

**Company Report – Research Update**

Company Note	2
Investment Thesis	6
Company Overview	6
Financial Data	8
Financial Analysis	9
Ratings History	10
Tigress Research Methodology Overview	10
Glossary of Key Terms and Measures	10
Contacts	11
Analyst Certification	11
Research Disclosures	11
Tigress Research Investment Rating Meanings and Distribution	11
Specific Disclosures for the companies that are the subject of this Report	12
Research Report Disclaimer	13
About Tigress Financial Partners LLC	13

**Alphabet Inc. Class A (GOOGL-US)**

## Internet Software &amp; Services

- We reiterate our Strong Buy rating on GOOGL as its ongoing focus on innovation, as well as further development of AI, cloud computing, home automation, and mobile connectivity along with its dominance in search continue to generate accelerating Business Performance.
- The growth of advertisers and enterprise customers along with ongoing investments in innovation continue to drive accelerating Business Performance.
- GOOGL Cloud gains traction in the fast-growing, highly-competitive cloud computing market.
- GOOGL search remains the dominant search engine on both desktop and mobile devices.
- YouTube continues to represent a significant incremental driver of advertising revenue growth.
- GOOGL's strong balance sheet and cash flow enable it to continue funding growth and complementary acquisitions and to enhance shareholder returns through the ongoing repurchase of shares.
- GOOGL is on our Research Focus List and in our Focus Opportunity Portfolio.

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**Company Note**
**Alphabet Inc. Class A (GOOGL-US)**

Internet Software &amp; Services

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**Research Action:**

Reiterate rating

**Rating:** Strong Buy

**Prior Rating:** Strong Buy

**Price 04/11/2018:** \$1,025.06

**52 Week High / Low:** \$1,198.00 / \$834.60

**Key Data: (TTM as of Dec-17)**
**Excess Cash per Share:** \$141.42

**Annual Dividend:** \$0.00

**Dividend Yield:** 0.00%

**Avg. Volume (30 Day):** 2.5M

**Shares Outstanding:** 695.3M

**Float:** 694.8M

**Short Interest:** 2.9M

**SI % / Float** 0.42%

**Equity MV:** \$712,733.5M

**Sales TTM:** \$111,024.0M

**Beta:** 1.36

**EBITDAR:** \$55,506.9M

**NOPAT:** \$20,680.8M

**Total Invested Capital:** \$158,799.3M

**Return on Capital:** 13.99%

**Cost of Capital:** 8.80%

**Economic Profit:** \$7,675.3M

**Market Value Added:** \$515,665.6M

**Current Operations Value:** \$235,013.1M

**Future Growth Value:** \$439,451.9M

- **We reiterate our Strong Buy rating on GOOGL as its ongoing focus on innovation, as well as further development of AI, cloud computing, home automation, and mobile connectivity along with its dominance in search continue to generate accelerating Business Performance.** GOOGL is best positioned to benefit from many of the key secular technology trends including the growth of mobile engagement, video sharing and advertising most importantly enterprise and cloud computing which is the sectors largest growth engine. Growth in mobile and desktop search, along with strong YouTube performance, continue to drive increased revenue and Economic Cash Flow. We believe GOOGL's dominant position search along with its innovative ability to develop greater home automation and mobile connectivity, and the ongoing build-out of its cloud computing platform will continue to drive increasing Economic Profit and greater shareholder value creation. We believe significant upside exists in the stock from current levels.
- **The growth of advertisers and enterprise customers along with ongoing investments in innovation continue to drive accelerating Business Performance.** For the 12 months ending December 2017, GOOGL reported that Net Sales Revenue increased 23.7% from \$89.73 billion to \$111.02 billion. We forecast a further increase of 23.4% to \$136.97 billion over the NTM. Economic Operating Cash Flow (EBITDAR) increased 22% Y/Y from \$45.52 billion to \$55.51 billion over the LTM. We forecast a further increase of 24.2% to \$68.93 billion over the NTM. Net Operating Profit After Tax (NOPAT) increased 4.5% Y/Y from \$19.78 billion to \$20.68 billion over the LTM. We forecast a further increase of 41% to \$29.15 billion over the NTM as GOOGL benefits from improving margins and the lower tax rate. Return on Capital (ROC) declined slightly from 14.87% to 13.99% over the LTM. We forecast an increase to 17.28% over the NTM. Economic Profit (EP) declined 12.2% Y/Y from \$8.74 billion to \$7.68 billion over the LTM. We forecast an increase of 23.5% to \$9.48 billion over the NTM which should drive significant gains in shareholder value.

