

The CIO Monthly Perspective

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THE TINKER BELL EFFECT

Debates over Bitcoin; signs of market excess

We are only a month into 2021, yet it has felt much longer with the growing list of unusual developments. The new year opened with a surprise “Blue Sweep” courtesy of Georgia’s senate runoff elections. It was followed by rioters storming the Capitol, which sent shock waves across the country and led to a second impeachment against former President Trump. Big Tech took the opportunity to not only purge Trump and some of his acolytes from social media, but also shut down Parler, a social networking service preferred by conservatives. The SARS-Cov-2 mutation into more infectious strains also resulted in greater lockdown measures. To add to the dystopian trend, pandemic and protest threats turned the presidential inauguration into a virtual event with more troops stationed in the capital than tourists.

In spite of these issues, investors remained bullish for most of January. Expectation of greater fiscal spending drove U.S. Treasury yields and breakeven inflation rates higher. One barometer of risk appetite, Bitcoin, surged as much as 41% during the first nine days of the year. It turned out to be rather underwhelming relative to the epic short squeeze perpetrated by the so-called Reddit Army during the last seven trading days of the month. The posterchild was, of course, GameStop, which at one point had short interest at 150% of its float, making it a sitting duck for a short squeeze. This forced some hedge funds to sell their long positions to cover failed shorts, resulting in a market pullback by month end. It’s ironic that, while regulations were usually designed to protect the little guys from predatory firms, some of the masters-of-the-universe hedge fund biggies suddenly needed protection from the little guys. A temporary rescue came in the form of several brokerage firms such as Robinhood and E-Trade banning retail investors from purchasing some of the most shorted stocks. Amazingly, this inherently unfair practice managed to unify the political left and right in condemnation. This unprecedented short squeeze phenomenon now appears to have lost momentum, but the regulatory consequence may just be getting started. There may also be lingering contagion risk as some hedge funds were hit with substantial losses and will likely face redemption pressure.

If the adage “as January goes so goes the year” turns out to be true, 2021 will be a roller-coaster of a year. The good news is that economic growth still appears poised to re-accelerate as data shows that the pandemic has peaked. We remain optimistic with the synchronized global recovery thesis. However, the short-squeeze mania and signs of froth in other corners of the market could portend higher volatility.

SPOOKY ACTION AT A DISTANCE

It started with one of the greatest debates in science between two of the best minds the world has ever known. At the heart of the issue was the nature of reality – is it deterministic or probabilistic? On the deterministic side stood Albert Einstein, whose pioneering work on quantum theory at a tender age of 26 in 1905 won him the Nobel Prize in Physics in 1921 (surprised the prize was not for his General Theory of Relativity). On the other side was Niels Bohr, the great Danish physicist who was awarded the Nobel Prize a year after Einstein for his work on the structure of atoms and quantum mechanics. Bohr was a champion of the so-called Copenhagen interpretation of quantum mechanics. It basically theorized that, at the atomic level, it is not possible to predict the exact properties of a particle – position, momentum, energy – at any instant in time. These physical properties have to be determined by probability which yields a range of outcome. This quantum probability was unacceptable to Einstein, who famously quipped that God does not play dice with the universe and believed that there must be a way to predict the exact movement of particles.

The two towering titans of physics started their debate at the Fifth Solvay Conference on Physics in Brussels in 1927. It was a gathering of the most brilliant minds as 17 of the 29 attendees were or later became Nobel laureates. Einstein led a series of thought experiments in an attempt to prove inconsistency or incompleteness in Bohr's work. Bohr had to ruminate on his responses deep into the nights, but was always able to return with a coherent rebuttal to deflect Einstein's attacks. This debate resumed three years later at the Sixth Solvay Conference, and would have continued into the seventh conference held in Paris in 1933 had Einstein not emigrated to the U.S. in December 1932 to flee Nazi persecution.

