Musings on Markets

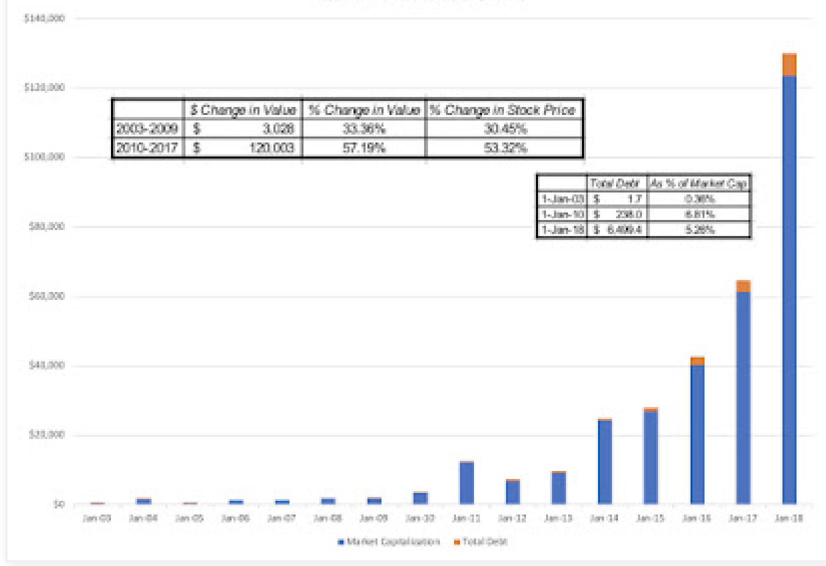
My not-so-profound thoughts about valuation, corporate finance and the news of the day!

Netflix: The Future of Entertainment or House of Cards?

For better or worse, Netflix has changed not just the entertainment business, but also the way that we (the audience) watch television. In the process, it has also enriched its investors, as its market capitalization climbed to $139 billion in March 2018 and even after the market correction for the FANG stocks, its value is substantial enough to make it one of the largest entertainment company in the world. Among the FANG stocks, with their gigantic market capitalizations, it remains the smallest company on both market value and operating metrics, but it has almost as big an impact on our daily lives as its larger peers.

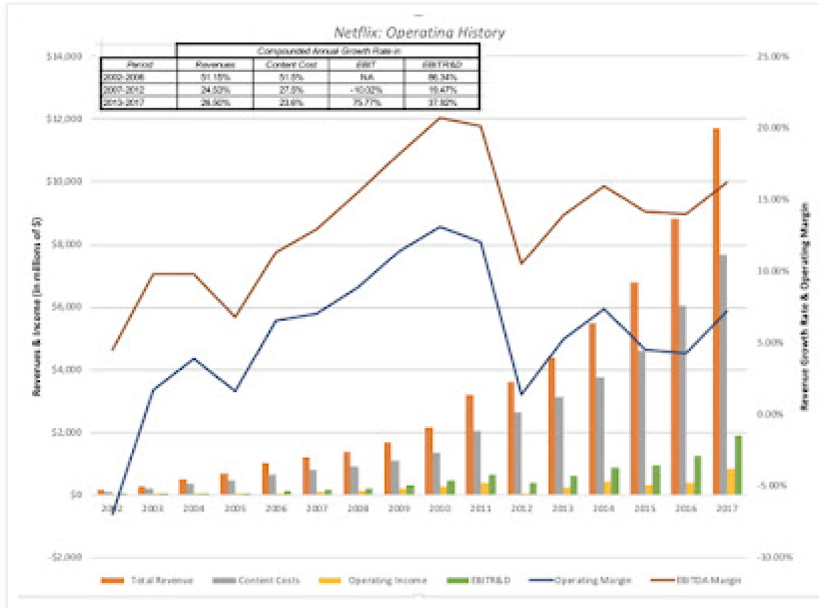
The History

This may come as a surprise to some, but Netflix has been publicly listed for longer than Facebook or Google. The difference between Netflix and these companies is that it's climb to stardom has taken more time.



Don't get me wrong! Netflix was a very good investment between 2003 and 2009, increasing its market capitalization by 33.36% a year and its market capitalization by about $3 billion, during that period. However, it became a superstar investment between 2010 and 2017, adding about $120 billion in value over the period, translating into an annual price appreciation of more than 50% a year.

The fuel that Netflix has used to increase its market capitalization is its subscriber base, as with the other FANG stocks, the company seems to have found the secret to be able to scale up, as it gets larger. That subscriber base, in turn, has allowed the company to increase its revenues over time, as can be seen in the picture below, summarizing Netflix's operating metrics.



You can accuse me of over analyzing this chart, but it captures to me the essence of the Netflix success story. While Netflix has been able to grow revenues in each of the three consecutive five-year time periods, 2002-2006, 2007-2012 and 2013-2017, that it has been existence, the company has been faced with challenges during each period, and it has adapted.

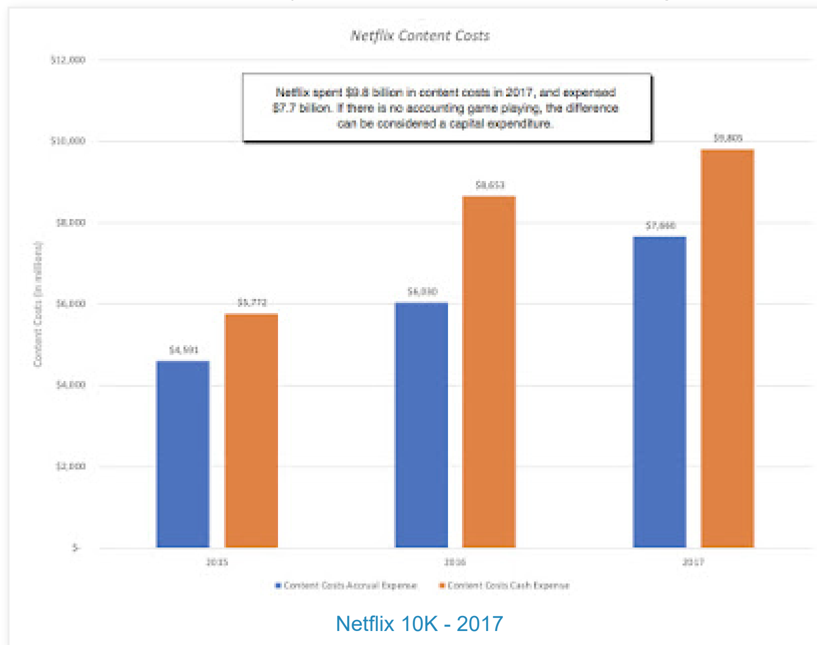
1. DVDs in the Mail: In the first five-year period, 2002 through 2006, the company mailed out DVDs and videos to its subscribers, challenging the video rental business, where brick and mortar video rental stores represented the status quo, and Blockbuster was the dominant player.
2. The Rise of Streaming: It was between 2007 and 2012, where the company came into its own, as it took advantage of changes in technology and in customer preferences. First, as technology evolved to allow for the streaming of movies, Netflix adapted, with a few rough spots, to the new technology, while its brick and mortar competitors imploded. Second, while Netflix saw a drop in revenue growth that was not unexpected, given its larger base, it also saw its content costs rise at a faster rate than revenues, as content providers (the movie studios) starting charging higher prices for content.
3. The Content Maker: In hindsight, the studios probably wish that they had not squeezed Netflix, because the company reacted by taking more control of its own destiny in the 2013-2017 time period, by shifting to original content, first with television series and later with direct-to-streaming movies. The results have upended the entertainment business,

but more critically for Netflix, they show up in a critical statistic. For the first time in its existence, Netflix saw content costs rise at a rate slower than its growth in revenues, with operating profit margins, both before and after R&D reflecting this development.

The State of the Game

We can debate whether Netflix is a good or a bad investment, but there is no argument that the way movies and television get made has been changed by the company's practices. It is the rest of the entertainment business that is trying to adapt to the Netflix streaming model, as evidenced by Disney's acquisition of BAM Media and Fox Entertainment. If I were to summarize where Netflix stands right now, here would be my key points:

1. It's a big spender on content: In 2017, Netflix spent billions on the content that it delivers to its subscribers, and the extent of its spending can be seen in its financial statements. The way that Netflix accounts for its content expenditures does complicate the measurement, since it uses two different accounting standards, one for licensed content and one for productions, but it capitalizes and amortizes both, albeit on different schedules, and based upon viewing patterns. The gap between the accrual (or amortized) cost (shown in the income statement) and the cash spent (shown in the statement of cash flows) on content can be seen in the graph below.



Netflix 10K - 2017

In 2017, Netflix spent almost $9.8 billion on content, though it expensed only $7.7 billion in its income statement. If this divergence continues, and there is no reason to believe that it will not, Netflix's profits will be more positive than their cash flows by a substantial amount. Note that this divergence should not be taken (necessarily) as a sign of deception or accounting game playing.

In fact, if Netflix is being reasonable in its amortization judgments, one way to read the difference of $2.14 billion ($9.8 in cash expenses minus $7.66 billion in accrual expenses) is to view it as the equivalent of capital expenditures at Netflix, since it is expense incurred to attract and keep subscribers.

2. An increasing amount of that spending goes to original content: The decision by Netflix to produce some of its own content in 2013 triggered a shift towards original content that has picked up speed since that year. In 2017, the company spent $6.3 billion on original content, putting it among the top spenders in the entertainment business:

Company	Money Spent on Content	Company	Money Spent on Content
NBC Universal	$ 10.20	Amazon	$ 4.50
Fox	$ 8.00	CBS	$ 4.20
Time Warner	$ 8.00	Discovery	$ 2.20
Disney	$ 7.80	Apple	$ 1.00
Netflix	$ 6.30	Facebook	$ 1.00
Viacom	$ 5.40		

Biggest Spenders on Entertainment Content in 2017

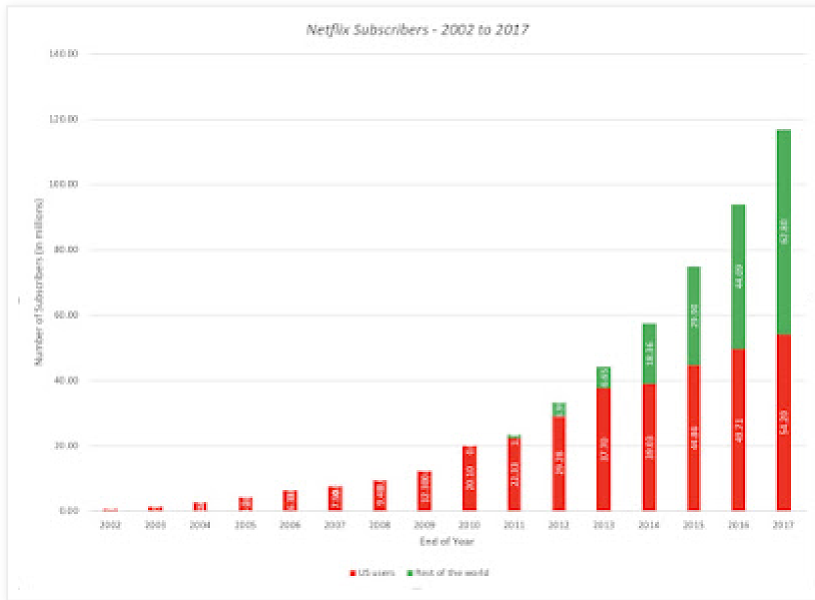
The pace is not letting up. In the first quarter of 2018, Netflix introduced 18 new television series and delivered 12 new seasons of existing series, prodigious output by any studio's standards. There are three reasons for the Netflix move into the content business.

