Bank of Melbourne

Cryptocurrency Special Report

Part 3: Questionable Portfolio Benefits

December 2022

Summary

- Proponents of cryptocurrencies have suggested several reasons why adding exposure to cryptocurrencies may add value to traditional investment portfolios, including as a: diversifying asset, store of value, inflation hedge, and safe-haven asset (i.e. digital gold).

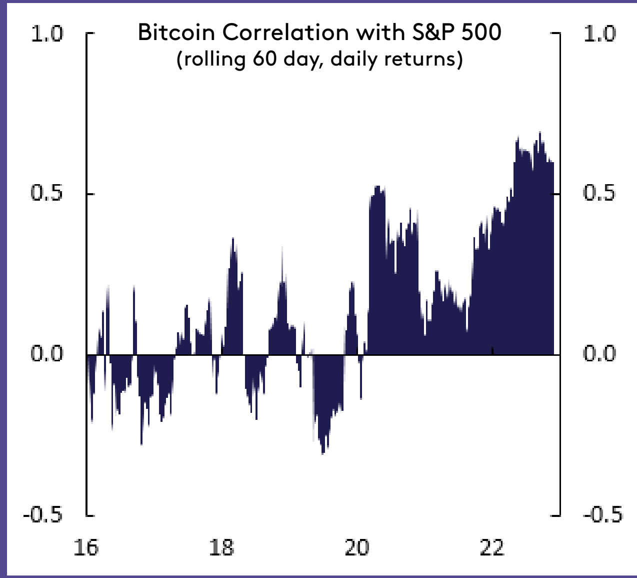
- Bitcoin has become increasingly more correlated with traditional risky assets, such as equities. Additionally, the markets are becoming more interrelated. Authors from the International Monetary Fund found that Bitcoin volatility explained about one sixth of the volatility of the S&P 500 during the pandemic, and around one tenth of the returns.

- Cryptocurrencies exhibit the characteristics of a highly speculative asset. Bitcoin and other cryptocurrencies have exhibited extreme volatility and very large drawdowns. Since 2014, Bitcoin has experienced drawdowns of more than 70% from its previous peak.

- Cryptocurrencies have not acted as an effective hedge against inflation during a period of elevated US and global inflation as economies recover from COVID-19. Additionally, they have not acted as a safe-haven asset during periods of heightened risk aversion and market stress.

- Cryptocurrencies do not have positive expected returns or intrinsic value. Additionally, they are zero-sum, or even negative-sum, transactions. Their long-term value is unclear, highly speculative and price growth relies on new investors buying in at higher prices.

- At the current time, the evidence does not appear to support the claim that cryptocurrencies can be used effectively for the purposes claimed by proponents.



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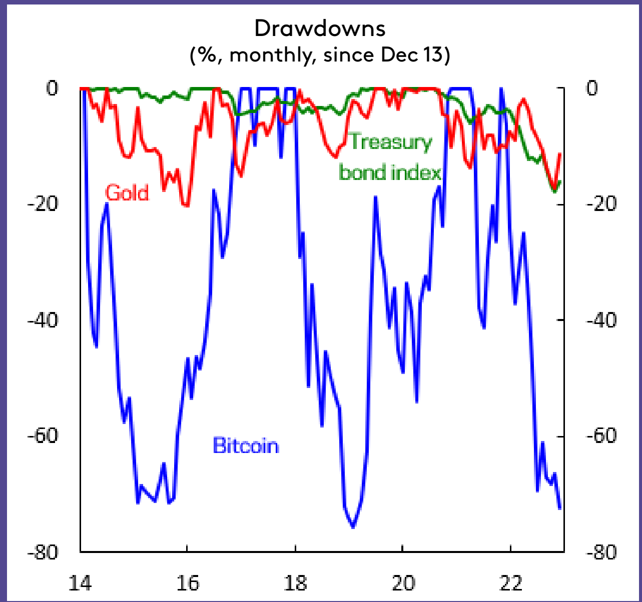

Source: Bloomberg

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Potential Uses for Cryptocurrency

Proponents of cryptocurrencies have suggested several reasons why adding exposure to cryptocurrencies may add value to traditional investment portfolios.

It is worthwhile considering these and assessing whether the evidence supports the function of cryptocurrencies in these ways.

