

Bitcoin: Tulip or Tool?

Ron Madey, CFA[®], Chief Investment Officer
January 30, 2025



Some Context

At a holiday dinner party a week before Christmas, the discussion turned to bitcoin on the men's side of the table. Tongue-in-cheek, I posed the question, "Is it a tulip or a tool? The jury is out." The immediate reaction took me by surprise as one person in the group took a strident tone: **"It's better than gold. What purpose does gold serve?"**

While I expressed that it was not my intention to defend gold, I did offer up a few thoughts to satisfy the question, but jewelry, electronics and being part of human culture since the beginning of time were insufficient. Fortunately, the hostess picked up on the discussion, got everyone's attention, and changed the subject. I was thankful to be rescued from the interchange. I was also compelled to further contemplate the perspective being expressed: Bitcoin, as the new digital gold, is better than the old physical gold. Hands down. End of discussion.

A week before the holiday party, I was on a CFA Institute wealth management conference panel. The panelists were asked what we were talking to clients about now. My answer: bitcoin. Some mistook my answer as if I was initiating the conversation. I was not. Our clients were asking about it. On a later panel, one CIO commented that while he was not invested in bitcoin, he thought there was a long-term case for it. Interestingly, no one asked him to articulate that case. **Bitcoin skepticism was the consensus view of the room.**

These two events, just a week apart, illustrate widely divergent perspectives on bitcoin, ranging from tulips to a new and promising arrow in the quiver of economic tools.

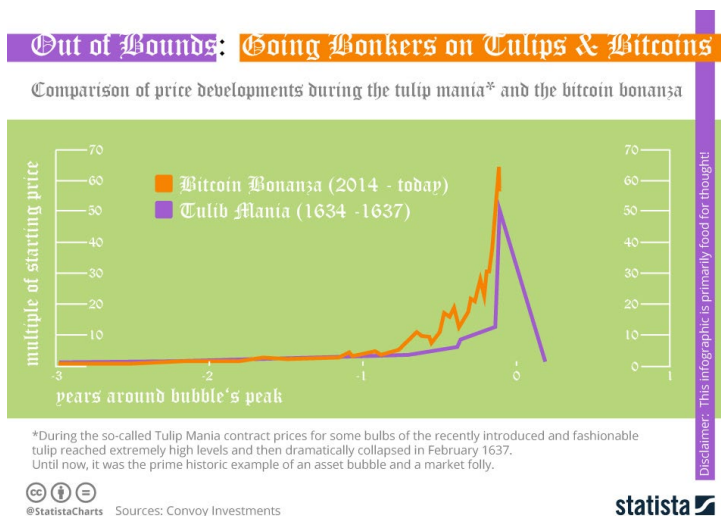
The Tulip Perspective

The term *tulipmania* was coined to refer to a speculative bubble that occurred in the Dutch Republic in the 1630's. The price of tulips went parabolic beginning in 1634, only to dramatically collapse in 1637. According to the BBC, "The highest price for which we have good evidence was 5,200 guilders for a single bulb in the winter of 1637. That is more than what Rembrandt charged for painting *The Night Watch* just five years later, and 20 times the annual income of a skilled worker, such as a carpenter."

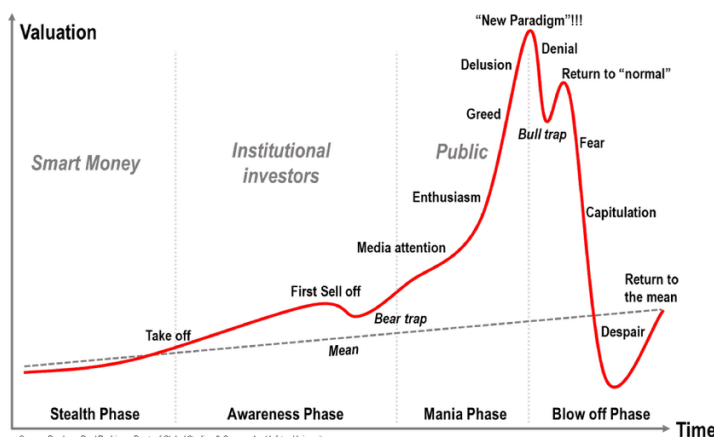
Serious discussion of tulipmania began with the 1841 publication of the book *Extraordinary Popular Delusions and the Madness of Crowds* by Charles Mackay, a Scottish journalist. He proposed that crowds of people often behave irrationally, and tulipmania was a prime example.

