



Analysts

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Stock Price: \$175.30

Alphabet Inc. (NASDAQ: GOOGL)

Stock Rating: **HOLD**

Target Range: \$180 - \$190

Communications Sector

November 18, 2024

Investment Thesis

We recommend a **HOLD** rating for Alphabet Inc. with a target price range of \$180 - \$190.

Drivers of Investment Thesis:

- **Growth of Cloud:** Cloud computing is an industry that has experienced annual double digit compounded growth since 2017, and it is expected to grow at 20% for the next two years¹. We believe this will fuel the growth of Google Cloud significantly.
- **AI Advancement:** With AI playing a significant part in technological innovation, we believe AI will increase marketing effectiveness for Alphabet's platforms. This leads to more revenue for Google and Alphabet as companies find more success across their platforms.
- **Digital Advertising Growth:** The digital advertising industry is only growing as more people consume internet media. With Google having a dominant search engine market share and YouTube being at the forefront of video advertising, where consumer preferences are shifting, Alphabet is in position to capitalize on this growth.

Risks to Investment Thesis:

- **AI Chatbots:** With the emergence of different AI tools, chatbots such as CoPilot, Chat GPT, and Perplexity pose a threat to traditional search engines. If more people choose to adopt these AI chatbots as their main search engine, it could affect Google Search's overall growth and market share of the search market.
- **Antitrust Litigation:** Google has faced scrutiny over potential monopolistic behavior, such as using its market power to stifle competition or unfairly favor its own services. Ongoing antitrust investigations and lawsuits in the U.S. and Europe could result in substantial fines, regulations, or even forced structural changes.

Company Overview

Alphabet Inc. is a global technology company based in Mountain View, California, with a dominant market share in the interactive media and entertainment sector. It is widely recognized as the parent company of Google and YouTube, two of the world's leading internet platforms. The majority of its revenue is generated from digital advertising and cloud computing services.

Financial Overview

Valuation Summary

DCF/EP	\$185
DDM	\$190
Relative P/E	\$195

Share Highlights

Current Price	\$175.30
52-Week Range	\$127.90 - \$191.75
Market Capitalization	\$2.12 T
Dividend Yield	0.46%

Financial Metrics

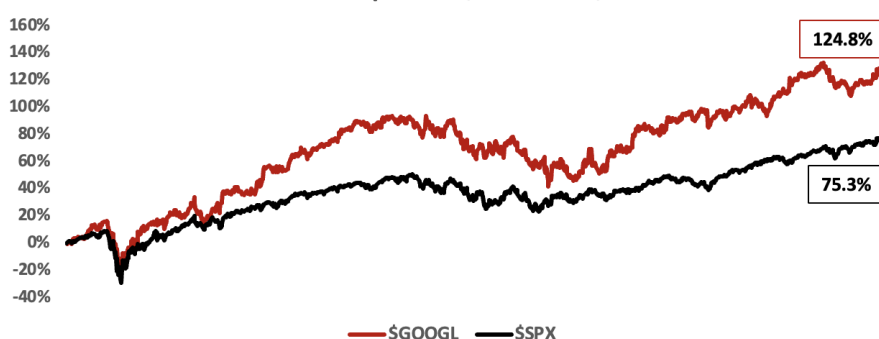
2023 Revenue	\$307,394 M
2024E Revenue	\$337,811 M
2023 Net Income	\$73,795 M
2024E Net Income	\$80,390 M
2023 Net Profit Margin	24.01%
2024E Net Profit Margin	23.80%

Financial Ratios

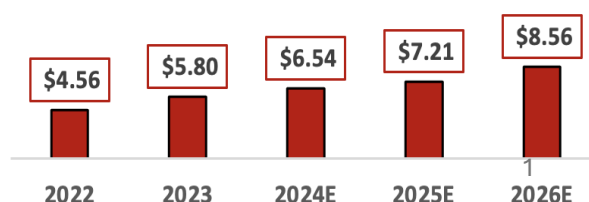
2023 ROE	28.81%
2023 ROA	20.20%
2023 Debt to Equity	0.42

Last 5 Years vs. S&P 500

5-Year Comparison: \$GOOGL vs. \$SPX



EPS Estimates



Company Analysis

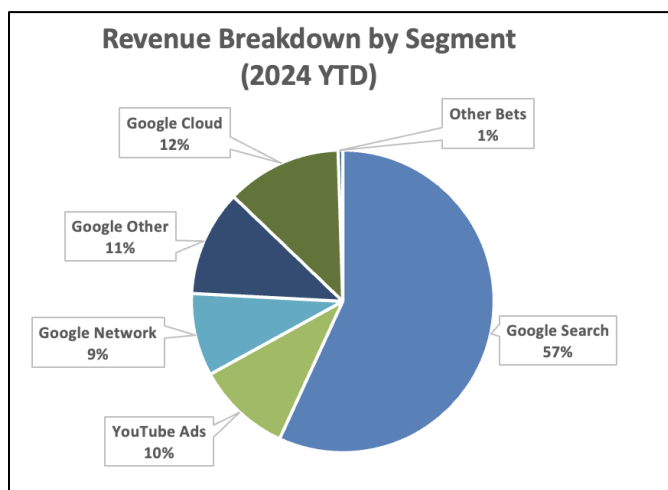
Executive Summary

Alphabet Inc., the parent company of Google, is a multinational technology conglomerate headquartered in Mountain View, California. Founded by Larry Page and Sergey Brin in 1998 as Google, the company went public in 2004. The company restructured in October 2015 to form Alphabet Inc., enabling better organization and management of its diverse business segments. As one of the largest companies in the world, Alphabet has a market capitalization of approximately \$2.12 trillion as of November 18, 2024.

Alphabet is a global leader in technology and innovation, driving advancements in online services, cloud computing, artificial intelligence, and other emerging fields. The company operates through three primary segments: Google Services, which encompasses core products such as Search, YouTube, Android, and Google Ads; Google Cloud, offering enterprise-level infrastructure and collaboration tools; and Other Bets, focusing on experimental ventures like Waymo's autonomous driving technology and DeepMind's artificial intelligence.

Although online advertising remains Alphabet's primary revenue source, with total Google Advertising accounting for 77% of its revenue in FY2023, the company also generates income from subscription services, hardware products like Google Pixel and Nest devices, and cloud computing solutions. These diversified income streams, combined with investments in groundbreaking technologies through 'Other Bets,' solidify Alphabet's position as a leading technology company operating in the communications sector.

Revenue Analysis & Breakdown



Source 2: 10-Q

Google Search

Google Search remains Alphabet's most significant revenue segment, generating \$175 billion in 2023, and currently accounting for 56.8% of total revenue. This segment encompasses advertising revenues from Google Search, Gmail, Google Maps, and Google Play, as well as partnerships with distribution partners that position Google as the default search engine on many devices. Growth in 2023 was driven by continued adoption of mobile search, improvements in ad delivery formats, and the integration of generative AI into search algorithms, which enhanced user engagement and ad relevance. Looking ahead, innovations in multi-modal and voice search, as well as strategic investments in AI, are expected to sustain this segment's growth. We have projected revenues to grow at a 5-year CAGR of 9.3%, reaching \$273.6 billion by 2028.

YouTube Ads

YouTube Ads contributed \$29.2 billion to Alphabet's total revenue in 2023, currently representing about 10.1% of total revenues. The platform continues to thrive as the world's second most popular social network with over 2.5 billion monthly active users in 2024. YouTube is a critical platform for advertisers seeking to reach large audiences across the globe³. A key driver of growth is YouTube Shorts, which competes with platforms like TikTok and Instagram Reels, attracting both viewers and advertisers alike. The platform has also capitalized on its NFL Sunday Ticket rights and partnerships with telecom providers to increase its streaming presence. New monetization features, such as revenue-sharing programs for creators and shoppable video ads, have further attracted advertisers to this platform. Although growth was relatively modest the last two years for this segment, we have forecasted this revenue to grow by a 5-year CAGR of 8.9%.

Google Network

The Google Network segment, which encompasses advertising revenues from AdSense, AdMob, and Google Ad Manager, generated \$31.3 billion in 2023, currently accounting for 8.8% of total revenues. This segment allows Alphabet to extend its advertising ecosystem beyond owned platforms, serving ads on third-party websites and applications. Though revenue declined by 4.5% in 2023 and is projected to decline by a similar percentage in 2024, the segment remains integral to Alphabet's broader advertising strategy. Alphabet cited that this decrease in revenue was primarily driven by the unfavorable effect of foreign currency exchange rates, as well as a decrease in AdMob revenues². We have forecasted this

this segment to recover from previous poor performance, with a long-term growth rate of 9.4%.

Subscriptions, Platform, & Devices

Google Other, which has been renamed Subscriptions, Platforms, and Devices, contributed \$34.7 billion to revenue in 2023. This segment currently represents 11.3% of total revenue. This segment includes revenues from YouTube Premium, YouTube Music, YouTube TV, Google Play, and hardware sales, including the Pixel smartphone lineup and Nest smart home devices. This segment has historically seen strong growth, though volatile at times. Alphabet cites that fluctuations in this segment may be affected by factors such as changes in customer usage and demand, number of subscribers, and fluctuations in the timing of product launches². As Alphabet continues to innovate in hardware and subscription services, we have forecasted this segment to grow at a conservative 5-year CAGR of 8.9%.

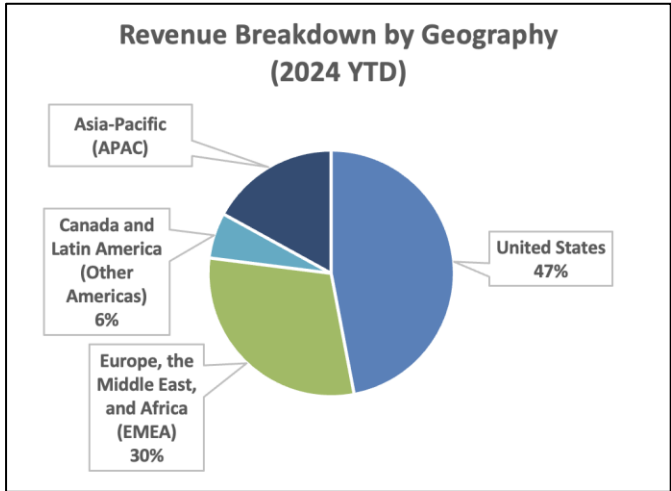
Google Cloud

Google Cloud has established itself as Alphabet’s fastest-growing segment, generating \$33.1 billion in 2023, an increase of 25.9% year-over-year. Alphabet cites this growth has been fueled by the consumption-based fees and subscriptions received for Google Cloud Platform (“GCP”) services, Google Workspace communication and collaboration tools, and other enterprise services. Google Workspace includes applications like Gmail, Docs, Drive, Calendar, Meet, among others. Continued investment in AI and cybersecurity solutions position this segment as a key pillar of Alphabet’s future growth. Also, it’s important to note that Google Cloud turned profitable in 2023, showcasing their ability to improve operational efficiency. We forecast revenues to exceed \$53 billion by 2028, with a 5-year CAGR of 28.2%.

Other Bets

The Other Bets segment, which houses Alphabet’s innovative and experimental ventures, generated \$1.5 billion in 2023, representing about 0.5% of total company revenue. Key businesses in this segment include GFiber, Calico, CapitalG, GV, Verily, Waymo, Wing, and X, among others. Alphabet describes these ventures as “moonshots,” with the hopes of turning creative ideas into profitable, groundbreaking businesses. According to Alphabet, revenues from this segment are largely driven by the sale of healthcare-related services through Verily and internet services through GFiber. Despite increasing operating losses in this segment, Other Bets remains a strategic area for Alphabet as it seeks to develop transformative

technologies. We have forecasted revenues to grow modestly to \$2.9 billion by 2028 as commercialization efforts advance across the portfolio, representing a 5-year CAGR of 13.8%.



Source 2: 10-Q

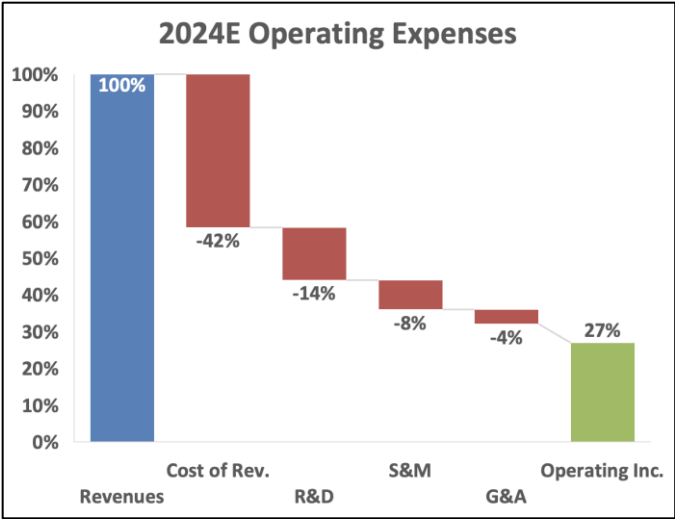
Expense Analysis

Alphabet’s expense profile reflects strong operational efficiency, with total costs and expenses representing 72.6% in 2023, down slightly from 73.5% in 2022. This trend appears to be continuing through 2024. Key components of expenses include the Cost of Revenue, Research and Development (R&D), Sales and Marketing, and General and Administrative (G&A) Expenses.