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- **GOOGL Cloud gains traction in the fast-growing, highly-competitive cloud computing market.** GOOGL's Cloud Computing Platform (GCP) and G Suite, its productivity and collaboration platform continue to gain increasing scale and have now reached over \$1 billion per quarter in incremental revenue, making it the fastest growing major public cloud computing platform in the world. GOOGL continues to increase customer wins, with the number of transactions over \$1 million tripling Y/Y. GOOGL's strong brand equity and market-leading position continues to drive new cloud service partnerships with industry leaders including Cisco Systems (CSCO-US, Buy-rated) for open hybrid cloud environments; salesforce.com (CRM-US, Non-rated) for customer insights and productivity tools; and SAP (SAP-US, Non-rated) for AI and data insights across its platforms. GOOGL continues to report increasing customer wins and just surpassed four million paying customers on its G Suite platform.
- **GOOGL search remains the dominant search engine on both desktop and mobile devices.** For the LTM ending March 2018, reported by netmarketshare.com, GOOGL had 73.6% desktop search market share in the U.S. followed by Baidu with 11.5% market share, Bing with 8.0%, and Yahoo with 5.2%. GOOGL is also the dominant search engine in Canada, Europe, France, Germany, Latin America, Spain, U.K. along with most Asia-Pacific countries (Baidu is the dominant search engine in China as Google access is pretty much banned by the Chinese government). GOOGL is also the dominant mobile search engine with an even greater U.S. market share of 92.6% for the same period, with Baidu at 4%, Bing at 2.6%, and Yahoo at 1.2%. GOOGL's dominance in mobile is more important because more search is being done on-the-go on mobile devices than desktops, and GOOGL also continues to generate significant revenue from mobile advertising. Mobile search continues to grow because it provides on-demand information at the exact time the need arises. The ability to further incorporate location-based advertising into search will also further drive GOOGL mobile advertising revenue. GOOGL also incorporates search in its Google Home voice-activated interface that incorporates GOOGL's AI-driven Google Assistant, which is also used in mobile devices as well.

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- **YouTube continues to represent a significant incremental driver of advertising revenue growth.** YouTube now has more than 1.5 billion monthly active users that watch full TV shows and movies as well as sporting events. Currently, The Ellen Show has over 22 million subscribers, NBA has over 8 million subscribers, and SciShow, a popular education channel, has over 4.5 million subscribers. There are over one billion learning-related video views every day on YouTube. With an incredible amount of content and the ability to access it on both smart-enabled TVs and mobile devices, YouTube continues to gain viewership over traditional media outlets. GOOGL continues to add content as it recently announced a partnership with Major League Soccer's LA Football Club. YouTube TV is also available on Roku (ROKU-US, Non-rated). YouTube continues to generate viewership around the world with localized versions of YouTube now in 90 countries and in 80 different languages. GOOGL recently announced that it is expanding its mobile YouTube Go to over 130 countries. In Q4 last year, GOOGL expanded its relationship with the music industry by signing new licensing deals with Sony Music Entertainment and Universal Music Group. GOOGL has also partnered with Ticketmaster to buy tickets on YouTube for live music events. GOOGL's Google Preferred categorizes the top 5% of the most-watched content on YouTube for advertisers so it may be best targeted to optimize of advertisers. Mobile revenue on YouTube also continues to grow, and TrueView also offers a paid-click advertising platform to embed ads in videos. GOOGL is also developing YouTube original content that will further drive viewership.

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- **GOOGL's strong balance sheet and cash flow enable it to continue funding growth and complementary acquisitions and to enhance shareholder returns through the ongoing repurchase of shares.** Currently GOOGL has over \$98 billion, \$141 per share in excess cash along with our projection that it will generate almost \$70 billion in Economic Operating Cash Flow (EBITDAR) over the NTM, giving it more than enough to continue to fund growth, R&D, strategic acquisitions, and to continue to repurchase shares. In January of this year, GOOGL announced an open market purchase for \$8.59 billion worth of stock which followed previously announced purchases of \$7 billion in 2016 and \$5 billion in 2015. Since then GOOGL repurchased \$1.8 billion in stock in 2015, \$3.7 billion in 2016, \$4.8 billion in 2017, and \$2.1 billion so far in 2018. Currently, GOOGL has over \$8 billion in available repurchase capacity.
- **GOOGL is on our Research Focus List and in our Focus Opportunity Portfolio.** GOOGL's growing presence in enterprise and cloud computing along with its dominance in search, maps, digital advertising, and overall management of information access will propel its lead in the future areas of home automation, automotive infotainment, and so many other key areas making it one of our long-standing must-own stocks in the Internet, Software and Services Sector.

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**Investment Thesis**

GOOGL is one of the leading providers of online engagement and target-based online and mobile advertising. Alphabet is best positioned to benefit from many of the key secular technology trends including the growth of mobile engagement, video sharing and advertising most importantly enterprise and cloud computing which is the sector's largest growth engine.

GOOGL continues to demonstrate incredible ability to innovate and execute and emerges as a dominant provider in all its product offerings. We believe GOOGL will continue to drive greater shareholder value creation through the continued monetization of its product offerings and its dominance in mobile and online search and advertising. We also believe that YouTube will capture more video dollars shifting online and that strength in Google Play will continue.

**Company Overview**

**Alphabet, Inc. (GOOGL-US)** is the parent company of Google which is the world's largest search engine and Other Bets which incubates new businesses and technologies. GOOGL operates search and other Internet products including Ads, Android, Apps, Chrome, Cloud, Commerce, Google Play, Maps, and YouTube. GOOGL also offers several hardware products that include Chromebooks, Chromecast, and Nexus. The Other Bets include business lines such as Access which is also known as Google Fiber, Calico, Google's Investment initiatives that are done through Google Capital and Google Ventures, Google X, Nest, Verily, and other developmental technology initiatives. Nest develops and sells home automation and smart home devices including cameras, smoke alarms, and smart thermostats. Google Fiber provides high-speed Internet infrastructure. Google Capital and Google Ventures are its financing arms for private equity and venture capital investments. Other Bets also includes special investment in developmental projects including Life Sciences which is in development for glucose sensing contact lens; Calico, which focuses on longevity research; Google's X Lab which does research on space and drone delivery systems; and Sidewalk Labs which focuses on developing technologies to improve urban living. In 2016, Alphabet separated its development of autonomous vehicle technology into a separate company called Waymo.

