# Alphabet

# ALPHABET ANALYST REPORT

Student Managed Fund 2018 – 2019

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## Table of Contents

Report Highlights	
Basis for Recommendation	1
Business Description	3
Management	
Culture	3
Corporate Social Responsibility	3
Industry Overview & Trends	4
Investment Thesis	5
Thesis	5
Catalysts	
Financials	6
Valuation	
GOOGL vs. GOOG	7
Discounted Cash Flow	
Risks to Investment Thesis	8
Conclusion	9
Appendix	10

## Report Highlights

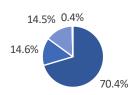
Alphabet, Inc. (NASDAQ: GOOG)
Sector: Communication Services

Purchase Price	Current Price	Target Price	52-Week Range	Market Cap	P/E	Beta
\$1040.55	\$1263.45	\$1538.13	\$970.11 - \$1273.89	867.95B	28.52	1.16

Figure 1: GOOG vs. SPY

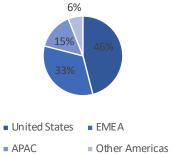


Figure 2: Revenue by Segment



- Google Properties revenues
- Google Network Members' properties revenues
- Google Other revenues
- Other bets revenues

Figure 3: Revenue by Region



#### **Basis for Recommendation**

We recommended a **BUY** rating for Alphabet (GOOG), based on a price target of \$1538.13, resulting in a margin of safety of 21.74% given April 25<sup>th</sup>, 2019's stock price of \$1263.45. Alphabet has been a strong investment since the company's initial public offering. We believe that Alphabet is poised to continue to beat the market over a ten-year time horizon, and will continue to produce stable and constant returns. In addition to some key catalysts, our recommendation is driven by the following three factors:

- 1. Well-Structured Business Model Alphabet's traditional business model is selling advertising space on their own and affiliates websites. Alphabet then uses the free cash flow it generates from selling these advertisements to invest in other products and services. Today, Alphabet is benefiting as those other business lines begin to monetize and create value for shareholders.
- 2. Future Focus Alphabet is focused on controlling the middle.

  They are using Google and their other suite of products to collect data to build an artificial intelligence program. Alphabet will then use this software to offer their customers a unique and customized product or service.
- 3. International Growth Alphabet is poised to experience exponential growth in the emerging markets of Asia, specifically China and India. An example of this is GooglePay in India. The app processed over \$1 billion in transactions after just six months.

#### **Business Description**

Alphabet was created in 2015 by co-founders of Google, Larry Page and Sergey Bin. Alphabet was formed as a technology conglomerate following a restructuring of Google. This decision was made because

Figure 4: Google Segment Revenues (billions)

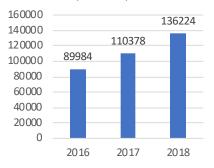


Figure 5: Google Advertising Revenues (billions)

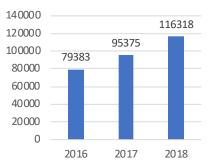


Figure 6: Other Bets Revenues (billions)

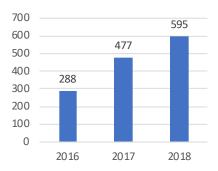
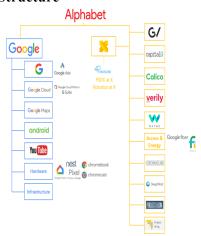


Figure 7: Alphabet Corporate Structure



management believed that the business could be run more effectively by separating products and services into their own businesses units. Today, Alphabet is split into two main components. The first of which is Google, and the second being Other Bets.

Google – Google is the core to Alphabet's business model. In 2018, Google's core products such as Android, Google Cloud, Google Suite, Google Play, search, and YouTube all had over a billion active monthly users. Google has become the dominant search engine in the industry because of their hyper-focus on consumer engagement. Google consistently allocates billions of dollars on research and development expense in order to pioneer new developments for their products and services. Google's constant innovation keeps consumers engaged. Other businesses also included in this segment are GoogleAds, Google Maps, Android, and Google Hardware such as Google Home or Google Chromecast. In 2018, Google accounted for 99.6% of Alphabet's total revenue.