Cost of revenue accounted for 39.5% of revenue in 2023, driven by Traffic Acquisition Costs (TAC), which are central to Alphabet’s business model but face regulatory scrutiny. Approximately \$20 billion of TAC is paid to Apple on an annual basis to secure Google as the default search engine on iPhones⁴. The Department of Justice filed a lawsuit against Google, stating they have violated antitrust law by maintaining a monopoly in search and advertising. It’s still unknown what remedies will come out of this case. If amendments are made and agreements with Apple are restricted, Alphabet could save on TAC, but the revenue impact is uncertain, as many users may still choose Google as their search browser. Outside of TAC, recent increases in Cost of Revenues were primarily due to increases in content acquisition costs, largely for YouTube, other technical infrastructure operations costs, and third-party service fees².

R&D expenses comprised 14.8% of revenue in 2023, reflecting Alphabet’s investments in the technical infrastructure to support the growth of long-term

initiatives, in particular artificial intelligence (AI) products and services. Sales and Marketing Expenses were 9.1% of revenue in 2023, as Alphabet increased advertising and promotional activities for its products, such as its Google Cloud platform, Pixel devices, and YouTube services. General and Administrative (G&A) decreased slightly year-over-year to 5.3% of revenue in 2023, reflecting a reduction in charges related to legal and other matters.



Source 2: 10-Q

The graph shows 2024E operating expenses, with the operating margin expected to be 26.9%. Alphabet’s operating margin was 27.4% in 2023, up from 26.5% in 2022. This year’s operating expenses have been driven by charges for office space optimization, increased competition, and ad and promotional activities².

Payout Policy

Alphabet’s payout policy reflects a recent shift in strategy as the company has expanded its approach to returning value to shareholders. On top of the long-standing share buyback program, Alphabet initiated its first-ever dividend payment in Q2 2024 of \$0.20 per share, signaling confidence in the company’s overall financial stability.

Alphabet has maintained an active share repurchase program as a core method of shareholder return dating back to 2015. In 2023, they repurchased \$61.5 billion worth of shares, up from \$59.3 billion and \$50.3 billion in 2022 and 2021, respectively. As mentioned, Alphabet initiated a quarterly dividend at the start of 2024. This came right after a period of intense cost-cutting and layoffs in 2022 and 2023. Alphabet states they intend to maintain their quarterly dividend payments in the future, subject to review and approval by the company’s Board of Directors. This could be

seen as a sign of maturity for Alphabet. With the dividend yield currently sitting around 0.46%, we expect this to increase as the company continues to mature over time. With over \$93 billion dollars of cash and marketable securities on the balance sheet as of September 30th, 2024, there should be little to no concern with Alphabet continuing their annual share repurchases and quarterly dividend payments.

Capital Expenditures

Alphabet’s capital expenditures have risen significantly this past year, reflecting the company’s aggressive investments in technical infrastructure to support its AI and Cloud ambitions. During the first nine months of 2024, Alphabet spent \$38.3 billion on CapEx, a substantial increase from \$21.2 billion during the same period in 2023. In Q3 2024 alone, CapEx reached \$13.1 billion, up 62% year-over-year, with similar spending expected in Q4. This spending was focused on servers, network equipment, and data centers, which are critical for powering Alphabet’s cloud services and scaling its AI products. CEO Sundar Pichai emphasized on the company’s Q3 conference call the company’s leadership in AI infrastructure, citing its partnership with NVIDIA. Alphabet states they have all the leading AI accelerators, GPUs, TPUs, as well as CPUs, and they are investing in all of them⁵.

Additionally, Alphabet highlighted that these investments are expected to translate into revenue in the near term, driven by growing customer demand for AI and cloud solutions. Looking ahead to 2025, Alphabet anticipates continued CapEx growth, as it pursues an aggressive roadmap to support AI and cloud development. Despite the significant rise in expenditures, Alphabet remains focused on offsetting these costs through strategic cost-cutting measures in other parts of the business to maintain its historically strong profitability⁶.

SWOT Analysis

Strengths

Alphabet’s leadership in the technology sector is built on its dominance in digital advertising, financial strength, and innovation. Total Google Advertising has generated nearly 76% of revenues for the first nine months of this year, driven by Google’s commanding search market share. Google holds 94.7% of the global market share for search engines on mobile devices and 79.7% for desktop devices⁷. Meanwhile, Google Cloud has been demonstrating very strong growth, with a 35% increase year-over-year in Q3. This reflects the growing

demand for cloud infrastructure and AI-powered solutions. Additionally, Alphabet benefits from a highly diverse product ecosystem, spanning across Google Search, YouTube, Android, Google Cloud, and hardware products like Pixel and Nest, among others. The diversity helps mitigate risks associated with dependence on a single revenue stream and allows Alphabet to capture value across multiple industries.

In addition, with \$73.6 billion in net income year-to-date, Alphabet’s strong financial position gives it the ability to invest heavily in capital expenditures, allowing them to take part in the innovative technological trends currently unfolding. This includes investment in areas such as AI, cloud infrastructure, and hardware development that further position the company to stay at the forefront of these rapidly growing markets. Without investing in these areas, Alphabet would quickly lose its status as one of the Tech industry leaders known for dominating new technological developments.

Weaknesses

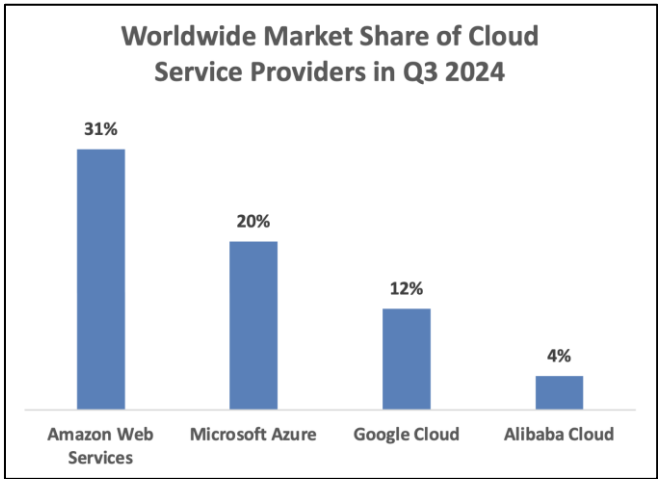
Alphabet faces several notable weaknesses that could impact its future growth or even profitability. One of its most significant vulnerabilities is its heavy reliance on advertising. While the company has made significant progress in lessening this dependency - Total Google Advertising accounted for 92.4% of their revenue in 2020 but has gradually decreased to 87.1% YTD in 2024 - it remains a dominant portion of Alphabet’s overall revenue. This is concerning because it exposes Alphabet to risks associated with fluctuations in advertising budgets, which could be driven by unfavorable economic conditions in the future. On top of this, increasing competition in the digital advertising space and the growing use of ad-blocking technologies could further penetrate this vulnerability. Privacy concerns also represent a substantial challenge, as Alphabet’s data collection practices have come under elevated levels of scrutiny. Earlier this year, Alphabet agreed to a \$350 million settlement over allegations it concealed data-security vulnerabilities in its now-defunct Google+ platform, marking this as the largest privacy and cybersecurity-related securities class action lawsuit settlement to date⁸. In addition to this, Alphabet faces other challenges relating to antitrust litigation with the U.S. Department of Justice, many U.S. states, and the European Commission targeting Google’s dominance in the search and digital advertising markets. As Google faces antitrust litigation from multiple fronts, potential regulatory changes or imposed remedies on the business could disrupt Alphabet’s operations and hinder its ability to perform

the way they have historically.

Opportunities

Alphabet has many opportunities to fuel future growth and diversification. As discussed, expansion in cloud computing and AI remains a cornerstone of its strategy, as businesses are increasingly looking to adopt cloud offerings and AI-driven tools. Google Cloud, which we’ve forecasted to generate \$41.7 billion in revenue in 2024, is poised for further growth in a cloud computing market projected to grow at a CAGR of 22% and reach \$2 trillion in revenue by 2030⁹. If Alphabet can maintain its leadership in this technological movement, it stands to capture a substantial portion of this lucrative market. Also, Alphabet’s investments in generative AI, such as Gemini (formerly Bard) and its integration into Google Cloud and Search, position the company well as a key player in providing AI-driven enterprise solutions. Capturing more market share in this area and growing this segment of the business would help alleviate the reliance of advertising revenue on Alphabet’s bottom-line growth.

On another note, Alphabet has a history of acquiring companies and strategically integrating them into their business to enhance their offerings and overall competitiveness. Recent successful integrations, such as Mandiant and Fitbit, showcase their ability to do so, while opening doors to new areas in the process. Future acquisitions may present key opportunities for growth. Alphabet has made it clear that they are prioritizing investments in new businesses, products, services and technologies, as well as in acquisitions and strategic investments².



Source 10: Statista

Threats

Alphabet faces significant risks across regulatory, competitive, and technological landscapes. Regulatory scrutiny remains intense, with antitrust actions from the

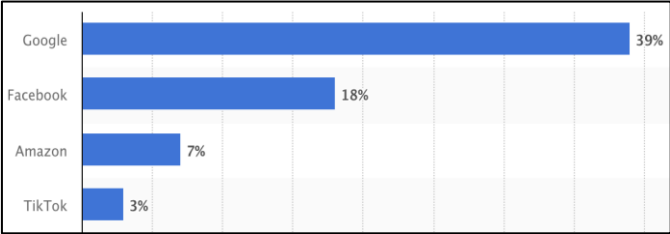
U.S. Department of Justice, fines from the European Commission, and compliance requirements under the EU's Digital Services Act (DSA) creating potential for severe financial penalties or even operational restrictions¹¹. Generative AI, exemplified by OpenAI's well-adopted ChatGPT platform, poses a direct threat to Google's core search business, forcing Alphabet to prioritize rapid innovation to maintain leadership in the search space. Competitive pressures from Amazon, Microsoft, and Meta Platforms challenge Alphabet's dominance in both digital advertising and cloud services. Looking at the cloud services sector specifically, Google Cloud generated \$31.3 billion in revenue year-to-date. Microsoft Azure generated \$30.5 billion, while Amazon Web Services (AWS) posted \$80 billion over the same period. As previously mentioned, with the total addressable market of this sector projected to grow at a CAGR of 22% to 2030, the intense competition poses a significant threat to this rapidly growing revenue stream within Alphabet's business⁹. If Alphabet cannot maintain its leadership and stay at the forefront of this trend, they will be left behind. Additionally, cyberattacks remain a serious threat to Alphabet, given the enormous amount of data it holds across its products and services. This makes it a prime target for cybercriminals looking to exploit sensitive information. While cybersecurity has come a long way since Google's 2010 network breach, the value and scale of Alphabet's data still make it a target for attack. Beyond the obvious financial implications associated with a cyberattack, data breaches carry the risk of significant reputational harm. At the same time, strict data privacy regulations like the GDPR further heighten the stakes, with noncompliance potentially leading to heavy penalties.

Industry Analysis

Sector and Subsector

Being the parent company of Google, Alphabet Inc. is recognized as one of the Big 4 technology companies. However, they operate in the internet content and information subsector within the broader communication services sector. Google's search engine, YouTube, digital ads, and cloud services all fall within this description. Companies in this sub-sector offer content, internet navigation services, and reference guide information for the World Wide Web through various platforms, such as social media, search engines, and networking platforms. Companies within this sector make a significant portion of their revenue through advertising on their platforms, meaning the companies

with the most platform traffic have a greater share of the advertising revenue. As illustrated in the chart below, Google currently holds 39% of the total digital advertising revenue worldwide, highlighting the fact that they are the most used search platform in the world.



Source 12: Statista

Recent Industry Trends

1) New AI Tools: As seen with many industries, AI is at the forefront of this sector's innovation adoption. AI has already been implemented with many major players in this sector and, as it advances, it could mean two things for Google. If utilized correctly, it can help improve all user experiences on different platforms and have more advanced algorithm ad targeting to increase conversion rates and in-turn, revenue. AI could also drive some people away from Google. As an increasing number of generative AI platforms are being released, many of them are serving as user's main search engines. This could limit the growth of Google's search engine advertising as more people adopt AI platforms for their search needs.

2) Video Content Growth: Video advertising has become a dominant and rapidly growing segment of the internet content and information landscape, particularly platforms like YouTube (owned by Alphabet Inc.), TikTok, Instagram, and Facebook. The rise of mobile devices, faster internet speeds, and changing consumer preferences have all contributed to the surge in video ad spending and revenue. Short-form videos have become a growing area that people are advertising on, which is why this sector is experiencing climbing engagement in YouTube Shorts, TikTok, and Instagram Reels. Alphabet is positioned well with YouTube, but Meta and other social media platforms can gain market share.

3) Privacy Regulations: The Digital Advertising space is projected to face some headwinds as it continues into 2025. Increased government regulation in the US and internationally could impact the effectiveness of targeted advertising due to new data privacy laws. This could also lead to restrictions on targeted advertising, specifically when it relies on psychographic data such as interests, beliefs, and personality. Successful companies in this industry will find creative ways to

work around these challenges by leveraging new technologies and staying in compliance with the government.

Competitor Analysis

Financial Metrics

The main competitors of Alphabet are listed below, along with some key financial metrics of each. Of the companies listed, Meta is the closest direct competitor to Alphabet, operating in many identical revenue streams. Alphabet is mostly in line with its competition, having a similar P/E & net profit margin to Adobe & Meta. Amazon and Microsoft generate portions of their revenues from different streams altering profit margins, but they are included due to their involvement in the cloud computing industry, which is Alphabet's fastest-growing segment. Additionally, each of these companies is leveraging proprietary AI tools to enhance business offerings.

