AMD vs NVDA

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Investment Analysis Report

Comparison of AMD and NVDA

Executive Summary:

This investment report provides an analysis of Company AMD and Company NVDA, focusing on their financial performance, market position, and growth prospects. Both companies operate in the technology sector and are competing in similar markets. The report aims to assist investors in making informed decisions regarding potential investment opportunities.

1. Statistics Analysis Performance:

- AMD:
    - Average Returns: 4.5% in 6.8 years
    - Max Returns: 47.18%
    - Min Returns: -41.05%
    - Standard Deviation: 16.85%
    - Median: 2.69%
    - Kurtosis: 0.0175
    - Skewness: 0.0524
- NVDA:
    - Average Returns: 4.2% in 6.8 years
    - Max Returns: 36.34%
    - Min Returns: -32.02%
    - Standard Deviation: 14.64%
    - Median: 4.02%
    - Kurtosis: -0.1029
    - Skewness: -0.24.64

Analysis: In analyzing the performance metrics of AMD and NVDA over a period of 6.8 years, it's evident that both companies have shown positive average returns, with AMD slightly outperforming NVDA with an average return of 4.5% compared to NVDA's 4.2%. Despite the relatively similar average returns, AMD has demonstrated higher volatility, as indicated by its larger standard deviation of 16.85% compared to NVDA's 14.64%. AMD's maximum return of 47.18% also surpasses NVDA's maximum return of 36.34%, suggesting potentially higher rewards for investors but with greater risk. Conversely, AMD's minimum return of -41.05% is more drastic than NVDA's -32.02%. When considering the distribution shape, AMD exhibits a slightly positive skewness and kurtosis, while NVDA's skewness is negative and its kurtosis is slightly negative as well, indicating that AMD's returns may be slightly more positively skewed and less peaked compared to NVDA. Overall, while both AMD and NVDA have shown positive average returns, investors may need to weigh the higher volatility associated with AMD against the potentially higher returns it offers.

2. Ratio Analysis Performance:

- AMD:
    - Average Returns: 4.5% in 6.8 years
    - Standard Deviation: 16.85%
    - Beta: 1.1198
    - Alpha: 0.0374
    - Sharpe Ratio: 0.26778
    - Sharpe Ratio Trading: 4.2514
    - Return on Investment: 696.43
    - Compound Annual Growth Rate: 182.21%
    - Loss Rate: 5.88%
    - Win Rate: 92.65%
- NVDA:
    - Average Returns: 4.2% in 6.8 years
    - Standard Deviation: 14.64%
    - Beta: 1.3483
    - Alpha: 0.0338
    - Sharpe Ratio: 0.2838
    - Sharpe Ratio Trading: 4.2514
    - Return on Investment: 674.76%
    - Compound Annual Growth Rate: 178.35%
    - Loss Rate: 30.88%
    - Win Rate: 67.65%

Analysis: In the comparative analysis between AMD and NVDA, it is evident that both companies have exhibited positive average returns over a 6.8-year period, with AMD slightly outperforming NVDA with a 4.5% return compared to NVDA's 4.2%. However, AMD also shows a higher standard deviation of 16.85% compared to NVDA's 14.64%, indicating higher volatility in its returns. Despite this, AMD's beta of 1.1198 suggests it is slightly less volatile than the market, while NVDA's beta of 1.3483 indicates higher volatility. AMD also demonstrates a higher alpha of 0.0374 compared to NVDA's 0.0338, suggesting better risk-adjusted returns. The Sharpe ratio for AMD stands at 0.26778, marginally lower than NVDA's 0.2838, but both companies boast impressive Sharpe Ratio Trading values of 4.2514. AMD's compound annual growth rate (CAGR) of 182.21% significantly surpasses NVDA's 178.35%, illustrating AMD's stronger growth trajectory. However, NVDA has a higher win rate of 67.65% compared to AMD's 92.65%, indicating a higher frequency of successful trades for NVDA despite its lower overall CAGR. Overall, while AMD exhibits greater growth potential and risk-adjusted returns, NVDA demonstrates more consistent trading success despite slightly lower growth figures.

3. Risk Analysis Performance:

Initial Investment Amount $5,000

- AMD:
  - Average Drawdown: -2.6002
  - Min Drawdown: -0.6196
  - Max Drawdown: -50.5539
  - Standard Error: 3.0539
  - Standard Deviation: 0.1685
  - Value-at-Risk (VaR): -0.2143
  - Conditional VaR: -0.2828
  - VaR Amount: ($1,071.55)
- NVDA:
  - Average Drawdown: -3.3377
  - Min Drawdown: -0.1109
  - Max Drawdown: -380.9185
  - Standard Error: 6.0577
  - Standard Deviation: 0.1464
  - Value-at-Risk (VaR): -0.2161
  - Conditional VaR: -0.2616
  - VaR Amount: ($1,080.55)

Analysis: In the analysis of two prominent semiconductor companies, AMD and NVDA, various metrics were examined to assess their drawdown performance. The performance analysis provides valuable insights into the risk associated with investments in these companies, based on various metrics. With an alpha level of 0.05 indicating a confidence level of 95%, the analysis delves into the drawdowns experienced by each company. For AMD, the average drawdown stands at -2.6002, with a minimum drawdown of -0.6196 and a maximum drawdown of -50.5539. The standard error and standard deviation are 3.0539 and 0.1685, respectively, reflecting the variability and uncertainty in the drawdowns. Additionally, the Value-at-Risk (VaR) and Conditional VaR, at -0.2143 and -0.2828 respectively, provide estimates of the maximum potential loss under normal conditions and extreme scenarios. Similarly, for NVDA, the average drawdown, standard error, and standard deviation are -3.3377, 6.0577, and 0.1464, respectively, with corresponding VaR and Conditional VaR of -0.2161 and -0.2616. These metrics, along with the VaR Amounts for both companies, provide crucial information for investors to assess and manage the risk associated with their investment portfolios. These metrics provide valuable insights into the volatility and risk associated with the stock performances of both AMD and NVDA, crucial for investors in making informed decisions.

Conclusion:

Based on analysis, AMD presents a more compelling investment opportunity than NVDA. With strong financial performance, established market presence, and promising growth prospects, AMD indicates higher potential returns. However, investors should conduct additional due diligence, considering industry trends and macroeconomic factors before investing. In conclusion, comparing key financial metrics and risk factors, AMD outperforms NVDA with a substantial 696.43% ROI versus NVDA's 674.76%. Despite NVDA's higher Sharpe ratio, indicating historically favorable risk-adjusted returns, AMD remains preferable for investors seeking stable long-term growth. AMD maintains a lower risk profile compared to NVDA, evident in its lower value-at-risk (VaR) and diversified product portfolio. Additionally, AMD's lower stock price allows investors to acquire more shares, enhancing potential returns over time. In summary, AMD emerges as the more attractive investment option, offering higher returns, a reduced risk profile, and greater potential for share volume, appealing to investors seeking long-term stability and growth.

References

Yahoo Finance. (n.d.). Advanced Micro Devices, Inc. (AMD) - Historical Data. Retrieved from https://finance.yahoo.com/quote/AMD/history

Yahoo Finance. (n.d.). NVIDIA Corporation (NVDA) - Historical Data. Retrieved from https://finance.yahoo.com/quote/NVDA/history

Yahoo Finance. (n.d.). S&P 500 (^SPX) - Historical Data. Retrieved from https://finance.yahoo.com/quote/%5ESPX/history