Investing in the Digital Age

The Rise of Cryptocurrency

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Abstract

The "Fourth Turning" has begun, a period which will be defined by huge shifts in demographics, incredible advancements in science and technology, and the breaking down of legacy social coordination systems. The invention of cryptocurrency, combined with a profound shift in monetary policy, is set to change the investing environment of the near future. This paper seeks to address several key points, made relevant by these emerging circumstances. Such points include but are not limited to: (i) The concept of network value, (ii) a need to return to trend following strategies during times of great change, (iii) structural changes to markets led by demographic changes, and (iv) the rise of cryptocurrency. The decentralization of various aspects of society seems inevitable due to the incentive mechanisms built into these systems.

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1 The Fourth Turning

From the static pages of Web 1.0 to the dynamic and mobile Web 2.0, the internet has completely changed the way humans live today than they did 30 years ago. This technological disruption led not only to a distinct shift in the way the economy functioned, but it also changed the social fabric of our society.

Interestingly, just a few years before the creation of Web 1.0, Allen Greenspan was appointed as Chair of the Federal reserve in 1987. In a trend arguably as important as the rise of the Internet, the Fed has since been pursuing a near constant monetary policy. At almost any sign of economic weakness, the Fed would lower interest rates in some significant way. When interest rates approached zero, the Fed began to implement quantitative easing as well. Inflation in tandem with bond yields came down as this cycle progressed.

These two macro trends became intertwined. The rise of the internet accelerated globalization along with global trade, leading to a more connected world. As the economic dependency between countries increased, the monetary policy of global central banks became increasingly correlated. The dominance of the US dollar as the global reserve currency in this connected world forced global central bankers to adopt Fed policy. As the dollar devalued through successive rounds of QE, other central bankers were forced to devalue their currency to sustain their export economy.

Wages stagnated and asset prices soared. The combination of globalization and homogenous central bank monetary policy led to the highest levels of wealth inequality in around 100 years. The rise of Populism is directly correlated with this imbalance in wealth distribution. Populist politicians, who thrive on promising the masses social programs that will solve their problems, found their way into office.

This set of conditions was in place when what could end up being the largest macro event of our lifetimes occurred: The Covid-19 Pandemic. It is politicians that spend money, not central bankers, and this event spurred them into action. Over 4 trillion USD and a 40% increase in the total money supply later, we find ourselves in 2021 with the stock market at all-time highs, material levels of inflation, and further trillions of spending on the way.

If that wasn't enough, I am yet to mention the most important aspect of all this change: Blockchain Technology. Created in response to the constant debasement of fiat currencies, Bitcoin emerged from nothing to present an alternative. While some label it tulips, this technology has the potential to change the global economy and social fabric more than Web 2.0. Blockchain represents the final instantiation of what the original promise of the internet was meant to be: A web where users have digital private property rights, in turn allowing them to control their data, identity, and assets, safe from the clutches of monopolistic tech giants. This technological shift is what many are beginning to refer to as Web 3.0.

When the steam engine was invented, people stopped using horses for transport. When electricity was invented, people stopped using candles to light their homes. When there is a fundamental 0 to 1 step change in technology, ways of the past are abandoned.

The same applies to investing.

"Past performance is not indicative of future results". A simple rule to follow (often forgotten by even the smartest of investors) as macro trends tend to play out not over years, but decades. A talented investor could spend their entire career in a single cycle, where models they were taught as young analysts worked

for the following 40 years. When the tide starts to shift, however, fortunes are made by those who can see the future clearly.

After 80 years of global US hegemony and USD dominance, we are entering the 4th turning. This massive demographic shift is occurring in conjunction with a global pandemic, a drastic change in monetary policy, and exponential technological growth. The decade is set for an incomprehensible amount of change.

This shift won't happen overnight, though. The entrenched forces of old will fight to stave off the competing desires of the energetic youth. Young people have felt the effects of a continual depreciation of the dollar, as well as wage stagnation, outrageous student loans, and record real estate prices. Along this vein, the internet can be thought of as a second enlightenment, steadily degrading young people's trust in prevailing institutions. As the propaganda arms of the kleptocracy produce increasingly fake, biased news, it is obvious they are losing control.

By 2029 Millennials will have a higher net wealth share than Boomers[i]. Money is power, and although I predict a turbulent decade ahead, I am optimistic for the future. Where our parents purchased real-estate, bonds, and historically low equity valuations, millennials will purchase crypto, Tesla, and NFTs. With their formational years spent on the internet and economic lives forged through the Great Financial Crisis, millennials trust computers and favor transparency. Whether a good investment or not, millennials vote in Tesla clearly shows their environmental concerns. The youth also create popular culture. In what could end up being the second renaissance, digital private property rights will finally allow artists to capture all their created value, selling their work directly to a global audience consisting of billions of individuals.

