

Company Valuation for Nvidia Based on Multiple Valuation Methods

Zeyue Lin

*Haidian Foreign Language Academy, Beijing, China
Song.JH@bjfles.com*

Abstract: This paper conducts an overall valuation for Nvidia by applying three major valuation methods: Relative Valuation, Discounted Cash Flow (DCF) and Adjusted Present Value (APV). The purpose is to provide a clear analysis for the real value of Nvidia's share price. The Relative Valuation method evaluates Nvidia by comparing the company to its peer companies, using the comparable companies' operating conditions to provide insights to the target company's value. The DCF valuation method estimates Nvidia's share value by discounting the company's future cash flows to present value, taking into account the company's expected growth rate and market risks. Lastly, the APV method captures the impact of the company's financing structure on its firm value, adding benefits received from financing to the firm's value. The paper will introduce these three distinctive valuation methods specifically, and provide investment reference and valuable insights to investors and shareholders evaluating Nvidia's firm value by analyzing the valuation results produced by these valuation methods.

Keywords: Valuation, Relative Valuation, Discounted Cash Flow, Adjusted Present Value

1. Introduction

As the rapid development in the field of artificial intelligence, the demand for GPU and other chip-related products increases significantly. As a result, in the financial market, companies in this field gained great popularity and attention from investors as well as speculators. As the leading company in the chip industry, Nvidia's stock price has been in a clear uptrend since the start of 2024.

Huge fluctuations in price have lead to division opinions on the company's valuation. Some analysts agree the companies indicating the high growth potential in AI related industries deserve their high evaluation, while others believe huge bubbles already exist in the market. In this case, the importance of a fair evaluation for Nvidia is emphasized.

Valuing a company precisely and objectively in order to make rational trade decisions, maximizing capital gain and investment return, these are what are pursued by all the investors in the financial market.

This paper is intended to explore Nvidia's value through three different valuation methods and to use the results produced by these valuation methods to analyze whether Nvidia's shares have been fairly priced, providing theoretical support to investment strategies.

The three valuation techniques that will be used in the paper for conducting company valuation for Nvidia and their brief introduction are stated below. Relative Valuation, which compares Nvidia to similar companies using multiples (e.g. P/E, EV/EBITDA). Discounted Cash Flow, the valuation

method that evaluates Nvidia's intrinsic value by forecasting future cash flows and discounting these future cash flows to the present for indicating present value of Nvidia's stock. Adjusted Present Value, this valuation method separates the value of Nvidia's revered business from the impact of debt and tax benefits.

The paper will demonstrate the process and the results of valuing Nvidia through these three distinctive valuation methods mentioned above, providing a fair investment reference to investors.

Valuing a company precisely and objectively in order to make rational trade decisions, maximizing capital gain and investment return, these are what are pursued by all the investors in the financial market. The findings would help assess whether Nvidia is overvalued, undervalued or fairly priced during several crucial periods for Nvidia's development. The research content of the paper will be demonstrating and explaining how different evaluations are implemented, plus the application scenarios, preponderances and disadvantages for each of them. Eventually, presenting the fair evaluations of Nvidia during its key development periods.

2. Main body

2.1. Introduction of valuation methods

2.1.1. Relative valuation

This valuation method is also known as multiple valuation, the method is to estimate a company's value by comparing it to similar companies based on key financial indicators. Instead of quantitatively calculating the absolute value of the target company's share price, relative valuation can provide a holistic view of a company's value by making comparison. The first step to conduct relative valuation is to identify comparable companies for the target companies. These comparable companies should have similar business model, revenue structures, growth prospects as the target company does. After choosing the appropriate companies as comparable ones, the next step is to select valuation multiples to perform relative valuation. Valuation multiples are ratios used to compare a company's value to financial measurement, for instance, Price-to-Earnings ratio is the company's market value compares to its earnings. The basic idea is that similar companies should have similar multiples, so by comparing the companies' multiples to those of the comparable companies, investors are able to assess whether the share price of the company is fairly priced. There are several advantages of using relative valuation to evaluate a company. The most obvious one is that it is quick and easy to apply compared to other valuation methods involving complex calculations. It also reflects the performance of other similar companies in the same industry, producing a comprehensive result for valuing a company. On the contrary, relative valuation highly relies on the selection of comparable companies. Investors could select different sets of appropriate companies based on distinctive perspectives, which leads to huge fluctuation on valuation results. Another drawback is that results produced by relative valuation could be influenced by market sentiment and temporary mispricing in the market [1].