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GOOGL offers several web-based information services through its own and hosted networks. GOOGL's primary source of revenue is advertising driven by ads embedded in search result pages that are derived from its page ranking and text matching proprietary technology and infrastructure that facilitates the advertising optimizing process. GOOGL's main advertising service called AdWords, helps advertisers create ads based on the inclusion of certain pre-purchased words in search results. GOOGL's AdSense program enables the distribution into Google Network websites. GOOGL's AdMob technology is incorporated in AdWords which extends advertising campaigns onto AdMob's mobile network that is optimized for mobile devices. Mobile is the fastest-growing part of GOOGL search and advertising business. Google mobile allows users to search by word as well as by location, voice, or site. Google Local delivers local information on over 80 million places of interest including restaurant, stores, and other places of interest. GOOGL also offers website embedded display ads. GOOGL's video-sharing site, YouTube offers embedded video ads, and TrueView offers opt-in ads embedded in YouTube videos to provide viewers with advertising that may be of interest to them. Google's advertising service platforms include AdExchange, AdWords, Bid Manager, and DoubleClick.

GOOGL also offers a number of operating systems and platforms including the world leading mobile operating platform Android along with Chrome OS and Browser, Google Drive, Google Home, Google Play, Google TV, and Google Wallet. Google Enterprise includes apps such as Gmail, Google Docs, Google Calendar, and Google Sites. Google operates in more than 50 countries worldwide.

Alphabet generates 99% of its from Google advertising and other services and 1% coming from Other Bets. The United States remains its biggest source of revenue representing 47% of 2017 revenue. Other countries include; Europe Middle East & Africa (EMEA) which represented 33% of 2017 revenue, Asia-Pacific which represented 15% of 2017 revenue, and Other Americas which represented 5% of 2017 revenues.

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Alphabet Inc. Class A (GOOGL-US)