Although this wealth transfer will not be graceful, I believe there is better chance than not of a future renaissance. Every day more US politicians and regulators voice support for crypto as the industries' pockets get bigger, thereby increasing lobbying power. With the approval of a futures-based Bitcoin ETF as well as the President Working Group's positive guidance on the future of USD Stablecoins, it is becoming clearer that this industry is here to stay. Additionally, founders of Web 2.0 tech giants, like Dorsey and Zuckerberg, have bet big on crypto - in Facebook's case completely rebranding an 800-billion-dollar company. Although an open Web 3.0 is not a likely outcome for the eastern bifurcation of the new world order, the west has hope.

Decentralized Finance, built on blockchains, offers a solution to investors who are seeking higher, more transparent, risk-free yields. As pensions & sovereign wealth funds venture further out on the risk curve to satisfy their legal obligations, DeFi will become increasingly attractive. Unless the Fed raises interest rates and risks a collapse of the economy, a transition to a new financial system may be the only way to escape this slow inflationary spiral and debt bubble.

As inflation persists, sitting in cash is not a viable strategy. Bonds currently yield less than inflation – a bet on them is locking in a loss. Adjusted for M2 expansion, the S&P 500 is flat over the last decade, indicating the bare minimum to fight the central banks. At record valuations, where does one diversify? Although one could argue the idiosyncratic risk is high, crypto assets have low correlations with traditional asset classes as well as an asymmetric return profile. Who cares about volatility if your time horizon is beyond a few years and the volatility is up and to the right? Considering demographics, the bet is obvious. The bare minimum must be to get off zero. One must adapt or die.

The rise of the sovereign, Millennial investor that only needs access to an app such a Robinhood to invest has changed the dynamics of markets. This new class of investors has a preference towards digital assets as well as a decaying trust in legacy institutions. The rise of the internet has changed the way markets work as well. Investors must take a different approach when thinking about the value of assets.

2 Mimetic Theory and Network Value

Historically, investors have attempted to model the behavior of markets to improve investing returns. Generally beginning with Bachelier in the early 20th century, economists began to construct a "modern" theory of finance driven by science over simple observation. Other economists such as Markowitz, Sharpe, and the duo of Black and Scholes sharpened Bachelier's ideas into what would become The Efficient Market Hypothesis, Modern Portfolio Theory, and The Black-Scholes Options Pricing Model. This transitory period in modern economics is known as the Marginal Revolution, and while these models make many assumptions that have since been disproven by people such as Benoit Mandelbrot, they continue to be utilized in many cases by investors today [1]. Other valuation techniques such as DCF or DDM models have been utilized in the latter half of the 20th century, which calculate the fundamental value of an asset based on their cash-flows. In monetary regimes where rates are low, these techniques tend to become less effective. Growth stocks will take the spotlight, often being valued at insane multiples for irrational lengths of time.

Behavioral economics attempts to fill this gap and provide theories as to why assets can perform irrespective of their "fundamentals". The roots of this movement can be traced back to René Gerard, the father of Mimetic Theory. The core idea of Mimetic Theory is that human desire is not a linear process, whereby a person autonomously desires an inherently desirable object. Rather, humans imitate models created by others to endow value to objects. As Gerard says, "Man is the creature who does not know what to desire, and he turns to others in order to make up his mind. We desire what others desire because we imitate their desires."

It is important to mention that mechanically, the price of an asset is determined by supply and demand. In the case of a stock, the only way prices change is if a buy order and a sell order converge in price. Somebody must click sell, and somebody must click buy. The price of a stock does not magically go up if a companies' quarterly earnings increase. Once an asset becomes deemed "desirable" and investors purchase it more than it is sold, the price rises.

Although traditional valuation techniques attempt to predict the fundamental value of an asset, at the end of the day it is the common belief in those techniques that make them effective. They act as a Schelling Point – a coordination mechanism for a group of individuals to come to consensus on the price of an asset in the absence of communication. They give an investor confidence to behave in a certain manner because they believe their fellow investors have the same beliefs.

As an investor, it is important to understand that there is fundamental value in a shared belief system. With that said, I am not discounting all traditional valuation models. I simply contest that models act as a coordination mechanism and become reflexive because so many people look at them. Ultimately, prices trend towards an asset's fundamentals over long enough time frames as it becomes increasingly obvious the asset provides utility for humans (which is usually represented by discounted future cash-flows).