This paper focuses on the highest profile and most traded cryptocurrency, Bitcoin. However, the conclusions drawn from this analysis also apply to other cryptocurrencies as they are highly correlated with Bitcoin.

Potential uses of cryptocurrencies in investment portfolios include:

1. Diversifying asset
2. Store of value
3. Inflation hedge
4. Safe-haven asset (i.e. digital gold)

Diversifying Asset

In investing, diversification is the only free lunch, as was reportedly said by Nobel Prize laureate & father of modern portfolio theory, Harry Markowitz.

In constructing a diversified investment portfolio, adding assets which have low (or negative) correlations with other assets can reduce overall portfolio volatility, while having less impact on the expected return. The result is an increase in the risk-adjusted expected return of the portfolio.

Adding assets with positive risk premiums and expected returns (i.e. positive expected return over time as compensation for risk), but low (or negative) correlations provides the most benefit to investment portfolios. The most common portfolios are constructed using a mix of equities and bonds.

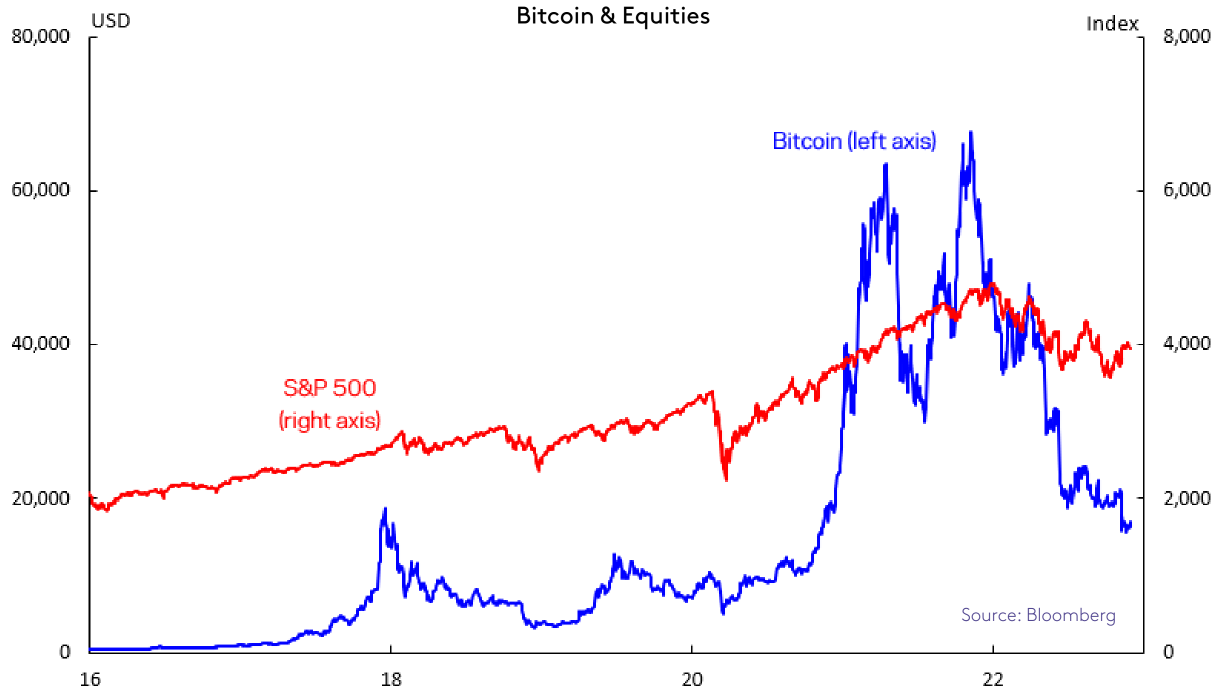
However, depending on the correlation of an asset with other assets in a portfolio, adding assets with no expected return (or even negative expected return) can still provide a diversification benefit to the overall portfolio. However, this relies on low (or negative) correlations continuing.

For example, many investors include commodities, such as gold, in their investment portfolios. These do not generate dividends or other earnings and would not be expected to have positive returns over time (once accounting for inflation). However, many investors view the diversification benefit that such assets can provide during market downturns as valuable and their low (or negative) correlations with other assets can improve the risk-adjusted return of an entire portfolio. Additionally, commodities have intrinsic value.

Despite many government bonds over the past decade having negative nominal yields, adding them to an investment portfolio has still provided a diversification benefit.

