**The Henry Fund**
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# ALPHABET INC. (GOOGL)

**September 23, 2024**

**Communication Services – Internet Content & Information**

**Stock Rating** **BUY**

## Investment Thesis

Alphabet faces an inflection point in its business as it deals with multiple antitrust lawsuits and the rapid growth of artificial intelligence (AI). We believe the firm is undervalued compared to peers, is set up well to be one of the winners of the AI movement and can weather any storm litigation throws its way. For these reasons, we give it a **BUY** rating, with a target price of $226, representing a return of 38% from its current price.

**Drivers of Thesis**

- We forecast Alphabet's advertising business to grow by a CAGR of 7% through 2028, due to increased demand for advertising as global economies stabilize.
- We project Alphabet's operating cash flows to grow by a CAGR of 11.5%, which provides significant support to their annual CapEx of $48b+.
- The firm can fend off generative AI attempting to take internet search market share due to consumer habit, information credibility, and having its own chatbot alternative, Gemini.

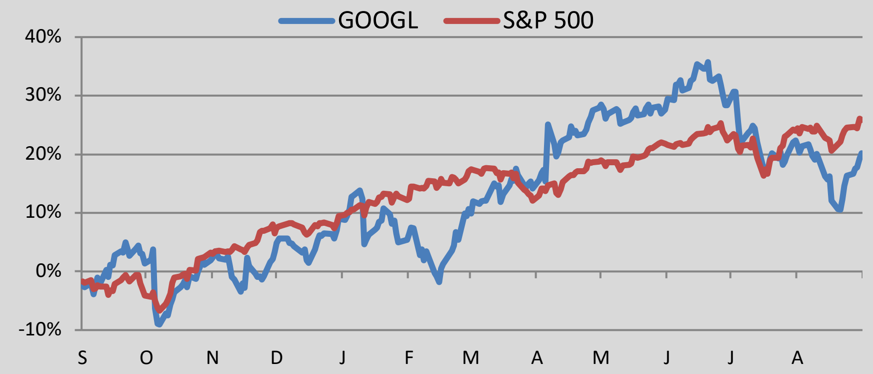
**Risks to Thesis**

- Antitrust litigation has the potential to significantly alter Google's business model. We expect a divestment of one its advertising segments, and/or a multibillion dollar fine and change of its business practices in the ad space.
- OpenAI's ChatGPT or other generative AI alternatives could cut into Google Search's market share.
- International economies slow down, lowering advertising budgets and weakening Google's core business.

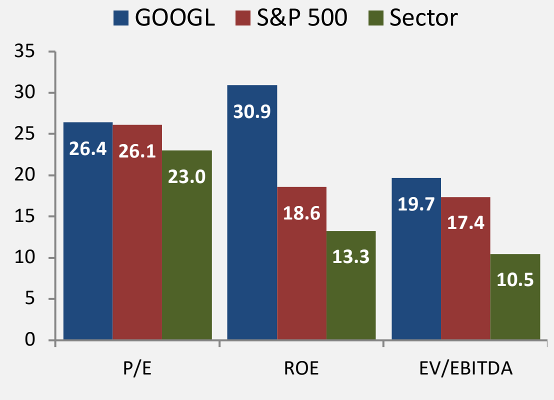
## Earnings Estimates

| Year | 2021 | 2022 | 2023 | 2024E | 2025E | 2026E |
|---|---|---|---|---|---|---|
| EPS | $5.69 | $4.59 | $5.84 | $7.64 | $8.68 | $9.95 |
| HF est. | | | | $7.99 | $8.90 | $9.97 |
| Growth | *92.5%* | *-19.4%* | *27.3%* | *36.8%* | *11.3%* | *12.0%* |

## 12 Month Performance



| Target Price | $226 |
|---|---|
| Henry Fund DCF | $226 |
| Henry Fund DDM | $242 |
| Relative Multiple | $294 |
| **Price Data** | |
| Current Price | $164 |
| 52wk Range | $120 – 192 |
| Consensus 1yr Target | $202 |
| **Key Statistics** | |
| Market Cap (T) | $2.0 |
| Shares Outstanding (M) | 12,322 |
| Institutional Ownership | 79.8% |
| Beta | 1.0 |
| Dividend Yield | 0.5% |
| Est. 5yr Growth | 21.1% |
| Price/Earnings (TTM) | 26.4 |
| Price/Earnings (24E) | 21.4 |
| Price/Sales (TTM) | 6.9 |
| Price/Sales (24E) | 5.8 |
| **Profitability** | |
| Operating Margin | 27.4% |
| Profit Margin | 56.6% |
| Return on Assets (TTM) | 22.0% |
| Return on Equity (TTM) | 30.9% |



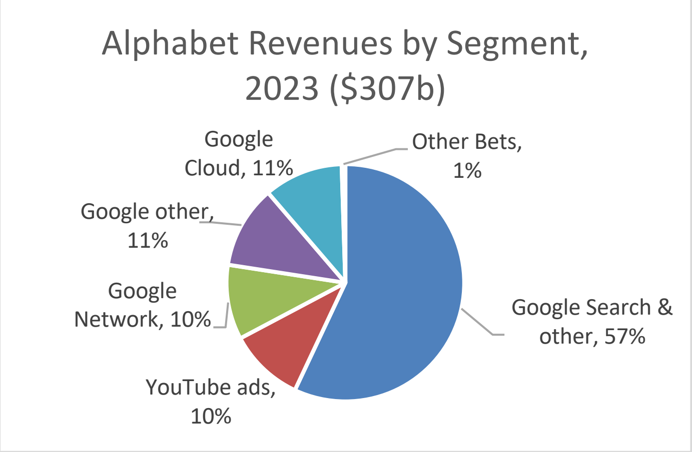
## Company Description

Alphabet is a collection of technology businesses, the majority of which are focused on advertising. Google is a leader in the technology space and has rapidly grown since its founding in the late nineties. The firm's businesses include Google Search, YouTube, Google Pixel, Android, Chrome, Google's Ad Network, Google Maps, Gmail, Google Drive, etc. The firm is known for innovating and has a segment focused on making bets in new and growing markets, such as driverless cars.

## COMPANY DESCRIPTION

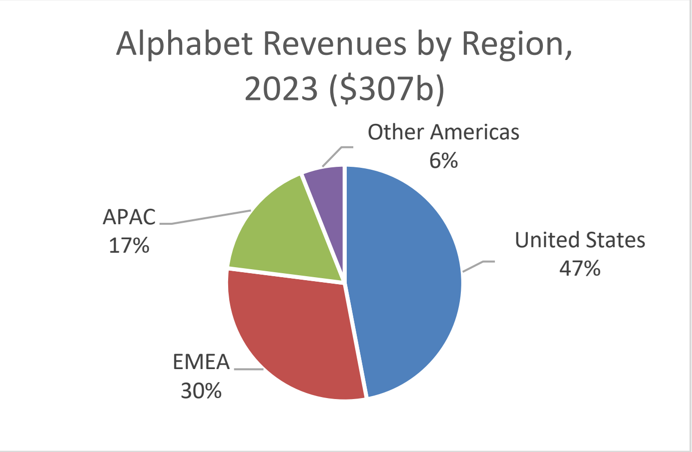
Alphabet is a leading technology conglomerate involved in several industries, including advertising, cloud computing, artificial intelligence, amongst others. The firm has a $2 trillion market cap and is one of the five biggest companies in the world[1]. This scale allows Google to be a major player in multiple areas and commit large amounts of resources to research and development. The innovative nature of the firm has contributed to Google's rapid ascent since its founding in 1998. In 2015, Google became a subsidiary of Alphabet, which was a strategic move to separate Google's core businesses from its side project investments the firm often calls "moonshots.[16]"

Alphabet reports in three main segments: Google Services, Google Cloud, and Other Bets. Google Services' segments break down even further into Google Search, YouTube ads, Google Network, and Google other. Despite all the tentacles Alphabet has, its core business is advertising. In 2023, approximately 77% of Alphabet's total revenue came from advertising[3]. A breakdown of Alphabet's 2023 revenue is displayed below.



*Source: Alphabet 10-K*

Alphabet also reports revenues by geographic region. The firm is a dominant international player in many different businesses, most notably the leader in internet search by a wide margin. The geographical revenue mix has remained relatively constant over the past five years. We project this to remain the same in the future. We do not anticipate the firm to move into China, as Google has dealt with several issues in the Chinese market[14]. This includes a failed attempt to implement its search engine which fell apart due to censorship issues, among other things. The firm has not operated in China in nearly fifteen years. Given their international operations, Alphabet hedges its currency risk exposure.



*Source: Alphabet 10-K*

## Google Services

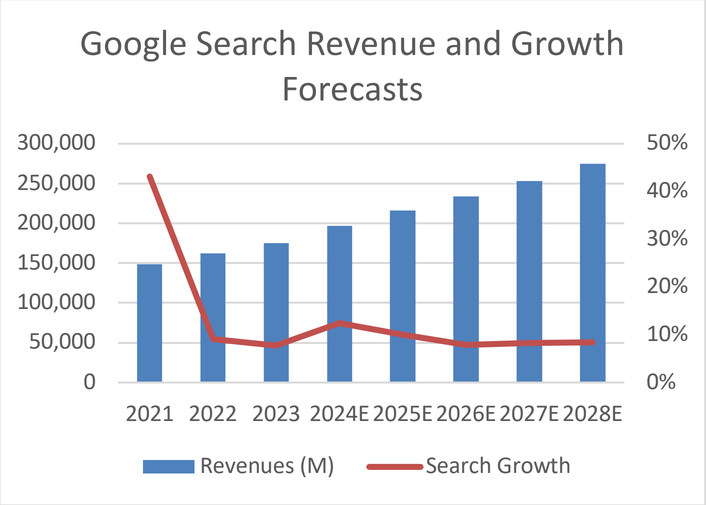
### Google Search

Google was originally founded to help internet users find weblinks, and that remains its largest business to this day. Google Search includes revenues generated from traffic generated by search distribution partners who use Google as their default search engine in browsers. Alphabet also includes advertising dollars from other Google owned and operated properties like Gmail, Google Maps, and Google Play that are not large enough for their own segment.

In early August, a federal judge ruled that Google acted illegally to maintain a monopoly in online search[21]. The decision is widely seen as the first major strike at a tech giant in in the modern internet era, and the first against a large tech firm since Microsoft over 20 years ago. Google's dominance in internet search is undeniable. According to the Justice Department, Google's search engine account for nearly 90% of web searches. The company spends billions of dollars annually to be the automatic search engine on browsers such as Apple's Safari. According to antitrust court documents, Alphabet paid Apple $20 billion to be Safari's exclusive search engine in 2022. The government argued these exclusivity payments made it harder for its competitors to enter the market and build scale. In the future, we expect these payments to no longer occur. We believe this could be very beneficial to Google, as costs would be cut significantly, and consumers are likely to continue using Google Search. The multi-decade dominance leads us to believe Google will still be heavily used if consumers are forced to choose. The removal of Traffic Acquisition Costs (TAC), which is what the firm pays to be the exclusive search engine of various browsers, may be more harmful to those that receive the payments (Apple, etc.) than Google.

It remains to be seen how the search antitrust case will affect Google's revenue and dominance in internet search. We will have a better understanding in 2025 when the punishments of the landmark decision come down. There are various outcomes, such as barring Google from being the exclusive search engine of browsers, making Alphabet spin off part of its business, adding choice-screens for users to choose a search engine for their web browser, etc. There are multiple upside and downside cases with potential remedies. Until we get further color on the situation, we believe it is best to forecast the segment in line with consensus estimates. We project Search revenues to grow by a CAGR of 9.4% over the forecasted period.

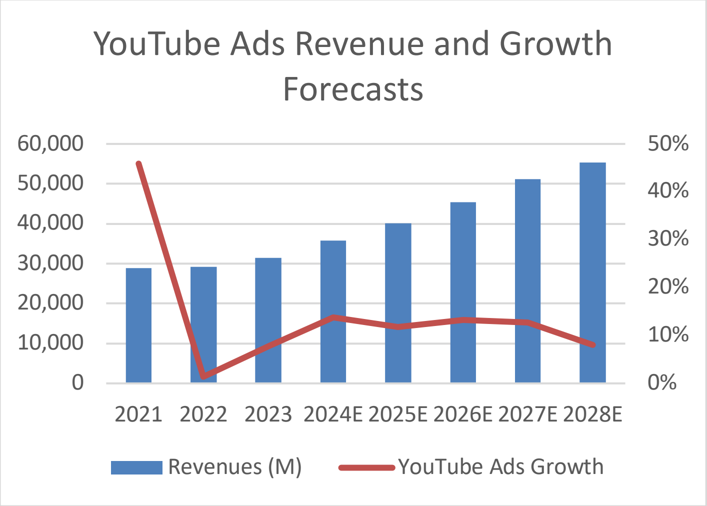
Another risk to Google's advertising business is ad blocker technology. According to Statista, nearly 30% of internet users use ad blockers. Google has made it clear they will not outright ban ad blockers on its Chrome browser, but the firm has made it more difficult for developers. The ad blocking battle has taken twists and turns over the past five years, but we do not anticipate it having major impacts on revenue. We believe most people who are interested in ad blockers have one by now. Google has taken enough measures to push out ad blockers, or at least slow their development. We believe it would take a major privacy/safety issue for the tech to take further adoption in the future.



*Source: Alphabet 10-K and HF Estimates*

## YouTube Ads

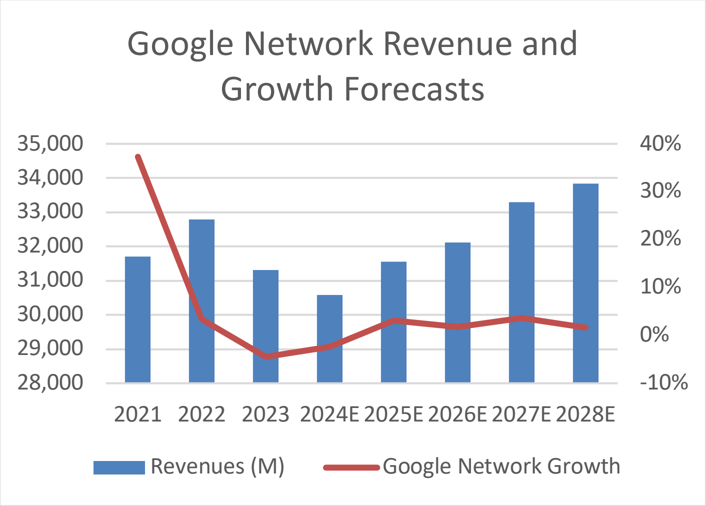
YouTube ads are a great business for Google. In the past three years, they have generated around $30 billion a year for the firm. If YouTube was a standalone business, it would be one of the top Communications companies. The business model is a great one, as users are the ones generating content for the platform. Unlike other media companies like its streaming counterparts, Google does not have to spend a dime on producing content. A percentage gets paid out to creators, but Google has a cash cow with YouTube that requires little maintenance. We project Alphabet's YouTube Ads revenue to grow by a CAGR of 11.9% through 2028. We expect YouTube ad revenue to grow in the coming years due to people cutting the cord on cable and shifting their content diet to include more digital video.



