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Can the bitcoin be considered as a a currency or an asset? : A review of literature

Taehun Kim

St. Johnsbury Academy Jeju, South Korea

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ABSTRACT

This study is based on academic literature rather than empirical analysis due to the absence of empirical data related to Bitcoin demand (currency vs. assets). This paper investigates Bitcoin's function as a financial asset (speculation, distribution, hedging, and safe assets) in the asset portfolio in terms of four aspects. First, some studies that show that Bitcoin cannot be recognized as a currency due to its lack of basic function as a currency, but many studies suggest the possibility of Bitcoin developing as a currency in the future. In order to monetize Bitcoin, tasks such as spreading adoption as a means of payment and settlement, establishing a legal system, and agreements between countries are placed. On the other hand, from an asset portfolio perspective, studies that refuse to recognize Bitcoin as a currency classify Bitcoin as a highly volatile profit-seeking speculative asset. Second, in terms of asset portfolios, Bitcoin is recognized as having a distributed function in correlation with other assets. Third, economic uncertainty indices recognize that Bitcoin has a hedge function against rapidly changing market volatility. Finally, Bitcoin is going to evolve like gold, although it is hitting the market, it has been found that it lacks functions as a safe asset such as gold. According to the literature review, Bitcoin's characteristics as an asset are not mutually exclusive with the financial asset characteristics of currency, raw materials, and stocks, and these characteristics mean that it can perform multiple financial asset functions of variance and hedge within the asset portfolio.

1.Introduction

Both blockchain and Bitcoin are self-regulated by protocol incentives, and all transactions in distributed work methods (the distributed ledger) are proven and recorded on computers and mobile networks, allowing Bitcoin users to access them but not to change them. Therefore, Bitcoin users can conduct economic and financial activities without using central institutions or intermediaries according to the blockchain technology processing and operation principles of the

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open distributed ledger, which is the transaction proof book, while avoiding double spending and security problems (Kiviat, 2015). Transactions made with digital signatures implement the blockchain technology of the public distributed ledger. With virtual asset bitcoin, which is an online digital currency, finance is now conducted through a third-party financial intermediary. Although it emerged as a payment infrastructure and digital currency that enables P2P transactions without intervention, bitcoin's asset value as digital gold is increasing due to a decrease in trust caused by the oversupply of dollars due to the expansion of monetary policy (Kayal and Rohilla, 2021).

As such, Bitcoin is developing as a means of payment in the digital economy, a reliable means to conduct monetary policy, and an alternative investment for investment portfolios that replace existing currencies. As more companies adopt Bitcoin as a payment method, monetization as a monetary policy means is proceeding in conjunction with the Central Bank Digital Currency (CBDC) (Dionysopoulos, et al., 2023). Meanwhile, Bitcoin's financial assetization is spreading, as it is recognized as an alternative investment along with the creation of a capital market and an investment market in the industry. 1) As such, Bitcoin's monetization and financial assetization are currently underway at the same time but the speed differs between countries.

Bitcoin changed into an asset with a strong nature of speculative transactions since 2017 as demand for it soared due to market expectations for capital gains rather than its function as a digital currency (Baur et al., 2018). In addition, it has not been included in the investment portfolio due to the prohibition of holding and purchasing an equity investment by domestic financial institution investors. These regulations have resulted in far more insufficient results in domestic research on Bitcoin compared to overseas research. However, advanced foreign countries have been legally promoting virtual currency transactions. As a result, research has developed into 1) bitcoin demand and price determinants, 2) financial stability and macroeconomic relationship, 3) cryptocurrency price behavior and market structure, and 4) correlations and functions between different financial assets on the status and role of Bitcoin within the financial asset portfolio (e.g. portfolio variance, speculation). Research has also been conducted from the perspective of hedging, and hedging safe assets.

