FACEBOOK, AMAZON, NETFLIX, GOOGLE, APPLE AND MICROSOFT: THE FEARSOME SIX

The Avengers or Thanos?

The FANGAM Stocks

	Facebook	*Amazon*	*Netflix*	*Google*	*Apple*	*Microsoft*
Founded in	Feb-04	Jul-94	Aug-97	Sep-98	Apr-76	Apr-75
IPO Date	5/18/12	5/15/97	5/23/02	8/19/04	12/12/80	3/13/86
Mkt Cap at IPO ($ m	$80,000.00	$ 438.00	$ 300.00	$23,000.00	$ 1,800.00	$ 780.00
Mkt Cap Milestones (year reached)						
$100 billion	2012	2012	2018	2005	2007	1996
$500 billion	2018	2017		2012	2012	1999
$1 triillion		2018		2020	2018	2019
$2 triillion				2021	2020	
$3 triillion					2022	
Revenue Milestones						
In 2000	NA	$ 2,762	$ 37	$ 19	$ 7,963	$ 22,956
In 2010	$ 1,974	$ 34,204	$ 2,163	$ 29,321	$ 65,225	$ 62,484
In 2019	$ 57,927	$ 280,522	$ 20,156	$ 161,857	$ 267,683	$ 134,249
In 2021	$ 95,280	$ 469,822	$ 29,698	$ 257,637	$ 378,323	$ 184,903
CAGR: 2000-10	NA	28.61%	50.21%	108.37%	23.41%	10.53%
CAGR: 2010-19	45.57%	26.34%	28.15%	20.90%	16.99%	8.87%
CAGR: 2019-21	28.25%	29.41%	21.38%	26.16%	18.88%	17.36%

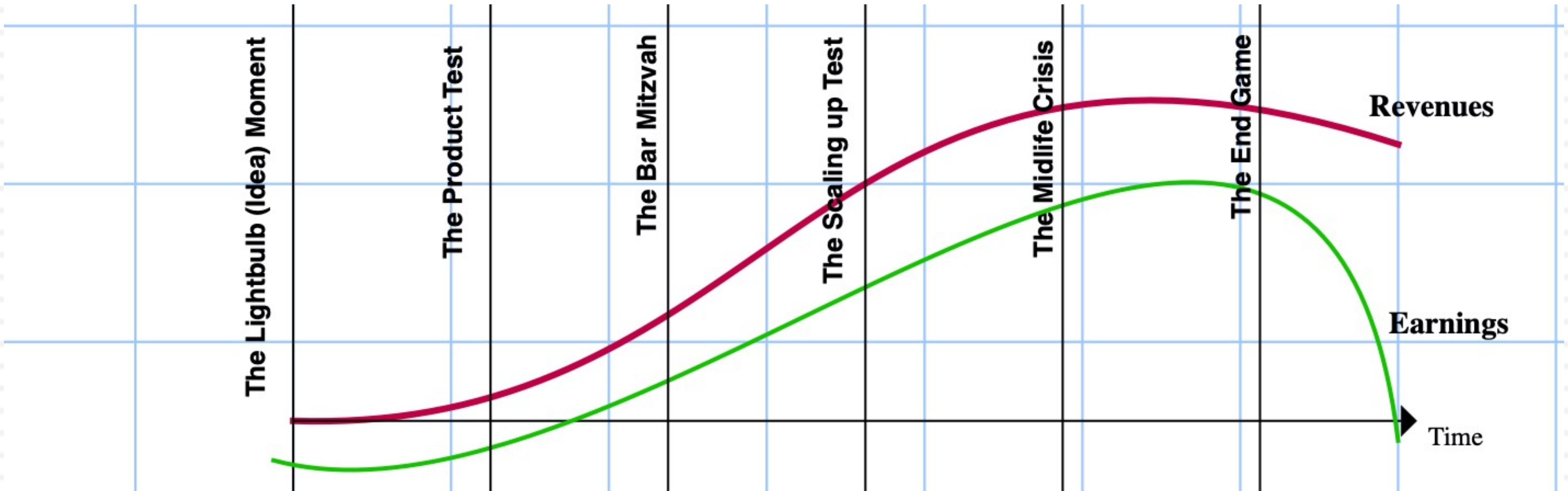
The FANGAM Story Line

- Scaling Success: Each of these companies has been able to keep revenue growing rapidly, even as they scale up and acquire larger market share.
- Bigger Slice of a Bigger Pie: They have changed 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.
- Profitability: Google and Facebook are money machines. Amazon and Netflix don't look as good on the surface, but capitalizing some of their mis-categorized operating expenses makes them look better.

The Roots of Success

- Centralized Power: The FANG 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. That is less the case with Apple & Microsoft.
- Big Data: 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. Apple plays the "good guy" role to perfection, while harvesting the data, and Microsoft lurks in the background.
- 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.

