

I. Introduction

Microsoft Corporation (MSFT), one of the global technology giants, is widely considered a good choice for growth and stability in investors' equity portfolios as a leading company in technological Sector. Its credit rating is AAA and Aaa by Standard & Poor and Moody in 2024. Despite, strong business performance, the following report seeks to evaluate Microsoft in terms of possible risks as an equity investment for a prudent investor. The data used in this report were extracted from the annual report of Microsoft Corporation 2024 and Yahoo Finance website.

II. Fundamental risk by sector

Division	High ←... Moderate ...→ Low					Division	High ←... Moderate ...→ Low				
Business Risk	●	●	◎	●	●	Political Risk	●	●	◎	●	●
Geographical Risk	●	●	◎	●	●	Reputation & ESG Risk	●	●	●	◎	●

Rating Prospect in Details

1. Business Risk

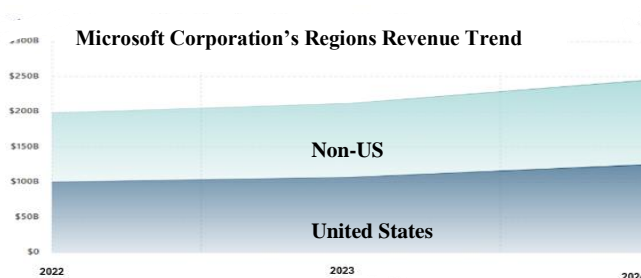
Regarding the nature of the contemporary world and business environment, the following is the primary risk that Microsoft might face:

Competition: The major competitors of Microsoft such as Google, Apple, and Amazon are powerful enough to undermine Microsoft's position in the market and Microsoft must continuous R&D investments to keep market leadership. It can also deteriorate the demand for Microsoft's software (Windows, Office) along with the rising of alternative sources such as Linux, LibreOffice.

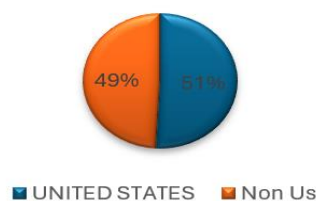
Technological Disruption: Microsoft faces the constant danger of cyber-attacks that can hamper Microsoft's reputation and growth. Besides, the development of open-source software and start-ups may be detrimental to the company's presence in the market.

2. Geographic Risk

Microsoft operates in more than 190 different countries, and the US is the largest market contributing to about 50% of the revenues. Although the US is one of the largest stable economies, it might face revolving risk. Meanwhile, the remaining half of the sales are open to international markets where regional economic fluctuations, exchange fluctuations and geopolitical uncertainties.



Revenue by Region(2024)



Hence, any economic downturn in the sale region could lead to a drop in revenues. Example: In 2022, Microsoft's cloud revenue grew at a slower pace due to the macroeconomic conditions.

3. Political Risk

The increasing support from the government for automation brings opportunities while Microsoft also faces challenges to comply with strict regulations. For example, the requirement to follow GDPR in Europe, CCPA in California, and other privacy laws results in higher operational costs. In addition, high US-China Tensions could significantly affect Microsoft's hardware supply chain as its Surface devices are manufactured in China. The additional raised trade barriers or export controls could lead to increased production expenditures.

4. Reputation & ESG Risks: Microsoft data centers consume a lot of electricity. The demand for sustainability and ethical use of AI is growing and so any misstep, such as flawed AI bias or harmful environmental effects, can undermine investor confidence.

III. Key Financial Ratios for Financial Risk (Ending Period:2024)

LIQUIDITY	Microsoft (MSFT)	Apple (AAPL)	Alphabet Inc. (GOOG)	PROFITABILITY	Microsoft (MSFT)	Apple (AAPL)	Alphabet Inc. (GOOG)
				Gross Margin	69.76%	46.52%	58.20%
Current Ratio	1.27	0.92	1.84	Operating Margin	44.64%	31.76%	32.11%
Quick Ratio	1.27	0.88	1.84	Net Margin	35.43%	24.30%	28.60%
Cash Ratio	0.60	0.37	1.07	ROE %	34.34	141.94	33.02
				ROA%	18.37	27.76	23.78

Liquidity: Microsoft shows a strong financial position with balanced risk exposure. Its liquidity profile is good according to current and quick ratios, which exceeds the industry benchmark of 1.0. So, it shows the capacity to cover short-term obligations although the cash ratio is slightly lower than its competitor, Alphabet Inc, but is still higher than Apple.

