

The Great Debate



BITCOIN &

INTRINSIC VALUE

September 2020

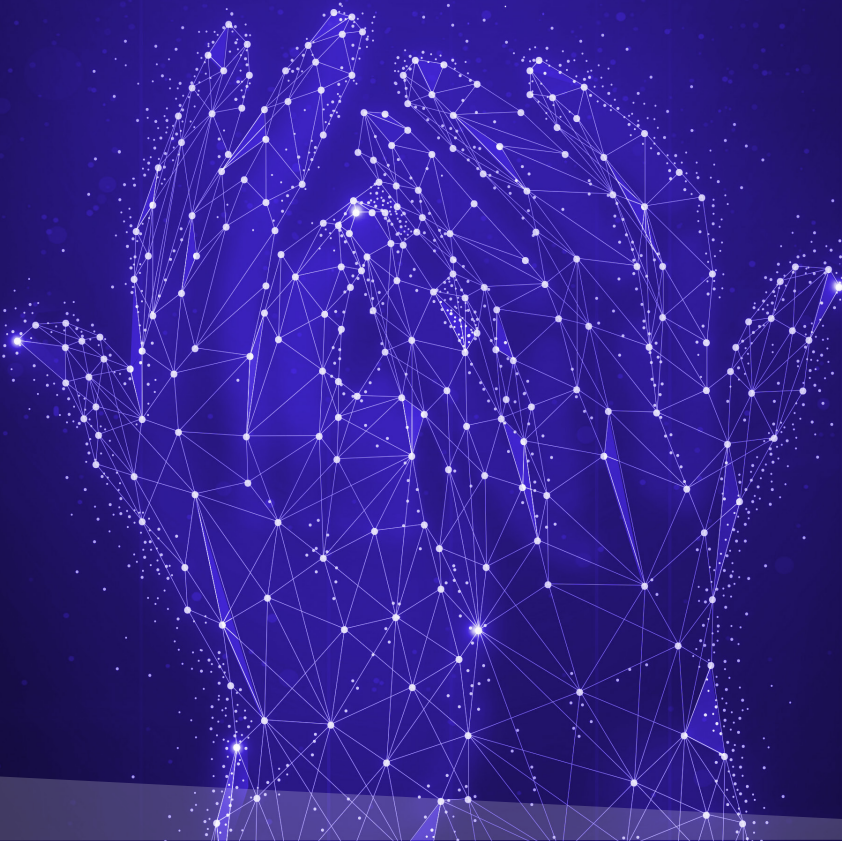


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INTRODUCTION

Just as one might ponder what they're willing to pay for a particular stock, commodity, or collectible, market participants must ultimately ask themselves a fundamental question of, "All things considered, what am I willing to pay for bitcoin today?" Stated otherwise, confronting the root issue of this question requires asking, "What is bitcoin's intrinsic value?"

The notion of "intrinsic value" is a longstanding financial concept dating back more than a century and sits at the heart of most investment decisions; though, many use this concept to assert that bitcoin possesses little or no value. On the other hand, many bitcoin proponents believe that to claim bitcoin has no intrinsic value is to misconstrue the very definition of intrinsic value. In this report, we dissect the concept of intrinsic value, address bitcoin's intrinsic value from the standpoint of believers & skeptics, and analyze the application of intrinsic value and the parallels to bitcoin.

01.

DEFINING “INTRINSIC VALUE”

Like most philosophical questions, no two people are likely to define intrinsic value in the same way. However, ask enough people and a general consensus will surface. With such in mind, consider the following definitions:

“Intrinsic value is the **perceived** or **calculated** value of a company, including **tangible** and **intangible factors**, using **fundamental analysis**. Also called the true value, the intrinsic value may or may not be the same as the current **market value**.”

– *Investopedia*¹

“The value that that thing has ‘**in itself**,’ or ‘for its own sake,’ or ‘as such,’ or ‘in its own right.’”

– *Stanford Encyclopedia*²

“An investor’s **perception** of the **inherent** value of **an asset**, such as a company, stock, option, or real estate.”

– *Motley Fool*³

“Intrinsic value or fundamental value is the ‘true, **inherent**, and essential value’ **of an asset** independent of its **market value**.”

– *Wikipedia*⁴

Although exhibiting variation, these definitions have significant overlap; namely, intrinsic value relates (1) to an asset; (2) its inherent attributes; (3) the owner's/investor's perception of value; and (4) can differ from its market value, or its price in a marketplace. If we want to be more definitive, we can loosely define intrinsic value as, *"One's perceived value of an asset when considering its fundamentals, tangible, and/or intangible properties, which can differ from its market value."* Under this definition, and others like it, resides a few assumptions:

1. An asset is a valuable thing.
2. Contrary to the Efficient Market Hypothesis (EMH), or the idea that an asset's price reflects all available information, markets are not efficient and participants are not always uniformly rational or perfectly informed. As such, an asset's intrinsic value does not always equal its market value.
3. Outside of the utility offered today, intrinsic value can be derived from expected future utility, where the past can inform future expectations (i.e. what was once historically useful may remain useful in the future).
4. Value is a spectrum that knows no absolute and is derived by way of a multivariate equation; it is the culmination of the value that individuals assign to an asset that influences its market price.
5. Because financial markets are a social phenomenon, subjectivity is at play and context matters; what is of value to some may be of little-to-no value to others.

In essence, intrinsic value is the value one ascribes to an asset and its attributes when observing said asset at a particular point in time and/or context. Take for example the diamond-water paradox, which is the notion that although water is, on the whole, more useful for survival, diamonds command a higher price in the open market. The value one would ascribe to water, a multi-purpose commodity, can vary depending on its intended use and circumstance. In the right setting, one would ascribe significantly greater value to water for hydration than say, for example, its use in agriculture.

02.

WHERE BELIEVERS & SKEPTICS STAND

A decade and three “boom & bust” cycles later, bitcoin’s intrinsic value remains a central topic of debate amongst bitcoin believers and skeptics. To the skeptics, the answer is an unequivocal “zero.” Oftentimes, those who ascribe zero intrinsic value to bitcoin have done so by way of imperfect knowledge, a narrow perspective, and/or old-aged frameworks that under-represent, if not misrepresent, the capabilities of bitcoin and the very idea of “value.”