- The first, referenced in the last section, is to gain more control over content costs and to be less exposed to movie studio price hikes.
- The second is that Netflix has been using the data that it has on subscriber tastes not only to direct content at them, but to produce new content that is tailored to viewer demands.
- The third is that it introduces stickiness into their business model, a key reason why new subscribers come to the company and why existing subscribers are reluctant to abandon it, even if subscription fees go up.

Netflix has moved beyond television shows to making straight-to-streaming movies, spending $90 million on Bright, a movie that notwithstanding its lackluster reviews, signaled the company's ambitions to be a major player in the movie business.

3. Netflix has been adept at playing the expectations game: One feature that all of the FANG stocks trade is that rather than let equity research analysts frame their stories and measure their success, they have managed to frame their own stories and make investors and analysts play on their terms. Netflix, for instance, has managed to make the expectations game all about subscriber numbers, and every earnings report of the company is framed around these numbers, with less attention paid to content costs, churn rates and negative cash flows. After its most recent earnings report in January, the stock price surged, as the company reported an increase of 8.3 million in subscribers, well above expectations.

<u>4. The company is globalizing</u>: One consequence of making it a numbers game, which is what Netflix has done by keeping the focus on subscribers, is that you have to go where the numbers are, and for better or worse, that has meant that Netflix has had to go global, with Asia being the mother lode.



At the end of 2017, Netflix had more subscribers outside the US than in the US, and it is bringing its free spending ways and its views on content development to other parts of the world, perhaps bringing Bollywood and Hollywood closer, at least in terms of shared problems.

In summary, Netflix has built a business model of spending immense amounts on content, using that content to attract new subscribers, and then using those new subscribers as its pathway to market value. It is clear that investors have bought into the model, but the model is also one that burns through cash at alarming rates, with no smooth or near term escape hatch.

The Valuation

In keeping with the focus on subscriber numbers that is at the center of the Netflix story, I will value Netflix with the subscriber-based approach that I used to value Spotify a few weeks ago and Uber and Amazon Prime last year.

Cost Breakdown

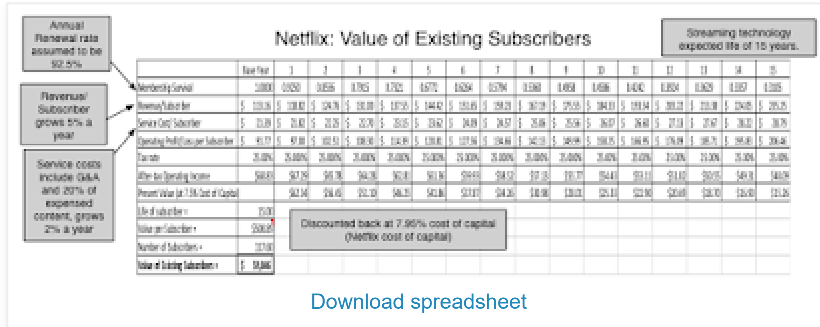
The key to getting a subscriber-based valuation of Netflix is to first break its overall costs down into (a) costs for servicing existing subscribers, (b) the cost of acquiring new subscribers and (c) a corporate cost that cannot be directly related to either servicing existing subscribers or getting new ones. I started with the Netflix 2017 income statement:

NETFLIX: BREAKING DOWN EXPENSES							
Subscriber Statistics							
	2017	2016	Net Change	Lost Subscribers	Gross Change	*Cost of acquiring new subscribers*	
Number of Subscribers	117.60	93.80	23.80	7.04	30.84	Total User Acquisition Costs	$3,424.00
Revenue/Subscriber	$113.16	$103.32				Change in Subscribers in 2017	30.84
Content Cost Breakdown						Cost per new Subscriber	$ 111.04
Content Costs (Cash expense)	$9,806.00		Subscribers (20%)	$ 1,532.00			
Content Costs Expensed	$ 7,660.00		Corporate (80%)	$ 6,128.00		*Cost of Servicing Existing Subscribers*	
Content Costs Capitalized	$2,146.00					Revenue/Subscriber in 2017	$113.16
Netflix: Operating Income in 2017						G&A Cost as % of Revenue	7.39%
Revenues	$11,693.00	As %				Subscriber-related Content Costs	$1,532.00
Marketing Costs	$ 1,278.00	10.93%					
G&A Costs	$ 864.00	7.39%				*Corporate Costs (unrelated to Subscribers)*	
Technology & Development	$ 1,053.00	9.01%				Technology & Development	$1,053.00
Content Costs Expensed	$ 7,660.00	65.51%				Corporate Content Costs	$6,128.00
Operating Profit	$ 838.00	7.17%					

Since Netflix does not break its costs down into my preferred components I made subjective judgments in allocating these costs, treating G&A costs as expenses related to servicing existing subscribers and marketing costs as the costs of acquiring new subscribers. With content costs, I started first with the $2,146 million difference between the cash content cost and expensed content cost and treated it also as part of the cost of acquiring new subscribers. With the expensed content cost of $7,600 million, I assumed that only 20% of these costs are directly related to subscribers and treated that portion as part of the cost of servicing existing subscribers and that the remaining 80% would become part of the corporate cost, in conjunction with the investment in technology and development. One key difference between the Netflix and Spotify cost models is that most of the content costs are fixed corporate costs for Netflix but almost all content costsare variable costs for Spotify, since it pays for content based upon how its subscribers listen to it, rather than as a fixed fee.

Value of an Existing Subscribers

My decision to treat most of the content content costs as a corporate cost has predictable consequences. The costs associated with individual subscribers are only the G&A costs and 20% of content costs, and the number is small, relative to the revenues that Netflix generates per subscriber:



Download spreadsheet

A strength that Netflix has built, perhaps with its original content, is that it has reduced it's churn rate (the loss of existing customers), each year since 2015. In 2017, the annual renewal rate for a Netflix subscription was about 91%, and that number improved even more across the four quarters. In my subscriber-valuation, I have used a 92.5% renewal rate, for the life of a subscriber, assumed to be 15 years. I will assume that Netflix investments in original content will give it the pricing power to increase annual revenue per subscriber (G&A and the 20% of content costs), which was $113.16 in 2017, at 5% a year, while keeping the growth rate in annual expenses per subscriber at the inflation rate of 2%. I estimate after-tax operating income each year, using a global average tax rate of 25%, and discount it back at a 7.95% cost of capital (estimated for Netflix, based upon its business and geographic mix, and debt ratio) to derive a value of $508.89 subscriber and a total value of $59.8 billion for Netflix's 117.6 million existing subscribers.

Value of New Subscribers

To value a new subscriber, I first estimated the total cost that Netflix spent on adding new subscribers by adding the total marketing costs of $1,278 million to the capitalized portion of the content costs of $2,142 million, and then divided this amount by the gross increase in the number of subscribers (30.84 million) during 2017, to obtain a cost of $111.01 for acquiring a new subscriber. I then net that number out from the value of an existing subscriber to arrive at a value of $397.88/new subscriber right now; I assume that this value will increase at the inflation rate over time.

Netflix: Value of New Subscribers

Cost of Acquiring a New Subscriber	$ 111.01
Value per new user (in today's $) =	$397.88

Net Subscriber base increases 15%/ year in years 1-5

Net Subscriber base increases 10%/ year in years 6-10

	Base Year	1	2	3	4	5	6	7	8	9	10
Total Subscribers	117.60	135.24	155.53	178.85	205.68	236.54	260.19	286.21	314.83	346.31	380.94
New Subscribers	0.00	26.46	30.43	34.99	40.24	46.28	41.39	45.53	50.09	55.10	60.60
Value per Subscriber	$397.88	$405.84	$413.96	$422.24	$430.68	$439.30	$448.08	$457.04	$466.18	$475.51	$485.02
Value added by new Subscribers		$10,719	$12,596	$14,775	$17,332	$20,330	$18,548	$20,811	$23,349	$26,198	$29,394
Terminal Value (New Subscribers)											$31,674
Present Value		$9,948	$10,809	$11,746	$12,763	$13,868	$11,721	$12,182	$12,662	$13,160	$28,418
Value Added by New Users	**$137,276**										

Value of new subscriber expected to increase 2% a year

Discounted back at a cost of capital at 7.95%, Netflix cost of capital

Number of new subscribers expected to increase 1% a year in after year 10

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I assume that Netflix will continue to add new subscribers, adding 15% to its net subscriber rolls, each year for the first five years, and 10% a year for years 6 through 10, before settling into a steady state growth rate of 1% a year. Discounting the value added by new subscribers at a higher cost of capital of 8.5%, reflecting the greater uncertainty associated with new subscribers, yields a total value of $137.3 billion for new subscribers.

The Corporate Drag

The final piece of the puzzle is to bring in the corporate costs that we assumed could not be directly linked with subscriber count. In the case of Netflix, the technology & development costs and 80% of the expensed content, that we put into this corporate cost category amounted to $6.13 billion in 2017 and the path that these costs follow in the future will determine the value that we attach to the company.

Netflix: Cost of Corporate Drag

	Base Year	1	2	3	4	5	6	7	8	9	10
Technology & Development	$1,053	$1,106	$1,161	$1,219	$1,280	$1,344	$1,411	$1,482	$1,556	$1,634	$1,715
Content Costs	$6,128	$6,312	$6,501	$6,696	$6,897	$7,104	$7,317	$7,537	$7,763	$7,996	$8,236
After-tax Corporate Expenses		$5,563	$5,747	$5,936	$6,133	$6,336	$6,546	$6,764	$6,989	$7,222	$7,463
Terminal Value (Corporate Exp)											$147,467
PV of Corporate Expenses		$5,153	$4,931	$4,719	$4,516	$4,322	$4,137	$3,959	$3,790	$3,628	$72,096
Value Drag of Corporate Expenses	**$111,252**										

Technology & Development costs grow 5% a year

80% of Content Costs, grows 3% a year.

Global tax rate of 25%

Discounted back at Netflix 7.95% cost of capital

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I assume that technology & development costs will grow 5% a year, but it is on the content cost component that I struggled the most to estimate a growth rate. I decided that the accelerated spending that Netflix had in 2017 and continued to have in 2018 reflect Netflix's attempt to acquire standing in the business, and that while it will continue to spend large amounts on content, the growth rate in this portion of the content costs will drop to 3% a year, for the next 10

years. Note that even with that low growth rate, Netflix will be consistently among the top five spenders in the content business, spending more than $100 billion on original content over the next ten years. Discounting back the after-tax corporate expenses back at the 7.95% cost of capital, yields a corporate cost drag of $111.3 billion.

The Netflix Valuation: The One Number

To value Netflix, I bring together the value of existing and new subscribers and net out the corporate cost drag. I also subtract out the $6.5 billion in debt that the company has outstanding and the value of equity options granted over time to its employees.

Valuing Netflix	
Value of Existing Subscribers	$59,845.86
Value of New Subscribers	$137,276.49
- PV of Corporate Expenses	$111,251.70
Value of Operating Assets	$85,870.65
+ Cash & Cross Holdings	$2,823.00
- Debt	$6,500.00
Value of Equity	**$82,193.65**
- Value of Equity Options	$ 4,978.00
Value of Equity in common stock	**$77,215.65**
Number of Shares	446.81
Value per Share	$ 172.82

Download spreadsheet

The value per share of $172.82 that I estimate for Netflix is well below the stock price of $275, as of April 14, 2018. My value reflects the story that I am telling about Netflix, as a company that is able to grow at double digit rates for the next decade, with high value added with new users, while bringing its content costs under control. I am sure that your views on the company will diverge from mine, and you are welcome to use my Netflix subscriber valuation template to come to your own conclusions.