The Dutch tulip bubble is generally considered the first recorded speculative bubble. According to some researchers today, it was more of a social-economic phenomenon than an economic crisis. Think *Tipping Point* by Malcolm Gladwell. Gladwell defines a tipping point as a moment when an idea, trend, or social behavior crosses a threshold, tips, and spreads rapidly. So, the question is, "Has bitcoin already tipped, or is it about to?"

The chart below overlays bitcoin prices on tulipmania prices, measured as a multiple of the starting price. It suggests bitcoin is in a bubble and near its peak price. Should we adopt the peak-bubble perspective for bitcoin? Many have.



However, I think the cadre of bitcoin bubble skeptics is decreasing. The next chart, from researchgate.net, overlays tulipmania prices with the classic stages of a bubble.



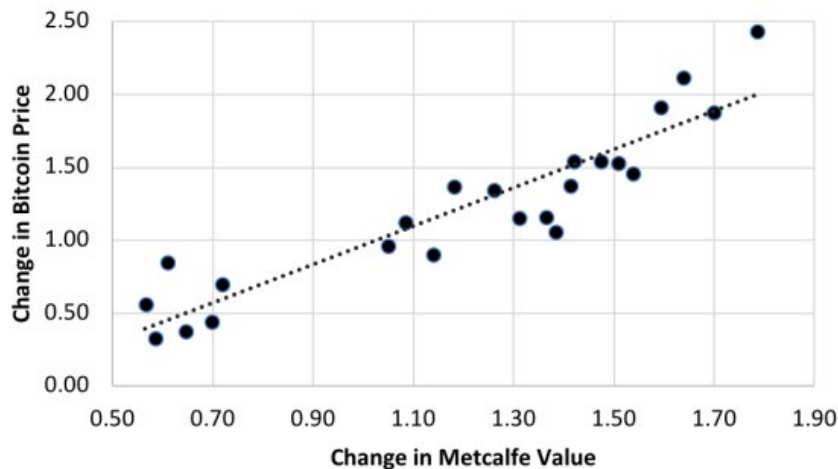
If we adopt the peak-bubble perspective for bitcoin, it would seem we are in the mania phase and putting in the top before the collapse.

Or, perhaps we are not in the peak-bubble mania/blowoff phase. Maybe we are in the awareness phase, still forming a bubble, with significant price increases still to come, followed by a collapse with bitcoin being tossed into the dustbin of economic history. My perspective? Bitcoin, and other, not all, crypto assets, will become a permanent, relevant fixture in our global economic landscape. It's not a tulip, and it's not a Beanie Baby. So, what is it worth?

The CFA Institute Research & Policy Center published a piece in November 2023 entitled *Valuation of Cryptoassets: A Guide for Investment Professionals* by Urav Soni and Rhodri Preece, CFA. It is a very thorough and thoughtful piece. Kudos to the authors for their contribution to expanding the CFA body of knowledge. One model they used to value bitcoin is based on Metcalfe's Law.

Metcalfe's Law says that the value of a network is proportional to the square of the number of nodes (or members or users) connected to it. Metcalfe's Law is exponential. A network of 10 members has a network value proportional to 100. At 100 members, the network value is proportional to 10,000. At 1,000 members, the network value is proportional to 1,000,000. It goes up fast!

So, is Metcalfe's Law an effective tool for valuing bitcoin? According to a 2018 paper, *Metcalfe's Law as a Model for Bitcoin's Value*, by Timothy F. Peterson, CAIA, the answer is yes. Peterson regressed the change in his estimate of Metcalfe's Value to the change in bitcoin's price. Below is a graphic from his paper of the relationship on a log scale.



Visually, it is a strong relationship. Statistically, according to Peterson's regression, the change in the Metcalfe value explains 85% of the change in bitcoin's price.

Metcalfe's Law can also be applied to tulipmania, or any bubble. The *Story of ZED*:

*A small group of people have an interest in ZED. They form Club ZED. They talk it up.
 They create a quantity of NFTs. Each represents a small share of ZED. They start trading ZED NFTs.
 They get others to join Club ZED and trade ZED too. The nodes on the ZED network grow.
 ZED prices rise as the size of the network expands. Rising prices attract more interest.
 The network expands rapidly. Price increases begin to accelerate.
 Prices eventually go parabolic as the Metcalfe value grows exponentially with each additional network node.
 As valuation becomes superextended some traders take profits and leave Club ZED.
 The ZED network begins to shrink. Prices begin to fall.
 Others take notice, sell their ZED, and leave Club ZED too.
 The network shrinks. Falling prices attract more sellers.
 The ZED network continues to shrink. Price declines accelerate.
 Prices collapse as all buyers leave the network.
 Only wannabe sellers are left in Club ZED
 ZED has little intrinsic value.*

So, which came first: The price change or the network change? It's clear that price change and network change are correlated, but it seems causality is bi-directional. Other than the size of the network, what else can influence the price of bitcoin? Let's focus on intrinsic value.

