

Alphabet Inc. (GOOGL)

September 18, 2023

Communication Services – Internet Content & Information

Stock Rating

BUY

Investment Thesis

We are recommending a Buy rating on Alphabet Inc. with a price target of \$145-\$155. Alphabet is strategically positioned to benefit from strong secular trends including the adoption of generative AI, and accelerated demand for cloud computing. Alphabet will also continue to see outsized growth in streaming and connected TV as consumer and advertiser preferences continue to shift towards digital platforms.

Drivers of Thesis

- Expect continued strong growth of 26% through 2027 in Cloud segment driven by AI demand and use of internally developed TPUs.
- Cord-Cutting trend will continue to drive strong growth in YouTube TV subscriptions and YouTube ad revenues.
- Strategically positioned to benefit from AI revolution, integrating AI into search and other key revenue segments as well as rolling out new language model Gemini by year end.

Risks to Thesis

- Increased competition from Microsoft’s Bing and ChatGPT could cut into Google Search market share.
- Tempered ad spending in an uncertain macro environment could negatively impact near term growth.
- Regulatory risks from ongoing anti-trust lawsuits with DOJ and EU may create share overhang and heavy fines or loss of market share

Target Price

\$145-155

Henry Fund DCF	\$132.0
Henry Fund DDM	\$147.3
Relative Multiple	\$197.5

Price Data

Current Price	\$137.4
52wk Range	\$83.3 – 138.7
Consensus 1yr Target	\$149.7

Key Statistics

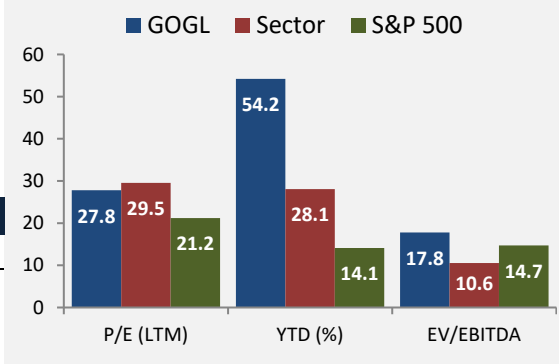
Market Cap (B)	\$1,717.2
Shares Outstanding (M)	12,609.0
Institutional Ownership	78.3%
Beta	1.3
Dividend Yield	0%
Est. 5yr Growth	16.2%
Price/Earnings (TTM)	29.2
Price/Earnings (FY1)	21.6
Price/Sales (TTM)	6.1
Price/Book (mrq)	6.5

Profitability

Operating Margin	26.5%
Profit Margin	21.2%
Return on Assets (TTM)	16.6%
Return on Equity (TTM)	23.8%

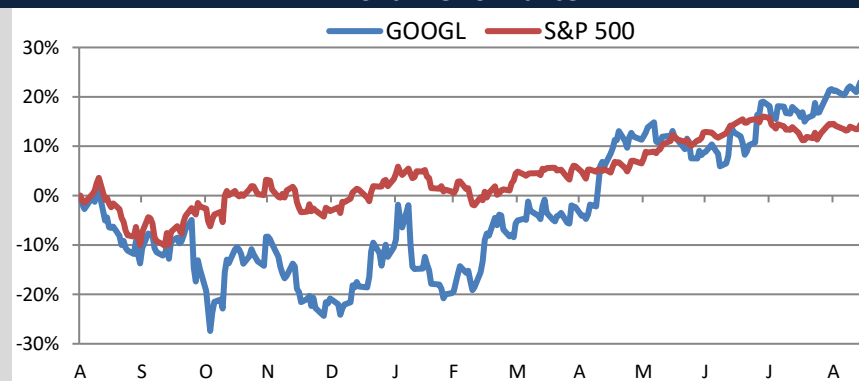
Earnings Estimates

Year	2020	2021	2022	2023E	2024E	2025E
EPS	\$2.96	\$5.69	\$4.59	\$5.67	\$6.69	\$7.76
HF est. growth	21.8%	92.3%	-19.3%	26.6%	17.5%	17.4%



FactSet

12 Month Performance

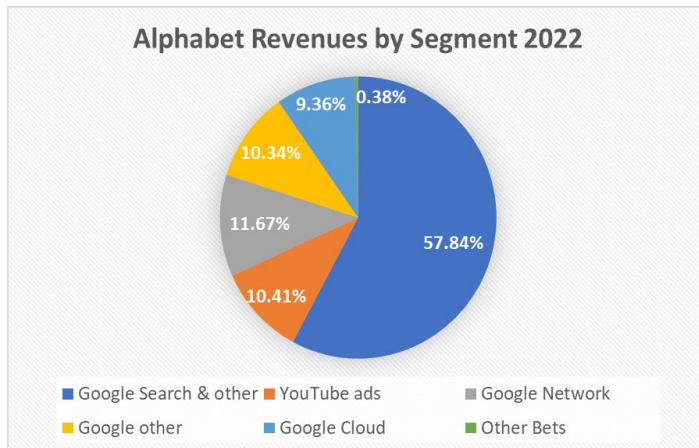


Company Description

Alphabet Inc. is the parent company of Google. Its operations are centered around its internet search engine and the ad revenues it generates. Google is the world’s largest digital advertising business. The company has also expanded its revenue streams to include mobile phones, cloud computing, enterprise services, and video and TV streaming through YouTube. Google is positioned to be at the forefront of technological innovation and is focusing its future on developing industry disrupting technologies including Generative AI.

COMPANY DESCRIPTION

Alphabet Inc. is a global technology and internet services conglomerate and one of the largest companies in the world with a market cap of \$1.7t. The company was formed in October of 2015 as part of a corporate restructuring of Google. The restructuring was a focused effort to separate Google’s core businesses from its more experimental investments which the company often refers to as “moonshots”.³ Alphabet now reports three main revenue segments: Google Cloud, Other Bets, and Google Services. The Google Services segment is further broken into subcategories including Search & Other, YouTube ads, Google Network, and Google Other. A breakdown of 2022 revenues by segment can be seen below. At its core, Alphabet is still an advertising business with nearly 80% of total revenues coming from ad sales.



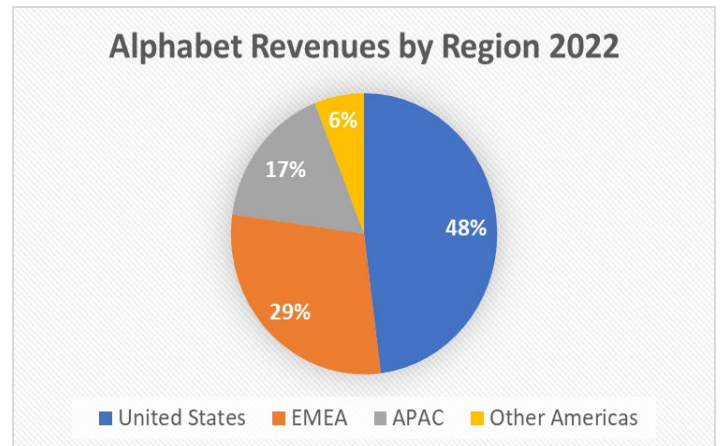
Alphabet 10-k

Beyond advertising, Alphabet has diversified its offerings to include entertainment streaming services, cloud computing and enterprise services, Android, mobile phones, and other hardware products. The company also holds a separate portfolio of investments called Other Bets. These are investments in companies pursuing disruptive technologies in fields such as transportation, life sciences, and internet services. Many of these companies are still in the early stages and as a result the Other Bets segment is not significant contributor to overall revenue.

From a geographic perspective, Alphabet is an industry leader in internet search, digital advertising, and video streaming around the globe, with a notable exception being China. Google struggled to gain a foothold in China as it clashed with the government over tight regulatory restrictions and censorship. The company has eliminated

most of its operations within the country.⁴

In 2022, 48% of Alphabet’s \$283b revenues came from the US, and 29% from Europe, Middle East, and Africa (EMEA). The Asia and Pacific region (APAC) contributed 17%, while Other Americas, encompassing Canada, Mexico, and South America, contributed 6%. This revenue distribution has remained relatively consistent over the past five years. APAC and Other Americas have gradually gained share with EMEA seeing slight declines. We expect this trend to continue in the near term, but don’t foresee major changes to the geographic mix going forward.



Alphabet 10-k

Google Services

Advertising

Within the Google Services segment there are four different subcategories, three of which can be classified as advertising revenue streams. Alphabet’s revenues are still primarily driven by ad sales through Google Search and Other, YouTube ads, and Google Network. These sub-segments generated a combined \$224.5b or 79.4% of total sales in 2022.⁴ Alphabet generates sales using two types of ads: performance, and brand. Performance ads are advertisements that users click on, which leads to direct engagement with the advertiser. Brand ads can include videos, text, and images that are designed to build awareness for the brand and specific marketing campaigns.

Within advertising, Google Search and Other remains the maintains the highest share with \$162.5b in sales in 2022. Google’s search engine still holds a dominant 92% market share as of August 2023.⁶ Microsoft’s integration of ChatGPT within Bing has yet to yield meaningful results in

terms of market capture despite the hype earlier this year. To continue to fend off competitors Google is incorporating AI into its search engine and advertising services. In May, Google announced Search Generative Experience (SGE), its first effort to incorporate generative AI into Search. SGE is built on a number of large language models (LLMs) and is designed to carry out tasks specifically related to identifying and ranking web results.⁷ The company also continues to roll out new AI powered tools for advertisers including Demand Gen and Video View Campaigns. These tools help simplify ad placement across Google's services and maximize views from a targeted audience.⁸

YouTube ads has been Alphabet's fastest growing ad segment with a 5-year CAGR of 29%. Growth in Connected TV (CTV) advertising continues to be a strong tailwind for YouTube as advertisers seek more targeted audiences and shift focus away from linear TV. Over 50% of ad-supported streaming watch time on connected TVs is spent on YouTube.¹¹ We see this trend continuing to drive strong growth for the segment and project a 10% CAGR through 2027.

