supply of top-quality components like semiconductors and memory chips. Yet, being a major industry player grants Nvidia substantial leverage in negotiations, enabling it to secure favorable prices and terms from its suppliers. Furthermore, Nvidia's suppliers contend with fierce competition from other firms, further diminishing their bargaining power. Should a supplier attempt to raise prices or compromise on quality, Nvidia can readily switch to alternative suppliers. This competitive dynamic gives Nvidia the upper hand in supplier negotiations. To further reduce the bargaining power of suppliers and ensure a steady stream of resources for innovation and growth, Nvidia can implement several strategies like increasing supplier diversity, diversifying the supplier base, developing in-house production capabilities, or negotiating long-term contracts. While suppliers in the semiconductor

industry hold low bargaining power due to the availability of multiple sources and high switching costs, Nvidia can further mitigate this by nurturing long-term relationships with key suppliers and investing in vertical integration to reduce reliance on external sources.

Substitutes: moderate. Emerging technologies like quantum computing could potentially replace traditional computing technologies, including Nvidia's GPUs. To address this threat, Nvidia must focus on enhancing its product offerings to ensure they remain competitive. Investing in research and development is crucial to stay ahead of emerging technologies that could jeopardize its market position. Building brand loyalty and fostering strong customer relationships can also help prevent customers from switching to substitutes. To further mitigate the threat of substitutes, Nvidia can implement several strategies. This includes continuous innovation to develop new and advanced products that are difficult for competitors to replicate. Building a strong brand identity and providing excellent customer service can foster loyalty, making it less likely for customers to switch to alternatives. Collaborating with other companies through strategic partnerships can lead to the creation of unique products and services that are hard to imitate. Adjusting pricing strategies to offer superior products at competitive prices can also deter customers from opting for substitutes. Moreover, expanding the product line to cater to a broader range of customer needs can make it more challenging for substitutes to compete effectively. The threat of substitutes is moderate in the semiconductor industry, as there are few substitutes for the high-performance computing and graphics products that Nvidia offers. To lower the threat of substitutes further, Nvidia can continue to invest in R&D to improve its product offerings and expand into new markets and applications.

New Entrants: low. Nvidia faces a low threat from potential new competitors, primarily due to several key factors. Firstly, entering the market requires a substantial investment of capital to develop advanced microprocessors and graphics cards. This is because the process demands extensive research and development, as well as intricate manufacturing procedures. Secondly, Nvidia boasts strong brand recognition and customer loyalty, making it challenging for newcomers to break into the market. Thirdly, Nvidia has cultivated robust partnerships with crucial suppliers and partners, creating formidable barriers for aspiring competitors. Additionally, established players in the industry benefit from significant economies of scale, enabling them to produce chips more cost-effectively than new entrants. These combined factors create a formidable challenge for new competitors looking to enter the market successfully. To further diminish the threat of new entrants, Nvidia can undertake various actions. This includes ongoing investment in research and development to enhance its technology and maintain its competitive edge. Strengthening relationships with suppliers is also essential to secure reliable access to raw materials and mitigate supply chain risks. Moreover, Nvidia can continue to build its brand recognition and customer loyalty to fortify its position in the market against potential newcomers. Diversifying its product portfolio and exploring new markets can also reduce dependency on any specific product or market segment. Lastly, acquiring and integrating smaller companies with promising technologies can bolster Nvidia's market position and broaden its competitive advantage. Overall, the semiconductor industry faces a low threat from new entrants due to high entry barriers such as capital and research costs. Nvidia's established presence, strong brand, and strategic partnerships further fortify its position. Continuing investments in research, maintaining supplier relationships, and expanding market reach are essential for Nvidia to sustain its competitive edge and mitigate the threat of new entrants.

Rivalry among Existing Competitors: high. Competition in the semiconductor industry is high, with Nvidia going head-to-head against strong rivals like Intel, AMD, Qualcomm, and others. This competition is intense due to several reasons, such as the large market size, high costs of research and development, and the fast pace of technological advancements. Competitors are constantly introducing new and advanced products, which creates pricing pressures and heightens the rivalry. To thrive in this competitive landscape, Nvidia concentrates on developing innovative technology and upholding a solid brand reputation. The company heavily invests in research and development, forms strategic partnerships, and engages in mergers and acquisitions. By staying at the forefront of technology and innovation, Nvidia aims to retain its leading position in both the semiconductor and graphics processing sectors. To mitigate the high competition, Nvidia could consider various strategies. Firstly, it can focus on innovation and product differentiation through increased investment in research and development. Secondly, expanding into new markets can help broaden its customer base and lessen the impact of competition in any single market. Additionally, forming strategic partnerships and collaborations with other companies can provide Nvidia with a competitive advantage. Price adjustments and promotional offers may also help attract customers and alleviate competition, but careful consideration is necessary to maintain profitability. Lastly, mergers and acquisitions could be an option to gain a larger market share and decrease the number of competitors, although this strategy carries risks that must be carefully weighed.