It is worth taking a pause, and considering the differences between Netflix and Spotify, both subscription-based business models, that draw their value from immense subscriber bases.

1. By paying for its content, both licensed and original, and using that content to go after subscribers, Netflix has built a more levered business model, where subscribers, both new and existing, have higher marginal value than at Spotify, where content costs are tied to subscribers listening to music.
2. The Netflix model, which is increasingly built around original rather than licensed content, provides for a stronger competitive edge, which should show up in higher renewal rates and more pricing power, adding to the value per subscriber, both existing and new.

3. The Netflix model will deliver higher value from subscription growth than the Spotify model, but it comes with a greater downside, because a slackening of that growth will leave Netflix much deeper in the hole, with more negative cash flows, than it would Spotify.

Now that both companies are listed and traded, it will be interesting to see whether this plays out as much larger market reactions to subscription number surprises, both positive and negative, at Netflix than at Spotify.

In my earlier post on Google, I noted that every company has a value driver, one number that more than any of the others determines value. In the case of Netflix, the key value driver, in my view, is content costs. My value per share is premised not just on high growth in subscribers and continued subscriber value, but also on content costs growing at a much lower rate (of 3%) in the future. To illustrate the sensitivity of value per share to this assumption, I varied the growth rate in content costs and calculated value per share:

Annual Growth Rate in Content Cost	Compounded Annual Growth Rate in Revenue (next 5 years)				
	5%	10%	15%	20%	25%
0%	$ 80.96	$ 142.82	$ 216.35	$ 303.17	$ 405.04
2%	$ 53.12	$ 114.98	$ 188.50	$ 275.32	$ 377.19
4%	$ 20.44	$ 82.30	$ 155.83	$ 242.65	$ 344.52
6%	$ (17.84)	$ 44.02	$ 117.55	$ 204.37	$ 306.24
8%	$ (62.60)	$ (0.74)	$ 72.79	$ 159.61	$ 261.48
10%	$ (114.84)	$ (52.98)	$ 20.54	$ 107.36	$ 209.23

To illustrate the dangers to Netflix of letting content costs grow at high rates, note that the company's equity value becomes negative (i.e., the company goes bankrupt), if content costs grow at high rates, relative to revenue growth, with double digit growth rates creating catastrophic effects. If Netflix is able to cap the costs at 2017 levels in perpetuity, the estimated value per share is approximately $216, at the base case growth rate of 15%, and if it is able to reduce content costs in absolute terms over time, it is worth even more. In my view, investing in Netflix is less a bet on the company being able to deliver subscriber and/or revenue growth in the future and more one on the future path of content costs at the company.

The Decision

There is no doubt that Netflix has changed the way we watch television and the movies, and it is changing the movie/TV business in significant ways. By competing for talent in the content business, it is pushing up costs for its competitors and with its direct-to-streaming model, putting pressure on movie theaters and distribution. That said, the entertainment business remains a daunting one, because the talent is expensive and unpredictable, and egos run rampant. The history of newcomers who have come into this business with open wallets is that they leave with empty ones. For Netflix to escape this fate, it has to show discipline in controlling content costs,

and until I see evidence that it is capable of this discipline, I will remain a subscriber, but not an investor in the company.

The Disruptive Duo: Amazon and Netflix!

Amazon and Netflix! Need I say more? Just the mention of those companies cleaves market participants into opposing camps. In one camp are those who believe that those who invest in these companies are out of their minds and that there is no way that you can justify buying these companies, perhaps at any price. In the other are those who argue that the old time value investors don't get it, that these companies are redefining old businesses and will emerge as winners, thus justifying their high prices. The truth, as always, lies in the middle.

Amazon and Netflix: Reading the Pricing Entrails

Amazon and Netflix have been market wonders, rising in market capitalization even in 2015, a year when most of the market was retrenching. Notwithstanding the steep drop in stock prices of both companies this year (with Amazon down 23% and Netflix down 22%), Amazon is still up 36% over the last year and Netflix is up 34% during the same period.

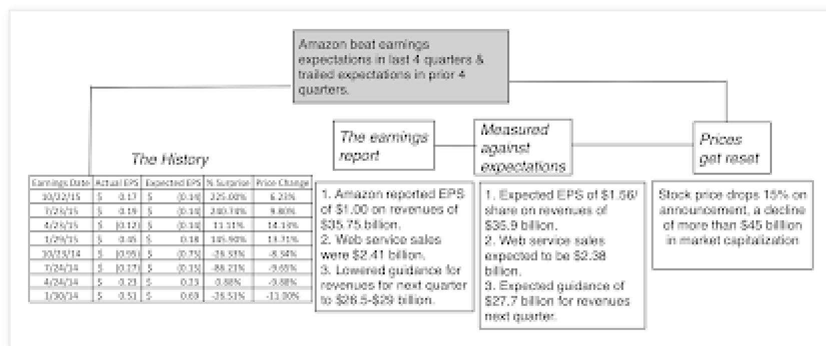
One simple way to measure how much these companies have to come to dominate their playing fields is to compare them with traditional heavyweights in their businesses, Walmart, in the case of Amazon, and Time Warner, in the case of Netflix.

Is it possible that Amazon is worth more than Walmart and that Netflix is more than 60% of Time Warner's value? The answer is yes and the only way to find out is by valuing both companies.

Amazon: The Field of Dreams Company

In a post in October 2014, I described Amazon as a Field of Dreams company, with a CEO (Jeff Bezos) who has been remarkably consistent in his push to make the company larger, even if that means selling products and services at cost, or even below, with the objective of using that market power to generate profits later. His vision for the company can be seen in this 1997 letter to stockholders and the company has certainly delivered on at least one half of that vision and increased its revenues in retailing initially, entertainment later and cloud computing recently, while generating little in profits over much of its existence.

In its most recent earnings report on January 28, 2016, Amazon delivered its by-now-usual high revenue growth, delivered close to expected numbers on its revenues and guidance, but came in well below expectations on its earnings per share.



The market reacted strongly to the earnings per share surprise, with the stock price dropping 15% and Amazon losing $45 billion in market capitalization. The response followed a pattern of large market reactions to earnings surprises at the company, perhaps suggesting that the market is dreaming less about revenues and wanting more in profits from Amazon.

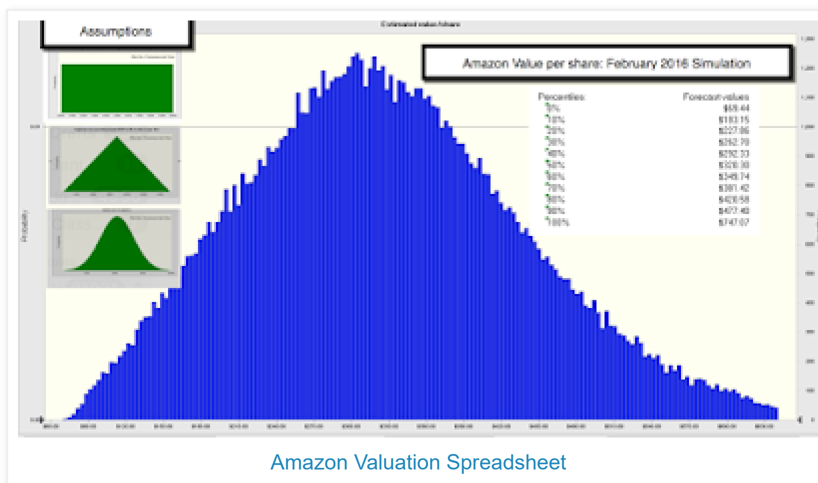
From a valuation perspective, Amazon's results reinforced my existing story, with perhaps a tweak in the pathway to profitability:

Pre-report Narrative
Amazon is a "Field of Dreams" company, growing revenues by selling products & services at cost or below, with the intent of using that market power to extract profits in the future.

Amazon's Earnings Report on January 28, 2016
1. Revenue growth for most recent twelve months was 20.25%, an astonishing number, given that the revenues last year were $88 billion.
2. Amazon posted its third profitable quarter in a row, a departure from its past history of reporting losses.
3. The company's guidance suggests that growth will continue to be in the low single digits next year.
4. The Web services business (Cloud) is growing fastest, with revenues increasing 69% over the prior year to reach $2.38 billion with an operating margin of 28.5%.

Post-report Narrative
Amazon continues on its path of revenue growth, but it is starting on its pathway to profitability, at least in its media and cloud businesses, perhaps setting up trade offs between revenue growth and profits.

During the last year, Amazon has taken actions that suggest that it is heeding the call to show profits, shifting more of its focus to cloud computing and laying off employees for the first time in its corporate life. To get a measure of the company's current and expected future profit margins, I decided to take Amazon's substantial technology and product development costs, which amounted to $12.5 billion in 2015 out of the operating expenses, and capitalize them, on the rationale that as growth started to slow, the growth in this cost would level off. That adjustment does push the current operating margin for the company from 2.09% to 6.58%, while also significantly raising my estimates of how much Amazon is reinvesting to generate its high revenue growth. Assuming that there is still room for revenue growth (especially in Amazon's media and cloud computing business) and margin expansion (to 8.80%, the weighted average of the margins in the retail, media and cloud business) gives me an updated story for Amazon. The value that I obtain is $323.55 per share and the results of the simulation in February 2016 using this updated story are below:

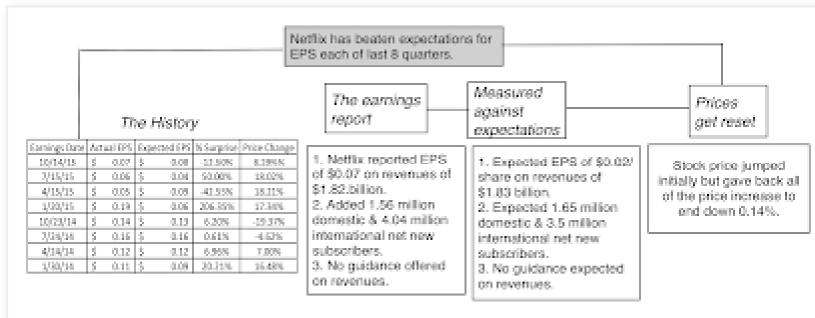


Amazon Valuation Spreadsheet

At $507 per share, the price on February 12, 2016, Amazon still looks over valued to me, but as you can see from the simulation, there is a sizeable probability that assuming higher growth and higher margins can get you values that exceed the price. If your rationale for buying Amazon is the cloud computing dream, I would suggest caution. The business is a big, potentially profitable one, but it is also one where other big players are stirring.

Netflix: House of Cards or Global Streamer?

Like Amazon, Netflix has a CEO in Reed Hastings, who has been both consistent and credible in selling a story of growth and potential. As the company approaches saturation in the US market, the growth story has a global twist to it. In its earnings report on January 19, 2016, Netflix beat expectations on both earnings per share and subscribers, with the growth in global subscribers tipping the scale.



Earnings Date	Actual EPS	Expected EPS	% Surprise	Price Change
10/14/15	$ 0.07	$ 0.08	-12.50%	8.19%
7/15/15	$ 0.06	$ 0.04	50.00%	18.02%
4/15/15	$ 0.05	$ 0.09	-41.55%	18.21%
1/20/15	$ 0.19	$ 0.06	206.35%	17.36%
10/23/14	$ 0.14	$ 0.13	6.20%	-19.37%
7/21/14	$ 0.16	$ 0.16	0.61%	-4.62%
4/21/14	$ 0.12	$ 0.12	6.96%	7.00%
1/22/14	$ 0.11	$ 0.09	20.71%	16.48%

While the report initially evoked a positive response, that price bounce quickly faded as investors took profits.