*Source: Alphabet 10-K and HF Estimates*

## Google Network

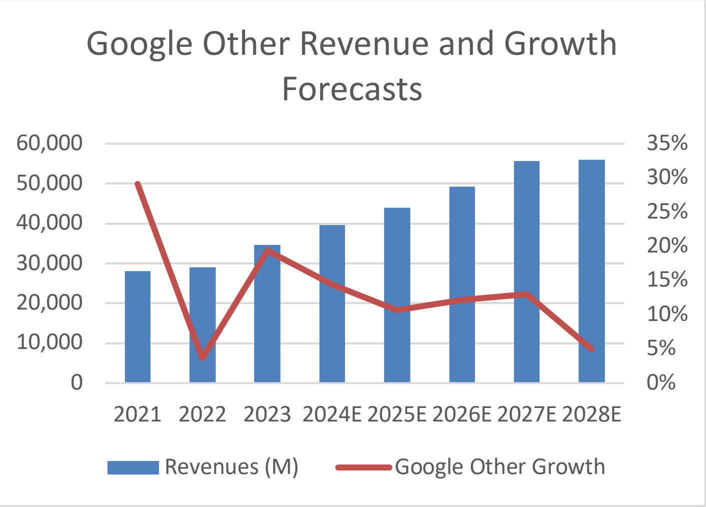
Google Network includes revenues from Google's AdMob, AdSense, and Ad Manager properties. These subsegments act as a broker between advertisers and publishers who want to earn ad revenue on their website, app, etc. Google pays out the ad revenue to the publisher and takes a slice of it. This technology is also under major scrutiny and is subject to another antitrust lawsuit that is ongoing. The litigation says that Google created and maintained a monopoly on the technology used to buy and sell the ads on the internet. Given the decision in the Google Search case, we believe it is likely that Google may lose this case as well. However, due to the uncertainty, we project Google Network's revenue to stay relatively stagnant and grow by a CAGR of 1.6%. If a divestment was required, we believe this is the arm of its advertising segment that Google would cut out if it had a choice. Growth has been negative, and YouTube and Search are more valuable businesses to own.



*Source: Alphabet 10-K and HF Estimates*

## Google Other

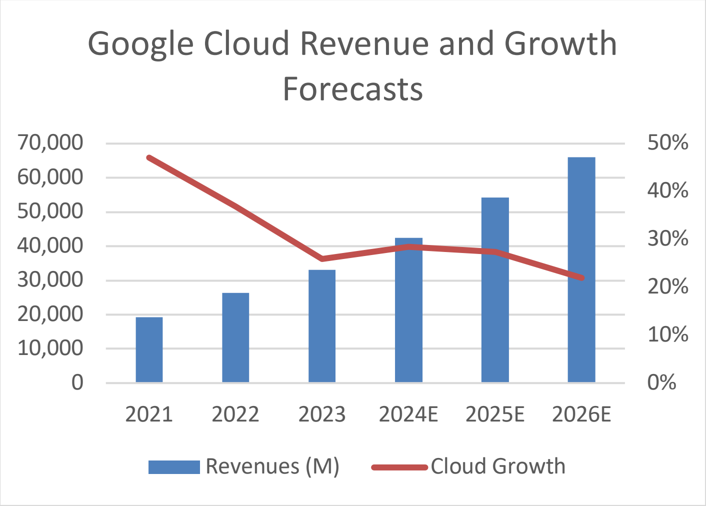
Google subscriptions, platforms, and devices have grown into a solid business for Alphabet. This segment is comprised of consumer subscriptions. These primarily revolve around YouTube (YouTube TV, YouTube Music and Premium, NFL Sunday Ticket) and include Google One, a storage plan that supports other Google platforms like Drive, Gmail, and Google Photos. The segment also includes revenues from Google Play and the sales of apps and in-app purchases, devices including the Google Pixel phone, and other services and products. This segment comprises many things but brings in great cash flows that are different from the advertising business which is currently facing several legal issues. YouTube TV is a growing service and gaining popularity amongst people who cut the cord on cable, and the Pixel provides a solid phone for those who do not want to go with Apple or Samsung. Given the diverse set of businesses in the segment and growth potential for many of them, we expect the segment to grow by a CAGR of 11.0% through 2028. We expect revenue growth to steady out at the 5% level in the terminal year. We YouTube TV growth is likely to slow down with most cord cutters making the switch to digital-only by 2028.



*Source: Alphabet 10-K and HF Estimates*

## Google Cloud

Cloud is Google's fastest growing segment. Its Cloud Platform encompasses consumption-based fees and subscriptions for infrastructure, platform, and other services. These services provide access to cybersecurity, databases, analytics, and AI offerings. On top of this it also offers Google Workspace, which includes subscriptions and collaboration tools for businesses such as Calendar, Gmail, Docs, Drive, etc. Google has leveraged its strengths in AI, databases and analytics, and cybersecurity to become one of the world's largest growing cloud vendors. We expect this trend to continue and anticipate the firm taking more market Cloud market share from competitors such as Amazon Web Services and Microsoft Azure. The firm's scale allows it to adapt quickly to the quickly changing Cloud market. Google Cloud Platform (GCP) is the cheapest option among GCP, Amazon Web Services, and Microsoft Azure. Google offers sustained used discounts, which creates lower costs for users who invest a large amount of time and effort into GCP. They also offer free tiers and credits for new customers and small businesses. We see this is as a strong way to gain new customers as they attempt to take market share from fellow tech giants Amazon and Microsoft. GCP offers a strong growth business for Google as its advertising segments face legal trouble. We anticipate the firm to take market share from other tech giants as they build their customer base. The firm has the capital and technological resources to grow its Cloud business for years to come. We expect this area to be a significant focus for Google as it attempts to be the leader in AI. Given the attention on AI and the amount of CapEx forecasted ($12b per quarter through 2028), we expect Google's Cloud segment to grow revenues by a CAGR of 23.8% alongside their rapidly growing AI capabilities.



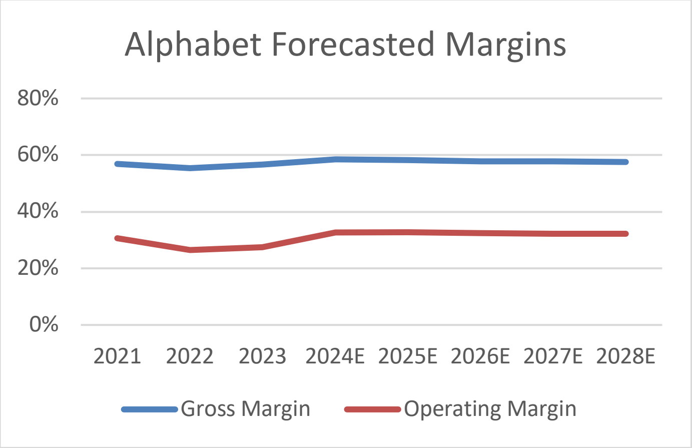
*Source: Alphabet 10-K and HF Estimates*

## Other Bets

Google has several portfolio companies it develops and grows that they see as potential disruptors to various businesses down the road. These include bets in life sciences, driverless cars with Waymo, etc. The segment accounts for less than 0.75% of Alphabet's total revenue, but it contributes to the innovative and startup-esque culture of the firm. In 2023, Alphabet brought in $1.5b in Other Bets revenue, with an operating loss of $4.1b. We anticipate Alphabet's Waymo to have the highest long-term upside of current companies in the segment. If Waymo were able to legitimately compete with Tesla in self driving cars, Alphabet would have a huge growth engine on its hands. While not a serious driver of GOOGL's top-line growth, we believe this segment is important for the firm's future development and overall innovation in the tech sector.

## Cost Structure Analysis

Alphabet's cost of revenues includes Traffic Acquisition Cost (TAC), which is what the firm pays to be the exclusive search engine of various browsers, etc. Cost of revenues has been steady for Google, and we expect it to be near the same percentage of revenues it typically hovers around since we do not yet know the remedy of their Search antitrust case. If the firm is banned from paying firms to be the exclusive search engine of browsers, we expect the firm to save billions ($20b+) and maintain their dominant market share. We also expect R&D expense as a percentage of sales to remain at its current figure due to the continued development in AI. For Google's Marketing and SG&A expenses, we forecast them to be a lower percentage of total revenues than historical averages due to a couple of reasons. One is that marketing costs should become cheaper with lower interest rates. Another is that we expect the firm to trim down its staff with layoffs which will lower wage expenses. This is part of a broader trend in the tech industry, where companies became overstaffed during the pandemic. These trends contributed to improved margins over our forecasted period. We expect a bigger boost to operating margin in 2024 and a leveling out of margin levels through 2028 as the firm reaches equilibrium on staffing and interest rates maintain lower levels than what was experienced in the Fed's rate hiking cycle.



*Source: Alphabet 10-K and HF Estimates*

## Firm Differentiation

Google's business is differentiated from peers due to the moat they built in their advertising business (which is also why they are facing significant antitrust legal issues). The firm owns almost all levels of the advertising process it makes money on. It makes as an exclusive search engine because it has the scale to pay TAC fees. They also own the largest streaming platform in YouTube, which provides another source of endless content to run ads on. On top of this, they also serve as brokers in the advertising process (Google Network). This business is hard to replicate, as the barriers of entry are extremely high, and Alphabet's scale allows it to do whatever it wants. The potential remedies of Alphabet's various antitrust lawsuits are the biggest threat to break up Alphabet's business model. Meta is Alphabet's largest advertising peer but is more focused on social media advertising.

## Business Model Viability

Although Google has an incredible advertising business revolving around Search, YouTube, and ad brokering, the question is how long they will be able to hold on. Recent antitrust lawsuits have called into question the sustainability of Alphabet's advertising moat. The advertising businesses Google owns would be strong companies on their own. Following regulation in the coming months will be important to see how long Google will be able to maintain its business model, and if other big tech firms will have issues on their large-scale dominant business models as well.

## Debt Maturity Analysis

| Firm | S&P Debt Rating |
|---|---|
| **Alphabet** | **AA+** |
| Apple | AA+ |
| Meta | AA- |
| Microsoft | AAA |
| NVIDIA | A+ |
| Oracle | BBB |
| Amazon | AA |

*Source: S&P*

Alphabet has a strong credit rating given their ability to pay off debt, as the firm's total debt obligations are a tiny fraction of the revenues they earn on an annual and quarterly basis. In 2023, the firm had $102b in operating cash flow, which is nearly seven times the amount of total debt they have, displaying their ability to easily service debt obligations. With a history of strong cash flows, Alphabet can issue debt with low credit spreads. This is a big beneficiary to the firm if it has unique goals to achieve with debt. If not, most business needs can easily be paid off with cash.

| Fiscal Year | Payment ($mil) |
|---|---|
| 2024 | $1,299 |
| 2025 | 1,163 |
| 2026 | 2,165 |
| 2027 | 1,143 |
| 2028 | 132 |
| Thereafter | 8,960 |
| Total | $14,862 |

*Source: Alphabet 2023 10-K*

## ESG Analysis

| Firm | ESG Rating |
|---|---|
| **Alphabet** | **23.9 (medium risk)** |
| Apple | 16.8 (low risk) |
| Meta | 32.7 (high risk) |
| Microsoft | 14.2 (low risk) |
| NVIDIA | 13.2 (low risk) |
| Oracle | 14.5 (low risk) |
| Amazon | 29.0 (medium risk) |

*Source: Morningstar Sustainalytics*

Morningstar Sustainalytics gives Alphabet a medium risk ESG rating. This places the firm in the bottom 42% of the software & services industry group.

On the environmental front, their work in building data centers and using artificial intelligence could be costly from a carbon emission and power standpoint. It takes a significant amount of power to operate data centers, and that is where the large chunk of Alphabet's CapEx is going. However, a Google search uses significantly less power than a Chat GPT query.

As for social factors, Google has faced issues over data privacy in the past. Given almost everyone in America uses Google to browse the internet the firm has a lot of user data. Many are also consumers of Google's other platforms such as YouTube and Google Maps, which tracks your location. This inherently brings up potential risks for litigation from Google consumers. In 2022, the firm paid out a $392m fine because of its location tracking[17]. For Alphabet and all other major tech companies, privacy is a key issue that is constantly being addressed with new rules and policies to prevent lawsuits.

The firm also deals with content moderation issues, as dangerous, inappropriate, or illegal content may be posted on YouTube. This is bad for Google on a couple fronts. One is that their platform has the potential to share bad things and contribute negatively to impressionable minds. The other is that if their ad system displays major brands' ads on bad videos. For example, the firm recently displayed Adobe ads on a video that was spreading racist falsehoods about Haitian immigrants[24]. The issue of misinformation and conspiracy theories is not unique to Google, though, as it plagues all social media sites and the overall internet.

# RECENT DEVELOPMENTS

## Recent Earnings Announcement

On July 23rd, Alphabet announced earnings for Q2 2024. The firm's revenue was up 14% year over year, in large part due to growth in Search and Cloud. The company reported total advertising revenue of $64 billion, which was up from $58.14 in 2023[1]. This displays Google's advertising business continuing to grow despite tough market conditions with high interest rates and rising inflation cutting advertising budgets in 2022 and 2023. Alphabet announced EPS of $1.89 a share, beating the consensus estimate of $1.84. They also beat expectations for revenue, with $84.74 billion vs. $84.19 estimated. These beats were largely due to growth in Search and Cloud.

YouTube Ads were the only segment to miss expectations. Despite being up roughly a billion year over year, YouTube ads still missed the mark. This is likely due to the increased competition they face from other social media video platforms like TikTok and Instagram Reels.

In addition to announcing earnings, the firm discussed capital expenditures guidance. In management's Q2 earnings call, Ruth Porat stated that CapEx spending was expected to reach $12 billion per quarter. Given AI will not reach its final form in a couple months, we utilized this number for the entire forecasted period. We expect Google will need to commit large amounts of its cash flows to building AI infrastructure if it expects to be an industry leader.

The firm also noted that its Other Bets segment brought in $365 million. Alphabet announced they will be committing a new $5 billion multiyear investment in Waymo[1], which CEO Sundar Pichai said is making 50,000 weekly paid rides.

