A little bitcoin goes a long way.

Bitcoin's place as an alternative, diversifying asset in modern portfolios.

CoinShares

Contents

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Introduction

The world experienced a rare paradigm shift in technology usage when the Internet became available to the general population in the mid-1990s. This, in turn, led to the convergence of several remarkable technologies, such as the development and use of big data, artificial intelligence and software-driven task automation. The emergence of a cryptographically secure digital asset therefore comes as no surprise. Nor does that fact that, just like the internet in its early days, it suffers considerable confusion as to its value and usage potential.

Bitcoin's lifespan now straddles two economic crises and stems from the need for an independent digital store of value. Its arrival at the global investment stage comes at a time when investors are facing considerable valuation challenges in traditional asset classes, while seeing few diversifying benefits from existing alternative investments. Investors looking for alternatives are understandably excited by digital assets offering a non-sovereign, programmable store of value, with the potential to protect from inflation.

Commodities in the 1990s faced critiques of investment suitability, just as digital assets do today. Among those were the unpredictability of events such as the weather and geopolitics on supply, and unanticipated increases in demand resulting from changes in emerging market prosperity. The creation of the GSCI (Goldman Sachs Commodity Index) and considerable promotion as a new, diversifying asset class in the early 2000's eventually led to the financialisation of commodities.

We believe that a similar trend of financialisation is emerging in digital assets, and particularly bitcoin. The proliferation of financial infrastructure and corresponding financial products referencing bitcoin as well as on-chain bitcoin usage data supports this thesis. Since 2012, the number of Bitcoin addresses that have remained dormant for more than one year has more than doubled. Simultaneously, financial infrastructure such as prime brokerages, order management systems and insured custody solutions has paved the way for increasing financialisation through products such as options, futures and Exchange Traded Products (ETP).

While Bitcoin has some growth exposure due to growth in the broader technology sector, we believe it is relatively insulated from economic cycles. We also find that in the context of a portfolio, it behaves in a similar manner to other alternative assets in providing diversification, with the exception that its portfolio diversification benefits are far greater than its competitors.

The Digital Asset Class

- *We see bitcoin as an investment being a non-sovereign store of value which has potential exposure to economic growth, whilst being largely uncorrelated to other asset classes*
- *Bitcoin's identity has been somewhat split over the years, but there is growing evidence for it becoming an established store of value*
- *The proportion of investors holding bitcoin for a year or longer has risen from 30% in 2012 to 60% today (5). We believe this trend of investor participation is likely to continue as its total market cap grows and its volatility gradually subsides*
- *We believe Bitcoin is integral to the secular growth trend in technology*

There is no universally accepted definition of asset classes. In 2005, the Yale University Endowment stated; "Because investment management involves as much art as science, qualitative considerations play an extremely important role in portfolio decisions. The definition of an asset class is quite subjective, requiring precise distinctions where none exist" (1). Consequently, while we can backtest to help define digital assets, we also must emphasise the qualitative considerations.

One broadly accepted definition of an asset class, however, is that it is expected to exhibit different risk and return investment characteristics and perform differently in certain market environments. It is then often split into real assets and financial assets.

In the US, Bitcoin's classification varies, with the IRS (Internal Revenue Service) taxing it as property, the SEC (Securities & Exchange Commission) classifying digital assets on a case-by-case basis, and the CFTC (Commodities Futures Trading Commission) regulating it as a commodity. To further add to the confusion, many digital assets have a moniker of "currency" which we believe is unhelpful as it falls outside of commonly applied definitions.

So where does Bitcoin fit?

To better understand this, we need to understand its characteristics as a potential investable asset. Satoshi Nakamoto, the pseudonymous author of the bitcoin whitepaper, "Bitcoin: A peer-to-peer electronic cash system" highlights the goal of the Bitcoin network was to build an electronic payment system around cryptographic proof instead of trust. In effect, the creation of a parallel banking system built on global, open-source software and networks instead of people / reputation.

Many attempts have been made at boxing in bitcoin into the pre-existing frameworks of current asset classes, but due to its unique collection of similar yet often non-overlapping attributes, it never quite fits any established mould.

Adding to the issues of classification based on characteristics is the problem that investor perception of bitcoin influences its behaviour, which in turn influences its performance within different macroeconomic environments leading back to questions of classification.

Parsing out which fundamentals are the "true" drivers of bitcoin's performance might be impossible so long as speculative demand remains the primary driver of price action. This leads us to the situation where bitcoin may have been one thing in the past, another thing now, and will be yet another thing in the future.

> *"...if we are to examine bitcoin in terms of its investability, we believe there is a necessity to classify bitcoin according to its likely performance in a mature state..."*

Nevertheless, if we are to examine bitcoin in terms of its investability, we believe there is a necessity to classify bitcoin according to its likely performance in a mature state, where investors are more settled as to its identity performance through the economic cycle. To do this, we must analyse bitcoin based on its economic fundamental characteristics, de-emphasising past and current price performance.