Google Network includes revenues from use of Google's AdMob, AdSense, and Ad Manager services. These services allow businesses to partner with Google and place revenue generating advertisements on their mobile applications and websites. The Network segment has seen slowing and negative growth over the past few quarters. We are projecting a moderate recovery with growth plateauing at 4% over the long term.

Google Other

The Google Other segment includes revenues from hardware, mobile, and YouTube subscription services. Hardware sales come from Pixel phones, Fitbit wearables, and Nest Home products. The mobile revenues include Android operating system and Google Play Store. YouTube non-advertising revenues come from YouTube TV, premium, and music subscription services. The segment currently accounts for roughly 10% of revenues and has seen strong growth of 22% annually since 2017. The growth of YouTube TV subscribers has helped drive the Google Other segment. YouTube TV now has a 7% market share and is the 5th largest pay TV provider in the US.¹⁰ YouTube Premium subscriptions have also seen strong growth numbers, reaching 80 million paid subscribers by the end of 2022. This is up from 50 million in 2021, and 30

million in 2020.¹² We see these growth trends slowing as YouTube subscription services further penetrate their respective markets. However, we still see room for solid growth of 12% annually in the medium term.

Google Cloud

Google's Cloud business is its fastest growing revenue segment with a 45% annualized growth since 2017. The segment now accounts for 9.5% of total revenues. Cloud can be broken into two key components: platform, and workspace. The Cloud Platform offers a full suite of services to businesses including cybersecurity, data analytics, AI integration, machine learning, and infrastructure. It operates under the Platform as a Service (PaaS) and Infrastructure as a Service (IaaS) models. Workspace serves enterprise customers and includes communication and collaboration tools like Gmail, Docs, Drive, Calendar, & Meet.

The Cloud business has been bolstered by the growth in generative AI related demand. As companies look to incorporate AI and large language models into their services, they require greater computing power. Alphabet is one of the few so-called "hyperscalers" with the infrastructure and computing capabilities to meet this demand. As a result, we forecast cloud growth to average 26% through 2027.

Other Bets

The Other Bets segment accounts for less than 0.5% of revenues. It includes Alphabet's portfolio of investments in independent companies that they see as potential industry disruptors. The companies are at various stages of development and operate in industries including transportation, healthcare, and biotech. Some of the larger investments include Verily, Calico, and Waymo. Of note, Alphabet's longtime CFO Ruth Porat is transitioning into a Chief Investment Officer position and will now oversee the Other Bets portfolio.⁹ Revenues for the segment have varied significantly over time but have averaged 17% growth. We are forecasting a more conservative 12% annual revenue growth for the segment going forward.

Cost Structure Analysis

The largest component of Alphabet's cost of revenues is called Traffic Acquisition Costs (TAC). TAC includes

payments to distribution partners including browser providers, mobile carriers, and original equipment manufacturers. It also includes all amounts paid to Google Network partners who display ads on their properties. These third-party ads come at a lower margin relative to ads on Search and other Google owned properties. Total expenses relating to TAC were \$49b in 2022. Other costs of revenue include content acquisition costs, data center related expenses, and inventory for hardware products.³

The other component of Alphabet's cost structure is operating costs stemming from R&D, sales and marketing, and administrative costs. In 2022 operating costs totaled \$81.8b.

We see a number of factors driving both gross and operating margins higher in the coming years. Accelerated growth in YouTube subscription revenues and slower growth in the lower margin Network Ads segment will result in a more profitable segment mix. Additionally, Google Cloud has now turned an operating profit each of the past two quarters, compared to large operating losses in prior years.^{3,5} The company also announced a cost savings initiative in Q1 of this year including a workforce reduction of 12,000 employees (6% of total workforce) and a reduction in real estate footprint. This is expected to result in fixed-costs savings of \$3b-4b annually.²

	2023	2024	2025	2026	2027
Operating Margin	28.4%	29.1%	29.9%	30.5%	30.9%
Net Margin (NI/Sales)	24.6%	25.2%	25.8%	26.2%	26.5%

Henry Fund Forecasts

We are forecasting Alphabet's operating margins to improve to 28% in FY23 and up to 31% by FY27. We also see gradual improvements in net margin up to 26.5% over the next 5 years.

Debt Maturity Analysis

Alphabet currently has \$15b in outstanding debt with \$5b maturing within the next five years. The notes outstanding have coupon rates ranging from .45% - 3.38% with a weighted average rate of 1.78%. Alphabet's debt is rated AA+, similar to peer companies' ratings which range from A+ - AAA. Given Alphabet's large net cash balance we do not foresee any issues servicing the debt or immediate needs for refinancing. Additionally, with two-thirds of outstanding debt maturing in 2030 or later, the impacts of higher interest rates will be fairly minimal assuming the company maintains a similar capital structure.

Five-Year Debt Maturity Schedule

Fiscal Year	Coupon (%)	Payment (\$mil)
2024	3.38	\$1,000
2025	0.45	1,000
2026	1.99	1,000
2027	0.80	2,000
2028	-	0
Thereafter		10,022
Total	1.78%	\$15,022

Factset

ESG Analysis

MOOREWATSON SUSTAINALYTICS

ESG Risk Score

24.2 (Medium Risk)



Sustainalytics, FactSet

Sustainalytics gives Alphabet Inc. an ESG risk score of 24.2 and classifies it as medium risk. It ranks 709 out of 1094 companies in the software and services segment. The cluster scores the breakdown to 1.6 for environment, 11.2 for social, and 11.5 for governance.

Key ESG related risk factors highlighted by Sustainalytics include data privacy and security, business ethics, and human capital. Of the three, data privacy and security bring about the greatest concerns. Between Google Search, Chrome, Gmail, YouTube, and Android devices, the company can collect and track user data across multiple platforms and devices. The company also has access to your physical location data through GPS and IP addresses. Concerns have been raised about users' privacy and the extent to which Google shares this data with third parties. Google has faced a number of lawsuits from both consumer groups and government agencies regarding data privacy.¹⁴ The company has been required to pay out fines and settlements including a recent \$392m to consumers for tracking their location data even after they had disabled the location-history function.¹⁵

Google has made efforts to ease concerns including offering an incognito mode in chrome which limits the amount of data collected. It also announced new privacy restrictions for apps on Android devices that will limit the ability to track data across apps.¹⁴ Despite these efforts, lawsuits and fines from data security and privacy violations remain a risk to the business.

RECENT DEVELOPMENTS

Recent Earnings Announcement

Alphabet announced Q2 earnings for FY23 on July 25th. The company reported revenues of \$74.6b, a 7% increase over the prior year. The company also saw a 1% operating margin improvement to 29% and a \$0.23 (19%) gain in EPS.⁹ CEO Sundar Pichai emphasized the company's commitment to developing and deploying AI technology. He also highlighted Cloud and YouTube subscription revenues as key growth drivers for the quarter.

Of particular note, Search and YouTube ad revenues were up 5% and 4% yoy respectively, highlighted by growth in retail driven ad spending. This represents an inflection point for ad revenues which had seen multiple quarters of yoy declines.⁹ We see this as a positive trend that should continue into 2024. We are projecting a moderate 7.3% in overall revenue growth in FY23 followed by a strong recovery to 12% in FY24.

AI Language Model Gemini Release

Alphabet is expected to release a large-language model called Gemini in late 2023 or early 2024. Gemini is expected to be Google's response to OpenAI's ChatGPT-4. Gemini is a collection of large-language models and will be used to power chatbots, help developers write code, and summarize or generate text and images among other things.²²

The success of Gemini's launch could have a profound impact on share price and investor sentiment. AI has been one of the main driving factors for performance in the tech sector this year. Investors are closely watching the AI arms race among tech giants, especially Microsoft and OpenAI vs. Google. An ability to demonstrate advanced AI capabilities and the potential monetization of tools like Gemini could lead to a major increase in valuation.

Google Search Anti-Trust Lawsuit

Alphabet is currently facing an anti-trust lawsuit centered around their Search Engine dominance and associated advertising business. In 2020 a lawsuit was filed by the DOJ along with the Attorney Generals for 11 states, suing Google for unlawfully maintaining a monopoly. The lawsuit is targeting Google's search engine business which has a 90% market share, and the trial began on 9/12. The

expected timeline is for phase one of the trial to last 10-weeks, followed by another round of court filings and arguments to be presented, with a ruling expected sometime in early 2024. Should the judge rule against Google another trial will be set to determine what measure to be taken.²⁰

The DOJ's case is centered around the fact that Alphabet pays phone manufacturers and telecom companies billions of dollars annually to ensure Google is installed as the default search engine. Google has exclusivity contracts in place with these companies including Apple and Samsung, which the government says violates anti-trust laws by essentially paying for market share.²¹ The total amount Google pays for the default exclusivity contracts is estimated to be upwards of \$20b annually.

Google's defense will be centered around an argument that the DOJ has to narrow its view of the search market. Google's lead attorney claimed that the company competes with other sites like Amazon and Expedia where customers go to find information without using a traditional search engine.²¹ Additionally, the company has argued that customers are free to switch the default search engine on their phones and internet browsers, so they aren't forcing consumers to use Google despite the default agreements in place.²¹

The potential outcomes and resulting impact from the case are interesting. Should the judge rule against Google, they would most likely be forced to end their exclusivity agreements. This would result in an immediate cost savings of \$20b+ from the fees it pays to Apple and other companies. The question then shifts to what degree of market share loss would result from no longer being the default search engine. The court can prevent Google from purchasing default exclusivity, but it likely can't stop users from choosing to set Google as their default search tool.

Clearly Google values these contracts as they are paying billions of dollars annually and attempting to defend them in court. Should Google lose the case, the company may see higher margins in the short term from the cost savings. But longer-term risks will arise from a gradual loss of market share to existing search engines and the threat of another company like apple developing their own competing search engine.

