AT A GLANCE

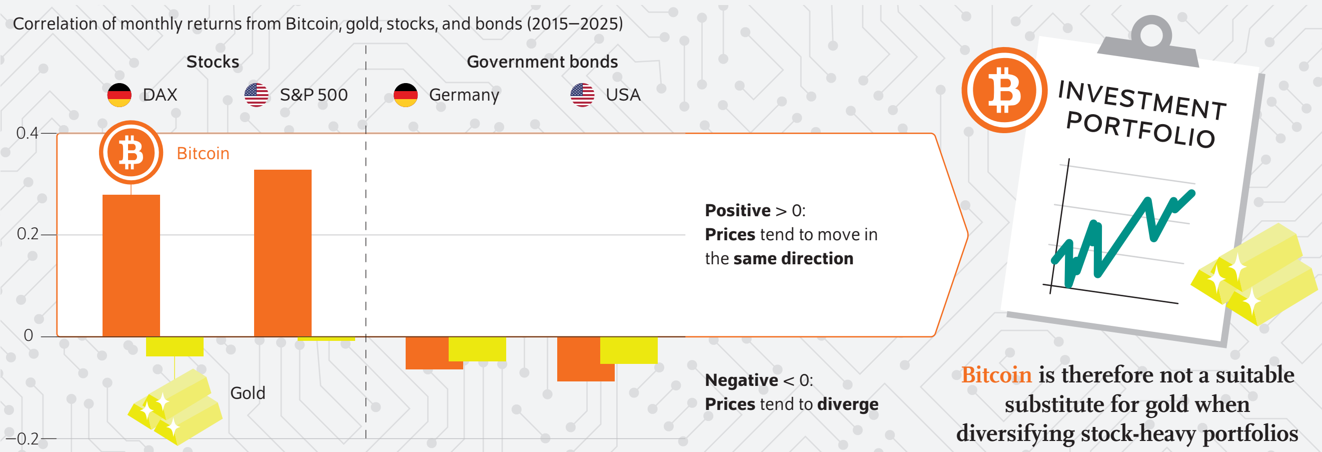
Bitcoin is not the new gold

By Alexander Kriwoluzky and Christoph Schneider

- The study examines the returns from Bitcoin and gold compared to stocks and government bonds in Germany and the U.S. Gold is regarded as a safe haven since its returns are not linked to stock or bond returns, particularly in times of crisis
- In contrast, calculations of returns over the past ten years show a strong correlation between Bitcoin and stock returns over the past decade
- The price of Bitcoin also fluctuates substantially, making it a riskier investment than gold, which is recognized as a traditional store of value
- Therefore, Bitcoin is not a suitable substitute for gold in portfolio diversification

Strong correlation between Bitcoin returns and stock returns, making Bitcoin unsuitable as a safe haven like gold

Correlation of monthly returns from Bitcoin, gold, stocks, and bonds (2015–2025)



Source: Datastream; own calculations.

Note: correlation coefficient on a scale of +1 (positive correlation) to −1 (negative correlation).

FROM THE AUTHORS

„We observe that when stock prices go up and people buy stocks, the price of bitcoin also goes up. Conversely, when stock prices fall, the price of bitcoin falls. Therefore, bitcoin is not a good investment if you want to diversify your portfolio."

— Alexander Kriwoluzky —

MEDIA

Audio Interview with Alexander Kriwoluzky (in German)
www.diw.de/mediathek

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ABSTRACT

The price of cryptocurrency Bitcoin has risen sharply over the past ten years, with many investors adding Bitcoin to their portfolios, benefitting from price increases and diversifying their investments. But is Bitcoin suitable for this purpose? This Weekly Report examines the extent to which Bitcoin, like gold, can contribute to the diversification of an investment portfolio. To achieve this, we have calculated the correlation of monthly returns over the last ten years between U.S. and German stocks, bonds, gold, and Bitcoin. The results of our calculations indicate that, unlike gold, Bitcoin has shown a high correlation with stock market returns over time. As a result, an investment portfolio heavily weighted towards stocks cannot achieve the same level of diversification with Bitcoin as it could with gold.

