

## **Alphabet Inc. Risk Assessment Report**

### **Fundamental Risk Assessment:**

As an equity investor, understanding the fundamental risks associated with Alphabet Inc. is crucial for evaluating the long-term sustainability and persistency of the company. Although Alphabet continues to be a dominant force in the global technology sector, there are a range of non-financial risks that could impact its performance. These include business risk, geographic exposure, political and regulatory, and other risks.

### **Business Risk**

Alphabet's business model remains heavily reliant on digital advertising, particularly through Google Search, YouTube, and its display ad network. In 2023, advertising still accounted for the majority of Alphabet's revenues. While the company has diversified into cloud computing (Google Cloud), AI, hardware, and other moonshot ventures (like Waymo and DeepMind), its financial success remains tethered to the performance of its ad business.

This reliance presents a key risk: any downturn in global advertising spends whether due to economic slowdown, competition, or shifts in advertiser behaviour could significantly affect Alphabet's revenues. Moreover, increasing consumer privacy expectations and changes in browser policies (such as phasing out third-party cookies) may further erode its ad targeting capabilities, challenging its dominance.

Additionally, Alphabet's continuous investment in high-risk, long-horizon projects (via its "Other Bets" segment) raises concerns about capital allocation efficiency. These ventures, while innovative, have yet to yield consistent returns, potentially diverting resources from core profit-generating activities.

### **Geographic Risk**

Alphabet operates globally, deriving a significant portion of its revenues from international markets. While this geographical diversification reduces dependence on the U.S. economy, it exposes the company to varying regulatory frameworks, economic conditions, and currency fluctuations.

In particular, emerging markets such as India, Brazil, and Southeast Asia present both opportunities and risks. These regions offer strong user growth, but are also fraught with infrastructure constraints, price sensitivity, and localized competition. Alphabet's ability to scale profitably in these regions may be challenged by governmental restrictions and rising nationalism in digital ecosystems.

### **Political and Regulatory Risk**

Regulatory scrutiny is perhaps the most prominent non-financial risk Alphabet faces today. Across jurisdictions including the United States, European Union, and India, Alphabet is under increasing pressure regarding antitrust, market dominance, and data privacy concerns.

In the EU, Alphabet has faced multi-billion-euro fines and regulatory actions under the Digital Markets Act (DMA), while in the U.S., lawsuits over monopolistic practices and search dominance threaten to reshape its operating model. Similarly, data localization laws, content moderation rules, and competition from domestic players in countries like India and China further complicate Alphabet's ability to operate freely.

Furthermore, the expanding regulatory landscape for artificial intelligence, a core growth area for Alphabet could limit innovation or increase compliance costs, especially as global regulators grapple with the ethical and economic implications of AI systems like Gemini and Bard.

### **Other Risks**

Alphabet also faces reputational and operational risks. As a global tech giant, the company is frequently in the public eye, and issues related to misinformation, content moderation, labor practices, or algorithmic bias can quickly escalate into major controversies, affecting brand value and user trust.

Additionally, cyber threats remain an ongoing concern. While Alphabet is at the forefront of cybersecurity, the scale and sensitivity of its data repositories make it a prime target for malicious attacks, potentially resulting in service disruption or regulatory penalties.

The company faces material risks from overreliance on advertising, global regulatory pressures, geographic dependencies, and evolving technology challenges.

### **Financial Risk Assessment:**

From a financial risk perspective, Alphabet Inc. remains a highly resilient and conservatively financed company. The evaluation of its core financial ratios over the last two years (2022 and 2023) highlights the strength of its balance sheet and operational performance.

#### **Current Ratio**

Alphabet's current ratio decreased from 2.38 in 2022 to 2.10 in 2023, indicating a modest decline in short-term liquidity. Despite this drop, the ratio remains well above 1, demonstrating that the company continues to maintain a strong buffer of current assets over its current liabilities. This ensures that Alphabet is well-positioned to meet its short-term financial obligations.

#### **Quick Ratio**

The quick ratio declined from 1.61 in 2022 to 1.33 in 2023. This ratio excludes inventory and focuses on the most liquid assets such as cash, marketable securities, and receivables. The drop suggests a slight tightening in Alphabet's very short-term liquidity position, though the ratio still reflects healthy financial flexibility.