The Story of ZED is a bubble story. It applies to both tulips and Beanie Babies. According to Wikipedia, at the peak of the Beanie Baby fad, Beanies made up 10% of eBay's sales. People would flip Beanies for as much as ten-fold. Some collectors insured their purchases for thousands of dollars. Today, Beanie Babies sell for six dollars – the (intrinsic or usefulness) value people are willing to pay to give their child the pleasure of a cute, huggable stuffed animal.

So, we define intrinsic value as value associated with usefulness. For tulips, their usefulness value today is around \$50 to \$60 a dozen. This is the value that people are willing to pay for the pleasure of brightening a room. When the price of tulips is outrageous, they buy an alternative flower they like. When the bubble bursts, prices fall to usefulness value, which could be zero if ZED is useless.

So, what is the usefulness value of bitcoin? Advocates of bitcoin offer up many use cases. I will focus on the following:

- digital gold
- digital cash

The digital gold use case includes a store of value, an inflation hedge, and a currency debasement hedge. The digital cash use case focuses on illicit economic activity. These use cases can give us a basis for estimating the intrinsic value of bitcoin as an economic tool. Please note that there are other potential use cases for bitcoin, that if adopted, would raise the expected intrinsic value of bitcoin from the levels estimated here.

The Tool Perspective

Before we discuss use cases, let's answer the question, "What is bitcoin?"

Bitcoin is a digital currency that eliminates the need for central authorities or intermediaries (e.g. banks) to facilitate the movement of money. It is the original peer-to-peer digital currency built on blockchain technology. A blockchain is a distributed database or ledger shared across computer network nodes.

Blockchains play a key role for cryptocurrencies. Bitcoin is a cryptocurrency, which is a type of digital currency. The main difference is that cryptocurrency uses cryptography to secure and verify transactions on a decentralized network, whereas a digital currency is simply electronic money, which relies on an intermediary or centralized authority such as central banks.

Bitcoin offers a secure and decentralized record of transactions. It is not subject to centralized control, and it is impervious to inflation (it has a fixed supply of 21,000,000). However, it is not anonymous. Bitcoin's design emphasizes transparency. While transactions are not directly tied to one's name, they are linked to a public address, which can be traced back to a person or entity.

The digital gold use case: To assess the use case for bitcoin as digital gold and its impact on bitcoin's intrinsic value, we must first understand the use cases for gold for which bitcoin could be a plausible substitute.

Gold is considered a store of value, an inflation hedge, and a hedge against currency debasement. It became an effective medium of exchange about 550 BC when the first gold coins were minted. The coins circulated as currency until the introduction of paper money. Paper currencies, as a medium of exchange, were exchangeable into gold at a fixed rate, thereby indirectly keeping gold as a medium of exchange. It ceased being an indirect medium of exchange on August 15, 1972, when President Nixon removed the U.S. dollar from the gold standard. Gold is used for jewelry and has various industrial uses, primarily in technology.

According to the World Gold Council, as of the end of 2023, about 272,000 metric tons of gold have been discovered to date, with about 213,000 metric tons having been mined and another 59,000 in known underground reserves.

Of the already mined gold, the World Gold Council estimates the use case allocation as follows:

- Jewelry 45%
- Private Investment 22%
- Official Sector/Central Banks 17%
- Other 14%

From the above data, we need to define the addressable market where bitcoin can serve as substitute for gold. Bitcoin cannot substitute for the jewelry nor industrial/technology use cases. That leaves private investment (22%) and official sector/central banks (17%). So, 39% of the 213,000 metric tons of already mined gold is the addressable market for digital gold. This translates into a market value of about \$8 trillion at a price of \$2,750 per ounce of gold. The table below shows an implied intrinsic value price at different levels of substitution.

