



Under the Hood: Right on Schedule: Google + Facebook Versus AOL, 18 Years and Counting (dated 7/17/17)

(An Ongoing Series — September 2017)

This discussion bears more than a little similarity to an ongoing discussion we had about the Internet and Technology Bubble, emblemized by an evaluation of AOL (nee America Online) written on this precise date 18 years ago, as it happens. That being just about one generation, the rising valuation/market saturation phenomenon discussed herein is right on schedule. For reference, a portion of that analysis, “The Internet Bubble Test”, which is more fun than it sounds, is appended to this review. Google and Facebook, being one-half of the FANG gang, are centerpieces in the valuation and return distortions large-cap indexation is creating: in the first half of 2017, five stocks – just 1% of the index holdings – were responsible for over one-quarter of the S&P 500’s return. In 2016, 25-odd names accounted for 50% of the index’s return; in 2015, just 10 stocks accounted for more than 100% of the S&P 500’s return.

In the last several years, there have been enormous changes to the manner in which advertising activity is conducted worldwide. The primary change has been the movement away from print and television towards the internet. This has created two giant advertising platforms: Facebook Inc. and Google, now known as Alphabet Inc. Facebook is likely to generate \$35 billion of revenue in 2017, Alphabet about \$105 billion.

According to Zenith Optimedia, which tracks this information, worldwide advertising expenditures were \$579 billion in 2016. Generally, this grows by about 4% per annum, but often declines during recessions; global advertising expenditure is unquestionably cyclical. Assuming no recession in 2017, perhaps \$602 billion will be spent in 2017 for advertising. Facebook and Alphabet alone, as noted, should generate at least \$140 billion of revenue: this represents 23.2% of worldwide advertising expenditures.

Zenith Optimedia estimates the proportion of worldwide internet-related advertising expenditures at \$228 billion, about evenly split between mobile phones and desktop computers. Between them, the Facebook and Google revenues amount to 61% of all internet advertising. Clearly, these two firms will never be 100% of internet advertising, and it is unlikely that worldwide advertising will ever be 100% internet-based.

As to global advertising, assuming Facebook and Google grow by 25% per annum, they should collectively generate \$273 billion by 2020. If we assume the normal 4% per annum growth in worldwide advertising expenditures, the total sum should equal \$677 billion in 2020. In which case, Google and Facebook should control 40.3% of the world’s advertising expenditures in 2020. This is a plausible figure and one that is reflected in these companies’ high P/E ratios.

2017 Internet-Related Advertising Expenditures

	<i>(\$ in billions)</i>
Mobile Internet	\$114
Desktop Internet	<u>114</u>
Total	\$228
Facebook & Google	<u>\$140</u>
As % of World Internet Advertising	61.4%
As % of Worldwide Advertising	23.2%

Source: Zenith Optimedia

Projected Global Advertising Expenditures in 2020

	<i>(\$ in billions)</i>
Facebook & Google, at 25%/yr growth	\$273
Global advertising, at 4%/yr growth	<u>677</u>
Facebook & Google, as % of Worldwide Advertising	40.3%

Source: Zenith Optimedia



Of course, as Google's and Facebook's share of worldwide advertising expenses increases, they must eventually reflect the cyclical attributes of the industry that clearly everyone expects they will dominate. Eventually, the P/E ratios accorded to their shares will come to reflect the cyclicity of the industry. The problem is that no one can predict what their maximum market share percentage will be.

Therefore, the imponderables are: (1) the maximum share of advertising revenue these firms can achieve; (2) the time at which the maximum share will be reached; (3) the P/E at the time that Google and Facebook absolutely dominate advertising; and (4) whether there will be a cyclical decline in advertising expenditures that will disrupt the growth of these firms, and if so, when it might occur.

Ultimately, the situation for an investor today is that of two cyclical firms that appear now, and will continue to appear to be, growth companies until they achieve true dominance of the industry—a position they are almost on the verge of achieving—and then there is likely to be valuation multiple compression. The question is: when will the market realize that? It is a very dangerous game to play.

Appendix A is a review of a remarkably similar set of questions about AOL, once the largest-market-capitalization company in the world, at \$222 billion in December 1999. Even today, 18 years later, only 13 companies have a greater market capitalization. In January 2000, within a few inches of the tech bubble peak, AOL and Time Warner agreed to merge. The aftermath was one of the greatest cases of buyer's regret in stock market history¹. It wasn't so much the matter of the AOL Time Warner stock's dropping 90%, but that it was 90% of a \$350 billion combined stock market capitalization at the time of the merger agreement. And as far as \$350 billion goes, even today, there are only five U.S. companies larger than that; AOL Time Warner, 18 years ago, edged out the ExxonMobil of today.

APPENDIX
July 21, 1999

The Internet Bubble Test, Part I
or
The Internet: A Study in Reason and Unreason

How does one determine if Internet investing constitutes one of the greatest profit opportunities of history or one of the greatest bubbles in history? It would be necessary to devise a quantitative test to compare current valuation with ultimate profit opportunity. The following is a first attempt at such an exercise.