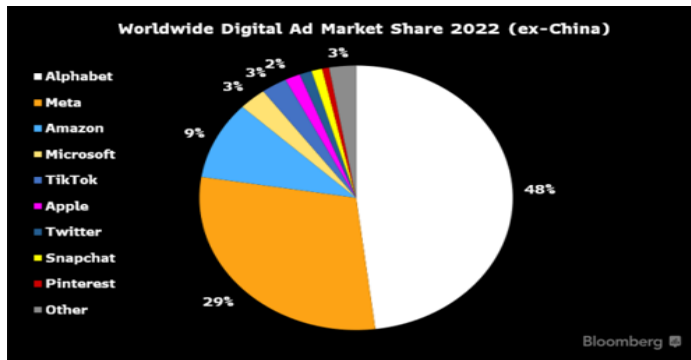
MARKETS AND COMPETITION

Peer Comparisons

Alphabet competes in a number of industries including internet search and digital advertising, cloud computing, Pay TV, and entertainment streaming services. There are no perfect comparisons for company of this size with such diverse offerings of products and services. To analyze the competitive landscape, we looked key competitors in each of Alphabets primary revenue segments.

Search and Digital Advertising

As mentioned previously, Google’s search engine maintains a dominant 92% market share among internet search engines. Microsoft’s Bing is the biggest challenger but still holds just 3% market share as of August 2023. Despite efforts to attract new users by incorporating ChatGPT, it has failed to see meaningful market capture.⁶ Google has now started rolling out AI features such as SGE into its own search engine. The company has built up over 20 years of consumer habits and the word “Google” has become a verb synonymous with searching for information on the internet. We don’t foresee a major loss in market share anytime soon.

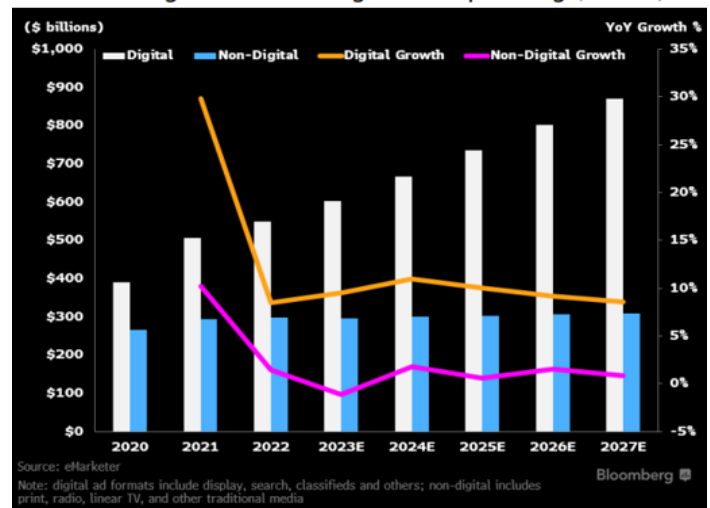


Bloomberg, eMarketer

Within the digital ad industry, Alphabet faces stiffer competition. Key competitors include Meta, Amazon, Twitter, TikTok, Pinterest, and Snapchat. Alphabet is currently holds 48% of the \$440b digital ad market (excluding China). Meta and Amazon follow with 29% and 9% respectively.² TikTok has been the main industry disruptor in recent years with strong user engagement trends. Despite this, the company only holds a 3% market share and there have been concerns over data privacy and brand safety that may be scaring some advertisers away.

The ongoing shift towards digital ad spend and away from traditional media advertising including linear tv, print, and radio has supported strong growth for the industry. Digital advertising is expected to grow at 9.7% annually through 2027 compared flat or zero growth in non-digital advertising.² Additionally, AI is expected to play a significant role in shaping the industry in the coming years. AI driven tools will help develop personalized content and more targeted ad campaigns. Companies that excel in these capabilities will be able to deliver more effective ads to their customers and charge higher prices. We expect larger companies with significant AI capabilities and first-party user data will benefit from this trend. Alphabet, along with Meta and Amazon are positioned to capture additional market share from smaller competitors assuming they can meet the AI demand.

Global Digital vs. Non-Digital Ad Spending (% YoY)



Bloomberg, eMarketer

Cloud Computing

Google Cloud is the company’s fastest growing revenue segment. However, it still trails Amazon Web Services and Microsoft’s Azure in the cloud computing space. Amazon is the industry leader with 32% market share followed by 22% for Microsoft Azure as of Q2 2023. Alphabet now holds an 11% market share.¹⁰

Cloud and infrastructure services demand has picked up pace recently due to the proliferation of generative AI and large language models. One key component that all industry players have in common is the reliance on Nvidia’s GPUs. Nvidia’s A100 and H100 chips are considered the best products available for supercomputing and AI model training. All major players in the cloud space rely on

NVIDIA chips to varying degrees.

Alphabet has developed their own chips called Tensor Processing Units or TPUs. They have used these chips to power the computers used to develop their own LLMs and AI capabilities. While other competitors are also working on their own in-house chips, they're still primarily reliant on Nvidia as a supply source.¹⁶ Alphabet also claims that over 70% of AI unicorns use Google Cloud services.⁹ We believe the company has positioned itself to continue to gain market share in the space due to its proven AI capabilities and diversified hardware offerings. Another factor to consider is growing multi-cloud strategy where companies use cloud computing services from two or more cloud service providers.²³ Given the market penetration of both Amazon and Microsoft, Google cloud could stand to benefit from their existing customers adopting a multi-cloud strategy.

Pay TV and Streaming Services

The markets for Pay TV and video streaming services are fiercely competitive and constantly evolving. Within pay TV, Alphabet has captured market share from traditional cable providers including Comcast, Charter, Dish, and DirectTV. YouTube TV also competes with other streaming services like Hulu and FuboTV. The cord-cutting trend is reshaping the industry as consumers continue to cancel high priced cable subscriptions. Some consumers have given up Pay TV altogether while others are opting for cheaper streaming services. In Q2 of 2023 Youtube TV added 200,000 subscribers. Notably, it was the only Pay TV service to gain subscribers during the quarter. Industry leading cable and satellite providers Comcast and DIRECTV lost an estimated 534,000 and 400,000 subscribers respectively.¹⁹ Other live TV streaming services including Hulu and Sling TV also saw subscriber losses, indicating YouTube TV is becoming a preferred service for customers still willing to pay for TV.

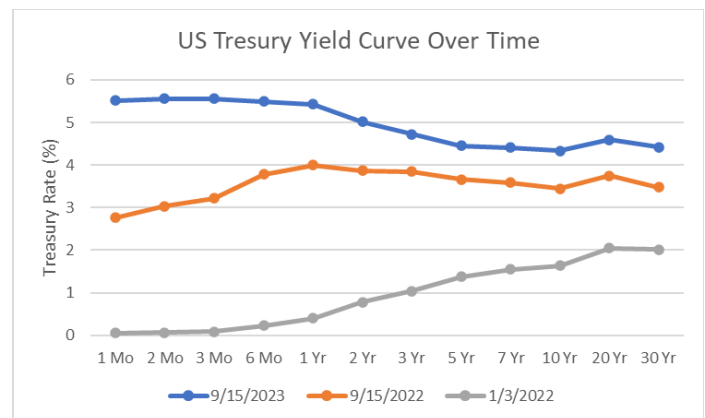
The global pay TV market is expected to grow at just 1.7% annually to \$265b in 2028.¹⁷ We expect the growth for YouTube TV to continue to come from capturing market share from cable and satellite providers rather than from broader industry growth. Additionally, YouTube ad revenues will stand to benefit from the cord cutting trend as consumers replace TV time with online video streaming.

ECONOMIC OUTLOOK

Alphabet's revenue is largely dependent on companies' appetite for advertising spend. Business sentiment is a key variable to monitor for Google's growth outlook. However, ad spend is partly driven by consumer demand. Companies will not spend on ads if the consumer is unwilling or unable to purchase. Consumer sentiment, discretionary income, and debt levels are also key factors to monitor for Alphabet's business outlook.

Interest Rates

The Federal Reserve has continued to raise interest rates in its efforts to combat inflation. The current Fed Funds Rate is now at 5.5% compared to just over 2.5% a year ago and .05% at the start of 2022. The CPE for August came in at 3.7% yoy, still a long way from the Fed's 2% target rate. To this point, rising interest rates have yet to have a significant impact on stocks and the broader economy. Tech stocks in particular continue to trade at historically high valuations despite higher borrowing costs and more attractive yields for investors. We expect this appetite for risk may subside gradually. Coming out of the pandemic, both consumers and business had strong balance sheets and benefited from near zero borrowing costs. Eventually some business will need to refinance or issue debt at the new higher rates. Consumers are also likely spending through their covid cash reserves and may need to cut back on spending soon.



US Treasury

Business Confidence

The OECD's business confidence index (BCI) came in at 99.23 for the month of August. The indicator provides an outlook on business sentiment and expectations for the

economy in the near term. When the index falls below 100 it signals pessimism towards future performance while numbers above 100 suggest greater confidence in future performance.²⁴

The index reading of 99.23 suggests a fairly neutral to slightly negative outlook for businesses. Companies have been concerned with the threat of a recession and a measured demand environment since the start of the years. Should business continue to hold this outlook and remain cautious in their spending, Alphabet may continue to see weakness in advertising demand or slower growth in cloud computing.

do not anticipate any major changes to Alphabet’s capital structure. The company has roughly \$30b in total debt outstanding including operating leases, compared to a market cap of over \$1.7t. Alphabet has a stable balance sheet with a large net cash position including \$26b in cash and nearly \$95b in marketable securities.

Revenue Growth

Our revenue growth assumptions by segment are below. We expect Google Cloud to remain the fastest growing segment throughout our 10yr forecast horizon. Growth in Youtube subscription services will also be a primary growth driver, leading to higher forecasted CAGRs for Youtube ads and Google Other.