“Nothing is so painful to the human mind as a great
and sudden change.”

– *Mary Wollstonecraft Shelley*⁵

To the believers, bitcoin’s intrinsic value lies in it being an uncorrelated asset, its intangible properties (immutability, computationally secure, decentralized, etc.), its scarcity, and/or its utility. While most believers acknowledge that bitcoin can serve as a substitute to existing fiat currencies and/or as an alternative, superior store of value, they also harness a strong dissidence towards putting bitcoin into a box given its various uses. Frequently, these believers have methodically deconstructed bitcoin – they’ve carefully analyzed bitcoin’s properties, usefulness, and potential within the context of societies of the past, present, and future. In the same vein, these believers have also exhaustively questioned past beliefs and expectations of what constitutes “value” before embracing the new-age notion of a “digital asset.”

As creatures and creators of today’s information age, there exists an obligation to revisit, reconsider, and reconstruct the age-old notion of “intrinsic value,” particularly with the advent of bitcoin. By carefully analyzing the derivation of intrinsic value with respect to traditional financial assets, one can better understand what gives credence to bitcoin’s intrinsic value and where it may come up short.

03.

STOCKS & BONDS

Streams of Value

Often one derives the intrinsic value of a stock or bond by discounting its future cash flows, dividends, or coupons. For stocks, market participants often use a discounted cash flows (DCF) model and/or the dividend discount model (DDM) to assess the value of future expected cash flows as of today, or their “present value.” If the the price of the security in the open market, or its market value, is less than its intrinsic value, a prudent investor would conclude the security to be undervalued. Although purchasers of bonds calculate intrinsic value by discounting coupons (interest payments), the idea is the same.

“In order to calculate intrinsic value, you take those cash flows that you expect to be generated and you discount them back to their present value”

– Warren Buffett⁶

Given that stocks and bonds generate cash flows, the intrinsic value of an asset is viewed by many as the value the asset produces and/or generates. That is, if you purchase a farm, you have ownership of all that it produces, if you purchase a stock, you’re entitled to the business’ cash flows and if you purchase a treasury note, you’re promised interest on top of the principle that you lent out. Bitcoin skeptics claim that because bitcoin does not generate its owners a stream of value, it has no intrinsic value.

Although one could argue that such “one-size-fits-all” approach is inherently flawed, the case could be made that bitcoin owners are, in fact, entitled to a perpetual stream of value when accounting for bitcoin’s most fundamental property – its open source code. Because anyone can “fork,” or replicate, Bitcoin’s code, purchasers own a claim on newly minted tokens that come to existence when bitcoin is hard forked. Such dynamic implies that by owning bitcoin, one is entitled to a perpetual stream of innovation that spawns out of Bitcoin – which can be a byproduct of dissenting opinions over bitcoin’s intended

purpose/future or ingenuity. However, it ought to be acknowledged that a forked version of bitcoin doesn't inherently command a nonzero market price.

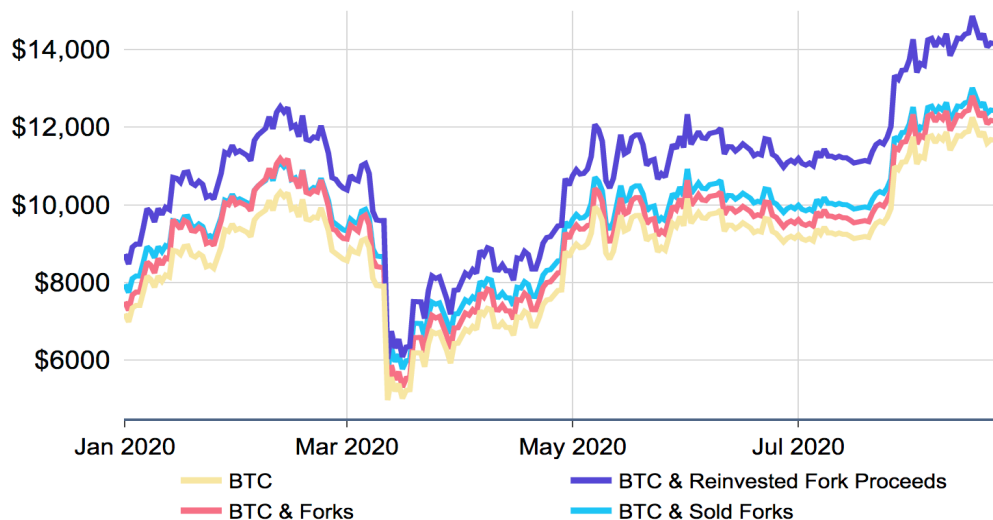
Take for instance the 105 bitcoin hard forks to date, particularly the Bitcoin Cash (BCH) hard fork on August 1st, 2017 that also led to the Bitcoin SV hard fork on November 15th, 2018.⁷ By owning a bitcoin, one was entitled to many of these forked versions of Bitcoin that ultimately took a different direction from its parent chain and came to market at a non-zero market clearing price with real demand. So while it has yet to be seen what relevance forked versions of bitcoin will possess over time and what innovation lies ahead, there is no denying that by owning bitcoin one is entitled to a valuable stream of innovation that flows back to bitcoin owners as a result of Bitcoin's open source nature.

Note that by owning a single bitcoin in late-2017, one would be entitled to a equal share of coins of the following hard-forked versions of bitcoin: Bitcoin Cash, Bitcoin Diamond, Bitcoin Gold, Bitcoin Private, and Bitcoin SV. An individual who owned 1 bitcoin and held onto their coins would have a portfolio worth \$10,595, relative to bitcoin's price of \$10,225 as of September 23rd, 2020 - or a +3.7% yield. Had that same individual sold their coins after 30 days of ownership, they would have a portfolio worth \$11,005 - an +7.6% yield. If they had sold their coins after 30 days of ownership and reinvested their proceeds into bitcoin, their portfolio would be worth \$12,405 - a +21.3% yield.