Company	Market Cap (Trillions)	Revenue 2023 (Billions)	P/E 24E	Net Profit Margin 2023
Alphabet	\$ 2.12	\$ 307	26.3	24.01%
Meta	\$ 1.40	\$ 135	25.15	28.98%
Adobe	\$ 0.22	\$ 19	26.43	28.03%
Amazon	\$ 2.13	\$ 575	38.58	5.29%
Microsoft	\$ 3.09	\$ 212	33.23	35.96%

Source 13: Trading View

Operating Metrics

Some important operating metrics to consider for these companies are total traffic on site (monthly active users) and market share of each company's respective platform. Starting with monthly active users (MAU), Alphabet has 4.5 billion, driven by their 8 billion Google searches per day, assuming multiple searches per user, and YouTube contributing 1.5 billion MAU¹⁴. Meta has just under 4 billion monthly active users driven by their dominant social media platforms, Instagram and Facebook. As for market share, Google captures about 90% of the total search engine market worldwide, resulting in most of their revenues coming from this platform. Meta, on the other hand, captures around 70% of the total social media market share, driving their advertising revenues. These companies are handily the top two competitors for total digital advertising revenues, driven by separate platform categories. As data collection scales and more cloud services are needed, expect the proportion of advertising revenues to shrink in relation to total revenue.

Porter's Five Forces Analysis

Threat of New Entrants: Low

There is a low threat of new entrants for Alphabet. It would be difficult for a new company to disrupt the strong brand reputation, not only with Google and YouTube, but also with other companies in this industry. There are new entrants in the cloud space due to the growth projections of that sector, however, most of the entrants are other established tech companies.

Intensity of Rivalry: Moderate/High

Because Alphabet has many different revenue streams, they face competition on almost all fronts. They mitigate this competition risk by having many different profitable divisions of the business and being a market share leader with a trusted brand. Companies in this sector are constantly innovating and expanding, fueling the intensity of company rivalry.

Threat of Substitutes: High

Threat of substitutes is a relatively high risk due to the adaptive nature of companies in this industry. Innovation is key and companies that stay ahead of the innovation curve typically find success. Some of this risk is curbed by the big companies who have a loyal customer base and consistently use the same platforms.

Bargaining Power of Suppliers: Low

Because Alphabet does almost everything in-house and uses software, there is little reliance on suppliers. As the cloud sector of their business grows, there could be more reliance on construction & installation of server farms from outsourced companies, but this is minimal relative to the total scale of their revenues.

Bargaining Power of Customers: Low

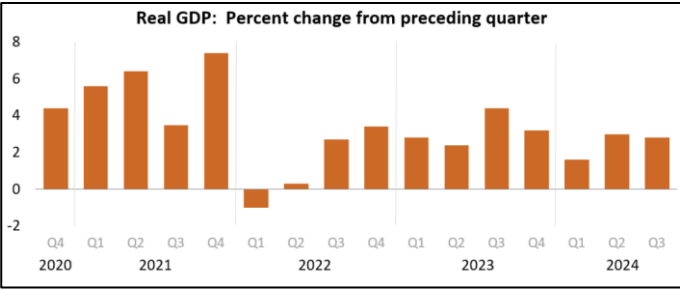
Customers have little bargaining power over how much money an ad placement will cost. Because Google owns most of the search market and has a great share of video ads, they can decide how much they can charge for ads (within reason) and the demand for digital advertising is only going to increase.

Economic Analysis

Real GDP Growth

U.S. Real Gross Domestic Product (GDP), a key measure of economic health, significantly impacts the communications sector, including companies like Alphabet. Real GDP reflects inflation-adjusted growth in the value of all goods and services produced in the U.S., encompassing consumer spending, private investment, government expenditures, and net exports. Real GDP growth has been steady and encouraging in

2024, with real GDP rising by 2.8% in Q3 according to estimates, following a 3.0% increase in Q2. This growth has been fueled by strong consumer spending in areas like healthcare and automotive goods, along with rising exports and increased federal government spending¹⁵. Consumer spending has remained resilient, supported by higher wages and a solid labor market, even as higher interest rates put some pressure on borrowing. For Alphabet, this steady economic growth is a positive catalyst, as businesses tend to boost their advertising budgets during periods of steady growth. With advertising being Alphabet's biggest revenue driver, the company benefits directly from this increased spending. Looking ahead, we expect GDP growth to stabilize between around 3% annually over the next several quarters. We believe this will be supported by resilient labor markets, moderating inflation, decreasing interest rates, and ongoing business investments specifically in AI-driven technologies. However, a slowdown in GDP growth could be harmful to Alphabet's business. Particularly, fluctuations in real GDP directly affect Alphabet's advertising and cloud services, as these sectors are sensitive to changes in corporate budgets and consumer confidence. While we anticipate continued GDP growth to support spending in communications services, risks such as geopolitical tensions, inflationary pressures, and higher borrowing costs could still influence the pace and sustainability of this expansion.



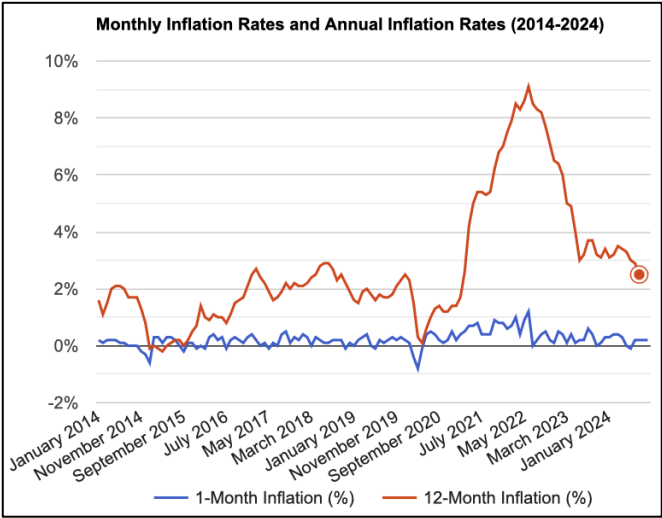
Source 15: U.S. Bureau of Economic Analysis

Inflation (CPI)

Inflation, measured by the Consumer Price Index, tracks changes in the cost of a basket of goods and services over time and is a key indicator of economic health. In 2024, inflation has varied, ranging as high as 3.5% year-over-year in March to 2.4% year-over-year in September. Most recently, the October 2024 U.S CPI result was 2.6%. This is a notable improvement from the 9.1% peak seen in June 2022. This decline is largely due to the Federal Reserve's aggressive interest rate hikes aimed at controlling rising prices. However, inflation remains above the Fed's long-term target rate of 2%, which has mixed

implications for the communications sector and companies like Alphabet. Higher prices increase costs for wages, energy, and infrastructure, while also reducing consumer's disposable income. This can potentially tighten advertising budgets, the core revenue segment for Alphabet.

For Alphabet, inflation is a double-edged sword. Rising costs put pressure on margins, especially with higher wages and expenses for data centers and AI infrastructure. At the same time, Alphabet offers essential digital services like advertising, search, and cloud computing. This helps weather inflationary pressures better than many other companies. AI advancements are also helping offset rising labor costs by creating efficiencies within the business. Looking forward, we expect inflation to bounce around the 2-3% range, while gradually working its way back down to the Fed's 2% target. A more stable inflationary environment, which seems probable in the near future, would likely boost advertising budgets and ease cost pressures, supporting continued growth in Alphabet's products and services.

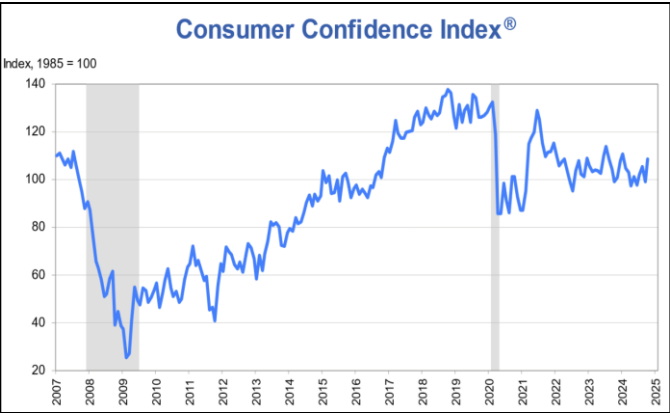


Source 16: U.S. Inflation Calculator

Consumer Confidence Index (CCI)

The Consumer Confidence Index (CCI), which is a key measure of consumer sentiment regarding the economy, saw a notable rebound in October 2024, rising to 108.7 from 99.2 in September. This represents the strongest monthly increase since March 2021, driven by improved perceptions of the current business conditions, job availability, and short-term economic expectations¹⁷. This resurgence in confidence is particularly beneficial for Alphabet and the broader communications sector. Improved consumer optimism translates into higher discretionary spending, fueling demand for advertising, entertainment, and subscription

services that Alphabet offers. As inflation and labor market conditions stabilize, we expect consumer confidence to remain steady or even improve further. However, economic uncertainties could still dampen consumer sentiment on a dime.



Source 17: The Conference Board

Foreign Exchange Rates

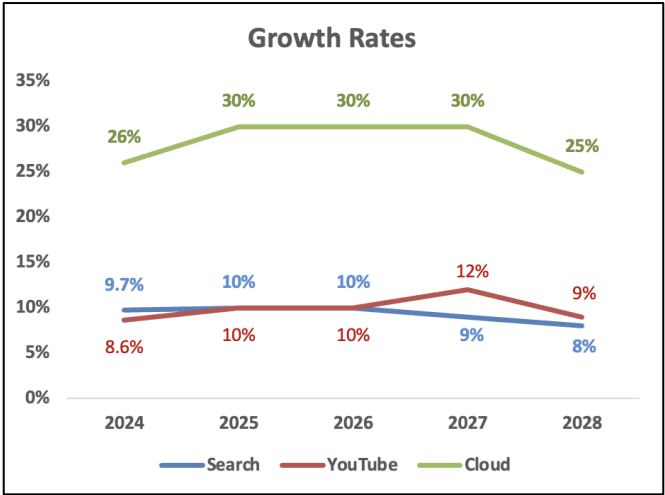
Foreign exchange rates play a role in Alphabet’s financial performance due to its extensive global operations, with only 47% of total revenue coming from the United States. These rates determine the value of revenue and profits generated in foreign currencies when converted back to U.S. dollars. Fluctuations in exchange rates can significantly impact Alphabet’s earnings. A stronger dollar, for example, can reduce the value of foreign earnings, while a weaker dollar can enhance them. To mitigate these risks, Alphabet has implemented a foreign exchange risk management program. According to its most recent 10Q², Alphabet uses derivative instruments, including forward and option contracts, to hedge against fluctuations in foreign exchange rates. These instruments help reduce the risk of adverse effects on cash flows, earnings, and investment in foreign subsidiaries. However, Alphabet still recognizes that its hedging program does not fully offset its exposure to currency fluctuations, and gains or losses from these activities are subject to vary from quarter to quarter.

Valuation Analysis

Revenue Assumptions

As stated, Alphabet Inc. has six different revenue streams. Google Search, YouTube ads, and Google Network make up the total advertising revenues. Subscriptions, Platforms, and Devices- which include YouTube TV, YouTube Subscriptions, and Google Pixel Phones- make up Google Services. The other two

revenue streams are Google Cloud & Other Bets. There have been three quarters of 2024 results, so to estimate all 2024 revenues we divided totals through Q3 by 0.75.



Source: Revenue Decomposition

The three revenue streams above make up 80% of Alphabet’s total revenue. Google Search is the biggest and most established revenue stream. This platform has seen significant historical growth, but we believe this will stabilize due to competitive factors such as the emergence of AI chatbots and recent pressures on Google relating to its global search market share. We estimate 10% YoY growth for 2025 and 2026, then a taper of 1% annually through 2030, holding at 6%.

We estimate YouTube will increase its YoY growth rate up to 12% in 2027. This is fueled by the preferences of consumers shifting towards video media, specifically YouTube Shorts. After 2027, we estimate this to stabilize at 9% as the market saturates.

Cloud is the newest and fastest-growing segment by far. It has seen YoY growth of 25% or greater the previous six years in a row. With the adoption of cloud computing from many industries, we do not estimate this growth will slow down over the next several years. Because this is the most unpredictable revenue segment, we referenced professional analyst opinions to compare our assumptions. Our 2-year horizon (2025E and 2026E) aligns closely with FactSet estimates¹⁹. We estimate this growth will slow down to 15% by 2030.

Aside from the major revenue streams, we estimate that Subscription, Platform, and Devices (Google Other) will keep a 10% growth rate for the next two years, then stabilize at 5% YoY by 2030. This is primarily due to the market saturation of smart phones. Smartphone penetration is nearing its peak, with Apple and

Samsung having a tight grip on 75% of the market¹⁸. Other Bets consist of Alphabet's experimental and emerging businesses. The historical growth averaged at around 20%, but we conservatively estimate a 15% YoY growth rate for the foreseeable future

We chose a relatively conservative 4% continuing value (CV) growth rate for NOPLAT. We felt this was realistic when you consider its commitment to innovation through significant investment in capital expenditures. This puts Alphabet in a position to stay ahead of the curve and continue to create new opportunities in the high-growth markets of AI and cloud computing. On top of that, the company's push into emerging markets through their 'Other Bets' segment opens the door to vast, untapped potential, where there is significant room to expand their reach and potential revenue. Alphabet's track record of innovation and its ability to grow in new markets make it reasonable to believe it can sustain growth slightly above the long-term inflation rate.

Expense Assumptions

The biggest expense that Alphabet faces is its cost of sales. This expense has historically been around 35-40% of revenue. For 2024, this percentage will almost certainly jump above 41% of sales from 39% in 2023, based on Q1-Q3 results. These costs are primarily comprised of traffic acquisition costs (TAC), which typically get paid to partners including browser providers, mobile carriers, original equipment manufacturers, and software developers. The other costs that make up cost of revenues are content acquisition costs (CAC), which are paid to content providers such as YouTube channels, and inventory of tangible products. In the 2023 10 – K²⁰, Alphabet said they expect this to go up as a percentage of sales. As it rises in 2024, we expect it to drop slightly back down to 39% in 2025 and slowly drop to 35% by 2030. This drop is primarily driven by the growth in cloud, which will be more profitable than Google, and as Alphabet matures in its business life cycle, we expect efficiency to increase.