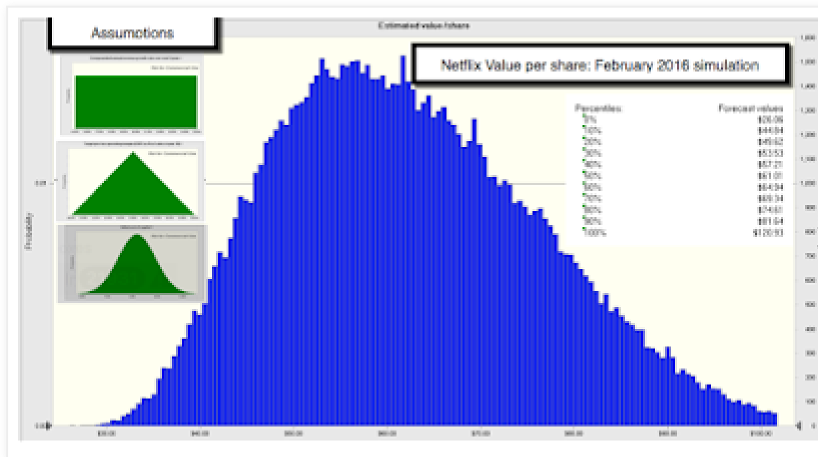
I have never posted a Netflix valuation on my blog, but in my prior valuations of the firm, I have tended to value it as a primarily domestic company that acquires others' content and streams it to subscribers While that remains the core business model, it seems to me that the story is shifting to a company that is increasingly global and more willing to generate its own content, with this earnings report providing further backing for the view. The connection between this story and my valuation inputs is below:

Pre-report Narrative
Netflix is a subscription-based business, whose strength comes from its library of mostly acquired content and a potential network advantage from exclusive use of that content.

Netflix's Earnings Report on January 19, 2016
1. Earnings were slightly higher than expected. While the company still has slim conventional accounting margins, its biggest expense is acquiring or makng content for its library.
2. Subscriber growth lagged expections domestically but beat expecations outside the US.
3. Company increased spending on original programming.

Post-report Narrative
Netflix will continue to be subscription based, but will shift towards more original content and global growth, using its library as its calling card.

Note that Netflix's shift to content has mixed effects, decreasing profit margins (at least as I have defined them) while also reducing the reinvestment needed to generate growth (as the cost of buying content is replaced with the cost of making its own). The value per share that I obtain with these inputs is $61.44. Allowing the inputs to vary and be drawn from distributions, my estimated value distribution for Netflix is as follows:



At $87.40/share per share, Netflix looks overvalued by about 40%, but as with Amazon, there are clearly combinations of revenue growth and margins that yield values that exceed the price.

To GAAP or not to GAAP?

Both Amazon and Netflix have a GAAP problem, insofar as neither company generates much in operating profits, using conventional accounting rules. I do believe that GAAP understates the profits at both companies, though not for the reasons used by many of the biggest cheerleaders for the company, including the adding back of stock-based compensation or the use of supplier

credit as a source of capital (and cash flows). The problem is in the accounting categorization of expenses, with Amazon's big investments in technology and content and Netflix's even bigger spending on acquiring the rights to content (usually for multiple years) being treated as operating expenses. If we following accounting's own first principle, which define capital expenditures as expenditures designed to create benefits over many years, Amazon's technology investments and Netflix's content commitments should both be moved out of operating expenses and the effects are captured in the table below:

	Amazon		Netflix	
	GAAP	*GAAP adjusted for reality*	*GAAP*	*GAAP adjusted for reality*
Revenues	$ 107,006.00	$ 107,006.00	$ 6,779.51	$ 6,779.51
Operating Income	$ 2,233.00	$ 7,250.22	$ 304.83	$ 1,913.58
Operating Margin	2.09%	6.78%		28.23%
Invested Capital	$ 1,811.00	$ 24,611.00	2285	$ 13,454.00
ROIC (Pre-tax)	123.30%	29.46%	13.34%	14.22%
Debt	$ 8,235.00	$ 13,857.00	$ 2,371.00	$ 12,654.00
Debt Ratio (Market)	3.55%	5.65%	6.03%	25.32%
Debt Ratio (Book)	38.09%	31.20%	51.61%	80.27%
Cost of capital	8.09%	8.07%	8.33%	8.17%
Revenue Growth	15.00%	15.00%	20.00%	20.00%
Target Margin	6.00%	8.80%	15.00%	25.00%
Sales/Capital	10.00	2.97	2.25	1.07
Value per share	**$249.32**	**$ 323.35**	**$42.25**	**$ 61.44**

In summary, reclassifying these basic expenses changes the picture of these companies from low margin companies, that grow revenues with very little reinvestment, to higher margin companies, that reinvest significant amounts to deliver higher revenues. It also has a favorable impact on value per share, not because of the obvious reasons (that operating income is increased) but because the reinvestment at both companies has been value-generating.

I don't worship at the GAAP altar and have come to the conclusion that while accountants might do some things well, measuring earnings at companies that are not stable, manufacturing firms is not one of those things. They not only violate their own first principles (as evidenced by the treatment of R&D and contractual commitments as operating expenses) but also create inconsistencies across companies, making earnings at Amazon and Netflix not quite comparable with the earnings at GM or even at Walmart. That is one reason that I give short shrift to arguments against investing in Amazon, because it trades at several hundred times earnings,

since cutting its technology development costs by $10 billion could quickly solve that PE problem while destroying the basis for the company's value.

As businesses, the two companies share a common characteristic: they are willing to spend money now (on Prime and technology, in the case of Amazon, and original and acquired content, in the case of Netflix) to generate revenue growth, which they believe that they can turn into positive cash flows later. Both companies also realize that their growth ambitions will require them to grow outside the US, in less friendly regulatory standpoint and competitive environments. The biggest danger that the two companies face is that their revenue growth plans come to fruition, but that their costs stay high, as they have to keep spending money to keep their customers. There is one other characteristic that they share and it is one that may add to their value, though it is disquieting, at least to me. I have a feeling that Amazon knows more about my buying habits, and Netflix about my TV and movie watching proclivities, than I do myself. As an Amazon Prime user and Netflix subscriber of long standing, I know that they will use this knowledge to draw me deeper into their web, but I must confess that I am going in willingly.

Investor or Trader?

In the first post in this series, I differentiated between investors and traders and no two companies better illustrate the divide than Amazon and Netflix. The two stocks have created a Rorschach test by forcing you to choose between staying true to your investing beliefs or capitulating to your pricing instincts. I would be lying if I said that I have not revisited my Amazon valuation from October 2014, when the stock was trading at about $300 and I found it to be over valued, as the stock doubled to more than $600 during the course of the next year or that I have not looked wistfully at Netflix, during its stock price rise last year. That said, I have made my peace, for the moment, with the market, on these companies. I am an investor, for better or worse, and have to go with my estimates of value, flawed thought they might be, and will not buy either Amazon or Netflix, at their current prices. At the same time, I have enough respect for the power of markets to not sell short on either stock, since I have seen what momentum can do with both stocks. You can call me chicken, but I don't have the luxury of investing other people's money!

Come easy, go easy: The Tech Takedown!

If there is one thing that I have learned about markets over the years, it is that they have a way of leveling egos and cutting companies and investors down to size. The last three weeks have been humbling ones for tech companies, especially the big four (Facebook, Amazon, Netflix and Alphabet or FANG) which seemed unstoppable in their pursuit of revenues and ever-rising market capitalizations, and for tech investors, many of whom seem to have mistaken luck for skill. Not surprisingly, some of the cheerleaders who were just a short while ago telling us that nothing could go wrong with these companies are in the midst of a mood shift, where they are convinced that nothing can go right with them. As Mark Zuckerberg gets ready to testify to Congress, amidst calls for both regulating and perhaps even breaking up tech companies, it is time to take a sober look at where we stand with these companies, what the last three weeks have changed and the consequences for investment decisions.

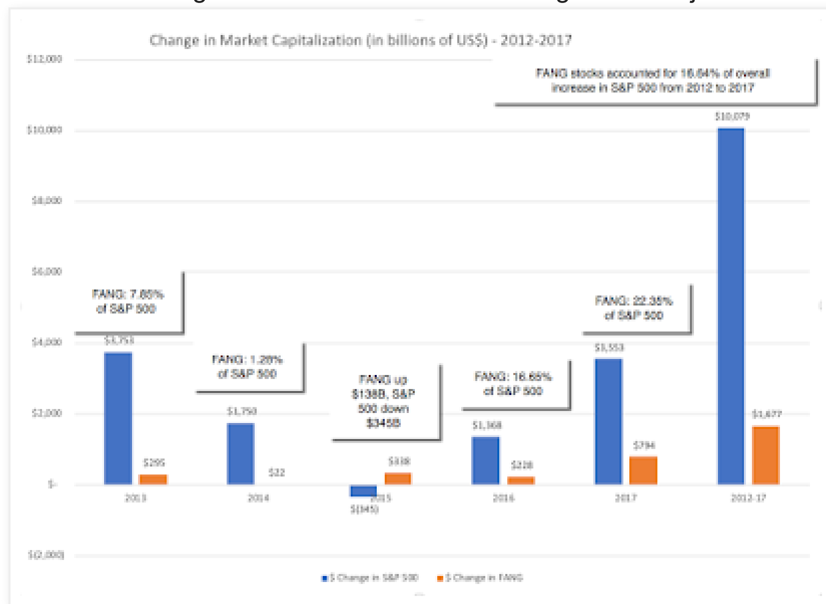
The Rise of Facebook, Amazon, Netflix and Google (FANG)

The outsized attention paid to the FANG (Facebook, Amazon, Netflix and Google) stocks sometimes obscures how young these companies are in the public market place. Amazon, a company that I valued as an online, book retailer in 1998, a year after its listing, is the granddaddy of the group. The Google IPO , remembered primarily because of its use of a Dutch auction, instead of a banker, to set its offering price was in 2004, but you probably completely missed the Netflix IPO two years earlier in 2002, and Facebook, the youngest of the four, went public in 2012. The growth in market capitalization at these companies is the stuff of investing legend and the table below shows how they have almost tripled their contribution to the overall market capitalization of the S&P 500 between 2012 and 2017 (with all numbers in billions of US $):

Date	S&P 500	Google (2006)	Amazon (2005)	Facebook (2013)	Netflix (2010)	FANG	FANG as % of S&P 500
12/31/12	$ 12,742,000	$ 248,461	$ 123,985	$ 70,821	$ 9,228	$ 452,495	3.55%
12/31/13	$ 16,495,000	$ 398,788	$ 164,734	$ 159,537	$ 24,185	$ 747,244	4.53%
12/31/14	$ 18,245,000	$ 359,747	$ 164,638	$ 218,323	$ 26,849	$ 769,557	4.22%
12/31/15	$ 17,900,000	$ 478,168	$ 278,364	$ 310,558	$ 40,415	$ 1,107,505	6.19%
12/31/16	$ 19,268,000	$ 500,588	$ 394,840	$ 378,530	$ 61,312	$ 1,335,270	6.93%
12/31/17	$ 22,821,000	$ 752,662	$ 692,249	$ 560,927	$ 123,497	$ 2,129,335	9.33%

At the end of the 2017, Amazon, Google and Facebook were three of the ten largest market capitalization companies in the world.