In 1935, Einstein came up with one last thought experiment which presaged the eventual discovery of a most bizarre phenomenon – quantum entanglement (QE), or as Einstein called it, "spooky action at a distance." He postulated that a pair of entangled particles will have some properties somehow connected to each other no matter how far apart they are. For example, if a spin-zero particle decays into a pair of subatomic particles, quantum mechanics' conservation laws would dictate that the total spin before and after the decay process must remain zero. If the first particle of the pair is measured to spin up, the other particle in the pair must be measured to spin down no matter how far apart they are. It's as if the two particles can sense each other instantaneously regardless of the distance between them, which should be a physical impossibility since nothing in the universe can travel faster than the speed of light. It also implies a deterministic rather than probabilistic outcome as one can precisely know the state of the second particle by measuring the first particle.

Equity Markets Indices ¹	12/31/20 Price	1/31/21 Price	MTD Change	YTD Change
MSCI All Country World	646	643	-0.5%	-0.5%
S&P 500	3756	3714	-1.1%	-1.1%
MSCI EAFE	2148	2124	-1.1%	-1.1%
Russell 2000 ^{®2}	1975	2074	5.0%	5.0%
NASDAQ	12888	13071	1.4%	1.4%
TOPIX	1805	1809	0.2%	0.2%
KOSPI	2873	2976	3.6%	3.6%
Emerging Markets	1291	1330	3.0%	3.0%

Fixed Income

2-Year US Treasury Note	0.12%	0.11%	-1	-1
10-Year US Treasury Note	0.92%	1.07%	15	15
BBG Barc US Agg Corp Sprd	0.96%	0.97%	1	1
BBG Barc US Corp HY Sprd	3.60%	3.62%	2	2

Currencies

Chinese Renminbi (CNY/\$)	6.53	6.43	-1.5%	-1.5%
Brazilian Real (Real)	5.20	5.47	5.3%	5.3%
British Pound (\$/GBP)	1.37	1.37	-0.3%	-0.3%
Euro (\$/Euro)	1.22	1.21	0.6%	0.6%
Japanese Yen (Yen/\$)	103.25	104.68	1.4%	1.4%
Korean Won (KRW/\$)	1086.35	1118.75	3.0%	3.0%
U.S. Dollar Index (DXY)	89.94	90.58	0.7%	0.7%

Commodities

Gold	1898	1848	-2.7%	-2.7%
Oil	48.5	52.2	7.6%	7.6%
Natural Gas, Henry Hub	2.54	2.56	1.0%	1.0%
Copper (cents/lb)	352	356	1.1%	1.1%
CRB Index	168	174	3.8%	3.8%
Baltic Dry Index	1366	1452	6.3%	6.3%

Source: Bloomberg

It took Bohr five months to come up with a response, which basically sought to invalidate Einstein's assumptions. By that time, the growing consensus among physicists was that Bohr had won the long-running debate, and Einstein also acknowledged that quantum mechanics was born out by real life experiments. However, Einstein held on to the belief that quantum mechanics was incomplete and pursued in vain for a unified field theory until his death in 1955.

Einstein's "spooky action at a distance" theory was largely neglected by the scientific world for decades. Two physicists detected some oddly linked behavior in pairs of photons in 1950 but did not realize that it was the first real-world observation of quantum entanglement. The

theoretical work on QE was finally advanced by physicist John Bell in 1964, and the actual phenomenon was demonstrated experimentally in 1972. However, a loophole-free experiment to prove beyond any doubt the existence of QE was not completed until 2015, 80 years after Einstein first conjured up the thought experiment. In 2018, scientists conducted an experiment that showed light emitted from a quasar 12.2 billion years ago, or 7.7 billion years before the Earth was formed, also exhibited quantum entanglement.