In the case of an asset like Bitcoin that cannot be valued by traditional methods, one can see how mimetic theory applies. The framework of Bitcoin as an asset has evolved over the years, from digital cash to now digital property. The hivemind of investors that support Bitcoin update their mental framework in accordance with the general narrative as it changes. They then propagate that narrative to convince others to desire Bitcoin as well. Specific models have been created, such as the Stock to Flow model, which investors can rally behind. For an asset like Dogecoin, which clearly has no unique properties or

fundamental utility, narrative based buying is even more evident. Elon Musk simply tweeting about Dogecoin is enough for millions of investors to want to purchase it.

Dogecoin is effectively worthless – but it's network effect is not. What if Tesla allows purchases with only Dogecoin, and no other cryptocurrency? What if the core development team uses newfound profits to create positive utility for the network via some type of mobile app, or DAO venture fund? Although it could very easily go to 0 during a bear market, the point here is if properly handled, this network can be transformed into something valuable.

As the coordinated belief in an asset grows, it generates a flywheel effect, where the staying power of that asset increases as more people believe in it. The more people that believe in it, the larger the network effect. A large network effect generates a virtuous cycle which increases staying power. It incentivizes new participants to join the dominant network to be able to interact with the greatest number of people. It also makes it increasingly difficult for a userbase to switch networks, the size of this moat increasing with the size of the network. This is why a large network has intrinsic value. As a network grows, in the case of a blockchain protocol with a native token, the price goes up as well. This acts as signal that the communities' shared belief in the asset is correct.

This leads me to George Soros and his theory of Reflexivity.

3 Profiting from Network Effects: Reflexivity and Trend Following

George Soros theorized that there is a two-way interaction between the Cognitive (how humans understand the environment in which we interact) and the Manipulative (how we change the environment we interact with). In other words, as humans interact with their environment, the environment must have some degree of reactionary change; which, in turn, distorts the way humans perceive said environment. A feedback loop is inevitably created. In the context of markets, where various participants have high levels of information asymmetry, investing experience, investing goals, etc., it is easy to see these cycles form, whether they be virtuous or vicious cycles (with respect to asset prices).

"The generally accepted view is that markets are always right, that is, market prices tend to discount future developments accurately even when it is unclear what those developments are. I start with the opposite view. I believe the market prices are always wrong in the sense that they present a biased view of the future…I contend that financial markets never reflect the underlying reality accurately; they always distort it in some way or another and the distortions find expression in the market prices. Those distortions can, occasionally, find ways to affect the fundamentals that market prices are supposed to reflect." - George Soros.

Soros believes humans are innately biased and never have full information. The Principle of Reflexivity defines markets as always trending towards disequilibrium because the actions of market participants are exaggerated by their biases about the market itself. I call this Financial Market Entropy. Just as the universe trends towards disorder, so too does the market. Subsequent actions that change the valuations of those markets further reinforce those biases in a self-reinforcing feedback loop. Ultimately, the price of an asset is one of, if not the, most important signal variable for investors. Even if an asset begins to go up in price due to misconceptions about it, this price appreciation can lead to a reflexive effect of the price going up further because other investors think that asset must be valuable.

Recalling the Marginal Revolution, many advances in economics were made because more advanced forms of math penetrated economic theory, namely calculus. The level of calculus used, though, is simple calculus that might be taught to an advanced high school senior. It turns out that the math behind Einstein's Special Theory of Relativity has an interesting parallel to the concept of reflexivity. His theory contends that matter curves space, which in turn bends time. An advanced form of calculus, Gauge Theory, typically taught to advanced differential geometrics and physicists, is what can model this interaction between matter and spacetime. Going back to economics, agents move markets, but per Soros's theory, markets also move the minds of agents. The reflexive nature of these interactions can be encoded mathematically via Gauge Theory and differential calculus. Agents also have unique tastes and can be influenced by advertising or the desires of other agents, i.e., mimesis.

In the mid-1970s, Jim Simons in conjunction with Shiing-Shen Chern invented a new mathematical structure – the Chern-Simons theory – which turned out to have application in advanced of theoretical physics (string theory, condensed matter physics, particle physics). They discovered this theory with zero knowledge of advanced theoretical physics. This caused an explosion in both differential geometry and theoretical physics, as tooling from both fields became interoperable with each other. Interestingly, Jim Simons realized that the evolving structure of differential geometry was found in economics. He founded a hedge fund, Renaissance Technologies, whose main fund, Medallion, has earned $100 billion since inception in 1988. It has compounding gross returns of 66.1%, or 39.1% net returns, per year. It is purely a quantitative fund that only trades based on mathematical models. Clearly there is alpha to be found in

modeling the reflexive nature of markets. These strategies are labeled as trend following, or momentum-based strategies.

