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An Analysis of the Future of Nvidia

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Abstract: Nvidia is the most valuable semiconductor, worth 1.14 trillion dollars. Potential investors need to understand the risk involved when investing in major tech stocks like Nvidia. Today, many companies focus on the quantitative analysis of Nvidia, so to do a more comprehensive and complete investigation, this article analyses the fundamentals of NVIDIA Corp. (NVDA) to determine whether potential investors should invest in this stock. The methods used for the quantitative analysis will include calculating its intrinsic value, analysing its financial statements, etc. For qualitative research, the paper will analyse recent trends, future products, and demand for said products. Through both quantitative and, particularly, qualitative analysis, it can be inferred that Nvidia's value in the future cannot be underestimated and is a promising investment opportunity, as the company's business is penetrating across industries and integrating the latest and most trending technologies such as artificial intelligence, autonomous driving, etc.

Keywords: graphics cards, artificial intelligence, autonomous driving, bitcoin mining, robotics

1. Introduction

Nvidia is a global corporation that manufactures mobile technologies and desktop computers, but its primary profit source is its advanced graphics cards, which outshine every competitor. With the latest release of the 4000 series graphics cards, Nvidia continues to dominate the market over competitors such as AMD and Intel [1]. However, AMD's processor and graphics cards are starting to catch up. For its last quarter, Nvidia crushed the expectations of Wall Street experts as the stock rallied over 60 percent [2]. All this growth is thanks to their announcement of a new supercomputer, software, and services for generative AI. An example of generative AI is the newly popular tool, ChatGpt. Genitive AI, such as ChatGPT, can write articles, create content, and even code. In the battle for AI dominance, Nvidia is further ahead than anyone at the moment. Traditionally, when analyzing a stock like this, researchers often focus on the numbers while ignoring the more qualitative side. Sites like TipRanks include a wide variety of quantitative data but fail to include qualitative data. Similarly, most investing papers, such as CNN, give investors raw stock numbers without explanation. The qualitative data in this paper will be thoroughly discussed so that even the most novice investor can understand it. This paper aims to dive deep into both the quantitative and qualitative sides to provide investors with a deep level of investment.

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2. Statistic Analysis

After the crash in 2022, Nvidia's stock has risen by over 230 percent year to date. Nvidia earned a 98 on the IBD composite rating, the highest possible score. This means Nvidia is in the top 2 percent of stocks based on technical and fundamental metrics. In May, Nvidia's earnings exceeded those in the previous quarter by 19% [3]. Although still down 13% from a year ago, these earnings show strong growth for the company. Not surprising as GPU and tech chip demand continue to rise as the threat of COVID fades away. Nvidia, alongside Apple, Microsoft, Alphabet, and Amazon, accounted for 95% of the earnings of the S&P 500 this year. Additionally, Nvidia has a relative strength rating of 99, which means it outperformed 99% of the stocks over the past year. Alongside the considerable revenue increase of 19% came the huge 44% increase in net revenue compared to last quarter and the 26% increase from last year. Furthermore, as revenue increases, the long-term debt decreases by 11.35% year over year. This is especially exciting as this is the first time the debt has decreased since the almost 200% increase in debt from 2020 to 2021. The total liability of Nvidia has grown by 8.57% since 2022. However, this is nothing to worry about since the debt is down; this can only mean Nvidia is trying to grow and expand even more. To further elaborate on Nvidia's growth, the cash on hand for this company has decreased by 37.31% since 2022, signaling a desire to expand [4]. Nvidia predicted sales of 11 billion, up 64% year over year for the current quarter, though sales dropped 13% after a disappointing release of the 4000 series graphics card. Unsurprisingly, in Q1, data center sales rose by 14% [5]. Overall, the statistics of this California-based company signal heavy growth for the future.