Among the major winners of 2024 were investors who held Bitcoin in their portfolios at the beginning of the year and benefited from its sharp price rises throughout the year. After all, the price of Bitcoin surged from around 40,000 US dollars to almost 100,000 US dollars. One reason for the sharp price increase was the speculation leading up to the U.S. elections about Bitcoin becoming a new currency reserve. Former German Finance Minister, Christian Lindner, followed the hype and, in December 2024, called for Bitcoin to be added to Bundesbank and European Central Bank currency reserves.[1]

Many remain skeptical simply because Bitcoin prices have experienced significant fluctuations in recent years. This is because, unlike stocks and bonds, Bitcoin is an asset that does not inherently hold any intrinsic value. Stocks derive their value from future dividends paid by companies, while bonds pay interest and are backed by governments or corporations that guarantee interest payments and principal repayments. Bitcoin lacks these characteristics. In fact, in some ways, Bitcoin is more similar to gold as a store of value.

Like gold, Bitcoin pays neither dividends nor interest. Both Bitcoin and gold share another characteristic: a finite supply. This is a compelling argument because the profit from Bitcoin or gold comes solely from selling it at a higher price than it was purchased for. As demand increases and supply remains limited, the price inevitably rises.

However, not everything that is rare is inherently valuable. People must also find it appealing or beneficial. Humans have been fascinated by gold for thousands of years, with most of the gold extracted from the earth used for jewelry. Whether Bitcoin will experience the same level of stable demand as gold remains to be seen. On one hand, there is relatively stable demand for Bitcoin from criminal activities or from states wanting or needing to circumvent the SWIFT payment system. On the other hand, there are other cryptocurrencies that serve as viable substitutes for Bitcoin—much like

1 Tagesschau.de, *Lindner schlägt Bitcoin-Reserve bei der EZB vor*. Article dated December 29, 2024 (available online). This applies to all other online sources in this report unless stated otherwise.

DOI: https://doi.org/10.18723/diw_dwr:2025-9-1

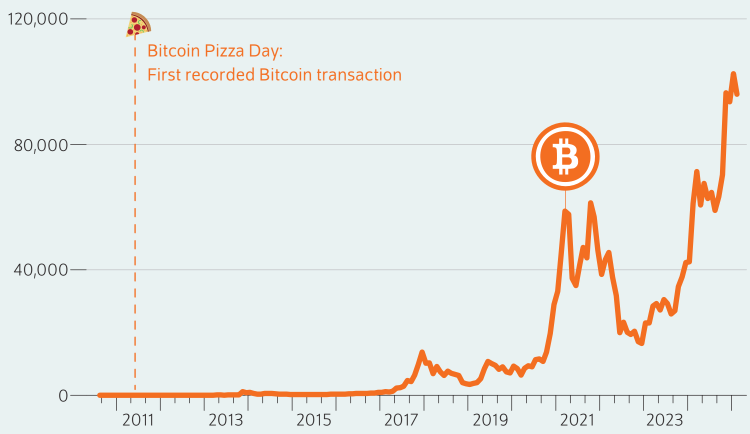
silver is a good substitute for gold. This means that cryptocurrency users may switch to Ethereum, Tether, or Cardano rather than pay increasingly higher prices for Bitcoin. One advantage of Bitcoin is its status as the world's most well-known cryptocurrency, giving it a certain brand value.

In addition, both Bitcoin and gold protect investors against the inflation of fiat currencies such as the euro or US dollar. When the purchasing power of the euro or dollar declines, Bitcoin or gold investors are unlikely to sell their holdings at the previous exchange rate. In this situation, the value of Bitcoin or gold increases, effectively protecting investors from the loss of purchasing power caused by inflation.

Gold is widely appreciated for its ability to retain value in times of crisis, especially when the prices of stocks and bonds are falling. In such uncertain periods, gold provides investors with a safe haven. This is one of the main reasons why many investors include gold in their portfolios. In this Weekly Report, we examine whether Bitcoin is also comparable to gold in this respect. Specifically, we explore to what extent Bitcoin and gold constitute stable alternatives to stocks and bonds—especially when these assets are losing value.

Figure 1

Price of Bitcoin
In US-Dollar



Source: investing.com

Bitcoin price fluctuates substantially but rose sharply, especially in 2024.

Bitcoin price subject to strong fluctuations

First introduced in 2009, Bitcoin is a digital currency based on blockchain technology. Unlike traditional currencies, Bitcoin is not controlled by a central institution such as a central bank or government. Instead, it operates on a decentralized network of computers that verify transactions and store them securely and transparently on a public ledger (blockchain), which cannot be subsequently altered. The total number of Bitcoins is limited to 21 million, making the currency scarce. To date, 20 million Bitcoins have been created through a process known as mining, in which specialized computers solve complex mathematical problems to validate transactions and add new blocks to the blockchain. In return, miners receive newly generated Bitcoins and transaction fees from users. The first documented transaction took place in 2010, when two pizzas were purchased for 10,000 Bitcoins. Since then, the Bitcoin community has celebrated Bitcoin Pizza Day every year on May 22. Bitcoin first reached a value of one US dollar in 2011 (see Figure 1).