2.1.2. Discounted Cash Flow (DCF)

This is a fundamental valuation method that estimates a company's value by discounting its future cash flow into the present. This method is widely used for valuing companies with high growth potential. The method main idea is that a company's value is equal to the present value of its expected future cash flows [2]. Since the money today is worth more than the same amount received in the future due to the time value of money, future cash flows of the target company need to be discounted back to the present using appropriate discount rate. This method can adjust the impact of market sentiment, producing the objective valuation for intrinsic value of the target companies. It is also an eminent valuation method for companies that have promising growth potential, since growth potential

is presented in the calculation of future cash flow [3]. Nonetheless, this model is highly sensitive to relevant assumptions, for example, it assumes constant discount rate and cash flow growth rate, which may contradict the real market condition. Besides, if the future cash flow of the target company is unstable or unpredictable company, the valuation results is also limited.

2.1.3. Adjusted Present Value (APV)

This model is a corporate valuation method that separates the value of a company into two main components the value of the firm as if it were all-equity financed and the present value of financing effects, such as tax shields from interest payment [4]. Adjusted present value is useful for firms with changing capital structures. It can provide a clearer breakdown of value compared to discounted cash flow method. The key concept behind this valuation method is that the firm's total value is the sum of its unlevered value and the present value of financing benefits (mainly tax shields on debt interest) [5]. Adjusted present value provides a transparent perspective of how financing having impact on the company's value, it suits well for firms with changing capital structure. However, it is relatively complex to perform [6].

2.2. Performing valuation methods

2.2.1. Relative valuation

Aiming at select comparable companies for Nvidia, the thesis engages in SWOT analysis to assess Nvidia's current business circumstances comprehensively.

Strength: The company's major strength is that Nvidia is currently at the global forefront of Graphics Processing Unit (GPU). The company's innovations in the GPU field are consistently pushing the boundaries of graphics performance and computing power. In the AI field, its CUDA parallel computing platform facilitates the training and inference of AI models. Furthermore, Nvidia had shown strong financial performance, with continuous growth in revenue and profit. The remarkable and stable financial situation provides sufficient financial capital for the company to conduct further research and development.

Weakness: Nvidia's high-end GPU products are relatively expensive, which limits further expansion of its market share. Higher prices can push customers to seek more cost-effective alternatives. Also, notice that Nvidia has high dependence on foundries. Once the supply chain disruptions occur, Nvidia's product supply will be affected.

Opportunities: Opportunities are still abundant for Nvidia in the chip industry. The company could conduct expansion of the AI and machine learning market. The demand for high-performance computing chips is still increasing in almost every industry. The expansion will enable the company to continue to enlarge its market share and further promote its profitability.

Threats: Increased competition in the chip industry is posing potential threats to Nvidia's current leading position. Economic cycles and market instability will negatively impact Nvidia's operating condition.

From the analysis above, two comparable companies are chosen: AMD (Advanced Micro Devices), and Broadcom(Broadcom Inc) due to their similarities in business model, product offerings, and market positioning in the semiconductor industry. The chosen multiples to conduct relative valuation for Nvidia is Enterprise Value to Earnings Before Interest, Taxes, Depreciation, and Amortization (EV/EBITDA). This multiple can neutralize the impact of different capital structure between companies.

As shown in Table 1, the average EV/EBITDA of the two comparable companies is about 32.89. The estimated valuation of enterprise value: \$2,833,045,930,000.00 is obtained from using the average EV/EBITDA to multiply Nvidia's EBITDA. The estimated valuation per share using

EV/EBITDA as multiple is about \$116.11, resulting from estimated enterprise value divide the amount of share outstanding: 24,400,000,000, as shown in Table 2.