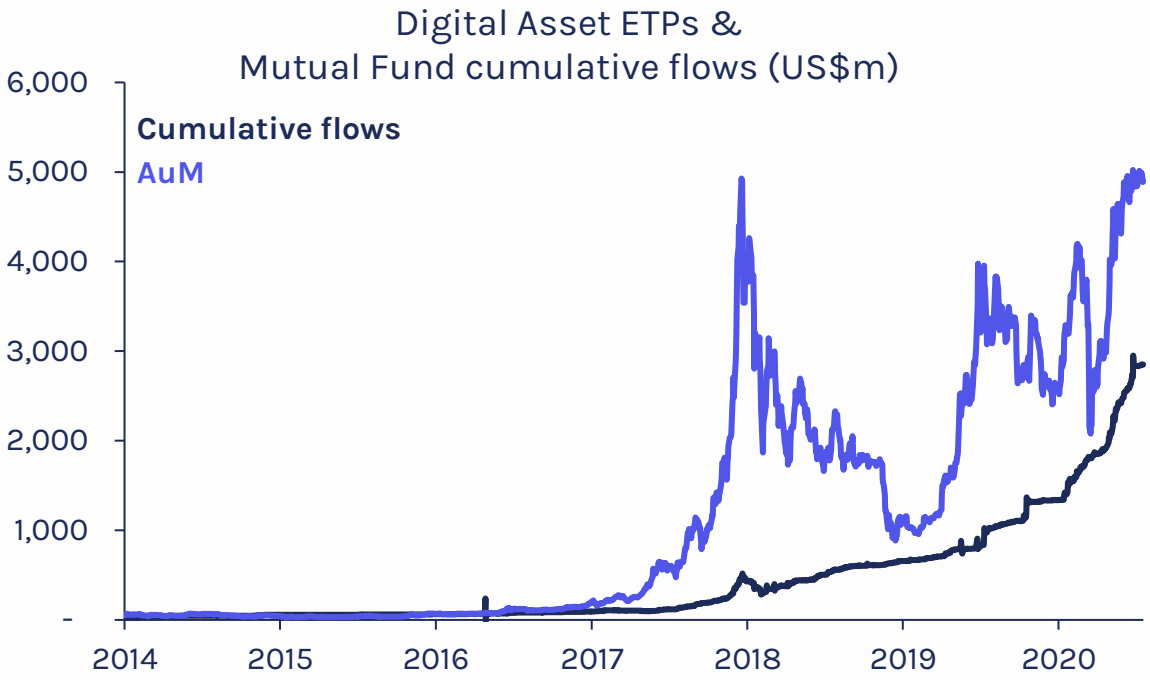
In its growth phase, bitcoin behaves much like a tech stock

Having started its life at a price of zero, it is hardly surprising that bitcoin's investment performance, like that of successful startups, has been stellar. As a potentially disruptive technology, bitcoin's risk profile is rather similar to that of a technology stock: if it reaches its potential, the value could be immense, but at the same time, there is a non-zero chance that it fails entirely, leaving the value of bitcoins close to zero.

These characteristics influence which type of investors are willing to speculate on bitcoin. This, in turn, influences how the aggregate investor pool interacts with the asset. If bitcoin is perceived as a more liquid version of a tech start-up stock, this is likely to cause its investors to treat it as a potentially high-reward, yet liquid, risk-on asset––moving in and out of it on an opportunistic basis. The markets have treated it more and more like this in the last two years, evidenced by its correlation coefficient of 0.52 versus the Social Media Equity Index.

In its mature phase, more like a store of value

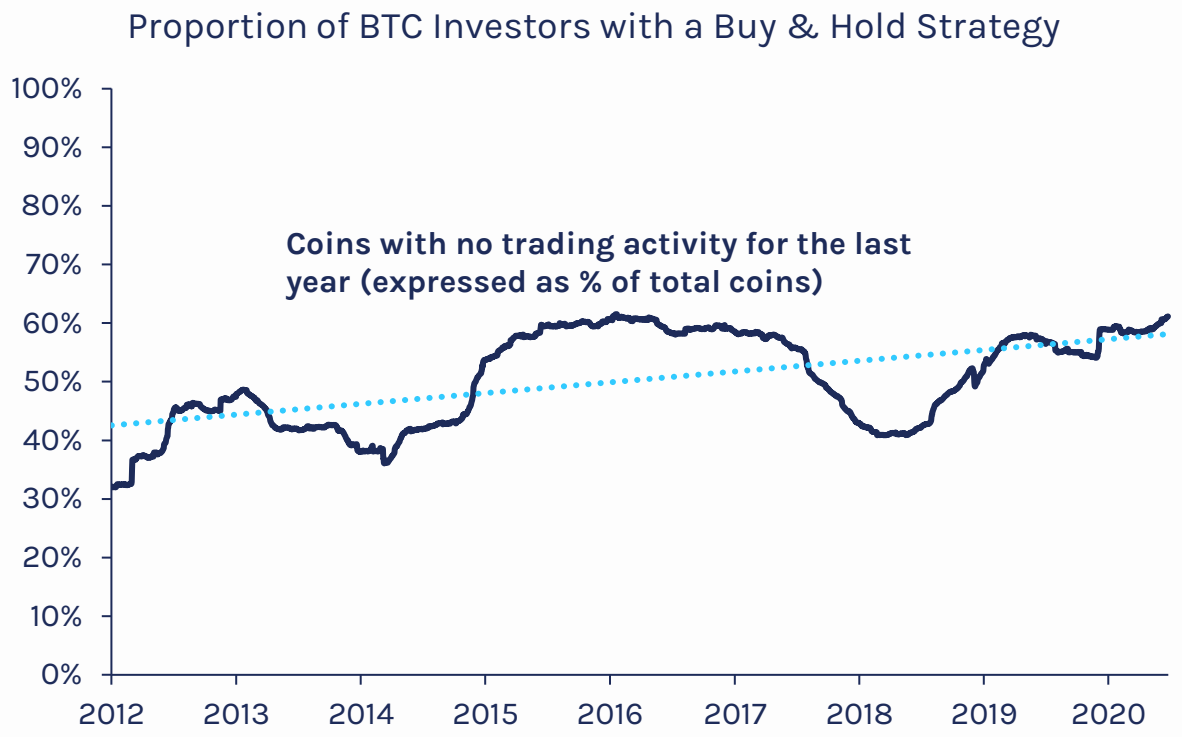
As Bitcoin matures, its robustness is further proven, and its risk of failure moves further and further away from zero, we believe investors will start treating it differently, leading its macroeconomic behaviour to follow suit.