Network value and reflexivity are tied together because as a network grows the number of connections between nodes, or individuals, increases exponentially in accordance with Metcalf's law. Exponential growth leads to exponential price increases, which creates equally impressive reflexive dynamics. Although not as sticky, per-say, as a companies fundamentals driven by cash-flows, it is important to remember the market can remain irrational longer than one can remain solvent. In the case of blockchain protocols which exhibit both large network effects and cashflows, the valuations have the potential to be larger than any company.

4 Structural Changes to Markets over the Next Decade

Why is it important to understand the theory behind trend following? I believe in times of extreme change these strategies tend to perform the best. The US experienced a secular boom from 1984 to 2007, seemingly ending with the Great Financial Crisis[ii]. The country has been in secular decline since – asset prices are misleading because the denominator has been devalued[iii] by the Fed. The stock market has trended sideways for decades before, and it is possible it can happen again. Being net long with a risk-parity portfolio will not work when bond yields are less than inflation.

Unlike global Fed policy, politicians are extremely heterogenous in thought. Even in a single country and along the same party lines, politicians can disagree on ways to spend money. As politicians spend to solve societal, infrastructure, and environmental problems, the response will vary wildly country to country as well. It is the decisions of these politicians that will dictate the rise and fall of specific industries, assets, taxes, and regulations. They will not be successful, though. This cycle will likely end with entitlement defaults, helicopter money, and monetization of budget deficits, sometime during this decade. Covid accelerated these trends, as we have already seen massive money printing and helicopter money. Populism will continue to rise, and the tides will shift towards wealth distribution. Money printing will also lead to more inflation. Powell has officially "retired" the use of the word Transitory. An inflationary environment could lead to a resurgence in trend following performance, just as it did in the 1970s.

I believe another major factor at play here is changing demographics, and its intersection with the current role of passive investing in the stock market. The great indexation/passive investing experiment began in approximately 1999 and was given a real boost in the wake of the 2008 financial crisis. Currently, more than 40% of all money in the market is in passive vehicles. In 2017, the share of equity assets invested each year in passive funds was 44.6%. Similarly, 58% of all money going into retirement savings in 2017 (even higher now) went directly into target date funds. This year, more than $600 billion went into Vanguard ETFs, and by 2023 Vanguard expects 80% of their investors to be in a target date fund [2].

The idea behind market efficiency breaks down when the majority of capital flows are going straight into passive vehicles. Prices are no longer being determined by market participants putting up risk capital for the incentive of making profit from a deviation of what they believe to be the true price. Instead, the majority of money coming into the market is through average citizens depositing money with their bi-weekly paycheck. Combine this with homogenized monetary policy, and it can be reasonably assumed that price discovery is no longer occurring within the contents of these passive vehicles. As Millennials say, "Stonks only go up."

Indexes are for-profit vehicles that play in a hyper-competitive space. They only increase their margins by creating larger ETFs with higher liquidity or by offering better sharp ratios through adding high growth stocks (which typically have smaller market caps). To get sufficient liquidity for an ETF large enough to make a profit, they necessarily have to include many of the largest companies (that are in the vast majority of ETFs) in order to allow for differentiation on smaller companies. As a result, each of the common categories of ETFs with respect to growth stocks, large cap, mid cap, small cap, overseas, etc. are creating the exact opposite effect of diversification. The largest ETFs, which are also volume weighted, are highly concentrated. This concentrated dynamic could lead to high volatility when the market shows signs of weakness. So, the benefit of trend following is that it is price agnostic – one can make money on the way up, or down.

What could lead to a weakness in the market great enough that even the Fed can't paper over it? Changing demographics. The average boomer just turned 65/66 years old. Peak productivity occurs between 45 and 65, and then steeply drops off. Boomers are going to stop putting money into the market and begin taking money out as they continue into retirement. This will change passive flows drastically. Although one could argue that Millennial flows will take their place, I am not so sure.

Millennials have different preferences than their parents, and this is what leads me to the seismic technological shift that will change everything.

5 The Arc of Decentralization

It is important to understand the arc of decentralization before addressing the specific value proposition of cryptocurrency.