Table 1: Financial data of Nvidia's comparable companies

	AMD	Bradcom	Average
Comparable companies' EV/EBITDA	33.4	32.38	32.89

Data source: Yahoo Finance <http://finance.yahoo.com>

Table 2: Nvidia's financial data for conducting Relative Valuation

EBITDA	\$86,137,000,000
Share outstanding	\$24,400,000,000.00
Valuation of enterprise value	\$2,833,045,930,000.00
Valuation of share price	\$116.11

Data source: Yahoo Finance <http://finance.yahoo.com>

2.2.2. Discounted Cash Flow (DCF) valuation

Discounted Cash Flow valuation is to discount every expected future cash flow that is expected to receive in the future to the present, and plus the company's terminal value. The basic formula is presented below:

$$V_{\text{firm}} = \sum_{t=1}^n \frac{FCF_t}{(1+r)^t} + \frac{FCF_n \times (1+g)}{(r-g) \times (1+r)^n} \quad (1)$$

Where:

FCF_t = Cash flow in year t

r = Discount rate

n = number of years in the projection period

g = costant growth rate of cash flows

Using data derived from Nvidia's annuls financial report, the current free cash flow: \$60,853,000000, is obtained. Next, the proper discount rate should be determined. In this case the Weighted Average Cost of Capital (WACC) is the appropriate discount rate since it represents the company's opportunity cost of capital, the return required by both debt and equity financing, which corresponds to the current capital structure of Nvidia—financed both by debt and equity. Besides, Nvidia is operating in the rapid-growing semiconductor & AI industry, where future cash flows are uncertain. WACC reflects the required return based on market conditions, making it a risk-adjusted measure that aligns investors' expectations. To calculate WACC for Nvidia, the following formula of WACC is cited:

$$WACC = \left(\frac{E}{V} \times R_e\right) + \left(\frac{D}{V} \times R_d \times (1 - T_c)\right) \quad (2)$$

Where:

E = Market value of equity

D = Market value of debt

V = Total market value of the company's financing

R_e = Cost of equity

R_d = Cost of debt

T_c = Corporate tax rate

The data relevant are shown in the table above. Notice that R_e needs to be calculated by Capital Pricing Asset Model (CAPM):

$$E(R_i) = R_f + \beta_i \times (E(R_m) - R_f) \quad (3)$$

Where:

$E(R_i)$ = Expected return of the assets

R_f = Risk – free rate

β_i =Beta of the asset, which measures its sensitivity to market movements

$E(R_m)$ = Expected return of the market

$E(R_m) - R_f$ = Market risk premium

The market expected return: 16.30% presented in the table below is derived from geometric mean of Standard & Poor's 500 Index's annual return during the past ten years.

Table 3: Nvidia's financial Data for conducting DCF valuation

FCF	\$60,853,000,000.00	Market Capitalization	\$2,680,000,000,000.00
Risk-Free Rate	4.30%	Enterprise Value	\$2,690,000,000,000.00
Beta	1.76	Total Debt	\$10,270,000,000.00
Market Return	16.30%	Interest Expense	\$247,000,000
Cash & equivalents	\$43,210,000,000.00	Sahre outstanding	24,400,000,000.00

Data source: Yahoo Finance <http://finance.yahoo.com>

Using the data presented in Table 3 to calculate other components of the WACC formula, the cost of debt (pre-tax) is approximately 2.40%, the tax rate is approximately 3.30%, and CAPM in this case is approximately 12.00%. Then Proceeding further calculations following the WACC formula, the WACC as annual discount rate for Nvidia's DCF valuation is approximately 12.00%.

At the moment, Nvidia is the leading company in the fast-growing chip industry, as can be seen in table 4. Using reasonable free cash flows growth rate is crucial for producing a relatively accurate company valuation. Furthermore, the growth rate will vary from period to period according to the free cash flow from past three years reported by Nvidia's annual financial report is listed below.