As such, studies have fiercely discussed the problems and characteristics of virtual currency in the existing financial system (Tang et al., 20220). In the research topics below, the scope of the topic has widened and its depth has deepened as the efficiency of the Bitcoin futures market has progressed. Previous studies have analyzed Bitcoin's demand factors by various factors such as blockchain transactions, investor sentiment, virtual currency demand, and asset demand function (speculation, safe assets, distributed functions, and hedging) (Lee et al., 2020). Price fluctuations are analyzed by a single volatility model, jump model, and cluster model. If the nature of Bitcoin is important to the function of currency, the price determining factor of Bitcoin should be

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observed in terms of demand (Bergsli et al., 2022). If Bitcoin is analyzed as an alternative investment asset such as gold, it can be analyzed in relation to the demand for other assets (stock, foreign exchange, gold, bonds, short-term finance, etc.). If it has both the characteristics of money and assets, bitcoin should be analyzed in terms of both money and asset demand. Thus, this study is based on the literature rather than empirical analysis related to Bitcoin transactions. It reviews the characteristics and functions of Bitcoin within financial assets and suggests the implications of the use of Bitcoin as an asset.

2. The Benefits of Bitcoin as a Financial Asset

If Bitcoin cannot evolve into a currency due to its inherent problem, it is necessary to discuss whether it can be viewed as a financial asset and what characteristics it has (Fry, 2018). First, the basis for supporting Bitcoin as a financial asset is that it generates non-monetary benefits and can earn trading gains as a financial asset. In terms of benefits, Bitcoin itself does not generate monetary revenue cash flows like bonds or stocks (dividends), but it can be classified as a financial asset in that it obtains non-monetary benefits such as remittance, payment methods, and tax avoidance. Fundamentally, the intrinsic value of a financial asset is determined by future cash flows, and legalization (Geuder, et al., 2018). Since it is not, it can be seen that bitcoin does not have intrinsic value such as stocks or bonds. However, in the case of legalization, it is recognized as a financial asset without generating cash flows because economic entities can obtain useful benefits such as non-income benefits, that is, tax payments and securing liquidity, rather than cash flow benefits. Therefore, the intrinsic value of legalization is not zero. According to this logic, Bitcoin does not generate income flows, but it has non-monetary returns, which enable network transactions, tax avoidance, and black-market transactions (Cochrane, 2017). In the next section, we will recognize Bitcoin as a financial asset and focus on its functions in the financial market.

3. Functions of Financial Assets (Speculative Assets, Safe Assets, Dispersion, Hedging)

The contents created by Bitcoin's incorporation into the international financial market as a financial asset are as follows. First, Baur, et. al (2018), a cryptocurrency trading platform of the Chicago Mercantile Exchange and Intercontinental Exchange (ICE), listed Bitcoin futures and options contracts (CME: BTC, ICE: XBT) to open a derivative market that can promote Bitcoin futures trading while hedging against spot price risks. In line with this, a fund (the NYDIG Bitcoin Strategy Fund) has been released that allows institutional investors to invest in Bitcoin futures, and the Stock Exchange (SEC) is considering listing unapproved Bitcoin ETFs and ETFs that can invest in blockchain to avoid volatile cryptocurrencies also being released. Second, cryptocurrency digital tokenization is being applied to various assets. For example, FinHub under SEC has laid the foundation for Community Token Offering (CTO) and Security Token

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Offering (STO) to proceed by announcing the criteria for judging the securities of cryptocurrency in 2019 (Sec, 2025). Through this, in September 2019, Paxos, a virtual asset company, launched an Asset Backed Token, which corresponds to the tokenization of raw materials. Third, institutional investors such as hedge funds are incorporating Bitcoin into their assets. In the case of the hedge fund Renaissance Medallion Fund, according to the ADV Report (Form ADV) submitted to the Securities and Exchange Commission (SEC), Bitcoin futures were incorporated and reported a 39% high return as of April 2020 during the COVID-19 period (Hashdex, 2024). The report presents related risks along with Bitcoin futures investment details. Institutional investors' cryptocurrency investments are mainly made in the form of technology participation in crypto funds that invest in blockchain projects using private equity funds or distributing a certain portion of their portfolio to hedge funds that invest in Bitcoin. It is mainly approached as an alternative investment to a distributed function that lowers the investment risk of traditional assets such as stocks and bonds rather than a method of pursuing the return of a single Bitcoin investment with high volatility. As the perception of Bitcoin investment has changed, the number of participants in the investment market is also increasing as university donation managers invest in funds that include Bitcoin.