Historically, the vast share of wealth was controlled by single individuals such as Emperors, Kings, Queens, etc., that had full reign over their kingdom through the monopolization of violence. Guilds and private business ventures existed in medieval times, but there was little to no legal framework to support these structures. Between the 14th and 17th century - generally speaking the time of the renaissance - the idea of the company formed, and for the first time in history, groups of people could engage in a business venture together and share in wealth creation. Ultimately then, the advent of the stock market towards the end of the 18th century additionally allowed outside individuals to own a small portion of businesses. And although this was an improvement on prior systems, an underlying problem still existed that could not allow all of society to participate.

Before 1830, one needed an act by parliament to get limited liability. What that meant was, without limited liability, if one created a railroad company and somebody dies, that company founder would go to jail. As a result, typically only partnerships of 10 or less people existed. Then in the 1830s, there was a railroad boom in the UK and the US. The industry needed to raise capital resulting in pressure on politicians to eventually pass legislation that created the Limited Liability Corporation (LLC). The advent of the LLC effectively allowed a greater number of people to share in wealth creation – one of the first historical steps towards the decentralization of ownership.

This trend of more and more people being able to participate in value creation has now finally led to fully decentralized, cryptographic protocols. In a tokenized world, a billion people can participate in value creation. Not only can anyone invest, but now in many cases, being an active participant in the early community is rewarded in direct, partial ownership that correlates with the value of the network. Typically, a blockchain protocol's roadmap eventually leads it to morph into a DAO (Distributed Autonomous Organization) structure, where all token holders of the protocol have the ability to vote on future upgrades and code changes. Although there are many problems with DAOs currently (and why centralized structures exist for a reason), I believe over time they will result in a fairer version of corporate structures and a better alignment of incentives between the majority owners of these protocols and the vast majority of people.

While this might be a future where the average investor has more potential to lose money, I would argue it is a fairer future, where intelligent, hard-working people who previously did not have access to early-stage investments, now do. Individuals will be forced to do their own research and learn for themselves, in general resulting in a more educated investor.

Even the best venture investors only hit on slightly more than 50% of their venture investments. As opposed to concentrating wealth creation within a small group of Silicon-Valley elite, the door will be open for everyone to have a chance at investing in the next Facebook. As opposed to redistribution of wealth from the top, a dynamic is created where people can accumulate wealth from the bottom up. I would argue the democratization of investing is better for society, and young people agree.

Not only do decentralized system include more of society in the wealth creation process, but they are fundamentally more efficient than currently technologies as well.

6 The Rise of Cryptocurrency

When new technologies create a step change variance in productivity growth, they disrupt technologies of old which are left to die. Over long time frames prices reflect fundamental value. We are currently witnessing the early stages of the adoption curve of blockchain technology.

Advances in cryptography combined with distributed consensus led to the first solution to the Byzantine Generals Problem – The Bitcoin Blockchain and the implementation of the Proof of Work consensus mechanism. The ability to achieve distributed consensus effectively creates a conservation law in digital space. This allows the creation of universal ledger composed of unique, digital assets which binds those assets to users – a system of automated digital private property rights. These systems can be designed to have any properties the developers' desire. In the case of Bitcoin, the monetary policy was carefully selected to maintain a ledger with a finite number of bitcoins. This scarcity dynamic is like that of gold, which is commonly used as an inflation hedge in times of fiat monetary debasement.

With the advent of Ethereum, a coding language was built on top of a blockchain to allow for programmatic token movements, as well as the storage of state and data. Applications, commonly referred to as smart contracts, can be built on top of Ethereum which utilize the trust minimized computation the chain offers. Smart contracts can theoretically automate any scriptable business logic. This game changing technology has the potential to disrupt any 3rd party rent seeking intermediary that extracts monopoly rent from end users. A primary example being the banking system.

The implications of this technology are so profound that it will be impossible to predict what the future will look like in a few decades. In the short term, we are beginning to see early disruptions in a few industries.

Blockchain based smart contracts are the future of both high-value financial agreements (derivatives, insurance, trade finance, etc.) and micro-transactions (IoT payments, ad payments, mobile payments, etc.). Advanced smart contracts known as "hybrid smart contracts" have emerged to create a new internet of contracts, built on a foundation of cryptographic truth, generated by various decentralized infrastructure. Hybrid smart contracts rely on blockchains for on-chain logic and decentralized oracle networks like Chainlink for their second critical component of trust minimized off-chain computation.

In the short term, digitally native industries that rely on decade old infrastructure are set to be disrupted, specifically the derivatives, insurance, and trade finance industries. The market caps of which are $1.2 quadrillion, $4 trillion, and $20 trillion respectively. Smart contracts are set to reduce the cost of most backend office business expenses by upwards of 90% and allow for instant settlement time with zero counterparty risk. Blockchains and smart contracts effectively commoditize trust, and sell it at a cheaper price than any company is capable of doing. Eventually smart contracts will define the interaction between cyber-physical systems which compose the autonomous economy.