This section also accounts for the traditional advertising revenue made from Alphabet's own websites and those of affiliated companies. Google sells two different types of advertising. First off is performance advertising, which is when Google creates ads that generate money from each click on the advertisement. The second type is brand advertising which continues to expose consumers to a specific product or brand using video, banner, and text advertisements. In 2018, this subsection of the Google subsidiary accounted for 85.4% of Alphabet's total operating revenues.

Other Bets – Other Bets is the riskier, but more exciting part of the Alphabet business model. Alphabet is trying to use data and technology to solve some of the world's biggest problems. These companies are early stage businesses that are yet to generate strong and stable free cash flows. Alphabet refers to many of these businesses as 'moonshot ideas' that may never become profitable. However, in the circumstance that they do, those businesses will be able to monetize their new products with strong returns that mesh well with the alphabet business model. Alphabet has a strong management team at the head of each of these start-up companies to steer them towards profitability. Alphabet's Other Bets currently account for approximately 0.4% of total revenue.

There are a vast array of unique businesses in the Other Bets section. To highlight a few of Alphabet's most successful Other Bets: Nest is a company manufacturing home products such as a e-thermostat and a security system, Waymo is trying to create the world's first self-driving car, DeepMind is an artificial intelligence company that won a protein folding competition in December 2018. Alphabet is strategically expanding into new business segments and deploying their research and development expense into opportunities that can generate long-term value for their shareholders.

Figure 8: Alphabet CEO, Larry Page



Figure 9: Alphabet President, Sergey Bin



Figure 10: Google CEO, Sundar Pichai



Figure 11: Noogle Hat worn by



#### Management

A company is only as strong as their management team, and we believe that management teams are essential to unlock and create value for their shareholders. We believe that Alphabet is being lead by brilliant, visionary leaders from both the technology and business worlds.

- Larry Page Chief Executive Officer (CEO) of Alphabet. Larry Page is one of Google's co-founders. Page originally served as CEO of Google before the company's restructuring in 2015. Page holds an undergraduate B.S. degree in Computer Science Engineering from the University of Michigan and a graduate M.S. degree in Computer Science from Stanford University.
- Sergey Bin President of Alphabet. Sergey Bin is one of Google's cofounders. Previously, Bin served as head of Google X, the company's
  semi-secret innovation division. Bin holds an undergraduate B.S.
  degree in Computer Science and Mathematics from the University of
  Maryland and a graduate M.S. degree in Computer Science from
  Stanford University.
- Sundar Pichai Chief Executive Office (CEO) of Google. Sundar Pichai started his career as a McKinsey & Co. management consultant. Pichai joined Google in 2004. Pichai is largely credited for pioneering the creation of Google Chrome and Google Drive. Pichai holds a graduate M.S. degree in Material Science and Engineering from Stanford University and a MBA from the Wharton School of Business at the University of Pennsylvania.

#### Culture

Alphabet prides itself on its company culture and gives it credits for some of the company's success. Alphabet encourages a culture of innovation, where employees are encouraged to brainstorm inventions to benefit the company. Alphabet employees use 20% of their time developing personal ideas that they believe are valuable. Many products such as Gmail, Google News, and AdSense have been created by employees during their 20% of free time.

#### **Corporate Social Responsibility**

Many Corporate Social Responsibility (CSR) organizations have ranked Alphabet as the most sustainable company because of Alphabet's commitment to environmental, social, and governance (ESG). We wanted to highlight a few initiatives in each category. Environmentally, Alphabet runs 100% on renewable energy. Socially, Alphabet is creating offline digital learning content and providing tools for teachers. For governance, Alphabet's board is 25% women while the industry median is just 22%.

## **Industry Overview & Trends**

Figure 12: GOOG vs. **Communication Services Sector** 



Figure 13: Global Digital **Advertising Expenditures** 

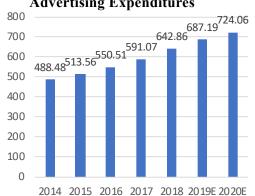
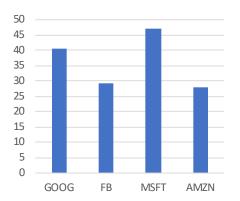


Figure 14: Smartphone

	2016	2017	2018	2019
Android	84.6%	85.1%	84.8%	85.2%
IOS	14.7%	14.7%	15.1%	14.8%
Other	0.7%	0.2%	0.1%	1.0%

Figure 15: EBITDA of Alphabet and its competitors (billions)



The communication services industry has a positive outlook because spending appears to be increasing. Alphabet derives the majority of it's revenues from digital advertising. As of 2018, Alphabet continues to remain strong as the dominant company in this space. Alphabet made up approximately 33% of the total market share of global advertising revenues. Alphabet's nearly doubles their closest competitors market share, which is Facebook. Facebook makes up approximately 18% of the total market share of global advertising revenues.