The role that the FANG companies have played in driving US equities can be best seen with a different lens, by looking at the total change in the market capitalization of the S&P 500 and how much of that change can be attributed to the rising values of just these four companies:

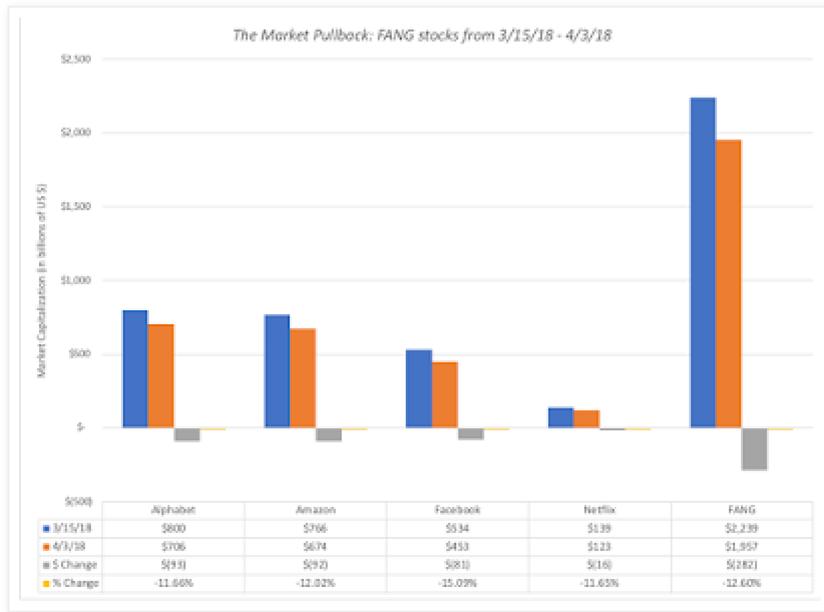


To add weight to these numbers, consider these facts. The four companies that comprise FANG added almost $1.7 trillion in market capitalization over these five years and accounted for one-sixth of the increase in value for the entire index. Put simply, if you were a large-cap US portfolio manager and you held none of these stocks between 2013-2017, it would have been very, very difficult, if not impossible, to beat the S&P 500 over this period.

A Reversal in Fortunes for the FANG stocks

It is the sustained success of these companies that has made the last few weeks so trying for investors in them and so unsettling for market watchers. While these stocks went through the same ups and downs that the rest of the market was going through in February, it was in the middle of March that they became the central story, with the revelations from Cambridge Analytica, a data analytics and consulting firm, that they had harvested data on about 50 million Facebook users (a number that has since been increased to 87 million) for use in political and commercial campaigns. The political firestorm that followed has not only hurt Facebook, but the

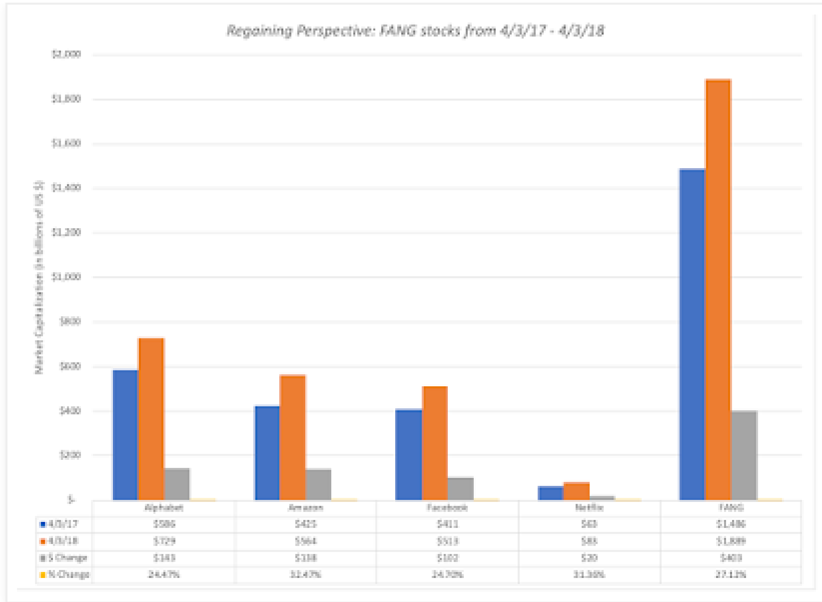
other three companies as well, and the graph below chronicles the damage in the days since the news story was released:



	Alphabet	Amazon	Facebook	Netflix	FANG
3/15/18	$800	$766	$534	$139	$2,239
4/3/18	$706	$674	$453	$123	$1,957
$ Change	$(93)	$(92)	$(81)	$(16)	$(282)
% Change	-11.66%	-12.02%	-15.09%	-11.65%	-12.60%

The numbers are staggering, at least in absolute terms. Collectively, the FANG stocks lost $282 billion in market capitalization between March 15 and April 2 and contributed significantly to the drop in US equity markets over that period. To put that in perspective, the market capitalization lost in just these four companies in about two weeks was greater than the total value all crypto currencies (Bitcoin and all its relatives) as of the start of April of 2018, perhaps suggesting that we have been letting ourselves get distracted by penny change, when dollars are at stake. It is also interesting that while much of the attention has been directed at Facebook, which lost 15% of its value in just over two weeks, the three other stocks each lost about 12% of their value.

Speaking of perspective, though, investors in these four stocks should consider another fact before they complain too much about being punished by the market. Even with the losses through April 2 incorporated, the collective market value of these companies remains about $400 billion higher than it was a year ago, on April 3, 2017.



The bottom line is that two weeks of market pull backs cannot take away from the longer term success at these companies. If this is what failure looks like, I would love to see more of it in my portfolio.

The Fang Story Line

To understand both the rise and recent pullback, let's look at what these four companies have in common. As I see it, here are the salient features:

1. Scaling Success: Each of these companies has been able to keep revenue growing rapidly, even as they scale up and acquire larger market share. In effect, they have been able to deliver small company growth rates, while becoming monoliths.

	Facebook Revenues		Amazon Revenues		Netflix Revenues		Alphabet Revenues		FANG Revenues	
2012	$ 5,089		$ 61,093		$ 3,609		$ 46,039		$ 115,830	
2013	$ 7,872	54.69%	$ 74,452	21.87%	$ 4,375	21.22%	$ 55,519	20.59%	$ 142,219	22.78%
2014	$ 12,466	58.36%	$ 88,988	19.52%	$ 5,505	25.83%	$ 66,001	18.88%	$ 172,961	21.62%
2015	$ 17,928	43.82%	$ 107,006	20.25%	$ 6,780	23.16%	$ 74,989	13.62%	$ 206,704	19.51%
2016	$ 27,638	54.16%	$ 135,987	27.08%	$ 8,831	30.25%	$ 90,272	20.38%	$ 262,729	27.10%
2017	$ 40,653	47.09%	$ 177,866	30.80%	$ 11,693	32.41%	$ 110,855	22.80%	$ 341,068	29.82%

   This success of these companies at delivering high growth, as they have become bigger, have some led some to rethink long-held beliefs about the limits of growth.

2. Bigger Slice of a Bigger Pie: All four of these companies have also been able to change the businesses that they have entered, increasing the size of the total market by attracting new customers, while also changing the way business is run to their benefit. With Google

and Facebook, that business is advertising, with Netflix, it is entertainment, and with Amazon, it is just about any business it enters, from retailing to entertainment to cloud services. In each of these businesses, they have not only made the pie bigger but also increased their slice of it, quite a feat!

3. Promise of Profitability: Alphabet and Facebook are money-making machines, with very high profit margins; Facebook's margins are among the highest among large market capitalization companies and Google's are in the top decile.

	Operating Income					Operating Margin				
	Facebook	Amazon	Netflix	Alphabet	FANG	Facebook	Amazon	Netflix	Alphabet	FANG
2012	$ 538	$ 676	$ 50	$ 13,634	$ 14,898	10.57%	1.11%	1.39%	29.61%	12.86%
2013	$ 2,921	$ 745	$ 228	$ 15,403	$ 19,297	37.11%	1.00%	5.21%	27.74%	13.57%
2014	$ 4,994	$ 178	$ 403	$ 16,874	$ 22,449	40.06%	0.20%	7.32%	25.57%	12.98%
2015	$ 6,225	$ 2,233	$ 306	$ 19,360	$ 28,124	34.72%	2.09%	4.51%	25.82%	13.61%
2016	$ 12,427	$ 4,186	$ 380	$ 23,716	$ 40,709	44.96%	3.08%	4.30%	26.27%	15.49%
2017	$ 20,203	$ 4,106	$ 839	$ 28,882	$ 54,030	49.70%	2.31%	7.18%	26.05%	15.84%

Amazon has lagged on profitability historically, but it seems to be showing progress in the last few years, and Netflix still struggles to generate decent profit margins. The low margins that these companies show are deceptively low because they are low, after expensing what would be business building or capital expenditures in most other companies - $22.6 billion in technology and content at Amazon and almost $8 billion in content costs at Netflix.

If, in 2008, you had described the trajectories that these companies would go through, to get to where they are today, I would have given you long odds on it happening. To the question of how they pulled it off, I would point to three factors;

1. Centralized Power: These companies are more corporate dictatorships, than corporate democracies. All four of these companies continue to be run by founder/CEOs, whose visions and narratives have focused these companies; Brin and Page, at Alphabet, Zuckerberg, at Facebook, Bezos at Amazon and Hastings at Netflix, have unchallenged power at these companies, and the only option that shareholders who disagree with them have is to sell and move on.
2. Big Data: While big data is often a buzz word thrown into conversations where it does not belong, these four companies epitomize how data can be used to create value. In fact, you can argue that what Google learns from our search behavior, Facebook from our social media interactions, Netflix from our video watching choices and Amazon from our shopping carts (and Alexa) is central to these companies being able to scale up successfully and change the businesses they are in. Google and Facebook use what they learn about us to allow companies to target their advertising, Netflix develops content that reflects our watching preferences and Amazon uses our shopping history and Prime membership to run circles around its competitors.

3. Intimidation Factor: There is one final intangible in the mix and that is the perception that these companies have created in regulators, customers and competitors that they are unstoppable. Advertisers facing off against Google and Facebook increasingly settle for crumbs off the table, convinced that they cannot take on either company frontally, the entertainment business which once viewed Netflix as a nuisance has learned not only to live with the company but has adapted itself to the streaming world and Amazon's entry into almost any business seems to lead to a negative reassessment of the status quo in that business.

In short, if you were an investor in any of these companies until three weeks ago, the story that you would have used to justify holding them would have been that they were juggernauts headed for global domination, and valued accordingly.

Story Break, Recalibration or Tweak?

If you have read my prior posts on valuation, you know that I am a great believer that stories hold together valuations, and that it is changes to stories that change valuation. It is still early, but the question that investors face is whether what has happened in the last three weeks has changed the story dynamics fundamentally at these companies. At the very minimum, we have at least noticed that the strengths that we noted in the last section come with accompanying weaknesses

1. CEO heads cannot roll: Unlike traditional companies facing crises, where CEOs can be offered by a board of director as a sacrificial offering to calm investors, regulators or politicians, the FANG companies and their CEOs are so intertwined, with power entrenched in the current CEOs, this option is off the table. Even if Mark Zuckerberg performs like Valeant's Michael Pearson did in front of a congressional committee next week, he will still be CEO for the foreseeable future, an advantage that having voting shares and controlling more than 50% of the voting rights gives him.
2. The Dark Side of Sharing: I don't know what we, collectively as users of these companies' products and services, thought they were doing with all of the information that we were sharing so willingly with them, but until the last few weeks, we were able to look the other way and assume that it would be used benevolently. The Facebook fiasco with Cambridge Analytica has pushed some of us out of denial and perhaps into a reassessment of how we share data and how that data is used. It has also created a firestorm about data sharing and privacy that may result in restrictions in how the data gets used.
3. No Friends: When other companies feel threatened by your success and growth, it should come as no surprise that many of them are cheering, as you stumble. From Elon Musk shutting down Tesla's Facebook presence] to Tim Cook castigating Google and Facebook for misusing data, there seems to be a desire to pile on. Musk has far bigger problems at

Tesla than it's Facebook page, and Cook should be careful about throwing stones from a glass house, but watching the FANG companies squirm is evoking joy in the boardrooms of its competitors.