SWOT Analysis

Strengths

Strong and Increasing Financial Performance. NVIDIA's financial stability underscores its operational prowess. With a remarkable gross profit margin of 69.85% in the twelve months ending October 31, 2023, and net profit margin amounting to 42.10%, the company demonstrates resilience against market fluctuations while sustaining profitability.

Product portfolio and strategic alliances. NVIDIA's dominance in the AI space is bolstered by its innovative offerings like the NVIDIA HGX platform and DGX cloud services. These products cater to the growing demand for AI infrastructure and training. Strategic alliances with industry giants such as Microsoft Azure complement NVIDIA's expansion into cloud-based AI services, highlighting its commitment to innovation and market growth. With a diverse portfolio of over 2,300 patents and unique products, NVIDIA is poised to maintain its leadership in AI technology for the future.

Investments in R&D. NVIDIA prioritizes research and development, driving innovation with its product offerings. Notably, in the 2023 fiscal year, NVIDIA allocated a substantial $7.34bn investment to R&D, with an impressive 25.91% compound annual growth rate between 2017 and 2023, and an

increase of 39.31% compared to 2022. This robust investment underscores NVIDIA's steadfast dedication to pushing technological boundaries and delivering innovative solutions to the market.

Successful M&A History. NVIDIA boasts a history of successful mergers and acquisitions, executing a total of 9 operations between 2020 and 2023. These strategic operations have enabled the company to streamline its operations, reduce costs, and establish a robust supply chain.

Diversified Revenue Sources and Market Dominance. NVIDIA has diversified revenue streams, which include gaming, data centers, professional visualization, and automotive. This diversification helps to reduce the risks associated with a single revenue source. At the same time, NVIDIA stands as a leader in both the AI and gaming sectors, with a remarkable growth driven by the soaring demand for NVIDIA's GPUs, which are essential for AI applications and popular among gaming enthusiasts.

Weaknesses

Geopolitical Trade Restrictions. NVIDIA encounters operational hurdles due to geopolitical trade restrictions, notably recent U.S. government licensing requirements that affect exports to China and Russia. These restrictions pose a substantial threat to sales in these key markets, which have historically been significant contributors to NVIDIA's data center revenue. Addressing these regulatory barriers demands strategic planning and may limit the company's growth opportunities in affected regions.

High Employee Turnover Ratio. NVIDIA experiences a higher employee turnover ratio compared to its industry peers, indicating a greater number of departures, and necessitating increased expenditure on new employee training. Consequently, the company faces escalated recruitment expenses and diminished organizational productivity, due to a high rate of attrition in its workforce.

Supply Chain Challenges. Facing increased supply chain complexities, NVIDIA struggles with managing the supply and demand for new and transitioning products as it expands its product lines and enters new markets. This challenge is compounded by long manufacturing lead times and the company's reliance on third-party manufacturers and assemblers, which adds to the intricacies.

High Days of Inventory. NVIDIA days inventory on hand is quite high compared to its direct competitors – signifying increased storage costs and limited flexibility. With 5y average IDH of 99.59, NVIDIA maintains a higher inventory turnover period compared to Broadcom and AMD, which maintain respective 5-year averages of 38.64 and 82.59. High IDH can result in excess inventory, which can tie up a significant amount of working capital and lead to higher storage and handling costs. Another contributing factor to NVIDIA's high IDH and higher-than-peers inventory levels is its ineffective demand forecasting, resulting in increased storage cost.

Opportunities

AI and Machine Learning. The rapid advancements in AI and machine learning present a lucrative opportunity for NVIDIA, as the demand for its GPUs and AI infrastructure is anticipated to rise with the increasing sophistication of AI technologies. NVIDIA's substantial investment in AI research and development strategically positions the company to leverage this trend and solidify its pivotal role as a leading facilitator of AI innovation. With its GPUs well-suited to meet the escalating demand for high-performance computing in AI and machine learning applications, NVIDIA stands at the forefront of this transformative industry. Moreover, NVIDIA widely adopted deep learning software platform, CUDA, further strengthens its position by meeting the needs of researchers and businesses, affirming its status as a key player in shaping the future of AI.

Increasing Usage of GPUs in Data Centers. NVIDIA's GPUs are experiencing growing utilization in data centers, particularly for compute-intensive tasks such as artificial intelligence, data analytics, and high-performance computing.