Source: Bloomberg, CoinShares, data available as of close 23 July 2020

Alongside Bitcoin's growth in scope and size, its evolution is making it increasingly apparent that it not only has potential utility as a store of value, but is also being increasingly financialised as an asset. We believe this financialisation is self-reinforcing. As it becomes more financialised, the more it could become a store of value. Evidence for this is in the $4.9 billion of assets currently in Bitcoin ETPs and its growing acceptance as collateral for debt financing in fiat currencies.

Behavioural analysis from the Bitcoin blockchain supports the thesis of increased use as a store of value. Examinations of address behaviour show that the proportion of investors holding bitcoin for a year or longer has risen from 30% in 2012 to 60% today (5). This year 8.7% of bitcoin has been taken off exchange, we assume that it is being put into cold storage of self custody (6).



Source: Bloomberg, CoinShares, data available as of close 23 July 2020

The trend of financialisation is likely to continue but not overshadow its original concept as a digital payment system, as they are not necessarily mutually exclusive.

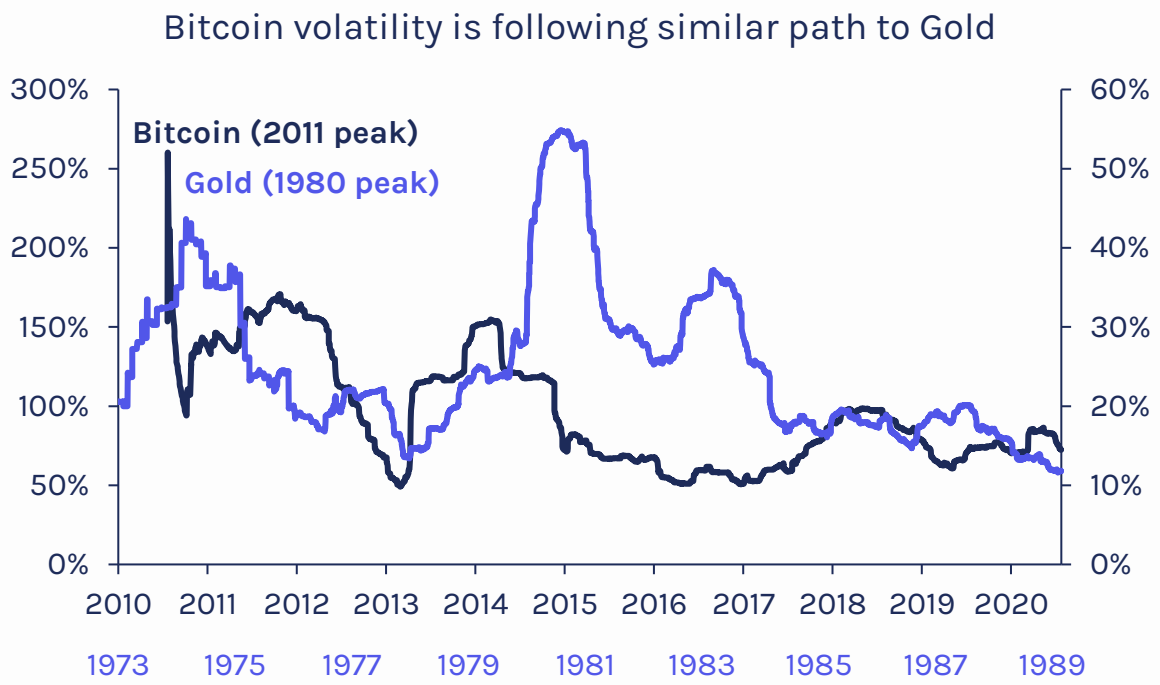
A recent institutional investor survey by Fidelity highlighted that almost 80% of investors find something appealing about the asset class. In this survey 22% say they are currently invested and 47% believe digital assets have a place in their portfolio (3). The market has also evolved to accommodate institutional investors with services such as prime brokerage, trading tools and insured custody, paving the way for further financialisation.

We also recognise Bitcoin's other functions as digital ownership, security, providing immutable and traceable records as well as programmable money that can reduce administrative work. These features are in fact what helps define it as a unique asset class. We have summarised what we believe are the key features of Bitcoin that define it as such in the table below.