## Google Antitrust Lawsuits

| Big Tech Antitrust Litigation | | |
|---|---|---|
| **Firm** | **Lawsuit(s)** | **Status** |
| Alphabet | App Store (vs. Epic Games - $700m), Search, Ad Tech | 2 losses, Ads TBD |
| Amazon | E-Commerce | Set for 2026 trial |
| Apple | Smartphone market, App Store (vs. Epic Games) | Win against Epic Games, |
| Meta | Social media (Instagram and WhatsApp) | TBD |

*Source: New York Times*

**Google vs. Epic Games:**

This lawsuit is the least important antitrust issue for Google from a big picture perspective. Epic Games sued Google in 2020 after fighting over in-app purchases in the Google Play store[22]. Epic wanted to be able to use third-party app stores, sideloaded apps, and non-Google payment processors easier. Google argued that the demands would damage Androids ability to offer secure user experience and compete with Apple. In December 2023, the jury ruled in Epic's favor, finding that Google acted like a Monopoly by forcing developers to use its app store and pay high fees on in-app purchases. As of September 2024, the judge has not issued his final decision on what Google must do in response. Given Google Play is a smaller part of Google's business, we find that this issue is not one to be too worried about. Apple has also fought a similar legal battle against Epic Games, and we believe app store businesses will become less lucrative for big tech firms. Of the three cases, this one is the least concerning.

**Google Search Case:**

On August 5, 2024, a federal judge ruled that Google has maintained a monopoly in the search engine market. He argued that Google's acquisition costs for becoming the exclusive search platform of various browsers disincentivized companies such as Apple from creating their own search engines. The $20b+ payment to Apple and billions to other browser owners prevented innovation and competitors in the market. Another point was Google's resilience in the market, as their search engine has around a 90% market share, which has only grown over the decades. He argued that if there was genuine competition, there would be more fluidity in market shares, lost businesses, and new entrants. At this point it is unclear what this decision will mean for the future of Google's business. Remedies will be decided by August 2025, and could be anything from stopping certain business practices to a breakup of its search business. This is a concerning decision, as search is the biggest driver for Google's revenues. With unclarity in what remedies Google will face, it is hard to forecast changes in future years. With a breakup of the business as the worst case, there could also be upside for Google. If the firm had to be part of a choice screen of search engines that consumers had to pick from, our feeling is that it is very likely consumers would stick with Google. In this case, they would also be saving $20b+ that would normally be going to browsers for exclusivity, and it could increase the profitability of the engine. We will continue to monitor the situation over the coming year.

**Google Ad Tech Case:**

On September 9th, Google was back in the courtrooms for another antitrust trial against the Department of Justice. This time arguing about if Google has a monopoly in advertising technology. The DOJ argues that Google has used monopolistic tactics to lock up the ad tech tools that publishers and advertisers use to monetize websites and market goods. Google argues that it's created strong products and faces plenty of competition. This trial comes on the heels of Google's search lawsuit, which was a landmark decision in favor of the government and the first major antitrust strike against a big tech firm. With the trial just beginning, it remains to be seen where this one will head. Our instinct is that Google will be ruled against if their past two antitrust cases are any indication. The case will be something to watch over the coming months, and we want to see how the decision in this case interacts with the search ruling. If Google is ruled against, we anticipate the Department of Justice will work to find remedies that have synergies together, such as spinning off one or multiple of its businesses. We will continue to monitor the situation over the coming year.

Google is not the only firm facing significant antitrust opposition. Their big tech counterparts Amazon, Apple, and Meta are also in question for monopolistic practices in their various industries. From a big picture perspective, it feels as though Google's search antitrust lawsuit loss was an inflection point in the history of big tech. Although it is unclear how the cases will go, Google's loss may serve as the beginning of a movement to strip power away from big technology firms. We do not believe Alphabet will be the only one among peers to lose an antitrust lawsuit in the coming years. Although a significant threat to Alphabet and the broader tech industry, legal proceedings take a long time to settle out, so it may be multiple years until we see significant impact. Legal developments might be the single biggest threat to big tech's business models and will be key to watch.

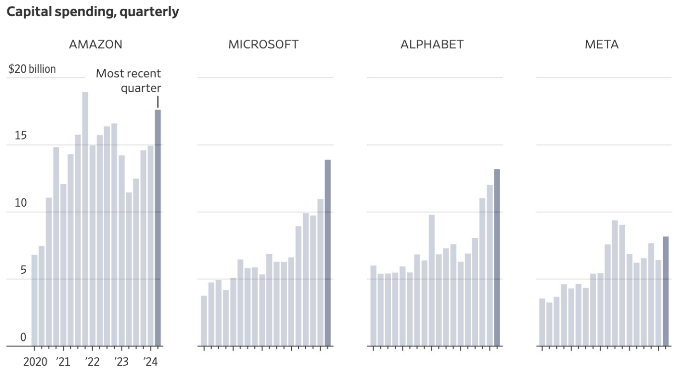
## AI Developments

| AI Timeline | |
|---|---|
| **Development:** | **Date:** |
| OpenAI debuts ChatGPT, a breakthrough in generative AI | Nov. 2022 |
| Microsoft announces a large multi-year investment in OpenAI | Jan. 2023 |
| Google stumbles out the gates with its first AI chatbot, Bard | Feb. 2023 |
| Microsoft upgrades its chatbot to Copilot, Google releases Gemini | Late 2023 |
| Gemini is criticized after generating insensitive images | Feb. 2024 |
| NVIDIA passes $3t mkt cap, as firms rush to get their chips | Jun. 2024 |
| Apple reports partnership with OpenAI for ChatGPT integration in iPhones | Jun. 2024 |

*Source: Goldman Sachs AI Report*

Since ChatGPT's breakout in late 2022, it has been a whirlwind for the AI market. Developments are happening daily. Google's AI path since the debut of ChatGPT has been a bit rocky. The firm struggled with its first chatbot, Bard, which struggled at understanding prompts and giving inaccurate responses. Google's next chatbot, Gemini, was improved but caused controversy after it made insensitive images. Google's Gemini has stabilized and is one of the top chatbots in the market. Open AI's ChatGPT currently has a first-mover advantage in the space, but it is a fast-developing market. June's announcement of OpenAI's partnership with Apple to integrate ChatGPT into iPhones is a significant development. As seen with Google search, being a major exclusive partner with Apple (and others) can contribute to creating strong consumer preferences. We would like to see Google continue to develop and bring top AI products to the market and believe that integrating Gemini into its product suite will benefit Google in its competition with Open AI/Chat GPT.

## Rapid Spending in AI

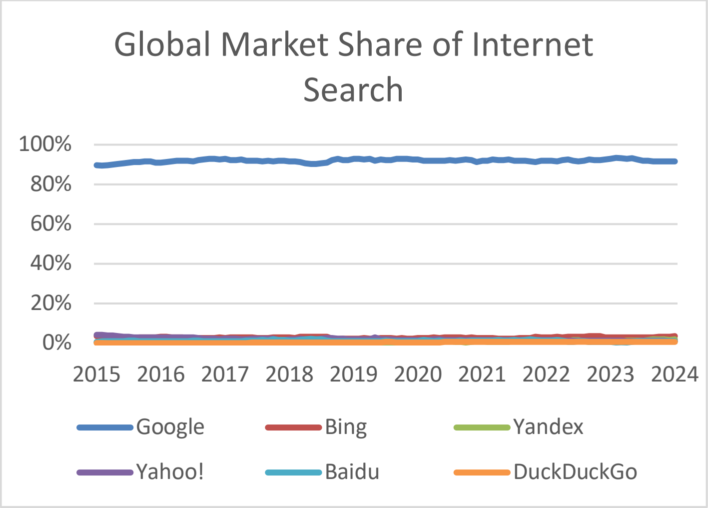


*Source: WSJ*

One of the largest areas of focus in the AI market is on CapEx spending. Firms such as Amazon, Microsoft, Alphabet, and Meta are spending upwards of $10-15 billion per quarter to keep up with the market. These firms have the capacity to spend cash, and are investing a significant amount in data centers, servers, technical infrastructure, etc. The mindset from senior management in the industry, including Alphabet's, is that when a new market pops up like AI, underinvesting and losing ground is a bigger risk than spending too much. Microsoft's CEO, Satya Nadella, cited the transition to Cloud was similar in that it was knowledge-intensive and capital-intensive. We expect to see this type of spending continue over the coming years as AI integrates into more and more things. Right now, AI is a flashy new thing that has yet to solve any major issues. Its technology is impressive, but the breakthrough in changing white collar work, the medical field, etc., has not happened yet. We anticipate it will, and like the fact that Google is making investments to remain a market leader. Over the course of the coming years, we would like to see Google make a breakthrough in its AI plan. As of now, AI is an arms race, and it remains to be seen what the first domino will be to fall in stabilizing the highly costly industry.

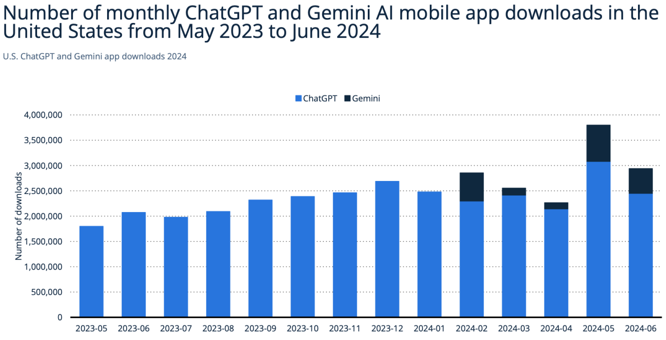
## Gen AI Targets Search Market

Google is easily the most dominant player in internet search. It is part of the reason they recently lost their antitrust case against the Department of Justice. Google has become such a norm for consumers that even if they could not be the default search engine, we anticipate most would keep using Google. After all, the word Google has become a verb and synonymous with online search.



*Source: Statista*

Aside from antitrust risk, the other key risk to Google Search and the broader search engine market is the entrance of ChatGPT and other generative AI chatbots. Chatbots present risk in that they can answer more specific and personalized questions. They can code for you, write essays, etc. However, they are still in their infancy and still struggle with information accuracy, writing like a human, etc. However, this technology is the biggest development in years and is the largest threat Google Search has ever seen. Google has a chatbot of their own, Gemini, which is a top competitor to OpenAI's ChatGPT. ChatGPT has seen a clear first mover advantage in the space, which can be seen by their app download dominance over Gemini.



*Source: Statista*

Given the space is relatively new, it is hard to get perfect market share data for generative AI. Alphabet's integration of Gemini into its product suite and search makes it hard to fully comprehend how many users are using the service. Despite this, ChatGPT is still clearly the market leader and is capitalizing on being first to the market. Moving forward, we would like to see Gemini grab a larger share of the market. We believe this is possible due to the amount of consumer's Google touches through Search and its other network of products such as Gmail, Google Drive, Google Maps, etc. Something we will be following is how soon chatbots can generate accurate information and be a quality substitution for search engines. Right now, we are not to that point. If we get there in the next 12-24 months, we expect Google's Gemini to be a top market player so they can counterbalance a loss in search customers by gaining generative AI consumers.

## MARKETS AND COMPETITION

### Major Players

Big tech has a select number of massive players. Each firm has their own focus/niche:

- Google: Advertising
- Meta: Advertising/Social Media
- Microsoft: Cloud
- Apple: Tech products
- NVIDIA: GPUs/AI
- Oracle: Cloud
- Amazon: Cloud

| Firm | Mkt. Cap | P/E (TTM) | Revenue (TTM) |
|---|---|---|---|
| **Alphabet (GOOGL)** | **$2.02T** | **23.47** | **$339.5B** |
| Apple (AAPL) | 3.47T | 34.73 | 391.0B |
| Meta (META) | 1.42T | 28.74 | 156.2B |
| Microsoft (MSFT) | 3.24T | 36.92 | 254.2B |
| NVIDIA (NVDA) | 2.85T | 54.46 | 96.3B |
| Oracle (ORCL) | 466B | 43.30 | 53.8B |
| Amazon (AMZN) | 2.01T | 45.62 | 620.1B |

*Source: FactSet*

All these firms have some overlap, including AI, Cloud, digital advertising, etc. These companies were the ones to rise to power in the internet era and make up a large chunk of the overall S&P 500. Because they gained such a large scale, they have many businesses within their business. For example, Google, Apple, and Amazon all dabble in the streaming service sector as a side hobby. Microsoft owns Xbox, etc.

Right now, all focus lies on artificial intelligence and cloud services. The firms are competing for innovation and market lead in these newer markets. There has been no clear winner or loser from the AI era so far, and we expect to see most resources and focus from these firms be on winning artificial intelligence. The business model of most is also being challenged due to antitrust litigation, and we expect this to also play a key role in the upcoming years.

### Structure and Stability

The firms all have massive businesses that each serve out a carved-out niche, but they also compete to be the most innovative. This has allowed firms and the tech industry to grow, as companies are always fighting to be the best of the "next big thing." Right now, the industry is not in equilibrium as antitrust litigation and AI have shaken up the system. Each big tech competitor is fighting for market share in the AI, data, and cloud landscapes.

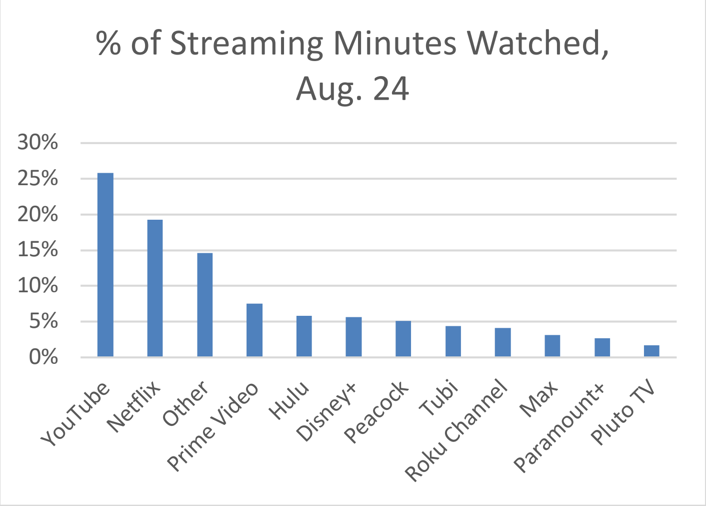
### Risk of Disruption & Substitution

The tech industry is naturally vulnerable to disruption, as the sector focuses on new markets and innovation constantly. AI was the most recent example of this. It continues to disrupt, and the full story has yet to play out. As for substitution, many tech firms built strong moats due to their massive cash flows and ability to dominate markets (see: Google Advertising). As the industry enters an AI wave and antitrust environment, the risk of substitution is higher than usual. For Google specifically, the risk of substitution is best seen through ChatGPT's attempt at taking users away from search.