Diversifying Revenue Streams. NVIDIA is strategically positioned to capitalize on substantial growth opportunities by venturing into new markets and applications. Its initiative to develop regulation-compliant solutions for markets affected by U.S. trade restrictions underscores its adaptability and proactive approach to navigating challenging environments, as well as its ability to capture emerging growth areas. Through strategic partnerships with industry leaders, NVIDIA is well-equipped to diversify its revenue streams and unlock new market potentials. In the automotive sector, NVIDIA's DRIVE platform, designed for autonomous vehicles, is gaining momentum, evidenced by partnerships with leading automakers such as Mercedes-Benz and Audi. Additionally, the company is actively developing AI-powered infotainment systems for automobiles.

Threats

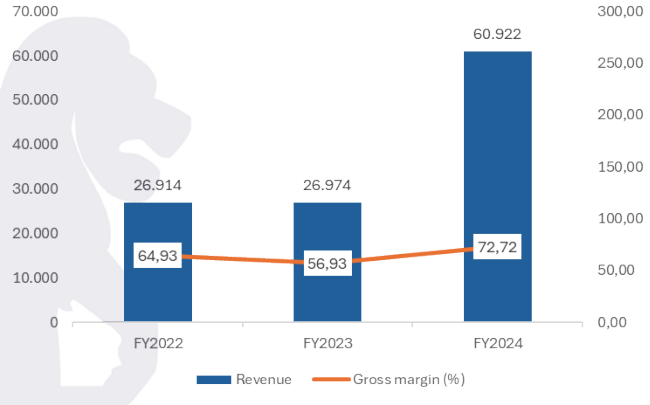
Cybersecurity Threats. As a tech company, NVIDIA faces several cybersecurity risks. A significant breach could lead to financial and reputational damage. Additionally, NVIDIA's capacity to oversee the information security practices of third parties is limited.

Intense Competition. NVIDIA operates within an industry where rivals, such as AMD and Intel, are constantly innovating to gain market dominance. The stable profitability of the sector attracts numerous entrants, intensifying competition and posing challenges for sustained growth. To uphold its technological leadership, the company must increasingly and consistently invest in research and development. Failing to match the industry's pace of innovation could jeopardize NVIDIA's market standing and profitability.

Dependence on Manufacturing Partners. NVIDIA does not manufacture its chips but relies on third-party foundries. Particularly, NVIDIA's heavy dependence for chip production on Taiwan Semiconductor Manufacturing Company (TSMC), the world's leading contract chipmaker, raises concerns. Any disruption or unavailability of TSMC's foundry services could result in delays in NVIDIA's product delivery, potentially impacting revenue and customer relations.

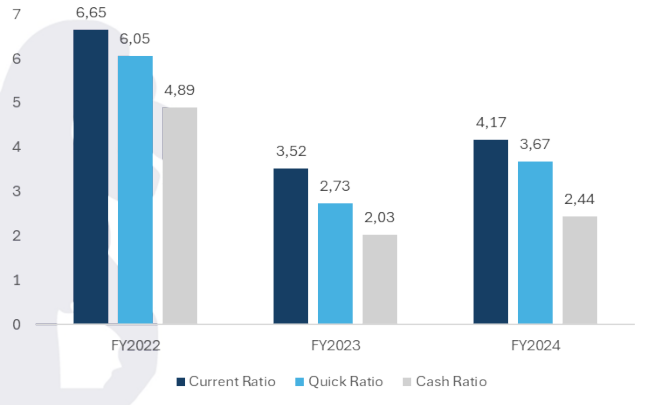
Legal and policy implications. NVIDIA's business operations can be significantly affected by shifts in regulations, such as the recent U.S. government restrictions. These restrictions entail limitations on NVIDIA's sale of various advanced AI chips to China, aimed at impeding the country's access to cutting-edge technologies that could bolster its military capabilities.