Global advertising spending is poised to grow as there is more of an increased emphasis on digital spending. In 2015, global digital advertising spending was approximately \$500 billion. However, industry analysts estimate spending will reach approximately \$725 billion by 2020. This gives the global advertising spending a compounded annual growth rate of over 7%.

Additionally, Alphabet derives revenue from Android sales. Android has been the top smartphone operating system since 2010. In 2019, it estimated that Android will hold approximately 84% of the market share for smartphone operating systems. Industry analysts estimate global mobile advertising revenue will double to \$250 billion, where Alphabet is slated to capture the majority of the revenue increase.

Alphabet has many competitors in their individual lines of businesses; however, there is no company that exists that truly competes against Alphabet in all of their various business segments. No other company in the world has the diverse set of data Alphabet possesses. Alphabet and its' subsidiaries can leverage those thousands of pieces of data that have been collected in their various lines of business.

This gives Alphabet a competitive advantage, which will allow them to be the first mover into the artificial intelligence field. Some of us may already see the push notifications pop up on our phones telling us to leave now based on traffic conditions, along with other notifications. It is only a matter of time before Alphabet is able to use your data to make recommendations to you and continue to use this as a space to sell advertising.

In a not so distant future, you will be driving along the highway in your self-driving Waymo car. Suddenly, you yawn and your Google assistant registers this and the algorithm thinks through different scenarios. Your Google assistant then notifies you that there is a Starbucks a few miles down the road and asks if you would like it to order your favorite type of coffee. Alphabet would then collect a small portion of the sale it just generated. Alphabet is playing to the middle with its' AI computing capabilities, which will allow the company to continue to grow.

## **Investment Thesis**

# Figure 16: Alphabet Percentage of Global Advertising Expenditures

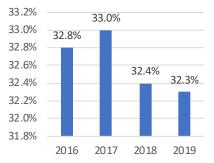
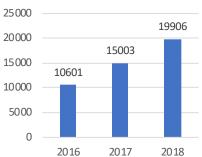


Figure 17: Google Other Revenues (billions)



**Figure 18: Google Home Device** 



Figure 19: Google Chromecast Device



#### **Thesis**

Alphabet is a leading technology giant that has a long track record of success and growth. This dominance is expected to continue for many years to come because of the companies well-structured business model, future focus, and international growth opportunities.

#### **Catalysts**

There are many catalysts which will continue to increase Alphabet's dominance, and Alphabet's top line revenue. First, Alphabet currently holds the dominant market share in digital advertising. Next, Alphabet's hardware and software product expansion will allow for Alphabet to capture more of the market. Lastly, Alphabet's other bets section is beginning to monetize as moonshot ideas become profitable.

- Dominant Market Share in Digital Advertising As people spend more and more time on the internet, the use and need of online digital ads is increasing. As discussed before total global advertising expenditures is expected to grow to \$750 billion by 2020. Alphabet, specifically Google, has almost a third of the market share for this segment. Additionally, mobile advertising is expected to double in the next two years to reach \$250 billion. Once again. Alphabet holds a dominant market share but this time with 85.2% of the smart phones running on the Android operating system. Therefore, as overall expenditures are expected to increase drastically, Alphabet's top-line will increase with it.
- Hardware Revenue Growth Alphabet has a strong and growing hardware businesses. Alphabet offers a whole selection of products which include phones, tablets, laptops and connected home devices. Connected home devices are leading growth in this sector, as more and more households are purchasing devices such as the Amazon Echo or Google Home. The market for smart devices was created in 2015 by Amazon, and the growth has steadily been on the rise. Analysts estimate the compound annual growth rate of revenue to be close to 48%. Individuals are able to dictate notes to their Google Home, then she is able to effortless retrieve the notes on her google account. Although there was a first-move advantage for Amazon, Google Home's ease of use due to the Google account connection has allowed for Google Home sales to surpass Amazon. In May 2018, Google Home outsold Amazon Echo by approximately 483%. As of August 2018, Google Home has reached a base of 50 million units, and daily active users of the device has increased fives times.