Internet Software & Services

Financial Data

Report Basis	LTM	LTM	LTM	LTM	LTM	LTM	NTM	5 Yr	3 Yr	Current
Reported Period Ending	12/31/2012	12/31/2013	12/31/2014	12/31/2015	12/31/2016	12/31/2017	12/31/2018	Average	Average	Trend
<b>Net Sales Revenue</b>	\$51,162.0	\$59,730.0	\$65,977.0	\$73,590.0	\$89,733.0	\$111,024.0	\$136,973.0	\$80,010.8	\$91,449.0	\$123,998.5
Sales Growth	35.13%	16.75%	10.46%	11.54%	21.94%	23.73%	23.37%	16.88%	19.07%	23.55%
Sales Growth Trend	33.09%	24.10%	12.97%	11.11%	17.78%	23.01%	23.51%	17.79%	17.30%	23.26%
<b>Operating Cash Flow (EBITDAR)</b>	\$23,965.6	\$26,961.2	\$32,366.6	\$36,979.2	\$45,516.5	\$55,506.9	\$68,929.4	\$39,466.1	\$46,000.9	\$62,218.2
EBITDAR Margin	46.84%	45.14%	49.06%	50.25%	50.72%	50.00%	50.32%	49.03%	50.32%	50.16%
EBITDAR Growth	19.00%	12.50%	20.05%	14.25%	23.09%	21.95%	24.18%	18.37%	19.76%	23.07%
<b>Net Operating Profit Before Tax (NOPBT)</b>	\$13,773.6	\$14,587.2	\$17,363.6	\$18,901.2	\$24,527.5	\$30,866.9	\$36,900.7	\$21,249.3	\$24,765.2	\$33,883.8
NOPBT Margin	26.92%	24.42%	26.32%	25.68%	27.33%	27.80%	26.94%	26.31%	26.94%	27.37%
NOPBT Growth	8.05%	5.91%	19.03%	8.86%	29.77%	25.85%	19.55%	17.88%	21.49%	22.70%
<b>Cash Operating Income Tax</b>	\$2,671.8	\$2,296.4	\$3,351.2	\$3,108.7	\$4,745.0	\$10,186.1	\$7,749.1	\$4,737.5	\$6,013.3	\$8,967.6
Economic Tax Effective Rate	19.40%	15.74%	19.30%	16.45%	19.35%	33.00%	21.00%	20.77%	22.93%	27.00%
<b>Net Operating Profit After Tax (NOPAT)</b>	\$11,101.9	\$12,290.8	\$14,012.4	\$15,792.5	\$19,782.5	\$20,680.8	\$29,151.6	\$16,511.8	\$18,751.9	\$24,916.2
NOPAT Margin	21.70%	20.58%	21.24%	21.46%	22.05%	18.63%	21.28%	20.79%	20.71%	19.96%
NOPAT Growth	10.25%	10.71%	14.01%	12.70%	25.26%	4.54%	40.96%	13.45%	14.17%	22.75%
<b>Cash &amp; Equivalents</b>	\$49,557.0	\$58,717.0	\$64,395.0	\$74,049.0	\$87,511.0	\$103,784.0	\$128,188.1	\$77,691.2	\$88,448.0	\$115,986.0
<b>Total Assets</b>	\$93,798.0	\$110,920.0	\$131,133.0	\$147,461.0	\$167,497.0	\$197,295.0	\$243,687.5	\$150,861.2	\$170,751.0	\$220,491.2
<b>Non - Interest Bearing Liabilities (NIBLs)</b>	\$14,307.0	\$15,864.0	\$18,327.0	\$18,371.0	\$20,550.0	\$36,243.0	\$44,765.3	\$21,871.0	\$25,054.7	\$40,504.1
<b>Net Assets</b>	\$79,491.0	\$95,056.0	\$112,806.0	\$129,090.0	\$146,947.0	\$161,052.0	\$198,922.2	\$128,990.2	\$145,696.3	\$179,987.1
<b>Economic Asset Adjustments</b>	\$2,330.5	(\$1,092.0)	(\$836.1)	(\$892.1)	(\$1,603.8)	(\$2,252.7)	(\$2,782.4)	(\$1,335.3)	(\$1,582.9)	(\$2,517.5)
<b>Net Operating Assets</b>	\$81,821.5	\$93,964.0	\$111,969.9	\$128,197.9	\$145,343.2	\$158,799.3	\$196,139.8	\$127,654.9	\$144,113.5	\$177,469.6
<b>Debt &amp; Debt Equivalents</b>	\$8,805.5	\$8,762.0	\$10,667.9	\$11,676.9	\$10,781.2	\$11,661.3	\$14,403.4	\$10,709.9	\$11,373.1	\$13,032.4
<b>Equity &amp; Equivalents</b>	\$71,715.0	\$87,309.0	\$104,500.0	\$120,331.0	\$139,036.0	\$152,502.0	\$188,361.7	\$120,735.6	\$137,289.7	\$170,431.9
<b>Total Capital - Financing Sources</b>	\$80,520.5	\$96,071.0	\$115,167.9	\$132,007.9	\$149,817.2	\$164,163.3	\$202,765.1	\$131,445.5	\$148,662.8	\$183,464.2
<b>Capital Adjustments</b>	(\$938.0)	(\$4,609.0)	(\$6,267.0)	(\$7,349.0)	(\$8,450.0)	(\$9,945.0)	(\$12,283.5)	(\$7,324.0)	(\$8,581.3)	(\$11,114.2)
<b>Net Capital Financing Sources</b>	\$79,582.5	\$91,462.0	\$108,900.9	\$124,658.9	\$141,367.2	\$154,218.3	\$190,481.6	\$124,121.5	\$140,081.5	\$172,350.0
<b>Net Working Capital</b>	\$5,956.1	\$7,389.5	\$8,086.9	\$8,477.5	\$11,077.7	\$9,060.2	\$11,190.6	\$8,818.3	\$9,538.5	\$10,125.4