Substitution Rate	Bitcoin Price at Different Levels of Substitution for Gold				
	10%	20%	30%	40%	50%
Market Value	800,000,000,000	1,600,000,000,000	2,400,000,000,000	3,200,000,000,000	4,000,000,000,000
Bitcoin Price	38,095	76,190	114,286	152,381	190,476

The values range from ~\$38,000 to ~\$190,000. This is only a beginning. We are left with the questions:

- What is a plausible substitution rate?
- Over what horizon?

The answers to these questions will evolve with time. The more bitcoin is accepted as digital gold and a substitute for physical gold, the higher the plausible substitution rate. I would have expected this to occur very slowly with investors first substituting bitcoin for new gold investments, then eventually, meaning many many years, selling existing investment holdings of gold for bitcoin.

However, President Trump's promise to create a national bitcoin stockpile changes the calculus significantly. The size of the stockpile will be important. More important will be the act of creating it. This will draw in other buyers, both institutional and private, for reasons from FOMO to bitcoin legitimization. The bitcoin lobby may have bought their tipping point.

The main advantages the bitcoin has over gold include:

- Storage costs
- Liquidity. Ease of cross-border transactions. (this could change with the tokenization of gold).
- A better inflation hedge mathematically – the supply of bitcoin is fixed. There remains 59,000 metric tons of known underground reserves, worth about \$5.7 trillion, yet to be mined. There is also gold recycling, which currently accounts for about 25% of the annual supply of gold.
- A better currency debasement hedge for the same reason that it is a better inflation hedge.

So bitcoin, as digital gold, has a legitimate claim as a plausible substitute for physical gold for the private investor and official sector use cases.

The use case for bitcoin as digital gold may go well beyond the physical gold use case in the official sector. As of 2024Q2, according to the IMF, worldwide global foreign exchange reserves were more than \$12.35 trillion. This excludes the \$3.2 trillion value of gold held by central banks as reserves.

Foreign exchange reserves are currency deposits held by monetary authorities and governments to help maintain confidence in a country's financial system by ensuring they have enough funds to pay bills, to meet foreign exchange demands, and to influence the exchange rate of their currency.

The U.S. dollar share of allocated reserves is about 58%. The euro's share is about 20%. Many see the U.S. dollar under threat as the primary international reserve currency. The U.S. and its allies have weaponized their dominant position in global finance through sanctions, freezing of assets, and limiting access to the SWIFT global payments system. Rival and rogue nations are seeking alternatives.

China and Russia have been leading an effort with the BRICs nations – Brazil, Russia, India, China, South Africa, Egypt, Ethiopia, Indonesia, Iran, and the UAE – to stand-up an alternative common currency (think euro) that would be pegged partly to gold and partly to a basket of their own currencies. Part of me thinks of this as a gleam in the eye of impotent dictators. The dream of a competitive BRIC common currency is a triumph of hope over experience. Nevertheless, they are trying, as demonstrated by the three-fold increase in gold reserves of BRIC nations over the past two decades, according to OMFIF, an independent think tank for central banking, economic policy, and public investment.

Anyone who has lived through or studied the 20-year creation of the euro, beginning with the ECU (European Currency Unit) in 1979 to the adoption of the euro in 1999, recognizes the magnitude of the challenges to creating a viable common currency. The amount of cooperation and economic convergence required (think fiscal policies, inflation rates, labor markets, central banking, etc.) is significant. Europe was starting from a place of greater initial convergence than the wildly disparate BRIC nations.

Adding to the likely demise, or at least significant diminishment, of Xi Jinping and Vladimir Putin's dream of a BRIC common currency is President Trump's threats of 100% tariffs on BRICs nations if they pursue a currency that challenges the dollar's dominance... and bitcoin.

Bitcoin offers the BRICs nations two birds in hand for just one in the bush. It is already available for use. Nothing new needs to be created. It is outside the U.S.-led global financial system. Moreover, it has no governing authority, so it is outside of a would-be China-attempted dominance of a BRICs common currency. It is highly liquid and easily convertible. This may also be a reason for President Trump's initiative to establish a national strategic bitcoin reserve.

So, the question is not if but by how much bitcoin becomes a reserve currency. El Salvador has adopted bitcoin as a currency. The Swiss National Bank is facing an initiative to oblige it to hold bitcoin as part of its reserves. The Czech Republic could become the first Western central bank to hold bitcoin as a reserve currency. The Czech National Bank Governor has proposed holding up to 5% of its total reserves, 140 billion euros, in bitcoin. Let's look at the substitution math.