Figure 20: Alphabet Total Employee Headcount

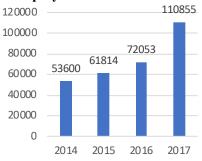


Figure 21: Fiber Logo



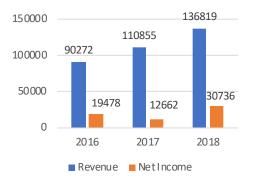
Figure 22: Verily Logo



- Software Revenue Growth More and more companies reliance on cloud computing and software have caused astronomical growth rates in this industry. Cloud computing expenditures are expected to climb to over \$500 billion by 2022. Cloud computing revenue accounts for Alphabet's fastest growing segment. Currently Alphabet ranks third for market share in this segment, but Alphabet is growing faster than any of their competitors. Alphabet is committed to its cloud computing business and the company continues to increase its presence through a number of investments and acquisitions. Alphabet has recently seen a spike in their total number of employees, which is being driven by cloud hires. Additionally, there has been a small increase in capital expenditures to finance the real estate, construction, and upkeep of data centers that will lay the groundwork for their cloud business. Moreover, Alphabet has acquired a wide array of cloud based computing companies that aim to fill any holes that exist in their current cloud computing. On Alphabet's 2017 Q4 earnings call, it was announced the cloud business was generating over \$1 billion in revenue. Additionally, Google Suite has over four million paying customers.
- Monetization of Other Bets Many of Alphabet's other bets are risky companies that may never be able to make any money. However, some of Alphabet's other bets have slowly started to turn a profit. In 2018, other bets revenue posted a 24.7% year-over-year growth following a 65.6% year-over-year growth in 2017. Although some believe this revenue is negligible, the Google segment of revenue as a percentage of total revenue is decreasing year after year. The monetization of other bets is being driven by Fiber, a fiberoptic company dedicated to delivering high-speed internet, and Verily, a life sciences company dedicated to using technology to detect, treat, and cure infectious diseases. We expect more of Alphabet's other bets to continue to monetize as new products and innovations are being created.

## Financials

Figure 23: Alphabet Revenue and Net Income



Alphabet's top line revenue, net income, and free cash flow have been steadily increasing since it's initial public offering on the NASDAQ. The revenue growth Alphabet experienced has been driven by their increasing market share in the digital advertising industry along with main new product innovations, such as Gmail and the Google Drive.

Moving forward, Alphabet is expected to continue to grow because of their central business model that supports the companies future focus on artificial intelligence, and international expansion into new emerging markets that are expected to grow faster than the overall world economy. Additionally, the catalysts outlined above will contribute to

Figure 24: 2018 Financial Ratios

Gross Margin	56.4%
Cash Ratio	3.15
ROIC	18.0%
ROE	18.5%
ROA	13.2%

Alphabet's revenue. The catalysts will also provide Alphabet with a strong economic moat as the company continues to expand into new and innovative industries through the company's other bets section of their business.

Alphabet has generated strong gross margins, cash balance, ROIC, ROE, and ROA ratios. Alphabet is known for their strategic acquisitions of smaller technology companies, but what makes the company unique is their ability to consistently create value through these acquisitions. It is also important to note that Alphabet has constantly grown even during the 2008 financial crisis.

## **Valuation**

Figure 25: Percent Voting Power per Share

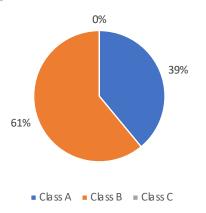


Figure 26: DCF Model

Implied Perpetuity Growth Rate	
Terminal Year Free Cash Flow	\$ 100,549.1
WACC	9.0%
Terminal Value	\$ 1,892,151.7
Implied Perpetuity Growth Rate	3.5%

Implied Equity Value and Share Price	0	
PV of Cash Flows	\$	121,522.3
PV of Terminal Value	\$	799,265.3
Enterprise Value	\$	920,787.6
Less: Total Debt	\$	3,969.0
Plus: Cash and Cash Equivalents	\$	101,871.0
Plus: Other Bets	\$	50,000.0
Implied Equity Value	\$	1,068,689.6
Fully Diluted Shares Outstanding		694.8
Implied Share Price	\$	1,538.13
Current Stock Price		1263.45
Margin of Safety		21.74%

Alphabet was purchased on two occasions: first on November, 15<sup>th</sup> 2018 at \$1049.96 and second on December 26<sup>th</sup>, 2018 at \$989.13. These two positions gave us an average purchase price of \$1040.55. We reallocated our capital after the stock market fell towards the end of December after we reviewed our investment thesis and felt nothing had fundamentally changed for Alphabet.