Cost of Net Working Capital	\$385.8	\$572.1	\$611.7	\$644.7	\$811.9	\$886.1	\$1,094.4	\$705.3	\$780.9	\$990.2
% of Revenue	0.75%	0.96%	0.93%	0.88%	0.90%	0.80%	0.80%	0.89%	0.86%	0.80%
<b>Operational Capital</b>	\$18,838.6	\$21,828.5	\$30,845.8	\$36,626.4	\$43,991.9	\$48,644.5	\$60,082.9	\$36,387.4	\$43,087.6	\$54,363.7
Cost of Operational Capital	\$1,250.9	\$1,743.2	\$2,082.1	\$2,626.0	\$3,346.9	\$4,075.9	\$5,034.4	\$2,774.8	\$3,349.6	\$4,555.1
% of Revenue	2.45%	2.92%	3.16%	3.57%	3.73%	3.67%	3.68%	3.41%	3.66%	3.67%
<b>Productive Capital</b>	\$36,848.6	\$39,386.5	\$51,051.8	\$56,342.4	\$63,766.9	\$68,083.5	\$84,092.9	\$55,726.2	\$62,730.9	\$76,088.2
Cost of Productive Capital	\$2,266.1	\$3,267.8	\$3,574.8	\$4,179.8	\$4,986.5	\$5,801.3	\$7,165.5	\$4,362.0	\$4,989.2	\$6,483.4
% of Revenue	4.43%	5.47%	5.42%	5.68%	5.56%	5.23%	5.23%	5.47%	5.49%	5.23%
<b>Total Operating Capital</b>	\$34,822.6	\$38,233.5	\$50,873.8	\$57,828.4	\$62,318.9	\$60,566.5	\$74,808.3	\$53,964.2	\$60,237.9	\$67,687.4
Cost of Total Operating Capital	\$2,112.3	\$3,131.5	\$3,522.2	\$4,230.7	\$4,988.0	\$5,406.9	\$6,678.3	\$4,255.9	\$4,875.2	\$6,042.6
% of Revenue	4.13%	5.24%	5.34%	5.75%	5.56%	4.87%	4.88%	5.35%	5.39%	4.87%
<b>Non - Operating Capital</b>	\$46,998.9	\$55,730.5	\$61,096.2	\$70,369.5	\$83,024.4	\$98,232.8	\$121,331.5	\$73,690.7	\$83,875.6	\$109,782.2
Cost of Non - Operating Capital	\$3,411.8	\$4,403.5	\$4,617.9	\$5,116.6	\$6,368.3	\$7,975.2	\$9,850.5	\$5,696.3	\$6,486.7	\$8,912.8
% of Revenue	6.67%	7.37%	7.00%	6.95%	7.10%	7.18%	7.19%	7.12%	7.08%	7.19%
<b>Total Capital</b>	\$81,821.5	\$93,964.0	\$111,969.9	\$128,197.9	\$145,343.2	\$158,799.3	\$196,139.8	\$127,654.9	\$144,113.5	\$177,469.6
Cost of Total Capital	\$5,524.1	\$7,535.0	\$8,140.1	\$9,347.3	\$11,356.3	\$13,382.0	\$16,528.7	\$9,952.1	\$11,361.9	\$14,955.4
% of Revenue	10.80%	12.62%	12.34%	12.70%	12.66%	12.05%	12.07%	12.47%	12.47%	12.06%
<b>Cost of Capital (WACC)</b>	7.54%	8.57%	7.91%	7.78%	8.30%	8.80%	8.80%	8.27%	8.30%	8.80%
<b>Capital Structure</b>										
<b>Debt &amp; Debt Equivalents</b>	\$8,805.5	\$8,762.0	\$10,667.9	\$11,676.9	\$10,781.2	\$11,661.3	\$14,403.4	\$10,709.9	\$11,373.1	\$13,032.4
Debt & Debt Equivalents % of Market Value	4.49%	2.75%	3.13%	2.33%	2.11%	1.69%	1.69%	2.27%	2.00%	1.69%
<b>Preferred Equity</b>	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Preferred Equity % of Market Value	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
<b>Market Value of Common Equity</b>	\$187,425.3	\$310,125.1	\$329,768.5	\$488,852.2	\$499,834.6	\$680,103.1	\$840,024.5	\$461,736.7	\$556,263.3	\$760,063.8
Common Equity % of Market Value	95.51%	97.25%	96.87%	97.67%	97.89%	98.31%	98.31%	97.73%	98.00%	98.31%
<b>Total Economic Market Value (MV)</b>	\$196,230.8	\$318,887.1	\$340,436.4	\$500,529.1	\$510,615.8	\$691,764.5	\$854,427.9	\$472,446.6	\$567,636.4	\$773,096.2
Total %	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
<b>Excess Cash</b>	\$46,998.9	\$55,730.5	\$61,096.2	\$70,369.5	\$83,024.4	\$98,232.8	\$121,331.5	\$73,690.7	\$83,875.6	\$109,782.2
<b>Economic Enterprise Value</b>	\$149,231.9	\$263,156.6	\$279,340.3	\$430,159.6	\$427,591.5	\$593,531.7	\$733,096.3	\$398,755.9	\$483,760.9	\$663,314.0
<b>Average Capital</b>	\$71,253.3	\$85,522.2	\$100,181.4	\$116,779.9	\$133,013.0	\$147,792.8	\$172,520.0	\$116,657.9	\$132,528.6	\$160,071.4
Capital Δ	\$16,658.5	\$11,879.4	\$17,439.0	\$15,757.9	\$16,708.3	\$12,851.1	\$36,263.3	\$14,927.2	\$15,105.8	\$24,557.2