	Equity	Fixed Income	Real Estate	Commodities	Cash	Digital Assets (Bitcoin)
Represents	Ownership of a business	Lending money	Ownership of physical space	Ownership of goods with an end use	Liquidity & power to buy anything	Ownership in a peer-to-peer monetary/ledger system
Investment objective	Growth /Real Income	Nominal Income	Real Income /Growth	Cyclical Exposure /Diversification	Store of value /Risk control	Non-sovereign store of value /Growth /Diversification
Liquidity	Very high	High	Very low	Varied	Very high	Medium - increasing
Return Potential	Above Inflation	Near Inflation	Above Inflation	Inflation	Near Inflation	At or above inflation
Volatilty in returns	High	Low	High	Medium/High	Nil	High
Complexity	Average	Low	High	High	Nil	High
Maturity	Perpetual	Medium/Long	Long	Medium/Long	Nil	Perpetual
Programmable	Low	Low	Low	Low	Low	High
Fungibility	Medium - High	Medium - High	Low	High	High	High
Transfer friction	High	High	High	Medium	Low	Very low

Source: CoinShares

As more and more value is transferred into the Bitcoin ecosystem its volatility will likely reduce. This could, in turn, cause Bitcoin to act more and more like a stable safe haven and store of value. One can draw comparisons with gold volatility. Gold purchased as an investment really only took off after the 1970's when the United States once again made it legal to own and trade in physical gold and Post Bretton Woods when currencies were allowed to float freely. (Up until 1975, the Gold Reserve Act Of 1934 had made the possession of gold illegal.)



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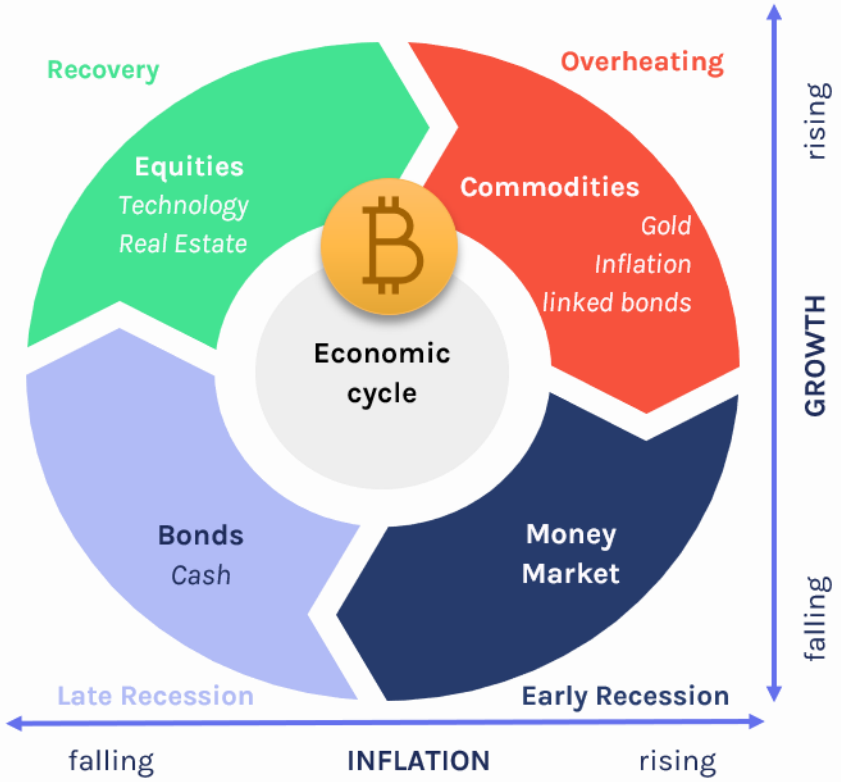
Gold slowly became financialised in the mid-1970's through to the early 1980's. As this happened, its annualised volatility declined from its peak of 50%. This was not a straight

line down due to high inflation in the late 1970's, however, its downwards trend remains intact. This is also a common trend amongst small cap companies that progress to large caps. Recently, short-term bitcoin volatility has been lower than in many key developed market equity indices.

Where should bitcoin sit in the economic cycle?

Bitcoin combines the growth opportunities of technology while it exhibits emerging features akin to a store of value. Bitcoin's supply was designed to be similar to the supply growth rate of gold, and is hardcoded in its algorithm. The supply of bitcoin is therefore genuinely limited, whereas the supply of other assets such as the US dollar are potentially infinite. During periods of economic uncertainty and if the US dollar weakens, bitcoin is likely to benefit in the same way as gold.

Bitcoin's position in the economic cycle



Source: CoinShares

In this way bitcoin is similar to banks in that they tend to sit in the middle of the economic cycle, yet (to some extent) are exposed to economic growth. More closely though, it is likely linked to technological growth rather than broader economic growth. What remains challenging to reconcile is that technology is being increasingly utilised during times of economic weakness by organisations to solve their problems and increase efficiency. This further strengthens our thesis that bitcoin could be relatively immune to the broader economic cycle, but in reality, we will only know this when bitcoin has weathered one or more full economic cycles. Recent data on inflation suggests, as we expect, that there is a link between bitcoin and inflation.

> *"We do not believe bitcoin fits any currently established asset class moulds. In the past its characteristics made it much akin to a tech growth stock, but we believe this is changing."*

In summary, if bitcoin's financialisation continues, it is unlikely that it will be able to remain insulated from the social and financial system. Consequently it is inevitable to expect increased correlation to other asset classes in times of crisis and we observed this exact outcome during the COVID panic of March 2020. We do not believe Bitcoin fits any currently established asset class moulds. In the past its characteristics made it much akin to a tech growth stock, but we believe this is changing.