#### **GOOGL vs. GOOG**

Alphabet's equity is made up of three unique classes of shares:

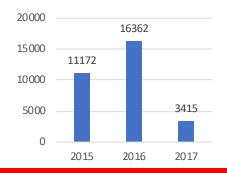
- Class A Shares (GOOGL) This is publicly traded and gives the owner one vote per share.
- Class B Shares (Privately Held) This is privately held by the top executives and the founders of the company. This gives the owner ten votes per share, and class B shareholders currently have 61% of the voting.
- Class C Shares (GOOG) This is publicly traded and gives the owner no voting power.

Historically, GOOGL and GOOG have the same price fluctuations, but GOOGL trades at a slight premium because of its voting rights. Therefore, we recommend purchasing GOOG because company insiders hold the majority of voting power, so nothing will pass without their approval. Because of this, we believe the slight premium to have voting power is not worth it.

#### Discounted Cash Flow Model

For the Discounted Cash Flow (DCF) Model, we assumed that revenue grew at approximately 20% for the next five years. This was based off of management guidance and industry analyst expectations for the next

Figure 27: Alphabet Free Cash Flow (billions)



five years. Management expects there to be advertising revenue growth, coupled with strong hardware and software revenue growth and Other Bets monetization. The following five years we grew revenue at 15% per year. We believe that this growth is reasonable and expect Alphabet to continue to grow at double digits for the foreseeable future. Next, for terminal growth, we used a 3.5% perpetuity growth rate. This figure accounts for the global economies Alphabet operates in. Lastly, we used a WACC of 9.0%, which is reflective of the average capital structure and cost of debt and equity in the S&P 500. From our DCF, we arrived at a value of \$1538.13.

## Risks to Investment Thesis

Figure 28: European Commission Logo



## EUROPEAN COMMISSION

Figure 29: Google Assistant Logo



Figure 30: Waymo Logo



#### Technology Companies are Often Subject to Legal Risks

The biggest risk that Alphabet faces is antitrust laws. Over the last three years alone, Alphabet has been fined over \$9.3 Billion by the European Union. Most of these fines have been a result of regulation against Alphabet using their dominant search engine as leverage in the pricing of advertisements and online shopping search results. As internet users are becoming more dependent on the Google search engine, Alphabet's favorable positioning in digital advertising is becoming more evident. This monopolization affect could possibly result in a legal settlement that would result in Alphabet making their data public information or deleting it. We believe that Alphabet has a right to this intellectual property. The data they gather every day from their search engine puts them in an excellent position to have a competitive advantage in the development of artificial intelligence.

#### **Competition in Artificial Intelligence**

Further advancing the Google Assistant is a major key to many of Alphabet's investments in their "Other Bets" segment. If Google were to not win the race to the best artificially intelligent assistant then this would make some of these ventures much less likely to succeed. Alphabet's biggest competitor in the race to Artificial Intelligence is Amazon. While Google Hardware sales just recently passed Amazon, Amazon still has more in-home smart speaker hardware. Google has an opportunity to take more of Amazon's market share because of their ability to create a much more advanced personal assistant than Amazon is capable of.

#### **Failure to Monetize Other Bets**

Google has been pumping their cash into the research and development of their future focused ideas. Some investors have grown skeptical about Google wasting their money on these bets. If Alphabet can find a way to interconnect their other bets subsidiaries with the Google Assistant, the other bets have potential to be integrated into the every day lives of consumers. This would prove the investments to pay off, as they would begin producing a much more significant portion of revenue.

## Conclusion

## Figure 31: Google Original Homepage



In conclusion, we recommend a **buy** rating of Alphabet with a price target of \$1538.13 per share, which provides us with a margin of safety of 21.74% given April 25<sup>th</sup>, 2019's stock price of \$1263.45. Alphabet is a stable ten-year investment with the opportunity to significantly outperform the market. It's strong business model, future focus, and international expansion will allow Alphabet to be a dominant player in the technology space.

