A Long Time Ago in a Galaxy Far, Far Away…There was Fear, Policy Mistakes, Complacency and Volatility

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Last month, I took my son to *Star Wars: The Last Jedi* just like my father did when the original came out 40 years ago. In 1977, Star Wars was one of those sci-fi movies that forced people to imagine what the future would look like. Forty years later, Star Wars barely looks futuristic anymore. In some ways, the technology in the theater and in your hands is almost more incredible than what you see on the screen. This piqued my son's interest, he being a curious twelve year old, and I discussed what the future would hold in his lifetime. He is aware that over the last five years, I have become more focused on what the world will look like in the future and the need to think differently and remain adaptable in order to survive and thrive. The timing of the movie and his curiosity align perfectly to kick off my thoughts for a 2018 outlook paper. I want to center this outlook on a long-awaited trip I took to San Francisco's Singularity University (SU). Having written about exponential innovation and its impact on our daily lives and emotions beginning in 2013 with the paper, Adapt or Die: An Investment World Driven by QE, Tweets, Clouds, Robots, Singularity and Luddites, this trip to San Francisco this past November was the most exciting yet. I finally got to SU. SU has been influential in the way I think about markets and economics since the concept of singularity was first described to me by a Brigadier General in the Air Force. SU is a Silicon Valley think tank where people gather to discuss how technology can help solve the world's most important problems, eventually leading to a world of abundance.

During this November trip, a group of investors and myself listened to some SU speakers talk about their views on what the world would look like in the future. Because of my fascination with these topics, I had some familiarity with them: artificial intelligence with machine learning and deep learning, robotics, autonomous vehicles, the internet of things, VR and AR, digital biology, digital manufacturing, nanotechnology and advanced materials, cryptocurrencies, blockchain, synthetic biology, energy storage, solar panels etc. These comprised the bulk of the presentations but given my past readings on them, these innovations themselves did not fire my own curiosity. However, the eight hours of continuous presentations and questions from the audience did connect two dots that made me think about the markets for 2018. The first big takeaway was the realization of the breadth of exponential innovation occurring right now. All of the innovations mentioned are accelerating currently and converging at the same time to have an impact faster and broader than we can possibly understand. Convergence was the word that resonated the most. Whatever intensity of change we have seen so far due to technology, expect it to move at a much faster pace in the coming years. For those interested in the reason behind this convergence, as one speaker put it, we no longer have storage capacity constraints. And without that constraint, things can accelerate with data as the fuel and algorithms as the engine.

"Truly wonderful, the mind of a child is."

The cloud, big data and artificial intelligence have created an environment in recent years that is similar to the "bomb cyclone" hitting NYC today as I write this paper. Outside of this convergence realization, the second important takeaway from my time at SU was behavioral. Following each of the presentations was a Q&A session for the audience. There was not one question, comment or observation that could be viewed as positive. All of them involved skepticism; especially fear of the possible consequences of all of these technologies. Even after an amazing presentation on digital biology and everything happening which would allow us to exponentially increase longevity and lead healthier lives into old age, the questions and comments were still negative. Having talked with many people about these exciting technologies over the years, this skepticism and fear is normal. Change scares people. Uncertainty scares people. Exponential innovation is about uncertain fast change, and with convergence speeding things up, it is hard to process and put into context what our lives will look like in the coming years. This complex psychological relationship between humans and technology is part of the story in the Star Wars movie. Here is the battle between the Rebel Alliance and the Galactic Empire as described by the author of Star Wars: Return of the Jedi:

> ***"Star Wars is also very much concerned with the tension between humanity and technology, an issue which, for me, dates back even to my first films. In Jedi, the theme remained the same, as the simplest of natural forces brought down the seemingly invincible weapons of the evil Empire". James Kahn, Author of Return of the Jedi***

My son's questions after seeing the recent Star Wars episode were not centered on fear but rather the curiosity of a twelve year old mind as to what these technologies could mean for his life from a positive perspective. Could he travel that fast in the future and would there be flying cars? Would there be robots helping him to answer questions? Could he get a bionic hand like Luke if he lost his? Could we communicate through holograms? After discussing these questions and technology, my favorite question he asked was why Amazon bought Whole Foods and how they could change that business. His psychology of focusing on the endless technological possibilities and benefits were very different than what I heard at SU. He is not alone on these positive thoughts though. And this lead to my thoughts on the markets.