Table 4: Nvidia's past FCF data

Point-in-time	2025.1.31	2024.1.31	2023.1.31	2022.1.31
FCF	\$60,853,000,000.00	\$27,021,000,000.00	\$3,808,000,000.00	\$8,132,000,000.00

Data source: Yahoo Finance <http://finance.yahoo.com>

Table 5: Nvidia's estimated FCF growth rate

Year	2025	2026	2027	2028-2029	Long-term
Estimated FCF Growth Rate:	70.00%	50.00%	30.00%	12.50%	4.00%

Historically, Nvidia's FCF grows 20%-30% slower than revenue due to capital spending. According to analyst consensus on Bloomberg, Nvidia's revenue growth rate would increase 50.00%-70.00% in 2025. The thesis chooses 70.00% as Nvidia's FCF growth rate in 2025 including the optimistic view about increasing demand for AI related products. In 2026, as the competition intensifies and the market matures, Nvidia's FCF growth rate in this year is expected to decrease to 50.00%. In 2027, the chip industry will face a diminishing research progress rate. As Nvidia spends more money to push the technology frontier, its FCF growth rate this year is likely to be lessened, so a 30.00% FCF growth rate seems to be suitable in this case. According to Microsoft's revenue from 2010 to 2024 [7] and other similar technology companies' revenue, mature technology companies

typically grow at 10.00%-20.00% during their expansion phase (e.g. Microsoft, Apple). For Nvidia, AI demand will stay strong, but growth will cool as market mature (e.g. historical peers AMD, Intel settled at 10.00%-15.00% after hyper-growth).

By discounting each cash flow that is acquired from each year's FCF growth rate, the present value of the company: \$2,532,072,754,626.00, is presented. To find the estimated share price of Nvidia, the equity value which equals the present value of Nvidia to deduct Nvidia's total debt and plus Nvidia's cash equivalents needs to be divided by the company's share outstanding. After performing the calculation, the estimated share price for Nvidia by using the DCF valuation method is about \$105.12.

2.2.3. Adjusted Present Value (APV)

As mentioned in the introduction, adjusted present value separates a company's value into its present value and the financing benefits (mainly composed by tax shields). Adjusted present value uses unlevered cost of equity to discount the company's future free cash flow in order to obtain the present value, which makes this valuation method distinctive compared to other valuation methods like DCF [8]. Here, the paper uses Weighted Average Cost of Capital (WACC) to calculate the company's unlevered cost of equity (R_u). The formula is presented below:

$$R_u = \frac{WACC - R_d \times (1 - T_c) \times \frac{D}{V}}{E/V} \quad (4)$$

Where:

WACC = Weighted Average Cost of Capital

R_d = Cost of debt

T_c = Corporate tax rate

E = Market value of equity

D = Market value of debt

V = Total market value of the company's financing

The estimated R_u for Nvidia is approximately 12%. Discounting expected free cash flow and corresponding estimated growth rate in different time periods that are presented in Table 5, the estimated unlevered firm value is about \$2,532,072,754,626.00.

Next, determining the appropriate debt growth rate. As FCF growth rate, estimated debt growth rate can also be divided into three phases based on Nvidia's expected operating circumstances. In the short term (1-3 years), according to report from Reuters [9], Nvidia is expected to continue to expand its capital expenditure to meet the heightened demand for AI chips and its own demand for innovation, differentiating its own products. Regarding the debt growth rates of AMD and Intel, which are about 10%-15% annually in recent years, it is reasonable to assume that Nvidia would expand its debt level as its peers in the industry at the same pace in the upcoming 1-3 years. In the middle term (4-5 years), as the estimated growth rate in the industry slows, Nvidia may decrease its debt dependence due to a less fierce market condition. Furthermore, Nvidia's pricing power in the industry is expected to be lessened since other companies will be more likely to catch up with Nvidia's product quality and technology, reducing Nvidia's dominance in the market and limiting Nvidia's debt growth. Based on the data acquired from Nvidia's long term debt [10], Nvidia's debt growth rate is expected to decrease to 5%-10% annually. In the long run, as the market is fully developed, the expected debt growth rate would be reduced again. Furthermore, technology companies are facing pressure from ESG investors, which could be another reason for Nvidia to slow down its debt growth rate. The estimated debt growth rate will be lessened again from 5%-10% in the mid-term into 0%-3%.