Digital scarcity also allows for the creation of digital marketplaces for IP which the internet previously destroyed. In an evolving trend known as the Metaverse, NFTs (non-fungible tokens) can represent scarce objects in the digital realm. Artists can monetize their work, and communities can monetize culture itself. We are in the very early days of this new trend, but it is clear the world is moving in this direction. The Metaverse, similar to the discovery of a new land mass, represents untapped productivity growth that can grow the pie for all.

I believe the rise of blockchain technology will result in a large percentage of Millennial passive flows going into cryptocurrencies, not stocks. Millennials are also more comfortable investing on their own. Growing up with the internet and through the Great Financial Crisis, Millennials have a general distrust of institutions as well as comfortability with computers. Digital assets with algorithmic monetary policies based on math, not people, seem to be favorable to them.

7 Show me the Incentive and I will Show you the Outcome: The Fall of Legacy Institutions

In addition to fundamental value, the incentive mechanisms built into the decentralization of networks will drive the adoption of cryptocurrency. It is quite obvious current legacy institutions and politicians are failing to solve the critical problems that society faces. I would argue it is not their inability to solve these problems, but the lack of incentives which push them to solve it.

Because a company's executive team is hired to maximize shareholder value, decisions are optimized for the wealth of a few. In order for companies to stay competitive, they must take every advantage possible to them. The most unethical companies have no problem letting the public bear the cost of negative externalities (think manufacturing activities that cause air pollution). This creates a dynamic where other companies are also forced to be unethical in order to compete, otherwise they will lose market share. Thus, every company, in an attempt to maximize shareholder value, must do every unethical thing every other company is doing just to compete. Incentives between companies and greater society consequently become unaligned. With no firewall between markets and governments, lobbying additionally allows the most powerful companies to change rules to benefit themselves. The largest companies can extract monopoly rent from the public as well as use their capital advantage to buy-out small companies that have the potential to disrupt them. These factors have dis-incentivized many of the largest companies to invest capital into long-term focused R&D, and to instead focus on short term profits.

The profit maximization dynamic, however, changes with decentralized protocols. The unique thing about cryptographic protocols is not only are they open source and permissionless, but they utilize game theory, mechanism design, and casual inference to align the incentives of all participants. By starting from the individual decision-making and strategic interactions between network participants, a network can be designed which facilitates the adoption of a decentralized service. A native protocol token is awarded to protocol participants if they act in accordance with the rules of the network. Such protocols also have control over the monetary policy of their token and can tailor the crypto-economics to tie the value of the token to the overall value of the network.

Many technologies, from aircrafts to neural networks, have often adopted ideas from nature, where evolution has fine-tuned biological systems. From a meta-perspective, decentralized protocols take a step beyond traditional markets and more effectively model the dynamics of evolution.

Human competition can be ugly between participants and can be taken to extremes (in the case of war), but it is undeniable competition maximizes human progress as a whole. As we compete to provide goods and services to others to maximize wealth for ourselves, positive externalities result in a higher standard of living for society. Decentralized protocols mirror this dynamic. Many individuals compete within a network to provide services to users. With Bitcoin, for instance, miners provide secure, censorship resistant, and inflation resistant money for users, while in turn they compete for the block rewards. Miners competing against each other makes the overall network stronger, thus increasing the utility of the network for greater societal use.

Every network participant in a decentralized protocol can own part of the protocol via tokens, in some cases utilized for voting rights. In this scenario, all network participants are incentivized to act in their shared common interest because, if the network becomes more valuable, every participant becomes wealthier. One can see that if the majority of society owned a larger share in the networks and companies

which influence our daily lives, incentives would be better aligned, and hence societal outcomes would improve.

Decentralized network ownership differs from the dynamic of a traditional company as ownership and governance lies in the hands of many, not just a few. The open-source network that wins is the one that gives the most positive utility to greater society while minimizing negative externalities. The most successful company is the one that most aggressively dominates the market by taking all revenue generating opportunities, even ones with negative externalities, and lobbying most effectively to maintain power.