Other operating revenues, aside from depreciation, including research and development, sales and marketing, and general administrative expenses. The main component of all these expense categories is labor. We expect these to remain relatively consistent with the 5-year historical average as a percentage of sales. We might see slight variability with different hiring cycles of Alphabet; however, they remain relatively consistent historically.

Capital Expenditures Assumption

Based on the most recent 10-Q provided by Alphabet Inc., we estimate that 2024 CapEx will be \$51 billion, with management saying they anticipate continued elevated spending as they invest in new technologies. While their CapEx spending surged by over 50% this year, we conservatively forecasted CapEx to grow every year by the rate of inflation, 2.5%.

WACC

Alphabet's WACC was calculated using the market weights and current capital structure. A risk-free rate was determined using the 10-year treasury bond yield as of valuation date, 11/18/24, and the equity risk premium was valued at 5% per recommendation of the fund manager. With a beta of 1.04, Alphabet's cost of equity comes out to 9.6% and the after-tax cost of debt is 3.7%. With nearly 99% of the capital structure being composed of equity, the estimated WACC equates to 9.53%. This number has a significant impact on the overall stock price due to it being used as the discount rate, and it is subject to change slightly as the company's capital structure and risk profile change.

Discounted Cash Flow and Economic Profit Model

Estimated Share Price: **\$185**

Our DCF and EP models give us a good projection of the true value of Alphabet. Considering there are no competitors to Alphabet with the same revenue streams, we believe this is an effective way to value the company by capturing the value of all future cash flows. Until recent data from Q3 results indicated a significant jump in CapEx spending, our models projected a higher estimated share price of around \$195. Accounting for new CapEx numbers, we get a price of \$185. Currently the stock trades at \$175.30, but a month ago it was trading around the \$165 range. Our model is highly volatile to the WACC, continuing value growth of NOPLAT, and the equity risk premium. This means any significant changes in capital structure, significant changes in operating margin, or changes in interest rates could alter our valuation.

Dividend Discount Model

Estimated Share Price: **\$189**

We believe that the dividend discount model, although outputting a relevant price, is not necessarily the most effective method to value the company. Alphabet has

only paid dividends for two quarters now, which makes it challenging to estimate how Alphabet will increase these dividends over the coming years. Therefore, we think it's too early yet to have a reliable dividend discount model.

Relative Valuation to Peers

Estimated Share Price: **\$195**

When looking at other technology companies and competitors of Alphabet – Apple, Microsoft, Amazon, Meta, IBM, Netflix, and Adobe – and using an average of their forward P/E ratios, we find that Alphabet has a relative valuation price of about \$195. This might be slightly high due to some of these technology companies trading at premium P/E multiples. While this may be a good ballpark estimate, we don't necessarily believe this valuation accounts for all the nuances of Alphabet's business and competitive advantages. If Alphabet cloud revenue continues to grow, then it could be more useful to use this method with companies like Amazon and Microsoft. For right now, it's not the best representation of the underlying value of the company.

Sensitivity Analysis

Beta vs. CV Growth of NOPLAT

Beta is an essential piece of the equation when calculating WACC and determining how risky investors should assume the stock to be, thus altering return expectations. The long-term growth rate of NOPLAT is an assumption that has a major impact on stock price, as we can see in the chart. This changes the continuing value, which makes up the majority value of our operating assets used in valuation models.

CV growth of NOPLAT	Beta							
	185.03	0.89	0.94	0.99	1.04	1.09	1.14	1.19
	2.5%	180.87	173.41	166.50	160.09	154.13	148.58	143.40
	3.0%	190.41	182.00	174.27	167.13	160.53	154.41	148.71
	3.5%	201.76	192.15	183.38	175.34	167.95	161.13	154.82
	4.0%	215.48	204.32	194.22	185.03	176.65	168.97	161.90
	4.5%	232.41	219.18	207.33	196.66	187.00	178.23	170.22
	5.0%	253.82	237.72	223.51	210.86	199.53	189.34	180.11
	5.5%	281.75	261.54	243.98	228.59	215.00	202.91	192.08

WACC vs. Dividend Yield

WACC is beneficial to test because as the cost of capital changes throughout the business's life, it can have a big impact on the price of the stock today. We wanted to test different dividend yields because Alphabet just started paying out dividends and we expect the dividend yield to increase in the future.

Dividend Yield	WACC (2023)							
	185.05	8.75%	9.00%	9.25%	9.5%	9.75%	10.00%	10.25%
	0.00%	219.02	207.03	196.20	185.64	177.43	169.25	161.74
	0.50%	218.14	206.20	195.41	184.89	176.72	168.57	161.08
	1.00%	217.26	205.36	194.62	184.14	176.00	167.89	160.43
	1.50%	216.37	204.53	193.83	183.39	175.29	167.20	159.78
	2.00%	215.49	203.69	193.04	182.64	174.57	166.52	159.13
	2.50%	214.61	202.86	192.25	181.89	173.86	165.84	158.48
	3.00%	213.72	202.02	191.46	181.14	173.14	165.15	157.82

Risk-Free Rate vs. Equity Risk Premium

Equity risk premium (ERP) and the risk-free rate are two related variables that affect the WACC. We wanted to see which one had greater impact on the price of the stock because the risk-free is always changing, and as the risk profile of the business changes it will alter the equity risk premium, too.

Equity Risk Premium	Risk-Free Rate							
	185.05	3.65%	3.90%	4.15%	4.40%	4.65%	4.90%	5.15%
	4.25%	259.31	243.52	229.48	216.92	205.62	195.40	186.11
	4.50%	242.93	228.95	216.45	205.19	195.01	185.76	177.31
	4.75%	228.43	215.98	204.77	194.62	185.40	176.99	169.28
	5.00%	215.50	204.34	194.24	185.05	176.67	168.99	161.92
	5.25%	203.92	193.85	184.70	176.35	168.69	161.65	155.16
	5.50%	193.47	184.35	176.03	168.40	161.38	154.91	148.91
	5.75%	184.01	175.71	168.11	161.11	154.66	148.68	143.14

Growth Rate of Cloud vs. Cost of Sales

Cost of sales is important for the bottom line, and it has changed slightly over the years as Google's revenue streams have adapted and grown. With Google Cloud specifically, this is their fastest growing revenue stream and the most unpredictable due to its high-growth and lack of historical data, as this market is still in its infancy.

Cost of Sales % (2023)	Growth Rate of Cloud (2025)							
	185.05	15%	20%	25%	30%	35%	40%	45%
	30%	179.49	182.02	184.55	187.08	189.61	192.14	194.67
	33%	178.82	181.35	183.87	186.40	188.92	191.45	193.97
	36%	178.15	180.67	183.19	185.71	188.24	190.76	193.28
	39%	177.48	179.99	182.51	185.03	187.55	190.07	192.58
	42%	176.81	179.32	181.83	184.35	186.86	189.38	191.89
	45%	176.13	178.64	181.15	183.66	186.17	188.68	191.19
	48%	175.46	177.97	180.47	182.98	185.49	187.99	190.50

Effective Tax Rate vs. Normal Cash Estimate

As the tax rate moves, it has a direct impact on the bottom line. With the change in political leadership this year, there might be potential changes to the marginal and effective tax rates applied to companies. Normal cash is measured to see how idle cash reflects the stock price when it's not reinvested.

Normal Cash Estimate	Effective Tax Rate							
	185.05	14.00%	15.00%	16.00%	17.00%	18.00%	19.00%	20.00%
	3.3%	195.15	192.49	189.82	187.16	184.49	181.83	179.16
	4.8%	194.45	191.78	189.12	186.45	183.79	181.12	178.46
	6.3%	193.74	191.08	188.41	185.75	183.08	180.42	177.75
	7.8%	193.04	190.38	187.71	185.04	182.38	179.71	177.05
	9.3%	192.34	189.67	187.01	184.34	181.68	179.01	176.35
	10.8%	191.63	188.97	186.30	183.64	180.97	178.31	175.64
	12.3%	190.93	188.26	185.60	182.93	180.27	177.60	174.94

Important Disclaimer

This report was created by students enrolled in the Applied Equity Valuation class at the University of Iowa. The report was originally created to offer an internal investment recommendation for the University of Iowa Krause Fund and its advisory board. The report also provides potential employers and other interested parties an example of the student's skills, knowledge, and abilities. Members of the Krause Fund are not registered investment advisors, brokers, or officially licensed financial professionals. The investment advice contained in this report does not represent an offer or solicitation to buy or sell any of the securities mentioned. Unless otherwise noted, facts and figures included in this report are from publicly available sources. This report is not a complete compilation of data, and its accuracy is not guaranteed. From time to time, the University of Iowa, its faculty, staff, students, or the Krause Fund may hold financial interest in the companies mentioned in this report.

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Alphabet

Revenue Decomposition

(In Millions)

Through Q3

Fiscal Years Ending Dec. 31	2021	2022	2023	2024 (YTD)	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E
Google Search	148,951	162,450	175,033	144,050	192,067	211,273	232,401	253,317	273,582	292,733	310,297	328,915	348,649	369,568
Growth Rate	43.1%	9.1%	7.7%	-	9.7%	10.0%	10.0%	9.0%	8.0%	7.0%	6.0%	6.0%	6.0%	6.0%
YouTube Ads	28,845	29,243	31,510	25,674	34,232	37,655	41,421	46,391	50,566	55,117	60,078	65,485	71,379	77,803
Growth Rate	45.9%	1.4%	7.8%	-	8.6%	10.0%	10.0%	12.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%
Google Network	31,701	32,780	31,312	22,405	29,873	32,686	35,764	39,132	42,816	46,848	51,259	56,086	61,367	67,145
Growth Rate	37.3%	3.4%	-4.5%	-	-4.6%	9.4%	9.4%	9.4%	9.4%	9.4%	9.4%	9.4%	9.4%	9.4%
Total Google Advertising	209,498	224,473	237,855	192,129	256,172	281,615	309,585	338,839	366,965	394,698	421,634	450,485	481,395	514,516
Growth Rate	42.6%	7.1%	6.0%		7.7%	9.9%	9.9%	9.4%	8.3%	7.6%	6.8%	6.8%	6.9%	6.9%
Subscription, Platform, & Devices	28,032	29,055	34,688	28,707	38,276	42,104	46,314	50,019	53,520	56,732	59,568	62,547	65,674	68,958
Growth Rate	29.1%	3.6%	19.4%		10.3%	10.0%	10.0%	8.0%	7.0%	6.0%	5.0%	5.0%	5.0%	5.0%
Total Google Services	237,530	253,528	272,543	220,836	294,448	323,718	355,899	388,859	420,485	451,430	481,202	513,032	547,069	583,474
Growth Rate	40.9%	6.7%	7.5%		8.0%	9.9%	9.9%	9.3%	8.1%	7.4%	6.6%	6.6%	6.6%	6.7%
Google Cloud	19,206	26,280	33,088	31,274	41,699	54,208	70,471	91,612	114,515	143,144	164,615	189,308	217,704	250,359
Growth Rate	47.1%	36.8%	25.9%		26.0%	30.0%	30.0%	30.0%	25.0%	25.0%	15.0%	15.0%	15.0%	15.0%
Other bets	753	1,068	1,527	1,248	1,664	1,914	2,201	2,531	2,910	3,347	3,849	4,426	5,090	5,854
Growth Rate	14.6%	41.8%	43.0%		9.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
Hedging (Gains / Losses)	149	1,960	236	-	-	-	-	-	-	-	-	-	-	-
Growth Rate	-15.3%	1215.4%	-88.0%		-	-	-	-	-	-	-	-	-	-
Total Revenues	257,639	282,837	307,395	253,549	337,811	379,840	428,571	483,001	537,910	597,920	649,666	706,766	769,863	839,687
Growth Rate	41.2%	9.8%	8.7%		9.9%	12.4%	12.8%	12.7%	11.4%	11.2%	8.7%	8.8%	8.9%	9.1%

Alphabet Inc.
Income Statement (in millions)