Figure 3. Profitability



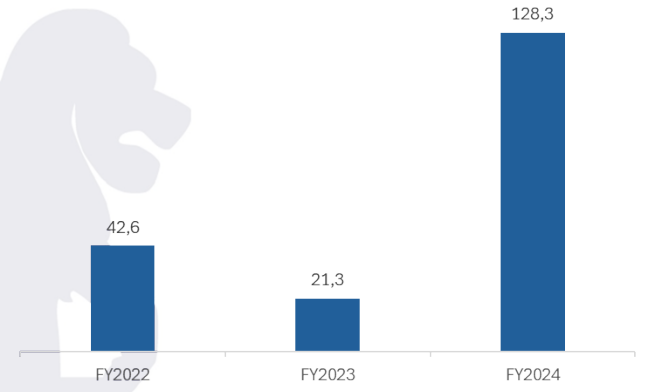
Source: Minerva Investment Society

Figure 4. Liquidity



Source: Minerva Investment Society

Figure 5. Solidity: Interest Coverage Ratio



Source: Minerva Investment Society

Figure 6. Cash Conversion Cycle

Source: Minerva Investment Society

Financial Analysis

Profitability

In 2023, NVIDIA positioned itself as a leader in the Artificial Intelligence (AI) field and showed significant revenue growth thanks to the increase in demand in every segment. In particular, revenue for fiscal year 2024 is $60.9 billion, an increase of 126% from the previous year. This surge is mainly driven by Data Center's 217% rise in revenue, 40% of which is estimated to come from AI inference (according to NVIDIA's Earnings Call Transcript). AI lies at the core of NIVDIA's operations as the company believes that AI solutions have been deployed by virtually every industry, from technology to healthcare and financial services. Besides, Gaming was up 15% thanks to the stabilized inventory levels and the growing demand, especially during holidays. Professional Visualization's revenue gained a 1% increase, while that of Automotive went up by 21%. Despite a slight increase in operating expenses due to growth in human capital costs and acquisition termination charge of the proposed Arm transaction, NVIDIA's Data Center 217% revenue growth and lower inventory provisions as a percentage of revenue brought gross margin to 72.7%, remarkably higher than competitors' median at 55.1%. This leadership in the industry can be attributed to the early adoption of the GPUs which left NVIDIA with no meaningful competition.

Liquidity

Over the past 3 years, all of NVIDIA's liquidity ratios demonstrated a strong ability to cover current liabilities. The numbers halved in FY2023 from FY2022 but still remained greater than 2x. In FY2024, the company's current liabilities reached $10,631 million (up 62% from the previous year) due to the increases in customer program accruals and account payables. Nevertheless, impressive revenue growth returns the ratios to growth in the same year. Looking into FY2024, the current ratio stays at 4.17x, signaling that NVIDIA has enough liquidity to pay off all short-term debts. This stability can also be seen with the 3.67x quick ratio as NVIDIA can easily meet its contemporary financial obligations without the need to sell and convert inventory into liquid assets. Lastly, a 2.44x cash ratio means the company manages to make up for its short-term liabilities using only cash and cash equivalents.

Solvency

To analyze NVIDIA's financial health, we look into the interest coverage ratio (IRC) and the Debt-to-Equity ratio (D/E). IRC witnessed a substantial increase from the three-year low of 21.3x in FY2023 to 128.3x in FY2024, so coverage of interest payments is not a concern. At the same time, D/E halved to 25.7% in FY2024 after one year. This is mainly due to the surge in shareholders' equity and illustrates that the company has been utilizing its assets instead of borrowing more capital.

Cash Conversion Cycle

NVIDIA's Cash Conversion Cycle (CCC) is calculated by using Days Inventory Outstanding (DIO), Days Sales Outstanding (DSO), and Days Payable Outstanding (DPO). This metric assesses NVDA's efficiency in managing working capital. The lower the value, the more adept NVDA is at converting inventory investments back into cash and paying suppliers; a shorter CCC

also has a positive effect on cash flows since the company now possesses an increased availability of cash. From FY2022 to FY2023, DIO and DSO increased from 86 to 122 and from 48 to 57, respectively; meanwhile, DPO decreased from 53 to 38. The trend reversed for FY2024 with DIO at 115, DSO at 41, and DPO at 42. This results in a reduced FY2024 CCC of 114, down from 141 in FY2023. Although the company has been improving the CCC throughout the period, the figures are still higher than those of competitors. This is due to NVIDIA's great dependency on third parties for their technology to manufacture, assemble, test, or package products. Furthermore, the company's supply chain is currently concentrated in the Asia-Pacific region, making the company unable to control product delivery schedules and resulting in extended manufacturing lead times. To secure future supply and capacity, NVIDIA has increased capacity purchases with existing suppliers and added new vendors, which ultimately raised product prices. We note that these consequences of the reliance on third-party supply chains might affect the business in the long run.

Valuation

Our analysis followed two main approaches:

- Intrinsic valuation using the DCF model (FCFF).
- Relative valuation using comparable company analysis.

Cost of Capital

Throughout the whole analysis, we used a constant cost of capital. We can therefore start looking at how we computed it through its different components.

Risk-free rate and ERP

The risk-free rate has been assumed to be equal to the average of the 10-year Treasury bond yield (4.3%) and the long-term assumption (3%), which is 3.64%.

To compute the ERP, we used Damodaran's ERP for the US, which is 4.60%.

Beta

Beta represents the systematic risk attached to the company, comparing its market performance with the overall market. For Beta computation, we initially calculated the adjusted levered beta of comparable firms used in relative valuation. Subsequently, we applied Hamada's equation to unlever the latter and calculate the average unlevered beta of the sector. We then used the same equation to re-lever the obtained Beta with Nvidia's marginal tax rate (21%) and Debt-to-Equity ratio (0.68%). Levered Beta of NVIDIA is 1.103.