Because of its characteristics (scarcity, liquidity, high uptime), evidence suggest investors are increasingly using it as a store of value. This has started a self-reinforcing process of financialisation which we believe will lead to increasing use as a store of value. It is important to highlight that this is unlikely to detract from its other compelling functions such as digital ownership, security, providing immutable and traceable records as well as programmable money.

The mere possibility that it may undergo such a transition towards a store of value raises its future potential market capitalisation ceiling closer towards those of traditional safe havens like gold or US treasuries.

Bitcoin's behaviour in a portfolio

- *Small weightings of bitcoin have an outsized positive impact on Sharpe ratios relative to other alternative assets*
- *Small weightings of bitcoin also have an outsized positive impact on diversification relative to other alternative assets*
- *Increasing a risk budget by only 120 basis points suggests a portfolio weight of just under 4% in a traditional 60/40 equity/bond portfolio*
- *A portfolio weighting of 4% achieves a Sharpe ratio of 1.67, a correlation fall of 15% and an increase in maximum drawdown of 1.3%*

As we discuss above, bitcoin is an asset in its infancy, leading many in the investment industry to struggle allocating it into the correct "bucket". We believe it is beginning to mature into a store of value although this is not how it has behaved in the past. Nevertheless, we believe a backtest of its performance in a portfolio can deliver valuable insights. Our analysis highlights that it both enhances returns and increases diversification regardless of the length of the backtest.

To test how bitcoin would help or hinder a portfolio we created a database of daily returns starting from 2015 when it was first financialised (available as an ETP). Limiting our risk budget to an additional 120 basis points, we created a traditional balanced portfolio with 60% equities and 40% bonds and then added a notional 4% bitcoin, detracting from both equities and bonds equally. As bitcoin is an asset in an early growth phase, most investors would allow its portfolio weight to drift to some extent. We have decided to rebalance on a quarterly basis--despite its potential hindrance on enhancing returns--because we believe rebalancing helps moderate volatility.

Our analysis, as indicated in the table below, highlights that despite bitcoin's volatility it has enhanced annualised returns by 9.7%. The Sharpe ratio (volatility adjusted returns) is 1.67 while the correlation falls by 15%.

Various Asset Classes Performance in a balance portfolio (since Oct 2015)

	Portfolio (60/40) benchmark	Portfolio (4% Bitcoin)	Portfolio (4% gold)	Portfolio (4% SOCL)	Portfolio (4% CRB)
annualised returns	9.1%	**18.8%**	9.3%	9.8%	8.7%
max drawdown	16.7%	**18.1%**	16.3%	17.4%	16.5%
volatility	8.6%	**9.8%**	8.3%	8.9%	8.3%
correlation	-	**84.8%**	99.8%	99.8%	100.0%
tracking error	-	**5.2%**	0.6%	0.7%	0.3%
beta	-	**0.74**	1.03	0.96	1.03
sharpe	0.78	**1.67**	0.84	0.83	0.76
IR	-	**1.86**	0.41	1.03	-1.08

Source: Bloomberg, CoinShares, data available as of close 23 July 2020

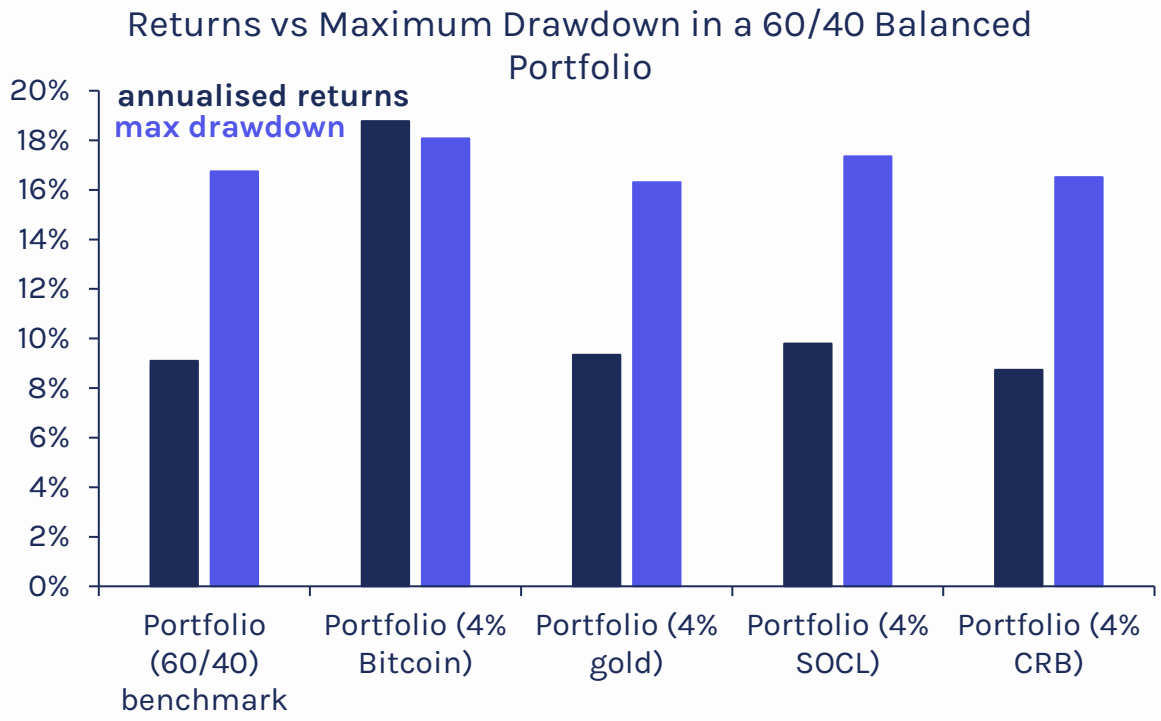
Data derived from a balanced 60/40 quity/bond portfolio, with an equal weight detraction to allocate to bitcoin, gold, SOCL or the CRB. MSCI World total return, Bloomberg Total Return 7-10 year bond, XBTUSD, Gold, SOCL and CRB indices are used. Rebalanced per calendar quarter.