Corporate Life Cycle



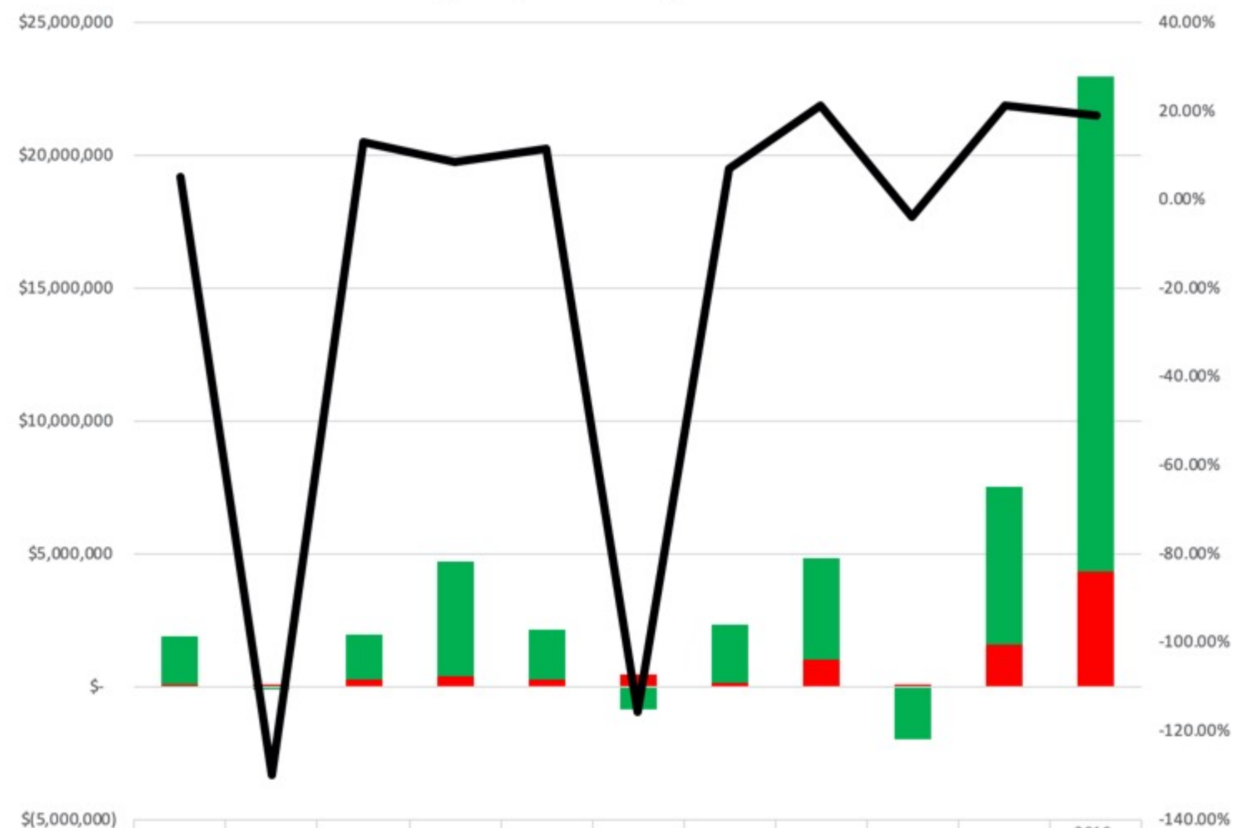
Lifecycle stage	Start-up	Young Growth	High Growth	Mature Growth	Mature Stable	Decline
Investing Policy	New product development	Market testing and build up	Scale up production	Augment capacity + New Products	Maintain capacity + Acquisitions	Reduce capacity
Financing Policy	Equity funding, debt only if desperate	Equity, public market option	Equity mainly, with some debt capacity	Debt capacity increases	Debt capacity maximized	Debt scales down with firm
Dividend Policy	Cash burn, with equity infusions	Cash burn maximized	Beginnings of positive cash flows	Cash buildup, if not returned	Peak cash returns	Cash return from asset divestitures

FANGAM: Exceptions to the rule?

- Amazon, the Original: After its stint as poster child for the dot com boom, Amazon's online retail business flirted with failure in 2001, but survived and prospered in the next decade. By 2010, though, it seemed like Amazon's story had run its course, but just as investors were readying for the company becoming a mature retailer, the company reinvented itself as a disruption platform, ready to go after any business it chose to, with an army (Amazon Prime) backing it up.
- Apple and Microsoft, the Reincarnation Duo: By tech company standards, Apple and Microsoft are old companies that should be struggling to hold on to their customers and fighting off competition. Both companies though seem to have found a way to move the clock back and retain their status as growth companies, Apple with the smart phone and Microsoft with Azure.
- Alphabet and Facebook, the Advertising Juggernauts: Google and Facebook have had almost uninterrupted growth, since their founding, taking advantage of the shift to online advertising and dominating that shift, while also delivering profit margins in the stratosphere.
- Netflix, the Shape Shifter: Of the six stocks, the one that has had to make the most mid-course corrections, changing its business model, from video rental company to content renter to content provider, to reflect a changing world, is Netflix. It started life as a video rental service, mailing DVDs to its customers, and undercutting Blockbuster, the dominant player in the business then.

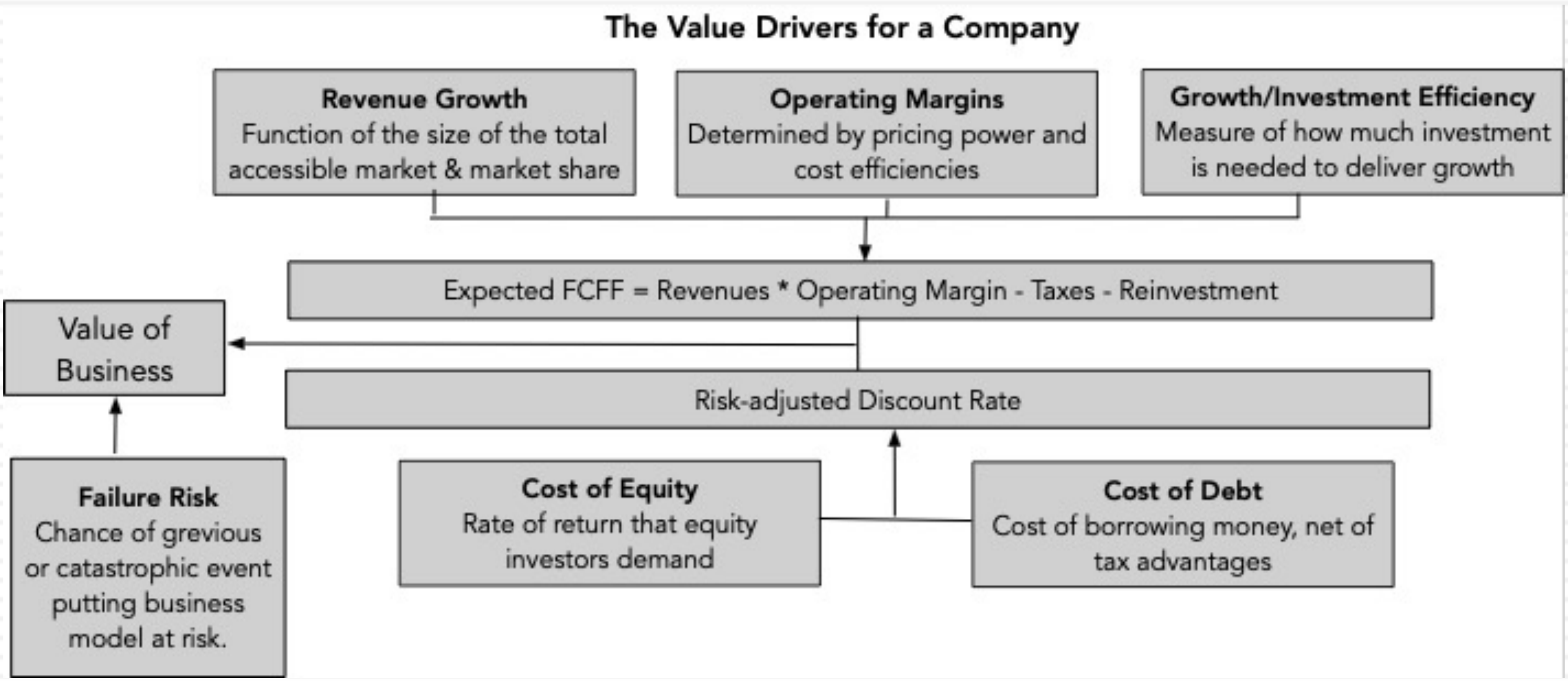
And FANGAM's outsized role in the bull market