VALUATION

Key Assumptions

Some of the key assumptions and forecasts used in our valuation methods are below:

- 5yr Revenue CAGR – 10.4%
- 10yr Revenue CAGR – 8.5%
- Operating Margin – 28.4% increasing to 31%
- Net Margin – 25%-27%
- Payout Ratio – 85% through share buybacks
- Marginal tax rate – 24.8%
- Capex – 11% of sales
- Depreciation rate – 17.65% of PP&E net
- R&D expense – 13.1% of sales
- G&A expense – 4.7% declining to 4% over time
- Sales & Marketing 8.9%
- Cost of Revenues – 38.2% improving to 35.5%

We expect Alphabet to see low double digit revenue growth through 2027 driven by recovering ad spending and strong growth in Cloud and YouTube services. By the end of our forecast horizon in 2032 we expect revenue growth to stabilize around 4.5% annually. Our margin assumptions show improving operating and net margins over time as the workforce reduction and improved revenue mix offer greater profitability. In particular we expect to see reductions in G&A expense and cost of revenues.

For Capex spending and depreciation, we have forecasted these to remain stable and have calculated them based off of recent historical averages for the company. Finally, we

Forecasted 5yr Growth Rates

Segment:	23-27	28-32
Google Search & other	8.0%	5.0%
YouTube ads	10.0%	5.5%
Google Network	5.0%	4.0%
Google Other	11.5%	7.0%
Google Cloud	26.0%	12.0%
Other Bets	12.0%	12.0%
Total	10.4%	6.6%

Henry Fund Forecasts

The Other Bets segment has the potential to for much higher revenue growth than the stable 12% we projected. However, the companies are inherently riskier and less predictable. Additionally, with Ruth Porat now overseeing the portfolio there may be a shift away from aggressive growth towards a focus on reducing losses and pursuing long-term profitable growth.

DCF/Economic Profit Model

Key inputs in our DCF and Economic Profit Models include a terminal NOPLAT growth assumption of 4%, a WACC of 10.3%, and ROIC of 50% in the final year of our 10yr horizon. We believe that a higher long-term growth rate is warranted for Alphabet given the company’s leadership in technology and innovation. Additionally, the AI boom is just beginning, and the company has investments in early-stage disruptors through the Other Bets portfolio. Despite this, the DCF and EP models yielded the lowest price of our three valuation methods at just \$132.02 per share. We ran a sensitivity test on our terminal growth and cost of capital

assumptions. A 50bps change in the growth rate results in a price swing of \$5-6 in either direction. A 50bps move in the WACC has an even larger impact of \$8-12 in price movement.

		CV Growth of NOPLAT						
		3.00%	3.50%	3.75%	4.00%	4.25%	4.50%	4.75%
WACC	9.00%	150.47	158.36	162.86	167.82	173.30	179.38	186.19
	9.50%	138.08	144.41	147.98	151.88	156.16	160.85	166.05
	10.00%	127.50	132.64	135.52	138.64	142.03	145.73	149.78
	10.30%	121.87	126.43	128.97	131.72	134.69	137.92	141.44
	10.50%	118.37	122.59	124.94	127.46	130.19	133.15	136.36
	11.00%	110.40	113.91	115.84	117.91	120.14	122.53	125.12
	11.50%	103.40	106.34	107.94	109.66	111.49	113.46	115.57

HF Estimates

Dividend Discount Model

Alphabet does not currently pay dividends despite its strong free cash flow. The company prefers to maintain flexibility and returns cash to shareholders through share repurchases. To value the company using the dividend discount model we assumed a terminal EPS growth rate of 5.5%. This number is higher due to the significant share repurchase driving down the shares outstanding. We also forecast the company to return 85% of net income to shareholders through share buybacks annually based on recent share repurchase activity. Our final year EPS estimate in 2032 is \$19.48. We have EPS growing at an average of 15.6% over our forecast horizon. Multiplying our EPS estimate by the implied terminal year P/E multiple and discounting back by our cost of equity gave us a share price of \$147.33. Our assumptions for payout ratio and EPS terminal growth are sensitivity tested in the table below.

		CV Growth of EPS						
		4.00%	4.50%	5.00%	5.50%	6.00%	6.50%	7.00%
Payout Ratio	147.33	110.50	117.62	126.04	136.18	148.62	164.25	184.46
	77.50%	113.04	120.45	129.22	139.78	152.74	169.01	190.06
	80.00%	115.66	123.37	132.50	143.50	156.98	173.92	195.83
	82.50%	118.37	126.39	135.89	147.33	161.36	178.99	201.78
	85.00%	121.16	129.50	139.39	151.29	165.88	184.22	207.93
	87.50%	124.04	132.72	143.00	155.37	170.55	189.62	214.28
	90.00%	130.10	139.48	150.59	163.96	180.37	200.98	227.63

HF Estimates

Relative Valuation

Our relative valuation model used a peer group of some of the largest names in tech. We included Apple, Meta, Microsoft, Oracle, and Amazon. Alphabet competes with each of these companies in at least one of its main revenue segments. For the valuation we looked at forward P/E ratios for the peer group. The average P/E came out to be 33.55 for 2023 earnings estimates. Applying this to our FY23 EPS estimate of \$5.89 we arrived at a valuation of

\$197.51 for GOOGL. This valuation implies that either Alphabet is significantly undervalued relative to peers, or large cap tech as a group is severely overvalued and GOOGL is priced fairly. We believe the correct interpretation lies somewhere in between. Many of the peer companies are trading at P/E ratios well above their historical average so its reasonable to assume this may revert towards the mean at some point. However, we do see potential for a re-rating in Alphabet as it seems to have lagged peers in AI driven share appreciation.

Valuation Summary

To arrive at our final price target range of \$145-155 we took a weighted average of the prices from our three valuation methods. Applying an equal 33% weighting to each valuation method yielded a price of \$158. However, we felt it was more appropriate to underweight the relative multiple price given our belief that tech stocks are somewhat overvalued currently. We applied a 40% weighting to the DDM and DCF models and 20% to the relative multiple. This yielded a price of target of \$150.

Our valuation and price target falls close to the analyst consensus target of \$148. One key difference is our EPS estimate over the next three years. We are slightly more bullish on EPS growth, expecting \$5.9 and \$6.9 per share in 2023-24, compared to street consensus of \$5.7 and \$6.7. The difference likely stems from projected operating margin being 40bps higher and potential differences in share repurchase assumptions.

KEYS TO MONITOR

We are recommending a buy rating on Alphabet Inc (GOOGL) with a target price range of 145-150. The price target suggests moderate upside of 9.5% on the high end of the range. Continued share price increases could move the rating towards a hold.

Driving projected upside is a firm belief that Alphabet is positioned strategically to benefit from a number of strong secular trends. First and foremost being the adoption of generative AI. The company is putting AI at the forefront of everything they do and has the capital and technical expertise to be an industry leader. The company stands to benefit from AI integration in its search and advertising business as well as the Google Cloud offerings. Apart from AI, Alphabet will continue to gain market share in Pay TV and streaming services through its YouTube service

offerings. Consumer and advertiser preferences continue to shift towards digital.

Things to monitor going forward include trends in ad spending and macroeconomic concerns. The company's Q3 earnings will serve as a strong indicator of where advertiser spending is heading. We have seen a gradual recovery in the previous two quarters and expect the trend to continue. Finally anti-trust lawsuits from the DOJ and European Union continue to pose threats to Alphabet's market dominance. The ongoing court battles should be monitored closely.

investment opinion contained in this report does not represent an offer or solicitation to buy or sell any of the aforementioned securities. 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 Henry Fund may hold an investment position in the companies mentioned in this report.

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Alphabet Inc.
Income Statement
in millions

Fiscal Years Ending Dec. 31	2020	2021	2022	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
Revenues	182,527	257,637	282,836	303,518	339,901	378,781	419,989	463,039	504,394	543,962	579,591	609,888	637,723
Cost of revenues (excluding D&A)	71,035	98,498	110,275	115,982	128,186	140,954	154,189	168,373	181,646	194,535	205,828	216,587	226,472
Depreciation & Amortization	13,697	12,441	15,928	20,350	22,697	25,219	28,077	31,210	34,680	38,330	42,084	45,878	49,573
Research & development expense	27,573	31,562	39,500	39,785	44,555	49,651	55,053	60,696	66,117	71,303	75,974	79,945	83,594
Sales & marketing expense	17,946	22,912	26,567	26,930	30,159	33,608	37,264	41,084	44,754	48,264	51,426	54,114	56,583
General & administrative expense	11,052	13,510	15,724	14,386	15,260	16,059	17,386	18,705	19,871	21,430	22,834	24,028	25,124
European Commission fine	-	-	-	-	-	-	-	-	-	-	-	-	-
Total costs & expenses	141,303	178,923	207,994	217,434	240,856	265,492	291,969	320,069	347,067	373,863	398,146	420,552	441,346
Income from operations	41,224	78,714	74,842	86,084	99,045	113,289	128,020	142,971	157,327	170,099	181,446	189,336	196,377
Interest income	1,865	1,499	2,174	2,756	2,675	2,772	2,839	2,924	3,012	3,102	3,196	3,291	3,390
Interest expense	(135)	(346)	(357)	(261)	(274)	(301)	(331)	(364)	(399)	(435)	(472)	(508)	(542)
Other income (expense), net	5,128	10,867	(5,331)	-	-	-	-	-	-	-	-	-	-
Income before income taxes	48,082	90,734	71,328	88,579	101,447	115,760	130,528	145,531	159,940	172,767	184,170	192,120	199,225
Provision for income taxes	(7,813)	(14,701)	(11,356)	(14,102)	(16,151)	(18,430)	(20,781)	(23,170)	(25,464)	(27,506)	(29,321)	(30,587)	(31,718)
Net Income (loss) from discontinued operations	-	-	-	-	-	-	-	-	-	-	-	-	-
Net income	40,269	76,033	59,972	74,476	85,296	97,330	109,747	122,362	134,477	145,261	154,848	161,533	167,507

Net Margin	22%	30%	21%	25%	25%	26%	26%	26%	27%	27%	27%	26%	26%
Weighted average shares outstanding - class A, B & C -	13,616	13,353	12,897	12,695	12,376	12,022	11,573	11,050	10,523	10,001	9,490	9,000	8,536
Year end shares outstanding	13,504	13,242	12,849	12,540	12,212	11,832	11,313	10,787	10,260	9,742	9,239	8,761	8,310
EPS (basic)	2.96	5.69	4.65	5.87	6.89	8.10	9.48	11.07	12.78	14.52	16.32	17.95	19.62
Share repurchases (millions of shares)				466.64	486.55	505.45	518.86	526.67	526.95	518.21	502.92	477.62	450.90
Share repurchases (millions \$)	31,149	50,274	59,296	63,305	72,501	82,731	93,285	104,007	114,305	123,472	131,621	137,303	142,381

Alphabet Inc.