2017 was a year where the collection of people that make up the market saw the same benefits that my son saw. That is reflected in the performance of risk assets last year. The SPX total return index was up all 12 months and has now been up 21 of the last 22 months since the first quarter oil scare in 2016. The driving factor behind that SPX performance has been technology. Since the low on February 11th, 2016, the technology sector rose 74%. FANG, Nvidia, Alibaba and Tencent have brought stock market exuberance back, after nine years of climbing the wall of worry. Most importantly, for the first time since 2007, there are signs of speculation again as dinners and cocktail parties are now dominated by conversations about Bitcoin. On Feb 11th 2016, the cryptocurrency market, and specifically Bitcoin, was still only something for insiders to talk about. That day Bitcoin closed at 375. Recently, it approached 20,000 and ICOs are the new IPOs. Based on the results of 2017, investors are not worried like the SU attendees about the consequences of exponential innovation. Markets are still impacted by the psychology of recency bias. And when you go up 21 of 22 months and the VIX makes it lowest closing year level ever, the fear of something going wrong fades away as people forget the risks. As we enter 2018, earnings are expected to grow, tax reform is now in place to help the economy, rates remain stubbornly low and technological euphoria is accelerating. This is a "bomb cyclone" for high expectations going into the New Year. In fact, this is the first year I can remember since 2007, where there was not an obvious thing to worry about in the coming year. For the first time since 2007, all 45 countries monitored by the OECD are expected to show growth in 2018. Each year since 2007, there has been a wall of worry to climb and now the wall is missing. This all feels a little like 1999 to me again. Before everyone thinks I am getting negative and this will be an outlook piece about recessions and a long bear market; that is not the case. Technology does not eliminate the fear and greed in people that drives markets, however, and right now, I think we are in the greed phase. So a reminder of the importance of psychology seems inevitable this year.

To be clear, the medium term foundation for a long bull market is still in place. As we continue the transition out of the industrial revolution and into the digital revolution, the structural deflationary forces of exponential technology, demographics and the outstanding liabilities associated with those demographics will continue to keep inflation and interest rates low and force money out on the risk curve and away from low yielding developed market assets. All this means is that there is still a lot of money to go to work in the long run for higher yielding equities. However, this is the long running belief, which, for me, is centered on people and especially governments, embracing exponential technology and not fighting it. As we enter 2018, I have three concerns related to the fears and the lack of understanding around technology that I believe will finally lead to a reminder that markets and economics are also driven by behavioral decisions and not solely valuation, earnings and tax cuts. These three concerns are first, government fears over the pace of technological innovation and the power the companies and cryptocurrencies potentially wield. The second is the likely scenario that central banks make a policy mistake and focus on inflationary cycles of the past industrial revolution rather than the structural reality of the deflationary forces of the digital revolution. The third is the current investor sentiment and positioning, mostly related to volatility and liquidity which I believe underestimates the impact of technology and algorithms all contributing to shorter and sharper cycles.

Governments Fear Over Technology

"Fear is the path to the dark side...fear leads to anger...anger leads to hate...hate leads to suffering."

Governments around the world have become more focused on the power of these massive technology companies in recent years. Daniel Franklin, executive editor at the Economist, has called 2018 to be the year of "techlash", as lawmakers begin to go after these behemoth tech companies on issues involving data, tax avoidance, antitrust and a redistribution of wealth. This has always been a risk that has never really amounted to much, but the convergence acceleration is likely to make it more difficult as these companies become so large. Last year, Facebook, Google, Apple, Amazon and Microsoft added over a trillion dollars in market cap alone and were responsible for over 25% of the SPX returns for 2017. As an example of relative dominance and size, Amazon is part of the S&P 1500 retail industry group that has 87 companies in the index. As of today, its market cap is larger than the bottom 83 in that index combined. NY Times tech columnist Farhad Manjoo has called these five mega tech companies the “frightful five” because of their collective power relative to governments. Bank of America Merrill Lynch wrote about this size growth in a recent report, stating "It could ultimately lead to populist calls for redistribution of the increasingly concentrated wealth of Silicon Valley as the gap between tech capital & human capital grows ever-wider." In China, President Xi has called for a redistribution of wealth and is forcing government ordered investments by the mega tech companies into some SOEs and announced Communist Party functionaries will be added to boards of private companies. However, outside of these internet companies, there are two growing areas that I feel will be most important in driving more government scrutiny going forward and those are cryptocurrencies and blockchain. None other than Milton Friedman in 1999, predicted this exact scenario in an interview where he said:

> ***“I think that the Internet is going to be one of the major forces for reducing the role of government. The one thing that’s missing, but that will soon be developed, is a reliable e-cash, a method whereby on the Internet you can transfer funds from A to B, without A knowing B or B knowing A.” Milton Friedman***

The New York Times in December wrote about what Friedman was referring to back in 1999 with these lines: “Yet as Bitcoin continues to grow, there’s reason to think something deeper and more important is going on. Bitcoin’s rise may reflect, for better or worse, a monumental transfer of social trust: away from human institutions backed by government and to systems reliant on well-tested computer code. It is a trend that transcends finance: In our fear of human error, we are putting an increasingly deep faith in technology.” John McAfee, founder of McAfee, recently said: “It will eventually frighten every nation state, but it doesn’t matter what they do, there’s no way you can create a law or to legislate something that will stop Bitcoin or any cryptocurrency because technically, you cannot.” Mark Zuckerberg added, “There are important counter-trends to this – like encryption and cryptocurrency – that take power from centralized systems and put it back into people's hands.” Decentralization scares governments. If you type governments hate bitcoin in a search engine, you will see how many countries are regulating or looking to compete with bitcoin right now. In my opinion, the price movement in Bitcoin in 2017 is far more important to the stock market than most realize. I say this because seldom do I meet people who have spent enough time on cryptocurrencies and more importantly blockchain to understand its massive implications to governments and capitalism. In the book Radical Technologies by Adam Greenfield, he calls these two the first technologies which are “just fundamentally difficult for otherwise intelligent and highly capable people to understand.” I agree with this statement and still have trouble when I read where China’s government just asked local governments to regulate the electricity usage of bitcoin miners. Good thing my son has not asked about cryptocurrencies yet. Given the importance of the technology sector for the overall market, be on the lookout for any signs of aggressive government action against internet companies and the cryptocurrency market.

Central Banks Focusing on the Industrial Past Rather Than the Digital Future

"When nine hundred years old you reach, look as good you will not."

For central banks, after 10 years of adding liquidity in the system, we hit peak liquidity in 2017. The Fed has been first in ending the QE experiment and next we should see the ECB begin to taper. At the same time, during President Xi's 3 ½ hour speech at the national congress in October, he laid out a plan to 1) reduce debt 2) fight pollution and 3) begin a reduction of the distribution of wealth problem. With the 2017 year being focused on structural reforms around the globe and economies growing, central banks are now focusing on short term strength and moving the long term structural issues to the back as this great monetary experiment enters a new phase of trying to reduce excess liquidity. This all makes sense for the industrial revolution when the world was younger and liabilities were smaller. In the digital revolution, with exponential innovation and a rapidly aging world with growing liabilities, I think this will be a policy mistake. As I mentioned above, the most powerful of all the presentations at SU was centered on digital biology. There are so many things happening on this front that longevity is going to surprise even the most optimistic of current actuarial forecasts in my opinion. The role of technology in increasing longevity in the coming years needs to be put into context. In May 2017, the World Economic Forum released a report titled *"We'll Live to 100 – How Can We Afford It?"* Within the report, they highlight these numbers which, when you read them, makes you wonder why we care so much about the miniscule Fed balance sheet in comparison.

The retirement savings gap in 2015 is estimated to be ~$70 trillion, with the largest shortfall being in the United States. In terms of GDP, this gap represents ~1.5 times the annual GDP across the countries studied. Based on our forward-looking projections, the gap will grow by 5% each year to ~$400 trillion by 2050. This means an additional $28 billion of deficit each day. Looking at the US specifically, the gap is growing at a rate of $3 trillion each year. This increase is the equivalent of five times the annual US defense budget, or 60% of BlackRock (the world's largest asset manager) assets under management, which in 2016 stood at $5 trillion.

Michael Drexler, Head of Financial and Infrastructure Systems at the World Economic Forum added, "The anticipated increase in longevity and resulting ageing populations is the financial equivalent of climate change…….We must address it now or accept that its adverse consequences will haunt future generations, putting an impossible strain on our children and grandchildren." I won't go into detail with the math but this report and analysis actually assume a fairly linear increase in longevity while the presentation at SU highlighted a far greater potential exponential increase due to the convergence of innovations and discoveries within the digital biology space. If you have interest in this topic, I highly recommend watching Raymond McCauley's presentations online. Remember, the iPhone was created in 2007 and the first baby boomer turned 65 in 2011 so this is the first central bank attempt at a liquidity drain during the digital revolution and I believe this has the risk of being a mistake. Maybe the asset managers responsible for the liabilities who are driving the yield curves know something the central banks don't.