Figure 1

Portfolio value of 1 bitcoin, varied by use of forked coins received

Portfolio Value - 1 BTC



Data Source: CoinGecko

INTANGIBLE ASSETS

Investors can also use financial multiples to arrive at a stock's intrinsic value, which includes a price-to-earnings ratio (P/E), price-to-book ratio (P/B), and/or enterprise value to EBITDA (EV/EBITDA) multiple. Because of the uniqueness of a business and/or an industry, a “one-size-fits-all” approach does not exist for valuing stocks. Moreover, as industries have evolved, so have valuation methodologies. Throughout the information age, market participants have been at odds with valuing technology businesses because of their disruption potential, massive cash burn rates, exuberant growth, unexplored/unquantifiable markets, and priceless intangible assets. Such complexities have caused even the most talented and experienced market participants to miss the boat.

“I made the wrong decisions on Google and Amazon.”

– Warren Buffett⁹

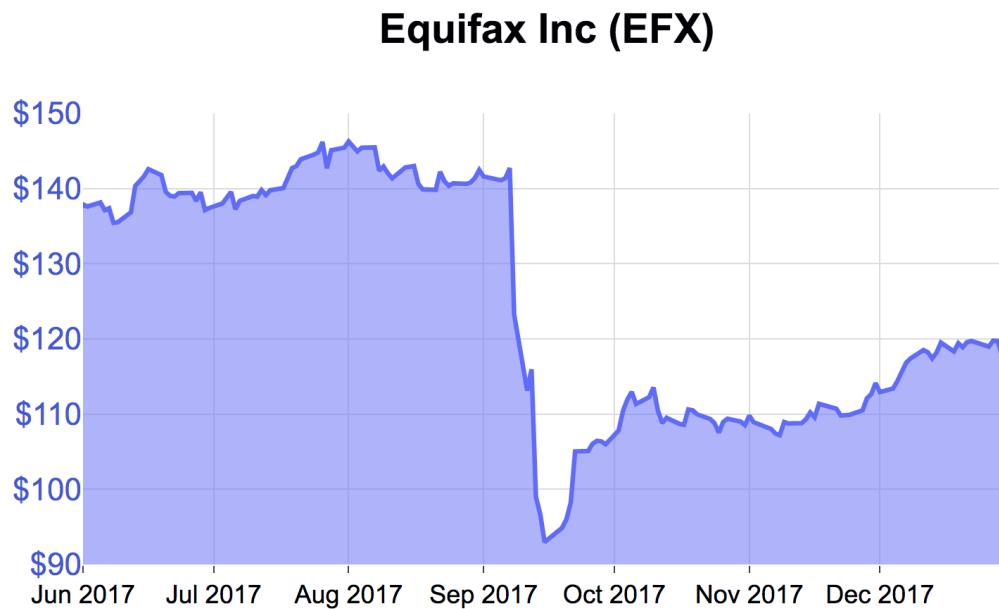
Consider that if we were to value Facebook's stock by using a price-to-book ratio (P/B), we'd fail to account for Facebook's most valuable intangible asset – its network of 1.8B daily active users that is available to anyone with an internet connection and an email address.⁹ As exemplified by Facebook, value in the modern age can exist in the form of bits and bytes – a phenomenon that traditional investors and bitcoin skeptics have either neglected, forgotten, or have yet to realize. With this in mind, one ought to contemplate bitcoin's intangible assets when ascertaining its intrinsic value, such as the following:

Cryptographic & Computational Security

Being that bitcoin is secured by cryptography and an ever-increasing amount of computational power, the reliability and robustness of the network presents itself as the most secure, decentralized, digital asset in existence. Particularly in today's information age, there is an implicit expectation of digital goods and services being secure; entities, goods, and services that prove to be unreliable and insecure are widely perceived to be of lesser value. Take for instance in September 2017 when consumer credit bureau Equifax Inc. reported a data breach that exposed the personal information of 147 million people; in just over a week, the value of Equifax's stock plunged nearly -35%, erasing more than \$5B in value.

Figure 2

Equifax Inc. (EFX) stock price



Source: Yahoo! Finance

At a hash rate of 127E/Hs, more than \$2.9B in hardware would be needed to perform a “51% attack” on the bitcoin blockchain to exclude, manipulate, and/or reverse transactions. Furthermore, at a rate of \$0.05 per kWh, an attacker would need to spend nearly \$5M per day in electricity costs. Both calculations assume the attacker uses a \$2,400 AntMiner S19 Pro ASIC miner and obtains 132.2E/Hs in computational power.¹⁰

Verifiable and Immutable

Because bitcoin was developed with incentives in place to ensure that network validators have a vested interest in verifying past and present transactions, bitcoin’s immutability is arguably priceless in a world where replication, deceit, alteration, and fraud is always a risk. The immutability of a bitcoin and a corresponding transaction, which cannot be counterfeited or faked, makes bitcoin a highly differentiated, reliable, secure, and valuable asset.

While there is no shortage of anecdotal stories of fake gold, jewels, and or collectables being passed off as the real deal, the downfall of Bre-X Minerals Ltd. tells it all. Bre-X, a Canadian conglomerate, bought a Busang mining site in March 1993 before announcing in October 1995 that a substantial amount of gold had been discovered. The news went on to catapult Bre-X’s penny stock to a record high of CAD\$286.50 on the Toronto Stock Exchange in eight months. Although Bre-X would achieve a market capitalization of more than CAD \$6 billion, the stock collapsed in 1997 after gold samples from the site

were found to be counterfeit and the mining site was determined unproductive.¹¹

More recently, it was found that Nasdaq-listed and Wuhan-based Kingold Jewelry used gilded copper bars to pass off as real gold bars in securing \$2.8B in loans from more than a dozen Chinese financial institutions. The scheme came to light in February 2020 when Dongguan Trust Co. Ltd. went to liquidate Kingold's collateral to cover defaulted debt, only to discover gilded copper alloy. On May 22nd, one of Kingold's largest creditors, China Minsheng Trust Co. Ltd., obtained a court order to test a sample of the collateral and discovered copper alloy. As of September 23rd, shares in Kingold have fallen -88% since the news broke in February.¹²

Censorship-Resistant Permissionless Network

Unlike traditional, centralized networks, anyone around the world with an internet connection can join the Bitcoin network at any hour. Not to mention, because there is no centralized governing body that operates the network or acts as a central point of failure, there are no barriers to participation. In a world where costs, restrictions, limitations, and frictions prevent people from freely connecting, exchanging, and communicating with one another, there exists immense value in Bitcoin's global, decentralized network being able to facilitate said services without any interference.