Cost of Equity

The cost of equity, therefore, is equal to:

$$Cost\ of\ equity = k_E = r_f + \beta_L \cdot ERP = 8.71\%$$

Cost of Debt

To compute the cost of debt, we added the risk-free rate to the spread of NVIDIA's debt:

$$Pre - tax\ cost\ of\ debt = rf\ rate + debt\ spread = 4.43\%$$

We computed the debt spread as the rating-based default spread for A+ companies, which is 0.79%, according to ICE BofA OAS Index. Rating A+ is obtained using the synthetic approach based on the level of interest coverage. Therefore, with the pre-tax cost of debt equaling 4.43%, using a marginal tax rate of 21%, we estimated that the cost of debt would be equal to 3.50%.

$$Cost\ of\ debt = k_D = (Pre - tax\ k_D) \cdot (1 - t) = 3.50\%$$

WACC

We estimate the WACC using the following formula:

$$WACC = \frac{E}{D+E} \cdot k_E + \frac{D}{D+E} \cdot k_D = 8.68\%$$

where k_E is cost of equity, k_D is the after-tax cost of debt, D is the market value of the company's debt, and E is the company's market capitalization. WACC is 8.68%.

DCF Valuation

In our DCF valuation, we embarked on a detailed exploration of revenue projections by dissecting the evolution of Nvidia's business across its diverse segments and estimated potential demand and market share accretion/dilution for the company up to 2033.

Beginning with the Data Center domain, we recognized an revenue surge of 216.73% in FY2024, attributing this robust growth to escalating demands for cloud and AI infrastructure. Given Nvidia's dominant stance in this arena, we anticipate the company's growth to triple that of the overall market in 2024. Our projections extend to a market CAGR of 14% from 2023 to 2033, with Nvidia expected to outpace this until FY2028, driven by its historical performance and market demand. This leads to an impressive CAGR of 21% for Nvidia in this segment, escalating revenues from $47 billion in 2023 to $198 billion by 2028, and reaching $320 billion by 2033.

Turning our attention to the Gaming segment, we observed a notable growth rate of 15.22% in FY2024, significantly outperforming the market. With Nvidia poised to solidify its leadership in gaming, buoyed by an expanding GoForce NOW subscriber base and strong GPUs sales, we predict sustained superior growth rates before aligning with the broader market post-2028. Our forecasts suggest a market growth of 5.03% in the coming year, with Nvidia's revenues evolving from $10 billion in 2023 to $14 billion by 2028 and reaching $16 billion by 2033.

In the Professional Visualization sector, Nvidia currently holds a 95% market share. We expect this figure to adjust to just above 80.77% in the long run, influenced by emerging competition and strategic shifts. We project a market CAGR of 5.6%, leading to revenue of $2.7 billion by 2033. The Automotive segment presents a burgeoning opportunity, with Nvidia's market share expected to escalate from 1.97% in 2023 to 8.97% by 2033, reflecting a revenue increase from $1 billion to $23 billion,

Figure 7. DCF Valuation

Assumptions	
Final period in forecast horizon	2033
Terminal growth rate	3,0%
Tax rate	21%
Forecast WACC	8,7%
Terminal WACC	8,7%

Calculations	
Final forecast FCFF	155.274
Terminal value	2.816.498
Present value of forecast cash flows	614.668
Present value of terminal value	1.225.397

Enterprise value	1.840.065
Less: debt & other capital claims	13.369
Add: cash & cash equivalents	25.984
Less: Pension provisions	-
Less: Other debt-like items	-
Add: Non-operating assets	-
Less: Minority Interests	-
Less: Value of options (Damodaran approach)	-

Equity value	1.852.680
Weighted average basic shares outstanding	2.470
weighted average dilluted shares	2.493

Value per share	750,07
Current value per share	$ 880,08
Premium (discount to last close)	-14,77%

Source: Minerva Investment Society

Figure 8. Sensitivity Analysis

Share Price vs WACC and TGR

	8,5%	8,5%	8,7%	8,9%	9,1%
2,6%	$744,78	$744,78	$717,40	$691,79	$667,80
2,8%	$761,97	$761,97	$733,16	$706,29	$681,15
3,0%	$780,42	$780,42	$750,04	$721,77	$695,38
3,2%	$800,26	$800,26	$768,15	$738,34	$710,58
3,4%	$821,67	$821,67	$787,63	$756,12	$726,85

Source: Minerva Investment Society

Figure 9. Comps Analysis

	EV / EBIT Forward	P/E Forward
Multiple	34.1x	32.5x
Nvidia Metric	64,021	50,347
Implied EV	2,184,058	-
(Net Debt)	(13,865)	-
Implied Equity Value	2,170,193	1,636,442
NOSH	2,470	2,470
Implied NVDA Share Price	878.6	662.5
Average	770.6	

Source: Minerva Investment Society

driven by a market CAGR of 16.61% and Nvidia's anticipated CAGR of 17%. The company currently serves over 40 customers, including most of the largest EV, truck and robotaxi makers, and employs its GPUs to train neural networks to develop AI systems for self-driving vehicles.