### Peer Comparisons

YouTube's Dominance

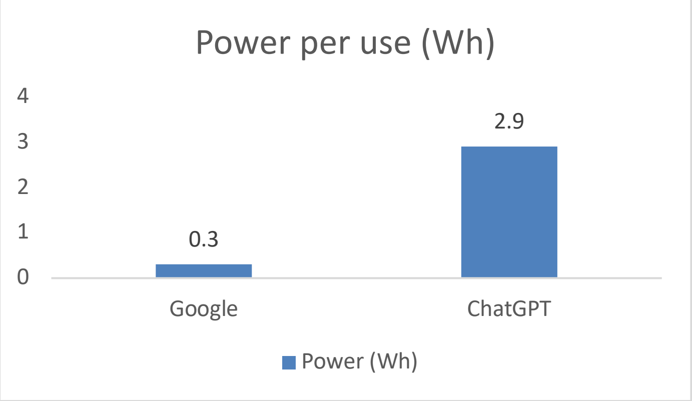
YouTube has served Alphabet as a great business. As of August 2024, it was the top streaming service in the marketplace. YouTube serves as a place for cable cord-cutters who want to catch up on the news, sports highlights, or just watch for entertainment. Unlike the other firms, they do not pay for all the content on their service, which makes the platform less likely to take short-term dips due to content quality or creative choices. As Google heads into uncertainty about the future of their business, we expect them to protect YouTube as one of their crown jewels.



*Source: Nielsen*

Power Consumption:

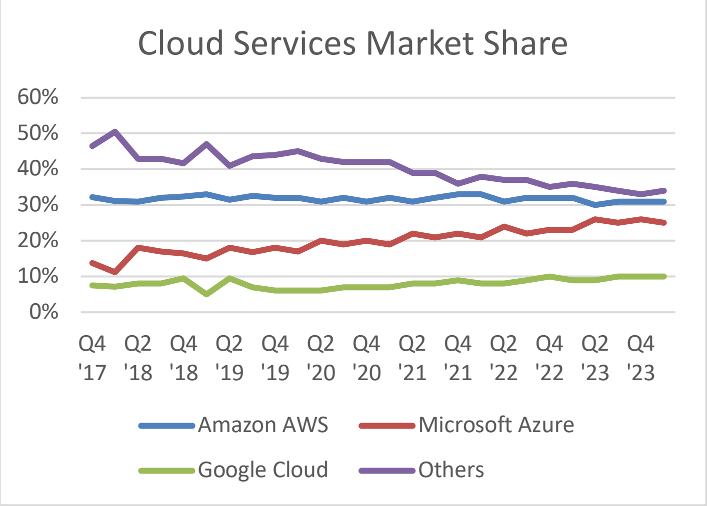
As focus in the market shifts to AI and CapEx spending in the sector, costs of maintenance will come more into focus. Currently, power demand from data centers is leading to a large rise of electricity consumption. For example, a ChatGPT query is 10 times as power intensive as a Google search. We believe if these numbers are maintained, it shows the strength of Google Search's business as they compete for market share with generative AI. We expect them to hold on to leading search market share and use it as a more profitable business to support their AI ventures, such as Gemini (power data not publicly available).



*Source: Goldman Sachs AI Report*

Cloud Market Share:

One of Google's largest drivers of growth has been its Cloud segment. Over the past five years, cloud infrastructure services have seen significant growth, and Google has grown its market share as the pie has gotten bigger. We anticipate Google's investment in cloud to contribute to increasing its market share throughout the forecasted period. We anticipate Google Cloud will gain ground on Amazon Web Services and Microsoft Azure, as well as smaller competitors who do not have the capital to scale as quickly as Google.



*Source: Statista*

## ECONOMIC OUTLOOK

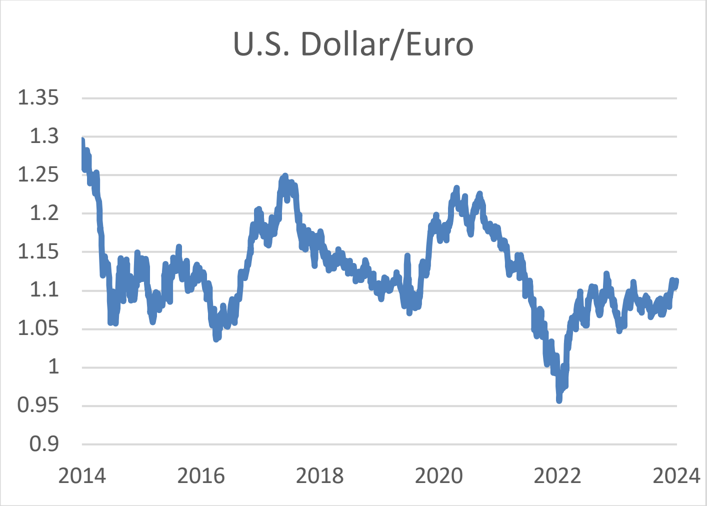
### Global Economic Growth

Strong global economies are a boost to Alphabet's business. Given approximately 53% of their revenues come from foreign buyers, Google relies on a strong international economy to keep advertising spending high. Studies have shown the elasticity of advertising with respect to GDP to have increased to 1.9, which means the demand for advertising nearly doubles GDP growth, whether it is positive or negative[25]. This exemplifies how important it is for advertisers to operate in a healthy economy. Downturns or recessions lend themselves to businesses cutting advertising budgets, which hurts Alphabet's ability to bring in revenue. After the massive COVID related spikes in 2020 and 2021, the World GDP Growth Rate has leveled out to around the level it was maintained from 2014-2019. If most economies across the world can get through rate-hiking cycles with soft landings, it should bode well for Alphabet.

*Source: International Monetary Fund*

## Currency Exchange Rates

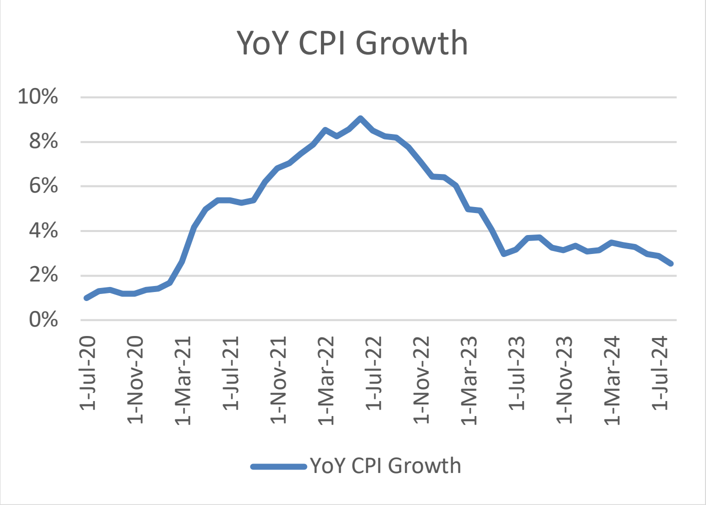
The strength of the U.S. dollar also plays a large role in the success of Alphabet. Given their international operations, fluctuations in currency exchange rates can affect earnings. For example, if the Euro were to weaken against the U.S. dollar, Google's revenue in Europe would become more valuable when converted back into U.S. dollars. The Henry Fund team expects the U.S. dollar/Euro to main its current exchange rate around $1.10 per Euro in both the short-term and long-term, which would be a good outcome for Alphabet given where the rate has been in the past. A stronger dollar would hurt Alphabet's bottom line. The firm does engage in hedging currency risk, which should take away some, but not all currency exchange rate risks. Alphabet's operations are truly global, so monitoring exchange rates is key moving forward.



*Source: European Central Bank*

## Inflation

Rising inflation impacts Alphabet on a couple fronts. Internally, it raises costs such as wages and other operating expenses. It also affects Google's core business of advertising, by lowering consumer spending which in turn may lead to a pullback from advertisers. Prior to inflation and the rate-hiking cycle, Google Advertising was growing by double digit percentages consistently. Since inflation hit, growth in advertising is still positive but slowing to 6-7%. With the Fed announcing a 50bps cut in September, we believe inflation should continue to tick downwards towards target levels as their belief is that their slowing measures have worked. We believe inflation will continue moving downward but will remain above the 2% Fed target. Moving forward, advertising revenue should be strong through the end of the year with the U.S. election and holiday season. The inflation rate will be something to monitor at the start of 2025 and will be telling for Alphabet's first half of 2025 performance.



*Source: Federal Reserve Economic Data (FRED)*

## VALUATION

**Revenue Growth:**

We project revenue to grow 13.0% in 2024, which is the highest projected growth of the forecasted period. This comes off the back of earnings beats in both Q1 and Q2 of 2024. We forecasted revenues to be consistent with consensus. We project overall revenue growth to slow but remain high through its terminal year of 2028 (8.6%). The main drivers of growth over the forecasted period are Google's Cloud segment, as well as Google Other, and YouTube ads. We projected Google Search to remain Google's largest source of revenue through the forecasted period. However, uncertainty remains on its ability to hold its dominance in internet search due to its antitrust lawsuit and the rise of generative AI alternatives. We believe Google Search is entrenched as consumer's main source of online information and will remain the market leader in the future.

**Operating Expense Assumptions:**

Approximately 43% of Alphabet's cost of revenues come from traffic acquisition cost. TAC includes the amounts paid to Google's distribution partners who make Google Search available on various access points and services. The largest example of this is the TAC fees Google pays to Apple, which is in the $20-22 million range. Due to future uncertainty revolving how Google Search's business will operate, we forecasted Google's cost of revenues as a percentage of the total revenues on trend with recent years. We also project the operating expense categories of research and development, sales and marketing, and general and administrative to stay at current levels as a percentage of total revenue. Google's scale and diverse group of businesses have allowed for predictable operating costs, which is reflected in the forecast.

**Profit Margin Forecasts:**

We do not expect drastic changes in Alphabet's margins. We predict 2024 operating margin ticks up from 2023 levels, which is boosted by strong results from the first two quarters. We expect there to be less of a boost for gross margin levels and expect them to remain where they have been in recent years.

**Earnings estimates relative to the consensus:**

We expect Alphabet to out earn its consensus EPS estimates. The largest reason for this is due to lower cost projections than Wall Street estimates. We believe strong earnings are also due in part to high projected growth in Google Cloud and maintained dominance in Search.

| **Year** | **2021** | **2022** | **2023** | **2024E** | **2025E** | **2026E** |
|---|---|---|---|---|---|---|
| **EPS** | $5.69 | $4.59 | $5.84 | $7.64 | $8.68 | $9.95 |
| **HF est.** | | | | $7.99 | $8.90 | $9.97 |
| **Growth** | *92.5%* | *-19.4%* | *27.3%* | *36.8%* | *11.3%* | *12.0%* |

**CapEx:**

This is where focus lies for investors looking at major players in big tech and AI. When projecting Google's CapEx we used management's guidance from their Q2 earnings call, where Google's Chief Investment Officer Ruth Porat said they expect CapEx to be at around $12 billion a quarter. The $48b per year is nearly 50% of their 2023 operating cash flow ($102b). Google can likely internally finance their CapEx but may utilize debt if spending continues to ramp higher. In the arms race for more data centers and AI capabilities, it remains to be seen how long it will take to build AI infrastructure. Due to this, we project this level of spending to maintain for the entire forecasted period.

**Capital Structure:**

We expect Alphabet to maintain a low level of debt. Given the large cash flows of the business, they should not have a need to raise outside capital. We do anticipate Alphabet to participate in share buybacks, which is where a large chunk of incoming cash is projected to go. For the past two years, the firm has averaged nearly $15.5-16 billion in share buybacks per quarter. We expect this trend to continue and forecasted $63 billion in share buybacks per year. We project the firm to maintain a healthy amount of cash and investments that can be utilized for debt, CapEx, dividends, and repurchases.

**Payout Policy Forecasts:**

In April, Alphabet announced its first ever dividend, which was a $0.20 quarterly payout to shareholders. Another $0.20 dividend was paid out in mid-September. We forecasted Alphabet's dividend to maintain its $0.20 per quarter level for the rest of 2024 and rise 10% on a yearly basis moving forward.

**Contingent liabilities:**

Although litigation is a major concern for Google, we did not forecast any litigation expenses for the firm. We projected Alphabet to continue status quo. Moving forward, it will be key to monitor Alphabet's litigation which we anticipate will take many years to play out.

## Valuation Models:

**DCF/EP:**

Our DCF and economic profit model yielded a value of $222 per share. Key drivers of our DCF projection include a 4% CV growth rate of NOPLAT, our estimated WACC of 8.74%, and our five-year monthly beta of 1.04. We believe the 4% growth in the terminal year is justified because of Alphabet's diverse geographic mix. It is roughly 75 bps ahead of the US's long-term GDP average growth rate, which we believe factors in the developed and emerging markets Alphabet is player in. We believe the DCF is the best suited match for Google given it projects out the cash flows of their businesses and our dividend increase forecast is just an educated guess given their lack of a historical dividend.

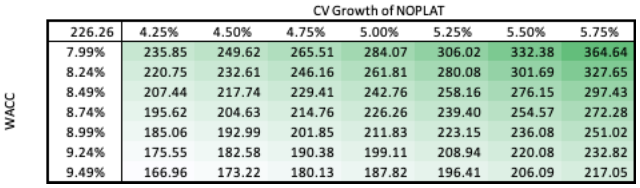
**DDM:**

Our DDM model utilizes a 6% CV growth rate of EPS, a 29.3% CV year ROE, and an 8.8% cost of equity. This outputs a price of $242, but we place less weight on the model due to Google's lack of a historical dividend and minimal guidance from management on future dividend plans. The high CV growth rate of EPS is due to Alphabet's consistent share buyback program.

**Relative Valuation:**

Our P/E relative value model based on 2024 EPS values Alphabet as a cheap stock compared to its peer group. The model outputs a price of $294 for GOOGL, representing an almost 100% gain from where the stock currently trades. Alphabet currently has at a 19.7x forward year P/E multiple, compared to Apple at 32x, NVIDIA at 42x, etc. The only peer within distance of Alphabet's multiple is Meta. We believe the lower multiple valuation is largely due to antitrust issues. We find the current multiple to be an attractive investment opportunity. Alphabet's strong cash flows, innovative company spirit, and track record of growing new businesses sets them up just as well as the next competitor for the AI movement. Because the other tech and AI stocks are trading at a higher premium, we believe the price overshoots what Alphabet is worth. However, it contributes to our bullish stance on the investment opportunity that GOOGL provides.