FANGAM versus Rest of US Equities: Change in Market Value



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2010-2019
Rest of US equties	$1,802,125	$(127,335)	$1,675,932	$4,300,238	$1,880,319	$(837,804)	$2,163,659	$3,797,937	$(1,995,36	$5,934,756	$18,594,46
FANGAM	$95,266	$71,964	$246,759	$397,326	$239,933	$449,610	$160,686	$1,028,752	$75,286	$1,589,160	$4,354,739
FANGAM as % of US equities	5.02%	-129.97%	12.83%	8.46%	11.32%	-115.82%	6.91%	21.31%	-3.92%	21.12%	18.98%

The Drivers of Value



Healthy Valuation

Favored Tools
- Accounting statements
- Excel spreadsheets
- Statistical Measures
- Pricing Data

A Good Valuation

Favored Tools
- Anecdotes
- Experience (own or others)
- Behavioral evidence

The Numbers People ⟷ The Narrative People

Illusions/Delusions
1. Precision: Data is precise
2. Objectivity: Data has no bias
3. Control: Data can control reality

Illusions/Delusions
1. Creativity cannot be quantified
2. If the story is good, the investment will be.
3. Experience is the best teacher

The steps in valuation

Step 1: Develop a narrative for the business that you are valuing
In the narrative, you tell your story about how you see the business evolving over time.

Step 2: Test the narrative to see if it is possible, plausible and probable
There are lots of possible narratives, not all of them are plausible and only a few of them are probable.

Step 3: Convert the narrative into drivers of value
Take the narrative apart and look at how you will bring it into valuaton inputs starting with potential market size down to cash flows and risk. By the time you are done, each part of the narrative should have a place in your numbers and each number should be backed up a portion of your story.

Step 4: Connect the drivers of value to a valuation
Create an intrinsic valuation model that connects the inputs to an end-value the business.

Step 5: Keep the feedback loop open
Listen to people who know the business better than you do and use their suggestions to fine tune your narrative and perhaps even alter it. Work out the effects on value of alternative narratives for the company.

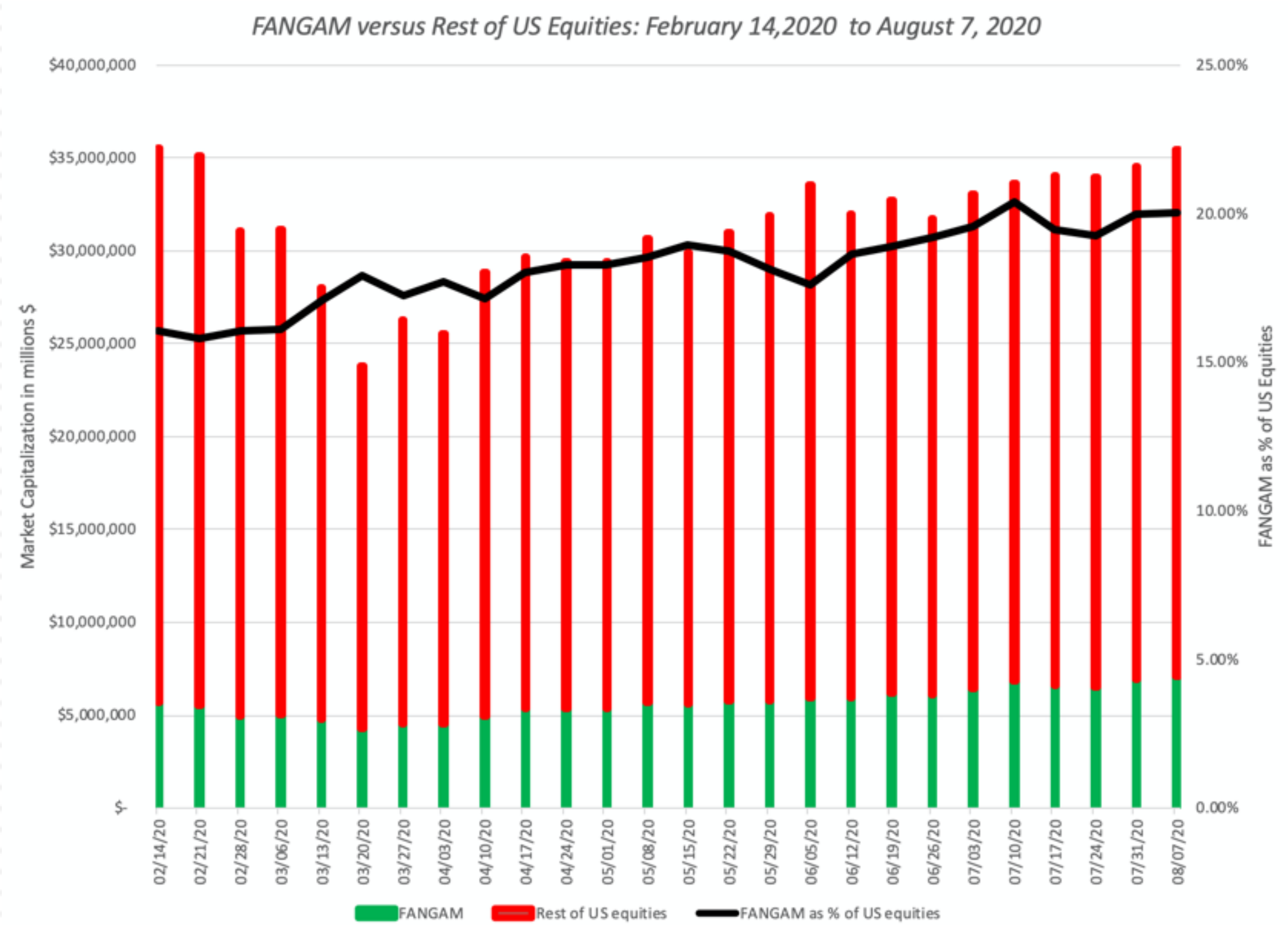
The FANGAM stocks, in January 2010

- The Lagging Giant: At the start of 2010, Microsoft had a market capitalization in excess of $270 billion, and was second only to Exxon Mobil, with a market cap of $320 billion, but that represented a come down from its status as the largest market cap company at the start of 2000, with a market cap exceeding $500 billion.
- The Rising Star: At the start of 2010, Apple's market cap was approaching $200 billion, a quantum leap from its market cap of $16 billion, ten years earlier.
- The Field of Dreams Company: By early 2010, Amazon had cemented its status as online retailer, capable of growing its revenues at the expense of its brick and mortar competitors, but without a clear pathway to profitability. The market seemed to be willing to overlook this limitation, giving the company a market cap of more than $50 billion, a significant comeback from the dot-com bust days of 2001, when it was valued at less than $4 billion.
- The New Tech Prototype: In January 2010, Google was already the prototype for the new tech model, reaching a hundred-billion dollar market cap threshold than any other company in history, with a market capitalization of more than $160 billion in early 2010.
- On the cusp: In early 2010, it is unlikely that anyone would have put Netflix on the list of big-time winners, since its market capitalization was less than $4 billion and its business model of renting content and signing up subscribers was already under strain.
- The glimmer in the market's eye: At the start of 2010, Facebook was still a private business, though venture capitalists were clearly excited about its prospects, pricing it at roughly $14 billion in January 2010, based primarily on its user numbers.