Balance Sheet

in millions

Fiscal Years Ending Dec. 31	2020	2021	2022	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
Assets													
Current Assets:													
Cash & cash equivalents	26,465	20,945	21,879	40,344	54,812	66,307	65,069	64,124	63,505	63,231	63,461	63,991	65,373
Marketable securities	110,229	118,704	91,883	94,639	97,479	100,403	103,415	106,518	109,713	113,005	116,395	119,886	123,483
Total cash, cash equivalents, and marketable securities	136,694	139,649	113,762	134,984	152,290	166,710	168,484	170,641	173,218	176,235	179,856	183,877	188,856
Accounts receivable, net	30,930	39,304	40,258	43,202	48,381	53,915	59,780	65,908	71,794	77,426	82,497	86,810	90,771
Receivable under reverse repurchase agreements	-	-	-	-	-	-	-	-	-	-	-	-	-
Income taxes receivable, net	454	966	-	-	-	-	-	-	-	-	-	-	-
Inventory	728	1,170	2,670	1,957	2,191	2,442	2,707	2,985	3,252	3,507	3,736	3,932	4,111
Prepaid revenue share, expenses & other assets	-	-	-	-	-	-	-	-	-	-	-	-	-
Other current assets	5,490	7,054	8,105	8,662	9,701	10,811	11,987	13,215	14,396	15,525	16,542	17,406	18,201
Total current assets	174,296	188,143	164,795	188,805	212,563	233,877	242,958	252,749	262,659	272,693	282,631	292,025	301,939
Non-marketable securities	20,703	29,549	30,492	32,626	34,910	37,354	39,969	42,767	45,760	48,963	52,391	56,058	59,982
Prepaid revenue share, expenses & other assets, non-curr	-	-	-	-	-	-	-	-	-	-	-	-	-
Deferred income taxes	1,084	1,284	5,261	5,261	5,261	5,261	5,261	5,261	5,261	5,261	5,261	5,261	5,261
Property & equipment, gross	126,462	147,012	171,710	204,998	242,277	283,820	329,883	380,667	435,987	495,646	559,213	626,103	696,046
Less: accumulated depreciation & amortization	41,713	49,414	59,042	78,929	101,182	126,088	153,930	184,988	219,528	257,736	299,730	345,533	395,057
Property & equipment, net	84,749	97,599	112,668	126,069	141,095	157,733	175,953	195,679	216,459	237,911	259,483	280,571	300,989
Operating lease assets	12,211	12,959	14,381	16,092	18,009	20,133	22,459	24,977	27,629	30,367	33,121	35,812	38,418
Intangible assets, net	1,445	1,417	2,084	1,621	1,177	863	628	476	336	214	124	48	-
Goodwill	21,175	22,956	28,960	28,960	28,960	28,960	28,960	28,960	28,960	28,960	28,960	28,960	28,960
Other non-current assets	3,953	5,361	6,623	6,280	7,032	7,837	8,689	9,580	10,436	11,254	11,992	12,618	13,194
Total non-current assets	145,320	171,125	200,469	216,909	236,445	258,141	281,919	307,700	334,841	362,930	391,331	419,329	446,805
Total assets	319,616	359,268	365,264	405,713	449,008	492,018	524,878	560,449	597,501	635,623	673,962	711,353	748,744
Liabilities and Stockholders' Equity													
Current liabilities:													
Accounts payable	5,589	6,037	5,128	6,829	7,648	8,523	9,450	10,418	11,349	12,239	13,041	13,722	14,349
Short-term debt	-	-	-	-	-	-	-	-	-	-	-	-	-
Accrued compensation & benefits	11,086	13,889	14,028	16,190	18,131	20,205	22,403	24,700	26,906	29,016	30,917	32,533	34,018
Accrued expenses & other current liabilities	28,631	31,236	37,866	41,184	46,120	51,396	56,987	62,829	68,440	73,809	78,643	82,754	86,531
Accrued revenue share	7,500	8,996	8,370	10,666	11,945	13,311	14,760	16,272	17,726	19,116	20,368	21,433	22,411
Securities lending payable	-	-	-	-	-	-	-	-	-	-	-	-	-
Deferred revenue	2,543	3,288	3,908	3,966	4,442	4,950	5,488	6,051	6,591	7,108	7,574	7,970	8,334
Income taxes payable, net	1,485	808	-	-	-	-	-	-	-	-	-	-	-
Total current liabilities	56,834	64,254	69,300	78,836	88,286	98,385	109,088	120,270	131,012	141,289	150,544	158,413	165,643
Long-term debt	13,932	14,817	14,701	15,399	16,933	18,624	20,465	22,445	24,481	26,544	28,568	30,489	32,332
Deferred revenue, non-current	481	535	599	725	811	904	1,003	1,105	1,204	1,299	1,384	1,456	1,522
Income taxes payable, net, non-current	8,849	9,176	9,258	10,150	11,624	13,264	14,956	16,676	18,327	19,796	21,103	22,014	22,828
Deferred income taxes	3,561	5,257	514	514	514	514	514	514	514	514	514	514	514
Operating lease liabilities	11,146	11,389	12,501	14,273	15,974	17,857	19,920	22,153	24,506	26,935	29,377	31,764	34,076
Other long-term liabilities	2,269	2,205	2,247	2,247	2,247	2,247	2,247	2,247	2,247	2,247	2,247	2,247	2,247
Total non-current liabilities	40,238	43,379	39,820	43,307	48,103	53,411	59,105	65,141	71,279	77,335	83,193	88,484	93,519
Total liabilities	97,072	107,633	109,120	122,143	136,389	151,795	168,194	185,411	202,291	218,624	233,736	246,897	259,162
Stockholders' equity:													
Class A, class B, & class C stock & additional paid-in capite	58,510	61,774	68,184	84,439	100,693	113,697	113,697	113,697	113,697	113,697	113,697	113,697	113,697
Accumulated other comprehensive income (loss)	633	(1,623)	(7,603)	(7,603)	(7,603)	(7,603)	(7,603)	(7,603)	(7,603)	(7,603)	(7,603)	(7,603)	(7,603)
Retained earnings	163,401	191,484	195,563	206,734	219,529	234,128	250,590	268,945	289,116	310,905	334,133	358,362	383,489
Total stockholders' equity	222,544	251,635	256,144	283,570	312,619	340,222	356,684	375,038	395,210	416,999	440,226	464,456	489,582
Total liabilities and stockholders' equity	319,616	359,268	365,264	405,713	449,008	492,018	524,878	560,449	597,501	635,623	673,962	711,353	748,744

Alphabet Inc.
Historical Cash Flow Statement
in millions

Fiscal Years Ending Dec. 31	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Operating activities										
Net income	12,920	14,444	16,348	19,478	12,662	30,736	34,343	40,269	76,033	59,972
Adjustments:										
Depreciation & impairment of property & equipment	2,781	3,523	4,132	5,267	6,103	8,164	10,856	12,905	11,555	15,287
Amortization & impairment of intangible assets	1,158	1,456	931	877	812	871	925	792	886	641
Stock-based compensation expense	3,343	4,279	5,203	6,703	7,679	9,353	10,794	12,991	15,376	19,362
Excess tax benefits from stock-based award activities	(481)	(648)	(548)	-	-	-	-	-	-	-
Deferred income taxes	(437)	(104)	(179)	(38)	258	778	173	1,390	1,808	(8,081)
Loss (gain) on debt & equity securities, net	-	(285)	-	-	-	(6,650)	(2,798)	(6,317)	(12,270)	5,519
Loss (gain) on divestiture of business	(700)	(740)	-	-	-	-	-	-	-	-
Impairment of equity investments	-	-	-	-	-	-	-	-	-	-
Loss (gain) on marketable & non-marketable investments, net	-	-	334	275	194	-	-	-	-	-
Other adjustments	106	87	212	174	137	(189)	(592)	1,267	(213)	1,030
Accounts receivable, net	(1,307)	(1,641)	(2,094)	(2,578)	(3,768)	(2,169)	(4,340)	(6,524)	(9,095)	(2,317)
Income taxes, net	401	283	(179)	3,125	8,211	(2,251)	(3,128)	1,209	(625)	584
Inventories	(234)	-	-	-	-	-	-	-	-	-
Prepaid revenue share, expenses & other assets	(696)	459	(318)	312	-	-	-	-	-	-
Other assets	-	-	-	-	(2,164)	(1,207)	(621)	(1,330)	(1,846)	(5,046)
Accounts payable	605	436	203	110	731	1,067	428	694	283	707
Accrued expenses & other liabilities	713	757	1,597	1,515	4,891	8,614	7,170	5,504	7,304	3,915
Accrued revenue share	254	245	339	593	955	483	1,273	1,639	1,682	(445)
Deferred revenue	233	(175)	43	223	390	371	37	635	774	367
Net cash provided by operating activities	18,659	22,376	26,024	36,036	37,091	47,971	54,520	65,124	91,652	91,495
Investing Activities										
Purchases of property & equipment	(7,358)	(10,959)	(9,915)	(10,212)	(13,184)	(25,139)	(23,548)	(22,281)	(24,640)	(31,485)
Proceeds from disposals of property & equipment	-	-	-	240	99	98	-	-	-	-
Purchases of marketable securities	(45,444)	(56,310)	(74,368)	(84,509)	(92,195)	(50,158)	(100,315)	(136,576)	(135,196)	(78,874)
Maturities & sales of marketable securities	38,314	51,315	62,905	66,895	73,959	48,507	97,825	132,906	128,294	97,822
Purchases of non-marketable securities	(569)	(1,227)	(2,172)	(1,109)	(1,745)	(2,073)	(1,932)	(7,175)	(2,838)	(2,531)
Maturities & sales of non-marketable securities	-	-	-	494	533	1,752	405	1,023	934	150
Acquisitions, net of cash acquired, & purchases of intangible assets	-	-	-	-	-	-	-	-	-	(6,969)
Cash collateral related to (from) securities lending	(299)	1,403	(350)	(2,428)	-	-	-	-	-	-
Investments in reverse repurchase agreements	600	(775)	425	450	-	-	-	-	-	-
Proceeds from divestiture of business	2,525	386	-	-	-	-	-	-	-	-
Acquisitions, net of cash acquired & proceeds received from divestiture, & pu	(1,448)	(4,888)	-	-	-	-	-	-	-	-
Acquisitions, net of cash acquired, & purchases of intangibles & other	-	-	(236)	(986)	(287)	(1,491)	(2,515)	(738)	(2,618)	-
Proceeds from collection of notes receivable	-	-	-	-	1,419	-	-	-	-	-
Other investing activities	-	-	-	-	-	-	589	68	541	1,589
Net cash used in investing activities	(13,679)	(21,055)	(23,711)	(31,165)	(31,401)	(28,504)	(29,491)	(32,773)	(35,523)	(20,298)
Financing Activities										
Net proceeds (payments) related to stock-based award activities	(781)	(2,069)	(2,375)	(3,304)	(4,166)	(4,993)	(4,765)	(5,720)	(10,162)	(9,300)
Excess tax benefits from stock-based award activities	481	648	548	-	-	-	-	-	-	-
Adjustment payment to class C capital stockholders	-	-	(47)	-	-	-	-	-	-	-
Repurchases of common & capital stock	-	-	(1,780)	(3,693)	(4,846)	(9,075)	(18,396)	(31,149)	(50,274)	(59,296)
Proceeds from issuance of debt, net of costs	10,768	11,625	13,705	8,729	4,291	6,766	317	11,761	20,199	52,872
Repayments of debt	(11,325)	(11,643)	(13,728)	(10,064)	(4,377)	(6,827)	(585)	(2,100)	(21,435)	(54,068)
Proceeds from sale of interest in consolidated entities, net	-	-	-	-	800	950	220	2,800	310	35
Net cash flows from financing activities	(857)	(1,439)	(3,677)	(8,332)	(8,298)	(13,179)	(23,209)	(24,408)	(61,362)	(69,757)
Effect of exchange rate changes on cash and cash equivalents								24	(287)	(506)
Net increase (decrease) in cash and cash equivalents	4,123	(118)	(1,364)	(3,461)	(2,608)	6,288	1,820	7,967	(5,520)	934