3. Stock Rating

Firstly, Looking at the Nvidia stock itself, its current PE ratio is 207.62, compared with the S & P 500 ratio, which is around 26; it seems that Nvidia's PE is exceptionally high. However, this PE ratio can be easily explained by the recent surge in this stock, so this ratio is nothing to be worried about. The current market cap for Nvidia is around 1.16 trillion dollars, an increase of 473.73 billion dollars from Q2. The insane increase only signifies the insane growth of this stock. Next, it needs to determine the safety value of this stock by looking at its EBITDA value. The higher the value, the safer the stock. The EBITDA margin for Nvidia is, on average, 33.4%, which is only average for technology sector stocks. But with this stock's exceptionally high growth potential, 33.4% can at least provide some reassurance for investors. Another hidden detail that will comfort potential investors is that Nvidia bought back massive shares of stock starting in Q2 2022. Nvidia bought back 1.996 billion dollars worth of shares at the beginning of Q2 2022, and they have continued to buy back shares through Q1 2023. The total amount of shares bought back amounted to 10.039 billion dollars. Generally speaking, companies buying back shares mean that the higher-ups of the said company predict that its value will increase in the future, as no one likes losing money. So what this huge buyback means is that the people at Nvidia are confident about their company, and investors should be too. However, not everything about Nvidia is positive. Looking at the intrinsic value of this stock, it can be seen that this stock is heavily overpriced. According to the Discounted Cash Flow model, the stock is currently priced at 470.77 dollars, which is more than 10 times its intrinsic value of 39.63 dollars [6]. A stock being this overpriced usually means that a readjustment is bound to happen; it could be a minor adjustment of a couple of percent or a significant adjustment of over 10 percent. Investors should consider this possibility when investing at this time. Investors investing in this stock right now should consider its absurdly overpriced value.

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4. Qualitative Aspects

However, the statistics do not tell the whole story of the company. It also needs to analyze factors such as rivals and demands that would not show up on a simple balance sheet. Nvidia has two big rivals, AMD, a giant in the semiconductor chip-making scene, and Intel, who dominated the market for years with their advanced CPUs. Currently, Nvidia takes the lead over both companies, with over 84% of graphics cards sold made by Nvidia. However, the graphics card market dropped about 38% since Q1 2023 [7]. Nvidia has two big rivals, AMD, a giant in the semiconductor chip-making scene, and Intel, who dominated the market for years with their advanced CPUs. Currently, Nvidia takes the lead over both companies, with over 84% of graphics cards sold made by Nvidia. However, the graphics card market has dropped about 38% since Q1 2023. This result is expected, as much of the market is overly saturated after the massive buyout of these cards during and after COVID. With graphics card sales dropping, the other advantage Nvidia holds over its rivals is its current developments in AI. According to Tom Taulli in his book Artificial Intelligence Basics, AI influences virtually every facet of our daily lives, with profound effects on both technological and non-technological domains, a trend that is poised to last into the future [8]. Therefore, entering the field of AI may hold the potential for Nvidia to yield even greater value in the future. The company's emphasis on creating specialized hardware for AI applications is one of the main elements supporting Nvidia's leadership in the AI market. While other businesses rely on multipurpose CPUs, Nvidia has produced GPUs specifically designed to handle AI applications [9].

Another significant advantage Nvidia has over its competitors is the acquisition of Mellanox, a networking Israeli-American company, back in 2019 [10]. Mellanox provides the infrastructure that supports the exponentially increasing data processing caused by modern data center workloads. The company offers the choice of Ethernet and InfiniBand, which helps enterprises maximize their AI investment. Mellanox gives the infrastructure that supports the exponentially increasing data processing caused by modern data center workloads. The company offers the choice of Ethernet and InfiniBand that helps enterprises maximize their AI investment.

Nvidia is not satisfied with only graphics cards and AIs; they are also adventuring into the realm of autonomous driving, as driverless cars are perceived as a crucial component of a wider mobility solution and have highlighted rising demands in megacities with traffic congestion and insufficient air pollution control [11]. They created software called Nvidia Drive AGX, a software platform that can process large volumes of sensor data and make real-time driving decisions. Even other enterprises, such as Tesla and Google, use Nvidia's deep learning algorithm to help develop their autonomous driving systems. Circling back, this is all possible because of Nvidia's newest edition of graphics cards. The old card was based on a 28-nanometer Maxwell Architecture.