**Sensitivity Analysis:**



CV Growth of NOPLAT

WACC

| 226.26 | 4.25% | 4.50% | 4.75% | 5.00% | 5.25% | 5.50% | 5.75% |
|---|---|---|---|---|---|---|---|
| 7.99% | 235.85 | 249.62 | 265.51 | 284.07 | 306.02 | 332.38 | 364.64 |
| 8.24% | 220.75 | 232.61 | 246.16 | 261.81 | 280.08 | 301.69 | 327.65 |
| 8.49% | 207.44 | 217.74 | 229.41 | 242.76 | 258.16 | 276.15 | 297.43 |
| 8.74% | 195.62 | 204.63 | 214.76 | 226.26 | 239.40 | 254.57 | 272.28 |
| 8.99% | 185.06 | 192.99 | 201.85 | 211.83 | 223.15 | 236.08 | 251.02 |
| 9.24% | 175.55 | 182.58 | 190.38 | 199.11 | 208.94 | 220.08 | 232.82 |
| 9.49% | 166.96 | 173.22 | 180.13 | 187.82 | 196.41 | 206.09 | 217.05 |

The CV growth of NOPLAT has the largest effect on our DCF's share value. We believe the rate of 4% is justified due to it factoring in both domestic GDP growth, as well as international economic growth. Although 75 bps ahead of the US's average GDP growth rate, we believe the rate is not too optimistic as it balances the potential risks in foreign economies.

## KEYS TO MONITOR

As Alphabet enters the end of 2024 and into 2025, we will keep our eyes on antitrust litigation in big tech, spending in AI, and the overall growth of the artificial intelligence field.

**Key Drivers:**

We expect the firm to remain strong in the long-term and be able to deal with antitrust litigation. The advertising business should perform well as marketing budgets open back up after inflationary and interest rate pressures cut them down the past couple of years. We also believe that Google search will maintain a high market share and that Gemini will take market share away from ChatGPT for those who make the switch from search to generative AI.

The main driver between both of those opinions is the brand loyalty and trustworthiness Google has earned revolving internet information over the past 20+ years.

**Key Risks:**

Although we do not know the outcome, antitrust litigation is the largest risk to Google's business model. It remains to be seen on if they will need to spin off part of their business or how they will need to change their business practices. The level of effect this has on Alphabet is hard to predict, so the risk is significant. The risk of generative AI taking away from search is the other key risk to monitor. We believe Google's fundamental business is strong and that they will be able to fend off generative AI with consumer habits in search and having Gemini to compete in the space.

**Conclusion:**

We believe that market uncertainty due to AI and antitrust has created a strong investment opportunity for Alphabet. The firm is undervalued compared to other big tech peers, despite having strong earnings so far in 2024. The firm's ability to innovate and create new businesses gives us confidence moving forward if they were to face a spin-off of one of their units. We utilized our DCF model to arrive at our target price of $222, representing an upside of 35%. We believe the business will continue to beat earnings estimates and grow through various cycles of tech innovation. For that reason, we give the stock a **BUY** rating.

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**Alphabet**

*Revenue Decomposition (in millions)*

| *Fiscal Years Ending Dec. 31* | 2021 | 2022 | 2023 | 2024 Q1A | 2024 Q2A | 2024 Q3E | 2024Q4E | 2024E | 2025 Q1E | 2025 Q2E | 2025 Q3E | 2025 Q4E | 2025E | 2026E | 2027E | 2028E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Google Search & other | 148,951 | 162,450 | 175,033 | 46,156 | 48,509 | 49,041 | 53,051 | 196,757 | 50,704 | 52,978 | 54,278 | 58,476 | 216,436 | 233,640 | 253,102 | 274,480 |
| growth | 43.1% | 9.1% | 7.7% | | 5.1% | **1.1%** | **8.2%** | 12.4% | **-4.4%** | **4.5%** | **2.5%** | **7.7%** | 10.0% | **7.9%** | **8.3%** | **8.4%** |
| YouTube ads | 28,845 | 29,243 | 31,510 | 8,090 | 8,663 | 8,888 | 10,214 | 35,854 | 8,805 | 9,538 | 10,036 | 11,700 | 40,079 | 45,388 | 51,176 | 55,316 |
| growth | 45.9% | 1.4% | 7.8% | | 7.1% | **2.6%** | **14.9%** | 13.8% | **-13.8%** | **8.3%** | **5.2%** | **16.6%** | 11.8% | **13.2%** | **12.8%** | **8.1%** |
| Google Network | 31,701 | 32,780 | 31,312 | 7,413 | 7,444 | 7,509 | 8,218 | 30,584 | 7,591 | 7,759 | 7,727 | 8,470 | 31,547 | 32,114 | 33,297 | 33,845 |
| growth | 37.3% | 3.4% | -4.5% | | 0.4% | **0.9%** | **9.4%** | -2.3% | **-7.6%** | **2.2%** | **-0.4%** | **9.6%** | 3.1% | **1.8%** | **3.7%** | **1.6%** |
| **Total Google Advertising Revenue** | 209,497 | 224,473 | 237,855 | 61,659 | 64,616 | 65,438 | 71,482 | 263,195 | 67,100 | 70,275 | 72,041 | 78,646 | 288,062 | 311,143 | 337,574 | 363,642 |
| growth | 42.6% | 7.1% | 6.0% | | 4.8% | 1.3% | 9.2% | 10.7% | -6.1% | 4.7% | 2.5% | 9.2% | 9.4% | 8.0% | 8.5% | 7.7% |
| Google subscriptions, platforms, and devices | 28,032 | 29,055 | 34,688 | 8,739 | 9,312 | 9,736 | 11,904 | 39,691 | 9,834 | 10,188 | 10,768 | 13,131 | 43,920 | 49,276 | 55,707 | 58,492 |
| growth | 29.1% | 3.6% | 19.4% | | 6.6% | **4.6%** | **22.3%** | 14.4% | **-17.4%** | **3.6%** | **5.7%** | **21.9%** | 10.7% | **12.2%** | **13.0%** | **5.0%** |
| **Total Google Services Revenue** | 237,529 | 253,528 | 272,543 | 70,398 | 73,928 | 75,175 | 83,386 | 302,887 | 76,933 | 80,463 | 82,809 | 91,777 | 331,981 | 360,419 | 393,281 | 422,133 |
| growth | 40.9% | 6.7% | 7.5% | | 5.0% | 1.7% | 10.9% | 11.1% | -7.7% | 4.6% | 2.9% | 10.8% | 9.6% | 8.6% | 9.1% | 7.3% |
| Google Cloud | 19,206 | 26,280 | 33,088 | 9,574 | 10,347 | 10,869 | 11,725 | 42,515 | 12,163 | 13,102 | 13,859 | 15,030 | 54,154 | 66,048 | 82,157 | 96,205 |
| growth | 47.1% | 36.8% | 25.9% | | 8.1% | **5.0%** | **7.9%** | 28.5% | **3.7%** | **7.7%** | **5.8%** | **8.5%** | 27.4% | **22.0%** | **24.4%** | **17.1%** |
| Other Bets | 753 | 1,068 | 1,527 | 495 | 365 | 379 | 626 | 1,865 | 575 | 468 | 477 | 670 | 2,191 | 2,750 | 2,868 | 3,534 |
| growth | 14.6% | 41.8% | 43.0% | | -26.3% | **3.8%** | **65.1%** | 22.1% | **-8.1%** | **-18.6%** | **1.9%** | **40.4%** | 17.5% | **25.5%** | **4.3%** | **23.2%** |
| Hedging gains (losses) | 149 | 1,960 | 236 | 72 | 102 | - | - | 174 | - | - | - | - | - | - | - | - |
| growth | -15.3% | 1215.4% | -88.0% | | 41.7% | **-100.0%** | **0.0%** | -26.3% | **0.0%** | **0.0%** | **0.0%** | **0.0%** | -100.0% | **0.0%** | **0.0%** | **0.0%** |
| **Total Revenues** | 257,637 | 282,836 | 307,394 | 80,539 | 84,742 | 86,423 | 95,737 | 347,440 | 89,671 | 94,033 | 97,145 | 107,477 | 388,326 | 429,216 | 478,306 | 521,873 |
| growth | 41.2% | 9.8% | 8.7% | | 5.2% | 2.0% | 10.8% | 13.0% | -6.3% | 4.9% | 3.3% | 10.6% | 11.8% | 10.5% | 11.4% | 9.1% |

**Alphabet**

*Income Statement (in millions)*

| *Fiscal Years Ending Dec. 31* | 2021 | 2022 | 2023 | 2024 Q1A | 2024 Q2A | 2024 Q3E | 2024 Q4E | 2024E | 2025 Q1E | 2025 Q2E | 2025 Q3E | 2025 Q4E | 2025E | 2026E | 2027E | 2028E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Revenues** | 257,637 | 282,836 | 307,394 | 80,539 | 84,742 | 86,423 | 95,737 | 347,440 | 89,671 | 94,033 | 97,145 | 107,477 | 388,326 | 429,216 | 478,306 | 521,873 |
| **Costs and expenses:** | | | | | | | | | | | | | | | | |
| Depreciation Expense | 11,555 | 15,287 | 11,946 | 3,413 | 3,708 | 3,359 | 3,359 | 13,838 | 4,213 | 4,213 | 4,213 | 4,213 | 16,851 | 19,966 | 22,769 | 25,292 |
| Other cost of revenues | 99,384 | 110,916 | 121,386 | 30,299 | 31,799 | 33,023 | 36,582 | 132,761 | 34,264 | 35,931 | 37,120 | 41,068 | 148,384 | 164,009 | 182,766 | 199,414 |
| Cost of revenues | 110,939 | 126,203 | 133,332 | 33,712 | 35,507 | 36,382 | 39,941 | 146,599 | 38,477 | 40,144 | 41,333 | 45,281 | 165,235 | 183,974 | 205,535 | 224,706 |
| Research and development | 31,562 | 39,500 | 45,427 | 11,903 | 11,860 | 12,095 | 13,399 | 49,257 | 12,550 | 13,160 | 13,596 | 15,042 | 54,348 | 60,071 | 66,941 | 73,038 |
| Sales and marketing | 22,912 | 26,567 | 27,917 | 6,426 | 6,792 | 6,914 | 7,659 | 27,791 | 7,174 | 7,523 | 7,772 | 8,598 | 31,066 | 34,337 | 38,264 | 41,750 |
| General and administrative | 13,510 | 15,724 | 16,425 | 3,026 | 3,158 | 3,457 | 3,829 | 13,470 | 3,587 | 3,761 | 3,886 | 4,299 | 15,533 | 17,169 | 19,132 | 20,875 |
| **Total costs and expenses** | 178,923 | 207,994 | 223,101 | 55,067 | 57,317 | 58,848 | 64,828 | 236,060 | 61,788 | 64,588 | 66,586 | 73,220 | 266,182 | 295,551 | 329,873 | 360,369 |
| Income from operations | 78,714 | 74,842 | 84,293 | 25,472 | 27,425 | 27,575 | 30,909 | 111,381 | 27,884 | 29,445 | 30,559 | 34,257 | 122,145 | 133,666 | 148,433 | 161,504 |
| Other income (expense), net | 12,020 | (3,514) | 1,424 | 2,843 | 126 | 964 | 964 | 4,896 | 1,134 | 1,134 | 1,134 | 1,134 | 4,537 | 5,415 | 6,603 | 7,985 |
| Income before income taxes | 90,734 | 71,328 | 85,717 | 28,315 | 27,551 | 28,539 | 31,873 | 116,277 | 29,018 | 30,579 | 31,693 | 35,391 | 126,682 | 139,081 | 155,036 | 169,489 |
| Provision for income taxes | 14,701 | 11,356 | 11,922 | 4,653 | 3,932 | 4,309 | 4,813 | 17,707 | 4,382 | 4,617 | 4,786 | 5,344 | 19,129 | 21,001 | 23,410 | 25,593 |
| **Net income** | 76,033 | 59,972 | 73,795 | 23,662 | 23,619 | 24,229 | 27,060 | 98,570 | 24,636 | 25,962 | 26,907 | 30,047 | 107,553 | 118,080 | 131,626 | 143,896 |
| | | | | | | | | | | | | | | | | |
| Basic Earnings per Share (EPS) | 5.69 | 4.59 | 5.84 | 1.91 | 1.91 | 1.97 | 2.21 | 7.99 | 2.02 | 2.14 | 2.23 | 2.50 | 8.90 | 9.96 | 11.37 | 12.77 |
| Year end shares outstanding (basic) | 13,242 | 12,849 | 12,460 | 12,381 | 12,322 | 12,262 | 12,202 | 12,202 | 12,145 | 12,088 | 12,032 | 11,975 | 11,975 | 11,733 | 11,417 | 11,125 |
| Weighted average shares outstanding class A, B & C (basic) | 13,353 | 13,063 | 12,630 | 12,415 | 12,343 | 12,292 | 12,232 | 12,331 | 12,174 | 12,117 | 12,060 | 12,003 | 12,088 | 11,854 | 11,575 | 11,271 |
| Annual Dividends per Share | - | - | - | - | 0.20 | 0.20 | 0.20 | 0.60 | 0.22 | 0.22 | 0.22 | 0.22 | 0.88 | 1.00 | 1.10 | 1.20 |