Cryptocurrencies have been promoted as a potential diversifying asset due to their historically low correlations with equity markets and other asset classes.

While correlations have been relatively low in the past, these have increased considerably (particularly against equities) as they have become more popular. The returns of cryptocurrencies have also become more closely intertwined with broader equity market returns. However, the price movements of Bitcoin have been significantly larger than major equity indices (e.g. S&P 500), both on the upside and downside.

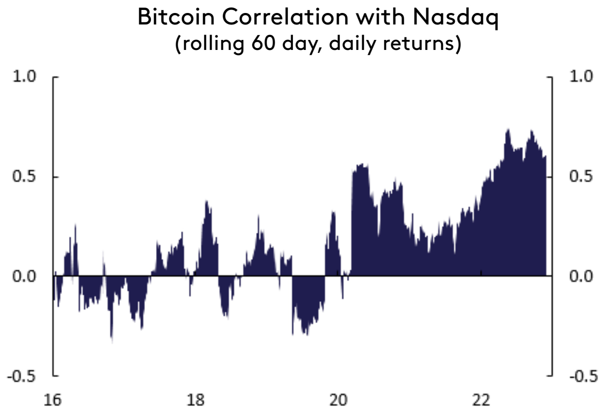


The correlation of Bitcoin with the S&P 500 and Nasdaq stock indices has increased considerably over recent years. This is particularly true since the beginning of the COVID-19 pandemic. Since mid-2022, the correlation has been around 0.60 - 0.70. This means that the returns of Bitcoin have become more highly connected to the returns of broader equity markets.

The higher correlation with other risky assets reduces the diversification benefit that may have existed in the past. Current or future diversification benefits may also be lower than what may have been initially perceived by cryptocurrency proponents.

Given the relatively short history of cryptocurrencies and the rapidly increasing correlation with other risky assets, there is not enough evidence to conclude that correlations with other asset classes are likely to be low in the future.

Indeed, correlations between asset classes can change considerably over time, even for established assets. Varying correlations can impact the effectiveness of investment strategies built on the assumption that historical correlations will continue. For example, the correlation between stock and bond returns have varied throughout history. This can impact the diversification benefits provided through the addition of the two asset classes in investment portfolios.



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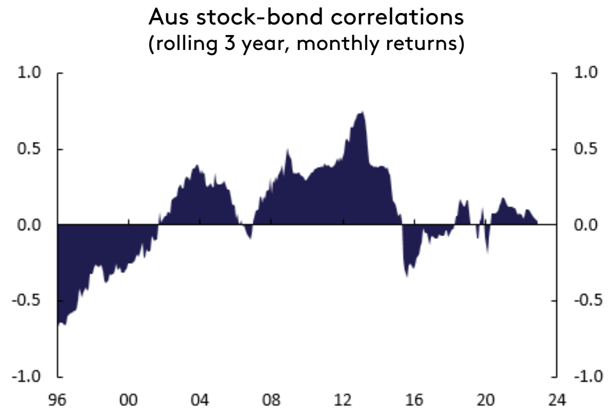

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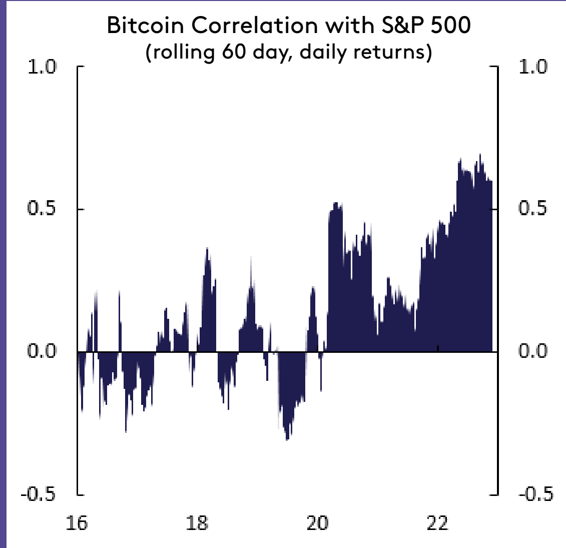