Fiscal Years Ending Dec. 31	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E
Revenues	\$ 66,001	\$ 74,989	\$ 90,272	\$ 110,855	\$ 136,819	\$ 161,857	\$ 182,527	\$ 257,637	\$ 282,836	\$ 307,394	\$ 337,811	\$ 379,840	\$ 428,571	\$ 483,001	\$ 537,910	\$ 597,920	\$ 649,666	\$ 706,766	\$ 769,863	\$ 839,687
Costs and Expenses																				
Cost of revenues	20,712	23,101	28,994	38,668	50,514	60,115	71,035	98,498	110,275	121,386	140,924	147,783	162,857	183,540	199,027	215,251	227,383	247,368	269,452	293,890
Depreciation and impairment of PP&E	3,523	4,132	5,267	6,103	8,164	10,856	12,905	11,555	15,287	11,946	17,465	21,826	25,786	29,401	32,720	35,787	38,637	41,305	43,818	46,202
Amortization and impairment of intangible assets	1,456	931	877	812	871	925	792	886	641	-	-	-	-	-	-	-	-	-	-	-
Research and development expense	9,832	12,282	13,948	16,625	21,419	26,018	27,573	31,562	39,500	45,427	48,280	56,806	64,094	72,235	80,446	89,421	97,160	105,699	115,136	125,578
Sales and marketing expense	8,131	9,047	10,485	12,893	16,333	18,464	17,946	22,912	26,567	27,917	27,260	35,325	39,857	44,919	50,026	55,607	60,419	65,729	71,597	78,091
General and administrative expense	5,851	6,136	6,985	9,608	13,197	11,248	11,052	13,510	15,724	16,425	13,044	22,145	24,986	28,160	31,361	34,860	37,877	41,206	44,884	48,955
European commission fees	-	-	-	2,736	5,071	1,697	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Costs and Expenses	49,505	55,629	66,556	84,709	110,498	127,626	141,303	178,923	207,994	223,101	246,973	283,886	317,581	358,255	393,580	430,925	461,476	501,307	544,887	592,716
Income from operations	16,496	19,360	23,716	\$ 26,146	\$ 26,321	\$ 34,231	\$ 41,224	\$ 78,714	\$ 74,842	\$ 84,293	\$ 90,838	\$ 95,954	\$ 110,990	\$ 124,746	\$ 144,330	\$ 166,995	\$ 188,190	\$ 205,458	\$ 224,975	\$ 246,970
Other income (expense), net	763	291	434	1,047	8,592	5,394	6,858	12,020	(3,514)	1,424	8,205	7,682	8,668	9,769	10,879	12,093	13,140	14,295	15,571	16,983
Income before income taxes	17,259	19,651	24,150	27,193	34,913	39,625	48,082	90,734	71,328	85,717	99,043	103,637	119,658	134,515	155,209	179,088	201,330	219,753	240,546	263,953
Provision for income taxes	3,331	3,303	4,672	14,531	4,177	5,282	7,813	14,701	11,356	11,922	18,653	17,618	20,342	22,868	26,386	30,445	34,226	37,358	40,893	44,872
Net Income	\$ 14,444	\$ 16,348	\$ 19,478	\$ 12,662	\$ 30,736	\$ 34,343	\$ 40,269	\$ 76,033	\$ 59,972	\$ 73,795	\$ 80,390	\$ 86,018	\$ 99,316	\$ 111,647	\$ 128,824	\$ 148,643	\$ 167,104	\$ 182,395	\$ 199,653	\$ 219,081
Additional Income Statement Information																				
Basic Earnings Per Share (EPS)	\$ 1.03	\$ 1.14	\$ 1.39	\$ 0.90	\$ 2.19	\$ 2.46	\$ 2.93	\$ 5.61	\$ 4.56	\$ 5.80	\$ 6.55	\$ 7.21	\$ 8.57	\$ 9.91	\$ 11.77	\$ 13.98	\$ 16.18	\$ 18.17	\$ 20.47	\$ 23.12
Total Shares Outstanding	13,603	13,747	13,826	13,896	13,911	13,767	13,504	13,242	12,849	12,460	12,105	11,761	11,426	11,101	10,785	10,479	10,181	9,892	9,611	9,338
Weighted Average Shares Outstanding	13,519	13,693	13,756	13,858	13,903	13,852	13,616	13,353	13,063	12,630	12,283	11,933	11,593	11,263	10,943	10,632	10,330	10,036	9,751	9,474
Annual Dividends Per Share	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 0.60	\$ 0.80	\$ 1.20	\$ 1.60	\$ 2.20	\$ 2.80	\$ 3.60	\$ 4.40	\$ 5.40	\$ 6.40

Alphabet Inc.
Balance Sheet (in millions)

Fiscal Years Ending Dec. 31	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E
Assets																				
Current Assets																				
Cash & Cash Equivalents	18,347	16,549	12,918	10,715	16,701	18,498	26,465	20,945	21,879	24,048	(6,827)	(28,290)	(43,709)	(51,622)	(57,236)	(45,906)	(31,042)	(12,715)	9,848	38,895
Marketable Securities	46,048	56,517	73,415	91,156	92,439	101,177	110,229	118,704	91,883	86,868	90,673	94,644	98,790	103,117	107,633	112,348	117,268	122,405	127,766	133,362
Total cash, cash equivalents, & marketable securities	\$ 64,395	\$ 73,066	\$ 86,333	\$ 101,871	\$ 109,140	\$ 119,675	\$ 136,694	\$ 139,649	\$ 113,762	\$ 110,916	83,846	66,355	55,081	51,495	50,397	66,441	86,226	109,689	137,615	172,257
Accounts receivable, net	9,383	11,556	14,137	18,336	20,838	25,326	30,930	39,304	40,258	47,964	52,274	58,778	66,318	74,741	83,238	92,524	100,531	109,367	119,131	129,936
Inventory	-	-	268	749	1,107	999	728	1,170	2,670	-	1,531	1,684	1,853	2,001	2,141	2,269	2,383	2,502	2,627	2,758
Other Current assets	-	-	-	2,983	4,236	4,412	5,490	7,054	8,105	12,650	13,204	13,782	14,386	15,016	15,674	16,360	17,077	17,825	18,606	19,421
Total current assets	\$ 80,685	\$ 90,114	\$ 105,408	\$ 124,308	\$ 135,676	\$ 152,578	\$ 174,296	\$ 188,143	\$ 164,795	\$ 171,530	150,855	140,599	137,638	143,253	151,450	177,595	206,217	239,383	277,978	324,372
Non-marketable securities	3,079	5,183	5,878	7,813	13,859	13,078	20,703	29,549	30,492	31,008	34,109	37,520	41,272	45,399	49,939	54,933	60,426	66,468	73,115	80,427
Deferred income taxes	176	251	383	680	737	721	1,084	1,284	5,261	12,169	13,316	14,400	15,651	17,057	18,680	20,552	22,657	24,955	27,469	30,229
Property & equipment, net	23,883	29,016	34,234	42,383	59,719	73,646	84,749	97,599	112,668	134,345	167,892	198,353	226,162	251,695	275,283	297,211	317,732	337,064	355,399	372,904
Operating lease assets	-	-	-	-	-	10,941	12,211	12,959	14,381	14,091	17,610	20,805	23,721	26,399	28,873	31,174	33,326	35,354	37,277	39,113
Intangible assets, net	4,607	3,847	3,307	2,692	2,220	1,979	1,445	1,417	2,084	-	-	-	-	-	-	-	-	-	-	-
Goodwill	15,599	15,869	16,468	16,747	17,888	20,624	21,175	22,956	28,960	29,198	29,198	29,198	29,198	29,198	29,198	29,198	29,198	29,198	29,198	29,198
Other non-current assets	-	-	-	2,672	2,693	2,342	3,953	5,361	6,623	10,051	10,491	10,951	11,430	11,931	12,454	12,999	13,568	14,163	14,783	15,431
Total assets	\$ 129,187	\$ 147,461	\$ 167,497	\$ 197,295	\$ 232,792	\$ 275,909	\$ 319,616	\$ 359,268	\$ 365,264	\$ 402,392	423,471	451,825	485,072	524,933	565,876	623,662	683,125	746,585	815,220	891,673
Liabilities and Stockholders' Equity																				
Current liabilities:																				
Accounts payable	1,715	1,931	2,041	3,137	4,378	5,561	5,589	6,037	5,128	7,493	8,971	10,087	11,381	12,826	14,285	15,878	17,252	18,769	20,444	22,298
Short-term debt	2,009	3,225	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Accrued compensation & benefits	3,069	3,539	3,976	4,581	6,839	8,495	11,086	13,889	14,028	15,140	16,723	18,803	21,215	23,910	26,628	29,599	32,160	34,987	38,110	41,567
Accrued expenses & other current liabilities	4,434	4,768	6,144	10,177	16,958	23,067	28,631	31,236	37,866	46,168	47,610	53,534	60,401	68,073	75,812	84,269	91,562	99,609	108,502	118,343
Accrued revenue share	1,952	2,329	2,942	3,975	4,592	5,916	7,500	8,996	8,370	8,876	11,272	12,818	14,578	16,498	18,282	20,347	21,944	23,356	25,297	27,866
Deferred revenue	752	788	1,099	1,432	1,784	1,908	2,543	3,288	3,908	4,137	4,443	4,996	5,636	6,352	7,074	7,864	8,544	9,295	10,125	11,043
Income taxes payable, net	96	302	554	881	69	274	1,485	808	-	-	522	489	551	621	692	769	836	909	991	1,080
Total current liabilities	\$ 16,805	\$ 19,310	\$ 16,756	\$ 24,183	\$ 34,620	\$ 45,221	\$ 56,834	\$ 64,254	\$ 69,300	\$ 81,814	89,540	100,726	113,764	128,281	142,773	158,726	172,299	186,926	203,470	222,198
Long-term debt	3,228	1,995	3,935	3,969	4,012	4,554	13,932	14,817	14,701	13,253	12,354	14,252	16,075	17,833	19,509	21,152	22,681	24,199	25,722	27,264
Deferred revenue, non-current	104	151	202	340	396	358	481	535	599	911	804	904	1,020	1,149	1,280	1,423	1,546	1,682	1,832	1,998
Income taxes payable, net, non-current	3,407	3,663	4,677	12,812	11,327	9,885	8,849	9,176	9,258	8,474	8,050	7,648	7,265	6,902	6,557	6,229	5,918	5,622	5,341	5,074
Deferred income taxes	1,971	189	226	430	1,264	1,701	3,561	5,257	514	485	560	2,643	3,051	4,574	792	3,044	3,423	3,736	4,089	4,487
Operating lease liabilities	-	-	-	-	-	10,214	11,146	11,389	12,501	12,460	15,835	18,708	21,330	23,738	25,963	28,031	29,967	31,790	33,519	35,170
Other long-term liabilities	1,118	1,822	2,665	3,059	3,545	2,534	2,269	2,205	2,247	1,616	2,023	1,962	1,867	1,950	1,926	1,915	1,930	1,924	1,923	1,926
Total liabilities	\$ 26,633	\$ 27,130	\$ 28,461	\$ 44,793	\$ 55,164	\$ 74,467	\$ 97,072	\$ 107,633	\$ 109,120	\$ 119,013	129,165	146,841	164,372	184,427	198,800	220,520	237,763	255,877	275,895	298,117
Stockholders' Equity																				
Preferred stock	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Class A, class B, & class C stock & additional paid in capital	28,767	32,982	36,307	40,247	45,049	50,552	58,510	61,774	68,184	76,534	76,534	76,534	76,534	76,534	76,534	76,534	76,534	76,534	76,534	76,534
Accumulated other comprehensive income (loss)	27	(1,874)	(2,402)	(992)	(2,306)	(1,232)	633	(1,623)	(7,603)	(4,402)	(4,402)	(4,402)	(4,402)	(4,402)	(4,402)	(4,402)	(4,402)	(4,402)	(4,402)	(4,402)
Retained earnings	75,706	89,223	105,131	113,247	134,885	152,122	163,401	191,484	195,563	211,247	222,174	232,852	248,569	268,374	294,944	331,009	373,230	418,575	467,192	521,424
Total stockholders' equity	\$ 104,500	\$ 120,331	\$ 139,036	\$ 152,502	\$ 177,628	\$ 201,442	\$ 222,544	\$ 251,635	\$ 256,144	\$ 283,379	294,306	304,984	320,701	340,506	367,076	403,141	445,362	490,707	539,324	593,556
Total liabilities and stockholders' equity	\$ 131,133	\$ 147,461	\$ 167,497	\$ 197,295	\$ 232,792	\$ 275,909	\$ 319,616	\$ 359,268	\$ 365,264	\$ 402,392	423,471	451,825	485,072	524,933	565,876	623,662	\$ 683,125	\$ 746,585	\$ 815,220	\$ 891,673

Alphabet Inc.
Historical Cash Flow Statement (in millions)