Today, quantum entanglement serves as a cornerstone in the emerging field of quantum computing, which can process a vast array of calculations simultaneously. It has the potential to break existing cryptography but can also create a more secure quantum cryptography. There is now a global race for quantum computing supremacy with far-reaching geopolitical and economic ramifications. However, scientists still do not have an explanation for how two entangled particles, being lightyears apart across the universe, can remain inextricably linked and act in unison instantaneously. Perhaps God does play dice with the universe after all.

THE GREAT CRYPTO DEBATE

Unlike the intellectual discourse between Einstein and Bohr, there have been some intensely visceral debates of a pecuniary nature over the last few years. At the heart of the issue is how much each of the digital files, featuring strings of alphanumeric characters that make up what is known as Bitcoin, is worth. As the price of cryptocurrency soared to new heights of late, the debates have climbed higher on the decibel scale.

I first wrote about Bitcoin in my December 2017 monthly report titled, *Rise of the Alt Currencies*. At the time, Bitcoin was about halfway into a parabolic rise to \$19,000 before crashing down to \$3,200 a year later. I had marveled at the design of Bitcoin as a work of genius and laid out the attributes that made it so attractive to many from different walks of life. However, I cautioned that there was no way to gauge its intrinsic value and I was uncomfortable with various pie-in-the-sky valuation methodologies such as pricing Bitcoin off the size of the monetary base or the total value of gold ever mined. I also raised the security concern and surmised that the limited supply thesis would not hold as there were, at the time, 916 variants of cryptocurrencies, and Bitcoin Cash was just spun off from Bitcoin. I concluded that Bitcoin was a bubble but acknowledged that the price could go as high as people's imagination would allow as more newcomers jump on the bandwagon.

Three years on, my view on Bitcoin has not changed much, but the industry has evolved. There are now more than 7,800 varieties of cryptocurrencies, yet Bitcoin has managed to stay as the market share leader. Governments

have imposed regulations on cryptocurrencies, but nothing was serious enough to derail the industry's development. More importantly, some believe that Bitcoin has been legitimized as institutional investors - e.g., hedge fund legends Paul Tudor Jones and Stan Druckenmiller, business intelligence software company MicroStrategy, etc. - have entered this space. It has created a network-effect that has attracted more buyers and believers including the likes of actress Lindsay Lohan who recently posted a video touting her \$100,000 price target.

Despite Bitcoin's parabolic price movement of late, some of its detractors have remained unimpressed. Nouriel Roubini, aka Dr. Doom for having presciently called the housing bubble implosion, is one of Bitcoin's most vocal critics. He once characterized it as "the mother and father of all scams and bubbles" and has continued to warn that Bitcoin "has no intrinsic fundamental value, use or utility or any other service." He also alleged that Bitcoin trading is prone to manipulation -New York Attorney General Letitia James has accused stable-coin issuer Tether and the Bitfinex exchange of pumping up Bitcoin's prices. Christine Lagarde, President of the European Central Bank, recently characterized Bitcoin as a "highly speculative asset" that has enabled some "totally reprehensible money-laundering activity" and called for tighter global regulation.

I suspect these debates will not be settled for years, and they will continue to elicit strong emotions and fervors from cryptocurrency's evangelists as well as non-believers.

THE EVOLUTION OF MONEY

When one takes a step back from the heated debates and examines the evolution of money over time, the rise of cryptocurrencies seems inevitable. For most of known history, money had been directly or indirectly backed by real assets with limited quantities - cowrie shells, silver, gold, etc. It wasn't until 50 years ago, with President Nixon's decision to de-peg the U.S. dollar from gold in 1971, that the world moved into the current fiat currency era in which all money was backed by nothing more than the full faith and credit of their governments. Over the last few decades, technological progress has accelerated the financialization of the economy as increasingly esoteric asset-backed securities were created. However, this 50-year fiat currency experiment and various financial innovations have resulted in massive "money printing" (i.e., quantitative easing), elevated leverage, and an unnatural development called negative interest rates. Some are worried about the end game to this unstable system and potentially draconian policy responses such as currency debasement, financial repression, wealth taxes, and even default. Against this backdrop, cryptocurrencies emerged as a seemingly promising antidote or a financial hedge with some attractive attributes: innovation, scarcity,

anonymity, and portability. Indeed, when Bitcoin was launched by the enigmatic Satoshi Nakamoto in January 2009, it was an underground finance counterculture, a peer-to-peer electronic cash that would bypass the traditional financial system.