**Alphabet**

*Balance Sheet (in millions)*

| ***Fiscal Years Ending Dec. 31*** | **2021** | **2022** | **2023** | **2024E** | **2025E** | **2026E** | **2027E** | **2028E** |
|---|---|---|---|---|---|---|---|---|
| **Assets** | | | | | | | | |
| ***Current Assets:*** | | | | | | | | |
| Cash & cash equivalents | 20,945 | 21,879 | 24,048 | 36,496 | 56,362 | 83,812 | 115,942 | 161,732 |
| Marketable securities | 118,704 | 91,883 | 86,868 | 90,317 | 93,902 | 97,630 | 101,506 | 105,536 |
| Total cash, cash equivalents, & marketable securities | 139,649 | 113,762 | 110,916 | 126,812 | 150,265 | 181,443 | 217,448 | 267,267 |
| Accounts receivable, net | 39,304 | 40,258 | 47,964 | 52,116 | 58,249 | 64,382 | 71,746 | 78,281 |
| Other current assets | 7,054 | 8,105 | 12,650 | 12,160 | 13,591 | 15,023 | 16,741 | 18,266 |
| **Total current assets** | 188,143 | 164,795 | 171,530 | 191,089 | 222,105 | 260,848 | 305,934 | 363,814 |
| Non-marketable securities | 29,549 | 30,492 | 31,008 | 32,239 | 33,519 | 34,850 | 36,233 | 37,672 |
| Deferred income taxes | 1,284 | 5,261 | 12,169 | 8,854 | 7,652 | 6,300 | 4,682 | 2,559 |
| Property & equipment, net | 97,599 | 112,668 | 134,345 | 168,507 | 199,656 | 227,690 | 252,921 | 275,629 |
| Operating lease assets | 12,959 | 14,381 | 14,091 | 17,674 | 20,941 | 23,882 | 26,528 | 28,910 |
| Intangible assets, net | 1,417 | 2,084 | - | - | - | - | - | - |
| Goodwill | 22,956 | 28,960 | 29,198 | 29,198 | 29,198 | 29,198 | 29,198 | 29,198 |
| Other non-current assets | 5,361 | 6,623 | 10,051 | 10,450 | 10,865 | 11,296 | 11,745 | 12,211 |
| **Total assets** | 359,268 | 365,264 | 402,392 | 458,010 | 523,936 | 594,064 | 667,242 | 749,993 |
| | | | | | | | | |
| **Liabilities and Stockholders' Equity** | | | | | | | | |
| ***Current liabilities:*** | | | | | | | | |
| Accounts payable | 6,037 | 5,128 | 7,493 | 7,644 | 8,543 | 9,443 | 10,523 | 11,481 |
| *Short-term debt* | *113* | *441* | *1,493* | *716* | *767* | *819* | *879* | *935* |
| Accrued compensation & benefits | 13,889 | 14,028 | 15,140 | 17,025 | 19,028 | 21,032 | 23,437 | 25,572 |
| *European commission fines* | *9,799* | *9,106* | *9,525* | *9,677* | *9,767* | *9,637* | *9,448* | *8,899* |
| *Payables to brokers for unsettled investment trades* | *397* | *-* | *-* | *-* | *-* | *-* | *-* | *-* |
| *Accrued customer liabilities* | *3,505* | *3,619* | *4,140* | *4,206* | *4,701* | *5,196* | *5,790* | *6,318* |
| *Accrued purchases of property & equipment* | *2,415* | *3,019* | *4,679* | *4,754* | *6,362* | *8,190* | *10,418* | *12,776* |
| *Current operating lease liabilities* | *2,189* | *2,477* | *2,791* | *2,836* | *3,169* | *3,503* | *3,904* | *4,259* |
| *Other accrued expenses & other current liabilities* | *12,931* | *19,645* | *25,033* | *25,432* | *28,425* | *31,418* | *35,012* | *38,201* |
| Accrued expenses & other current liabilities | 31,236 | 37,866 | 46,168 | 46,904 | 52,424 | 57,944 | 64,571 | 70,453 |
| Accrued revenue share | 8,996 | 8,370 | 8,876 | 10,423 | 11,650 | 12,876 | 14,349 | 15,656 |
| Deferred revenue | 3,288 | 3,908 | 4,137 | 4,343 | 4,854 | 5,365 | 5,979 | 6,523 |
| **Total current liabilities** | 64,254 | 69,300 | 81,814 | 86,339 | 96,499 | 106,660 | 118,859 | 129,685 |
| Long-term debt | 14,817 | 14,701 | 13,253 | 12,645 | 14,027 | 15,308 | 16,539 | 17,648 |
| Deferred revenue, non-current | 535 | 599 | 911 | 869 | 971 | 1,073 | 1,196 | 1,305 |
| Income taxes payable, net, non-current | 9,176 | 9,258 | 8,474 | 12,395 | 13,390 | 14,701 | 16,387 | 17,915 |
| Deferred income taxes | 5,257 | 514 | 485 | 442 | 395 | 344 | 287 | 225 |
| Operating lease liabilities | 11,389 | 12,501 | 12,460 | 15,628 | 18,517 | 21,117 | 23,458 | 25,564 |
| Other long-term liabilities | 2,205 | 2,247 | 1,616 | 1,680 | 1,747 | 1,816 | 1,888 | 1,963 |
| **Total liabilities** | 107,633 | 109,120 | 119,013 | 129,998 | 145,547 | 161,020 | 178,614 | 194,305 |
| | | | | | | | | |
| **Stockholders' Equity:** | | | | | | | | |
| Preferred stock | - | - | - | - | - | - | - | - |
| Common Stock & addition paid-in-capital | 61,774 | 68,184 | 76,534 | 93,305 | 110,077 | 121,817 | 121,817 | 121,817 |
| Accumulated other comprehensive income | (1,623) | (7,603) | (4,402) | (4,402) | (4,402) | (4,402) | (4,402) | (4,402) |
| Retained Earnings | 191,484 | 195,563 | 211,247 | 239,109 | 272,714 | 315,629 | 371,213 | 438,273 |
| **Total stockholders' equity** | 251,635 | 256,144 | 283,379 | 328,012 | 378,389 | 433,044 | 488,627 | 555,688 |
| **Total liabilities and stockholders' equity** | 359,268 | 365,264 | 402,392 | 458,010 | 523,936 | 594,064 | 667,242 | 749,993 |

**Alphabet**

*Historical Cash Flow Statement (in millions)*

| *Fiscal Years Ending Dec. 31* | 2021 | 2022 | 2023 |
|---|---|---|---|
| **Operating Activities** | | | |
| Net Income | 76,033 | 59,972 | 73,795 |
| **Adjustments:** | | | |
| Depreciation of property and equipment | 11,555 | 15,287 | 11,946 |
| Stock-based compensation expense | 15,376 | 19,362 | 22,460 |
| Deferred income taxes | 1,808 | (8,081) | (7,763) |
| (Gain) loss on debt and equity securities, net | (12,270) | 5,519 | 823 |
| Other | (213) | 1,030 | 4,330 |
| **Changes in assets and liabilities, net of effects of acquisitions:** | | | |
| Accounts receivable, net | (9,095) | (2,317) | (7,833) |
| Income taxes, net | (625) | 584 | 523 |
| Other assets | (1,846) | (5,046) | (2,143) |
| Accounts payable | 283 | 707 | 664 |
| Accrued expenses and other liabilities | 7,304 | 3,915 | 3,937 |
| Accrued revenue share | 1,682 | (445) | 482 |
| Deferred revenue | 774 | 367 | 525 |
| **Net cash provided by operating activities** | 91,652 | 91,495 | 101,746 |
| **Investing activities** | | | |
| Purchases of property and equipment | (24,640) | (31,485) | (32,251) |
| Purchases of marketable securities | (135,196) | (78,874) | (77,858) |
| Maturities and sales of marketable securities | 128,294 | 97,822 | 86,672 |
| Purchases of non-marketable securities | (2,838) | (2,531) | (3,027) |
| Maturities and sales of non-marketable securities | 934 | 150 | 947 |
| Acquisitions, net of cash acquired, and purchases of intangible assets | (2,618) | (6,969) | (495) |
| Other investing activities | 541 | 1,589 | (1,051) |
| **Net cash used in investing activities** | (35,523) | (20,298) | (27,063) |
| **Financing activities** | | | |
| Net payments related to stock-based award activities | (10,162) | (9,300) | (9,837) |
| Repurchases of stock | (50,274) | (59,296) | (61,504) |
| Proceeds from issuance of debt, net of costs | 20,199 | 52,872 | 10,790 |
| Repayments of debt | (21,435) | (54,068) | (11,550) |
| Proceeds from sale of interest in consolidated entities, net | 310 | 35 | 8 |
| **Net cash used in financing activities** | (61,362) | (69,757) | (72,093) |
| Effect of exchange rate changes on cash and cash equivalents | (287) | (506) | (421) |
| **Net increase (decrease) in cash and cash equivalents** | (5,520) | 934 | 2,169 |
| Cash and cash equivalents at beginning of period | 26,465 | 20,945 | 21,879 |
| **Cash and cash equivalents at end of period** | 20,945 | 21,879 | 24,048 |
| **Supplemental disclosures of cash flow information** | | | |
| Cash paid for income taxes, net of refunds | 13,412 | 18,892 | 19,164 |

**Alphabet**

*Forecasted Cash Flow Statement (in millions)*

| *Fiscal Years Ending Dec. 31* | 2024E | 2025E | 2026E | 2027E | 2028E |
|---|---|---|---|---|---|
| **Operating Cash Flows** | | | | | |
| Net Income | 98,570 | 107,553 | 118,080 | 131,626 | 143,896 |
| Depreciation + Amortization | 13,838 | 16,851 | 19,966 | 22,769 | 25,292 |
| Change in Accounts receivable, net | (4,152) | (6,133) | (6,133) | (7,363) | (6,535) |
| Change in Other current assets | 490 | (1,431) | (1,431) | (1,718) | (1,525) |
| Change in Deferred income taxes | 3,315 | 1,202 | 1,351 | 1,618 | 2,123 |
| Change in Operating lease assets | (3,583) | (3,267) | (2,940) | (2,646) | (2,382) |
| Change in Accounts payable | 151 | 899 | 900 | 1,080 | 958 |
| Change in Accrued compensation & benefits | 1,885 | 2,003 | 2,004 | 2,405 | 2,135 |
| Change in Accrued expenses & other current liabilities | 736 | 5,520 | 5,520 | 6,627 | 5,882 |
| Change in Accrued revenue share | 1,547 | 1,227 | 1,227 | 1,473 | 1,307 |
| Change in Deferred revenue | 206 | 511 | 511 | 614 | 545 |
| Change in Deferred revenue, non-current | (42) | 102 | 102 | 123 | 109 |
| Change in Income taxes payable, net, non-current | 3,921 | 995 | 1,311 | 1,687 | 1,528 |
| Change in Deferred income taxes | (43) | (47) | (51) | (57) | (62) |
| Change in Operating lease liabilities | 3,168 | 2,889 | 2,600 | 2,340 | 2,106 |
| **Net cash flows from operating activities** | 120,007 | 128,875 | 143,014 | 160,576 | 175,376 |
| | | | | | |
| **Investing Cash Flows** | | | | | |
| CapEx | (48,000) | (48,000) | (48,000) | (48,000) | (48,000) |
| Change in Marketable securities | (3,449) | (3,586) | (3,728) | (3,876) | (4,030) |
| Change in Non-marketable securities | (1,231) | (1,280) | (1,331) | (1,384) | (1,438) |
| **Net cash flows from investing activities** | (52,680) | (52,865) | (53,059) | (53,259) | (53,468) |
| | | | | | |
| **Financing Cash Flows** | | | | | |
| Repurchases of Stock | (63,310) | (63,310) | (63,310) | (63,310) | (63,310) |
| Total Dividends Paid | (7,399) | (10,638) | (11,854) | (12,733) | (13,525) |
| Change in Other non-current assets | (399) | (415) | (431) | (448) | (466) |
| Change in Long-term debt | (608) | 1,382 | 1,280 | 1,231 | 1,109 |
| Change in Other long-term liabilities | 64 | 67 | 69 | 72 | 75 |
| Change in Common Stock & addition paid-in-capital | 16,771 | 16,771 | 11,740 | - | - |
| **Net cash flows from financing activities** | (54,880) | (56,143) | (62,506) | (75,187) | (76,118) |
| | | | | | |
| **Change in Cash** | 12,448 | 19,867 | 27,450 | 32,129 | 45,790 |
| Beginning of Year Cash | 24,048 | 36,496 | 56,362 | 83,812 | 115,942 |
| **End of Year Cash** | 36,496 | 56,362 | 83,812 | 115,942 | 161,732 |

**Alphabet**

*Common Size Income Statement*

| *Fiscal Years Ending Dec. 31* | 2021 | 2022 | 2023 | 2024E | 2025E | 2026E | 2027E | 2028E |
|---|---|---|---|---|---|---|---|---|
| **Revenues** | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |
| **Costs and expenses:** | | | | | | | | |
| Cost of revenues | 43.06% | 44.62% | 43.37% | 42.19% | 42.55% | 42.86% | 42.97% | 43.06% |
| Research and development | 12.25% | 13.97% | 14.78% | 14.18% | 14.00% | 14.00% | 14.00% | 14.00% |
| Sales and marketing | 8.89% | 9.39% | 9.08% | 8.00% | 8.00% | 8.00% | 8.00% | 8.00% |
| General and administrative | 5.24% | 5.56% | 5.34% | 3.88% | 4.00% | 4.00% | 4.00% | 4.00% |
| **Total costs and expenses** | 69.45% | 73.54% | 72.58% | 67.94% | 68.55% | 68.86% | 68.97% | 69.05% |
| Income from operations | 30.55% | 26.46% | 27.42% | 32.06% | 31.45% | 31.14% | 31.03% | 30.95% |
| Other income (expense), net | 4.67% | -1.24% | 0.46% | 1.41% | 1.17% | 1.26% | 1.38% | 1.53% |
| Income before income taxes | 35.22% | 25.22% | 27.89% | 33.47% | 32.62% | 32.40% | 32.41% | 32.48% |
| Provision for income taxes | 5.71% | 4.02% | 3.88% | 5.10% | 4.93% | 4.89% | 4.89% | 4.90% |
| **Net income** | 29.51% | 21.20% | 24.01% | 28.37% | 27.70% | 27.51% | 27.52% | 27.57% |