Fiscal Years Ending Dec. 31	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Operating activities										
Net income	\$ 14,444	\$ 16,348	\$ 19,478	\$ 12,662	\$ 30,736	\$ 34,343	\$ 40,269	\$ 76,033	\$ 59,972	\$ 73,795
Adjustments:										
Depreciation & impairment of property & equipment	3,523	4,132	5,267	6,103	8,164	10,856	12,905	11,555	15,287	11,946
Amortization & impairment of property of intangible assets	1,456	931	877	812	871	925	792	886	641	-
Stock-based compensation expense	4,279	5,203	6,703	7,679	9,353	10,794	12,991	15,376	19,362	22,460
Deferred income taxes	(104)	(179)	(38)	258	778	173	1,390	1,808	(8,081)	(7,763)
(Gain) loss on debt & equity securities, net	(1,025)	334	275	194	(6,650)	(2,798)	(6,317)	(12,270)	5,519	823
Other	87	212	174	137	(189)	(592)	1,267	(213)	1,030	4,330
Changes in assets and liabilities, net of effects of acquisitions:										
Accounts receivable, net	(1,641)	(2,094)	(2,578)	(3,768)	(2,169)	(4,340)	(6,524)	(9,095)	(2,317)	(7,833)
Income taxes, net	283	(179)	3,125	8,211	(2,251)	(3,128)	1,209	(625)	584	523
Other assets	-	-	-	(2,164)	(1,207)	(621)	(1,330)	(1,846)	(5,046)	(2,143)
Accounts payable	436	203	110	731	1,067	428	694	283	707	664
Accrued expenses & other liabilities	757	1,597	1,515	4,891	8,614	7,170	5,504	7,304	3,915	3,937
Accrued revenue share	245	339	593	955	483	1,273	1,639	1,682	(445)	482
Deferred revenue	(175)	43	223	390	371	37	635	774	367	525
Net cash flows provided by operating activities	\$ 22,376	\$ 26,024	\$ 36,036	\$ 37,091	\$ 47,971	\$ 54,520	\$ 65,124	\$ 91,652	\$ 91,495	\$ 101,746
Investing activities										
Purchases of property & equipment	(10,959)	(9,915)	(10,212)	(13,184)	(25,139)	(23,548)	(22,281)	(24,640)	(31,485)	(32,251)
Purchases of marketable securities	(56,310)	(74,368)	(84,509)	(92,195)	(50,158)	(100,315)	(136,576)	(135,196)	(78,874)	(77,858)
Maturities & sales of marketable securities	51,315	62,905	66,895	73,959	48,507	97,825	132,906	128,294	97,822	947
Purchases of non-marketable securities	(1,227)	(2,172)	(1,109)	(1,745)	(2,073)	(1,932)	(7,175)	(2,838)	(2,531)	(3,027)
Maturities & sales of non-marketable securities	-	-	494	533	1,752	405	1,023	934	150	86,672
Acquisitions, net of cash acquired, & purchase of intangible assets	-	(236)	(986)	(287)	(1,491)	(2,515)	(738)	(2,618)	(6,969)	(495)
Other investing activities	-	-	-	-	-	589	68	541	1,589	(1,051)
Net cash flows used in investing activities	\$ (21,055)	\$ (23,711)	\$ (31,165)	\$ (31,401)	\$ (28,504)	\$ (29,491)	\$ (32,773)	\$ (35,523)	\$ (20,298)	\$ (27,063)
Financing activities										
Net proceeds (payments) related to stock-based award activities	(2,069)	(2,375)	(3,304)	(4,166)	(4,993)	(4,765)	(5,720)	(10,162)	(9,300)	(9,837)
Repurchases of stock	-	(1,780)	(3,693)	(4,846)	(9,075)	(18,396)	(31,149)	(50,274)	(59,296)	(61,504)
Proceeds from issuance of debt, net of costs	11,625	13,705	8,729	4,291	6,766	317	11,761	20,199	52,872	10,790
Repayments of debt	(11,643)	(13,728)	(10,064)	(4,377)	(6,827)	(585)	(2,100)	(21,435)	(54,068)	(11,550)
Proceeds from sale of interest in consolidated entities, net	-	-	-	800	950	220	2,800	310	35	8
Net cash flows used in financing activities	\$ (1,439)	\$ (3,677)	\$ (8,332)	\$ (8,298)	\$ (13,179)	\$ (23,209)	\$ (24,408)	\$ (61,362)	\$ (69,757)	\$ (72,093)
Effect of exchange rate changes on cash & cash equivalents	(433)	(434)	(170)	405	(302)	(23)	24	(287)	(506)	(421)
Net increase (decrease) in cash & cash equivalents	(551)	(1,798)	(3,631)	(2,203)	5,986	1,797	7,967	(5,520)	934	2,169
Cash & cash equivalents at beginning of period	18,898	18,347	16,549	12,918	10,715	16,701	18,498	26,465	20,945	21,879
Cash & cash equivalents at end of period	\$ 18,347	\$ 16,549	\$ 12,918	\$ 10,715	\$ 16,701	\$ 18,498	\$ 26,465	\$ 20,945	\$ 21,879	\$ 24,048

Alphabet Inc.
Forecasted Cash Flow Statement (in millions)

Fiscal Years Ending Dec. 31	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E
Operating activities										
Net Income	\$ 80,390	\$ 86,018	\$ 99,316	\$ 111,647	\$ 128,824	\$ 148,643	\$ 167,104	\$ 182,395	\$ 199,653	\$ 219,081
Adjustments:										
Depreciation & impairment of property & equipment	17,465	21,826	25,786	29,401	32,720	35,787	38,637	41,305	43,818	46,202
Amortization & impairment of intangibles	-	-	-	-	-	-	-	-	-	-
Change in deferred income taxes	(1,073)	1,000	(842)	116	(5,405)	381	(1,727)	(1,984)	(2,161)	(2,362)
Changes in working capital accounts:										
Change in accounts receivable	(4,310)	(6,504)	(7,541)	(8,423)	(8,497)	(9,286)	(8,007)	(8,836)	(9,764)	(10,805)
Change in inventory	(1,531)	(153)	(168)	(148)	(140)	(128)	(113)	(119)	(125)	(131)
Change in other current assets	(554)	(578)	(604)	(630)	(658)	(687)	(717)	(748)	(781)	(815)
Change in accounts payable	1,478	1,116	1,294	1,445	1,458	1,594	1,374	1,516	1,676	1,854
Change in accrued compensation	1,583	2,081	2,412	2,694	2,718	2,971	2,562	2,827	3,123	3,456
Change in accrued expenses & other liabilities	1,442	5,924	6,868	7,671	7,739	8,458	7,293	8,047	8,893	9,841
Change in accrued revenue	2,396	1,546	1,760	1,920	1,784	2,065	1,597	1,412	1,941	2,569
Change in deferred revenue	306	553	641	716	722	789	681	751	830	918
Change in income taxes payable	522	(33)	63	70	71	77	67	73	81	90
Change in deferred revenue, non-current	(107)	100	116	130	131	143	123	136	150	166
Change in income taxes, non-current	(424)	(403)	(382)	(363)	(345)	(328)	(311)	(296)	(281)	(267)
Net cash flows provided by operating activities	\$ 97,582	\$ 112,492	\$ 128,718	\$ 146,247	\$ 161,122	\$ 190,477	\$ 208,561	\$ 226,479	\$ 247,053	\$ 269,798
Investing activities										
Capital expenditures	(51,012)	(52,287)	(53,594)	(54,934)	(56,308)	(57,715)	(59,158)	(60,637)	(62,153)	(63,707)
Change in non-marketable securities	(3,101)	(3,411)	(3,752)	(4,127)	(4,540)	(4,994)	(5,493)	(6,043)	(6,647)	(7,312)
Change in other non-current assets	(440)	(460)	(480)	(501)	(523)	(545)	(569)	(594)	(620)	(647)
Change in marketable securities	(3,805)	(3,971)	(4,145)	(4,327)	(4,517)	(4,714)	(4,921)	(5,136)	(5,361)	(5,596)
Change in operating lease assets	(3,519)	(3,195)	(2,917)	(2,678)	(2,474)	(2,300)	(2,152)	(2,028)	(1,923)	(1,836)
Change in goodwill	-	-	-	-	-	-	-	-	-	-
Net cash flows used for investing activities	(61,877)	(63,324)	(64,888)	(66,567)	(68,361)	(70,269)	(72,294)	(74,438)	(76,705)	(79,098)
Financing activities										
Change in long-term debt	(899)	1,897	1,823	1,758	1,677	1,643	1,528	1,518	1,523	1,542
Change in operating lease liabilities	3,375	2,873	2,623	2,408	2,225	2,068	1,935	1,823	1,729	1,651
Change in other non-current liabilities	407	(61)	(95)	84	(24)	(12)	16	(7)	(1)	3
Change in common stock	-	-	-	-	-	-	-	-	-	-
Share repurchases	(62,200)	(65,932)	(69,888)	(74,081)	(78,526)	(83,238)	(88,232)	(93,526)	(99,137)	(105,086)
Dividends	(7,263)	(9,408)	(13,711)	(17,761)	(23,727)	(29,340)	(36,651)	(43,523)	(51,899)	(59,764)
Net cash flows provided by financing activities	(66,580)	(70,631)	(79,248)	(87,593)	(98,376)	(108,878)	(121,403)	(133,714)	(147,785)	(161,653)
Net increase (decrease) in cash & cash equivalents	(30,875)	(21,463)	(15,419)	(7,913)	(5,615)	11,330	14,864	18,327	22,564	29,046
Cash & cash equivalents at beginning of period	24,048	(6,827)	(28,290)	(43,709)	(51,622)	(57,236)	(45,906)	(31,042)	(12,715)	9,848
Cash & cash equivalents at end of period	(6,827)	(28,290)	(43,709)	(51,622)	(57,236)	(45,906)	(31,042)	(12,715)	9,848	38,895

Alphabet Inc.
Common Size Income Statement

<i>Fiscal Years Ending Dec. 31</i>	2019	2020	2021	2022	2023	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
Revenues	\$ 161,857	\$ 182,527	\$ 257,637	\$ 282,836	\$ 307,394	\$ 337,811	\$ 379,840	\$ 428,571	\$ 483,001	\$ 537,910	\$ 597,920	\$ 649,666	\$ 706,766	\$ 769,863
Revenues	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Costs and Expenses:														
Cost of revenues	37.14%	38.92%	38.23%	38.99%	39.49%	41.72%	38.91%	38.00%	38.00%	37.00%	36.00%	35.00%	35.00%	35.00%
Depreciation and impairment of PP&E	6.71%	7.07%	4.48%	5.40%	3.89%	5.17%	5.75%	6.02%	6.09%	6.08%	5.99%	5.95%	5.84%	5.69%
Amortization and impairment of intangible assets	0.57%	0.43%	0.34%	0.23%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Research and development expense	16.07%	15.11%	12.25%	13.97%	14.78%	14.29%	14.96%	14.96%	14.96%	14.96%	14.96%	14.96%	14.96%	14.96%
Sales and marketing expense	11.41%	9.83%	8.89%	9.39%	9.08%	8.07%	9.30%	9.30%	9.30%	9.30%	9.30%	9.30%	9.30%	9.30%
General and administrative expense	6.95%	6.05%	5.24%	5.56%	5.34%	3.86%	5.83%	5.83%	5.83%	5.83%	5.83%	5.83%	5.83%	5.83%
European commission fees	1.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total Costs and Expenses	78.85%	77.41%	69.45%	73.54%	72.58%	73.11%	74.74%	74.10%	74.17%	73.17%	72.07%	71.03%	70.93%	70.78%
Income from operations	21.15%	22.59%	30.55%	26.46%	27.42%	26.89%	25.26%	25.90%	25.83%	26.83%	27.93%	28.97%	29.07%	29.22%
Other income (expense), net	3.33%	3.76%	4.67%	-1.24%	0.46%	2.43%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%	2.02%
Income before income taxes	24.48%	26.34%	35.22%	25.22%	27.89%	29.32%	27.28%	27.92%	27.85%	28.85%	29.95%	30.99%	31.09%	31.25%
Provision for income taxes	3.26%	4.28%	5.71%	4.02%	3.88%	5.52%	4.64%	4.75%	4.73%	4.91%	5.09%	5.27%	5.29%	5.31%
Net Income	21.22%	22.06%	29.51%	21.20%	24.01%	23.80%	22.65%	23.17%	23.12%	23.95%	24.86%	25.72%	25.81%	25.93%

Alphabet Inc.
Common Size Balance Sheet

Fiscal Years Ending Dec. 31	2019	2020	2021	2022	2023	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E
Revenues	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Assets															
Current Assets															
Cash & Cash Equivalents	11.4%	14.5%	8.1%	7.7%	7.8%	-2.0%	-7.4%	-10.2%	-10.7%	-10.6%	-7.7%	-4.8%	-1.8%	1.3%	4.6%
Marketable Securities	62.5%	60.4%	46.1%	32.5%	28.3%	26.8%	24.9%	23.1%	21.3%	20.0%	18.8%	18.1%	17.3%	16.6%	15.9%
Total cash, equivalents, & marketable securities	73.9%	74.9%	54.2%	40.2%	36.1%	24.8%	17.5%	12.9%	10.7%	9.4%	11.1%	13.3%	15.5%	17.9%	20.5%
Accounts receivable, net	15.6%	16.9%	15.3%	14.2%	15.6%	15.5%	15.5%	15.5%	15.5%	15.5%	15.5%	15.5%	15.5%	15.5%	15.5%
Inventory	0.6%	0.4%	0.5%	0.9%	0.0%	0.5%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.3%	0.3%
Other Current assets	2.7%	3.0%	2.7%	2.9%	4.1%	3.9%	3.6%	3.4%	3.1%	2.9%	2.7%	2.6%	2.5%	2.4%	2.3%
Total current assets	94.3%	95.5%	73.0%	58.3%	55.8%	44.7%	37.0%	32.1%	29.7%	28.2%	29.7%	31.7%	33.9%	36.1%	38.6%
Non-marketable securities	8.1%	11.3%	11.5%	10.8%	10.1%	10.1%	9.9%	9.6%	9.4%	9.3%	9.2%	9.3%	9.4%	9.5%	9.6%
Deferred income taxes	0.4%	0.6%	0.5%	1.9%	4.0%	3.9%	3.8%	3.7%	3.5%	3.5%	3.4%	3.5%	3.5%	3.6%	3.6%
Property & equipment, net	45.5%	46.4%	37.9%	39.8%	43.7%	49.7%	52.2%	52.8%	52.1%	51.2%	49.7%	48.9%	47.7%	46.2%	44.4%
Operating lease assets	6.8%	6.7%	5.0%	5.1%	4.6%	5.2%	5.5%	5.5%	5.5%	5.4%	5.2%	5.1%	5.0%	4.8%	4.7%
Intangible assets, net	1.2%	0.8%	0.5%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Goodwill	12.7%	11.6%	8.9%	10.2%	9.5%	8.6%	7.7%	6.8%	6.0%	5.4%	4.9%	4.5%	4.1%	3.8%	3.5%
Other non-current assets	1.4%	2.2%	2.1%	2.3%	3.3%	3.1%	2.9%	2.7%	2.5%	2.3%	2.2%	2.1%	2.0%	1.9%	1.8%
Total assets	170.5%	175.1%	139.4%	129.1%	130.9%	125.4%	119.0%	113.2%	108.7%	105.2%	104.3%	105.2%	105.6%	105.9%	106.2%
Liabilities and Stockholders' Equity						0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Current liabilities:						0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accounts payable	3.4%	3.1%	2.3%	1.8%	2.4%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%
Short-term debt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accrued compensation & benefits	5.2%	6.1%	5.4%	5.0%	4.9%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Accrued expenses & other current liabilities	14.3%	15.7%	12.1%	13.4%	15.0%	14.1%	14.1%	14.1%	14.1%	14.1%	14.1%	14.1%	14.1%	14.1%	14.1%
Accrued revenue share	3.7%	4.1%	3.5%	3.0%	2.9%	3.3%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.3%	3.3%	3.3%
Deferred revenue	1.2%	1.4%	1.3%	1.4%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%
Income taxes payable, net	0.2%	0.8%	0.3%	0.0%	0.0%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Total current liabilities	27.9%	31.1%	24.9%	24.5%	26.6%	26.5%	26.5%	26.5%	26.6%	26.5%	26.5%	26.5%	26.4%	26.4%	26.5%
Long-term debt	2.8%	7.6%	5.8%	5.2%	4.3%	3.7%	3.8%	3.8%	3.7%	3.6%	3.5%	3.5%	3.4%	3.3%	3.2%
Deferred revenue, non-current	0.2%	0.3%	0.2%	0.2%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Income taxes payable, net, non-current	6.1%	4.8%	3.6%	3.3%	2.8%	2.4%	2.0%	1.7%	1.4%	1.2%	1.0%	0.9%	0.8%	0.7%	0.6%
Deferred income taxes	1.1%	2.0%	2.0%	0.2%	0.2%	0.2%	0.7%	0.7%	0.9%	0.1%	0.5%	0.5%	0.5%	0.5%	0.5%
Operating lease liabilities	6.3%	6.1%	4.4%	4.4%	4.1%	4.7%	4.9%	5.0%	4.9%	4.8%	4.7%	4.6%	4.5%	4.4%	4.2%
Other long-term liabilities	1.6%	1.2%	0.9%	0.8%	0.5%	0.6%	0.5%	0.4%	0.4%	0.4%	0.3%	0.3%	0.3%	0.2%	0.2%
Total liabilities	46.0%	53.2%	41.8%	38.6%	38.7%	38.2%	38.7%	38.4%	38.2%	37.0%	36.9%	36.6%	36.2%	35.8%	35.5%
Stockholders' Equity						0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Preferred stock	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Class A, class B, & class C stock & additional paid in capital	31.2%	32.1%	24.0%	24.1%	24.9%	22.7%	20.1%	17.9%	15.8%	14.2%	12.8%	11.8%	10.8%	9.9%	9.1%
Accumulated other comprehensive income (loss)	-0.8%	0.3%	-0.6%	-2.7%	-1.4%	-1.3%	-1.2%	-1.0%	-0.9%	-0.8%	-0.7%	-0.7%	-0.6%	-0.6%	-0.5%
Retained earnings	94.0%	89.5%	74.3%	69.1%	68.7%	65.8%	61.3%	58.0%	55.6%	54.8%	55.4%	57.4%	59.2%	60.7%	62.1%
Total stockholders' equity	124.5%	121.9%	97.7%	90.6%	92.2%	87.1%	80.3%	74.8%	70.5%	68.2%	67.4%	68.6%	69.4%	70.1%	70.7%
Total liabilities and stockholders' equity	170.5%	175.1%	139.4%	129.1%	130.9%	125.4%	119.0%	113.2%	108.7%	105.2%	104.3%	105.2%	105.6%	105.9%	106.2%