Source: Company Data, Financial statements and Tigress Research

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Company Report – Research Update

Alphabet Inc. Class A (GOOGL-US)

Internet Software & Services

Financial Analysis

Report Basis	LTM	LTM	LTM	LTM	LTM	LTM	NTM	5 Yr	3 Yr	Current
Reported Period Ending	12/31/2012	12/31/2013	12/31/2014	12/31/2015	12/31/2016	12/31/2017	12/31/2018	Average	Average	Trend
Return on Market Value (NOPAT / MV)	5.66%	3.85%	4.12%	3.16%	3.87%	2.99%	3.69%	3.60%	3.34%	3.34%
Return on Enterprise Value (NOPAT / EV)	7.44%	4.67%	5.02%	3.67%	4.63%	3.48%	4.30%	4.29%	3.93%	3.89%
Return on Capital (NOPAT / Average Capital)	15.58%	14.37%	13.99%	13.52%	14.87%	13.99%	17.28%	14.15%	14.13%	15.64%
Cost of Capital (WACC)	7.54%	8.57%	7.91%	7.78%	8.30%	8.80%	8.80%	8.27%	8.30%	8.80%
Economic Return Spread	8.04%	5.80%	6.08%	5.74%	6.57%	5.19%	6.41%	5.88%	5.83%	5.80%
Capital Charge	\$5,371.2	\$7,331.7	\$7,919.9	\$9,090.1	\$11,044.3	\$13,005.5	\$16,063.7	\$9,678.3	\$11,046.7	\$14,534.6
Economic Profit (EP)	\$5,730.7	\$4,959.1	\$6,092.5	\$6,702.4	\$8,738.2	\$7,675.3	\$9,480.0	\$6,833.5	\$7,705.3	\$8,577.6
Economic Profit Improvement (EPI)	(\$26.9)	(\$771.6)	\$1,133.4	\$609.9	\$2,035.8	(\$1,062.9)	\$1,804.8	\$388.9	\$527.6	\$370.9
EP Growth	-0.47%	-13.46%	22.86%	10.01%	30.37%	-12.16%	23.51%	7.52%	9.41%	5.68%
Economic Profit Margin on Sales	11.20%	8.30%	9.23%	9.11%	9.74%	6.91%	6.92%	8.66%	8.59%	6.92%
Economic Profit Per Share	\$8.77	\$7.46	\$9.01	\$9.79	\$12.70	\$11.08	\$13.68	\$10.01	\$11.19	\$12.38
GAAP Earnings Per Share	\$16.43	\$18.29	\$20.27	\$23.21	\$28.32	\$18.30	\$41.44	\$21.68	\$23.28	\$29.87
Excess Cash Per Share	\$71.42	\$83.30	\$89.99	\$102.38	\$120.34	\$141.42	\$174.68	\$107.49	\$121.38	\$158.05
<b>Performance Drivers</b>										
Sales Growth	35.13%	16.75%	10.46%	11.54%	21.94%	23.73%	23.37%	16.88%	19.07%	23.55%
Sales Growth Trend (ROC Sales Growth)	33.09%	24.10%	12.97%	11.11%	17.78%	23.01%	23.51%	17.79%	17.30%	23.26%
EBITDAR Margin	46.84%	45.14%	49.06%	50.25%	50.72%	50.00%	50.32%	49.03%	50.32%	50.16%
EBITDAR Growth	19.00%	12.50%	20.05%	14.25%	23.09%	21.95%	24.18%	18.37%	19.76%	23.07%
NOPBT Margin	26.92%	24.42%	26.32%	25.68%	27.33%	27.80%	26.94%	26.31%	26.94%	27.37%
NOPBT Growth	8.05%	5.91%	19.03%	8.86%	29.77%	25.85%	19.55%	17.88%	21.49%	22.70%
NOPAT Margin	21.70%	20.58%	21.24%	21.46%	22.05%	18.63%	21.28%	20.79%	20.71%	19.96%
NOPAT Growth	10.25%	10.71%	14.01%	12.70%	25.26%	4.54%	40.96%	13.45%	14.17%	22.75%
Economic Profit Margin on Sales (EP / Sales)	11.20%	8.30%	9.23%	9.11%	9.74%	6.91%	6.92%	8.66%	8.59%	6.92%
Economic Profit Growth	-0.47%	-13.46%	22.86%	10.01%	30.37%	-12.16%	23.51%	7.52%	9.41%	5.68%
Economic Return Spread (ROC-WACC)	8.04%	5.80%	6.08%	5.74%	6.57%	5.19%	6.41%	5.88%	5.83%	5.84%
Economic Return Ratio (ROC / WACC)	206.69%	167.64%	176.93%	173.73%	179.12%	159.02%	196.41%	171.29%	170.62%	177.71%
Economic Profit Momentum (ΔEP/Capital)	-0.03%	-0.84%	1.04%	0.49%	1.44%	0.29%	0.95%	0.29%	0.41%	0.13%
Economic Profit Momentum Margin (ΔEP/Sales)	-0.05%	-1.29%	1.72%	0.83%	2.27%	-0.96%	1.32%	0.51%	0.71%	0.18%
Capital Growth	26.47%	14.93%	19.07%	14.47%	13.40%	9.09%	23.51%	14.19%	12.32%	16.30%
Capital Turns	0.64X	0.65X	0.61X	0.59X	0.63X	0.72X	0.72X	0.64X	0.65X	0.72X
EVC Acceleration Margin	-0.07%	-1.51%	1.90%	0.92%	2.77%	-1.18%	1.63%	0.28%	0.66%	0.41%
EVC Acceleration Spread	-0.05%	-1.08%	1.33%	0.61%	1.74%	-0.80%	1.22%	0.23%	0.45%	0.28%
<b>Risk Factors</b>										
Free Cash Flow (NOPAT - Δ Capital)	(\$5,556.6)	\$411.4	(\$3,426.6)	\$34.6	\$3,074.2	\$7,829.7	(\$7,111.8)	\$1,584.7	\$3,646.2	\$359.0
Free Cash Flow Rate (FCF / Capital)	-6.98%	0.45%	-3.15%	0.03%	2.17%	5.08%	-3.73%	0.92%	2.43%	0.67%
Free Cash Flow Yield (FCF / MV)	-2.83%	0.13%	-1.01%	0.01%	0.60%	1.13%	-0.83%	0.17%	0.58%	0.15%