Meanwhile, Thor, the newest generation of graphics card, uses a 5-nanometer Ada Lovelace architecture, explaining the significant performance jump. According to Nvidia, Thor "achieves up to 2,000 teraflops of performance and unifies intelligent functions — including automated and assisted driving, parking, driver and occupant monitoring, digital instrument cluster, in-vehicle infotainment (IVI) and rear-seat entertainment — into a single architecture for greater efficiency and lower overall system cost." That's not all, Nvidia was able to more densely pack transistors onto its processors thanks to a lower process node, increasing computational capability while using less power. Nvidia's GPUs are now significantly more capable than they were a few years ago of handling AI workloads and driving self-driving automobiles. After all, GPUs' capacity to do millions of calculations concurrently makes them the foundation of autonomous driving features like advanced driver assistance systems (ADAS). They can quickly analyze enormous volumes of data, which is essential for self-driving cars to make judgments in the present. The business is expected to be at the vanguard of self-driving technology in the future, according to Nvidia CEO Danny Shapiro, who

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believes Thor would allow manufacturers to scale up to full autonomy, eliminating the need for human vehicle involvement. Most importantly, Nvidia's dominance in the hardware and software aspects of the autonomous market could supercharge its growth in the long run.

Although it only makes up a small fraction of Nvidia's overall business, the automotive industry has expanded quickly. In fiscal year 2023, the company's automotive revenue increased by 60% to $903 million [12]. In contrast, Nvidia's total revenue for the fiscal year remained constant at close to $27 billion. With the ongoing hype around self-driving cars, this is only the beginning of a potentially billion-dollar industry. Even better, Nvidia believes that the automobile industry has a $300 billion long-term opportunity, driven by rising levels of automation and increasing demand for image processing, which is a task that its GPUs can do. The good news is that Nvidia has established a robust ecosystem of automakers, component suppliers, and software vendors to take advantage of this significant opportunity.

Some brands using Nvidia's self-driving AI technology include Mercedes-Benz, Volvo, BYD, Navistar, and Hyundai. The tech juggernaut should be able to turn more potential automotive opportunities into actual revenue and accelerate its growth when these businesses launch their products.

Bitcoin mining relies heavily on the quality of a graphics card [13]. Essentially, cryptocurrency mining is a game of numbers. In simple terms, Bitcoin miners compete to solve incredibly difficult mathematical puzzles involving expensive computers and electricity. Miners must be the first to discover the right or closest response to the query to finish the mining process. With more and more miners joining in and less and less Bitcoin being able to be mined, a powerful computer setup is essential. A mining computer includes dozens of parts, but the most important is definitely its graphics card. The better the graphics card, the faster the computer can solve the problem, thus earning Bitcoin. So, miners actively look for the most powerful graphics cards, and right now, they favor the 4000 series cards by none other than Nvidia.

Although the effect of robots on economic prospects, society, and even humanity remains uncertain, the inevitable shift toward machines gradually replacing human labor will soon become a reality [14]. Nvidia is adventuring in the realm of robotics with the creation of Issac, their first robot. These robots combine everything good about Nvidia, from its cutthroat technology to its futuristic AI. These robots are still in development, but with everything at their disposal, this sector will make major profits in the future.

5. Conclusion

It is tempting to buy Nvidia right now. The numbers look good; they are actively looking to expand, and they are at the forefront of some areas. However, the stock right now is way too over prices to buy. Additionally, the sales of one of their biggest products, the graphics card, are lower than last quarter as the market has been saturated. Nonetheless, Nvidia is a great company with tremendous upside potential, and with its active growth. In conclusion, the price is too high for me to recommend anyone buy Nvidia. Investors should be wary of its outlandish price. However, investors need to remember that this conclusion is only based on the data and news released to the public. Any partnership or announcement would significantly impact the accuracy of this paper. The current research is mainly based on literature and relevant statistical data analysis. In the future, the author will combine relevant models to further analyze its future development trends and investment value.

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