Fiscal Years Ending Dec. 31	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E
NOPLAT:																				
Revenues	\$ 66,001	\$ 74,989	\$ 90,272	\$ 110,855	\$ 136,819	\$ 161,857	\$ 182,527	\$ 257,637	\$ 282,836	\$ 307,394	\$ 337,811	\$ 379,840	\$ 428,571	\$ 483,001	\$ 537,910	\$ 597,920	\$ 649,666	\$ 706,766	\$ 769,863	\$ 839,687
Operating expenses:																				
(-) Cost of revenues	20,712	23,101	28,994	38,668	50,514	60,115	71,035	98,498	110,275	121,386	140,924	147,783	162,857	183,540	199,027	215,251	227,383	247,368	269,452	293,890
(-) Depreciation and impairment of PP&E	3,523	4,132	5,267	6,103	8,164	10,856	12,905	11,555	15,287	11,946	17,465	21,826	25,786	29,401	32,720	35,787	38,637	41,305	43,818	46,202
(-) Amortization and impairment of intangible assets	1,456	931	877	812	871	925	792	886	641	-	-	-	-	-	-	-	-	-	-	-
(-) Research and development	9,832	12,882	13,948	16,625	21,419	26,018	27,573	31,562	39,500	45,427	48,280	56,806	64,094	72,235	80,446	89,421	97,160	105,699	115,136	125,578
(-) Sales and marketing	8,131	9,047	10,485	12,893	16,333	18,464	22,912	26,567	27,917	27,917	27,260	35,325	39,857	44,919	50,026	55,607	60,419	65,729	71,597	78,091
(-) General and administrative	5,851	6,136	6,985	9,608	13,197	11,248	11,052	13,510	15,724	16,425	13,044	22,145	24,986	28,160	31,361	34,860	37,877	41,206	44,884	48,955
(+) Implied interest on operating leases	-	-	-	-	-	-	407	455	483	535	525	656	775	883	983	1,075	1,161	1,241	1,316	1,388
EBITA	\$ 16,496	\$ 19,360	\$ 23,716	\$ 26,146	\$ 26,321	\$ 34,231	\$ 41,631	\$ 79,169	\$ 75,325	\$ 84,828	\$ 91,363	\$ 96,610	\$ 111,765	\$ 125,629	\$ 145,313	\$ 168,070	\$ 189,351	\$ 206,699	\$ 226,291	\$ 248,358
Provision for tax expense	3,331	3,303	4,672	14,531	4,177	5,282	7,813	14,701	11,356	11,922	18,653	17,618	20,342	22,868	26,386	30,445	34,226	37,358	40,893	44,872
(+) Tax on implied interest on operating leases	-	-	-	-	-	-	88	98	105	116	114	142	168	191	213	233	251	269	285	301
(+) Tax on European commission fines	-	-	-	569	822	292	-	-	-	-	0	0	0	0	0	0	0	0	0	0
(-) Tax on other income	165	63	94	227	1,861	1,168	1,485	2,604	(761)	308	1,777	1,664	1,877	2,116	2,356	2,619	2,846	3,096	3,373	3,679
Total Adjusted Taxes	\$ 3,166	\$ 3,240	\$ 4,578	\$ 14,873	\$ 3,137	\$ 4,406	\$ 6,416	\$ 12,196	\$ 12,222	\$ 11,730	\$ 16,990	\$ 16,096	\$ 18,632	\$ 20,943	\$ 24,242	\$ 28,058	\$ 31,631	\$ 34,531	\$ 37,805	\$ 41,494
Change in deferred taxes	(104)	(179)	(38)	258	778	173	1,390	1,808	(8,081)	(7,763)	(1,073)	1,000	(842)	116	(5,405)	381	(1,727)	(1,984)	(2,161)	(2,362)
EBITA	16,496	19,360	23,716	26,146	26,321	34,231	41,631	79,169	75,325	84,828	91,363	96,610	111,765	125,629	145,313	168,070	189,351	206,699	226,291	248,358
Less adjusted taxes	3,166	3,240	4,578	14,873	3,137	4,406	6,416	12,196	12,222	11,730	16,990	16,096	18,632	20,943	24,242	28,058	31,631	34,531	37,805	41,494
Change in deferred taxes	(104)	(179)	(38)	258	778	173	1,390	1,808	(8,081)	(7,763)	(1,073)	1,000	(842)	116	(5,405)	381	(1,727)	(1,984)	(2,161)	(2,362)
NOPLAT	\$ 13,226	\$ 15,941	\$ 19,100	\$ 11,531	\$ 23,962	\$ 29,998	\$ 36,606	\$ 68,781	\$ 55,022	\$ 65,336	\$ 73,300	\$ 81,513	\$ 92,290	\$ 104,802	\$ 115,666	\$ 140,392	\$ 155,993	\$ 170,184	\$ 186,325	\$ 204,502
Invested capital (IC):																				
Operating current assets:																				
Normal cash (7.74%)	5,106	5,801	6,983	8,575	10,584	12,521	14,120	19,930	21,879	23,779	26,132	29,383	33,152	37,363	41,610	46,253	50,255	54,672	59,553	64,955
Accounts receivable	9,383	11,556	14,137	18,336	20,838	25,326	30,930	39,304	40,258	47,964	52,274	58,778	66,318	74,741	83,238	92,524	100,531	109,367	119,131	129,936
Inventory	-	-	268	749	1,107	999	728	1,170	2,670	-	1,531	1,684	1,853	2,001	2,141	2,269	2,383	2,502	2,627	2,758
Other current assets	-	-	-	2,983	4,236	4,412	5,490	7,054	8,105	12,650	13,204	13,782	14,386	15,016	15,674	16,360	17,077	17,825	18,606	19,421
Total operating current assets	\$ 14,489	\$ 17,357	\$ 21,388	\$ 30,643	\$ 36,765	\$ 43,258	\$ 51,268	\$ 67,458	\$ 72,912	\$ 84,393	\$ 93,141	\$ 103,627	\$ 115,710	\$ 129,121	\$ 142,663	\$ 157,406	\$ 170,247	\$ 184,366	\$ 199,917	\$ 217,069
Operating current liabilities:																				
Accounts payable	1,715	1,931	2,041	3,137	4,378	5,561	5,589	6,037	5,128	7,493	8,971	10,087	11,381	12,826	14,285	15,878	17,252	18,769	20,444	22,298
Accrued compensation benefits	3,069	3,539	3,976	4,581	6,839	8,495	11,086	13,889	14,028	15,140	16,723	18,803	21,215	23,910	26,628	29,599	32,160	34,987	38,110	41,567
Accrued expenses and other current liabilities	4,434	4,768	6,144	10,177	16,958	23,067	28,631	31,236	37,866	46,168	47,610	53,534	60,401	68,073	75,812	84,269	91,562	99,609	108,502	118,343
Accrued revenue share	1,952	2,329	2,942	3,975	4,592	5,916	7,500	8,996	8,370	8,876	11,272	12,818	14,578	16,498	18,282	20,347	21,944	23,356	25,297	27,866
Deferred revenue	752	788	1,099	1,432	1,784	1,908	2,543	3,288	3,908	4,137	4,443	4,996	5,636	6,352	7,074	7,864	8,544	9,295	10,125	11,043
Income taxes payable, net	96	302	554	881	69	274	1,485	808	-	-	522	489	551	621	692	769	836	909	991	1,080
Total operating current liabilities	\$ 12,018	\$ 13,657	\$ 16,756	\$ 24,183	\$ 34,620	\$ 45,221	\$ 56,834	\$ 64,254	\$ 69,300	\$ 81,814	\$ 89,540	\$ 100,726	\$ 113,764	\$ 128,281	\$ 142,773	\$ 158,726	\$ 172,299	\$ 186,926	\$ 203,470	\$ 222,198
Total net operating working capital	\$ 2,471	\$ 3,700	\$ 4,632	\$ 6,460	\$ 2,145	\$ (1,963)	\$ (5,566)	\$ 3,204	\$ 3,612	\$ 2,579	\$ 3,601	\$ 2,901	\$ 1,946	\$ 840	\$ (110)	\$ (1,320)	\$ (2,052)	\$ (2,559)	\$ (3,552)	\$ (5,128)
(+) Net property plant & equipment	23,883	29,016	34,234	42,383	59,719	73,646	84,749	97,599	112,668	134,345	167,892	198,353	226,162	251,695	275,283	297,211	317,732	337,064	355,399	372,904
(+) Net other operating assets	-	-	-	-	-	10,941	12,211	12,959	14,381	14,091	17,610	20,805	23,721	26,399	28,873	31,174	33,326	35,354	37,277	39,113
Operating lease assets	4,607	3,847	3,307	2,692	2,220	1,979	1,445	1,417	2,084	-	-	-	-	-	-	-	-	-	-	-
Intangible assets, net	-	-	-	2,672	2,693	2,342	3,953	5,361	6,623	10,051	10,491	10,951	11,430	11,931	12,454	12,999	13,568	14,163	14,783	15,431
(-) Other operating liabilities	104	151	202	340	396	358	481	535	599	911	804	904	1,020	1,149	1,280	1,423	1,546	1,682	1,832	1,998
Deferred revenue, non-current	3,407	3,663	4,677	12,812	11,327	9,885	8,849	9,176	9,258	8,474	8,050	7,648	7,265	6,902	6,557	6,229	5,918	5,622	5,341	5,074
Income taxes payable, non-current	22,843	28,902	33,987	38,363	52,834	74,723	86,017	109,412	127,427	151,681	190,740	224,458	254,975	282,815	308,663	332,412	355,111	376,718	396,734	415,247
Invested capital (IC)	\$ 22,843	\$ 28,902	\$ 33,987	\$ 38,363	\$ 52,834	\$ 74,723	\$ 86,017	\$ 109,412	\$ 127,427	\$ 151,681	\$ 190,740	\$ 224,458	\$ 254,975	\$ 282,815	\$ 308,663	\$ 332,412	\$ 355,111	\$ 376,718	\$ 396,734	\$ 415,247
Free Cash Flow (FCF):																				
NOPLAT	\$ 13,226	\$ 15,941	\$ 19,100	\$ 11,531	\$ 23,962	\$ 29,998	\$ 36,606	\$ 68,781	\$ 55,022	\$ 65,336	\$ 73,300	\$ 81,513	\$ 92,290	\$ 104,802	\$ 115,666	\$ 140,392	\$ 155,993	\$ 170,184	\$ 186,325	\$ 204,502
Change in IC	x	\$ 6,059	\$ 5,085	\$ 4,376	\$ 14,470	\$ 21,889	\$ 11,294	\$ 23,395	\$ 18,015	\$ 24,254	\$ 39,059	\$ 33,719	\$ 30,516	\$ 27,840	\$ 25,849	\$ 23,749	\$ 22,698	\$ 21,607	\$ 20,016	\$ 18,514
FCF	\$ 9,882	\$ 14,015	\$ 7,154	\$ 9,491	\$ 8,110	\$ 25,312	\$ 45,386	\$ 37,007	\$ 41,082	\$ 34,241	\$ 47,795	\$ 61,774	\$ 76,962	\$ 89,818	\$ 116,643	\$ 133,294	\$ 148,577	\$ 166,309	\$ 185,989	\$ 185,989
Return on Invested Capital (ROIC):																				
NOPLAT	\$ 13,226	\$ 15,941	\$ 19,100	\$ 11,531	\$ 23,962	\$ 29,998	\$ 36,606	\$ 68,781	\$ 55,022	\$ 65,336	\$ 73,300	\$ 81,513	\$ 92,290	\$ 104,802	\$ 115,666	\$ 140,392	\$ 155,993	\$ 170,184	\$ 186,325	\$ 204,502
Beginning IC	x	\$ 22,843	\$ 28,902	\$ 33,987	\$ 38,363	\$ 52,834	\$ 74,723	\$ 86,017	\$ 109,412	\$ 127,427	\$ 151,681	\$ 190,740	\$ 224,458	\$ 254,975	\$ 282,815	\$ 308,663	\$ 332,412	\$ 355,111	\$ 376,718	\$ 396,734
ROIC		69.79%	66.09%	33.93%	62.46%	56.78%	48.99%	79.96%	50.29%	51.27%	48.33%	42.74%	41.12%	41.10%	40.90%	45.48%	46.93%	47.92%	49.46%	51.55%
Economic Profit (EP):																				
Beginning IC	x	\$ 22,843	\$ 28,902	\$ 33,987	\$ 38,363	\$ 52,834	\$ 74,723	\$ 86,017	\$ 109,412	\$ 127,427	\$ 151,681	\$ 190,740	\$ 224,458	\$ 254,975	\$ 282,815	\$ 308,663	\$ 332,412	\$ 355,111	\$ 376,718	\$ 396,734
x (ROIC - WACC)	-9.52%	60.27%	56.57%	24.41%	52.94%	47.26%	39.47%	70.44%	40.77%	41.76%	38.81%	33.22%	31.60%	31.59%	31.38%	35.97%	37.41%	38.41%	39.94%	42.03%
EP	\$ 13,767	\$ 16,349	\$ 8,296	\$ 20,310	\$ 24,970	\$ 29,494	\$ 60,594	\$ 44,609	\$ 53,208	\$ 58,864	\$ 63,360	\$ 70,928	\$ 80,536	\$ 88,750	\$ 111,015	\$ 124,356	\$ 136,387	\$ 150,471	\$ 166,744	\$ 166,744