Alphabet Inc.

Forecasted Cash Flow Statement

Fiscal Years Ending Dec. 31	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
Cash flow from operating activities:										
Net Income	74,476	85,296	97,330	109,747	122,362	134,477	145,261	154,848	161,533	167,507
Adjustments										
Depreciation & Amortization	20350	22697	25219	28077	31210	34680	38330	42084	45878	49573
Accounts receivable	(2,944)	(5,179)	(5,534)	(5,865)	(6,128)	(5,886)	(5,632)	(5,071)	(4,312)	(3,962)
Inventories	713	(235)	(251)	(266)	(278)	(267)	(255)	(230)	(195)	(179)
Other current assets	(557)	(1,038)	(1,110)	(1,176)	(1,229)	(1,180)	(1,129)	(1,017)	(865)	(794)
Other non-current assets	343	(753)	(804)	(853)	(891)	(856)	(819)	(737)	(627)	(576)
Accounts payable	1,701	819	875	927	969	930	890	802	682	626
Accrued compensation & benefits	2,162	1,941	2,074	2,198	2,296	2,206	2,111	1,901	1,616	1,485
Accrued expenses and other liabilities	3,318	4,937	5,275	5,591	5,841	5,611	5,369	4,834	4,111	3,777
Accrued revenue share	2,296	1,279	1,366	1,448	1,513	1,453	1,391	1,252	1,065	978
Income taxes payable	892	1,474	1,640	1,692	1,719	1,651	1,470	1,307	911	814
Deferred revenue	184	562	601	637	665	639	612	551	468	430
Net cash flow from Operating Activities	102,936	111,800	126,682	142,158	158,051	173,459	187,597	200,524	210,265	219,678
Cash flow from Investing Activities:										
Marketable securities	(2,756)	(2,839)	(2,924)	(3,012)	(3,102)	(3,196)	(3,291)	(3,390)	(3,492)	(3,597)
Non-marketable securities	(2,134)	(2,284)	(2,444)	(2,615)	(2,798)	(2,994)	(3,203)	(3,427)	(3,667)	(3,924)
Purchase of PP&E	(33,288)	(37,279)	(41,543)	(46,063)	(50,784)	(55,320)	(59,659)	(63,567)	(66,890)	(69,943)
Operating lease assets	(1,711)	(1,918)	(2,124)	(2,326)	(2,518)	(2,652)	(2,738)	(2,754)	(2,692)	(2,606)
Net cash used in Investing Activities	(39,890)	(44,320)	(49,035)	(54,015)	(59,202)	(64,161)	(68,892)	(73,138)	(76,741)	(80,069)
Cash flow from Financing Activities:										
Long-term debt	698	1,533	1,691	1,841	1,980	2,036	2,063	2,024	1,921	1,842
Operating lease liabilities	1,772	1,701	1,884	2,063	2,233	2,353	2,429	2,442	2,387	2,312
Cash from ESOP	16,255	16,255	13,004							
Share repurchases	(63,305)	(72,501)	(82,731)	(93,285)	(104,007)	(114,305)	(123,472)	(131,621)	(137,303)	(142,381)
Net cash used in Financing Activities	(44,580)	(53,013)	(66,153)	(89,381)	(99,794)	(109,916)	(118,980)	(127,155)	(132,995)	(138,227)
Net Increase (decrease) in cash	18,465	14,467	11,495	(1,238)	(945)	(619)	(275)	231	529	1,382
Beginning cash	21,879	40,344	54,812	66,307	65,069	64,124	63,505	63,231	63,461	63,991
Ending Cash	40,344	54,812	66,307	65,069	64,124	63,505	63,231	63,461	63,991	65,373

Alphabet Inc.

Common Size Income Statement

<i>Fiscal Years Ending Dec. 31</i>	2020	2021	2022	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
Revenues	182,527	257,637	282,836	303,518	339,901	378,781	419,989	463,039	504,394	543,962	579,591	609,888	637,723
Cost of revenues	38.92%	38.23%	38.99%	38.21%	37.71%	37.21%	36.71%	36.36%	36.01%	35.76%	35.51%	35.51%	35.51%
Depreciation & Amortization	7.50%	4.83%	5.63%	6.70%	6.68%	6.66%	6.69%	6.74%	6.88%	7.05%	7.26%	7.52%	7.77%
Research & development expense	15.11%	12.25%	13.97%	13.11%	13.11%	13.11%	13.11%	13.11%	13.11%	13.11%	13.11%	13.11%	13.11%
Sales & marketing expense	9.83%	8.89%	9.39%	8.87%	8.87%	8.87%	8.87%	8.87%	8.87%	8.87%	8.87%	8.87%	8.87%
General & administrative expense	6.05%	5.24%	5.56%	4.74%	4.49%	4.24%	4.14%	4.04%	3.94%	3.94%	3.94%	3.94%	3.94%
European Commission fine	-	-	-	-	-	-	-	-	-	-	-	-	-
Total costs & expenses	77.41%	69.45%	73.54%	71.64%	70.86%	70.09%	69.52%	69.12%	68.81%	68.73%	68.69%	68.96%	69.21%
Income from operations	22.59%	30.55%	26.46%	28.36%	29.14%	29.91%	30.48%	30.88%	31.19%	31.27%	31.31%	31.04%	30.79%
Interest income	1.02%	0.58%	0.77%	0.91%	0.79%	0.73%	0.68%	0.63%	0.60%	0.57%	0.55%	0.54%	0.53%
Interest expense	-0.07%	-0.13%	-0.13%	-0.09%	-0.08%	-0.08%	-0.08%	-0.08%	-0.08%	-0.08%	-0.08%	-0.08%	-0.08%
Other income (expense), net	2.81%	4.22%	-1.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Income before income taxes	26.34%	35.22%	25.22%	29.18%	29.85%	30.56%	31.08%	31.43%	31.71%	31.76%	31.78%	31.50%	31.24%
Provision for income taxes	-4.28%	-5.71%	-4.02%	-4.65%	-4.75%	-4.87%	-4.95%	-5.00%	-5.05%	-5.06%	-5.06%	-5.02%	-4.97%
Net Income (loss) from discontinued operations	-	-	-	-	-	-	-	-	-	-	-	-	-
Net income	22%	30%	21%	25%	25%	26%	26%	26%	27%	27%	27%	26%	26%