Conversely, we anticipate stagnant growth in the OEM & Others segment as Nvidia phases it out.

Overall company revenue growing from $60 billion in 2023 to $362 billion by 2033, marking a 20% CAGR. This growth trajectory is underpinned by efficiencies from economies of scale, scope, and network effects, enhancing profitability as Nvidia cements its market leadership. Operational efficiencies are expected to manifest in reduced operating expenses relative to revenue, despite increasing compensation expenses tied to performance achievements.

Capital expenditures are projected at approximately 2% of revenue, transitioning towards intangibles through acquisitions and R&D capitalization, adjusting the asset base composition to 60.2% PP&E and 39.8% intangibles by 2033. This shift aligns with Nvidia's strategic focus on AI technologies. By FY2033, the CAPEX arrives at close to $7.8bn, with D&A hovering at around $4.2bn.

We have used the following formula to calculate the FCFFs:

$$FCFF = EBIT \cdot (1 - t) + D\&A - CAPEX - \Delta NWC$$

Discounting all the cash flows and adding them up leads us to an enterprise value of $1.8 trillion, which, after doing the equity bridge, translates to a share price of $750.04. When compared to the current share price of $880.08, this analysis suggests a potential overvaluation of 14.77%.

Multiples Analysis

Peers Analysis was conducted selecting as comparable only companies that operates in US. We selected 12 firms. In order to check the results obtained through the DCF model, we have performed a market multiple analysis. We have looked at the EV/EBIT, and P/E multiples (Actual and Forward) for the business. The median EV/EBIT F, and P/E F multiples of the comps considered were 34.1x and 32.5x, respectively. Given the multiples, for the final valuation we used the average share price obtained using the median EV/EBIT F ($878.6) and median P/E F ($662.5). This leads to an average share price of $770.6.

Final Valuation Methodology

For deriving the final target price, we computed a weighted average of the values obtained from the two analyses, attributing an higher weight to the DCF result because it captures both top-line revenue growth and profitability. We considered:

- DCF Share Price: $750.04 (weight 60%)
- Average Multiples Share Price: $770.60 (weight 40%)

This leads to a final target price of $758.28 / share, a 13.84% decrease from the last close price of $880.08 (5/04/2024).

Investment Risks

Upside Risks

Innovative Product Releases and Partnerships: *NVIDIA is known for its strong research and development efforts and for producing innovative products that are in high demand, such as their graphics processing units (GPUs) and products related to artificial intelligence (AI), deep learning, and data centers. The company also frequently forms strategic partnerships, which can drive growth. If NVIDIA announces a groundbreaking new GPU or secures a lucrative partnership, it could trigger an appreciation in stock value, leading to substantial losses for a short position. The tech industry is highly volatile and driven by innovation, and being short on a tech stock exposes to the risk of unexpected positive developments.*

Market Leadership and Competitive Advantage: *NVIDIA is a leader in the GPU market, which it has dominated for years. The company's competitive position in AI, deep learning, gaming, professional visualization, and data center markets can lead to sustained growth and market confidence. Their technology is integral to several emerging and high-growth sectors such as electric vehicles, autonomous driving, and AI applications. If NVIDIA extends its market leadership, the company's stock price could further increase.*

Earnings Surprises: *The company has a track record of strong financial performance, and if it continues to report earnings that beat analysts' expectations, the stock price is likely to rise. Positive financial surprises can prompt investors to reassess the company's growth prospects and lead to a rally in the stock price, causing harm to short sellers.*

Downside Risks

The Long-term Impact of Climate Change: *Climate change poses long-term risks to Nvidia's business, as well as those of its customers, partners, and vendors. Vulnerabilities include potential disruptions to water and energy availability, particularly in regions where Nvidia operates. Extreme weather events, such as extreme heat and wind coupled with dry conditions in Northern California, may lead to power safety shutoffs. This could hinder operations at Nvidia's headquarters and data centers. Moreover, climate change may increase political instability in areas of business operation, potentially disrupting operations and increasing costs for NVidia. Nvidia's business and its supply chain could face additional challenges due to climate-related laws, regulations, and lawsuits. Compliance with regulations like carbon taxes and pollution limits may result in higher direct and indirect costs, impacting Nvidia's expenses and requiring alterations to operations and product design activities. Failure to meet renewable energy sourcing goals, such as its stated goal of procuring 100% of its global electricity usage from renewable sources by the endof fiscal year 2025, could also harm Nvidia's reputation, while supply chain delays stemming from climate change-related disruptions may lead to contractual disputes and increased costs.*