With the internet revolution, people rushed to start or work for .com companies with the hope of changing the world or becoming wealthy via an IPO. In some instances, it only took a few software engineers and some laptops to incubate the platforms we use today, such as Facebook. This is no different today with Web 3.0. The smartest young minds are rushing to leave FAANG companies to work in blockchain. They realize that the first people to build the networks which are fundamental to the distributed systems of tomorrow will become incredibly wealthy. A team of approximately 20 engineers at Uniswap, for instance, can create a decentralized exchange which rivals Coinbase, a deca-billion-dollar company with over 1250 employees and millions of dollars in overhead. The incentive to create a protocol which can raise money globally through an ICO and then be utilized permissionless on a global scale is a no brainer. As Marc Andreesen says, software is eating the world. The future is created by people, and it is clear where the best and brightest are staking their claim.

The final key incentive with Web 3.0 is that users will get to benefit from these networks. In the case of Web 2.0 companies, the users are the product. In this revolution, the users are part of the network, and get to benefit from the growth economically via there token holdings. This is why crypto is growing at 113% per year, almost double the growth of the internet at 63% per year.

8 Conclusion

Currently communities, money, store of value, institutions, states, economics, etc. are being rebuilt in real time by millions of the world's smartest engineers, developers, economics, mathematicians, lawyers, and more. In the worlds of Raol Pal, "Mankind is saying fuck it, we'll do it ourselves", in response to the complete inability for our institutions and politicians to solve the problems that we face today. This is why crypto is so powerful – it aligns the incentives of our institutions, digital nation-states, networks, money, etc. with the people. Decentralization adds together the incentive of every "lay" person on the planet. Although the top 1% of US citizens hold 32.1% of the wealth, if you add together the 99% they have 67.9%. Crypto offers a means for the masses to combine their power behind the networks they vote for, and also as an alternative system that allows one to opt out of the old system.

In reproach of the old system, what incentive do Millennials have to not opt out? Why would they want to keep afloat public entitlements for the same boomers who have rigged the system against them, saddled them with debt, and pushed up first-time buyer home prices to record highs? Now that there is an alternative, if the next generation collectively decides it is the future, then it shall be.

Cryptocurrencies have uniquely strong fundamentals relative to current valuations. The open, permissionless nature of them allows a global audience to participate in their growth from inception and be rewarded economically. The asymmetric upside of these protocols combined with the fact anyone can participate will create a stronger reflexive effect than any other publicly investible asset. As word of freshly minted millionaires and billionaires spreads, like a virus so too will the adoption of this technology.

I believe this will be a highly volatile decade. Although it is fundamental of human nature to push back against change, one must embrace it. As Soros says, "You have got to make decisions even though you know you may be wrong. You can't avoid being wrong, but by being aware of the uncertainties, you're more likely to correct your mistakes than the traditional investor." One must keep their mind open to all possibilities. What I have learned in my years of investing in this market is, at this stage, it appears better to be early than right. Keep an open mind and be willing to cut losses quickly. And finally, once the chatter loudens regarding your friends making obscene amount of money, consider taking profits. Reflexivity acts towards the downside, as well. As the common saying in crypto goes: Prices go way higher, and drop way lower, than anyone thinks possible.

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9 Disclaimer

Nothing written in this paper should be considered financial advice by Abstraction Capital. Invest at your own risk, and never more than what you can afford to lose.

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[2] https://hiddenforces.io/wp-content/uploads/2019/12/Rundown-Ep.114-The-Greatest-Story-Ever-Sold-Mike-Green.pdf