The arithmetic means for each time interval are 12.5%, 7.5% and 1.5%. The paper will use these three estimated debt growth rate to calculate the financing benefit received from tax shield for Nvidia in three development phases. Assuming that the cost of debt (pre-tax) is constant at 2.4%. The tax

shield Nvidia will receive from three phases is approximately \$1,832,101,436. Therefore, the adjusted present value of Nvidia is \$2,533,904,856,062.00. Dividing Nvidia's share outstanding, its share price valued by adjusted present value is approximately \$105.20.

3. Conclusion

This paper conducted a comprehensive valuation for Nvidia's share price through Relative Valuation (using EV/EBITDA as multiple), Discounted Cash Flow (DCF), and Adjusted Present Value (APV). The estimated share prices derived from these three valuation models are \$116.11, \$105.12, and \$105.20, respectively. Given that the current market price of Nvidia is \$96.3, Nvidia's share value is obviously undervalued. The value obtained from relative valuation is much higher than the other two, this could be explained by the comparable companies are overvalued in the current stock market, if the comparable companies are having high EV/EBITDA multiples due to market sentiments or other factors, the estimated value of Nvidia's share price could also be potentially inflated when conducting relative valuation. The results produced by DCF and APV are similar in this case. In fact, notice that Nvidia's firm value is mainly composed of its equity value, the proportion of debt is very low, which lending support to an insignificant effect of tax shield for this company. The discount rates used to discount free cash flows of the company in these two methods are also the same.

While all three methods provide valuable insights into the company's value, they have their limitations. Firstly, the paper only chooses one multiple to conduct relative valuation, which could not lead to a comprehensive valuation result for the company. Besides, the amount of comparable companies are also limited in the paper, considering Nvidia's current dominate position in the industry, it is difficult to find perfectly appropriate comparable companies to conduct valuation for Nvidia. Secondly, the paper assumes constant tax rate, cost of debt and capital structure when calculating WACC and R_u , the real financial status for Nvidia could vary from years to years. The expected free cash flow, debt growth rates and market risk premium are obtained from the past industry data and the development of other similar industries. If the actual growth rates vary a lot from the predicted ones presented in the paper, the valuation result from DCF valuation and APV valuation will also be hugely impacted.

References

- [1] Damodaran, A. (2006). *Relative valuation*. In *Damodaran on valuation* (2nd ed., pp. 223-270). Wiley.
- [2] Damodaran, A. (2012). *Investment valuation: Tools and techniques for determining the value of any asset* (3rd ed.). Wiley.
- [3] Koller, T., Goedhart, M., & Wessels, D. (2020). *Valuation: Measuring and managing the value of companies* (7th ed.). Wiley.
- [4] Myers, S. C. (1974). **Interactions of corporate financing and investment decisions—Implications for capital budgeting**. *Journal of Finance*, 29*(1), 1-25. <https://doi.org/10.1111/j.1540-6261.1974.tb03058.x>
- [5] Luehrman, T. A. (1997). **Using APV: A better tool for valuing operations**. *Harvard Business Review*, 75*(3), 145-154. <https://hbr.org/1997/05/using-apv-a-better-tool-for-valuing-operations>
- [6] Brealey, R. A., Myers, S. C., & Allen, F. (2020). *Principles of corporate finance* (13th ed.). McGraw-Hill.
- [7] Macrotrends. (n.d.). *Microsoft Revenue 2010-2024 | MSFT*. Retrieved from <https://www.macrotrends.net/stocks/charts/MSFT/microsoft/revenue>
- [8] Copeland, T., Koller, T., & Murrin, J. (2000). *Valuation: Measuring and managing the value of companies* (3rd ed.). Wiley.
- [9] Reuters. (2025, March 20). *Nvidia to invest billions in US chip production over four years, FT reports*. Retrieved from <https://www.reuters.com/technology/nvidia-invest-billions-us-chip-production-over-four-years-ft-reports-2025-03-20/>
- [10] Macrotrends. (n.d.). *NVIDIA Long Term Debt 2010-2025 | NVDA*. Retrieved from <https://www.macrotrends.net/stocks/charts/NVDA/nvidia/long-term-debt>