For many around the world, the idea of participating in a network that doesn't discriminate and isn't tyrannical is both appealing and foreign. The fact that the applications of bitcoin are permissionless and available to all presents the opportunity for network effects to flourish like never before. To contextualize the inherent value of network effects, a study conducted by Silicon Valley seed investment fund NFX found that network effects account for approximately 70% of the value created in technology since 1993.¹³

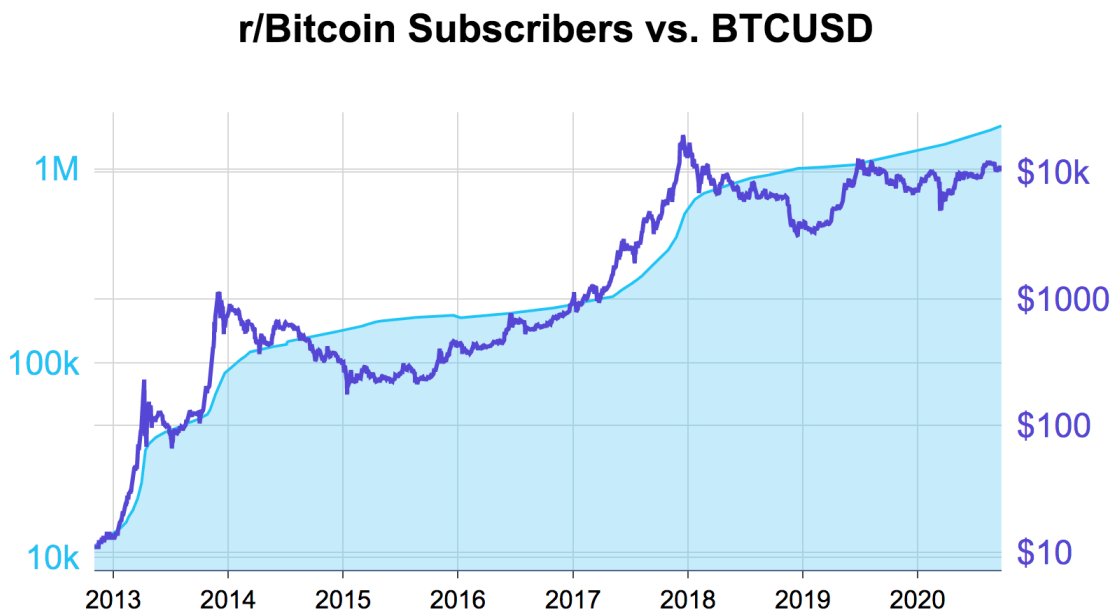
Its Reflexivity

The Theory of Reflexivity, a concept that George Soros credits much of his success as an investor, states that a positive feedback loop can exist between expectations and economic fundamentals such that price trends can substantially and persistently deviate from equilibrium prices.¹⁴ Said differently, investors don't base their decisions on reality, but rather on their perceptions of reality. It is this collective perception amongst market participants that turns perception into reality.¹⁵ For example, some believe that tech giants like Amazon, Google, and Tesla didn't rise to prominence solely because of their services/products, but because the perception of their future attracted the necessary financial and human capital to fuel their success.

For instance, the case could be made that bitcoin will “succeed” not purely because of its underlying technology and value proposition, but because people believe it will succeed. It's this belief that germinates a positive feedback loop; participants believe adoption, or the purchase/use of bitcoin, will continue to accelerate and for this reason, they adopt themselves. This rationale ignites a wave of adoption that drives others to the same conclusion and the same action. As a social phenomenon that continues to attract new users despite weathering several boom & bust cycles, bitcoin possesses the potential to rise to prominence due to its reflexive nature. We can turn to Reddit.com, the 19th most visited website in the world, as social proof of said phenomenon; the r/Bitcoin subreddit has amassed 1.65 million subscribers over the past eight years and is the 211th most popular subreddit among the some 1.2 million subreddits in existence.^{16,17}

Figure 3

Subscribers of r/Bitcoin and bitcoin's price



Source: Kraken, Subreddit Stats

04.

ALTERNATIVE INVESTMENTS

The similarities between bitcoin and traditional financial assets, such as stocks and bonds, are stark. However, bitcoin is more similar to what investors might call an “alternative investment,” or as Investopedia defines it, “A financial asset that does not fall into one of the conventional investment categories.”¹⁸ With the alternative investment industry estimated to be worth \$10T, examining how alternative assets derive their intrinsic value and what parallels exist with respect to bitcoin is warranted.

Real Estate

When it comes to deriving the intrinsic value of both commercial and residential real estate, a number of factors are weighed. The three most common methods for calculating intrinsic value are as follows:

1. Comparable sales, or the price paid for surrounding homes or buildings
2. A capitalization rate, or the rate of return used to discount the cash flows and arrive at the asset’s present value
3. The replacement cost, or the cost that will be incurred in reconstructing the property (including depreciation)

While these methodologies are straightforward on paper, they’re extremely challenging in practice. For starters, the information required in comparable property sales and income generation isn’t readily accessible. Also, major changes in the real estate market, like a credit crisis or real estate boom, are difficult to account for. Lastly, information asymmetry unique to real estate means making informed investment decisions is onerous. For these reasons, an asset’s replacement cost is arguably the baseline approach to ascertaining the intrinsic value of a piece of property.

Replacement Cost & Bitcoin

Like real estate, one could choose to arrive at bitcoin’s intrinsic value by considering its replacement cost - or cost of production. An individual who wishes to acquire bitcoin can either (1) purchase it or (2) use their time, energy, and capital to propose blocks on the Bitcoin network and thus mine it.