We have also included other comparable assets:

i. Gold due to bitcoin being often likened to digital gold.
ii. The SOCL index, a social networking index (including companies such as Facebook and Google) as bitcoin has been more closely correlated to this equity index than others in recent years.
iii. Finally, the CRB index, a representative indicator of today's global commodity markets due to its similarities to commodities.

> *"Despite bitcoin's volatility, a 4% portfolio weighting does not materially increase the maximum drawdowns relative to other assets…"*

Over the same period none of the other comparable assets or indices offer the same diversification benefits. What also stands out is the asymmetric return profile. Despite bitcoin's volatility, a 4% portfolio weighting does not materially increase the maximum drawdowns relative to other assets, while its annualised returns are close to double that of the comparisons.

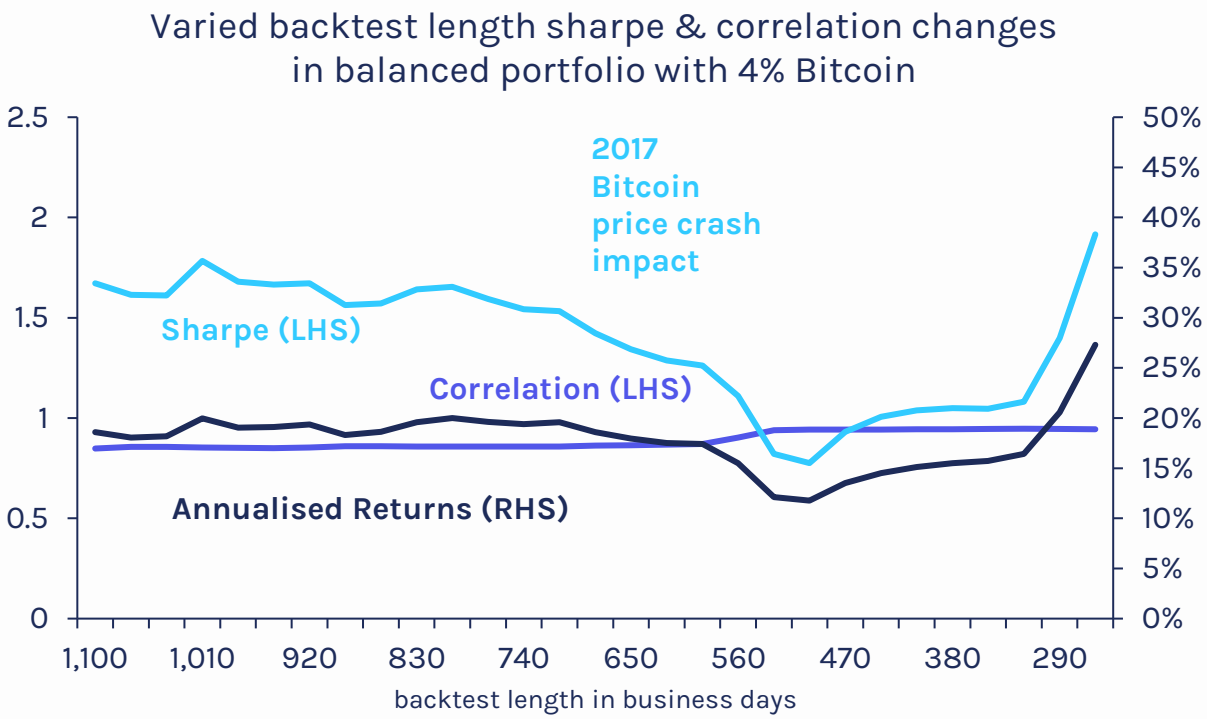


Source: Bloomberg, CoinShares, data available as of close 23 July 2020

The backward-looking problem

A main weakness of this type of analysis is that it is backward-looking. Investments are likely to perform and behave differently in the future than they have in the past. This could be particularly relevant as we argue that bitcoin's identity is steadily changing.

This does not mean we should dismiss this analysis. The chart below highlights varied backtest lengths, from 290 days on the right through to 1100 days on the left. We are encouraged to see that correlation of a bitcoin portfolio relative to the standard 60/40 equities/bond portfolio remains consistently lower than comparable assets such as gold or commodities, highlighting that bitcoin is a much better diversifier. Bitcoin's consistency is also significant. Even through exceptionally volatile periods for bitcoin, its correlation and annualised returns have remained remarkably consistent.