Some cryptocurrency analysts, reported in its first-quarter 2020 report that institutions account for 26% of Bitcoin's total circulation (Grobys et al., 2022). Compared to six months ago, the proportion of institutions' investment has gradually increased to 7%, which is an increase of about 10%compared to 12 months ago. Bitcoin's financial assetization is rapidly progressing in various fields as institutional investors increasingly move away from individual speculative investment, exceeding $18,000 in November 2020 from $13,000 in October 2018 based on Bitstamp, an international Bitcoin exchange. When recognizing Bitcoin as a financial asset, it is necessary to analyze the characteristics of the functional aspects of financial assets (speculation, safe assets, hedging, and dispersion) as a correlation between Bitcoin and other financial assets.

3.1. Speculative assets

Speculative assets refer to assets that continue to have a significant gap from intrinsic value or have high price volatility as a bubble occurs in prices. Cryptocurrency Bitcoin reported at least 13 price adjustments from January 2012 to August 2018 due to frequent bubbles. There are a number of studies on price volatility and speculative bubbles in Bitcoin. The empirical results classify Bitcoin as a speculative asset for its price bubble and trading behavior. Cascavilla (2024) is a representative researcher who considers Bitcoin as a speculative asset rather than money. The main reason is, first, that the money supply should be adjusted to meet economic growth, but Bitcoin has a limited supply problem. Second, Bitcoin is regarded as a speculative asset because the extreme price changes and volatility of Bitcoin prices, mainly due to sudden changes in demand, are greater than they are in raw material markets such as crude oil and gold.

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In addition, the lowest volatility of Bitcoin is lower than the highest monthly volatility of gold and other currencies, but the volatility of the upward plunge due to speculative overheating is extreme, proving that the average monthly volatility of Bitcoin is higher than that of gold and other currencies and that there is a speculative bubble. Wang et. al. (2019) suggested three variables (blockchain position, hedge rate, and liquidity) as the cause of the bubble, while suggesting the periods during which bubbles have appeared in bitcoin price behavior since 2009. It is also believed that Bitcoin has become a popular subject in the media, government organizations, and academia, which is for the sharp rise and plunge in prices. Domestic bitcoin price determinants are also considered speculative assets that are more strongly affected by psychological factors related to public interest such as the Naver Trend Index and newspaper articles than economic variables such as demand supply and real economic variables. This suggests that the Bitcoin speculative frenzy was more of an irrational bubble than an economic value. It also revealed that the cryptocurrency market acted as a substitute for stock market investment, as Bitcoin prices showed an inverse relationship with the net stock purchases of individual investors. Meanwhile, Kyriazis (2021) who are somewhat neutral, believe that the reason for the rapid volatility of Bitcoin prices lies in the uncertainty of its status as a currency, a commonly used exchange tool at some point in the future, and argue that these phase uncertainties make Bitcoin a speculative asset in the short term. In other words, due to the potential and uncertainty of Bitcoin as a global currency, Bitcoin prices will change unpredictably, and it is expected to go through the process of monetizing raw materials like gold. As such, they understand speculative phenomena as normal phenomena that occur because Bitcoin is monetized in the same way as digital gold, such as the speculative nature that appeared when raw material gold was monetized.

3.2. Safe-haven properties function

Gold was traditionally considered a safe asset for stocks and the dollar, serving as a shelter during times of economic downturn and inflationary pressure. In addition, because gold had the utility of acquiring goods and services in the market during the monetization process, economic players have increased their demand for it, and as a result, gold prices have continued to rise and will continue to rise until they stabilize to a certain level. Bitcoin also has the utility of acquiring goods and services in the market and can be thought of as a safe asset in the process of monetization. If investors recognize Bitcoin as a safe asset and invest in it (demand), Bitcoin and gold will become complementary goods, demand and prices will rise during periods of increased volatility (crisis), and demand and prices will fall during periods of reduced volatility (economic growth). Shahzad et al. (2019) suggested that Bitcoin's role as an asset can be a safe one even if it is time-varying and varies depending on the market, while a number of empirical studies have shown that Bitcoin is not a safe asset compared to gold.