Figure 4

Annual return of a single Antminer S19 Pro ASIC miner

	BTC Mining Annual Return (Antminer S19)			
Cents (USD) per KWh	\$	0.11	\$	0.12
Revenue (USD)*	\$	4,407.50	\$	4,407.50
Revenue (BTC)	฿	0.4300	฿	0.4300
Electrical Cost	\$	(3,088.00)	\$	(3,369.00)
Depreciation**	\$	(1,200.00)	\$	(1,200.00)
Mining Pool Fee (1%)	\$	(44.08)	\$	(44.08)
Total Expenses	\$	(4,332.08)	\$	(4,613.08)
Net Income	\$	75.43	\$	(205.58)

Source: ASIC Miner Value

*Exchange rate 1 BTC = \$10,250

**Antminer S19 Pro depreciated over 2 years

For instance, someone who has access to a stable supply of electricity at a fixed price of \$0.11 KWh may view bitcoin as less valuable than the current market price. To them, there is little reason to buy bitcoin in the open market because the costs (\$4,618) associated with purchasing an Antminer S19 Pro and mining bitcoin in a year is less than an equivalent amount on Kraken (\$4,407). However, at a fixed price of \$0.12 KWh, a prudent market participant would opt to purchase 0.43 bitcoin.

Similarly, a residential home buyer who has the knowledge, resources, and time to build a similar home on a similar plot of land at a lower cost than that of the seller's asking price will perceive the home as less intrinsically valuable - they'll build the home on their own dime. In both instances, a market participant considers the time, energy, and money that is required for them to acquire the asset to decide whether or not to make a purchase in the open market; both have taken an action based on the cost of production relative to supply and both have taken an action that uniquely influences the market value.

COMMODITIES

Because commodities, such as corn, wheat, copper, silver, and gold, have a history of use and value amongst societies and cultures, *their intrinsic value is a function of utility and finiteness*. Crude oil has intrinsic value not because of its black goo properties, but because it's scarce, difficult to obtain, and used across economies for various reasons. Gold remains desirable not purely because it is shiny, but because it is malleable, can be used as a conductor, is used in jewelry, and has served as a medium of exchange and store of value for centuries due to its homogenous, divisible, durable, and scarce nature.

In an attempt to hold onto the past, doubters will reject bitcoin possessing any intrinsic value because it's different from a physical, traditional commodity. To these individuals, not only can bitcoin not be held in hand, but it's believed that a bitcoin's utility is confined to its ability to be sent between network participants.

“What [bitcoins] lack is their own fundamental intrinsic value. You can't do anything with a bitcoin, other than trade it for something you want. So, intrinsically, the bitcoin itself has no value.”

– Peter Schiff, *Euro Pacific Capital*¹⁹

The fact of the matter is that bitcoin's utility exists, among all else, in its function as an alternative to what are commoditized services. These services include, but are not limited to, the following:

Traditional & Offshore Banking

Because anyone with an internet connection can purchase bitcoin and participate on the network, bitcoin can often serve as a better alternative to traditional and offshore banking services for many. Unlike existing offerings, bitcoin's fees are transparent, wallets are not subject to arbitrary minimum balances, transactions do not rely on a third-party, transacting is near-instant 24x7x365, it is difficult to unexpectedly seize bitcoin, and your personal data is less at-risk. For the first time in history, anyone in the world with an internet connection can function as their very own bank while participating in the economy with full control of their wealth.

Concede that more than 1.7 billion people around the world remain unbanked, the generations of tomorrow have turned their trust towards tech services as a result of their collective distrust for banks, and 1 in 4 consumers currently use a mobile wallet daily with nearly half (47.6%) using said wallet(s) multiple times per week.^{20,21,22}

Many bitcoin believers see these realities as proof that traditional and offshore banking services have a real, yet unfilled, demand that bitcoin can and will continue to fill.

Remittance Services

The World Bank estimated that \$551B in remittances were sent to low- and middle-income countries in 2019, up more than +4% from the year prior. On the whole, the demand for remittance services continues to grow despite their astronomical costs. In 1Q2020, banks charged on average 7% in transfer fees and fees can easily exceed 10% when the destination is in Africa or a Pacific Ocean island. Not only are remittances expensive, but they're slow and rely on a third-party service provider that users must trust.²³

On the other hand, bitcoin can be sent near-instantly, for next to nothing, and at any hour. For instance, on June 26th, 2020, nearly \$1B worth of bitcoin was transferred in less than 10 minutes for a \$0.48 fee.²⁴ At an average fee of 7%, a similar \$1B remittance transfer would cost \$70M and could take up to a week to clear.

Payments

Since the birth of the internet, payment service providers continue to emerge and arguably compete almost exclusively on the size of their existing network. Between Paypal, Venmo, Zelle, Square, and Apple Pay, among many others, there is no shortage of means by which you can send and transact. To contextualize how large the payments industry has grown, note that McKinsey expects average annual growth in payments revenues over the next four years to be 6%, with total revenues increasing to \$2.7 trillion by 2023.²⁵

However, the service one uses to transact is heavily reliant on whether the sender/receiver uses the same service. As with banking and pricey remittance services, payment services have become commodity services that require users to trust the service provider in safely and securely performing the services they promise. No matter your race, creed, color, national origin, geography, or nature of business, bitcoin can be sent to anyone around the world without reliance on a single entity or individual.

COLLECTIBLES

A definitive framework for deriving the intrinsic value of a collectible may not be known, but suffice it to say that the intrinsic value of a collectible is highly subjective. While a collectible's condition, age, maker, material, and other tangible factors are important, its utility, scarcity, authenticity, historical value, and potential return are just as relevant.

Take for instance a 1999 Pokémon “Pikachu Illustrator” card, one of the rarest Pokémon cards in existence that sold for \$245,750 in October 2019.²⁶ The Pokémon card may be scarce, possess historical value, and be of high demand given the state of the Pokémon card market. However, its value and/or utility can stem in part, or entirely, from the nostalgia that it offers. To others, it is nothing short of an image on paperboard. Similarly, a 1955 Corvette, which is on average valued at \$97,500, may be scarce and serve as a useful store of value. However, to some, its real value and utility really comes down to its ability to go from point A to point B while signaling one’s “status.”²⁷ To others, the Corvette is no more useful or desirable than a Toyota Prius because, to them, a car is a car and there is little value in status signaling.