The COVID Crisis: Time for a reckoning?

- For many old-time value investors, the FANGAM stocks became a symbol of growth and momentum run amok, though the best investment made by a legendary member of this group (Warren Buffet) was in one of the companies (Apple).
- Between January 1, 2020 and February 14, 2020, the FANGAM stocks continued to rise more than the rest of the market and they collectively accounted for 16.08% of the market cap of all US equities on February 14, up from the 14.94% at the start of the year.
- When the crisis hit, there were some in this group who felt that the market correction would be felt disproportionately by this group, given their status as growth and momentum stocks.

The COVID test



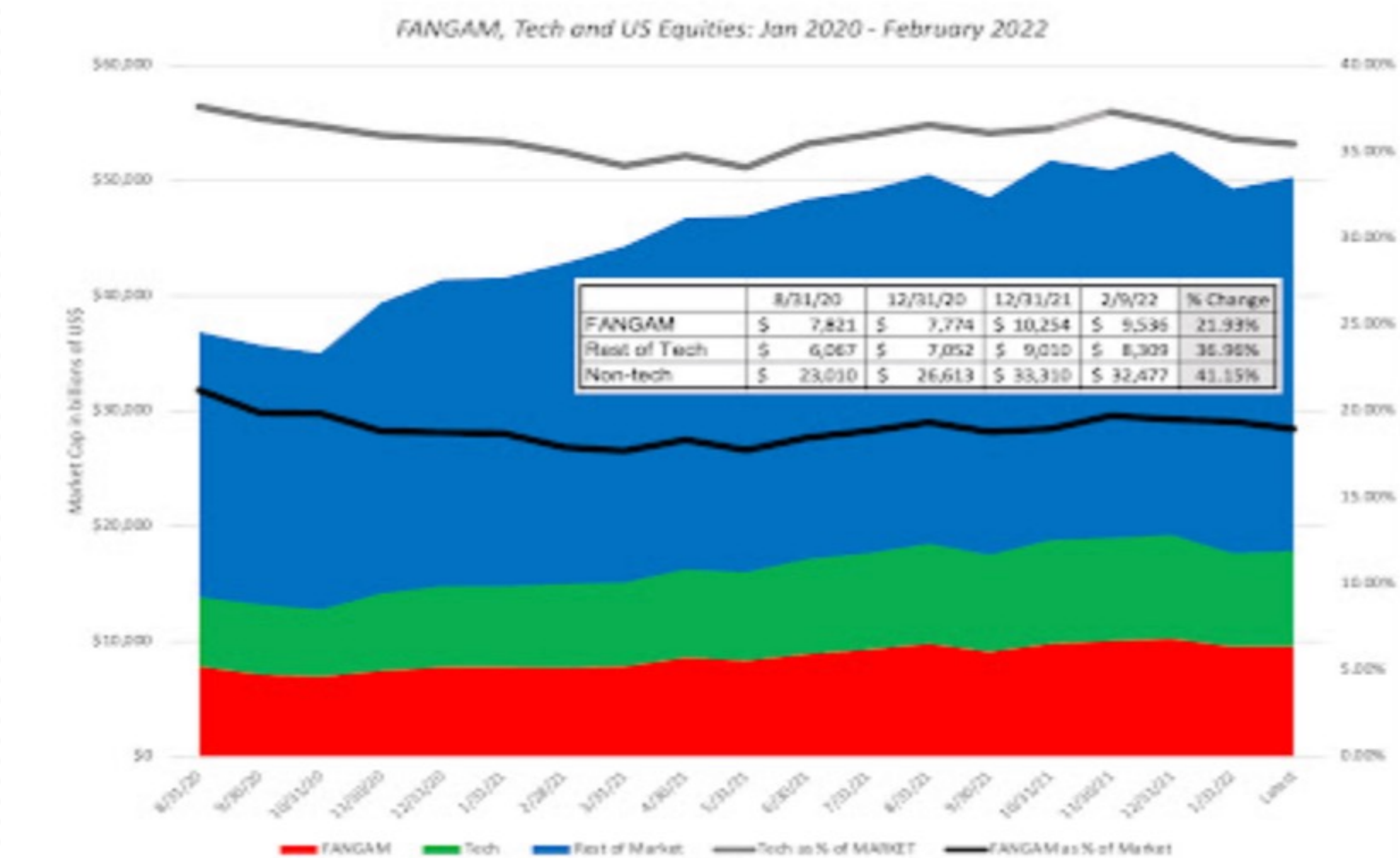
The FANGAM Strengths

- Cash Machines: Each of these companies has a business or segment that is a cash machine, generating high profitability and huge amounts of cash for the company, iPhone for Apple, the online ad business for Facebook and Alphabet, the software and cloud businesses for Microsoft, the cloud business for Apple and subscription revenues for Netflix.
- Platform of users/subscribers: The FANMAG stocks also share user bases that are immense, with Facebook leading that numbers game with close to 2.7 billion users, many of whom spend large portions of each day in its ecosystem. Microsoft, Google and Apple all also have more than a billion users apiece, using multiple ways to entangle them. Amazon and Netflix may not be able to match the other four companies on sheer numbers, but each has hundreds of millions of users.
- Proprietary and Actionable Data: I What sets the FANMAG companies apart is that they use big data to create value, partly because the data that they collect is **proprietary** (Facebook from your posts, Amazon/Alexa from your shopping/interactions, Netflix from your watching habits, Google from your search history and Apple from your device usage) and actionable.