Once Bitcoin surpassed the 1,000 US dollar mark for the first time in 2013, it sparked public interest and became widely discussed. The price of Bitcoin continued to rise sharply, reaching nearly 20,000 US dollars in December 2017. However, after this peak, its value fell sharply again.

In the 2020s, Bitcoin's value began to increase once more, surpassing the 60,000 US dollar mark. Interestingly, this price surge was fueled by support from institutional investors and broader acceptance among the general population, significantly expanding the investor base. Despite its higher prices, Bitcoin's value remained prone to strong fluctuations. From 60,000 US dollars in October 2021, the price fell to 15,000 US dollars in December 2022, before rising sharply again to over 100,000 US dollars by the end of 2024.

Gold is considered a safe haven in times of crisis

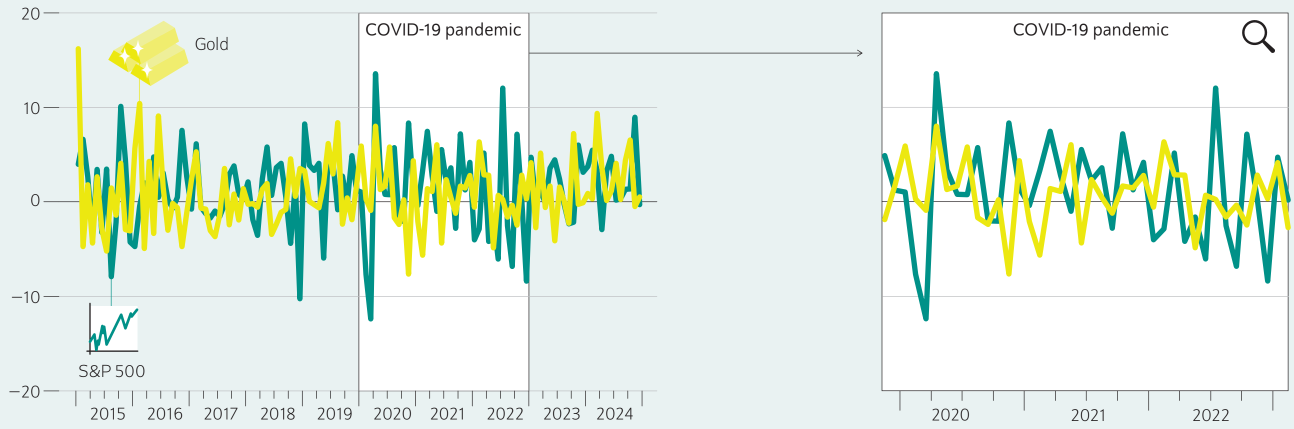
For thousands of years, gold has been regarded as a safe investment haven, typically preferred by investors in times of economic uncertainty.[2] This reputation was reinforced during the 2008/2009 financial crisis, as many investors turned to gold to protect their assets from major fluctuations and losses in value, resulting in a temporary surge in the price of gold. For example, on September 17, 2008, shortly after the collapse of investment bank Lehman Brothers, the price of an ounce of gold increased by more than ten percent. Overall, gold reached a new peak of 1,000 US dollars in 2008 and continued to rise to 1,900 US dollars before declining to 1,000 US dollars again in the 2010s as investors shifted their assets back into the more promising stock markets. In other words, the economic recovery and renewed confidence in the financial markets caused gold to lose some of its appeal.

At the onset of the COVID-19 pandemic, which led to global economic turmoil, many investors once again sought refuge in gold, driving the price of gold up to a new high of over 2,000 US dollars in 2020. Further global uncertainty, such as Russia's invasion of Ukraine, has since pushed the price of gold even higher, recently reaching a high of 2,900 US dollars. This price trend underlines the fact that many investors see gold as an indispensable instrument for portfolio

2 Ewa Feder-Sempach, Piotr Szczepocki and Joanna Bogołębska, "Global uncertainty and potential shelters: gold, bitcoin, and currencies as weak and strong safe havens for main world stock markets," *Financial Innovation* 10, no. 67 (2024) (available online); Michele Piffer and Maximilian Podstawski, "Identifying Uncertainty Shocks Using the Price of Gold," *The Economic Journal* 128 no. 616 (2018): 3266–3284 (available online).