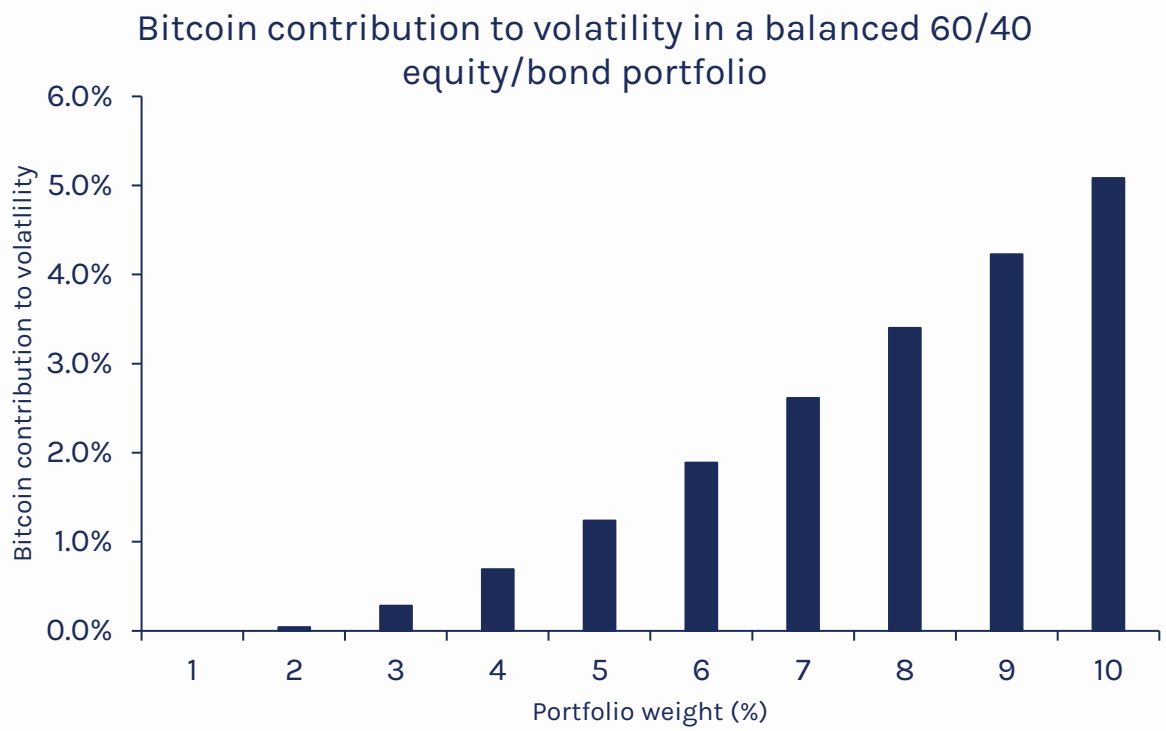


Source: Bloomberg, CoinShares, data available as of close 23 July 2020

Interestingly, even if bitcoin was added to a portfolio at the peak, in December 2017, when prices fell dramatically, it would still enhance portfolio returns with a reduced, but significantly better Sharpe ratio, relative to other portfolio diversifiers such as gold or commodities. From the peak in December 2017, bitcoin returns are currently -24%, it should therefore detract from the overall portfolio Sharpe ratio. Our calendar quarterly rebalancing has helped limit the impact of bitcoin volatility. We see similar results from monthly rebalancing, suggesting regular rebalancing has been an effective approach to moderate overall portfolio volatility.

How much bitcoin?

Bitcoin does increase volatility. So how much should be added to a portfolio? There are several ways to approach this. One method is volatility targeting. By our analysis, targeting an increase in volatility of 120 basis points would suggest a bitcoin portfolio weight of just under 4% in a traditional 60/40 equity/bond portfolio.



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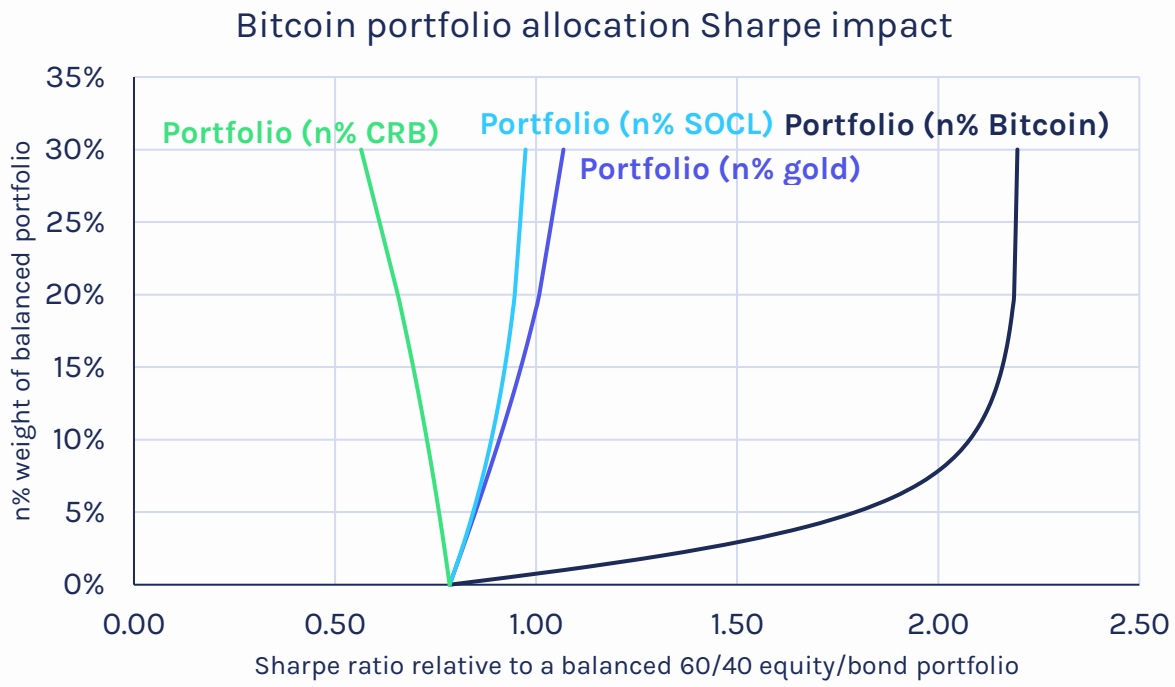
An alternative approach is to blend the risk and reward by analysing the impact on the portfolio Sharpe ratio in varying bitcoin portfolio weights.