Profitability: A gross margin of nearly 70% suggests that it receives a significant portion of its revenue after direct costs, which shows good pricing power. It has better margins across gross, operating, and net ratios compared to its competitors and indicates its good operational efficiency that can reduce business risk along with good figures for ROE and ROA.

LEVERAGE & SOLVENCY RATIOS	Microsoft (MSFT)	Apple (AAPL)	Alphabet Inc. (GOOG)	BANKRUPTCY ASSESSMENT	Microsoft (MSFT)	Apple (AAPL)	Alphabet Inc. (GOOG)
Cash to Debt	1.15	0.56	3.76	Z score	9.57	9.45	12.48
Equity to Asset	0.57	0.19	0.72				
Debt to Equity	0.21	1.45	0.08				
Interest Coverage Ratio	44.88	N/A	N/A				

Leverage and Solvency: Microsoft cash-to-debt ratio indicates that it holds more cash than debt and shows its financial flexibility. While Alphabet has a higher cash-to-debt ratio, Microsoft's figure also indicates a good position. Moreover, the company's equity-to-asset ratio, at 0.57, indicates that the company is more financing by equity, rather than debt. This shows its capacity to alleviate financial risk. Similarly, the company's debt-to-equity ratio 0.21

suggests a company has less reliance on debt financing. The interest coverage ratio of 43.97 further underscores it earning nearly 44 times of its interest expenses, and this is the above the typical industry benchmark of 10.

Bankruptcy Assessment: Z-score of 9.57 confirms Microsoft's low bankruptcy risk and indicates financial stability. While Alphabet's Z-score (12.48) is higher, both companies are in a secure financial position.

Debt Profile and Sensitivity Analysis Table

Debt Type	2023	2024	Risk Category	Hypothetical Change	Impact on Financials
Short-Term Debt Ratio	0%	13.55%	Interest Rate Risk	100 basis point increase in U.S. Treasury rates ▲	(\$1.34B) ▼ decrease in fair value
Long-Term Debt Ratio	100%	86.45%	Foreign Exchange Risk	10% decrease in foreign exchange rates ▼	(\$9.6B) ▼ decrease in revenue
			Foreign Exchange Risk	10% decrease in foreign exchange rates ▼	(\$38M) ▼ decrease in fair value (investment)

Interest Rate Risk: In 2023, Microsoft relied entirely on long-term debt (100%), but by 2024, short-term debt accounted for 13.55% and indicates exposure to rate fluctuations. With a 60% floating, 40% fixed debt mix, a 100-bps rate hike could cut fair value by \$1.34B, highlighting sensitivity to interest rates.

Foreign Exchange Risk: Foreign exchange risk is significant, with a \$9.6B potential revenue loss from a 10% USD appreciation, while investment exposure remains low (\$38M fair value loss).