Today, Alphabet is working to continue to create value for their shareholders. Alphabet has come a long way since it started off as a search engine. The company has networked its way into our lives and "google it" has become a phrase that individuals use quite often. Alphabet has laid all the necessary ground work to continue to grow.

# Appendix

## Appendix A: SWOT Analysis

#### Strengths

- Search Engine
- Data
- Digital Advertising

#### Weaknesses

- Regulation
- Artificial Intelligence Competitor
- Lack of Revenue Diversification

## **SWOT**

#### **Opportunities**

- Create artificially intelligent assistant to maximize potential of Other Bets
- Global expansion of Google services

#### Threats

- Loss of Digital Advertising Market Share
- Failure to successfully execute Other Bets

## Appendix B: Porter's Five Forces

#### Threat of New Entrants: High · Low probability of substitute search engine due to Google's constant improvement Threat of New Entrants Power of Suppliers: High Threat of Substitute Products: Low Google has high bargaining power A rival search engine rival is a Competitive Power of Suppliers due to the common usage of their high threat to Alphabet's Rivalry search engine Products advertising revenue If their search engine remains the Substitute products are also a best, people would pay to use it threat to Alphabet's business model in Hardware and Other Bets Competitive Rivalry: High High competition between technology companies. Power of Customers FAANG Stocks High rivalry in the race to better Artificial Intelligence. Power of Customers: Low Low customer bargaining power due to quantity of customers and premium services of Google

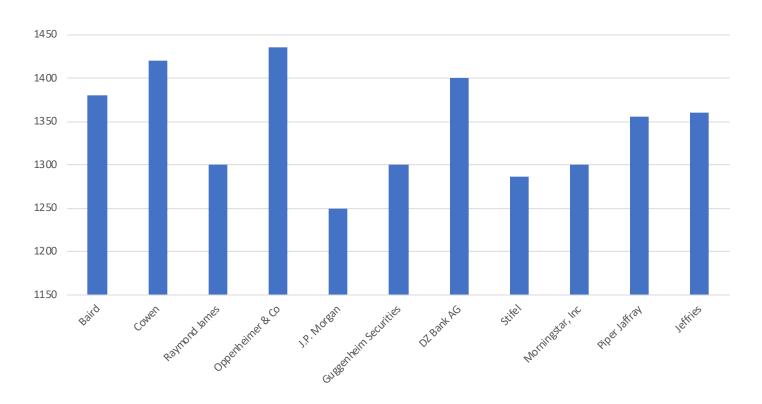
# Appendix C: Discounted Cash Flow Model