Total Debt / Total Capital	11.06%	9.58%	9.80%	9.37%	7.63%	7.56%	7.56%	8.79%	8.19%	7.56%
Total Debt / EBITDAR	36.74%	32.50%	32.96%	31.58%	23.69%	21.01%	20.90%	28.35%	25.42%	20.95%
Excess Cash	\$46,998.9	\$55,730.5	\$61,096.2	\$70,369.5	\$83,024.4	\$98,232.8	\$0.0	\$73,690.7	\$83,875.6	\$49,116.4
Financial Leverage (Total Debt - Excess Cash) / Pension Leverage (Net Pension Liability / MV)	-19.46%	-14.73%	-14.81%	-11.73%	-14.15%	-12.51%	1.69%	-13.59%	-12.80%	-5.41%
Equity Risk Index (S&P 500 = 1.00)	1.32	1.35	1.36	1.37	1.35	1.36	1.36	1.36	1.36	1.36
Stock Price Volatility	3.96	3.09	3.05	3.91	3.72	2.86	2.86	3.33	3.50	2.86
Sales Index (NL Sales)	10.84	11.00	11.10	11.21	11.40	11.62	11.83	11.26	11.41	11.72
Market Value Index (NL Market Value)	12.19	12.67	12.74	13.12	13.14	13.45	13.66	13.02	13.24	13.55
Size Index (NL Sales: MV)	11.51	11.84	11.92	12.16	12.27	12.53	12.74	12.14	12.32	12.64
Beta	1.47	1.52	1.53	1.55	1.53	1.53	1.53	1.53	1.54	1.53
TFP Adjusted Beta	1.32	1.35	1.36	1.37	1.35	1.36	1.36	1.36	1.36	1.36
Stock Price Volatility	3.96	3.09	3.05	3.91	3.72	2.86	2.86	3.33	3.50	2.86
<b>Valuation Measures</b>										
Total Economic Market Value (MV)	\$196,230.8	\$318,887.1	\$340,436.4	\$500,529.1	\$510,615.8	\$691,764.5	\$854,427.9	\$472,446.6	\$567,636.4	\$773,096.2
Economic Enterprise Value	\$149,231.9	\$263,156.6	\$279,340.3	\$430,159.6	\$427,591.5	\$593,531.7	\$733,096.3	\$398,755.9	\$483,760.9	\$663,314.0
Equity Market Value	\$187,425.3	\$310,125.1	\$329,768.5	\$488,852.2	\$499,834.6	\$680,103.1	\$840,024.5	\$461,736.7	\$556,263.3	\$760,063.8
Total Capital	\$81,821.5	\$93,964.0	\$111,969.9	\$128,197.9	\$145,343.2	\$158,799.3	\$196,139.8	\$127,654.9	\$144,113.5	\$177,469.6
Market Value Created MVC (MV - Capital)	\$114,409.3	\$224,923.1	\$228,466.5	\$372,331.2	\$365,272.6	\$532,965.1	\$658,288.0	\$344,791.7	\$423,523.0	\$595,626.6
MVC Margin (MVC / Sales)	223.62%	376.57%	346.28%	505.95%	407.07%	480.04%	480.60%	430.93%	463.12%	480.35%
MVC Spread (MVC / Capital)	139.83%	239.37%	204.04%	290.43%	251.32%	335.62%	335.62%	270.10%	293.88%	335.62%
Current EVC Value (EP / WACC)	\$76,022.4	\$57,846.1	\$77,066.8	\$86,104.8	\$105,238.7	\$87,220.3	\$107,729.5	\$82,599.0	\$92,883.0	\$97,474.9
Current Operations Value COV	\$147,275.7	\$143,368.4	\$177,248.2	\$202,884.7	\$238,251.8	\$235,013.1	\$280,079.5	\$199,256.8	\$225,411.5	\$257,546.3
Current Operations Value Per Share	\$225.26	\$215.58	\$262.23	\$296.34	\$346.41	\$339.17	\$411.12	\$292.48	\$327.43	\$374.84
Future Growth Value (MVC - EVA Value)	\$48,955.1	\$175,518.7	\$163,188.2	\$297,644.4	\$272,364.0	\$456,751.4	\$574,348.3	\$273,189.7	\$342,224.9	\$515,549.9
Future Growth Value Reliance (FGV / MV)	24.95%	55.04%	47.94%	59.47%	53.34%	66.03%	67.22%	57.82%	60.29%	66.69%
Share Price	\$354.03	\$560.90	\$530.66	\$778.01	\$792.45	\$1,053.40	\$1,053.40	\$743.08	\$874.62	\$1,053.40
Dividend Yield	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total Shareholder Return (TTM)	9.52%	58.43%	-5.39%	46.61%	1.86%	32.93%	0.00%	-29.46%	17.70%	20.44%
MV to IC Ratio	2.40X	3.39X	3.04X	3.90X	3.51X	4.36X	4.36X	3.70X	3.94X	4.36X
EV / EBITDAR Multiple	6.23X	9.76X	8.63X	11.63X	9.39X	10.69X	10.64X	10.10X	10.52X	10.66X
EV / NOPBIT Multiple	10.83X	18.04X	16.09X	22.76X	17.43X	19.23X	19.77X	18.77X	19.53X	19.58X
EV / NOPAT Multiple	13.44X	21.41X	19.94X	27.24X	21.61X	28.70X	25.15X	24.15X	25.80X	26.62X
EV / EP Multiple	26.04X	53.07X	45.85X	64.18X	48.93X	77.33X	77.33X	58.35X	62.78X	77.33X
Future Growth Value (% of MV)	24.95%	55.04%	47.94%	59.47%	53.34%	66.03%	67.22%	57.82%	60.29%	66.69%
Current Operations Value (% of MV)	75.05%	44.96%	52.06%	40.53%	46.66%	33.97%	32.78%	42.18%	39.71%	33.31%
Market Value (COV + FGV %)	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Basic Shares Outstanding	653.8	665.0	675.9	684.6	687.8	692.9	681.3	681.3	688.4	687.1