IV. Share Price Risk Analysis

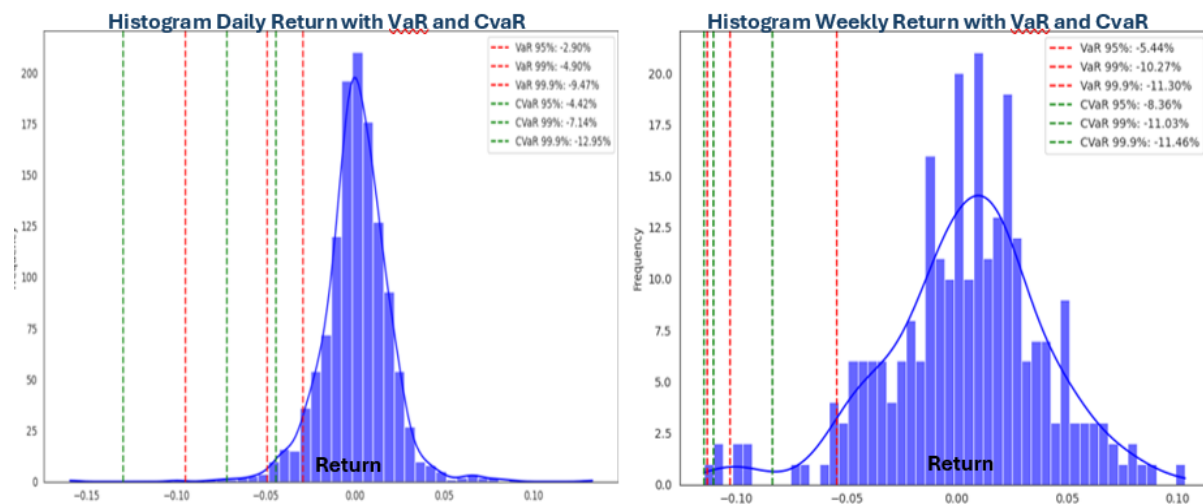
This section evaluates the risk associated with Microsoft Corporation's stock price from investor's perspective by using different model assessments.

Analysis of Volatility Value at Risk (VaR) and Conditional Value at Risk (CVaR)

Metric	Microsoft (MSFT)	Apple (AAPL)	Alphabet Inc. (GOOG)	S&P 500 (^GSPC)
Daily Volatility	1.92%	2.00%	2.04%	1.34%
Annualized Volatility	30%	31.69%	32.39%	21.35%

Microsoft has the lowest daily volatility (1.92%) as per table, compared to Apple and Alphabet while the S&P 500 is the least volatile as market Index. Annualized volatility follows a similar trend and indicates that Microsoft offers lower risk among three tech companies.

The below graph illustrates Var and Cvar of Microsoft Corporation. Var shows the potential loss in stock price at a given confidential level while CVaR shows the average loss beyond the VaR threshold.

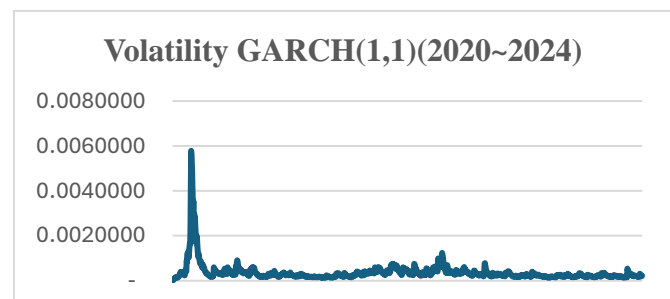


So, at the 95% confidence level, Microsoft's stock could potentially lose over 2.90% daily or 5.44% weekly with a 5% probability. On the other hand, in worst 5% of Cases, the average loss is 4.42% daily and 8.36% weekly. The higher CVaR relative to VaR can be seen particularly at higher confidence levels. So, it demonstrates that investors should expect occasional sharp declines in stock prices, especially under extreme market conditions.

GARCH (1,1) Model Analysis

GARCH (1,1) model estimates a **long-run unconditional volatility** of 1.83% which is slightly lower than the **historical volatility** of 1.92%.

- α : 0.105 , β : 0.843
- **Long-run Variance:** 0.000334
- **Annualized Volatility Estimate:** 1.83% per day



Since $\alpha + \beta = 0.948$, which is close to 1, the model indicates **strong volatility persistence**. It implies that the shocks to volatility such as price swings will decay slowly over time. It further suggests that past volatility strongly influences future volatility, creating a 'memory effect' in the stock's risk profile." However, it is important to note that GARCH assumes a stationary process, but real-world data often includes structural breaks or non-stationary periods.

V. Conclusion

In conclusion, Microsoft Corporation is a solid long-term investment but there are several associated risks that equity investors need to consider. The fundamental risks are competitive, regulatory and region-specific. The financial risks include slightly decreased liquidity and interest coverage ratios. The share price indicates moderate volatility, but with the potential of significant short-term loss. This trend is confirmed by VaR%, CVaR% and GARCH models. Overall, it is important for investors to mind the market risk and use diversification to maximize the downside.