Alphabet Inc.
Common Size Balance Sheet

Fiscal Years Ending Dec. 31	2021	2022	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
Assets												
Current Assets:												
Cash & cash equivalents	8.13%	7.74%	13.29%	16.13%	17.51%	15.49%	13.85%	12.59%	11.62%	10.95%	10.49%	10.25%
Marketable securities	46.07%	32.49%	31.18%	28.68%	26.51%	24.62%	23.00%	21.75%	20.77%	20.08%	19.66%	19.36%
Total cash, cash equivalents, and marketable securities	54.20%	40.22%	44.47%	44.80%	44.01%	40.12%	36.85%	34.34%	32.40%	31.03%	30.15%	29.61%
Accounts receivable, net	15.26%	14.23%	14.23%	14.23%	14.23%	14.23%	14.23%	14.23%	14.23%	14.23%	14.23%	14.23%
Receivable under reverse repurchase agreements	-	-	-	-	-	-	-	-	-	-	-	-
Income taxes receivable, net	0.37%	-	-	-	-	-	-	-	-	-	-	-
Inventory	0.45%	0.94%	0.64%	0.64%	0.64%	0.64%	0.64%	0.64%	0.64%	0.64%	0.64%	0.64%
Prepaid revenue share, expenses & other assets	-	-	-	-	-	-	-	-	-	-	-	-
Other current assets	2.74%	2.87%	2.85%	2.85%	2.85%	2.85%	2.85%	2.85%	2.85%	2.85%	2.85%	2.85%
Total current assets	73.03%	58.27%	62.21%	62.54%	61.74%	57.85%	54.58%	52.07%	50.13%	48.76%	47.88%	47.35%
Non-marketable securities	11.47%	10.78%	10.75%	10.27%	9.86%	9.52%	9.24%	9.07%	9.00%	9.04%	9.19%	9.41%
Prepaid revenue share, expenses & other assets, non-current	-	-	-	-	-	-	-	-	-	-	-	-
Deferred income taxes	0.50%	1.86%	1.73%	1.55%	1.39%	1.25%	1.14%	1.04%	0.97%	0.91%	0.86%	0.82%
Property & equipment, gross	57.06%	60.71%	67.54%	71.28%	74.93%	78.55%	82.21%	86.44%	91.12%	96.48%	102.66%	109.15%
Less: accumulated depreciation & amortization	19.18%	20.87%	26.00%	29.77%	33.29%	36.65%	39.95%	43.52%	47.38%	51.71%	56.66%	61.95%
Property & equipment, net	37.88%	39.84%	41.54%	41.51%	41.64%	41.89%	42.26%	42.91%	43.74%	44.77%	46.00%	47.20%
Operating lease assets	5.03%	5.08%	5.30%	5.30%	5.32%	5.35%	5.39%	5.48%	5.58%	5.71%	5.87%	6.02%
Intangible assets, net	0.55%	0.74%	0.53%	0.35%	0.23%	0.15%	0.10%	0.07%	0.04%	0.02%	0.01%	0.00%
Goodwill	8.91%	10.24%	9.54%	8.52%	7.65%	6.90%	6.25%	5.74%	5.32%	5.00%	4.75%	4.54%
Other non-current assets	2.08%	2.34%	2.07%	2.07%	2.07%	2.07%	2.07%	2.07%	2.07%	2.07%	2.07%	2.07%
Total non-current assets	66.42%	70.88%	71.46%	69.56%	68.15%	67.13%	66.45%	66.38%	66.72%	67.52%	68.76%	70.06%
Total assets	139.45%	129.14%	133.67%	132.10%	129.90%	124.97%	121.04%	118.46%	116.85%	116.28%	116.64%	117.41%
Liabilities and Stockholders' Equity												
Current liabilities:												
Accounts payable	2.34%	1.81%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%	2.25%
Short-term debt	-	-	-	-	-	-	-	-	-	-	-	-
Accrued compensation & benefits	5.39%	4.96%	5.33%	5.33%	5.33%	5.33%	5.33%	5.33%	5.33%	5.33%	5.33%	5.33%
Accrued expenses & other current liabilities	12.12%	13.39%	13.57%	13.57%	13.57%	13.57%	13.57%	13.57%	13.57%	13.57%	13.57%	13.57%
Accrued revenue share	3.49%	2.96%	3.51%	3.51%	3.51%	3.51%	3.51%	3.51%	3.51%	3.51%	3.51%	3.51%
Securities lending payable	-	-	-	-	-	-	-	-	-	-	-	-
Deferred revenue	1.28%	1.38%	1.31%	1.31%	1.31%	1.31%	1.31%	1.31%	1.31%	1.31%	1.31%	1.31%
Income taxes payable, net	0.31%	-	-	-	-	-	-	-	-	-	-	-
Total current liabilities	24.94%	24.50%	25.97%	25.97%	25.97%	25.97%	25.97%	25.97%	25.97%	25.97%	25.97%	25.97%
Long-term debt	5.75%	5.20%	5.07%	4.98%	4.92%	4.87%	4.85%	4.85%	4.88%	4.93%	5.00%	5.07%
Deferred revenue, non-current	0.21%	0.21%	0.24%	0.24%	0.24%	0.24%	0.24%	0.24%	0.24%	0.24%	0.24%	0.24%
Income taxes payable, net, non-current	3.56%	3.27%	3.34%	3.42%	3.50%	3.56%	3.60%	3.63%	3.64%	3.64%	3.61%	3.58%
Deferred income taxes	2.04%	0.18%	0.17%	0.15%	0.14%	0.12%	0.11%	0.10%	0.09%	0.09%	0.08%	0.08%
Operating lease liabilities	4.42%	4.42%	4.70%	4.70%	4.71%	4.74%	4.78%	4.86%	4.95%	5.07%	5.21%	5.34%
Other long-term liabilities	0.86%	0.79%	0.74%	0.66%	0.59%	0.54%	0.49%	0.45%	0.41%	0.39%	0.37%	0.35%
Total non-current liabilities	16.84%	14.08%	14.27%	14.15%	14.10%	14.07%	14.07%	14.13%	14.22%	14.35%	14.51%	14.66%
Total liabilities	41.78%	38.58%	40.24%	40.13%	40.07%	40.05%	40.04%	40.11%	40.19%	40.33%	40.48%	40.64%
Stockholders' equity:	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Class A, class B, & class C stock & additional paid-in capital	23.98%	24.11%	27.82%	29.62%	30.02%	27.07%	24.55%	22.54%	20.90%	19.62%	18.64%	17.83%
Accumulated other comprehensive income (loss)	-0.63%	-2.69%	-2.50%	-2.24%	-2.01%	-1.81%	-1.64%	-1.51%	-1.40%	-1.31%	-1.25%	-1.19%
Retained earnings	74.32%	69.14%	68.11%	64.59%	61.81%	59.67%	58.08%	57.32%	57.16%	57.65%	58.76%	60.13%
Total stockholders' equity	97.67%	90.56%	93.43%	91.97%	89.82%	84.93%	80.99%	78.35%	76.66%	75.95%	76.15%	76.77%
Total liabilities and stockholders' equity	139.45%	129.14%	133.67%	132.10%	129.90%	124.97%	121.04%	118.46%	116.85%	116.28%	116.64%	117.41%

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

Risk-Free Rate	4.18%
Beta	1.13
Equity Risk Premium	5.00%
Cost of Equity	9.84%

ASSUMPTIONS:

10yr Treasury Rate
 Avg 1,2,3,4,5 year weekly beta
 Henry Fund Estimate

Cost of Debt:

Risk-Free Rate	4.18%
Implied Default Premium	0.36%
Pre-Tax Cost of Debt	4.54%
Marginal Tax Rate	24.8%
After-Tax Cost of Debt	3.41%

10yr Treasury Rate

YTM on Company's 10yr debt

Market Value of Common Equity:

Class A Common price	\$ 5,933,000,000	135.66
Class B Convertible price	\$ 875,000,000	135.66
Class C Captial Stock price	\$ 5,801,000,000	136.80
MV of Equity	1,717,150,080,000	

MV Weights

98.26%

Market Value of Debt:

Short-Term Debt	-
Current Portion of LTD	1,317,000,000
Long-Term Debt	13,705,000,000
PV of Operating Leases	15,409,000,000
MV of Total Debt	30,431,000,000

1.74%

Market Value of the Firm

1,747,581,080,000

100.00%

Estimated WACC

9.73%

Alphabet Inc.

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

Fiscal Years Ending Dec. 31	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
EPS	\$ 5.87	\$ 6.89	\$ 8.10	\$ 9.48	\$ 11.07	\$ 12.78	\$ 14.52	\$ 16.32	\$ 17.95	\$ 19.62

Key Assumptions

CV growth of EPS	5.00%
CV Year ROE	36.07%
Cost of Equity	9.84%

Future Cash Flows

P/E Multiple (CV Year)										17.79
EPS (CV Year)										<u>\$ 19.62</u>
Future Stock Price										<u>\$ 349.11</u>
Dividends Per Share	0	0	0	0	0	0	0	0	0	
Discounted Cash Flows										\$ 149.98

Intrinsic Value as of Last FYE	\$ 149.98
Implied Price as of Today	\$ 159.53

Alphabet Inc.*Relative Valuation Models*

Ticker	Company	Price	EPS 2023E	EPS 2024E	P/E 23	P/E 24
AAPL	Apple	\$189.46	\$6.05	\$6.58	31.32	28.79
META	Meta	\$296.38	\$13.47	\$16.85	22.00	17.59
MSFT	Microsoft	\$328.66	\$10.99	\$12.68	29.91	25.92
ORCL	Oracle	\$123.23	\$5.59	\$6.31	22.04	19.53
AMZN	Amazon	\$138.12	\$2.21	\$3.17	62.50	43.57
Average					33.55	27.08

GOOGL Alphabet Inc. \$135.66 \$5.87 \$6.89 23.1 19.7

Implied Relative Value:

P/E (EPS23) \$ 196.85

P/E (EPS24) \$ 186.64

Alphabet Inc.*Present Value of Operating Lease Obligations*

Fiscal Years Ending Dec. 31	2013	2014	2015	2016	2017	2018
Year 1	499.0	598.0	646.0	828.0	1160.0	1303.0
Year 2	477.0	622.0	781.0	896.0	1120.0	1384.0
Year 3	438.0	634.0	792.0	905.0	1062.0	1327.0
Year 4	418.0	596.0	766.0	850.0	968.0	1145.0
Year 5	370.0	576.0	716.0	765.0	828.0	977.0
Thereafter	1836.0	3157.0	3705.0	3693.0	3615.0	3911.0
Total Minimum Payments	4038.0	6183.0	7406.0	7937.0	8753.0	10047.0
Less: Cumulative Interest	803.8	1331.6	1572.6	1604.9	1641.4	1824.9
PV of Minimum Payments	3234.2	4851.4	5833.4	6332.1	7111.6	8222.1
Implied Interest in Year 1 Payment		146.8	220.3	264.8	287.5	322.9
Pre-Tax Cost of Debt	4.54%	4.54%	4.54%	4.54%	4.54%	4.54%
Years Implied by Year 6 Payment	5.0	5.5	5.2	4.8	4.4	4.0
Expected Obligation in Year 6 & Beyond	370	576	716	765	828	977
Present Value of Lease Payments						
PV of Year 1	477.3	572.0	617.9	792.0	1109.6	1246.4
PV of Year 2	436.5	569.1	714.6	819.9	1024.8	1266.4
PV of Year 3	383.4	554.9	693.2	792.1	929.6	1161.5
PV of Year 4	350.0	499.0	641.4	711.7	810.5	958.7
PV of Year 5	296.3	461.3	573.5	612.7	663.2	782.5
PV of 6 & beyond	1290.7	2194.9	2592.8	2603.6	2574.0	2806.6
Capitalized PV of Payments	3234.2	4851.4	5833.4	6332.1	7111.6	8222.1

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

Number of Options Outstanding (shares):	442
Average Time to Maturity (years):	2.80
Expected Annual Number of Options Exercised	158

Current Average Strike Price:	\$ 102.97
Cost of Equity:	9.84%
Current Stock Price:	\$135.66

Fiscal Years Ending Dec. 31	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
Increase in Shares Outstanding:	158	158	126							
Average Strike Price:	\$ 102.97	\$ 102.97	\$ 102.97							
Increase in Common Stock Account:	16,255	16,255	13,004	-	-	-	-	-	-	-
Share Repurchases (\$)	63,305	72,501	82,731	93,285	104,007	114,305	123,472	131,621	137,303	142,381
Expected Price of Repurchased Shares:	\$ 135.66	\$ 149.01	\$ 163.68	\$ 179.79	\$ 197.48	\$ 216.92	\$ 238.27	\$ 261.72	\$ 287.47	\$ 315.77
Number of Shares Repurchased:	467	487	505	519	527	527	518	503	478	451
Shares Outstanding (beginning of the year)	12,849	12,540	12,212	11,832	11,313	10,787	10,260	9,742	9,239	8,761
Plus: Shares Issued Through ESOP	158	158	126	0	0	0	0	0	0	0
Less: Shares Repurchased in Treasury	467	487	505	519	527	527	518	503	478	451
Shares Outstanding (end of the year)	12,540	12,212	11,832	11,313	10,787	10,260	9,742	9,239	8,761	8,310

Alphabet Inc.*Valuation of Options Granted under ESOP*

Current Stock Price	\$135.66
Risk Free Rate	4.18%
Current Dividend Yield	0.00%
Annualized St. Dev. of Stock Returns	26.50%

Range of Outstanding Options	Number of Shares	Average Exercise Price	Average Remaining Life (yrs)	B-S Option Price	Value of Options Granted
Range 1	442	102.97	2.80	\$ 49.08	\$ 21,695
Total	442	\$ 102.97	2.80	\$ 49.08	\$ 21,695

Alphabet Inc.
Sensitivity Tables

		Equity Risk Premium							
		146.08	4.75%	5.00%	5.25%	5.50%	5.75%	6.00%	6.25%
Beta	0.98	176.98	168.32	160.47	153.31	146.77	140.77	135.24	
	1.03	168.57	160.31	152.83	146.01	139.77	134.05	128.78	
	1.08	160.92	153.03	145.88	139.37	133.42	127.95	122.92	
	1.13	153.94	146.39	139.54	133.31	127.62	122.39	117.58	
	1.18	147.54	140.30	133.73	127.76	122.30	117.29	112.69	
	1.23	141.65	134.70	128.39	122.66	117.42	112.61	108.19	
	1.28	136.22	129.53	123.46	117.95	112.91	108.29	104.04	

		CV Growth of NOPLAT							
		146.08	3.00%	3.50%	3.75%	4.00%	4.25%	4.50%	4.75%
WACC	9.00%	150.99	158.92	163.45	168.43	173.94	180.06	186.90	
	9.50%	138.59	144.96	148.55	152.48	156.78	161.50	166.73	
	10.00%	128.00	133.18	136.08	139.22	142.63	146.35	150.43	
	10.30%	122.36	126.96	129.52	132.29	135.28	138.53	142.07	
	10.50%	118.86	123.12	125.48	128.03	130.78	133.75	136.99	
	11.00%	110.89	114.42	116.37	118.46	120.70	123.12	125.73	
	11.50%	103.88	106.84	108.46	110.19	112.04	114.02	116.15	

		Cost of Revenues							
		146.08	34.50%	35.50%	36.50%	37.54%	38.50%	39.50%	40.50%
R&D Spending	13.00%	165.91	160.72	155.53	150.13	145.15	139.97	134.78	
	13.50%	163.31	158.12	152.94	147.54	142.56	137.37	132.18	
	14.00%	160.72	155.53	150.34	144.95	139.97	134.78	129.59	
	14.61%	157.55	152.37	147.18	141.78	136.80	131.61	126.43	
	15.00%	155.53	150.34	145.15	139.76	134.78	129.59	124.40	
	15.50%	152.94	147.75	142.56	137.17	132.18	127.00	121.81	
	16.00%	150.34	145.15	139.97	134.57	129.59	124.40	119.21	

		Effective Tax Rate							
		146.08	14.50%	15.00%	15.50%	15.92%	16.50%	17.00%	17.50%
Cost of Equity	9.00%	147.86	146.98	146.09	145.35	144.32	143.44	142.55	
	9.50%	148.31	147.42	146.53	145.79	144.76	143.87	142.98	
	10.00%	148.75	147.86	146.97	146.22	145.19	144.30	143.41	
	10.41%	149.12	148.22	147.33	146.58	145.55	144.66	143.76	
	11.00%	149.64	148.74	147.85	147.10	146.06	145.16	144.27	
	11.50%	150.08	149.18	148.29	147.53	146.49	145.59	144.70	
	12.00%	150.52	149.62	148.72	147.97	146.92	146.02	145.12	

		Sales and Marketing Expense							
		146.08	7.50%	8.00%	8.50%	8.90%	9.50%	10.00%	10.50%
G&A Expense	4.00%	157.04	154.45	151.86	149.78	146.67	144.07	141.48	
	4.50%	154.45	151.86	149.26	147.19	144.07	141.48	138.89	
	5.00%	151.86	149.26	146.67	144.59	141.48	138.89	136.29	
	5.50%	149.26	146.67	144.07	142.00	138.89	136.29	133.70	
	6.00%	146.67	144.07	141.48	139.40	136.29	133.70	131.10	
	6.50%	144.07	141.48	138.89	136.81	133.70	131.10	128.51	
	7.00%	141.48	138.89	136.29	134.22	131.10	128.51	125.92	

		DDM							
		159.53	4.00%	4.50%	5.00%	5.50%	6.00%	6.50%	7.00%
Payout Ratio	77.50%	127.24	136.54	147.77	161.58	178.98	201.59	232.15	
	80.00%	130.22	139.90	151.56	165.92	184.02	207.52	239.30	
	82.50%	133.30	143.35	155.48	170.41	189.21	213.65	246.68	
	85.00%	136.48	146.93	159.53	175.04	194.58	219.97	254.30	
	87.50%	139.77	150.62	163.71	179.83	200.13	226.51	262.17	
	90.00%	143.16	154.44	168.04	184.77	205.87	233.27	270.31	
	95.00%	150.31	162.47	177.14	195.19	217.94	247.50	287.45	

Company	Ticker	Mkt Cap (B)	Price	YTD (%)	Sales Growth			PEG	P/E FY1	P/S FY1	EPS FY1	Margin	
					1 year	3 year						EBIT	Net
Alphabet	GOOGL	1,691.3	133.74	51.6%	4%	74%	1.3x	23.6x	5.5x	5.7	28.1%	21.2%	
Digital Advertising													
Meta Platforms	META	771.1	299.67	149.0%	1%	60%	0.8x	22.2x	5.8x	13.5	32.3%	18.7%	
Pinterest	PINS	18.1	27.02	11.3%	6%	135%	-	27.7x	6.0x	1.0	-6.5%	-10.1%	
Baidu ADR	BIDU	46.1	16.41	14.7%	-1%	25%	0.3x	13.1x	2.4x	10.0	15.7%	12.1%	
Snap A	SNAP	14.7	9.03	0.9%	-1%	133%	-	-	3.2x	-0.8	-32.7%	-30.2%	
Cloud Computing													
Microsoft	MSFT	2,383.2	320.77	33.8%	7%	48%	2.2x	29.2x	10.1x	11.0	42.5%	34.1%	
Amazon.com	AMZN	1,388.1	135.29	61.1%	11%	67%	1.1x	61.1x	2.4x	2.2	5.0%	2.4%	
NVIDIA	NVDA	1,043.3	422.39	189.0%	10%	150%	1.1x	39.7x	19.3x	10.6	55.4%	31.6%	
IBM	IBM	136.5	149.83	6.3%	-5%	-20%	3.0x	15.7x	2.2x	9.6	17.6%	3.6%	
Oracle	ORCL	309.2	112.87	38.1%	15%	30%	1.5x	20.3x	5.8x	5.6	42.9%	18.4%	
PayTV/Streaming													
Charter Communications	CHTR	67.1	448.17	32.2%	3%	17%	0.9x	13.9x	1.2x	32.4	23.4%	8.5%	
DISH Network	DISH	3.4	6.41	-54.3%	-8%	25%	-	8.2x	0.2x	0.8	5.6%	11.1%	
Apple	AAPL	2,743.7	175.49	35.1%	-1%	40%	3.3x	29.0x	7.2x	6.1	29.6%	24.7%	
Comcast	CMCSA	187.7	45.50	30.1%	-1%	14%	1.1x	12.0x	1.6x	3.8	19.3%	5.4%	
fuboTV	FUBO	0.8	2.70	55.2%	39%	-	-	-	0.6x	-1.2	-24.4%	-32.7%	