**Alphabet**

*Common Size Balance Sheet*

| *Fiscal Years Ending Dec. 31* | 2021 | 2022 | 2023 | 2024E | 2025E | 2026E | 2027E | 2028E |
|---|---|---|---|---|---|---|---|---|
| **Assets** | | | | | | | | |
| ***Current Assets:*** | | | | | | | | |
| Cash & cash equivalents | 8.13% | 7.74% | 7.82% | 10.50% | 14.51% | 19.53% | 24.24% | 30.99% |
| Marketable securities | 46.07% | 32.49% | 28.26% | 25.99% | 24.18% | 22.75% | 21.22% | 20.22% |
| *Total cash, cash equivalents, & marketable securities* | 54.20% | 40.22% | 36.08% | 36.50% | 38.70% | 42.27% | 45.46% | 51.21% |
| Accounts receivable, net | 15.26% | 14.23% | 15.60% | 15.00% | 15.00% | 15.00% | 15.00% | 15.00% |
| Other current assets | 2.74% | 2.87% | 4.12% | 3.50% | 3.50% | 3.50% | 3.50% | 3.50% |
| **Total current assets** | 73.03% | 58.27% | 55.80% | 55.00% | 57.20% | 60.77% | 63.96% | 69.71% |
| Non-marketable securities | 11.47% | 10.78% | 10.09% | 9.28% | 8.63% | 8.12% | 7.58% | 7.22% |
| Deferred income taxes | 0.50% | 1.86% | 3.96% | 2.55% | 1.97% | 1.47% | 0.98% | 0.49% |
| Property & equipment, net | 37.88% | 39.84% | 43.70% | 48.50% | 51.41% | 53.05% | 52.88% | 52.82% |
| Operating lease assets | 5.03% | 5.08% | 4.58% | 5.09% | 5.39% | 5.56% | 5.55% | 5.54% |
| Goodwill | 8.91% | 10.24% | 9.50% | 8.40% | 7.52% | 6.80% | 6.10% | 5.59% |
| Other non-current assets | 2.08% | 2.34% | 3.27% | 3.01% | 2.80% | 2.63% | 2.46% | 2.34% |
| **Total assets** | 139.45% | 129.14% | 130.90% | 131.82% | 134.92% | 138.41% | 139.50% | 143.71% |
| | | | | | | | | |
| **Liabilities and Stockholders' Equity** | | | | | | | | |
| ***Current liabilities:*** | | | | | | | | |
| Accounts payable | 2.34% | 1.81% | 2.44% | 2.20% | 2.20% | 2.20% | 2.20% | 2.20% |
| Accrued compensation & benefits | 5.39% | 4.96% | 4.93% | 4.90% | 4.90% | 4.90% | 4.90% | 4.90% |
| Accrued expenses & other current liabilities | 12.12% | 13.39% | 15.02% | 13.50% | 13.50% | 13.50% | 13.50% | 13.50% |
| Accrued revenue share | 3.49% | 2.96% | 2.89% | 3.00% | 3.00% | 3.00% | 3.00% | 3.00% |
| Deferred revenue | 1.28% | 1.38% | 1.35% | 1.25% | 1.25% | 1.25% | 1.25% | 1.25% |
| **Total current liabilities** | 24.94% | 24.50% | 26.62% | 24.85% | 24.85% | 24.85% | 24.85% | 24.85% |
| Long-term debt | 5.75% | 5.20% | 4.31% | 3.64% | 3.61% | 3.57% | 3.46% | 3.38% |
| Deferred revenue, non-current | 0.21% | 0.21% | 0.30% | 0.25% | 0.25% | 0.25% | 0.25% | 0.25% |
| Income taxes payable, net, non-current | 3.56% | 3.27% | 2.76% | 3.57% | 3.45% | 3.43% | 3.43% | 3.43% |
| Deferred income taxes | 2.04% | 0.18% | 0.16% | 0.13% | 0.10% | 0.08% | 0.06% | 0.04% |
| Operating lease liabilities | 4.42% | 4.42% | 4.05% | 4.50% | 4.77% | 4.92% | 4.90% | 4.90% |
| Other long-term liabilities | 0.86% | 0.79% | 0.53% | 0.48% | 0.45% | 0.42% | 0.39% | 0.38% |
| **Total liabilities** | 41.78% | 38.58% | 38.72% | 37.42% | 37.48% | 37.51% | 37.34% | 37.23% |
| | | | | | | | | |
| **Stockholders' Equity:** | | | | | | | | |
| Preferred stock | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Common Stock & addition paid-in-capital | 23.98% | 24.11% | 24.90% | 26.86% | 28.35% | 28.38% | 25.47% | 23.34% |
| Accumulated other comprehensive income | -0.63% | -2.69% | -1.43% | -1.27% | -1.13% | -1.03% | -0.92% | -0.84% |
| Retained Earnings | 74.32% | 69.14% | 68.72% | 68.82% | 70.23% | 73.54% | 77.61% | 83.98% |
| **Total stockholders' equity** | 97.67% | 90.56% | 92.19% | 94.41% | 97.44% | 100.89% | 102.16% | 106.48% |
| **Total liabilities and stockholders' equity** | 139.45% | 129.14% | 130.90% | 131.82% | 134.92% | 138.41% | 139.50% | 143.71% |

**Alphabet**
*Value Driver Estimation*

| *Fiscal Years Ending Dec. 31* | 2021 | 2022 | 2023 | 2024E | 2025E | 2026E | 2027E | 2028E |
|---|---|---|---|---|---|---|---|---|
| **NOPLAT:** | | | | | | | | |
| **EBITA:** | | | | | | | | |
| Revenues | 257,637 | 282,836 | 307,394 | 347,440 | 388,326 | 429,216 | 478,306 | 521,873 |
| Depreciation Expense | 11,555 | 15,287 | 11,946 | 13,838 | 16,851 | 19,966 | 22,769 | 25,292 |
| **Operating Costs:** | | | | | | | | |
| Other Cost of Revenues | 99,384 | 110,916 | 121,386 | 132,761 | 148,384 | 164,009 | 182,766 | 199,414 |
| Research and development | 31,562 | 39,500 | 45,427 | 49,257 | 54,348 | 60,071 | 66,941 | 73,038 |
| Sales and marketing | 22,912 | 26,567 | 27,917 | 27,791 | 31,066 | 34,337 | 38,264 | 41,750 |
| General and administrative | 13,510 | 15,724 | 16,425 | 13,470 | 15,533 | 17,169 | 19,132 | 20,875 |
| Plus: Implied interest on operating leases | 505 | 557 | 567 | 687 | 807 | 916 | 1,018 | 1,109 |
| **EBITA:** | 79,219 | 75,399 | 84,860 | 111,010 | 122,951 | 134,581 | 149,451 | 162,613 |
| **Less: adjusted taxes** | | | | | | | | |
| Total income tax provision (income tax expense) | 14,701 | 11,356 | 11,922 | 17,707 | 19,129 | 21,001 | 23,410 | 25,593 |
| Minus: tax on interest or investment income | (226) | (328) | (584) | (657) | (760) | (901) | (1,088) | (1,304) |
| Add: tax shield on interest expense | 52 | 54 | 47 | 66 | 75 | 83 | 91 | 98 |
| Add: tax shield on implied lease interest | 76 | 84 | 86 | 104 | 122 | 138 | 154 | 168 |
| Add: tax shield on any non-operating losses | 341 | 983 | 465 | 290 | - | - | - | - |
| Minus: tax on any non-operating income | (1,982) | (178) | (143) | (438) | - | - | - | - |
| **Total adjusted taxes** | 12,962 | 11,971 | 11,793 | 17,071 | 18,566 | 20,322 | 22,567 | 24,555 |
| | | | | | | | | |
| Change in deferred taxes | 200 | 3,977 | 6,908 | (3,315) | (1,202) | (1,351) | (1,618) | (2,123) |
| | | | | | | | | |
| **NOPLAT** | 66,457 | 67,405 | 79,976 | 90,623 | 103,184 | 112,908 | 125,265 | 135,936 |
| | | | | | | | | |
| **Invested Capital (IC):** | | | | | | | | |
| **Operating Current Assets (CA):** | | | | | | | | |
| Normal Cash | 19,930 | 21,879 | 23,779 | 26,877 | 30,039 | 33,202 | 37,000 | 40,370 |
| Accounts Recievable | 39,304 | 40,258 | 47,964 | 52,116 | 58,249 | 64,382 | 71,746 | 78,281 |
| Other current assets | 7,054 | 8,105 | 12,650 | 12,160 | 13,591 | 15,023 | 16,741 | 18,266 |
| **Total operating current assets** | 66,288 | 70,242 | 84,393 | 91,153 | 101,880 | 112,607 | 125,486 | 136,916 |
| | | | | | | | | |
| **Non Interest-Bearing Current Liabilities (CL):** | | | | | | | | |
| Accounts payable | 6,037 | 5,128 | 7,493 | 7,644 | 8,543 | 9,443 | 10,523 | 11,481 |
| Accrued compensation & benefits | 13,889 | 14,028 | 15,140 | 17,025 | 19,028 | 21,032 | 23,437 | 25,572 |
| Accrued expenses & other current liabilities | 29,047 | 35,389 | 43,377 | 44,069 | 49,255 | 54,441 | 60,668 | 66,194 |
| Accrued revenue share | 8,996 | 8,370 | 8,876 | 10,423 | 11,650 | 12,876 | 14,349 | 15,656 |
| Deferred revenue | 3,288 | 3,908 | 4,137 | 4,343 | 4,854 | 5,365 | 5,979 | 6,523 |
| **Total non interest-bearing operating current liabilities** | 61,257 | 66,823 | 79,023 | 83,503 | 93,330 | 103,157 | 114,955 | 125,426 |
| | | | | | | | | |
| **Net Operating Working Capital** | 5,031 | 3,419 | 5,370 | 7,650 | 8,550 | 9,450 | 10,531 | 11,490 |
| | | | | | | | | |
| **Property & equipment, net** | 97,599 | 112,668 | 134,345 | 168,507 | 199,656 | 227,690 | 252,921 | 275,629 |
| | | | | | | | | |
| **Net Other Operating Assets (net of depreciation or amortization)** | | | | | | | | |
| Intangible assets, net | 1,417 | 2,084 | - | - | - | - | - | - |
| Operating lease assets | 12,959 | 14,381 | 14,091 | 17,674 | 20,941 | 23,882 | 26,528 | 28,910 |
| Other non-current assets | 5,361 | 6,623 | 10,051 | 10,450 | 10,865 | 11,296 | 11,745 | 12,211 |
| **Total Net Other Operating Assets** | 19,737 | 23,088 | 24,142 | 28,124 | 31,806 | 35,178 | 38,273 | 41,121 |
| | | | | | | | | |
| **Other Operating Liabilities** | | | | | | | | |
| Deferred revenue, non-current | 535 | 599 | 911 | 869 | 971 | 1,073 | 1,196 | 1,305 |
| Income taxes payable, net, non-current | 9,176 | 9,258 | 8,474 | 12,395 | 13,390 | 14,701 | 16,387 | 17,915 |
| Other long-term liabilities | 2,205 | 2,247 | 1,616 | 1,680 | 1,747 | 1,816 | 1,888 | 1,963 |
| **Total Other Operating Liabilities** | 11,916 | 12,104 | 11,001 | 14,944 | 16,108 | 17,590 | 19,471 | 21,183 |
| | | | | | | | | |
| **INVESTED CAPITAL (IC)** | 110,451 | 127,071 | 152,856 | 189,337 | 223,904 | 254,728 | 282,254 | 307,057 |
| | | | | | | | | |
| **Free Cash Flow (FCF):** | | | | | | | | |
| NOPLAT | 66,457 | 67,405 | 79,976 | 90,623 | 103,184 | 112,908 | 125,265 | 135,936 |
| Change in IC | 22,807 | 16,620 | 25,785 | 36,481 | 34,567 | 30,824 | 27,525 | 24,804 |
| **FCF** | 43,650 | 50,785 | 54,191 | 54,142 | 68,616 | 82,084 | 97,740 | 111,132 |
| | | | | | | | | |
| **Return on Invested Capital (ROIC):** | | | | | | | | |
| NOPLAT | 66,457 | 67,405 | 79,976 | 90,623 | 103,184 | 112,908 | 125,265 | 135,936 |
| Beginning IC | 87,644 | 110,451 | 127,071 | 152,856 | 189,337 | 223,904 | 254,728 | 282,254 |
| **ROIC** | 75.83% | 61.03% | 62.94% | 59.29% | 54.50% | 50.43% | 49.18% | 48.16% |
| | | | | | | | | |
| **Economic Profit (EP):** | | | | | | | | |
| Beginning IC | 87,644 | 110,451 | 127,071 | 152,856 | 189,337 | 223,904 | 254,728 | 282,254 |
| x (ROIC - WACC) | 67.09% | 52.29% | 54.20% | 50.55% | 45.76% | 41.69% | 40.44% | 39.43% |
| **EP** | 58,801 | 57,757 | 68,876 | 77,271 | 86,645 | 93,350 | 103,014 | 111,280 |

**Alphabet**

*Weighted Average Cost of Capital (WACC) Estimation*

| | | |
|---|---|---|
| **Cost of Equity:** | | *ASSUMPTIONS:* |
| Risk-Free Rate | 3.62% | *10-year treasury bond* |
| Beta | 1.04 | *5-year monthly beta* |
| Equity Risk Premium | 5.00% | *Henry Fund Estimate* |
| **Cost of Equity** | **8.82%** | |
| | | |
| **Cost of Debt:** | | |
| Risk-Free Rate | 3.62% | *10-year treasury bond* |
| Implied Default Premium | 0.10% | |
| Pre-Tax Cost of Debt | 3.72% | *YTM on GOOGL 10-year corporate bond* |
| Marginal Tax Rate | 15% | |
| **After-Tax Cost of Debt** | **3.16%** | |

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| | | |
|---|---|---|
| **Market Value of Common Equity:** | | **MV Weights** |
| Total Shares Outstanding | 12,322 | |
| Current Stock Price | $157.76 | |
| **MV of Equity** | **1,943,919** | 98.50% |
| | | |
| **Market Value of Debt:** | | |
| Short-Term Debt | 1,042 | *As of Q2 2024 10-Q* |
| Current Portion of LTD | - | |
| Long-Term Debt | 13,253 | |
| PV of Operating Leases | 15,251 | |
| **MV of Total Debt** | **29,546** | 1.50% |
| | | |
| **Market Value of the Firm** | **1,973,465** | 100.00% |

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| | |
|---|---|
| **Estimated WACC** | **8.74%** |

**Alphabet**

*Discounted Cash Flow (DCF) and Economic Profit (EP) Valuation Models*

| | |
|---|---|
| Key Inputs: | |
| CV Growth of NOPLAT | 5.00% |
| CV Year ROIC | 48.16% |
| WACC | 8.74% |
| Cost of Equity | 8.82% |

| ***Fiscal Years Ending Dec. 31*** | **2024E** | **2025E** | **2026E** | **2027E** | **2028E** |
|---|---|---|---|---|---|
| **DCF Model:** | | | | | |
| Free Cash Flow (FCF) | 54,142 | 68,616 | 82,084 | 97,740 | 111,132 |
| Continuing Value (CV) | | | | | 3,261,462 |
| PV of FCF | 49,792 | 58,035 | 63,848 | 69,918 | 2,333,088 |
| | | | | | |
| Value of Operating Assets: | 2,574,682 | | | | |
| Non-Operating Adjustments | | | | | |
| Excess Cash | 269 | | | | |
| Marketable Securities | 117,876 | | | | |
| Total Debt | -29,546 | | | | |
| PV of ESOP | -21,584 | | | | |
| Litigation Liabilities | -9,525 | | | | |
| Value of Equity | 2,632,172 | | | | |
| Shares Outstanding | 12,460 | | | | |
| Intrinsic Value of Last FYE | 211.2 | | | | |
| **Implied Price as of Today** | $ 226.26 | | | | |
| | | | | | |
| **EP Model:** | | | | | |
| Economic Profit (EP) | 77,271 | 86,645 | 93,350 | 103,014 | 111,280 |
| Continuing Value (CV) | | | | | 2,979,208 |
| PV of EP | 71,063 | 73,283 | 72,611 | 73,691 | 2,131,178 |
| | | | | | |
| Total PV of EP | 2,421,826 | | | | |
| Invested Capital (last FYE) | 152,856 | | | | |
| Value of Operating Assets: | 2,574,682 | | | | |
| Non-Operating Adjustments | | | | | |
| Excess Cash | 269 | | | | |
| Marketable Securities | 117,876 | | | | |
| Total Debt | -29,546 | | | | |
| PV of ESOP | -21,584 | | | | |
| Litigation Liabilities | -9,525 | | | | |
| Value of Equity | 2,632,172 | | | | |
| Shares Outstanding | 12,460 | | | | |
| Intrinsic Value of Last FYE | $ 211.25 | | | | |
| **Implied Price as of Today** | $ 226.26 | | | | |