Valuing the FANGAM Stocks in September 2020

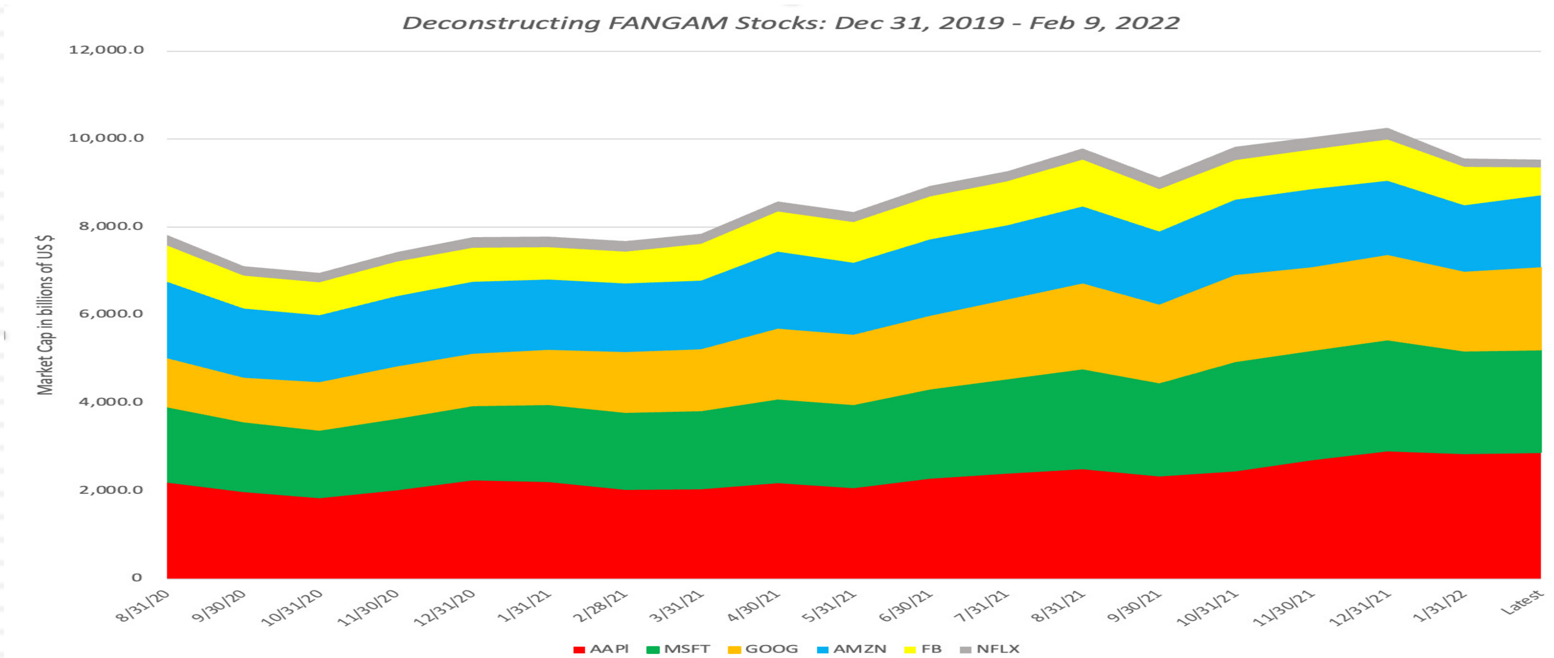
Company	*Base Year Numbers*	*Valuation Story*	*Valuation Inputs*	*Value per Share (Simulation)*		*Pricing per share*	
	Revenues = $75 B	**User Base pays off**: Immense & Intense user base allows for continued ad growth & new business potential.	Rev Growth = 10%	10th:	$ 267.77		
	EBIT = $27.9 B		Target Margin = 40%	25th:	$ 293.89	Price =	$262.59
Facebook	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	-19.86%
				90th:	$ 398.85	IRR	7.16%
	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
Amazon	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	17.36%
				90th:	$ 4,295.58	IRR	5.77%
	Revenues = $ 22.6 B	**Streaming Player**: Wiith 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
Netflix	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%
	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
Google/ Alphabet	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%
	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
Apple	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%
	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
Microsoft	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%

Updating the FANGAM Market Numbers..



	8/31/20	12/31/20	12/31/21	2/9/22	% Change
FANGAM	$ 7,821	$ 7,774	$ 10,254	$ 9,536	21.93%
Rest of Tech	$ 6,067	$ 7,052	$ 9,010	$ 8,309	36.96%
Non-tech	$ 23,010	$ 26,613	$ 33,310	$ 32,477	41.15%

And disaggregating…



	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%

Updating FANGAM's Operating Results

	Revenues			Operating Income			Compunded Annual Growth Rate	
	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	$ 49,323	$ 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%

Updating the News…

- **Facebook and Google** found themselves in the midst of the data privacy and political partisanship debates, though Google seemed to bear up to the pressure better . The most revealing news story about Facebook, though, was its decision to rename itself in late October to rename itself "Meta", and it framed the decision as readying itself for business in the Metaverse.
- The big stories affecting **Netflix** were came from Disney, which doubled down on Disney Plus,, spending more than $25 billion on content in 2021.
- **Apple and Microsoft**, ancient companies by tech standards, continued for the most part to keep their heads low and stay out of public controversies, for most of the eighteen months. 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) . Microsoft continued its long-term path of consolidate 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.
- 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.

Valuing the FANGAM stocks: Reframing the story

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 inctrease, 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 polticians and regulators, its business model was resilient, delivering sustained revenue growth & improving margins.	Disruption platform rolls on, alllowing for continued growth and improviing 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 getcontent 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 busienss 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 unfamilar 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 reporesented 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.

Facebook						Feb-22

The Story

Facebook's biggest asset remains its immense and engaged user base, and it is able to use what it knows about its users to sell focused and directed advertising. In the last few years, Facebook has faced pressure regulators and governments about its use of user data (privacy) and the effect of its social platform on political discourse. *In 2020 and 2021, these issues caught up with the company, leading to a name change for the company and lower user numbers in its most recent earnings report.*

The Assumptions

	Base year	*Next year*	*Years 2-5*	*Years 6-10*	*After year 10*	*Link to story*
Revenues (a)	$117,929.00	8.0%	8.00%	3.00%	3.00%	Growth slackens, as restrictions take hold
Operating margin (b)	48.59%	44.0%	44.00%	40.00%	40.00%	Margins decline, as costs of meeting new privacy rules rise.
Tax rate	16.70%		16.70%	25.00%	25.00%	Global/US marginal tax rate over time
Reinvestment (c)		0.89	0.89	0.89	20.00%	Set to company's historical level.
Return on capital	35.94%	Marginal ROIC =	26.79%		15.00%	Low capital investment needs
Cost of capital (d)			7.76%	7.56%	7.56%	Cost of capital stays relatively stable.