So, what now? As I see it, there are three ways to read the tea leaves, with the effects on value ranging from very negative to non-existent.

1. Second Thoughts on Sharing: It is possible that the news stories about how exposed we have left ourselves, as a consequence of our sharing, will lead us to all to reassess how much and how we interact online. That would have significant consequences for all of the FANG stocks, since their scaling success and business models depend upon continued user engagement.
2. Tempest in a teapot: At the other end of the spectrum, there are some who argue that after the Zuckerberg testimony, the story will blow over and that not only will the companies revert back to their old ways, but that they will continue to accumulate users and grow revenues, while doing so.
3. Data Protections: The third possibility lies somewhere between the first two. While the news stories may have little effect on how people use these companies' products and services, there may be new restrictions on how the data that is collected from their usage is utilized by the companies. That would include not only privacy restrictions, similar to those already in place in the EU, but also regulations on how the data is collected, stored and shared. In addition, the companies themselves may feel pressure to change current business practices, which while profitable, have left data vulnerabilities.

I don't buy into either of the first two scenarios. I think that we are too far gone down the sharing road to reverse field, and that while we will have a few high profile individuals signal their displeasure by abandoning (or claiming to abandon) a platform, most of us are too attached to Google search, our Facebook friends, watching Black Mirror on Netflix and the convenience of Prime to throw them overboard, because our privacy has been breached. In fact, I would not be surprised if Facebook usage has gone up in the days since the crisis, rather than down.

I also think that assuming that these stories will pass with no effect is a mistake, since there are changes coming to these firms, from within and without, that will have value consequences. To illustrate, Facebook has already announced that it will stop using data from third party aggregators to supplement its own data in customer targeting, because of data concerns, and I am sure that there are more changes coming, many of which will increase Facebook's costs and crimp revenue growth, and through those changes, the value that we attach to Facebook. I also believe that you will see more restrictions on the use of data and that these rules will also have

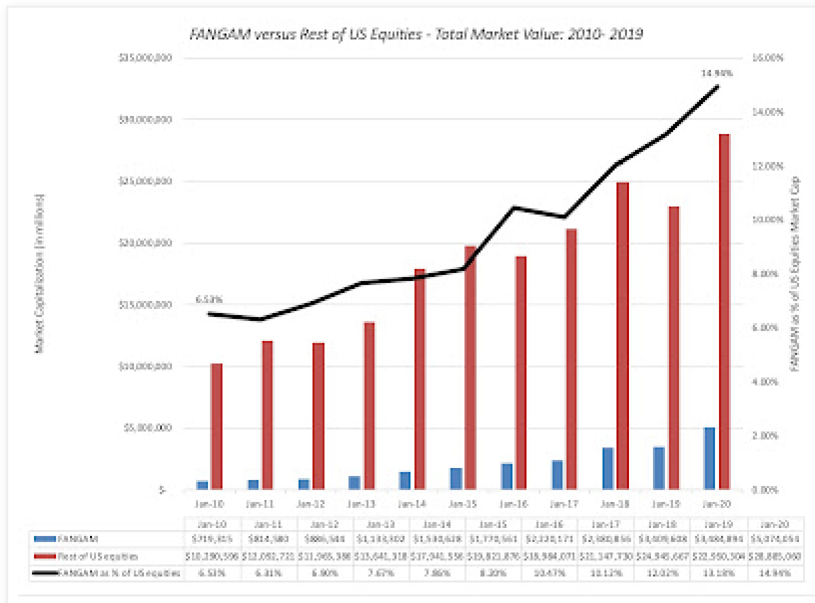
an effect on costs, growth and value. Rather than extend this post further, by looking at the impact of these changes, I will be using my next post to update my stories and valuations of Facebook, Amazon, Netflix and Google. If you want a preview, suffice to say that I am back to being a Facebook shareholder, that I am close to becoming a Google shareholder for the first time and that Amazon and Netflix remain out of my reach.

Back to Earth or Temporary Setback? Revisiting the FANGAM Stocks

It has been a rocky year so far, in 2022, with worries about inflation competing with hopes about recovery for the market's attention. In the midst of all the action, to no one's surprise, have been six stocks (Facebook, Amazon, Netflix, Google, Apple and Microsoft or FANGAM) that have largely driven US equities for the last decade, roiling the market with their most recent earnings reports. Netflix and Facebook saw drops of 20% or more in market capitalization, following negative earnings reports, but Amazon and Google beat market expectations. In this post, I will be valuing each of these companies, both to assess whether to invest in them individually, and to examine whether there are lessons for the market in their price entrails.

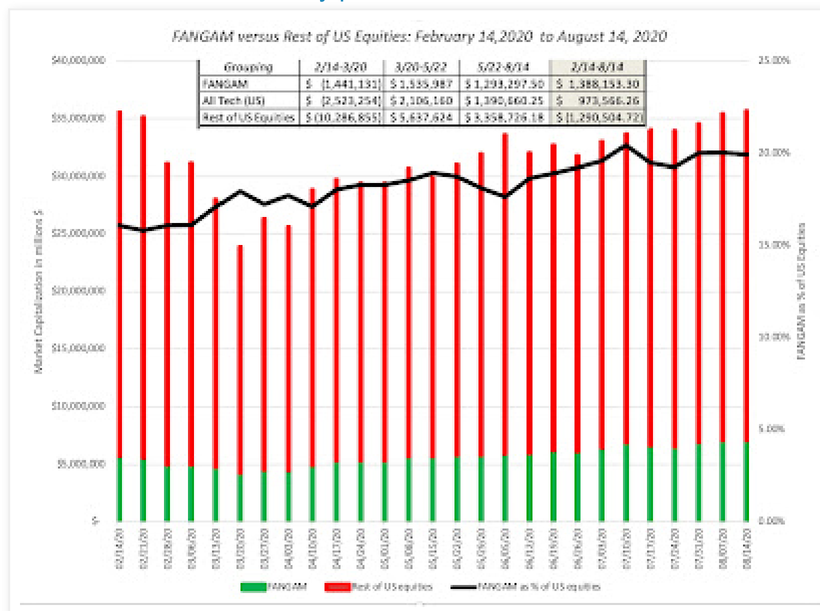
My September 2020 Valuations

If you tally the winners and losers in the stock market sweepstakes between 2010 and 2019, it is undeniable that the decade belonged to the FANGAM stocks, as can be seen in the graph, where I chart the collective market cap of these six companies against the collective market cap of all US equities, and report on their percentage share:



Over the course of the decade (2010-2019), the FANGAM stocks increased in collective market capitalization from $719 billion from $5.07 trillion, and their share of the overall equity value of all

US stocks also surged from 6.5% to 14.9%. It is not hyperbole that without these stocks, the last decade would not have been a great one for US equities. Coming into 2020 in a position of strength, these companies got stronger, as COVID rocked economies and markets in 2020, which became the headline for one of my posts on COVID:



Grouping	2/14-3/20	3/20-5/22	5/22-8/14	2/14-8/14
FANGAM	$ (1,441,131)	$ 1,535,987	$ 1,293,297.50	$ 1,388,153.30
All Tech (US)	$ (2,523,254)	$ 2,106,160	$ 1,390,860.25	$ 973,566.26
Rest of US Equities	$ (10,286,855)	$ 5,637,624	$ 3,358,726.18	$ (1,290,504.72)

Between February 14, 2020 and August 14, 2020, as markets first collapsed and then recovered just as strongly, the FANGAM companies collectively added $1.39 trillion in market cap, accounting for all of the recovery in US stocks during that period. I have valued each of FANGAM multiple times in the past, but my most recent attempt to value each of them was in September 2020, as one of a series of posts highlighting how COVID was playing out in markets. I wanted to see if that surge, added on to the trillions in the market cap of US equities between 2010 and 2019, had left them in nosebleed territory, in terms of value. I must admit I was surprised by my own valuations, since, given the low riskfree rates prevailing at the time, only one stock (Apple) looked significant over valued. Of the rest, Microsoft and Amazon were over valued, albeit by modest most amounts, and Facebook was the most undervalued, and Netflix and Google were close to fairly valued.

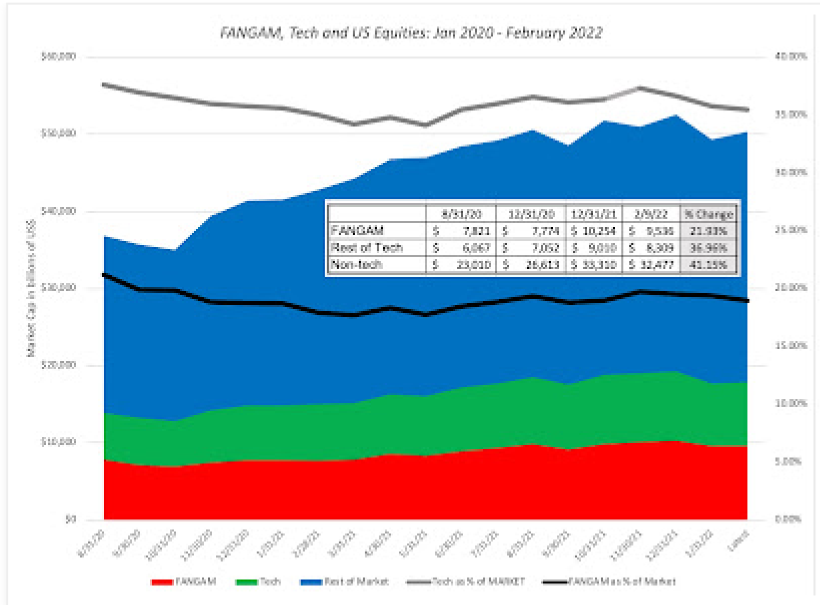
Company	Base Year Numbers	Valuation Story	Valuation inputs	Value per Share (Simulation)			Pricing per share	
Facebook	Revenues = $75 B	**User Base pays off:** Immense & intense user base allows for continued ad growth & new business potential.	Rev Growth = 10%	10th:	$	267.77		
	EBIT = $27.9 B		Target Margin = 40%	25th:	$	293.89	Price =	$262.59
	Oper. margin =44.3%		Sales to capital = 2.64	Median:	$	327.68	Under/Over =	Under valued
	Rev Growth (LTM) = 13.02%		Cost of capital = 6.08%	75th:	$	364.79	% under/over	-13.86%
				90th:	$	398.85	IRR	7.16%
Amazon	Revenues = $ 322 B	**Disruption Platform rolls on:** Continue to expand into new businesses, delaying profitability to deliver higher growth.	Rev Growth = 20%	10th:		$1,479.65		
	EBIT = $16.7 B		Target Margin = 12%	25th:	$	1,969.46	Price =	$3,260.48
	Oper. margin = 7.99%		Sales to capital = 1.94	Median:	$	2,778.22	Under/Over =	Over valued
	Rev Growth (LTM) = 31.58%		Cost of capital = 6.11%	75th:	$	3,617.74	% under/over	17.35%
				90th:	$	4,295.58	IRR	5.77%
Netflix	Revenues = $ 22.6 B	**Streaming Player:** With new competitors, will continue to add subscribers, but struggle to control content costs.	Value/Existing Subscriber = $446.	10th:	$	312.79		
	# Subscribers = 192.3 mil		Growth in Subscribers = 12%	25th:	$	372.49	Price =	$484.53
	Growth in LTM = 27.3%		Growth in Content Costs = 5%	Median:	$	445.53	Under/Over =	Over valued
	Cost/New Subscriber = $103		Cost of capital (Existing)= 6.5%	75th:	$	519.34	% under/over	8.75%
	Content Cost = $9.95 B		Cost of capital (New) = 7.5%	90th:	$	585.58	IRR	6.16%
Google/ Alphabet	Revenues = $166 B	**More than a Search Engine:** While the search box will continue to be the money-maker, other bets will start to pay off in growth.	Rev Growth = 8%	10th:	$	1,165.57		
	EBIT = $33.4 B		Target Margin = 24%	25th:	$	1,267.31	Price =	$1,544.61
	Oper. margin = 23.8%		Sales to capital = 2.64	Median:	$	1,406.96	Under/Over =	Over valued
	Rev Growth (LTM) = 5.22%		Cost of capital = 6.25%	75th:	$	1,551.26	% under/over	9.78%
				90th:	$	1,676.02	IRR	5.87%
Apple	Revenues = $274 B	**Cash Machine revs up:** The iPhone will keep the cash machine going up, but services business will be growth driver.	Rev Growth = 8%	10th:	$	285.67		
	EBIT = $52.6 B		Target Margin = 26%	25th:	$	312.28	Price =	$462.83
	Oper. margin = 25.9%		Sales to capital =4.00	Median:	$	350.22	Under/Over =	Over valued
	Rev Growth (LTM) = 7.07%		Cost of capital = 6.58%	75th:	$	390.66	% under/over	32.15%
				90th:	$	425.04	IRR	5.30%
Microsoft	Revenues = $143 B	**Old company Reborn:** Cloud/software business mix will continue to deliver growth with high margins.	Rev Growth = 12%	10th:	$	143.98		
	EBIT = $52.6 B		Target Margin = 40%	25th:	$	157.81	Price =	$209.70
	Oper. margin =40.1%		Sales to capital = 1.44	Median:	$	176.66	Under/Over =	Over valued
	Rev Growth (LTM) = 13.65%		Cost of capital = 7.11%	75th:	$	196.77	% under/over	18.70%
				90th:	$	214.83	IRR	6.32%

