

Assessing NVIDIA's Financial Performance and Risk Mitigation in the AI Boom

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Abstract. The development of generative artificial intelligence has been going at a high speed recently, and now NVIDIA is one of the essential components of the AI computing system globally. NVIDIA's publicly available financial statements for fiscal years 2024-2026 will be used in this paper to assess the company's financial health from three dimensions: profitability and quality of earnings, asset structure and liquidity, and cash flow performance. At the same time, an analysis will also be carried out to determine the effects of economic fluctuations and changes in the external environment on the company's finances. Although the company has been profitable and has good operating results so far, it is becoming more exposed to fluctuations in demand, geopolitical risks and the development of in-house AI chips by customers. Based on the above results, this paper proposes the following measures to strengthen the long-term financial health of NVIDIA. Expand into the Physical AI market for diversified revenue sources, generate recurring income through further commercialisation of the CUDA software ecosystem, and maintain a more balanced capital allocation plan by moderately reducing share repurchases and keeping a larger cash reserve. The analysis system in this paper may offer some references for assessing the financial risk of semiconductor companies and provide a practical model for other high-growth technology enterprises seeking to achieve profit generation and long-term stability simultaneously.

Keywords: NVIDIA, financial performance, risk mitigation

1. Introduction

With the development of generative artificial intelligence, there is now a high demand for computing power and an increase in investment in AI infrastructure around the world. NVIDIA is a first-tier company in the world that supplies AI GPUs and leads this change. Its products are now the computing foundation for large language models and other cutting-edge artificial intelligence applications, and both revenue and market value have been rising steadily in recent years.

Despite the above good results, people have grown increasingly anxious about the long-term stability of the current AI boom. Several recent studies have indicated that the scale of investment in AI infrastructure is growing at a faster rate than the economic benefits realised from AI applications thus far. In some estimates, expenditure on AI infrastructure has exceeded the commercial benefits by a factor of five to ten [1]. A similar phenomenon has been observed in the previous periods of

technological development; that is to say, too much investment in infrastructure has eventually created an asset bubble without sufficient long-term revenue support [2]. As one of the largest beneficiaries of the development of AI at present, NVIDIA has received a substantial amount of capital and is thus vulnerable to a downturn in the AI market.

Existing studies have discussed the possibility of an AI valuation bubble from multiple angles. However, the extent to which geopolitical changes affect a company's financial risk has been studied relatively little. Export restrictions on advanced semiconductors, changes in foreign trade policies and stricter regulations around the world are all contributing factors. Therefore, the above factors will directly impact the company's financial performance by affecting sales opportunities, inventory levels, procurement costs and revenue recognition. Although the public has expressed some interest in the problems mentioned above, no research has connected geopolitical risk with financial statements.

Given the above deficiency, this paper will use NVIDIA's public financial statements for the years 2024-2026. The three contents of the company's financial analysis are: profitability and earnings quality; asset structure and liquidity; and cash flow performance. Given the recent changes in global AI investment and semiconductor regulations due to geopolitical reasons, this paper will also consider the long-term financial health of the companies based on their financial statements.

The purpose of this paper is to explain why NVIDIA has performed so well financially in recent years due to the development of artificial intelligence, and at the same time, to identify underlying structural risks that are not obvious from the top-line financial data. Based on both quantitative financial data and a qualitative analysis of the industry, several feasible countermeasures to strengthen NVIDIA's management of future financial risks and support continuous expansion are proposed in this paper.

2. Financial performance analysis: quantitative evidence

Based on the financial report for 2024-2026, the construction of generative artificial intelligence has reshaped the semiconductor industry. With the rise in demand for large language models and AI infrastructure, the company's revenue, profitability and market value have all been increasing. However, good financial results do not guarantee that the company will continue to grow at the same rate indefinitely. Based on an analysis of the financial statements, some structural risks have started to emerge in the course of high-growth business development at NVIDIA. The three types of financial performance analysis in this paper are profitability and quality of earnings, asset structure and liquidity, and cash flow.

2.1. Profitability and earnings quality

A rise in the company's profit has added to the upward trend in stock prices. With the continuous development of AI computing and large-scale investment in hyperscale data centers, the company's profits have been rising steadily. NVIDIA's net income in fiscal years 2024 and 2026 had some of the highest growth rates among all other technology companies at that time.

The Structure of NVIDIA's Revenue further explains this growth. By the end of fiscal year 2026, the data centre division would have accounted for close to 90 per cent of the company's total revenue and thus been its main source of income. At the same time, its gaming and professional visualisation businesses also continued to develop steadily instead of declining. Therefore, the expansion of the company's total revenue has been driven by rising demand in the market, rather than an increase in resources from other business divisions.