1.) The Ultimate Internet Market

Let us assume that every household in the world has access to the Internet. There are roughly six billion inhabitants of planet Earth, and we will assume an average of four persons in each household. Therefore, if one temporarily ignores population growth, the maximum number of Internet households is 1.5 billion. Let us assume that each of these households pays \$20 per month for unlimited Internet access. Let us also observe that this should take some time to achieve since many households on Earth lack \$20 per month to spend on Internet service, do not own a computer or other Internet access device, do not own a telephone and have no access to electricity.

¹See Appendix, The Internet Bubble Test, dated 7/21/99.



In any event, the expenditure of \$20 per month by 1.5 billion households equals revenue of \$30 billion per month or \$360 billion per year. If all of the companies that provide such service were to maintain a 50% operating margin and a 35% tax rate, then the net profit derived from this revenue would equal \$360 billion x 50% x 65%, or \$117 billion.

Thus, in a market saturation scenario in which Internet services fees do not decline at all from current levels, the total world profit opportunity would be \$117 billion per year. It was assumed that the operating margin is 50%, and of course, very few companies ever maintain such a high operating margin, since it tends to attract intense competition. However, this assumption will be allowed to stand because the object of this exercise is to devise an optimistic profit forecast and then test for reasonability.

2.) The Terminal Internet Equity Valuation

The foregoing section presupposed a market saturation environment in which every potential Internet user is provided with service. It is by definition a zero growth environment, and should logically impose low valuations on companies active in this field. However, in the interest of maintaining an optimistic scenario, it will be assumed that low valuations do not arise and that the typical Internet company will trade at 30x earnings. Since profits are presumed to be \$117 billion per annum for the aggregate of all companies, the aggregate Internet equity valuation should be 30 x \$117 billion, or \$3.51 trillion.

3.) The Question of Time

The time value of money is a powerful influence upon valuation. If \$117 billion of annual profit is achieved in ten years, its net present value is far greater than if that profit is achieved in thirty years. Since any time assumption is at best conjectural, we will assume that complete global usage by individuals of the Internet will be achieved in 20 years.

4.) The Question of Returns to Investors

In order to calculate this quantity, it is necessary to proceed in stages, since a variety of scenarios may occur. The first such calculation will be the most simplistic case. It will be assumed that America Online is the only Internet service provider in the world in 20 years. For the purposes of simplicity, the potential profit arising from advertising will be temporarily ignored. By the preceding definitions, America Online will therefore have a market capitalization of \$3.51 trillion in 20 years. Its current capitalization is \$140 billion. If there were no dilution due to share issuance for the purpose of acquisitions, the return to shareholders would be 17.5% per annum. If America Online were only to maintain, let us say, a 33% global market share and if all other factors were held to be constant, then its market value 20 years hence would be \$1.17 trillion and the return to investors would decline to 11.2% per annum.

5.) The Question of Sensitivity

All of the calculations made thus far are predicated upon assumptions. As is the case with most assumptions, reality is frequently quite different. How sensitive are these calculations to changes in assumptions? The following calculations are designed to give some examples of sensitivity, as well as to provide a method so that the reader may perform other calculations. It will be recalled that the operating profit margin of an Internet service provider was assumed to eventually rise to 50%, although no such provider has yet attained this level. This implies, given a 35% corporate tax rate, a net profit margin of 32.5% (i.e., $50\% \times (1 - \text{tax rate of } 35\%) = 32.5\%$). Virtually no companies ever achieve such a high profit margin after taxes for the simple reason that they would tend to attract so much competition that margins would eventually be forced lower. A net profit margin of 10% should be considered excellent. Therefore, the previously calculated service revenue of \$360 billion per year generated 20 years hence would yield a profit after taxes of \$36 billion.



If this \$36 billion of net income were capitalized at 30x earnings, it would result in a market value of \$1.08 trillion. If this were the sole monopoly of America Online, the return to investors based on the current price would be 10.76% per annum. The sensitivity of this return to declining terminal multiples is presented in the following table.

AOL Terminal P/E Multiple	20-year Annualized Return
30x	10.76%
25x	9.75%
20x	8.53%
15x	6.98%
12x	5.80%

As observed in a previous section, one will quickly discover that return is incredibly sensitive to time. For example, if a 30x P/E ratio on \$36 billion of net income were to be achieved in 30 years instead of 20, then the compound annual return to America Online shareholders declines from 10.75% per annum to 7.05%, which could probably be earned with a high quality telephone company bond.

6.) The Question of Competition

All of the preceding computations make the presumption that America Online will be an Internet Service Provider monopoly in 20 years, which is a highly unlikely event. If America Online were to attain a 90% market share and a 10% net profit margin and were to achieve this in 20 years, the return to shareholders would be \$972 billion [.9 x \$36 billion of profit x 30 PE] divided by \$140 billion [current AOL market capitalization] to the power of 0.05 [portion of 20 years] = 10.17% compound annual return. Thus, a decline in market share to 90% is arithmetically equivalent to a decline in P/E from 30x to 27x. The sensitivity of return to market share is illustrated in the accompanying table.

(P/E assumed to be 30x)	
Market Share	Compound annual return for 20 years
80%	9.52%
70%	8.80%
60%	7.96%
50%	6.98%
40%	5.80%



DISCLOSURES:

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