Figure 2

Returns from gold and U.S. stocks (S&P 500)
Monthly changes in percent



Source: investing.com

Gold and U.S. stock returns fluctuate relatively independently, particularly in periods of economic uncertainty, such as the COVID-19 pandemic.

diversification. It provides stability in times of crisis, serving as a hedge against economic turbulence.

The price of Bitcoin tends to rise when the stock market is performing well

This Weekly Report examines the monthly returns of German and US stocks and government bonds since 2015, alongside changes in the prices of gold and Bitcoin. The return is the percentage price change over one month for Bitcoin, gold, and a stock or bond portfolio (including dividends and interest) from the US and Germany, respectively. We then determined the correlation between the returns of each asset class. Correlation values range from –1 to 1. A high positive correlation (values close to one) indicates that returns for both investments generally followed a similar trend. A correlation closer to zero suggests that there is no link between the development of the respective investment returns. With a high negative correlation (values close to minus one), positive returns from one asset class are accompanied by negative returns from the other asset class.

Investors strive to create a balanced portfolio with returns that are as stable as possible, meaning that portfolio returns should not have sharp peaks or troughs. This requires holding investments with low or no correlation, or ideally with a negative correlation. If the value of one investment rises while the other falls, it would be possible, with the appropriate weighting, to construct a portfolio whose value remains as stable as possible. In other words, the less the different investments correlate with one another, the better it is for the diversification of the portfolio.

This becomes evident when comparing the monthly returns from gold with those from the US stock market. They fluctuate unevenly (see Figure 2). Often, one return curve is positive while the other is negative. This is the case, for example, when economic uncertainty rises sharply, as it did after the Brexit vote in June 2016, at the onset of the COVID-19 pandemic in early 2020, and during the Russian invasion of Ukraine in February 2022.

In the following analysis, we examine the extent to which bitcoin, like gold, could act as a hedge against losses in equities or bonds.

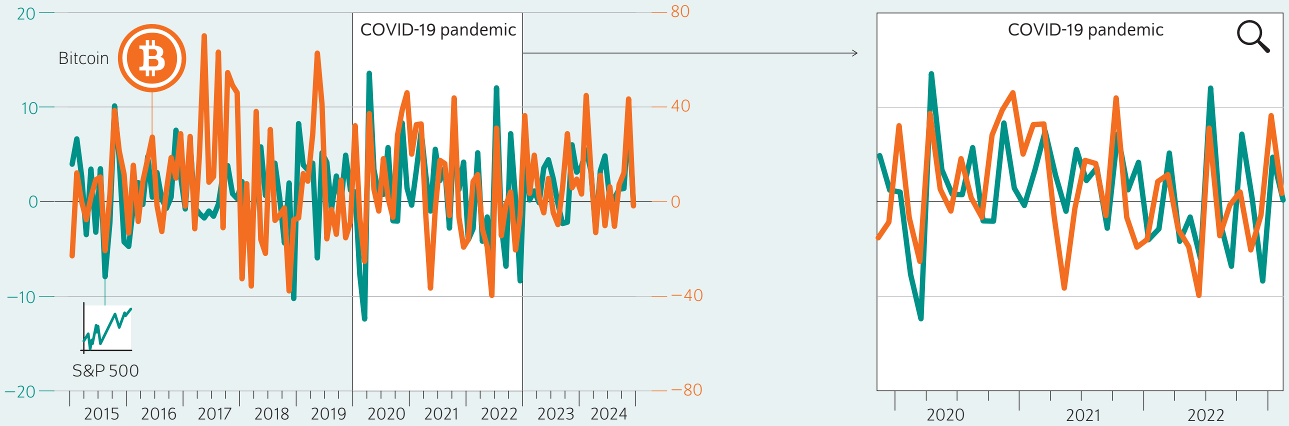
The analysis shows that returns from gold have no or a slightly negative correlation with returns from stocks and bonds, whether these are German or US (see Table). This means that the price of gold rises and falls relatively independently of stock and bond prices—which is precisely why it is so popular among investors.