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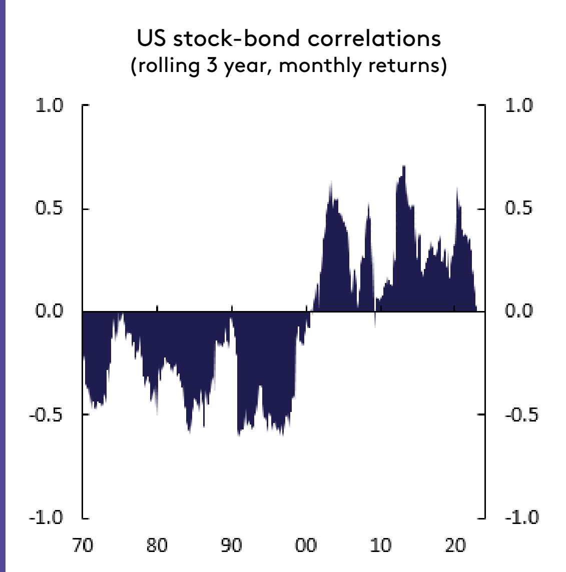


Source: Bloomberg

Store of Value

An effective store of value is an asset that has low volatility and maintains its value over time (particularly after inflation).

Cryptocurrencies have exhibited extreme volatility since their inception. While this has reduced as they have become more popular, the volatility of cryptocurrencies remains much higher than traditional asset classes.

Inflation Hedge

Many proponents suggest that cryptocurrencies can act as a reliable hedge against inflation, that is, maintain their value in real terms during periods of elevated inflation.

Fiat currencies issued by governments have no theoretical limit on the amount of money in circulation. On the other hand, many cryptocurrencies, particularly Bitcoin, have a built-in deflationary bias. The supply of Bitcoin is limited to 21 million coins. Proponents argue that the limited supply of Bitcoins will support its value as inflation contributes to a devaluation of traditional fiat currencies.

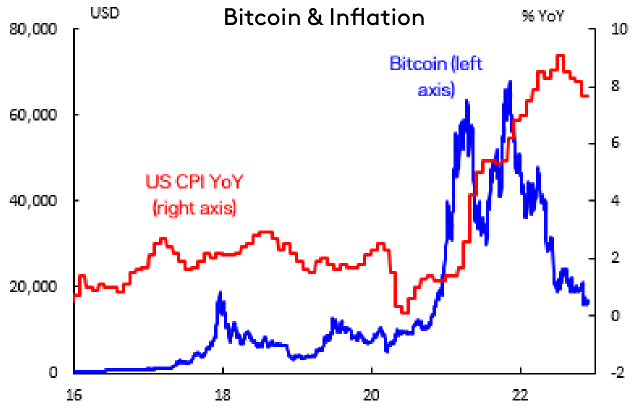
However, there are flaws in this argument. While the supply of Bitcoin is limited, the supply of cryptocurrencies, which are substitutes for Bitcoin, is unlimited. There are currently over 10,000 cryptocurrencies in existence, with new coins being created every day. Not all cryptocurrencies share Bitcoin's characteristic of a strictly limited supply and can also be inflationary. Additionally, cryptocurrencies can change their structure over time. As such, it is possible that Bitcoin's supply may increase beyond 21 million if the majority of the network agrees to such a change.

The idea of Bitcoin acting as an inflation hedge faced its first major test in 2022. During this period, US headline inflation spiked to as much as 9.1% over the year to June 2022. But Bitcoin so far hasn't passed the test.

The price of Bitcoin dropped from around US$10,000 prior to the pandemic (February 2020), to a low of around US$5,000 in March 2020, before surging to an intraday peak of over US$68,000 in November 2021. However, since then, the value of Bitcoin and the market capitalisation of all cryptocurrencies has collapsed by over 70%.

In contrast, other risky assets have experienced much smaller declines. The S&P 500 fell by around 20% from its peak in January 2022 and the Nasdaq dropped by around 30% from its peak in November 2021. Gold, often considered a safe-haven asset and inflation hedge, has largely traded in a US$1,600 to US$2,000 range since March 2020.

This drastic fall during a period of elevated inflation demonstrates that Bitcoin is not an effective hedge against inflation.