Investors Forget Volatility Can Rise

"Adventure. Excitement. A Jedi craves not these things"

The two concerns mentioned above are potential sparks. The biggest concern to me though is the complacency that now exists in the market. As I stated earlier, it is hard to find a reason to be worried going into 2018, which by itself should be worrying. In addition, the markets are going up strongly with no real pullbacks. This is the longest streak in market history without a 3% correction. No 3% pullbacks combined with 22% returns and all 12 months of the year being positive says "easy money". We all know there are no free lunches in the market. Everyone uses different measures for sentiment but a long time without a pullback, no real things to be worried about, speculation within Bitcoin, high valuations with the "frightful five" driving the market and compressed volatility are all reasons to at least be wary of risks. However, as I have written in other papers in 2017, my biggest concern is that technology has changed the dynamic of selling volatility in the market by way of vol targeting. Pure asset volatility selling is a zero sum game with a buyer and a seller. However, when a retail retirement product is structured in a way that reduces risk when realized volatility of the portfolio rises (as with portfolio insurance), you are therefore dependent on short term liquidity which may be limited if vol rises quickly. Based on my travels, I fear there is too much of this portfolio insurance out there right now in these structures. The fear is that the longer low volatility exists in an environment with the longest period on record without a correction coupled with high returns, when there eventually is a correction, it may not find the liquidity necessary for the amount of strategies now being run in this manner. In addition, the movement towards "optimized" portfolios within a low risk environment gives the illusion of being hedged. Due to this new environment and ecosystem of autonomous portfolios, whenever we finally do have the next large pullback, I am convinced it will happen in a very short amount of time as liquidity will be hard to find and lead to something similar to the August 2007 scenario where too much money had the same investment approach. In this case, it is the vol targeted investment approach.

"Wars not make one great."

There is one more concern for 2018 which is not about technology directly but one I feel is worth mentioning and that is in the relationship between China and the US. Whether it is over North Korea or trade, the new reality for the world is that China's importance to the global economy and markets has grown significantly since the last crisis and 2018 appears to be the year where President Trump focuses on trade. Recently, Scott Kennedy, director of the Project on Chinese Business and Political Economy at the Center for Strategic and International Studies made this prediction: "I expect a trade war to emerge in the first part of the year, and it could spiral into a serious conflict that threatens other elements of the relationship." If you read President's Xi's speeches both at Davos in January last year and then the Party Congress in October, China is assuming more of a global leadership role. A trade battle with China seems like a larger risk at this point than it has in the past.

"The greatest teacher, failure is"

Outlook papers are tough to write these days. There are so many of them and most of them say similar things. We spend too much time in our business attempting to get a calendar forecast right. Our reality is, however, to constantly reassess places where the opportunities seem the best. Rather than focus on an end of year number, we act in a probabilistic world of reward to risk and currently it feels like everyone at the table thinks they have the winning hand, and times like that eventually lead to large losses for many. My outlook for this year involves looking at the risk side of the equation. There are too many signs for me to ignore going into 2018. The opportunities I see for the year are still related to those embracing and acknowledging demographics, technology and countries where central banks will not ruin the party. That means, emerging markets and Japan from a regional basis. I like MLPs from a yield and value basis. Also, my favorite story for the next couple years is China's focus on electric vehicles and what it means for the metals markets. China is committed to fighting pollution and going green and this transition to more battery-operated cars has huge implications for the metals markets, despite the rally they have seen already. I would spend the time on those commodities and companies. My surprises are by the end of the year I do expect to see inverted yield curves in the US and a fall in oil prices despite the rise in metals. For US equities, I expect a significant short term correction that takes less than a couple weeks, followed by a continuation of the bull market in assets. It may take a year or more to make up the fall but I think it will be a V bottom when we look at it in hindsight. The system needs to be cleansed and people need to remember that there are no free lunches in the markets and when the expectations seem the most obvious, governments, regulators and investors are more prone to mistakes. The bold quotes throughout this paper are by my son's favorite character in the Star Wars series, Yoda. As Yoda said to Luke Skywalker in the Last Jedi, "the greatest teacher, failure is" and I think we will see some failures in 2018.

All the best in 2018!

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