				Hist	orical Period	1							P	ro	iection Perio	1			
		2013		2014	2015		2016		2017	г	2018		2019		2020		2021		2022
Revenue	\$	55,519.00	\$	66,001.00 \$	74,992.00	\$	90,272.00	\$	110,855.00	\$	136,351.65	\$		\$	202,932.16	\$	245,547.91	\$	294,657.5
% growth				18.9%	13.6%		20.4%		22.8%		23.0%		23.0%		21.0%		21.0%		20.0
Cost of Revenue	\$	21,993.00	\$	25,691.00 \$	28,164.00	\$	35,138.00	\$	45,583.00	\$	56,067.09	\$	68,962.52	\$	83,444.65	\$	100,968.03	\$	121,161.6
% margin		40%		39%	38%		39%		41%		41%		41%		41%		41%		41
Gross Margin	\$	33,526.00	\$	40,310.00 \$	46,828.00	\$	55,134.00	\$	65,272.00	\$	80,284.56	\$	98,750.01	\$	119,487.51	\$	144,579.89	\$	173,495.8
% margin		60.4%		61.1%	62.4%		61.1%		58.9%		60.0%		59.4%		59.7%		59.6%		59.6
R&D	\$	7.137.00	\$	9.832.00 \$	12.282.00	\$	13.948.00	s	16.625.00	s	20.448.75	\$	25,151,96	\$	30.433.87	\$	36.824.99	\$	44,189.9
% margin	۳	12.9%	Ψ.	14.9%	16.4%	٠	15.5%	~	15.0%	ľ	15.0%	۳	15.0%	*	15.0%	۳	15.0%	•	15.0
Sales & Marketing	\$	6.554.00	•	8.131.00 \$		\$		s	12.893.00	s		\$		\$		\$		\$	35.025.2
	Ф		Ф	12.3%	12.1%	Ф	11.6%	Ф	,	P	11.9%	Ф	11.9%	Ф	11.9%	Ф	11.9%	Ф	,
% margin		11.8%							11.6%	١.				_		_		_	11.9
General & Administrative	\$	.,	\$	5,851.00 \$	6,136.00	\$	6,985.00	\$	6,872.00	\$	,	\$	,	\$	,	\$	,	\$	22,963.7
% margin		8.0%		8.9%	8.2%		7.7%		6.2%	ı	7.8%		7.8%		7.8%		7.8%		7.8
Other Operating Expenses	\$	496.00	\$	763.00 \$	291.00	\$	434.00	\$	1,047.00	\$	1,053.38	\$	1,295.65	\$	1,567.74	\$	1,896.96	\$	2,276.3
% margin		0.9%		1.2%	0.4%		0.5%		0.9%		0.8%		0.8%		0.8%		0.8%		0.8
Total Operating Expenses	\$	18,619.0	\$	24,577.0 \$	27,756.0	\$	31,852.0	\$	37,437.0	\$	48,336.3	\$	59,453.7	\$	71,939.0	\$	87,046.1	\$	104,455
% margin		33.5%		37.2%	37.0%		35.3%		33.8%		35.4%		35.4%		35.4%		35.4%		35.4
Operating Profit	\$	14,907.0	\$	15,733.0 \$	19,072.0	\$	23,282.0	\$	27,835.0	\$	31,948.2	\$	39,296.3	\$	47,548.6	\$	57,533.7	\$	69,040
% margin		26.9%		23.8%	25.4%		25.8%		25.1%		23.4%		23.4%		23.4%		23.4%		23.4
SBC		3.127.00		4.175.00	5.203.00		6.703.00		7,679.00	s	9.066.96	\$	11.493.62	\$	14.121.37	\$	17.096.97	\$	20.243.7
% margin		5.6%		6.3%	6.9%		7.4%		6.9%	ľ	6.6%	*	6.9%	-	7.0%	•	7.0%	*	6.9
	s		s	19,908.00 \$	24,275.00	•	29,985.00	•	35.514.00	s	41.015.19	•		ŝ		ŝ		s	89,284,2
	ð	32.5%	ð	30.2%	32.4%	ð	33.2%	ð	32.0%	*	30.1%	ð	30.3%	ð	30.4%	ð	30.4%	ð	,
% margin Depreciation & Amortization	\$	32.5%	•	4.979.00 \$	5.063.00		6.144.00	•	6.915.00	ı	9,390.3		11,550.0		13,975.6		16,910.4		30.3 20,292
•	Ф	3,939.00 7.1%	Ф	4,979.00 \$ 7.5%	6.8%	Ф	6.8%	Ф	6.2%	ı	9,390.3 6.9%		6.9%		6.9%		6.9%		20,292
% margin EBIT	s	,.	ŝ	14.929.0 \$	19.212.0	•	23,841.0	•	28.599.0	ŝ		s		ŝ		ŝ		s	68,991
% margin	ð	25.4%	ð	22.6%	25.6%	ð	26.4%	ð	25.8%	*	23.2%	ð	23.4%	ð	23.5%	ð	23.5%	ð	23.4
76 margin Taxes		2.739.00		3.639.00	3.303.00		4.672.00		14.531.00	ı	6.641.2		8.240.4		10.015.8		12.121.3		14.488
% tax		19.4%		24.4%	17.2%		19.6%		50.8%	ı	21.0%		21.0%		21.0%		21.0%		21.0
	s		s	11.290.0 \$	15.909.0	•		s	14.068.0	s	24.983.7	•		\$		\$		s	54.503
Plus: Depreciation & Amortization	٠	3,939.0	٠	4.979.0	5.063.0	٠	6.144.0	9	6.915.0	*	9,390.3	ð	11.550.0	4	13,975.6	٠	16,910.4	9	20,292
Less: Capital Expenditures	\$	(7.358.00)	•	(10.959.00) \$		•	(10.212.00)	•		ı	(16.216.3)		(17.838.0)		(19.621.7)		(21.583.9)		(23,742
% marain	Ψ	-13.3%	Ψ	-16.6%	-13.3%	Ψ	-11.3%	Ψ	-11.9%	ı	-11.9%		-10.6%		-10.6%		-10.6%		-10.6
Less: Increase in Net Working Capital		692.0		-457.0	150.0		1,261.0		-4,384.0	ı	-491.90		-605.04		-732.10		-885.84		-1063
% margin		1.2%		-0.7%	0.2%		1.4%		-4.0%	ı	-0.4%		-0.4%		-0.4%		-0.4%		-0.4
-	s	8,629.0	•	4,853.0 \$	11,172.0	•	16,362.0	•	3,415.0	_	17,665.7	•		ŝ		\$	40,039.7	•	49,990
% arowth	•	0,020.0		-43.8%	130.2%	٠	46.5%	•	-79.1%	•	417.3%	٠	36.5%	٠	29.8%	۳	27.9%	•	24.9
WACC		9.0%		-40.070	100.270		70.070		-7 3.170		417.5%		30.376		20.070		21.070		24.0
Discount Period		9.0 /6									1		2		3		4		
Discount Feriod  Discount Factor											0.92		0.84		0.77		0.71		0.6
Present Value of Free Cash Flow			_			_					0.32		0.04		0.77		28.365.1		0.0