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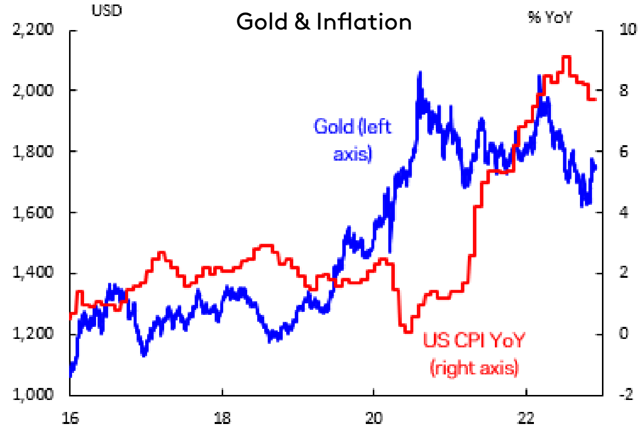


Source: Bloomberg

Safe-Haven Asset (i.e. Digital Gold)

Proponents often liken Bitcoin to a form of digital gold. Gold has been shown to act as an inflation hedge over the very long term and is considered a safe-haven asset during periods of market stress.

Gold also has intrinsic value as a commodity and its supply is inelastic in the short term, which are important characteristics for an asset to be an effective inflation hedge.

As Bitcoin is inherently scarce it is often compared to other scarce commodities, such as gold. However, scarcity alone is not enough for an asset to act as an inflation hedge or a safe haven in periods of stress.

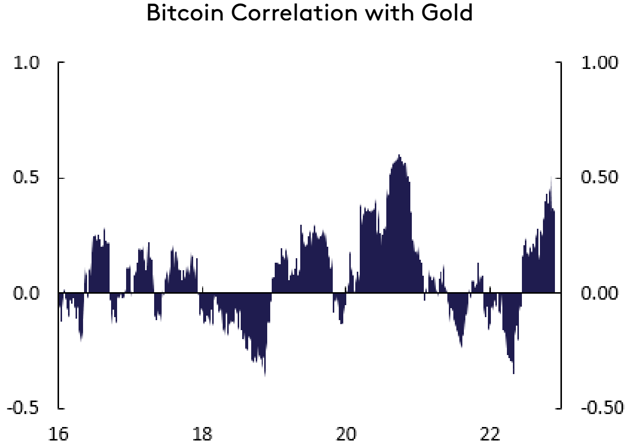
Gold has been used for thousands of years as money and a store of value. Governments throughout history issued currencies that were either made of or fully backed by gold (or other precious metals, such as silver). Currencies remained backed by gold until the fall of the Bretton Woods system in the early 1970s.

The historic use of gold supports it being considered as a store of value and safe-haven asset by market participants. Additionally, the intrinsic value of gold (and other commodities) is above zero due to various uses (e.g. jewellery and electronics).

In contrast, Bitcoin has only existed for a little over a decade and has only garnered interest from institutional investors in the last few years. During that time, the price of Bitcoin has been incredibly volatile, with drawdowns of over 70%. Additionally, cryptocurrencies have no intrinsic value or industrial use to reinforce their value in times of market stress.

The correlation of Bitcoin with gold has shifted considerably over time, and the value of Bitcoin and other cryptocurrencies has fallen sharply during periods of market stress, such as the beginning of the COVID-19 pandemic and the market downturn in 2022. An asset experiencing drastic falls during periods of market stress is the opposite of what investors are seeking from a safe-haven asset.

Bitcoin has exhibited large and prolonged drawdowns during its relatively short history. This contrasts with assets which are typically considered to be safe havens, including gold and US government bonds. Since 2014, Bitcoin has exhibited drawdowns of over 70% from a previous peak. Over the same period, the maximum drawdown exhibited by gold was significantly smaller, at around 20%. Similarly, the maximum drawdown of the Bloomberg US Treasury Total Return Index, which includes US government bonds of varying maturities, was typically less than 5% over the same period.



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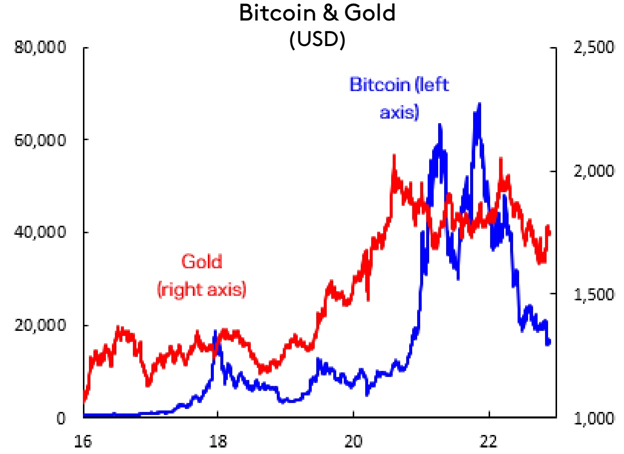


Source: Bloomberg

This increased to a peak of around 20% during the market downturn in 2022, where bond prices were significantly impacted.