**Operating Margin**

Alphabet's operating margin improved from 26.5% in 2022 to 27.4% in 2023, indicating increased operational efficiency. This margin improvement reflects Alphabet's ability to control operating costs and maintain profitability even amid a challenging macroeconomic environment and restructuring efforts.

**Debt-to-Equity Ratio**

Alphabet's debt-to-equity ratio decreased slightly from 0.43x in 2022 to 0.42x in 2023, highlighting the company's conservative capital structure. With significantly more equity than debt, Alphabet faces minimal financial risk associated with leverage. This low ratio provides Alphabet with strategic flexibility and reduces vulnerability to interest rate fluctuations.

**Return on Investment (ROI)**

Alphabet's ROI rose from 16.42% in 2022 to 18.34% in 2023, demonstrating improved efficiency in generating net income from its total asset base. The increase in ROI reflects strong earnings performance and effective use of capital resources, reinforcing Alphabet's appeal as a profitable and efficient enterprise.

**Interest Coverage Ratio**

Alphabet's interest coverage ratio surged from 209.6x in 2022 to 273.7x in 2023, indicating its exceptional ability to service debt obligations. This ratio shows that Alphabet can cover its interest expenses over 270 times with its operating income, effectively eliminating any short-term solvency concerns related to borrowing.

Overall, Alphabet Inc. demonstrates minimal financial risk, supported by strong liquidity, efficient operations, and low leverage. The company's robust interest coverage and improving return metrics make it a highly attractive candidate from a financial risk perspective for long-term equity investors.

**Share Price Risk:**

Alphabet Inc.'s share price risk can be comprehensively understood by evaluating its volatility, distribution characteristic GARCH (1,1) model, Value at Risk (Var), Conditional Value at Risk (CVaR).

**Volatility**

Volatility is a core measure of stock price risk, reflecting the degree of variation in returns. Alphabet's daily standard deviation, a proxy for volatility, is approximately 1.95%, meaning the stock typically fluctuates nearly 2% each day. This indicates moderate short-term volatility for a large-cap technology company.

**Descriptive Statistics (Daily Returns)**

Standard Deviation: 0.0195 (1.95%), Skewness: -0.2247 (slight negative bias; more left-tail risk), Kurtosis: 4.0077 (leptokurtic distribution with fat tails)

These values suggest that Alphabet's return distribution is not normal, with a tendency toward extreme losses more often than gains. The negative skewness and high kurtosis highlight the presence of tail risk, a key concern for investors during violent market behaviour.

### **GARCH (1,1) Model**

To capture volatility clustering and persistence, I ran a GARCH (1,1) model and I have received the following output values:

Alpha ( $\alpha$ )	Beta ( $\beta$ )	Omega ( $\omega$ )	$\alpha + \beta$	LR Variance
0.052	0.9419	$3.52 \times 10^{-6}$ ,	0.994	0.0005814

This model confirms very high volatility persistence, meaning once volatility rises due to a market shock, it remains elevated for an extended period. The model's long-run daily volatility of 2.4% is almost consistent with observed standard deviation (i.e., 1.95%), validating the model's accuracy for financial forecasting.

### **Value at Risk (Var) and Conditional Var (CVaR)**

Daily Var and CVaR:

- At 99% confidence, there's a 1% chance the stock could fall by more than 5.26% in a single day, with an average loss of 7.29% on such days.
- At 95% confidence, the daily loss threshold is 3.04%, and the CVaR is 4.63%.

Weekly Var and CVaR:

- At 99% confidence, Var is 9.26%, with a CVaR of 11.70%.
- At 95% confidence, Var is 5.58%, with a CVaR of 8.16%.

These results show that holding the stock for longer periods significantly increases downside risk, and that losses during rare events can be substantially higher than average volatility would suggest.

### **Conclusion**

In summary, Alphabet's stock displays moderate volatility with non-normal risk characteristics, including downside bias and fat tails. The GARCH (1,1) model highlights persistent volatility, suggesting that risk events can have long-lasting effects. Daily and weekly Var and CVaR metrics further reveal meaningful downside potential, particularly under stress conditions. Investors should account for this risk when managing exposure and consider these patterns in strategic decision-making.