More than a decade after Bitcoin's genesis, innovation has continued unabated as evidenced in the creation of more than 7,800 variants of cryptocurrencies. This proliferation implies no scarcity in cryptocurrencies as a category, although Bitcoin has managed to maintain a dominant share while keeping the promise of capping its ultimate circulation at 21 million coins. The anonymity feature is getting harder to maintain as regulators work on reducing tax evasion and money laundering. As for portability, digital files are obviously easy to transfer, but the main concern is security. Bitcoins are stored in digital "wallets" that require a pair of cryptographic security keys - one private and one public - for access. If the private key is lost, the wallet becomes inaccessible. Some estimated that around 20% of existing Bitcoins may be lost or stranded due to misplaced private keys. Interestingly, if holders of these "lost" bitcoins wait long enough, the aforementioned quantum computing technology could be used to break the cryptography and recover the stranded coins. On the other hand, quantum computing could also pose an existential threat to cryptocurrencies if the crypto part can be compromised. Experts are divided on whether powerful quantum computers in the future can indeed pose such a risk to Bitcoin. Consulting firm Deloitte has gone out on a limb with the analysis that about 20% of Bitcoins in circulation are vulnerable to a quantum hack when quantum computing becomes powerful enough.

A THOUGHT EXPERIMENT

The above-mentioned attributes pertain to the viability of the cryptocurrency industry. However, the one attribute that triggers the most intense debate is Bitcoin's intrinsic value, or the lack thereof. Most assets have something tangible to back them up. Stocks give their holders ownership in businesses; bonds offer interest incomes and the eventual return of principals. Even a lump of gold has physical use such as jewelry. Bitcoin, on the other hand, has nothing tangible to back it up. How should we measure its value? Would Bitcoin be more acceptable if it were "backed up" by something tangible?

In the tradition of Einstein's thought experiments to prove a point, allow me to propose one to demonstrate how one could create a better cryptocurrency that has scarcity value and is backed by a real asset. Let's say a team of entrepreneurs can manage to raise a few hundred million dollars through the red-hot SPAC market for the purpose of creating this cryptocurrency. Part of the funds raised would be used to acquire one of Van Gogh's paintings, say for \$200 million. The business plan is to sell fractional

ownership of the artwork to the public by creating what they would call "Gogh-coins" using blockchain technology. Each tamper-proof digital Gogh-coin would be properly numbered and certified to hold one-twenty-millionth the value of the painting. It would put the initial value of each Gogh-coin at \$10 based on the price paid for the painting. Incidentally, the painting would be properly insured and loaned to a prestigious museum for display so owners of Gogh-coins could ascertain its presence.

A limited quantity of Gogh-coin would be released to the public on various crypto exchanges. The SPAC sponsors would initially buy and sell these Gogh-coins among themselves to drive up trading volume and mark up prices (Price manipulation is allowed in this thought experiment since central bankers are also active in this time-honored practice.). A few celebrity endorsers will be hired to tout the value of Gogh-coin - it is better than Bitcoin as its capped supply is backed up by a truly rare asset, and it democratizes art investing, a privilege heretofore reserved for the uber-wealthy.

Let's suppose Gogh-coin's capped-supply and real-asset-backed attributes resonate enough with investors to catch a bid. Rising prices would likely attract more buyers, and the price action could go parabolic if one dares to dream big. Bitcoin, with a total quantity ultimately capped at 21 million units and backed by nothingness, has seen its price surge from pennies to as high as \$40,000. How high could Gogh-coin, capped at 20 million units and backed by a truly rare asset, trade up to? Doubling to \$20 or tripling to \$30? Why not \$40,000?