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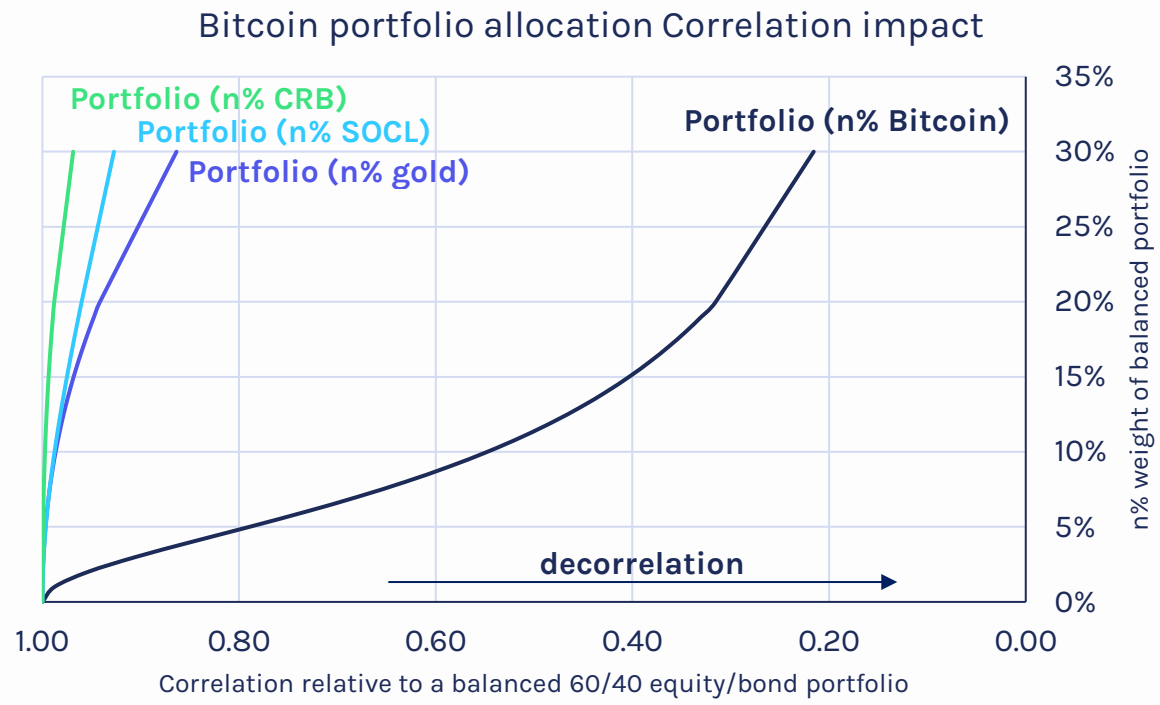
"…most significant improvements in the Sharpe ratio are gained through an allocation of up to 10% bitcoin in the portfolio."

The backtested results over almost 5 years indicate that the most significant improvements in the Sharpe ratio are gained through an allocation of up to 10% bitcoin in the portfolio. This highlights that even a small addition of bitcoin has a big impact on the Sharpe ratio. We have also included other comparable assets and indices, over the same time period they have had little impact relative to bitcoin on the Sharpe ratio, even when extreme weights are applied.

Does bitcoin decorrelate?

Bitcoin is a unique asset and we find it to be an effective diversifier in multi-asset portfolios. Applying the same methodology as above, using correlation as the target, indicates that a 4% bitcoin portfolio weight reduced correlation to a 60/40 balanced portfolio by 15%.



Source: Bloomberg, CoinShares, data available as of close 23 July 2020

Gold has a similar impact in diversifying a portfolio, although portfolio weights above 20% are required to achieve any substantive impact on diversification. Bitcoin is converse to this, with minimal weights having a far greater impact.

In conclusion, Bitcoin's investment characteristics have historically made it attractive both as a driver of returns and a portfolio diversifier. Compared to other common alternatives and diversifiers, Bitcoin delivers outsized positive impacts on returns, Sharpe ratio and diversification, even at very low allocation sizes. Given these benefits, Bitcoin may well be suited to fill the current gap in available diversifiers troubling portfolio managers.

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