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3.3. Portfolio distribution capabilities

Will there be a decentralized effect on other currencies and financial assets when Bitcoin is incorporated into the portfolio? Briere et al. (2015) noted that virtual assets increase the Sharpe ratio of distributed portfolios because Bitcoin has significant distributed benefits in asset allocation, and Bouri et al. (2017) estimated the correlation coefficients between Bitcoin and securities (stocks, bonds), raw material (comprehensive crude oil, gold, the raw material index), and foreign currency (the US dollar index). Studies have shown that Bitcoin's hedge and safe asset functions are weak, but they are suitable for distributed purposes. Platanakis and Urquhart (2018) suggested that Bitcoin contributes to the distribution of investor portfolios, even if it has its own unique idiosyncratic risks that are difficult to hedge. Further they also found that the risk-adjusted return increased when Bitcoin was incorporated into the stock-bond portfolio, and they found that the risk-adjusted return was high when Bitcoin was included in the stock-bond-community portfolio.

3.4. Hedge function

Recently, Halaburda et al. (2022) shows that Bitcoin has a hedging ability similar to gold, which can act as a hedge against the U.S. dollar and British stocks. This data supports Bouri et al. (2017) reports that Bitcoin has a hedge function against international uncertainties that occurred during the short-term investment period and the strong market during the boom period. This points to the fact that Mokni’s suggestion (2021) that Bitcoin can hedge economic uncertainty and volatility (VIX, EPU, and VSTOX). They argue that there is a significant negative correlation between Bitcoin price surges (negative skewness and skewness volatility) and economic uncertainty. Therefore, it is reported that the price plunge of Bitcoin was low when the market volatility index VIX, VSTOX, and EPU were high due to economic uncertainties. Therefore, it is suggested that Bitcoin can hedge market volatility indices of economic uncertainty.

3.5. Implication: Asset-Money Debate

Even in the United States, which defines virtual currency as a financial asset such as stocks, Bitcoin is still defined differently depending on the task of taxation and transaction information processing between currency and financial assets. For example, the Internal Revenue Service (IRS), which is the U.S. National Tax Service, emphasized the concept of financial assets and classified them as assets subject to capital gains tax when capital gains from Bitcoin are realized. On the other hand, it emphasizes the concept of currency in Bitcoin transactions and payment settlements in the Financial Crimes Enforcement Network (FinCEN) under the U.S. Treasury Department, requiring traders to register with Bitcoin exchanges and comply with regulations.

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The results of the empirical analysis focusing on the asset-currency debate on the nature of Bitcoin are summarized as follows. Ahmed et al. (2023) found that Bitcoin's investment trading volume and payment network transaction volume were close to speculative assets among assets-money by examining Bitcoin demand through a self-regression conditional variance model with Bitcoin price, Wikipedia search number, and news as independent variables. On the other hand, Ben (2019) states that Bitcoin is rich in the characteristics of safe assets such as gold. It was regarded as a speculative asset, suggesting that it was sufficient and that its function as a currency was limited. In particular, it was suggested that Bitcoin is a speculative investment tool through the multi-factor conditional variance model (multi-factor GARCH) and the turnover variable, a speculative transaction index. Horra et al. (2019), who emphasized the speculative nature of bitcoin demand, saw that the bubble in bitcoin prices is determined by short- and long-term demand for money as a means of exchange in the short term. In particular, they analyzed in detail whether it was a currency-financial asset using an error correction regression model for Bitcoin demand. They analyzed whether price volatility was a speculative means by including price volatility in the Bitcoin demand model as an explanatory variable and argued that speculative demand did not work in the long term and expectations for future utility as an exchange medium caused demand. In other words, the occurrence of bubbles in bitcoin prices differs in the short and long term. In addition, they suggested that Bitcoin is not required as a safe asset.