Although Bitcoin returns show little correlation with bond returns in either country, they exhibit a significant positive correlation with stock returns: 0.28 with the German stock index (DAX) and 0.33 with the US stock index (S&P500). Both correlations are statistically highly significant (one-percent level), meaning the probability that the correlation is equal to zero is very low. In other words, since 2015, Bitcoin prices have tended to rise when the stock markets were performing well, but fell when they were not (see Figure 3).

This contrasts with returns from gold, which show no clear link to stock market returns. Thus, Bitcoin is, at least in this respect, not the new gold. Furthermore, there is hardly any correlation between Bitcoin returns and those of gold (0.04).

Figure 3

Returns from Bitcoin and U.S. stocks (S&P 500)
Monthly changes in percent



Source: Datastream; own calculations.

Bitcoin and the U.S. stock market have shown similar price trends since 2015.

This correlation is not statistically significant, meaning there is a high probability that it is effectively zero.

The analysis shows that, over the past ten years, German and US government bonds have provided better diversification for stock portfolios than Bitcoin and gold. However, this correlation could change again. In the 1970s and up until the 1990s, there was a positive correlation between government bonds and stocks.[3]

Past perfomance is no guarantee of future results

This analysis is limited, covering 2015–2025. While this period is sufficient to make statistically robust statements, the findings should also be viewed with a degree of caution. In the case of gold, it can be said with more confidence that the correlation will be similar in the coming years. Returns from gold and stocks have been uncorrelated or even negatively correlated for several decades, and it is unlikely that this correlation will change significantly. In contrast, the correlation between Bitcoin returns and those of the stock and bond markets has not been observed over such a long period. Further, correlations between financial market variables can shift over time. So far, Bitcoin tends to rise when stock markets perform well, driven by increasing demand. However, that could change in the coming years. Possible reasons for this might be Bitcoin losing value due to the increased use of another cryptocurrency or a change in investment behavior, which we certainly cannot rule out. Perhaps it will eventually become a safe haven, similar to gold.

Table

Correlation between price trends of Bitcoin, stocks, and bonds
Correlation coefficient ranges from +1 (positive correlation) to −1 (negative correlation)

	Gold	DAX[1]	S&P 500[2]	German government bonds[3]	US bonds[4]
Bitcoin	0.04	0.28***	0.33***	−0.06	−0.09
Gold		−0.004	−0.01	−0.05	−0.05

1 DAX: Index of Germany's 30 largest publicly traded companies (since September 2021, 40 largest)
2 S&P 500: Index of the 500 largest publicly traded companies in the U.S.

Note: The correlation coefficient ranges from −1 to +1. At a value close to +1, the two assets tend to have similar price trends. However, if the correlation is zero, returns tend to diverge. At a value close to −1, positive returns from one asset class are typically accompanied by negative returns from the other. The stars next to the values indicate the level of significance. The more stars, the lower the probability of error. ***, **, and * indicate the significance at the one, five, and ten percent levels.

Source: Datastream; own calculations.

Finally, it is important to note that this analysis contains a number of simplifications for the sake of clarity and understanding. For example, no complex portfolios have been constructed from the various investments and returns have not been adjusted for risk.

Conclusion: Bitcoin is not a suitable substitute for gold

Recent developments in Bitcoin's price highlight its volatile nature. While many investors have benefited from sharp price increases, Bitcoin remains a contentious asset, viewed as both a potential safe haven and a high-risk speculative investment. Like gold, Bitcoin's finite supply makes it

3 Alfie Brixton et al, A Changing Stock–Bond Correlation: Drivers and Implications. The Journal of Portfolio Management Multi-Asset Special Issue 49 (4), 2023: 64–80 (available online).

attractive to investors looking to profit from rising demand. However, while gold is globally recognized as a store of value due to its versatility and history spanning thousands of years, Bitcoin's status as a store of value remains questionable as it lacks a tradition of investment security in turbulent times.

The statistical analysis shows that Bitcoin investment returns have a positive correlation with stock market performance, meaning Bitcoin's price generally falls when the stock market declines. This is where Bitcoin differs significantly from gold, whose value typically rises in times of crisis, regardless of stock market performance. Unlike gold, Bitcoin does not offer a safe haven and is therefore not the new gold in this respect. Whether this dynamic will change in the future remains to be seen. Until then, government bonds and gold offer more stable options for diversification and hedging against stock market fluctuations.

The analysis also helps to answer the question of whether Bitcoin is a good investment for central banks: it is not. Bitcoin is too volatile and does not have the return characteristics of gold.

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LEGAL AND EDITORIAL DETAILS

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