Read post, with links to valuations, from September 2020

At the end of that post, I disclosed that I owned Facebook, Microsoft and Apple, and that I would continue to hold the first two, and would sell my Apple shares. Clearly, much has happened since these valuations. The market has continued its march upwards, these companies have had multiple earnings reports and each of them has had newsworthy events occur.

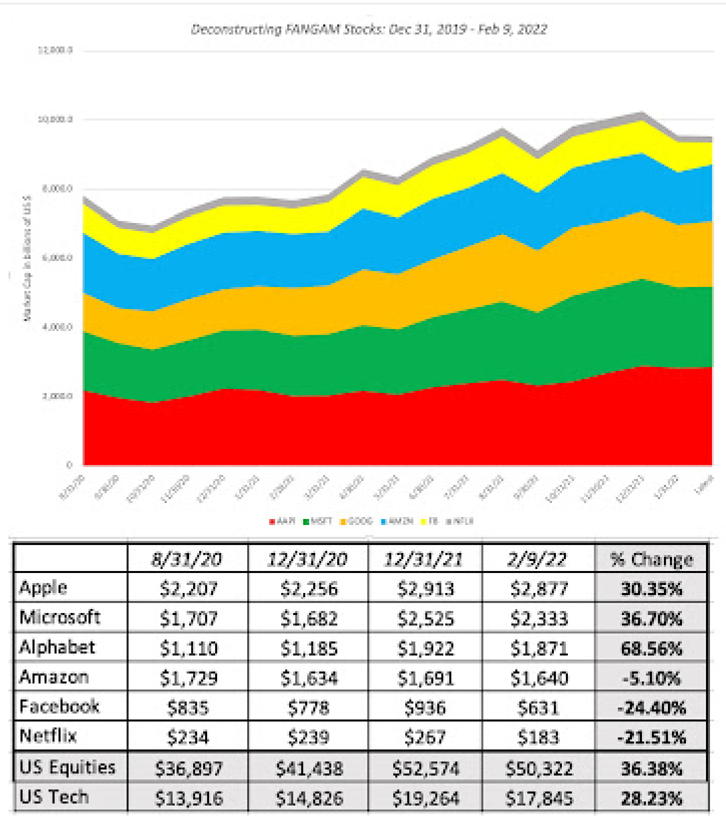
Updating the Numbers

In the eighteen months since I valued these companies, much has happened, to the economy, to US equities collectively, and to these six companies, in specific. In the graph below, I report on the collective market capitalization of US equities, broken down into three groupings, the FANGAM stocks, all other US tech companies and the rest of the US equity market, from August 31, 2020 to February 9, 2022:



During the period, the collective market capitalization of FANGAM stocks increased by 21.9%, but they lagged the rest of the US tech sector (up 37%) and non-tech US equities (41.1%). For the first time in more than a decade, the FANGAM stocks are running behind the rest of the market.

Breaking the FANGAM stocks into their constituent parts and charting their performance between August 31, 2020 and February 2022, here is what I get:



	8/31/20	12/31/20	12/31/21	2/9/22	% Change
Apple	$2,207	$2,256	$2,913	$2,877	**30.35%**
Microsoft	$1,707	$1,682	$2,525	$2,333	**36.70%**
Alphabet	$1,110	$1,185	$1,922	$1,871	**68.56%**
Amazon	$1,729	$1,634	$1,691	$1,640	**-5.10%**
Facebook	$835	$778	$936	$631	**-24.40%**
Netflix	$234	$239	$267	$183	**-21.51%**
US Equities	$36,897	$41,438	$52,574	$50,322	**36.38%**
US Tech	$13,916	$14,826	$19,264	$17,845	**28.23%**

During this period (8/31/20-2/9/22), three of the FANGAM stocks (Apple, Microsoft and Alphabet) were up strongly, and three (Amazon, Facebook, Netflix) were down. In summary, the FANGAM stocks were up collectively between August 31, 2020, and February 9, 2022, but they lagged the rest of the US equity market, with that underperformance isolated to Amazon, Facebook and Netflix.

The Numbers

Since I last valued the FANGAM stocks in September 2020, there have been six quarterly earnings reports from each of these companies, and I report on two key operating measures, revenues and operating income, in the table below, for the last three fiscal years for each of the companies. (Note that four of these companies have calendar year-ends, and two have fiscal years that end mid-year. For the latter, I am reporting on the trailing 12-month numbers, to ensure that I have the calendar year numbers.)

	Revenues			Operating Income			CAGR	
	2019	2020	2021	2019	2020	2021	Revenue Growth: 2019-21	Operating Income Growth: 2019-21
Apple	$ 267,683	$ 294,135	$ 378,323	$ 66,153	$ 74,253	$ 116,903	18.88%	32.93%
Microsoft	$ 134,249	$ 153,284	$ 184,903	$ 49,123	$ 60,341	$ 78,628	17.36%	26.26%
Amazon	$ 280,522	$ 386,064	$ 469,822	$ 14,541	$ 22,899	$ 24,879	29.41%	30.80%
Google	$ 161,857	$ 182,527	$ 257,637	$ 38,482	$ 41,224	$ 78,714	26.16%	43.02%
Facebook	$ 57,927	$ 69,273	$ 95,280	$ 28,986	$ 32,671	$ 46,753	28.25%	27.00%
Netflix	$ 20,156	$ 24,996	$ 29,698	$ 2,604	$ 4,585	$ 6,195	21.38%	54.24%

Looking at the percentage changes in revenues and operating income between 2019 and 2021 gives us a measure of how well each of these companies have navigated the currents of the last two years, and they seem to have turned the troubles to their advantage, posting strong compounded annual growth rates in revenues and operating income. These consolidated growth numbers, though, don't reflect the trend lines over the three years at these companies. Facebook and Netflix stumbled in their most recent earnings releases, losing more than a fifth of their market capitalization. With both companies, the user numbers were the basis for the negative surprises, with Facebook reporting its first drop in user number on a quarter-to-quarter basis as a public company and Netflix reporting underwhelming subscriber growth. Amazon and Google reported stronger than expected growth in both revenues and operating income, in the most recent quarter, and Microsoft and Apple delivered close to expected numbers.

The News

The FANGAM six, by virtue of their market capitalizations and their presence in our daily lives, have been also among the newsworthy of companies, and a significant portion of the news stories have are only mildly connected to current operating numbers. If I were to summarize the news about these companies in the last eighteen months:

- Facebook and Google found themselves in the midst of both the data privacy and political partisanship debates, as politicians and regulators argued about how best to restrict the social media platforms of these companies. Google, notwithstanding a few storms around YouTube, escaped relatively unscathed, but Facebook continued to draw fire from all directions. It is worth noting, though, that Facebook's loss of half a million users in the most recent quarter may have been more attributable to Apple tightening privacy protections on its devices than government action. The most revealing news story about Facebook, though, was its decision to rename itself "Meta", in late October, and it framed the decision as readying itself for business in the Metaverse. I argued then that the name change was a reflection of management at Facebook coming to the conclusion that its name had become too toxic, from a business perspective, and I did sell my shares in the aftermath. In hindsight, of course, this was a fortuitous decision, since it allowed me to evade the post-earnings collapse in the stock price, but it was definitely more luck than skill.

- The big stories affecting Netflix were less about the company and more about its competitors, and one of them, in particular, Disney. During this two-year period, Disney doubled down on Disney Plus, its streaming platform, and on content production, spending more than $25 billion on content in 2021. Netflix continued its traditional path of spending immense amounts on content, with content costs reaching $17.7 billion in 2021, but its cost of acquiring users climbed, as the US and European markets matured, and new subscribers in Asia and Latin America, the two geographical areas with the most user growth potential, delivered less revenues per subscriber.
- Apple and Microsoft, ancient companies by tech standards, continued for the most part to keep their heads down, and stay out of public controversies. In fact, Apple managed to reframe itself as a protector of privacy, putting itself on the right side of that debate, while also inflicting pain on its competitors (see Facebook above). Its new iPhone models rolled out smoothly and to generally positive reviews, a source of immense relief to a company that lives on the revenues from that product. Microsoft continued its long term path of consolidating its core product franchises (Windows and Office) and converting them to subscription businesses (with Office 365), while increasing its cloud business exposure. In the last month, the company made a splash with its announcement of the acquisition of Activision Blizzard for $68.7 billion, in an all-cash deal. While I am not a fan of acquisitions, especially big ones of publicly traded companies, there are some reasons to believe that this deal has a better chance than most of succeeding. First, at close to $70 billion, the deal looks big in absolute terms, but relative to Microsoft's market cap (of $ 2.2 trillion), it is a small deal. Second, I have to weigh in the fact that Microsoft has not been trigger-happy, when it comes to deals, and Satya Nadella has not struck me as an ego-driven CEO, at least in his public interactions. Third, I think that this deal plays into a much bigger end game, for Microsoft, than getting market share in the conventional game platform business. Finally, Activision own internal troubles had led to marking down of its stock price in the months leading into this deal, effectively reducing the actual premium paid. I know that there are some who see this acquisition as an attempt by Microsoft to squeeze Sony and Nintendo, but while that may be a side-product of this deal, I think that Microsoft has a much bigger gaming market, in mind, with much of it online, where it is competing against the other social media giants (Facebook and Google) and online game platform companies (Roblox).
- Of the six companies in the group, Amazon is most used to being targeted, for political and social reasons, over its entire lifetime. In addition to the stories about worker exploitation, with anecdotes about drivers not able to take bathroom breaks and overworked warehouse workers, there were questions about its competitive practices,

albeit often planted by competitors whose only hope of stopping Amazon has become the government. While Jeff Bezos officially stepped down as CEO of the company in 2021, his status as one of the richest men in the world, his messy divorce and newfound standing as a globe-trotting celebrity all became news stories about Amazon. It is a testimonial to the succession team that Bezos built at Amazon that the company continued its march towards global dominance, notwithstanding all these distractions.