Just as a purchaser of a collectible must decide what they’re willing to pay for the asset given its use, value, and relevance for them, a purchaser of bitcoin must do the same. Even if bitcoin is purchased for no other purpose than to store wealth, such doesn’t render bitcoin “worthless.” After all, Deloitte estimates that wealth associated with art and collectibles hit nearly \$1.75T in 2018 and found in a recent 2019 study that 72% of wealth managers stated that they offered art-related services to clients.²⁸ Although the utility of a collectible may vary and result in a discrepancy between one person’s intrinsic value and its price, these differences are natural and make a market.

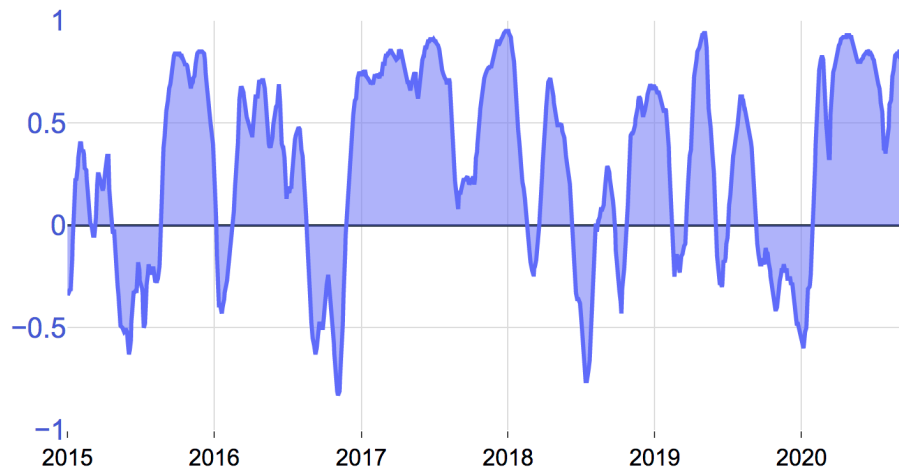
AN UNCORRELATED ASSET

Part of what makes an alternative investment in real estate, collectibles, and/or commodities attractive is a lack of correlation to traditional financial assets. This property alone can justify a purchase when seeking to maximize one’s risk-adjusted return. A lack of correlation over the long term is intrinsic to these assets and is a fundamental property that attracts capital. By the same token, many believe that bitcoin’s intrinsic value exists in its lack of correlation to other asset classes. Per figure 5 & 6, although bitcoin has, at times, been strongly positively or strongly negatively correlated with gold and the S&P 500, bitcoin remains uncorrelated with both assets over the long-term.

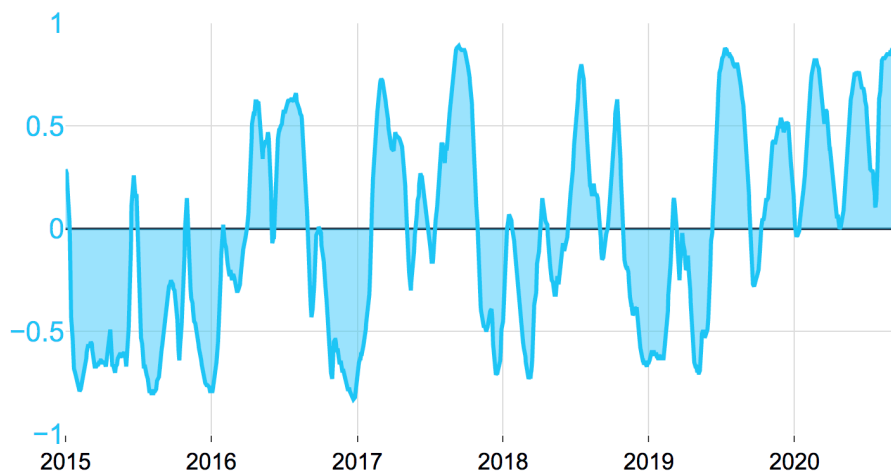
Figure 5 & 6

Bitcoin's 90-day rolling correlation with S&P 500 and gold

BTCUSD & S&P 500 90-Day Rolling Correlation



BTCUSD & Gold 90-Day Rolling Correlation



Source: Kraken, IEX

As shown in figure 7, even a 1-5% allocation in a traditional investment portfolio would generate superior risk-adjusted return as of September 23rd, 2020. While this is subject to change should bitcoin become more widely adopted, the lack of correlation seen to date is a unique attribute that makes bitcoin intrinsically valuable.

Figure 7

Portfolio returns to date by year, varied by portfolio allocation to bitcoin

Returns To Date By Year

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Traditional Allocation*	99%	78%	55.0%	40.1%	42.5%	32.5%	18.4%	24.0%	3.6%
1% in BTC	2255%	858%	66.5%	71.2%	64.7%	41.1%	17.9%	25.5%	4.1%
2% in BTC	4402%	1637%	78.0%	102.3%	86.8%	49.7%	17.4%	26.9%	4.5%
3% in BTC	6548%	2417%	89.5%	133.3%	109.0%	58.3%	16.9%	28.3%	4.9%
4% in BTC	8695%	3196%	101.0%	164.4%	131.2%	66.9%	16.5%	29.7%	5.4%
5% in BTC	10842%	3976%	112.6%	195.4%	153.4%	75.5%	16.0%	31.1%	5.8%

Source: Kraken, Yahoo! Finance

*60% S&P 500 (SPX), 40% 7-10 Yr. US Treasury bonds (IEF)

Note: Bitcoin allocations come from equal part S&P 500 and 7-10 Yr. US Treasury bond allocation

Because bitcoin is finite, scarce, void of monetary policy manipulation, and uncorrelated to traditional financial assets, it should come as no surprise that many see bitcoin as an attractive hedge against the collapse of current monetary systems and/or the global economy. After all, global economies will never be void of risk and governments are only 50 years into one of the greatest financial experiments of all time, “fiat currencies.”

05.

FIAT CURRENCIES

As previously discussed, many bitcoin supporters see bitcoin as more than just a new asset class, but a multipurpose tool that is widely accessible to all. Be that as it may, it hasn't stopped believers and skeptics from debating bitcoin's use as a "currency" and/or a means of circumventing one's reliance on fiat currencies.