Bitcoin Price at Different Levels of Substitution for Worldwide Currency Reserves					
Substitution Rate	10%	20%	30%	40%	50%
Reserve Value	1,235,000,000,000	2,470,000,000,000	3,705,000,000,000	4,940,000,000,000	6,175,000,000,000
Bitcoin Price	58,810	117,619	176,429	235,238	294,048

So, at a 10% substitution rate for gold and currency reserves, the expected intrinsic value of bitcoin is \$96,905. Over time, I would expect a higher bitcoin substitution rate for currency reserves than for gold.

The digital cash use case: For this analysis, I will use a definition of cash as money outside the banking system. I could have called this the illicit activity use case. Banks are required to report deposits or withdrawals of \$10,000 or more to the IRS. Those involved in illicit activities need to launder money to give it the appearance of a legal source and utilize it within the banking system. Bitcoin does not use the banking system and has no centralized authority, so it is an almost perfect tool for illicit activity. I say *almost* perfect because it is not anonymous.

The FBI pierced the veil-of-anonymity of bitcoin in 2021 when it seized 63.7 bitcoins, then valued at about \$2.3 million, that was a ransom payment to individuals in a group known as DarkSide, which had targeted Colonial Pipeline using ransomware to shut down critical infrastructure. Of course, the cat and mouse game between authorities and illicit actors continues, with privacy-oriented cryptocurrencies stepping into the breach and authorities having them removed from popular exchanges, making unregulated exchanges and self-hosted wallets the primary means for using privacy cryptocurrencies. Monero, ticker symbol XMR, is a favorite cryptocurrency that hides the identities of the sender and receiver. It has been outlawed in many countries but not in the U.S. thus far.

Digital cash is much easier to use than a briefcase full of \$100 bills to consummate a back-alley drug deal. Enabling illicit activity is an underbelly of cryptocurrencies that we must assess.

According to the International Coalition Against Illicit Economies (IACIE), illicit trade was emerging as a top 5 world economy in 2024, "yielding criminals, bad actors, and threat networks between \$3-5 trillion a year." Using a value of \$3.2 trillion for the illicit economy and a velocity¹ of 1.6, which is the about the current level of M1 velocity, the addressable illicit market for bitcoin is \$2 trillion.

Bitcoin Price at Different Levels of Substitution for Illicit Economic Activity					
Substitution Rate	10%	20%	30%	40%	50%
Reserve Value	200,000,000,000	400,000,000,000	600,000,000,000	800,000,000,000	1,000,000,000,000
Bitcoin Price	9,524	19,048	28,571	38,095	47,619

Illicit economic activity is a use case where bitcoin penetration can be expected to be relatively high. For example, Russia is using it to evade Western economic sanctions tied to its invasion of Ukraine. That said, we

¹ Velocity is a measure of money supply turnover to support a given level of nominal economic activity.

need only a 10% substitution rate to get an intrinsic value of bitcoin that is greater than its current price of about \$104,000:

- Gold Substitution Value at a 10% penetration rate: \$ 38,095
- Currency Reserves Substitution Value at a 10% penetration rate: \$ 58,810
- Illicit Economic Activity Substitution Value at a 10% penetration rate: \$ 9,524
- Combined Substitution Value at a 10% penetration rate: \$106,429

Summary

As I mentioned earlier, there are other potential use cases that could contribute to a higher bitcoin price that are not included here. I used 10% substitution rates across the board for simplicity. I would expect substitution rates for currency reserves and illicit economic activity to be higher than for gold as time passes. It may already be higher for illicit economic activity.

Based on the above analysis, bitcoin is trading near its intrinsic value, so it seems reasonably priced today. Given the impetus from the Trump Administration, both its intrinsic value and its network value are likely to rise.

Wealthcare Capital Management LLC ("Wealthcare") is a registered investment advisor with the U.S. Securities and Exchange Commission (SEC) under the Investment Advisors Act of 1940. All Rights Reserved.

Information contained herein is at a point in time and subject to change without notice. Information is derived from sources which are believed to be reliable, but are not independently audited.

Past performance is not a guide to future returns. All investments carry a degree of risk of loss of principal and there is no assurance that an investment will provide positive performance over any period of time. Wealthcare cannot guarantee any specific financial return results for any client.

Investors should consult with their advisor to determine which Wealthcare model is appropriate for their situation.



Two James Center, 1021 East Cary Street, Suite 702 | Richmond, VA 23219 | 804.644.4711

WEALTHCAREGDX.COM

Contact us at investmentcounseling@wealthcarecapital.com