Legal Implications and Government Regulations: *NVIDIA is facing a legal dispute regarding the utilization of copyrighted materials in the training of its AI platform, NeMo, being accused of using copyrighted books without permission. This lawsuit could expose NVIDIA to significant losses. Moreover, the U.S. government's imposition of new license requirements affecting exports to China, including Hong Kong and Macau, and Russia for certain NVIDIA data center products presents uncertainties. The company may encounter challenges in managing its operations and forecasting operating results due to these requirements. This regulatory landscape introduces difficulty in quantifying the impact, potentially affecting the company's performance.*

Appendix

($ mn)	2018	2019	2020	2021	2022	2023
Balance sheet						
Property	1.404	1.674	2.149	2.778	3.807	3.914
Goodwill and trademarks	618	618	4.193	4.349	4.372	4.430
Intangible assets	45	49	2.737	2.339	1.676	1.112
Operating lease assets	-	618	707	829	1.038	1.346
Deferred tax assets	-	548	806	1.222	3.396	6.081
Other non-current assets	668	118	2.144	3.841	3.820	4.500
Total non-current assets	**2.735**	**3.625**	**12.736**	**15.358**	**18.109**	**21.383**
Inventories	1.575	979	1.826	2.605	5.159	5.282
Accounts receivables	1.424	1.657	2.429	4.650	3.827	9.999
Cash at cash equivalents	7.422	10.897	11.561	21.208	13.296	25.984
Prepaid expenses and other current assets	136	157	239	366	791	3.080
Total current assets	**10.557**	**13.690**	**16.055**	**28.829**	**23.073**	**44.345**
Non-current assets for sale	-	-	-	-	-	-
Total assets	**13.292**	**17.315**	**28.791**	**44.187**	**41.182**	**65.728**
Preferred stock	-	-	-	-	-	-
Common stock	1	1	1	3	2	2
Additional paid-in capital	6.051	7.045	8.721	10.385	11.971	13.132
Treasury stock, at cost	(9.263)	(9.814)	(10.756)	-	-	-
Accumulated other comprehensive income / loss	(12)	1	19	(11)	(43)	27
Retained earnings	12.565	14.971	18.908	16.235	10.171	29.817
Total shareholders' equity	**9.342**	**12.204**	**16.893**	**26.612**	**22.101**	**42.978**
Accounts Payable	511	687	1.201	1.783	1.193	2.699
Accrued and other current liabilities	818	1.097	1.725	2.552	4.120	6.682
Short term debt	-	-	999	-	1.250	1.250
Total current liabilities	**1.329**	**1.784**	**3.925**	**4.335**	**6.563**	**10.631**
Convertible long-term debt	1.988	1.991	5.964	10.946	9.703	8.459
Other long term liabilities	633	1.336	2.009	2.294	2.815	3.660
Capital lease obligations, long-term	-	561	634	741	902	1.119
Other long-term liabilities	633	775	1.375	1.553	1.913	2.541
Total non-current liabilities	**2.621**	**3.327**	**7.973**	**13.240**	**12.518**	**12.119**
Liabilities held for sale	-	-	-	-	-	-
Total liabilities and equity	**13.292**	**17.315**	**28.791**	**44.187**	**41.182**	**65.728**

($ mn)	2018	2019	2020	2021	2022	2023
Income statement						
Revenue	11.716	10.918	16.675	26.914	26.974	60.922
Cost of Revenue	(4.545)	(4.150)	(6.279)	(9.439)	(11.618)	(16.621)
Operating expenses	(3.367)	(3.922)	(5.864)	(7.434)	(11.132)	(11.329)
Selling, general & adminsitrative expenses (SGAs)	(991)	(1.093)	(1.940)	(2.166)	(2.440)	(2.654)
Research and development	(2.376)	(2.829)	(3.924)	(5.268)	(7.339)	(8.675)
Acquisition termination cost	-	-	-	-	(1.353)	-
Operating profit	**3.804**	**2.846**	**4.532**	**10.041**	**4.224**	**32.972**
Interest income	136	178	57	29	267	866
Interest expense	(58)	(52)	(184)	(236)	(262)	(257)
Other income (expense), net excluding interest expense	14	(2)	4	107	(48)	237
Pre-tax Income	**3.896**	**2.970**	**4.409**	**9.941**	**4.181**	**33.818**
Taxes	245	(174)	(77)	(189)	187	(4.058)
Net Income	**4.141**	**2.796**	**4.332**	**9.752**	**4.368**	**29.760**