Alphabet Inc.*Weighted Average Cost of Capital (WACC) Estimation***Cost of Equity:**

Risk-Free Rate	4.40%
Beta	1.04
Equity Risk Premium	5.00%
Cost of Equity	9.60%

ASSUMPTIONS:

10 Year Treasury
2 year weekly avg

Cost of Debt:

Risk-Free Rate	4.40%
Implied Default Premium	0.35%
Pre-Tax Cost of Debt	4.75%
Marginal Tax Rate	22%
After-Tax Cost of Debt	3.72%

10 Year Treasury
10 Year Corporate Bond

Market Value of Common Equity:

Total Shares Outstanding	12,343,000,000
Current Stock Price	\$175.30
MV of Equity	2,163,727,900,000

MV Weights

98.59%

Market Value of Debt:

Short-Term Debt	0
Current Portion of LTD	0
Long-Term Debt	\$ 13,253,000,000
PV of Operating Leases	\$ 17,609,648,931
MV of Total Debt	30,862,648,931.11

1.41%

Market Value of the Firm**2,194,590,548,931.11****100.00%****Estimated WACC**

9.52%

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

Key Inputs:

CV Growth of NOPLAT	4.00%
CV Year ROIC	51.55%
WACC	9.52%
Cost of Equity	9.60%

Fiscal Years Ending Dec. 31	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E
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DCF Model:

Free Cash Flow (FCF)	34,241	47,795	61,774	76,962	89,818	116,643	133,294	148,577	166,309	185,989
Continuing Value (CV)										3,418,901
PV of FCF	31,266	39,849	47,028	53,499	57,009	67,602	70,539	71,794	73,378	1,508,481

Value of Operating Assets:	2,020,445
Non-Operating Adjustments	
(+) Non-marketable securities	34,109
(+) Marketable securities	90,673
(-) Operating lease assets	(17,610)
(-) Debt	(13,253)
Value of Equity	2,114,364
Shares Outstanding	12,343
Intrinsic Value of Last FYE	\$ 171.30
Implied Price as of Today	\$ 185.05

EP Model:

Economic Profit (EP)	58,864	63,360	70,928	80,536	88,750	111,015	124,356	136,387	150,471	166,744
Continuing Value (CV)										3,022,167
PV of EP	53,749	52,826	53,997	55,983	56,332	64,341	65,809	65,904	66,391	1,333,435

Total PV of EP	1,868,765
Invested Capital (last FYE)	151,681
Value of Operating Assets:	2,020,445
Non-Operating Adjustments	
(+) Non-marketable securities	34,109
(+) Marketable securities	90,673
(-) Operating lease assets	(17,610)
(-) Debt	(13,253)
Value of Equity	2,114,364
Shares Outstanding	12,343
Intrinsic Value of Last FYE	\$ 171.30
Implied Price as of Today	\$ 185.05

Alphabet Inc.

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

<i>Fiscal Years Ending</i>	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E
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EPS	\$	6.55	\$	7.21	\$	8.57	\$	9.91	\$	11.77	\$	13.98	\$	16.18	\$	18.17	\$	20.47	\$	23.12
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Key Assumptions

CV growth of EPS	4.00%
CV Year ROE	40.62%
Cost of Equity	9.60%

Future Cash Flows

[illegible]

Intrinsic Value as of Last FYE	\$ 175.75
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Implied Price as of Today	\$ 189.86
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Alphabet Inc.*Relative Valuation Models*

Ticker	Company	Price	EPS	EPS	P/E 24	P/E 25
			2024E	2025E		
AAPL	Apple Inc.	\$222.91	\$6.26	\$7.59	35.61	29.37
MSFT	Microsoft Corp.	\$410.37	\$12.35	\$13.69	33.23	29.98
AMZN	Amazon	\$197.93	\$5.13	\$6.13	38.58	32.29
META	Meta Platforms	\$567.16	\$22.55	\$24.96	25.15	22.72
IBM	International Business Machines Corp.	\$208.25	\$10.21	\$10.73	20.40	19.41
BIDU	Baidu Inc.	\$90.02	\$10.89	\$11.25	8.27	8.00
NFLX	Netflix, Inc.	\$756.10	\$19.78	\$23.71	38.23	31.89
ADBE	Adobe Inc.	\$482.80	\$18.27	\$20.54	26.43	23.51
Average					31.09	27.02

GOOGL Alphabet Inc. \$175.30 \$ 6.55  \$ 7.21  26.8 24.3

Implied Relative Value:

P/E (EPS24) \$ 203.47

P/E (EPS25) \$ 194.79

Alphabet Inc.

Key Management Ratios

Fiscal Years Ending Dec. 31	2020	2021	2022	2023	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E	2033E
Liquidity Ratios:														
Current Ratio (Current Assets/Current Liabilities)	3.07	2.93	2.38	2.10	1.68	1.40	1.21	1.12	1.06	1.12	1.20	1.28	1.37	1.46
Quick Ratio ((Current Assets - Inventory)/Current Liabilities)	3.05	2.91	2.34	2.10	1.67	1.38	1.19	1.10	1.05	1.10	1.18	1.27	1.35	1.45
Cash Ratio (Cash & Cash Equivalents/Current Liabilities)	2.41	2.17	1.64	1.36	0.94	0.66	0.48	0.40	0.35	0.42	0.50	0.59	0.68	0.78
Asset-Management Ratios:														
Inventory Turnover Ratio (COGS/Average Inventory)	82.26	103.79	57.43	90.93	138.07	87.66	83.57	84.53	88.63	90.26	92.54	93.10	96.46	100.07
Accounts Receivable Turnover Ratio (Revenue/Average Accounts Receivable)	6.49	7.34	7.11	6.97	5.06	6.08	6.07	6.08	6.11	6.12	6.19	6.19	6.19	6.18
Total Asset Turnover Ratio (Revenue/Average Total Assets)	0.61	0.76	0.78	0.80	0.61	0.77	0.81	0.85	0.89	0.90	0.92	0.91	0.91	0.90
Fixed Asset Turnover Ratio (Revenue/Net Fixed Assets)	1.26	1.51	1.41	1.33	0.93	1.09	1.09	1.12	1.17	1.21	1.25	1.28	1.32	1.36
Financial Leverage Ratios:														
Debt-to-Equity Ratio (Total Debt/Total Equity)	0.44	0.43	0.43	0.42	0.44	0.48	0.51	0.54	0.54	0.55	0.53	0.52	0.51	0.50
Debt-to-Assets Ratio (Total Debt/Total Assets)	0.30	0.30	0.30	0.30	0.31	0.32	0.34	0.35	0.35	0.35	0.35	0.34	0.34	0.33
Asset-to-Equity Ratio (Total Assets/Total Equity)	1.44	1.43	1.43	1.42	1.44	1.48	1.51	1.54	1.54	1.55	1.53	1.52	1.51	1.50
Profitability Ratios:														
Return on Equity (Net Income/Beg Total Shareholder Equity)	19.99%	34.17%	23.83%	28.81%	25.97%	27.32%	28.20%	30.97%	32.79%	35.09%	36.87%	37.52%	37.17%	37.02%
Gross Profit Margin Ratio ((Revenue - COGS)/Revenue)	61.08%	61.77%	61.01%	60.51%	58.31%	58.28%	61.09%	62.00%	62.00%	63.00%	64.00%	65.00%	65.00%	65.00%
Return on Assets (Net Income/Total Assets)	14.60%	23.79%	16.69%	20.20%	18.29%	18.98%	19.04%	20.47%	21.27%	22.77%	23.83%	24.46%	24.43%	24.49%
Payout Policy Ratios:														
Dividend Payout Ratio (Dividend/EPS)	0%	0%	0%	0%	9%	11%	14%	16%	19%	20%	22%	24%	26%	28%
Total Payout Ratio ((Dividends + Repurchases)/Net Income)	77%	66%	99%	83%	87%	88%	84%	82%	80%	76%	75%	75%	76%	76%
Retention Ratio (1 - Dividend Payout Ratio)	100%	100%	100%	100%	90.83%	88.90%	85.99%	83.86%	81.31%	79.97%	77.75%	75.79%	73.63%	72.32%

Alphabet Inc.
Sensitivity Tables

CV growth of NOPLAT	Beta						
	185.05	0.89	0.94	0.99	1.04	1.09	1.14
	2.5%	180.89	173.42	166.51	160.11	154.15	148.59
	3.0%	190.43	182.02	174.28	167.15	160.54	154.42
	3.5%	201.78	192.17	183.39	175.35	167.96	161.14
	4.0%	215.50	204.34	194.24	185.05	176.67	168.99
	4.5%	232.44	219.20	207.35	196.68	187.03	178.25
	5.0%	253.85	237.76	223.54	210.89	199.56	189.36
	5.5%	281.80	261.58	244.02	228.63	215.03	202.94

Dividend Yield	WACC (2023)						
	185.05	8.75%	9.00%	9.25%	9.5%	9.75%	10.00%
	0.00%	219.02	207.03	196.20	185.64	177.43	169.25
	0.50%	218.14	206.20	195.41	184.89	176.72	168.57
	1.00%	217.26	205.36	194.62	184.14	176.00	167.89
	1.50%	216.37	204.53	193.83	183.39	175.29	167.20
	2.00%	215.49	203.69	193.04	182.64	174.57	166.52
	2.50%	214.61	202.86	192.25	181.89	173.86	165.84
	3.00%	213.72	202.02	191.46	181.14	173.14	165.15

Cost of Sales % (2023)	Growth Rate of Cloud (2025)						
	185.05	15%	20%	25%	30%	35%	40%
	30%	179.49	182.02	184.55	187.08	189.61	192.14
	33%	178.82	181.35	183.87	186.40	188.92	191.45
	36%	178.15	180.67	183.19	185.71	188.24	190.76
	39%	177.48	179.99	182.51	185.03	187.55	190.07
	42%	176.81	179.32	181.83	184.35	186.86	189.38
	45%	176.13	178.64	181.15	183.66	186.17	188.68
	48%	175.46	177.97	180.47	182.98	185.49	187.99

Cost of Debt (Pre-Tax) 2023	Sales & Marketing Expense as % of sales (2025)						
	185.05	7.8%	8.3%	8.8%	9.3%	9.8%	10.3%
	3.25%	195.49	192.10	188.71	185.31	181.92	178.52
	3.75%	195.39	192.00	188.61	185.23	181.84	178.45
	4.25%	195.30	191.91	188.52	185.14	181.75	178.37
	4.75%	195.20	191.82	188.43	185.05	181.67	178.29
	5.25%	195.10	191.72	188.34	184.97	181.59	178.21
	5.75%	195.00	191.63	188.25	184.88	181.51	178.13
	6.25%	194.91	191.54	188.17	184.79	181.42	178.05

Normal Cash Estimate	Effective Tax Rate						
	185.05	14.00%	15.00%	16.00%	17.00%	18.00%	19.00%
	3.3%	195.15	192.49	189.82	187.16	184.49	181.83
	4.8%	194.45	191.78	189.12	186.45	183.79	181.12
	6.3%	193.74	191.08	188.41	185.75	183.08	180.42
	7.8%	193.04	190.38	187.71	185.04	182.38	179.71
	9.3%	192.34	189.67	187.01	184.34	181.68	179.01
	10.8%	191.63	188.97	186.30	183.64	180.97	178.31
	12.3%	190.93	188.26	185.60	182.93	180.27	177.60