**Alphabet**

*Dividend Discount Model (DDM) or Fundamental P/E Valuation Model*

| *Fiscal Years Ending* | 2024E | 2025E | 2026E | 2027E | 2028E |
|---|---|---|---|---|---|
| EPS | $ 7.99 | $ 8.90 | $ 9.96 | $ 11.37 | $ 12.77 |
| ***Key Assumptions*** | | | | | |
| CV growth of EPS | 5.50% | | | | |
| CV Year ROE | 29.45% | | | | |
| Cost of Equity | 8.82% | | | | |
| ***Future Cash Flows*** | | | | | |
| P/E Multiple (CV Year) | | | | | 24.50 |
| EPS (CV Year) | | | | | $ 12.77 |
| Future Stock Price | | | | | $ 312.72 |
| Dividends Per Share | 0.60 | 0.88 | 1.00 | 1.10 | 1.20 |
| Discounted Cash Flows | 0.55 | 0.74 | 0.78 | 0.78 | $ 223.01 |
| Intrinsic Value as of Last FYE | $ 225.86 | | | | |
| **Implied Price as of Today** | $ 241.91 | | | | |

**Alphabet**

*Relative Valuation Models*

| Ticker | Company | Price | EPS 2024E | EPS 2025E | P/E 24 | P/E 25 |
|---|---|---|---|---|---|---|
| AAPL | Apple | $216.03 | $6.70 | $7.44 | 32.24 | 29.04 |
| META | Meta | $529.78 | $21.30 | $24.29 | 24.87 | 21.81 |
| MSFT | Microsoft | $430.54 | $11.80 | $13.07 | 36.49 | 32.94 |
| NVDA | NVIDIA | $116.28 | $2.74 | $3.80 | 42.44 | 30.60 |
| ORCL | Oracle | $170.06 | $3.71 | $4.62 | 45.84 | 36.81 |
| AMZN | Amazon | $184.99 | $4.73 | $5.87 | 39.11 | 31.51 |
| | | | | Average | **36.83** | **30.45** |
| | | | | | | |
| GOOGL | Alphabet | $157.76 | $7.99 | $8.90 | 19.7 | 17.7 |

**Implied Relative Value:**

| | |
|---|---|
| **P/E (EPS24)** | **$ 294.42** |
| **P/E (EPS25)** | **$ 270.94** |

**Alphabet**

*Key Management Ratios*

| *Fiscal Years Ending Dec. 31* | 2021 | 2022 | 2023 | 2024E | 2025E | 2026E | 2027E | 2028E |
|---|---|---|---|---|---|---|---|---|
| ***Liquidity Ratios:*** | | | | | | | | |
| Current Ratio (current assets / current liabilities) | 2.93 | 2.38 | 2.10 | 2.21 | 2.30 | 2.45 | 2.57 | 2.81 |
| Net Working Capital % of Revenue | 1.95% | 1.21% | 1.75% | 2.20% | 2.20% | 2.20% | 2.20% | 2.20% |
| Cash Ratio (cash / current liabilities) | 0.33 | 0.32 | 0.29 | 0.42 | 0.58 | 0.79 | 0.98 | 1.25 |
| ***Asset-Management Ratios:*** | | | | | | | | |
| Cash Turnover Ratio (Revenue / Cash) | 12.30 | 12.93 | 12.78 | 9.52 | 6.89 | 5.12 | 4.13 | 3.23 |
| Asset turnover ratio (Revenue / average total assets) | 0.76 | 0.78 | 0.80 | 0.81 | 0.79 | 0.77 | 0.76 | 0.74 |
| Working capital turnover ratio (revenue/(current assets - current liabilities) | 2.08 | 2.96 | 3.43 | 3.32 | 3.09 | 2.78 | 2.56 | 2.23 |
| ***Financial Leverage Ratios:*** | | | | | | | | |
| LT Debt/Total Equity | 0.06 | 0.06 | 0.05 | 0.04 | 0.04 | 0.04 | 0.03 | 0.03 |
| LT Debt/Total Assets | 0.04 | 0.04 | 0.03 | 0.03 | 0.03 | 0.03 | 0.02 | 0.02 |
| Total Debt/Total Assets | 0.07 | 0.07 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| ***Profitability Ratios:*** | | | | | | | | |
| Return on Equity (NI/Beg TSE) | 34.17% | 23.83% | 28.81% | 34.78% | 32.79% | 31.21% | 30.40% | 29.45% |
| Gross Margin | 56.94% | 55.38% | 56.63% | 57.81% | 57.45% | 57.14% | 57.03% | 56.94% |
| Return on Assets (NI/Avg Total Assets) | 22.40% | 16.55% | 19.23% | 22.91% | 21.91% | 21.12% | 20.87% | 20.31% |
| Operating Margin | 30.55% | 26.46% | 27.42% | 32.06% | 31.45% | 31.14% | 31.03% | 30.95% |
| ***Payout Policy Ratios:*** | | | | | | | | |
| Dividend Payout Ratio (Dividend/EPS) | 0.00% | 0.00% | 0.00% | 7.51% | 10.87% | 10.27% | 9.86% | 8.79% |
| Total Payout Ratio ((Divs. + Repurchases)/NI) | 66.12% | 98.87% | 83.34% | 71.73% | 68.75% | 63.66% | 57.77% | 53.40% |

**Alphabet**

*Valuation of Options Granted under ESOP*

| | |
|---|---|
| Current Stock Price | $157.76 |
| Risk Free Rate | 3.62% |
| Current Dividend Yield | 0.52% |
| Annualized St. Dev. of Stock Returns | 27.50% |

| Range of Outstanding Options | Number of Shares | Average Exercise Price | Average Remaining Life (yrs) | B-S Option Price | Value of Options Granted |
|---|---|---|---|---|---|
| Range 1 | 387 | 117.01 | 2.70 | $ 55.77 | $ 21,584 |
| Total | 387 | $ 117.01 | 2.70 | $ 57.66 | **$ 21,584** |

**Alphabet**

*Effects of ESOP Exercise and Share Repurchases on Common Stock Account and Number of Shares Outstanding*

| | |
|---|---|
| Number of Options Outstanding (shares): | 387 |
| Average Time to Maturity (years): | 2.70 |
| Expected Annual Number of Options Exercised: | 143 |
| | |
| Current Average Strike Price: | $ 117.01 |
| Cost of Equity: | 8.82% |
| Current Stock Price: | $157.76 |

| *Fiscal Years Ending Dec. 31* | 2024E | 2025E | 2026E | 2027E | 2028E |
|---|---|---|---|---|---|
| Increase in Shares Outstanding: | 143 | 143 | 100 | 0 | 0 |
| Average Strike Price: | $ 117.01 | $ 117.01 | $ 117.01 | $ 117.01 | $ 117.01 |
| **Increase in Common Stock Account:** | **16,771** | **16,771** | **11,740** | **-** | **-** |
| | | | | | |
| Share Repurchases ($) | 63,310 | 63,310 | 63,310 | 63,310 | 63,310 |
| Expected Price of Repurchased Shares: | $ 157.76 | $ 170.85 | $ 185.03 | $ 200.39 | $ 217.03 |
| **Number of Shares Repurchased:** | **401** | **371** | **342** | **316** | **292** |
| | | | | | |
| Shares Outstanding (beginning of the year) | 12,460 | 12,202 | 11,975 | 11,733 | 11,417 |
| Plus: Shares Issued Through ESOP | 143 | 143 | 100 | 0 | 0 |
| Less: Shares Repurchased in Treasury | 401 | 371 | 342 | 316 | 292 |
| **Shares Outstanding (end of the year)** | **12,202** | **11,975** | **11,733** | **11,417** | **11,125** |

**Alphabet**

*Sensitivity Tables*

CV Growth of NOPLAT

WACC

| 226.26 | 4.25% | 4.50% | 4.75% | 5.00% | 5.25% | 5.50% | 5.75% |
|---|---|---|---|---|---|---|---|
| 7.99% | 235.85 | 249.62 | 265.51 | 284.07 | 306.02 | 332.38 | 364.64 |
| 8.24% | 220.75 | 232.61 | 246.16 | 261.81 | 280.08 | 301.69 | 327.65 |
| 8.49% | 207.44 | 217.74 | 229.41 | 242.76 | 258.16 | 276.15 | 297.43 |
| 8.74% | 195.62 | 204.63 | 214.76 | 226.26 | 239.40 | 254.57 | 272.28 |
| 8.99% | 185.06 | 192.99 | 201.85 | 211.83 | 223.15 | 236.08 | 251.02 |
| 9.24% | 175.55 | 182.58 | 190.38 | 199.11 | 208.94 | 220.08 | 232.82 |
| 9.49% | 166.96 | 173.22 | 180.13 | 187.82 | 196.41 | 206.09 | 217.05 |

Marginal Tax Rate

Pre-Tax Cost of Debt

| 226.26 | 13.60% | 14.10% | 14.60% | 15.10% | 15.60% | 16.10% | 16.60% |
|---|---|---|---|---|---|---|---|
| 2.97% | 231.00 | 229.50 | 227.99 | 226.49 | 224.99 | 223.48 | 221.98 |
| 3.22% | 230.91 | 229.41 | 227.91 | 226.41 | 224.91 | 223.41 | 221.91 |
| 3.47% | 230.83 | 229.33 | 227.83 | 226.33 | 224.83 | 223.33 | 221.83 |
| 3.72% | 230.75 | 229.25 | 227.75 | 226.26 | 224.76 | 223.26 | 221.76 |
| 3.97% | 230.66 | 229.17 | 227.67 | 226.18 | 224.68 | 223.19 | 221.69 |
| 4.22% | 230.58 | 229.09 | 227.59 | 226.10 | 224.61 | 223.11 | 221.62 |
| 4.47% | 230.50 | 229.01 | 227.51 | 226.02 | 224.53 | 223.04 | 221.55 |

Research & Development as % of sales

Other COGS % of Sales

| 226.26 | 11.00% | 12.00% | 13.00% | 14.00% | 15.00% | 16.00% | 17.00% |
|---|---|---|---|---|---|---|---|
| 29.21% | 325.04 | 316.90 | 308.77 | 300.64 | 292.50 | 284.37 | 276.23 |
| 32.21% | 300.24 | 292.11 | 283.98 | 275.84 | 267.71 | 259.58 | 251.44 |
| 35.21% | 275.45 | 267.32 | 259.18 | 251.05 | 242.92 | 234.78 | 226.65 |
| 38.21% | 250.66 | 242.52 | 234.39 | 226.26 | 218.12 | 209.99 | 201.85 |
| 42.21% | 217.60 | 209.47 | 201.33 | 193.20 | 185.06 | 176.93 | 168.80 |
| 46.21% | 184.54 | 176.41 | 168.27 | 160.14 | 152.01 | 143.87 | 135.74 |
| 50.21% | 151.48 | 143.35 | 135.21 | 127.08 | 118.95 | 110.81 | 102.68 |

Equity Risk Premium

Risk-Free Rate

| 226.26 | 4.70% | 4.80% | 4.90% | 5.00% | 5.10% | 5.20% | 5.30% |
|---|---|---|---|---|---|---|---|
| 2.87% | 313.18 | 301.79 | 291.21 | 281.35 | 272.15 | 263.54 | 255.46 |
| 3.12% | 287.13 | 277.54 | 268.59 | 260.20 | 252.32 | 244.91 | 237.93 |
| 3.37% | 265.12 | 256.94 | 249.26 | 242.03 | 235.21 | 228.77 | 222.68 |
| 3.62% | 246.27 | 239.21 | 232.55 | 226.26 | 220.30 | 214.65 | 209.29 |
| 3.87% | 229.95 | 223.79 | 217.97 | 212.44 | 207.19 | 202.19 | 197.44 |
| 4.12% | 215.68 | 210.27 | 205.12 | 200.23 | 195.57 | 191.12 | 186.88 |
| 4.37% | 203.10 | 198.30 | 193.73 | 189.37 | 185.20 | 181.22 | 177.41 |

Beta

Equity Risk Premium

| 226.26 | 0.89 | 0.94 | 0.99 | 1.04 | 1.09 | 1.14 | 1.19 |
|---|---|---|---|---|---|---|---|
| 4.70% | 308.09 | 284.26 | 263.89 | 246.27 | 230.88 | 217.33 | 205.30 |
| 4.80% | 298.61 | 275.74 | 256.16 | 239.21 | 224.39 | 211.32 | 199.72 |
| 4.90% | 289.69 | 267.72 | 248.88 | 232.55 | 218.26 | 205.64 | 194.43 |
| 5.00% | 281.30 | 260.16 | 242.01 | 226.26 | 212.45 | 200.27 | 189.42 |
| 5.10% | 273.39 | 253.02 | 235.51 | 220.30 | 206.96 | 195.17 | 184.67 |
| 5.20% | 265.91 | 246.27 | 229.36 | 214.65 | 201.75 | 190.33 | 180.15 |
| 5.30% | 258.84 | 239.87 | 223.52 | 209.29 | 196.79 | 185.73 | 175.86 |

Yearly CapEx

2026 Cloud Rev. Grow

| 226.26 | 39,000 | 42,000 | 45,000 | 48,000 | 51,000 | 54,000 | 57,000 |
|---|---|---|---|---|---|---|---|
| 14.46% | 232.78 | 229.57 | 226.35 | 223.14 | 219.92 | 216.70 | 213.49 |
| 16.96% | 233.82 | 230.61 | 227.39 | 224.18 | 220.96 | 217.74 | 214.53 |
| 19.46% | 234.86 | 231.65 | 228.43 | 225.22 | 222.00 | 218.78 | 215.57 |
| 21.96% | 235.90 | 232.69 | 229.47 | 226.26 | 223.04 | 219.82 | 216.61 |
| 24.46% | 236.95 | 233.73 | 230.51 | 227.30 | 224.08 | 220.86 | 217.65 |
| 26.96% | 237.99 | 234.77 | 231.55 | 228.34 | 225.12 | 221.90 | 218.69 |
| 29.46% | 239.03 | 235.81 | 232.59 | 229.38 | 226.16 | 222.94 | 219.73 |