At the same time, a high proportion of revenue from the data centre business is also a significant source of financial risk. NVIDIA's Sales are closely linked to the capital expenditure plans of a small number of hyperscale cloud service providers. If the first-tier customers cut back on their investment in AI training infrastructure, there will be a large decline in demand for NVIDIA's products and further growth in future revenue will be severely hampered.

Another index of the company's financial health is the gross margin. In 2026, the gross margin of the company will be about 75%. Based on the above analysis, the higher profitability is not due to enhanced equipment. Most of NVIDIA's pricing power stems from the combined effect of its GPU products and the CUDA software ecosystem; thus, developers and enterprises face high switching costs [3]. It will be difficult and expensive to switch to another platform in the future because of CUDA-specific software. The Ecosystem can increase customer stickiness and help NVIDIA keep a relatively high price in the face of more competition.

$$\text{Gross Profit Margin} = \frac{\text{Revenue} - \text{Cost of Goods Sold (COGS)}}{\text{Revenue}} \approx 75\% \text{ in FY2026} \quad (1)$$

Therefore, a high profit rate does not necessarily mean that a company has had steady earnings. External Factors can also affect the company's financial health. Geopolitical changes are typical of the above. As Zhao shows, export restrictions on advanced AI chips have gradually been included in the scope of operating risk for NVIDIA [4]. Tighter U.S. export controls in 2026 prevented the company from sending some high-end AI products to China, and as a result, approximately US\$4.5 billion of inventory had to be written down. Therefore, the high accounting profit may have dropped sharply after the change in external policy. Thus, in the future, the development of NVIDIA's earnings will also be subject to the impact of policy changes and fluctuations in global demand to some extent and will not be driven solely by leading-edge technology.

2.2. Asset structure and liquidity

NVIDIA's Balance Sheet exhibits features of an older fabless business model. The company will use an external high-end foundry for chip manufacturing and partner with TSMC. The operating model will reduce investment in production facilities and limit fixed-asset requirements, thus keeping the company's asset-light balance sheet relatively intact. A relatively small amount of capital is required; therefore, a high rate of return per unit of capital employed can be achieved.

The Company has a good-liquidity situation. By the end of fiscal year 2026, NVIDIA will have reached a new high in cash, cash equivalents and short-term investments, and maintained a relatively low amount of long-term debt. A conservative financing structure is relatively financially flexible and has a low demand for short-term funds. According to the previous research, relatively high liquidity and a relatively low debt level can help the company endure a short-term credit market downturn or broader economic slowdown [5].

All of the above indicators are favourable; however, there are some hidden risks. The first is a problem of inventory control. In fiscal years 2025 and 2026, although NVIDIA had built production bases for the new CoWoS advanced packaging technology, it was unable to meet the increased demand from customers, so inventory levels continued to rise [6]. Given the rapid changes in the industry, scholars are unable to hold a large amount of inventory at the same time.

If the principal customers delay their investment in AI facilities or reduce purchase orders, the company will have a lower-turnover inventory and further inventory write-downs. Although these

products would still have technological value in a normal market environment, excessive inventory would reduce profits due to higher storage costs, lower operating efficiency, and possibly need to be further written down. Therefore, the company's inventory has become a relatively large financial risk to its balance sheet.

2.3. Cash flow performance

NVIDIA's Cash Flow Performance Further Strengthens Its Robust Financial Foundation. The company has shown good performance in converting accounting profits into operating cash flow compared with many other companies, thus generating a large amount of free cash flow. It will have sufficient funds for research and development, business expansion, etc., to help the company respond to changes in the market.

However, it is likely that the funds will not be used for the good of the company. Rather than retaining more cash for future investments or strategic flexibility, NVIDIA has been using a large portion of the funds to buy back shares and has been paying out regular dividends [7]. Therefore, earnings per share will be higher; thus, investors are likely to increase the stock price in the short run.

At the same time, this may reduce the company's long-term financial flexibility. The semiconductor industry is naturally cyclical, so new-technology investment will need to be continuous. If too much of the cash is paid out as dividends, then less money will be available to cope with an economic downturn, unforeseen geopolitical risks and large-scale changes in technology in the future. Previously, some scholars proposed that maintaining a relatively large amount of cash reserves can help a company respond to unforeseen changes in the market better and carry out essential investments during the period of industrial restructuring [7].

NVIDIA's Cash Flow from All Sources is relatively high. However, in the end, the actual benefit of this advantage will also depend on how the obtained funds are used at different times.