It was also found that Bitcoin has a combination of hedging, dispersion, and safe asset functions for other assets. First, Urquhart and Zhang (2019) analyzed the correlation with Bitcoin at the daily level from November 2014 to October 2017 and found a hedge function for the Swiss franc (CHF), euro, and British pound. As such, Bitcoin has been shown to function as a hedge, decentralization, and safe asset for each country's currency. Regarding the rapid volatility of the stock market, it was suggested that Bitcoin functions as a strong safe asset, but hedging and safe asset functions change over time. The above empirical research results show that Bitcoin's financial characteristics as a financial asset are not mutually exclusive to various financial assets such as currency, raw materials, foreign exchange, and stocks, and due to this nature, it functions as a complex and multiple financial assets for various assets. For example, gold historically started as a precious metal currency, became a raw material and a key asset, and became a safe financial asset for investors during the economic crisis, but it also had speculative demand as an asset during inflation. The material nature of gold is a raw material and an axis of the monetary system, and as a safe asset. It is sometimes also a speculative alternative investment method (in-kind, index-linked bonds, index ETF/ETN, gold mining corporate funds), Bitcoin is currently developing as a financial asset for various functions and purposes (money exchange, financing and investment, speculative, safe assets, and hedging).

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4. Conclusion

First introduced by Nakamoto in 2008, Bitcoin is a new financial asset (Corbet et al, 2019). It has emerged as an electronic cash system that can be paid online peer-to-peer (P2P) between equal classes of both parties without intervention from financial institutions. In addition, unlike most financial assets, Bitcoin is not related to any organization or institution (authority) and does not have a physical entity (physical representation). Therefore, its value is not dependent on tangible assets or the national economy, and all transactions are developing into low transaction costs and financial assets through free design between P2P, international, and governments based on algorithm security (Klein et al., 2018). However, some countries are still unwilling to accept it as currency as a means of payment due to concerns over lack of market acceptance and lack of certainty in the transaction system, and efforts have not been made to create a market as a financial asset. Compared to rapid virtual asset legislation, taxation policies, and governance establishment in developed countries, this is a sluggish situation combined with the fear of speculative transactions and capital outflows and the uncertainty of Bitcoin. Nevertheless, Bitcoin is currently developing in combination with the blockchain economy, attracting a lot of interest and innovative examples from industry, the media, and politicians, and attracting different attractions and interests from traditional assets for investors who incorporate virtual currency into their asset portfolio. The review of the essential characteristics of virtual currency between currency and assets through previous studies so far is summarized as follows. First, although Bitcoin's monetary function is denied (Yermack, 2013), in the long run, some studies assume Bitcoin's standard value (Ciaian et al., 2016). Ciaian et al. (2016) emphasized the monetary function in that the demand for transactions and payments causes bitcoin demand. Since then, they has classified the function of Bitcoin by dividing short- and long-term demand factors, as the price bubble of Bitcoin was caused by expectations for money as a speculative asset in the short term and a means of exchange in the long term.

Next, Bitcoin has recently been deeply incorporated into the financial market as an investment asset rather than a monetary function, including Bitcoin futures, Bitcoin-related companies ETF, and CTO. Also, Bitcoin's functions in the financial market are complex. First, Bitcoin is close to speculative financial assets with higher historical volatility than other financial assets (Yermack, 2015), and they have similar characteristics to raw materials (other than oil and carbon credits) that are exhausted due to the limited supply of Bitcoin (21 million). They define Bitcoin as a speculative asset, seeing that its monetization is not only uncertain but also limited regarding the possibility of it replacing the dollar, the key currency. Second, it is the possibility that Bitcoin may serve as a safe asset. The process and role of Bitcoin's incorporation into the financial system are similar to that of gold, a safe asset, but empirical results show that Bitcoin has not yet played the role of a safe asset such as gold (Klein et al., 2018). Third, it is the market hedge

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function of Bitcoin. Along with a study (Urquhart et al., 2019), Bitcoin allows economic uncertainty indices (VIX, EPU, and VSTOX) to hedge rapidly changing market volatility, it is reported that it has a hedging function against inflation. Finally, it is a distributed function from a portfolio perspective (Platanakis & Urquhart, 2018). Platanakis and Urquhart (2018) showed distributed benefits even when Bitcoin was incorporated into the stock-bond portfolio, and Bouri et al. (2017) showed distributed benefits when Bitcoin was incorporated into the asset portfolio that includes raw materials. To be evaluated more concretely, there must be an estimation of a bitcoin demand model that encompasses the blockchain economy and the financial asset market. On the other hand, further research is needed regarding the relationship with other assets and the establishment of a portfolio through bitcoin's price behavior under a heterogeneous volatility system.

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