The Cash Flows

	Revenues	*Operating Margin*	*EBIT*	*EBIT (1-t)*	*Reinvestment*	*FCFF*
1	$127,363.32	44.00%	$56,039.86	$46,681.20	$10,625.71	$36,055.50
2	$137,552.39	42.40%	$58,322.21	$48,582.40	$11,475.76	$37,106.64
3	$148,556.58	41.60%	$61,799.54	$51,479.01	$12,393.82	$39,085.19
4	$160,441.10	40.80%	$65,459.97	$54,528.15	$13,385.33	$41,142.82
5	$173,276.39	40.00%	$69,310.56	$57,735.69	$14,456.16	$43,279.54
6	$185,405.74	40.00%	$74,162.30	$60,546.10	$13,661.07	$46,885.03
7	$196,530.08	40.00%	$78,612.03	$62,873.90	$12,529.15	$50,344.75
8	$206,356.59	40.00%	$82,542.63	$64,647.39	$11,067.42	$53,579.97
9	$214,610.85	40.00%	$85,844.34	$65,808.27	$9,296.63	$56,511.64
10	$221,049.18	40.00%	$88,419.67	$66,314.75	$7,251.37	$59,063.38
Terminal year	$227,680.65	40.00%	$91,072.26	$68,304.20	$13,660.84	$54,643.36

The Value

Terminal value	$1,198,319.21		
PV(Terminal value)	$570,856.85		
PV (CF over next 10 years)	$303,432.29		
Value of operating assets =	$874,289.14		
Adjustment for distress	$0.00	Probability of failure =	0.00%
- Debt & Minority Interests	$14,454.00		
+ Cash & Other Non-operating assets	$47,998.00		
Value of equity	$907,833.14		
- Value of equity options	$0.00		
Number of shares	2,815.00		
Value per share	$322.50	Stock was trading at =	$219.55

Amazon						Feb-22
The Disruption Platform Rolls on						
Amazon continues on its transformation from online retailer to disruption platform, willling to enter any business that it perceives as inefficiently run, and changing it. Along the way, it will invest large amounts of capital and wait for long periods to attain profitability. *In 2020 and 2021, Amazon benefited from the COVID shut down to increase growth and improve its profitability, making its dominant position even more dominant.*						
The Assumptions						
	Base year	*Next year*	*Years 2-5*	*Years 6-10*	*After year 10*	*Link to story*
Revenues (a)	$469,822.00	15.0%	15.00%	3.00%	3.00%	Disruption platform in multiple businesses
Operating margin (b)	9.60%	10.0%	10.00%	12.50%	12.50%	Margins improve, aided by cloud business & continued economies of scale.
Tax rate	12.60%		12.60%	25.00%	25.00%	Global/US marginal tax rate over time
Reinvestment (c)		1.69	1.69	1.69	25.00%	Maintined at Amazon's current level
Return on capital	14.17%	Marginal ROIC =	23.66%		12.00%	Stronge competitive edges
Cost of capital (d)			6.74%	6.11%	6.11%	Cost of capital close to median company
The Cash Flows						
	Revenues	*Operating Margin*	*EBIT*	*EBIT (1-t)*	*Reinvestment*	*FCFF*
1	$540,295.30	10.00%	$54,029.53	$47,221.81	$41,723.60	$5,498.21
2	$621,339.60	10.50%	$65,240.66	$57,020.33	$47,982.14	$9,038.19
3	$714,540.53	10.75%	$76,813.11	$67,134.66	$55,179.46	$11,955.19
4	$821,721.61	11.00%	$90,389.38	$79,000.32	$63,456.38	$15,543.94
5	$944,979.86	11.25%	$106,310.23	$92,915.14	$72,974.84	$19,940.31
6	$1,064,047.32	11.34%	$120,655.80	$102,460.90	$70,493.69	$31,967.21
7	$1,172,580.14	11.63%	$136,365.15	$112,419.43	$64,256.68	$48,162.75
8	$1,264,041.40	11.92%	$150,669.48	$120,475.31	$54,149.48	$66,325.83
9	$1,332,299.63	12.21%	$162,671.54	$126,037.91	$40,412.17	$85,625.74
10	$1,372,268.62	12.50%	$171,533.58	$128,650.18	$23,663.57	$104,986.61
Terminal year	$1,413,436.68	12.50%	$176,679.58	$132,509.69	$33,127.42	$99,382.27
The Value						
Terminal value			$3,195,571.27			
PV(Terminal value)			$1,694,040.21			
PV (CF over next 10 years)			$244,983.86			
Value of operating assets =			$1,939,024.07			
Adjustment for distress			$0.00		Probability of failure =	0.00%
- Debt & Minority Interests			$139,439.00			
+ Cash & Other Non-operating assets			$96,049.00			
Value of equity			$1,895,634.07			
- Value of equity options			$0.00			
Number of shares			506.00			
Value per share			$3,746.31		Stock was trading at =	$3,068.57

Value of Existing Subscribers											
	Base Year	1	2	3	4	5	6	7	8	9	10
Life Indicator		1	1	1	1	1	1	1	1	1	1
Membership Survival	1.0000	0.9500	0.9025	0.8574	0.8145	0.7738	0.7351	0.6983	0.6634	0.6302	0.5987
Revenue/Subscriber	$ 133.88	$ 140.57	$ 147.60	$ 154.98	$ 162.73	$ 170.87	$ 179.41	$ 188.38	$ 197.80	$ 207.69	$ 218.07
Cost/ Subscriber	$ 75.21	$ 76.72	$ 78.25	$ 79.82	$ 81.41	$ 83.04	$ 84.70	$ 86.40	$ 88.13	$ 89.89	$ 91.69
Operating Profit/Loss per Subscriber	$ 58.66	$ 63.85	$ 69.35	$ 75.16	$ 81.31	$ 87.82	$ 94.71	$ 101.98	$ 109.67	$ 117.80	$ 126.39
Tax rate	12.00%	13.300%	14.600%	15.900%	17.200%	18.500%	19.800%	21.100%	22.400%	23.700%	25.00%
After-tax Operating Income	$51.62	$52.59	$53.45	$54.20	$54.84	$55.38	$55.83	$56.19	$56.46	$56.65	$56.75
Present Value (at Cost of Capital)		$49.46	$47.27	$45.08	$42.90	$40.75	$38.63	$36.57	$34.55	$32.60	$30.72
Life of subscriber =	15.00										
Value per Subscriber =	$533.19										
Number of Subscribers =	221.83										
Value of Existing Subscribers =	**$ 118,277.65**										

Value of New Subscribers	
Cost of Acquiring a New Subscriber	$ 134.31
Value per new user (in today's $) =	$398.88