3. Financial risk identification and causes: qualitative analysis

Assessment of the Future Financial Health of NVIDIA is not based solely on past performance. The company has been profitable and performed well in recent years; however, in the future, changes in the market and problems within the company will also affect these results. As a cyclical industry, the semiconductor industry is susceptible to fluctuations; therefore, there is an uncertain future for the current wave of AI investment and thus risks at NVIDIA. These two are the risks mentioned above.

3.1. External risks: market, speculative, and geopolitical factors

The primary external risk to NVIDIA is that the current wave of AI investment will decline at a slower pace after the initial period of rapid growth. Recently, some studies have pointed out that valuations throughout the AI hardware industry already show characteristics of a speculative bubble in the previous round of technological innovation [8]. At the same time, researchers have also pointed out that expectations for future applications of AI continue to rise much faster than the economic benefits that many commercial AI projects have generated so far [9, 10]. If the above expectations are not realised in the long-term business profit, the market will lose confidence and investment will fall.

Although NVIDIA has increased the scale of its customers to some extent, a relatively large proportion of its revenue is still generated by a few large hyperscale cloud service providers. In

recent years, purchases by second-tier cloud providers, government departments and industrial AI applications have increased, thus reducing customer concentration to some extent. However, the company is still very sensitive to the investment decisions of a small number of large buyers.

Therefore, there is a relatively high financial risk. If the enterprise customers begin to doubt the commercial benefits of the AI projects, many will postpone or reduce their investment in computing infrastructure. As NVIDIA is now mainly a hardware company and no longer operates on a software-as-a-service model, a reduction in capital investment will likely lead to a decline in sales. Hardware enterprises are generally more exposed to fluctuations in customer investment behaviour than those with continuous-income-generating services.

The development cycle of the AI industry will also be altered, and this adds to the instability. As the market has gradually moved away from large-scale model training and is now focused on improving model efficiency and reducing operating costs, the demand for additional computing hardware will likely grow at a slower pace than in recent years [2]. At this time, it is more likely that customers will prioritize optimisation of software, inference efficiency and cost control over the continuous expansion of training facilities. The reason for NVIDIA's good financial results recently may no longer be the same.

Political and Geographical factors are also external risks. Export controls imposed by the United States on high-end AI chips have reduced the volume of sales to certain overseas regions for NVIDIA. China has been one of the company's top sources of income and profit for a long time. Although NVIDIA has attempted to redesign some products in line with the regulations, strengthened export controls have repeatedly restricted these alternatives [4]. Therefore, there will be changes in world politics, and as a result, the company's sales and profits will gradually be affected.

3.2. Internal risks: corporate and architectural factors

There are also internal factors in the form of a business model and strategy for this reason. The company is too concentrated in the data centre business; this is also a problem. The gaming and auto divisions are still relatively stable income streams, but they are much smaller in scale compared with the data centre portion. Therefore, these enterprises offer only limited protection in the event of reduced demand for AI infrastructure. A relatively small size of the data centre market will thus have a negative impact on the company's overall financial results.

In the age of development, people need to boost investment in research and development (R&D). NVIDIA has cut the time to develop a new product by approximately half compared with other companies and now releases new architectures more frequently. A considerable sum of money has already been allocated for the construction of the Blackwell platform and the development of the next-generation Rubin architecture. New Ideas are convenient for making the company more competitive, but they are also risky to implement.

Due to the shorter product cycle in the semiconductor industry, there is little time for design verification, manufacturing optimisation and supply chain coordination. If there are any production delays, technical problems or manufacturing bottlenecks, the release of the product will be postponed, and development costs will rise. If the new products fail to meet the expectations of the public, there will be lost sales, inventory write-downs and a reduction in returns for large-scale R&D investments by NVIDIA. A relatively high risk is associated with advanced-technology systems.

Another reason is that the customers are also Nvidia's own. Google, Amazon Web Services and other large-scale cloud service providers have been developing their own application-specific integrated circuits (ASICs) at a considerable scale. These custom chips are to increase the efficiency

of certain workloads and reduce the need for external hardware from suppliers. Although such processors are currently for relatively specialised applications and cannot fully replace NVIDIA's GPUs in large-scale model training or advanced multimodal AI systems, they may gradually reduce the demand for some categories of NVIDIA products over time. Therefore, the customer's self-developed chips should not be regarded as an immediate threat to NVIDIA's market share; rather, they are a long-term competitive risk that the company needs to monitor.

4. Financial risk mitigation strategies

Based on the analysis above, although NVIDIA has had good financial results in the past, there are still external risks and internal structural problems that need to be addressed for an extended period of high performance. A large increase in hardware sales or a rise in stock price will not provide continuous support for the stock during times of market fluctuation. Draw up an all-weather financial plan to boost stable income and enhance capital utilisation by reducing dependence on a single growth driver. The following three feasible ways can be used to strengthen the long-term financial foundation of NVIDIA.