# Appendix D: Sensitivity Analysis

	Sensitivity Analysis of Implied Share Price													
WACC														
			8.0%		8.5%		9.0%		9.5%	10.0%				
te e	2.5%	\$	1,557.96	\$	1,433.76	\$	1,328.91	\$	1,239.27	\$ 1,161.79				
Rate	3.0%	\$	1,680.68	\$	1,534.15	\$	1,412.31	\$	1,309.46	\$ 1,221.52				
€	3.5%	\$	1,830.67	\$	1,654.62	\$	1,510.88	\$	1,391.35	\$ 1,290.44				
Growth	4.0%	\$	2,018.16	\$	1,801.87	\$	1,629.16	\$	1,488.13	\$ 1,370.85				
G	4.5%	\$	2,259.22	\$	1,985.93	\$	1,773.72	\$	1,604.26	\$ 1,465.88				

## Appendix E: Analyst's Price Consensus



# Appendix F: Selected Financial Data

#### Alphabet Inc (GOOG US)

In Millions of USD except Per Share	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
12 Months Ending	12/31/2012	12/31/2013	12/31/2014	12/31/2015	12/31/2016	12/31/2017	12/31/2018
Revenue	46,039.0	55,519.0	66,001.0	74,989.0	90,272.0	110,855.0	136,819.0
Operating Income or Losses	13,834.0	15,403.0	16,496.0	19,360.0	23,716.0	26,146.0	26,321.0
Net Income to Common Adjusted	11,247.5	13,180.8	13,746.5	16,073.7	19,656.8	15,523.5	30,000.3
Basic Earnings per Share	16.41	19.13	20.91	23.12	28.32	18.27	44.22
Cash and Cash Equivalents	14,778.0	18,898.0	18,347.0	16,549.0	12,918.0	10,715.0	16,701.0
Total Current Assets	60,454.0	72,886.0	78,656.0	90,114.0	105,408.0	124,308.0	135,676.0
Total Assets	93,798.0	110,920.0	129,187.0	147,461.0	167,497.0	197,295.0	232,792.0
Total Current Liabilities	14,337.0	15,908.0	16,779.0	19,310.0	16,756.0	24,183.0	34,620.0
Total Liabilities	22,083.0	23,611.0	25,327.0	27,130.0	28,461.0	44,793.0	55,164.0
Total Equity	71,715.0	87,309.0	103,860.0	120,331.0	139,036.0	152,502.0	177,628.0
Cash From Operations	16,619.0	18,659.0	22,376.0	26,572.0	36,036.0	37,091.0	47,971.0
Cash from Investing Activities	-13,056.0	-13,679.0	-21,055.0	-23,711.0	-31,165.0	-31,401.0	-28,504.0
Cash from Financing Activities	1,232.0	-860.0	-1,872.0	-4,659.0	-8,502.0	-7,893.0	-13,481.0

## Appendix G: Sources

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