Large and prolonged drawdowns highlight Bitcoin's volatility and question its use as a store of value.

Market Dominance of Bitcoin

Additionally, there are questions as to whether Bitcoin will remain the largest cryptocurrency in the future. This may further undermine its use as a form of digital gold.

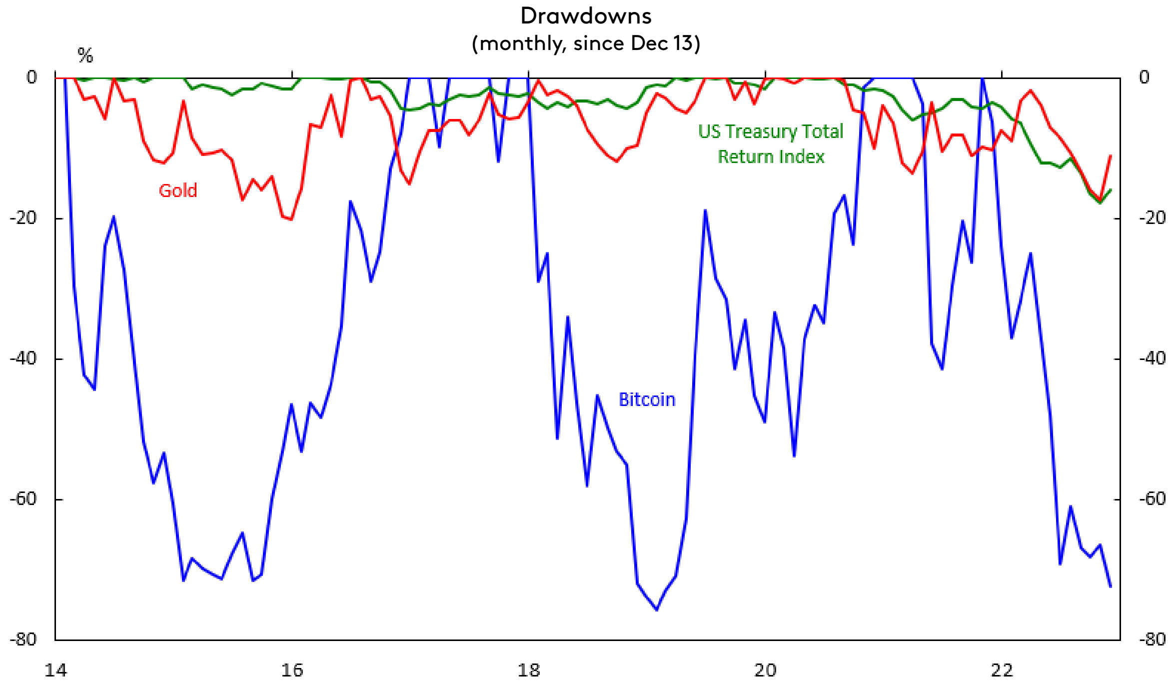
While Bitcoin remains the largest cryptocurrency, its dominance has fallen over time. Currently, Bitcoin accounts for less than half of the total cryptocurrency market capitalisation.

Bitcoin benefits from a first mover advantage and strong network effects relative to other digital currencies. However, those factors do not guarantee that it will remain dominant. It is not unusual for first movers in an industry to be overtaken by their competition over time.

Rapid innovation and change continue. However, much of this is happening on other chains, particularly those that can handle smart contracts, such as Ethereum.

Additionally, Bitcoin faces numerous challenges, including the speed and cost of transactions and the enormous environmental footprint of the network.

There are over 10,000 cryptocurrencies and more are being created daily. Some will prove more valuable than others. However, picking the winners today is an exercise with a low probability of success.



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Summary

Cryptocurrency supporters have proposed a range of potential uses for cryptocurrencies in traditional investment portfolios. However, the current evidence does not appear to support these claims. Cryptocurrencies remain a highly speculative instrument. Cryptocurrency investors may experience extreme volatility in their holdings and investments in cryptocurrencies may experience significant losses.

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