($ mn)	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Discounted Cash Flow																
Revenue	11.716	10.918	16.675	26.914	26.974	60.922	104.781	136.252	166.633	198.438	223.529	249.895	277.288	305.406	333.903	362.353
Cost of Revenue	(4.545)	(4.150)	(6.279)	(9.439)	(11.618)	(16.621)	(26.195)	(33.791)	(40.992)	(48.419)	(54.094)	(59.975)	(65.995)	(72.076)	(78.801)	(85.515)
Gross Profit	**7.171**	**6.768**	**10.396**	**17.475**	**15.356**	**44.301**	**78.585**	**102.462**	**125.641**	**150.019**	**169.435**	**189.920**	**211.293**	**233.331**	**255.102**	**276.838**
Margin	*61,2%*	*62,0%*	*62,3%*	*64,9%*	*56,9%*	*72,7%*	*75,0%*	*75,2%*	*75,4%*	*75,6%*	*75,8%*	*76,0%*	*76,2%*	*76,4%*	*76,4%*	*76,4%*
Operating expenses	(3.367)	(3.922)	(5.864)	(7.434)	(9.779)	(11.329)	(14.565)	(19.518)	(24.912)	(30.907)	(36.212)	(42.045)	(48.525)	(55.447)	(62.707)	(70.315)
Selling, general & adminsitrative expenses (SG	(991)	(1.093)	(1.940)	(2.166)	(2.440)	(2.654)	(3.039)	(3.611)	(4.332)	(5.060)	(5.588)	(6.122)	(6.794)	(7.482)	(8.181)	(8.878)
Research and development	(2.376)	(2.829)	(3.924)	(5.268)	(7.339)	(8.675)	(11.526)	(15.907)	(20.579)	(25.846)	(30.623)	(35.922)	(41.732)	(47.964)	(54.526)	(61.437)
EBIT	**3.804**	**2.846**	**4.532**	**10.041**	**4.224**	**32.972**	**64.021**	**82.944**	**100.729**	**119.112**	**133.223**	**147.875**	**162.768**	**177.884**	**192.395**	**206.523**
Adjusted EBIT	**4.111**	**3.174**	**5.763**	**11.086**	**6.926**	**34.313**	**64.021**	**82.944**	**100.729**	**119.112**	**133.223**	**147.875**	**162.768**	**177.884**	**192.395**	**206.523**
% growth		*-25,2%*	*59,2%*	*121,6%*	*-57,9%*	*680,6%*	*94,2%*	*29,6%*	*21,4%*	*18,2%*	*11,8%*	*11,0%*	*10,1%*	*9,3%*	*8,2%*	*7,3%*
Margin	*35%*	*29%*	*35%*	*41%*	*26%*	*56%*	*61%*	*61%*	*60%*	*60%*	*60%*	*59%*	*59%*	*58%*	*58%*	*57%*
After-tax EBIT	3.248	2.507	4.553	8.758	5.472	27.107	50.577	65.525	79.576	94.099	105.246	116.821	128.587	140.528	151.992	163.153
D&A	262	381	1.098	1.174	1.544	1.508	1.301	2.315	2.018	2.397	2.592	2.953	3.263	3.599	3.925	4.247
Capex	600	489	1.128	976	1.833	1.069	2.349	3.678	3.684	4.381	4.828	5.452	6.036	6.653	7.264	7.871
Change in NWC	0	(249)	817	2.134	3.352	7.201	6.449	5.272	4.719	4.714	3.158	3.853	3.929	3.987	4.071	4.256
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FCFF	**2.228**	**2.122**	**2.750**	**4.983**	**682**	**14.653**	**43.080**	**58.891**	**73.191**	**87.400**	**99.853**	**110.469**	**121.884**	**133.487**	**144.582**	**155.274**
DCF							**39.640**	**49.861**	**57.020**	**62.653**	**65.863**	**67.047**	**68.068**	**68.595**	**68.364**	**67.556**

	Jan'25 E (FY)			Jan'26 E (FY)			Jan'27 E (FY)		
	MIMS Est.	Consensus	MIMS vs. Cons.	MIMS Est.	Consensus	MIMS vs. Cons.	MIMS Est.	Consensus	MIMS vs. Cons.
Revenue	104,781	110,690	-5%	136,252	135,655	0%	166,633	149,401	12%
EPS	$ 20.20	$ 23.01	-12%	$ 26.20	$ 27.83	-6%	$ 31.83	$ 32.28	-1%

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