Well, before you get too excited about the imaginary Gogh-coin, let me break the bad news - it might be a stretch to push the price above \$50. At \$50, Gogh-coin would peg the value of the reference asset, the Van Gogh painting, at \$1 billion (\$50 times 20 million coins). That figure is more than double the highest price ever paid for a piece of artwork - a Saudi prince splurged \$450 million in 2017 for "Salvator Mundi", a controversial painting attributed to Leonardo Da Vinci. I suspect some grinch would argue that paying \$50 for a Gogh-coin would imply too steep a price for the Van Gogh painting.

Herein lies the irony - valuation of a cryptocurrency backed by a real asset, no matter how scarce, would likely be capped by its reference asset's real-world prices. Bitcoin, on the other hand, by not being tethered to anything tangible, does not have that valuation constraint. Bitcoin aficionados can defy gravity and let their imagination run wild in setting any price targets. So, the new investment paradigm is that something intrinsically worth nothing can be valued far more than something real and scarce. Hmmm, am I the only one to detect a tinge of absurdity in this picture?

THE TINKER BELL EFFECT

We could debate Bitcoin's value until we are blue in the face, but it seems to me it ultimately comes down to the Tinker Bell Effect. In the play *Peter Pan*, a dying fairy named Tinker Bell told Peter that she could be revived if children believed in fairies, which prompted Peter to ask the audience to clap their hands to show that they believe. As the sound of clapping got louder, Tinker Bell started to come back to life. In Bitcoin's case, its value depends on getting more people to believe in it, even if just temporarily for a trade.

Bitcoin's rising price action has attracted investors from all walks of life, though I doubt most of them can be characterized as true believers. Many are in for a trade and would likely be flushed out by a prolonged period of price decline. People should not assume that big name investors who have publicly endorsed Bitcoin are true believers in or have much better insight on the cryptocurrency. Some of them might have bought Bitcoin for a trade, and some may position it as a call option. These smart folks know the value of talking one's book, but they are unlikely to give us a heads-up before they exit from the position. I suspect many investors own Bitcoin on the expectation that more people, especially institutional investors, will likely convince themselves to allocate to Bitcoin a small portion of their assets that they can afford to lose. Given Bitcoin's limited quantity, greater demand should drive the price higher. However, isn't this a textbook example of the greater fool theory?

DAWN OF A REVOLUTION

While I do not think Bitcoin has much intrinsic value, I do believe Bitcoin's evolution has created some brand value – it is after all the world's most recognized and widely held cryptocurrency. There are highly committed and talented entrepreneurs, so-called Bitcoin maximalists, actively working on a new DeFi (decentralized finance) ecosystem to enable new financial products and services such as borrowing against Bitcoin. These innovations could potentially disintermediate the established financial system and bypass government's anti-money laundering (AML) and know-your-customer (KYC) measures. Indeed, the whole financial system is on the cusp of great changes with blockchain technology being used to enhance or replace existing ways of doing business. My thought experiment on Gogh-coin is not meant to be a joke, as tokenization of assets will create new financial instruments and disrupt the role of intermediaries. Governments will also introduce Central Bank Digital Currencies (CBDC) to tackle some of the inefficiencies in the existing system and implement new, potentially controversial features. China is already leading the world with its central bank's Digital Currency/Electronic Payment (DCEP) experiment. Over time, CBDC has the potential to not only facilitate further

state intrusion into socioeconomic matters, but also realign geopolitical balances of power. CBDC might even enable some countries to challenge the U.S. dollar's global reserve currency status.

Bitcoin maximalists' ambition to create a decentralized financial ecosystem and to compete with fiat currencies will likely lead to more regulation to impede their progress. However, these crusaders believe that if they can attract enough support, especially among institutional investors, to reach critical mass, regulators will have no choice but to accommodate them. It is analogous to how Uber's ride-hailing service started as non-regulated and, in some municipalities, illegal ventures. Uber eventually prevailed with the support of the public.