	Base Year	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
Total Subscribers	221.83	241.79	263.56	287.28	313.13	341.31	358.38	376.30	395.11	414.87	435.61
New Subscribers	0.00	31.06	33.85	36.90	40.22	43.84	34.13	35.84	37.63	39.51	41.49
Value per Subscriber	$398.88	$406.85	$414.99	$423.29	$431.76	$440.39	$449.20	$458.18	$467.35	$476.69	$486.23
Value added by new Subscribers		$12,635	$14,048	$15,618	$17,365	$19,306	$15,332	$16,420	$17,586	$18,835	$20,172
Terminal Value (New Subscribers)											$196,706
Present Value		$ 11,783	$ 12,217	$ 12,667	$ 13,134	$ 13,618	$ 10,085	$ 10,073	$ 10,061	$ 10,049	$ 107,908
Value Added by New Users	**$ 211,596.34**										

Value Drag of Corporate Expenses (Cost)											
	Base Year	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
Technology & Development	$2,274	$2,388	$2,507	$2,632	$2,764	$2,902	$3,047	$3,200	$3,360	$3,528	$3,704
Content Costs	$5,472	$5,746	$6,033	$6,335	$6,651	$6,984	$7,333	$7,700	$8,085	$8,489	$8,913
G&A Costs	$1,352	$1,379	$1,406	$1,434	$1,463	$1,492	$1,522	$1,553	$1,584	$1,615	$1,648
After-tax Corporate Expenses		$8,247	$8,494	$8,747	$9,007	$9,273	$9,546	$9,824	$10,110	$10,401	$10,699
Terminal Value (Corporate Exp)											$237,683
PV of Corporate Expenses		$7,756	$7,513	$7,276	$7,046	$6,823	$6,605	$6,393	$6,187	$5,987	$134,450
Value Drag of Corporate Expenses	**$196,035.72**										

Valuing Netflix	
Value of Existing Subscribers	$118,277.65
Value of New Subscribers	$211,596.34
- PV of Corporate Expenses	$196,035.72
Value of Operating Assets	$133,838.27
+ Cash & Cross Holdings	$6,023.00
- Debt	$18,116.60
Value of Equity	**$121,744.67**
- Value of Equity Options	$ 4,978.00
Value of Equity in common stock	**$116,766.67**
Number of Shares	443.2
Value per Share	$ 263.46

Alphabet						Feb-22

The Story

Alphabet will continue to use its search box to deliver profits and cash flows, but its bets on other businesses will start delivering, allowng the company to generate moderate growth in the near term, while maintaining profit margins. *In 2020 and 2021, Google increased its already dominant market share of the online advertising market, even as its primary competitor, Facebook, faced tailwinds, and augmented its profit margins in the process.*

The Assumptions

	Base year	*Next year*	*Years 2-5*	*Years 6-10*	*After year 10*	*Link to story*
Revenues (a)	$257,637.00	8.0%	8.00%	3.00%	3.00%	Alphabet's other buinesses supplement growth
Operating margin (b)	33.10%	30.0%	30.00%	30.00%	30.00%	Search engine keeps margins intact
Tax rate	16.20%		16.20%	25.00%	25.00%	Global/US marginal tax rate over time
Reinvestment (c)		2.80	2.80	2.80	20.00%	Advertising industry average
Return on capital	35.89%	Marginal ROIC =	74.08%		15.00%	Networking benefits payoff
Cost of capital (d)			7.77%	7.56%	7.56%	Cost of capital stays stable

The Cash Flows

	Revenues	*Operating Margin*	*EBIT*	*EBIT (1-t)*	*Reinvestment*	*FCFF*
1	$278,247.96	30.00%	$83,474.39	$69,951.54	$7,361.06	$62,590.48
2	$300,507.80	30.00%	$90,152.34	$75,547.66	$7,949.94	$67,597.72
3	$324,548.42	30.00%	$97,364.53	$81,591.47	$8,585.94	$73,005.54
4	$350,512.29	30.00%	$105,153.69	$88,118.79	$9,272.81	$78,845.98
5	$378,553.28	30.00%	$113,565.98	$95,168.29	$10,014.64	$85,153.66
6	$405,052.01	30.00%	$121,515.60	$99,691.40	$9,463.83	$90,227.57
7	$429,355.13	30.00%	$128,806.54	$103,405.89	$8,679.69	$94,726.20
8	$450,822.88	30.00%	$135,246.87	$106,195.84	$7,667.06	$98,528.78
9	$468,855.80	30.00%	$140,656.74	$107,968.11	$6,440.33	$101,527.79
10	$482,921.47	30.00%	$144,876.44	$108,657.33	$5,023.45	$103,633.88
Terminal year	$497,409.12	30.00%	$149,222.74	$111,917.05	$22,383.41	$89,533.64

The Value

Terminal value	$1,963,457.04		
PV(Terminal value)	$934,380.48		
PV (CF over next 10 years)	$560,935.62		
Value of operating assets =	$1,495,316.10		
Adjustment for distress	$0.00	Probability of failure =	0.00%
- Debt & Minority Interests	$28,508.00		
+ Cash & Other Non-operating assets	$139,649.00		
Value of equity	$1,606,457.10		
- Value of equity options	$0.00		
Number of shares	667.70		
Value per share	$2,405.96	Stock was trading at =	$2,685.65

Apple						Feb-22

The Story

Apple has built the most impressive cash machine in history, generating and returning more cash over the last give years than any company in history. That cash machine has largerly been driven by the iPhone's succdss, but Apple has found supplementary growth in its service and entertainment businesses.*In 2020 and 2021, the company continued to expand its services businesses, and managed to maintain its iPhone franchise, boosting margins and increasing growth.*

The Assumptions

	Base year	*Next year*	*Years 2-5*	*Years 6-10*	*After year 10*	*Link to story*
Revenues (a)	$378,323.00	12.0%	12.00%	3.00%	3.00%	Growth from services & entertainment
Operating margin (b)	31.98%	30.0%	30.00%	27.00%	27.00%	Margins stay intact
Tax rate	14.00%		14.00%	25.00%	25.00%	Global/US marginal tax rate over time
Reinvestment (c)		4.00	4.00	4.00	25.00%	Left higher to reflect Apple's history
Return on capital	288.64%	Marginal ROIC =	93.99%		12.00%	Substantial competitive moats
Cost of capital (d)			7.61%	7.56%	7.56%	Cost of capital stays steady.