Fiat Currencies

The intrinsic value of a fiat currency, or legal tender of an issuing government, is highly controversial. Because the fiat currencies of today are no longer asset-backed, the argument is often made that fiat currencies are worthless – they have no intrinsic value. For instance, in 1970 a \$10 bill represented a claim on gold. But today, a \$10 bill is merely \$10 of purchasing power backed by the full faith of the U.S. government and its recognition as legal tender.

Conversely, the belief is that the value of fiat currencies comes from their issuing governments. As a fully functioning and reliable entity, its native currency acts as a medium of exchange, a unit of account, and a store of value to both its citizens and other countries. Simply put, *the intrinsic value of fiat is based on the fact that it can be used to exchange value, store value, and because others see value in it.* Not to mention, its issuing government possesses the power and levers, such as fiscal policies (taxation), to enforce its use and acceptance.

Countries that can adequately weather severe economic downturns and attractive economic growth can be viewed as "safe-havens," thus attracting demand for their currency from individuals, businesses, and governments. A country's interest rates, GDP growth, trade balance surplus/deficit, and inflation are all factors that drive the soundness of the nation and its economy, thereby influencing the perceived value of the country's fiat currency. Put simply, *the strength of the harboring country, or a nation state's "ecosystem", makes said currency that much more intrinsically valuable.*

A Store of Value

Some argue that bitcoin has no intrinsic value because it doesn't have all of the properties of a "real" currency; that is, bitcoin may act as a unit of account and medium of exchange, but it is not a stable store of value. Skeptics go on to claim that the hyper-volatile nature of bitcoin undermines its ability to be a store of value and thus does not fulfill all three criteria of a currency. Additionally, skeptics say that not only can bitcoin not be deposited at a bank, but that its fixed supply of 21 million does not make for a viable currency in an expanding economy.

"To be successful, money must be both a medium of exchange and a reasonably stable store of value. And it remains completely unclear why Bitcoin should be a stable store of value...I have had and am continuing to have a dialogue with smart technologists who are very high on Bitcoin – but when I try to get them to explain to me why Bitcoin is a reliable store of value, they always seem to come back with explanations about how it's a terrific medium of exchange. Even if I buy this (which I don't, entirely), it doesn't solve my problem."

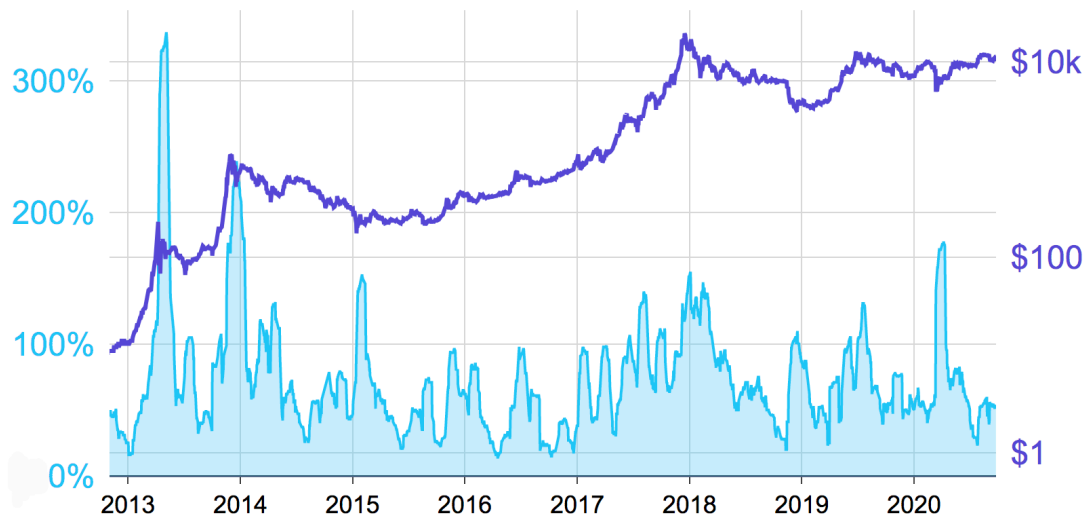
– Paul Krugman ²⁹

However, one could argue bitcoin's volatility is not a hindrance to its claim as a reliable store of value, but a driver of its success and adoption to date. As shown in figure 8, bitcoin's rise to prominence has been accompanied by a gradual, yet substantial, decline in volatility. Additionally, of the 3,691 days that bitcoin has traded in an open market, approximately 3,494 days (94.7%) have been profitable relative to a price of \$10,250.³⁰

Figure 8

Bitcoin's price and annualized volatility

Bitcoin's Price vs. Annualized Volatility (Rolling 30-Day)



Source: Kraken

IT FITS THE CHARACTERISTICS OF MONEY

According to the Federal Reserve of St. Louis, one of 12 regional Reserve Banks that make up the United States' central bank, durability, portability, divisibility, uniformity, limited supply, and acceptability are the seven characteristics of money. For a multitude of reasons, many bitcoin proponents adamantly believe that bitcoin checks all of these boxes and is therefore hard money with real intrinsic value.

Durable

Bitcoin can be lost if sent to the wrong address or if its private keys are lost, but it cannot be destroyed and is not prone to wear & tear. Furthermore, the private keys of a bitcoin can be effortlessly backed up.

Portability

Because bitcoin exists in bits, any quantity of bitcoin can be stored and transported on a laptop, smartphone, USB device, or even a piece of paper. Since the hardware needed to secure and transport bitcoin is agnostic to the amount stored, be it \$1 or \$1 billion, bitcoin is more portable than any other form of money in history.

Divisible

While existing forms of money are divisible to two decimal points, bitcoin goes as far back as eight. The smallest denomination of bitcoin, or 0.00000001, is a “satoshi.”

Uniformity

Each bitcoin might have been mined at a different period in time, but they're all the same. In the existing fiat currency system, this is not always true - we have all heard of an early 1900s silver dollar or \$2 bill selling at a premium to its denomination.

Limited Supply

Unless a majority of network users and participants agree to alter the monetary policy of bitcoin, only 21 million bitcoins will ever exist.