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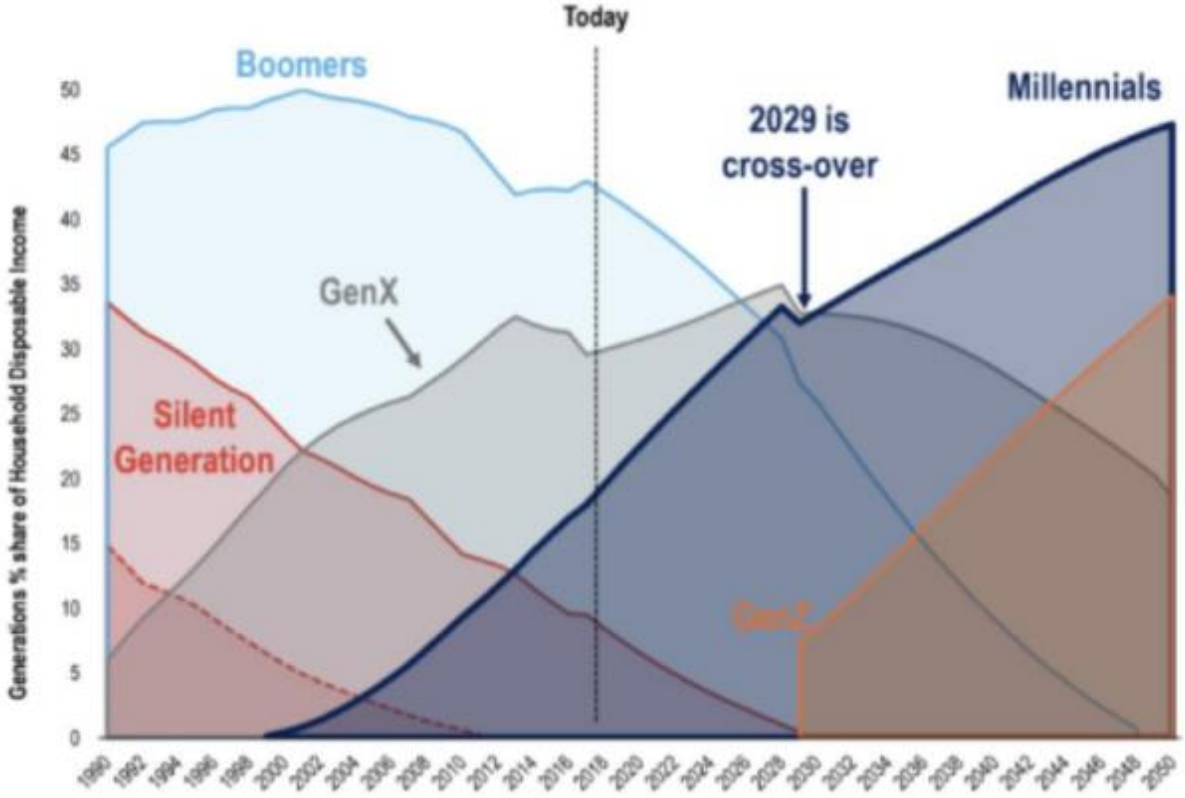
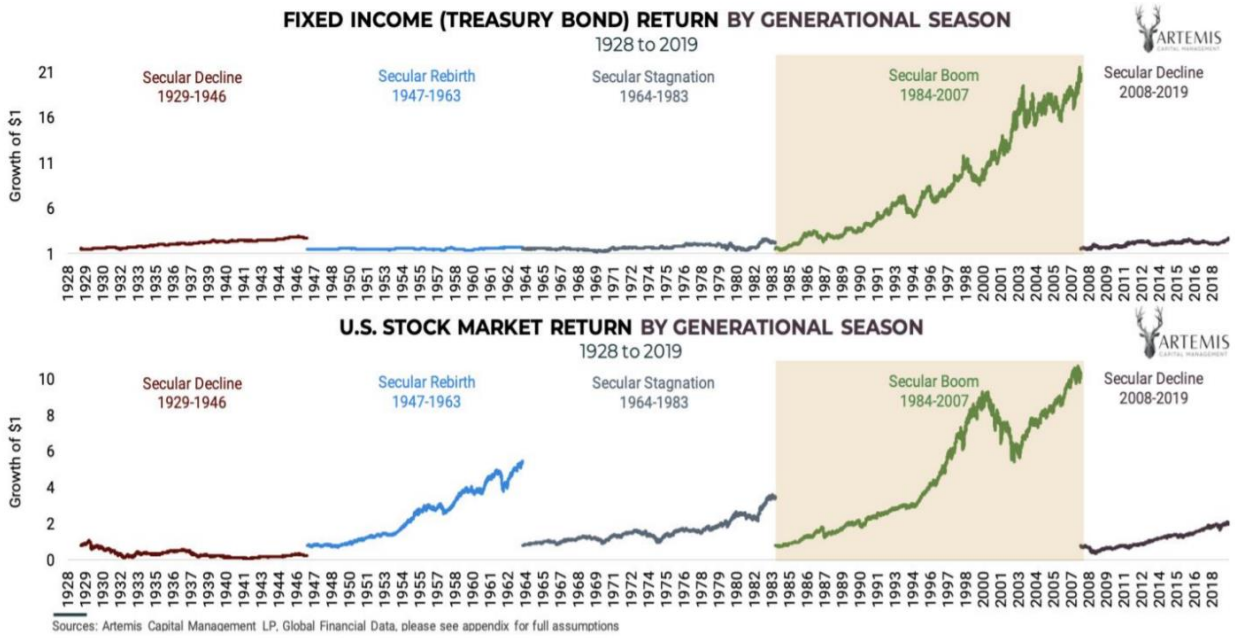


Demographic Cohort Wealth

ii



Ages of secular boom and decline – Allegory of Hawk and Serpent

iii

SPX vs M2 Monetary Base