4.1. Business diversification: transitioning to physical AI

Given the reduction in investment by NVIDIA in AI infrastructure, expand the range of sectors applying its technology. At present, a large proportion of the company's revenue is generated by cloud service providers that invest in large-scale training of AI models. Although this market will continue to develop, in the future, the demand will be relatively unstable as investment gradually shifts from infrastructure construction to commercial use.

Therefore, NVIDIA should increase the speed at which it develops Physical AI applications. Instead of training large language models, the company could increase investment in intelligent manufacturing, industrial automation, robotics, autonomous vehicles and other AI-powered physical systems. Based on the previous study, it is expected that these industries will be required to meet the growing demand for next-generation computing platforms as AI technology moves out of the realm of digital services and enters real-world applications [2].

Increase the proportion of these new-generation markets in the total number of customers and create more sources of income outside of large-scale cloud computing. Although Physical AI will still be subject to the general economic conditions and investment cycle, by extending its application to multiple scenarios, the company will reduce its reliance on a single group of customers and improve resilience against fluctuations in any single market.

4.2. Software ecosystem monetization: maximizing the CUDA moat

As the competition for semiconductor hardware in the field intensifies, leading by technological superiority in hardware alone will become increasingly difficult. Manufacturing technology has been advancing continuously in recent years, and now it is close to that of competitors. Given the above circumstances, software functions will be used to gain an edge in the competition.

CUDA is a relatively high-performance parallel computing platform for general-purpose GPUs by NVIDIA. CUDA has provided a development environment for GPU programming and built an all-encompassing software ecosystem that supports scientific computing, development of AI models and many other enterprise applications. Given that many organisations have invested a large amount

of money in CUDA-based software, moving to another platform will likely have high redevelopment costs and technical adjustments [3].

Expand the scope of commercial software that builds upon the foundation of CUDA continuously. Expand enterprise software services, cloud-based development tools, AI optimisation platforms and subscription software products to create more stable recurring revenue for the company. Software services are generally more stable in terms of cash flow and have a higher profit margin than hardware sales, and they are also better at retaining customers. Increase the proportion of software revenue and reduce earnings fluctuations to strengthen the durability of NVIDIA's high growth.

4.3. Capital structure optimization: balancing buybacks and resiliency

The company is financially healthy at present and has relatively loose restrictions on the use of cash funds. Share buybacks and dividends have raised investors' confidence and boosted earnings per share; therefore, it is now necessary to balance the interests of shareholders with the stability of the company's finances.

Given the cycle of the semiconductor industry and continuous geopolitical risks, good liquidity must be maintained at all times. Future problems, such as changes in the supply chain, export restrictions, investment in high-end manufacturing, and unforeseen market downturns, will all be costly. An overly large proportion of share buybacks will not solve the company's problems.

Thus, an even distribution plan of the capital will be more advantageous to NVIDIA in the long run. Reduce the scale of stock buybacks to some extent and increase cash reserves; this will free up funds for research and development, strategic mergers and acquisitions, supply chain investment and operational risk management. In light of the above, the company will still be able to increase investment in the future and improve its competitive strength amid a downturn in the economy.

5. Conclusion

Given the development of the AI industry, NVIDIA will be in a good financial state in 2024-2026. A high-profit rate, a large amount of free cash flow, and an efficient asset-light operating model have enabled the company to outperform most other enterprises in the world's semiconductor industry. However, the above excellent financial results may not reflect underlying structural problems that will affect the company's future performance.

The company will have some serious, related risks in the future. Outwardly, there are risks to the future growth of revenue from continuous investment in AI infrastructure, geopolitical tensions, export restrictions and changes in customer spending patterns. The company has shown a relatively high proportion of its data centre business in recent years; therefore, it faces considerable new-cycle research and development investment needs and intense competition. Based on the above, sustaining the current level of profitability will be relatively difficult in the future days of the AI industry's development.

Strengthen the economy of a diversified development model to enhance the long-term financial stability of NVIDIA. Expansion into Physical AI will reduce dependence on hyperscale cloud customers and open up new sources of demand. Further commercialisation of the CUDA ecosystem will provide ongoing software income and increase the retention rate of customers. Additionally, in light of the aforementioned reasons, a more moderate capital-allocation plan will be implemented; that is, some of the substantial cash reserves will not be deployed through share buybacks.

NVIDIA is still one of the top companies globally that drives the AI revolution at present. Leadership in the future will require more than new technologies. If the company hopes to continue succeeding in the long run, it needs to keep costs under control in the process of expansion, respond flexibly to changes in the market, and build an all-weather business model that can withstand future downturns in the industry cycle.

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