The Cash Flows

	Revenues	*Operating Margin*	*EBIT*	*EBIT (1-t)*	*Reinvestment*	*FCFF*
1	$423,721.76	30.00%	$127,116.53	$109,320.21	$11,349.69	$97,970.52
2	$474,568.37	28.80%	$136,675.69	$117,541.09	$12,711.65	$104,829.44
3	$531,516.58	28.20%	$149,887.67	$128,903.40	$14,237.05	$114,666.35
4	$595,298.56	27.60%	$164,302.40	$141,300.07	$15,945.50	$125,354.57
5	$666,734.39	27.00%	$180,018.29	$154,815.73	$17,858.96	$136,956.77
6	$734,741.30	27.00%	$198,380.15	$166,242.57	$17,001.73	$149,240.84
7	$796,459.57	27.00%	$215,044.08	$175,475.97	$15,429.57	$160,046.41
8	$849,025.90	27.00%	$229,236.99	$182,014.17	$13,141.58	$168,872.59
9	$889,779.14	27.00%	$240,240.37	$185,465.56	$10,188.31	$175,277.25
10	$916,472.52	27.00%	$247,447.58	$185,585.69	$6,673.34	$178,912.34
Terminal year	$943,966.69	27.00%	$254,871.01	$191,153.26	$47,788.31	$143,364.94

The Value

Terminal value	$3,143,968.02		
PV(Terminal value)	$1,512,501.78		
PV (CF over next 10 years)	$924,792.22		
Value of operating assets =	$2,437,294.01		
Adjustment for distress	$0.00	Probability of failure =	0.00%
- Debt & Minority Interests	$122,798.00		
+ Cash & Other Non-operating assets	$202,596.00		
Value of equity	$2,517,092.01		
- Value of equity options	$0.00		
Number of shares	16,426.79		
Value per share	$153.23	Stock was trading at =	$168.64

Microsoft						Feb-22

The Story

Microsoft will continue on its transformation from a software company, reliant on Office and Windows for its income, into a more diverse company. Its subscription model (Office 365) will continue to deliver recurring revenues, and its cloud business will contribute to both its growth and bottom line, allowing for continued high margins. *In 2020 and 2021, the company continued to grow, and increase its already impressive operating margin, as its cloud business provided a larger share of its revenues.*

The Assumptions

	Base year	*Next year*	*Years 2-5*	*Years 6-10*	*After year 10*	*Link to story*
Revenues (a)	$184,903.00	15.0%	15.00%	3.00%	3.00%	Other businesses grow to augment software
Operating margin (b)	44.31%	42.0%	42.00%	40.00%	40.00%	Continued high margins
Tax rate	10.70%		10.70%	25.00%	25.00%	Global/US marginal tax rate over time
Reinvestment (c)		1.17	1.17	1.17	25.00%	Maintined at industry aveages
Return on capital	46.45%	Marginal ROIC =	44.33%		12.00%	
Cost of capital (d)			7.53%	7.56%	7.56%	Cost of capital decreases to mkt average

The Cash Flows

	Revenues	*Operating Margin*	*EBIT*	*EBIT (1-t)*	*Reinvestment*	*FCFF*
1	$212,638.45	42.00%	$89,308.15	$79,752.18	$23,624.50	$56,127.68
2	$244,534.22	41.20%	$100,748.10	$89,968.05	$27,168.18	$62,799.88
3	$281,214.35	40.80%	$114,735.45	$102,458.76	$31,243.40	$71,215.36
4	$323,396.50	40.40%	$130,652.19	$116,672.40	$35,929.91	$80,742.49
5	$371,905.98	40.00%	$148,762.39	$132,844.82	$41,319.40	$91,525.42
6	$418,766.13	40.00%	$167,506.45	$144,792.58	$39,914.54	$104,878.04
7	$461,480.28	40.00%	$184,592.11	$154,282.09	$36,383.05	$117,899.03
8	$497,475.74	40.00%	$198,990.30	$160,624.97	$30,660.21	$129,964.75
9	$524,339.43	40.00%	$209,735.77	$163,300.27	$22,881.95	$140,418.32
10	$540,069.61	40.00%	$216,027.84	$162,020.88	$13,398.65	$148,622.23
Terminal year	$556,271.70	40.00%	$222,508.68	$166,881.51	$41,720.38	$125,161.13

The Value

Terminal value	$2,744,761.67		
PV(Terminal value)	$1,326,625.71		
PV (CF over next 10 years)	$644,043.69		
Value of operating assets =	$1,970,669.40		
Adjustment for distress	$0.00	Probability of failure =	0.00%
- Debt & Minority Interests	$80,353.00		
+ Cash & Other Non-operating assets	$125,348.00		
Value of equity	$2,015,664.40		
- Value of equity options	$0.00		
Number of shares	7,521.00		
Value per share	$268.00	Stock was trading at =	$295.04

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:	$ 247.70		
	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.	Value per subscriber = $533				
	EBIT = $9.2 B		Cost of acquiring subsbcriber = $134			Price =	$391.31
	Oper. margin = 31.11%		User growth = 9% in years 1-5	Value	$ 263.46	Under/Over =	Over valued
	Rev Growth (19-21) = 21.4%		Content cost growth = 5%/year			% under/over	48.53%
						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.

Decision Time

- **Facebook** looks the most under valued of the six companies, but one reason is that it has lost its story script. The company is still a profit-generating behemoth, with some of the highest operating margins in business, but I think that until it finds a cohesive story line, the price recovery may not come.
- **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 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 adding new users, and the only way it could keep doing this was by spending obscene amount of new content. That hamster wheel just got more difficult to get off.
- **Microsoft and Apple**, have kept their heads low, and Apple amazingly seems to have found a way to be the good guys in the privacy battle. For Microsoft, buying Activision advances them further on becoming a premier platform business, and those platforms offer the potential for sustained growth and sky-high margins.
- **Google** surprised me the most, delivering high growth and increased margins, and 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.
- **Amazon** has, for much of its life, been a Field of Dreams company, offering an investors a promise to investors of revenues now, and if they wait patiently, profits in the future. In the last five years, Amazon's margins have climbed and the company is solidifying its profit pathway…. I guess Shoeless Joe is coming out of the corn fields. It looks under valued to me.

My closing (in February 2022)

- I came into the analysis holding Microsoft, and I will continue to hold it, though they it is mildly over valued. If I still had Apple in my portfolio, I would hold it, but since I don't own it now, I have to wait for a price dip, when it comes, to buy it.
- I used to own Facebook, and while I sold it on the 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 in my portfolio.
- As for Google, I have never held it (to my regret) and 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. I put a limit buy on the stock at $2450.
- 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.

An Update in April 2022

- As tech stocks have taken a beating, all of the FANGAM stocks have dropped in value, with Google dropping below my limit buy price. I now own five of the six FANGAM stocks.
- If inflation is the big risk that equities face this year, and perhaps this decade, I want companies with pricing power and low failure risk in my portfolio. I cannot think of many other companies out there that can match the FANGAM stocks on these criteria.