It is difficult to assess how hard regulators will come down on Bitcoin and its growing ecosystem. They will likely react strongly if Bitcoin is perceived as a credible threat to fiat currencies and national security. Unlike ride hailing services, currency management belongs to the realm of macroprudential policies and sovereignty. Governments are unlikely to tolerate an alternative to usurp its power. To wit, India is now considering banning private cryptocurrencies. On the national security front, cryptocurrencies are a godsend to rogue states as they can be used to evade our sanctions. That said, it will likely be a very complicated process to create a regulatory framework. Many special interest groups will be affected, and legislators are often at an information disadvantage with regard to rapidly evolving technologies. It's also human nature for some of today's regulators to aspire to become tomorrow's well-paid consultants for the industry. Another regulatory challenge is that Bitcoin transcends national borders, and some countries may seek to leverage cryptocurrencies to become digital financial hubs. Lobbying from traditional financial institutions will likely play a role as well. It's interesting that Wall Street's C-suites have shifted from calling Bitcoin a fraud, a few years ago, to quiet acceptance these days, especially after the Office of the Comptroller of the Currency (OCC) having pronounced that banks are allowed to provide custody services for cryptocurrency and other digital assets. The times they are a-changin'!

FROM COUNTERCULTURE TO TRADING SARDINE

Bitcoin's evolution has transformed its ideological construct from an anti-establishment counterculture to a so-called trading sardine. While Bitcoin maximalists still aspire to create an alternative financial ecosystem, it seems that most people involved with Bitcoin today just want to make money. Bitcoin's early adopters have become fabulously wealthy, and their success has attracted many newcomers with the get-rich-quick mindset. Bitcoin proponents' strongest argument is that it is still in the early stage of adoption by pointing to its low institutional

ownership. However, the adoption can be disrupted by draconian regulatory measures, potentially triggering a downward spiral if many investors head for the exit as a result. Another issue is that, for at least the foreseeable future, Bitcoin prices will be solely determined by technical attributes (fund flow, sentiment, momentum, etc.) rather than anything fundamental. The lack of intrinsic value or a reference asset makes it impossible to tell whether Bitcoin is undervalued or expensive. It's in the eye of the beholder (or believer), and there are signs of bubbly behavior in this corner of the market.

At the risk of re-stating the obvious, let me summarize these takeaways:

- Do not conflate Bitcoin and blockchain. Blockchain is the technology used to create Bitcoin and other applications. Being bullish on blockchain adoption has nothing to do with Bitcoin.
- Do not assume that people who are touting Bitcoin really know cryptocurrency's intricacies. Bitcoin is very complicated, highly speculative, susceptible to manipulation, and subject to regulatory risk. Some investors may talk their book but will probably not give you a heads-up before their exit.

- It's nearly impossible to quantify Bitcoin's intrinsic value. It's probably not zero because of its brand value, but the upside is at the mercy of the Tinker Bell Effect - the value depends on the degree of acceptance and adoption among prospective investors.
- As the U.K.'s Financial Conduct Authority has cautioned recently, people who invest in cryptoassets "should be prepared to lose all their money."

Last, those who are drawn to Bitcoin's "digital gold" qualities - limited supply, a hedge on governments' financial profligacy and inflation - may want to consider the real thing. Gold has withstood the test of time and will likely shine again during periods of financial stress. It is downright boring when compared to Bitcoin's volatility, but it appears to be less risky. One way to evaluate the trade-off between gold and Bitcoin is the durability test. If you were asked to store an item of value in a time capsule to be buried in a secure place and remain inaccessible for the next forty years, what would you put in it? A USB thumb drive containing Bitcoin wallets? A piece of paper with your Bitcoin's private key written on it? A gold bullion? What will likely keep its value when you or your offspring open that time capsule forty years from now?



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