Valuing these FANGAM stocks reinforces the truth that valuing companies can never just be based upon the financials, since all of this news will play out eventually in the valuation stories (and valuations) of these companies.

The FANGAM Valuations: February 2022

In the trading game, where pricing is driven by mood and momentum, earnings reports and news stories are scanned for incremental news, information that ultimately will have little effect on value, but can move prices substantially. That explains the fixation with earnings per share expectations, and why seemingly trivial surprises, where a company beats or falls short of earnings expectations by a few cents can cause the market capitalization of a company to increase or decrease significantly. If you have been reading my posts, it should come as no surprise to you that I believe in intrinsic value, but I also believe that intrinsic value is driven by narrative. To me, the value effect of earnings reports and news stories comes from how they change (or don't change) the core narratives for companies. In keeping with that belief, I revisited my narratives for the FANGAM stocks, with the intent of revising these narratives, based upon what we have learned about these companies in the last two years:

Company	Sept 2020 Narrative	Information/News	Feb 2022 Narrative
Facebook	Will use its immense & engaged platform to continue to grow its online advertising business, notwithstanding regulatory moves on privacy.	Name change & recent drop in user number suggest that backlash is having an effect on growth.	User platform remains key asset, but growth will be constrained & costs will increase, as regulators and competitors push back on privacy.
Amazon	Disruption platform, targeting any large business where the status quo is inefficient. Biggest challenge it faces is regulatory/legal pushback.	In the face of pressure from politicians and regulators, its business model was resilient, delivering sustained revenue growth & improving margins.	Disruption platform rolls on, allowing for continued growth and improving margins. Regulators will try to constrain the company, but given its reach across businesses & geographies, they will fall short in stopping
Netflix	The subscription machine will keep adding users, even in the face of competition, and content costs will scale down over time.	Disney+ represents the most significant competition in the streaming business yet, and the chase for users is becoming more difficult and costly.	Netflix will continue to try grow its subscriber base, but it will find it more expensive to grow and more difficult to get content costs under control, as competitors also play the content game.
Google	The search engine will continue to be drive earnings and cash flows, but the company's other business bets will start paying off, augmenting growth over time.	Google continued to see growth in the online ad business, perhaps at the expense of Facebook, while increasing its profit margins.	The search engine and online advertising will remain the center of Google's business model, but its investments in other businesses will start delivering profits.
Apple	The smartphone company, living (and dying) off the success of the iPhone, but its services business will continued to grow, adding to its revenues and delivering high margins.	More of the same, as the iPhone continued to deliver, and Apple services continued to grow.	The company will stay the course, and bring more of its supply chain under its own control. In keeping with its history, the company will not over reach (no expensive acquisitions or entering unfamiliar businesses).
Microsoft	The company will continue its transition from being a software company to a platform company, augmenting its growth and profits with its cloud business.	The acquisition of Activision expands Microsoft's platform business into gaming, and brings in young users who are lightly represented on the company's existing platforms.	The multiple platforms (Office 365, LinkedIn and Activision) will give the company many sources of revenue and perhaps opportunities to cross sell, allowing for continued growth and sustained high margins.

Converting these stories into numbers, I revalued the six companies. You can download the full valuations by clicking here (Facebook, Amazon, Netflix, Google, Apple, Microsoft), but the summary of my key assumptions and valuations are below:

Company	Base Year Numbers	Valuation Story	Valuation Inputs	Value per Share (Simulation)			Pricing per share	
Facebook /Meta	Revenues = $117.9 B	**Friendless but profitable**: Privacy concerns & regulatory threats put a check on revenue growth, though margins stayed intact.	Rev Growth = 8%	10th:	$	247.78		
	EBIT = $57.3 B		Target Margin = 40%	25th:	$	284.25	Price =	$219.55
	Oper. margin =48.6%		Sales to capital = 0.89	Median:	$	326.52	Under/Over =	Under valued
	Rev Growth (19-21) = 28.3%		Cost of capital = 7.76%	75th:	$	374.81	% under/over	-32.76%
				90th:	$	426.48	IRR	16.06%
Amazon	Revenues = $ 469.8 B	**Unstoppable Force**: Forces may be gathering against it, but it seems to have found a new growth spurt, this time with profits.	Rev Growth = 15%	10th:		$2,386.21		
	EBIT = $45.10 B		Target Margin = 12.5%	25th:	$	2,881.93	Price =	$3,068.57
	Oper. margin = 9.60%		Sales to capital = 1.69	Median:	$	3,398.04	Under/Over =	Under valued
	Rev Growth (19-21) = 29.4%		Cost of capital = 6.74%	75th:	$	3,876.85	% under/over	-9.70%
				90th:	$	4,268.76	IRR	9.80%
Netflix	Revenues = $ 29.7 B	**Streaming gets crowded**: With competitors muscling into the streaming business, Netflix user growth slowed down.	Rev Growth = 12%	10th:		$244.64		
	EBIT = $9.2 B		Target Margin = 25%	25th:	$	286.90	Price =	$391.31
	Oper. margin = 31.11%		Sales to capital = 0.62	Median:	$	327.17	Under/Over =	Over valued
	Rev Growth (19-21) = 21.4%		Cost of capital = 6.98%	75th:	$	363.17	% under/over	19.60%
				90th:	$	393.60	IRR	5.15%
Google/ Alphabet	Revenues = $257.6 B	**Money machine**: While other bets have been slow to pay off, the online ad machine keeps growing and going.	Rev Growth = 8%	10th:	$	1,984.72		
	EBIT = $85.3 B		Target Margin =30%	25th:	$	2,226.62	Price =	$2,685.65
	Oper. margin = 33.1%		Sales to capital = 2.80	Median:	$	2,457.19	Under/Over =	Over valued
	Rev Growth (19-21) = 26.2%		Cost of capital =7.77%	75th:	$	2,653.57	% under/over	9.30%
				90th:	$	2,810.18	IRR	6.65%
Apple	Revenues = $378.3 B	**Second wind**: Using its services business to augment the iPhone cash machine, margins expanded strongly.	Rev Growth = 12%	10th:	$	152.06		
	EBIT = $121.0 B		Target Margin = 27%	25th:	$	156.93	Price =	$168.64
	Oper. margin = 32.0%		Sales to capital =4.00	Median:	$	162.78	Under/Over =	Over valued
	Rev Growth (19-21) = 18.9%		Cost of capital = 7.61%	75th:	$	168.75	% under/over	3.60%
				90th:	$	173.91	IRR	6.80%
Microsoft	Revenues = $184.9 B	**On a cloud**: Cloud/software business mix will continue to deliver growth with high margins.	Rev Growth = 15%	10th:	$	220.38		
	EBIT = $81.9 B		Target Margin = 40%	25th:	$	246.56	Price =	$295.04
	Oper. margin =44.3%		Sales to capital = 1.17	Median:	$	276.79	Under/Over =	Over valued
	Rev Growth (19-21) = 17.4%		Cost of capital = 7.53%	75th:	$	308.20	% under/over	6.59%
				90th:	$	337.28	IRR	6.83%
With all of these companies, I am assuming that treasury bond rates will rise over time to 3% and that there is no chance of outright default or failure. I am also using updated equity risk premiums, estimated using my 4.56% estimate of the ERP for the S&P 500 on Feb 1, 2022, as my starting point.								

(Download full valuations of Facebook, Amazon, Netflix, Google, Apple, Microsoft)

At the risk of repeating some of what I have said before, here is what the valuations tell me about these companies, as investments.

1. *Facebook looks the most under valued of the six companies*, but one reason is that it seems to have lost its story script. For a decade whether you liked or hated the company, the story that drove its valuation was a simple one: a platform of billions of users, about whom Facebook knew a great deal, and they then used that knowledge to deliver focused advertising. In short, this is a company that has built its business on accessing and using private data, and the privacy backlash seems to have finally led the company to try to redefine itself, first by renaming itself (Meta), and then muddying the waters about its business model. I think that the company is still a profit-generating behemoth, with some of the highest operating margins in American business, but I think that until it finds a cohesive story line, the price recovery will be stilted.
2. *Netflix is the most overvalued company in the mix*, even after its major price knock down, after the last earnings report. The company has upended the entertainment business and made everyone else in the business play the game their way, but it has always been on a hamster wheel, where its primary sales pitch to investors is its capacity to keep growing its subscriber base, and the only way it can keep doing this is by spending ever-increasing amounts of money of new content. The question of how the company would get off this

hamster wheel has always been there, and now that user numbers are starting to slow, and new users are becoming more costly to acquire, the challenge of doing so has become larger.

3. Microsoft and Apple have kept their heads low, as the rest of the FANGAM stocks have been buffeted by controversy and blowback. Apple seems to have found a way to be one of the good guys in the privacy battle, and in the process, intentionally or not, it has helped deliver punishment to others (like Facebook) in this rarefied group. For Microsoft, buying Activision advances them further towards becoming a premier platform business, and the company's diverse platforms (Office 365, LinkedIn and now Activision) offer the potential for growth and sustained high margins.
4. Google surprised me the most, delivering high growth and increased margins, suggesting that Facebook's problems are its own, and that Google continues to steamroll its online advertising competition. The other bets at Google continue to be cash-draining investments that deliver little in value, and after six years, I am not sure that they will be ever be big value creators, but that search box is the gift that keeps on giving.
5. Amazon has, for much of its life, been a Field of Dreams company, offering investors a promise of revenues now, and if they wait patiently, profits in the future. For the first decades of its existence, all that investors saw was revenue growth, but margins remained slim to non-existent. In the last five years, Amazon's margins have climbed and the company is solidifying its profit pathway, and while regulators and governments will try to rein it in, its mix of businesses and geographies will make it difficult to legislate against.

I came into the analysis holding Microsoft, and I will continue to hold it, though it is mildly over valued. If I still had Apple in my portfolio, I would also hold it, but since I don't own it now, I have to wait for a price dip, and when it comes, I will buy it. I used to own Facebook, and while I sold it on its name-change, I will be getting back into the stock, at current prices, notwithstanding its muddled story line and near-term troubles, simply because of its cheapness. On Amazon, a stock that I have bought and sold four times over the last twenty years, I am glad to add it back to my portfolio. As for Google, I have never held it, to my regret, and don't plan to add it on, at the current stock price. Finally, I just don't like Netflix, even at depressed prices, since I believe that scaling down content costs, key to the company's future success, has become more difficult, not less, after the entry of Disney into the streaming wars. Needless to say, there is the broader question of the overall market, and how inflation will play out this year, but the answer to that question has a bigger effect on my overall asset allocation than on my judgment on whether to buy any of these stocks.