Source: Company Data, Financial statements and Tigress Research

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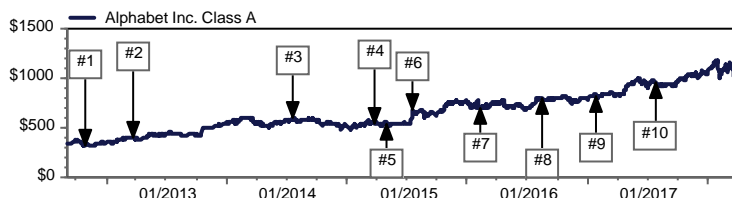
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**Alphabet Inc. Class A (GOOGL-US)**
**Internet Software & Services**
**Ratings History**

Alphabet Inc. Class A (GOOGL-US)				
Item #	Date	Research Action	Rating	Price
#10	07/26/2017	Reiterate Rating	Strong Buy	\$965.31
#9	01/30/2017	Reiterate Rating	Strong Buy	\$823.83
#8	08/16/2016	Reiterate Rating	Strong Buy	\$801.19
#7	02/09/2016	Reiterate Rating	Strong Buy	\$701.02
#6	07/20/2015	Reiterate Rating	Strong Buy	\$692.84
#5	05/01/2015	Reiterate Rating	Strong Buy	\$551.16
#4	03/27/2015	Reiterate Rating	Strong Buy	\$557.55
#3	07/23/2014	Reiterate Rating	Strong Buy	\$605.19
#2	03/20/2013	Reiterate Rating	Strong Buy	\$407.75
#1	10/25/2012	Initiation of Coverage	Strong Buy	\$339.21


**Tigress Research Methodology Overview**

We employ proprietary quantitative valuation models combined with dynamic fundamental analysis based on the principles of Economic Profit to formulate timely and insightful investment ratings, analysis, strategies, and recommendations.

We make key adjustments to reported financial data eliminating GAAP-based accounting distortions and measuring all companies on a cash operating basis.

Our proprietary research framework is a multi-factor model that scores and ranks companies based on their risk-adjusted ability to create Economic Profit relative to their current market value focusing on three key components:

**Business Performance:** Measuring economic profitability, growth and operating efficiency.

**Risk:** Measuring business sustainability, volatility, strength, and consistency.

**Valuation:** Linking business performance to market value. Measuring value created relative to capital employed and enterprise multiples of economic profit and cash flow.

We score and rank 24 key measurements of performance, risk, and value into relative market and industry investment recommendations.

For more information on our research methodology, please review the *Tigress Investment Research Guide to Company Valuation and Analysis*.

**Glossary of Key Terms and Measures**

**Excess Cash per Share:** Excess Cash per Share is the amount of excess cash divided by basic shares outstanding. Excess Cash consists of all cash and short-term securities less operating cash needed to run the business. Operating Cash is 5% of TTM net sales revenue.

**EBITDAR:** Earnings Before Interest, Taxes, Depreciation, Amortization, and Restructuring and Rent Costs. This is especially important when comparing companies that use a significant amount of leased assets like restaurants and retailers.

**NOPAT:** Net Operating Profit after Tax represents a company's after-tax cash operating profit excluding financing costs.

**Total Invested Capital:** Total Invested Capital the total cash investment that shareholders and debt holders have made during the life of the company.

**Return on Capital:** Return on Capital equals NOPAT divided by Total Invested Capital. It is a key measure of operating efficiency. ROC quantifies how well a company generates cash flow relative to the capital invested in its business.

**Cost of Capital:** Is the proportionately weighted cost of each category of capital – common equity, preferred equity and debt.

**Economic Profit:** Economic Profit is the net operating income after tax less the opportunity cost of the total capital invested. It is the most important driver of shareholder value.

**Current Operations Value:** Current Operations Value is the portion of market value based on the discounted present value of the current earnings stream assuming it remains constant forever.

**Future Growth Value:** Future Growth Value is the portion of market value based on un-earned Economic Profit

For more information on the key terms and measures, please review the *Tigress Investment Research Guide to Company Valuation and Analysis*.

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## Company Report – Research Update

April 17, 2018  
Page 11 of 13

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### Analyst Certification

I, Ivan Feinseth, hereby certify that the views expressed herein accurately reflect my personal views about the subject company and their securities and that I have not been and will not be directly or indirectly compensated for expressing specific recommendations or views in the report.

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Tigress Research employs a five-tier rating system for evaluating the investment opportunity and potential return associated with owning the common equity of rated firms within our research universe. The potential return is measured on a relative basis to the general market which is represented by the S&P 500 and to the subject company's industry peer group as indicated.

Rating:	Meaning:	Rating Distribution (04/11/2018)				
		Companies Under Coverage		Relationship Companies Under Coverage*		
		#	%	#	%	
<b>Strong Buy:</b>	Expect significant price gains in the price of the stock relative to its industry peer group and general market over the next 12 months.	16	14%	1	15%	
<b>Buy:</b>	Expect out-performance for the price of the stock relative to its industry peer group and general market over the next 12 months.	51	44%	5	70%	
<b>Neutral:</b>	Expect little or no outperformance opportunity over the next 12 months.	45	38%	1	15%	
<b>Underperform:</b>	Expect underperformance for the price of the stock relative to its industry peer group and general market over the next 12 months.	5	4%	0	0%	
<b>Sell:</b>	Expect price decline or significant relative market and industry underperformance over the next 12 months.	0	0%	0	0%	
<b>Not Rated</b>	No Current Research Rating	NA	NA	65	NA	
		<b>Total</b>	<b>117</b>	<b>100%</b>	<b>72</b>	<b>100%</b>

\*Relationship Companies under research coverage are companies in which Tigress Financial Partners LLC or one of its affiliates has received compensation for investment banking or non-investment banking services from the company, affiliated entities and / or its employees within the past twelve months or expects to do so within the next three months.

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**Specific Disclosures for the companies that are the subject of this Report**

<b>Company:</b>	<b>Disclosure:</b>
Alphabet Inc. Class A (GOOGL-US)	14

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1.	The Analyst or a household member responsible for the production of this report currently holds a position in securities of the company that is the primary subject of this report in a personal, related or beneficial account.
2.	The Analyst or a household member responsible for the production of this report beneficially owns one percent or more in securities of the company that is the primary subject of this report in a personal, related or beneficial account.
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