Acceptability

As of 2020, bitcoin is accepted by almost 16,000 businesses globally, more than 2,500 of which are based in the United States. This number is up a staggering +28,000% since November 2013 when the total number of businesses accepting bitcoin was roughly 550.³¹

Backed By A Sound Network

Critics who perceive bitcoin as purely a digital currency will often proclaim that it has no intrinsic value because "it's backed by nothing." That is, bitcoin cannot be redeemed for something else of use and/or value; while currencies have historically been backed by an underlying commodity or asset, if not the "the full faith of the government," bitcoin allegedly has nothing. Therefore, nonbelievers not only say that bitcoin isn't money, but that it also doesn't have any intrinsic value either.

"In our view, its intrinsic value must be zero: a bitcoin is a claim on nobody—in contrast to, for instance, sovereign bonds, equities or paper money."

- Stefan Hofrichter,
*Head of Global Economics & Strategy at Allianz Global Investors*³²

However, this logic fails to recognize that just as how the U.S. dollar, for example, is desired because of the underlying confidence in its sovereign state, bitcoin is desirable because of the strength and soundness of its network, or "ecosystem." Bitcoin has built its reputation as the most cryptographically secure, decentralized, and widely adopted digital asset that the world has ever seen, all of which is backed by billions of dollars in computational power and millions of participants. This ever increasing confidence in what bitcoin can do today and could do tomorrow makes for an appealing form of money and/or a store of value, hence its intrinsic value.

06.

CONCLUSION

Much like beauty, intrinsic value is in the eyes of the beholder. It's the culmination of all market participant's perceived intrinsic value of an asset that ultimately influences assets, such as bitcoin, on the whole and on the margin. Notwithstanding the fact that many have yet to understand why people from all around the world see real value in bitcoin and its intrinsic properties, those who see value in bitcoin have paradoxically used a conventional and unconventional approach in grasping what makes bitcoin similar to traditional financial assets and the first of its kind. Although it's likely that no two individuals will arrive at the same intrinsic value for bitcoin, the advent of bitcoin in today's information age warrants a methodical reevaluation of the concept of "intrinsic value," how stocks, bonds, real estate, collectibles, and fiat currencies are valued and perceived, and where digital assets fall along the value spectrum.

As time passes and bitcoin continues to navigate through uncharted waters, the intrinsic value of bitcoin will also likely change and as a result, so will its market value. With this in mind, it's helpful to be increasingly cognizant of how, why, and when bitcoin could be of greater value and what conceptual similarities bitcoin may share with traditional financial assets. Although the road ahead for bitcoin is uncertain, one thing is for certain is that bitcoin is valuable.

Appendix

- 1 <https://www.investopedia.com/terms/i/intrinsicvalue.asp>
- 2 <https://plato.stanford.edu/entries/value-intrinsic-extrinsic/>
- 3 <https://www.fool.com/knowledge-center/intrinsic-value.aspx>
- 4 [https://en.wikipedia.org/wiki/Intrinsic_value_\(finance\)](https://en.wikipedia.org/wiki/Intrinsic_value_(finance))
- 5 https://www.pagebypagebooks.com/Mary_Wollstonecraft_Shelley/Frankenstein/Chapter_23_p3.html
- 6 <https://whatheckaboom.wordpress.com/2007/07/28/warren-buffetts-discount-rate-used-in-dcf/>
- 7 <https://forkdrop.io/how-many-bitcoin-forks-are-there>
- 8 <https://www.cnbc.com/2018/05/05/buffett-i-was-wrong-on-google-and-amazon-bezos-achieved-a-business-miracle.html>
- 9 https://s21.q4cdn.com/399680738/files/doc_financials/2020/q2/Q2-2020-FB-Earnings-Presentation.pdf
- 10 <https://www.asicminervalue.com/miners/bitmain/antminer-s19-pro-110th>
- 11 https://en.wikipedia.org/wiki/Bre-X#cite_note-2
- 12 <https://www.caixinglobal.com/2020-06-29/cover-story-the-mystery-of-2-billion-of-loans-backed-by-fake-gold-101572911.html>
- 13 <https://www.nfx.com/post/70-percent-value-network-effects/>
- 14 <https://seekingalpha.com/article/126165-george-soros-reflexivity-and-market-reversals>
- 15 <https://www.investopedia.com/terms/r/reflexivity.asp>
- 16 <https://web.archive.org/web/20200416015659/https://www.alexa.com/topsites>
- 17 <https://subredditstats.com/r/Bitcoin>
- 18 https://www.investopedia.com/terms/a/alternative_investment.asp
- 19 https://www.youtube.com/watch?v=vTr_hTC90oQ
- 20 <https://www.reuters.com/article/us-offshore-wealth/super-rich-hold-32-trillion-in-offshore-havens-idUSBRE86L03U20120722>
- 21 <https://www.worldbank.org/en/news/press-release/2018/04/19/financial-inclusion-on-the-rise-but-gaps-remain-global-findex-database-shows>
- 22 https://www.speedpay.com/images/uploads/Speedpay_Pulse_Mobile_Trend_Report.pdf
- 23 <https://migrationdataportal.org/themes/remittances>
- 24 <https://www.blockchain.com/btc/address/3KZ526NxCVXbKwwP66RgM3pte6zW4gY1tD>
- 25 <https://www.mckinsey.com/-/media/mckinsey/industries/financial%20services/our%20insights/tracking%20the%20sources%20of%20robust%20payments%20growth%20mckinsey%20global%20payments%20map/global-payments-report-2019-amid-sustained-growth-vf.ashx>
- 26 <https://kotaku.com/the-most-expensive-pokemon-card-on-earth-sold-for-195-1839401186>
- 27 <https://www.caranddriver.com/features/a15137229/what-theyre-worth-today/>
- 28 <https://www2.deloitte.com/lu/en/pages/art-finance/articles/art-finance-report.html>
- 29 <https://krugman.blogs.nytimes.com/2013/12/28/bitcoin-is-evil/>
- 30 <https://www.lookintobitcoin.com/charts/bitcoin-profitable-days/>
- 31 <https://www.coindesk.com/surge-in-real-locations-accepting-bitcoin>
- 32 <https://www.marketwatch.com/story/bitcoins-intrinsic-value-must-be-zero-allianz-2018-03-14>