

Would Bitcoin Relace World Currency in The Future: Analysis Based on Marx's Theory of Monetary Function

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Abstract. Bitcoin has received a lot of attention as a cryptocurrency in recent years. The paper focuses on determining if Bitcoin would replace world currency in the future, which compares Bitcoin with the US dollar and gold. The article considers qualitative analysis to discuss the bitcoin's characteristics based on Karl Marx's five different categories in his book *Das Kapital*: measure value, means of circulation, means of hoarding, means of payment, and universal currency. The paper presents the advantages and disadvantages related to Bitcoin compared to the US dollar and gold. The article finds that Bitcoin is more secure in saving and privacy. Also, it wouldn't be affected by inflation. However, disadvantages are also present when applying Bitcoin in the market. The volatility and value of storing would be a challenge to solve. The lack of population using it and the limitations of transactions would also be problems. The research illustrates that Bitcoin can't replace world currency in the short term, but in the long term, Bitcoin would be the mainstream currency to use in real life due to the performance of people, governments, and the world economy. The article is the first research to utilize Marx's theory to analyze whether Bitcoin could replace world currency in the existing literature. This paper recommends that governments of all countries establish a unified regulatory policy and security mechanism on a global scale to ensure the legitimacy, stability, and security of Bitcoin so that Bitcoin can truly become a world currency.

Keywords: Money function, Gold standard, US Dollar, Bitcoin, Blockchain.

1. Introduction

Bitcoin is an encrypted digital currency based on blockchain technology, which has the characteristics of decentralization and anonymity [1]. Due to the rapid development of digital currency, bitcoin is the leading currency that brings impacts to the world, including government policies, investor actions, company decisions, etc. Bitcoin might be the new world currency since the government currency is continuously losing value and more people distrust the government's decisions.

Bitcoin is popular to invest in recent years. Bitcoin's market capitalization hits \$3 trillion as of June 2021. According to bitcoinity.org data, the BTC trading volume on exchanges in the first half of 2023 exceeded 4.2 trillion US dollars, of which the highest monthly BTC trading volume of 1.2 trillion US dollars was set in March [2].

More and more investors are in the Bitcoin market to trade due to the high return and volatility in the value. Moreover, a lot of the world's top tech companies purchased Bitcoin as assets and believe in its performance. Whether bitcoin may change the existing financial currency system attracts people's attention.

The current international financial system is a world economic system dominated by the United States formed after World War II [3]. The World Bank, the International Monetary Fund, and the General Agreement on Tariffs and Trade have become the three pillars supporting world economic and trade relations. The characteristic of this system is that the U.S. dollar is linked to gold. Governments around the world stipulate the gold content of their currencies, and the exchange rate with the U.S. dollar is determined by the ratio of the gold content. Countries implement adjustable exchange rates to ensure the stability of currency values. This system makes the U.S. dollar equal to gold and becomes the most important international reserve currency in the foreign exchange reserves of various countries.

However, because the U.S. dollar transmitted the US subprime mortgage crisis to the world and triggered the global financial crisis, the adverse impact of the U.S. dollar on the economies of various countries gradually emerged. In addition, the interest rate hike policy of the U.S. dollar in recent years has also led countries to continuously adjust currency values in the foreign exchange market, affecting normal economic decision-making and not conducive to the recovery of the economies of various countries. When the Federal Reserve raises interest rates, the interest rate of the US dollar rises, causing global funds to flow to the United States, and the supply of funds in other countries decreases, which in turn affects the stability of the global financial market [4-5]. In this situation, as a currency that is not subject to government supervision and control, Bitcoin will effectively alleviate some asset losses and shocks caused by the external policies of the United States if it replaces the US dollar, and will help stabilize the interests of banks and investors.

The paper would analyze the idea of Bitcoin as future money from the definition of the Function of Money by Karl Marx. Karl Marx presents the function of money could be classified into five different categories in his book *Das Kapital*: measure value, means of circulation, means of hoarding, means of payment, and universal currency. Moreover, this article mainly compares bitcoin's advantages and disadvantages to the US dollar and Gold by the above perspectives.

2. Measure value

2.1. Gold

Gold standard prevailed globally from 1880-1914. As John Stuart Mill states, gold help preserves the stability of the price and the market. The currency created by the government must connect to the amount of gold within the country [6]. Countries now gave up the gold standard due to a lack of flexibility in adjusting economics. In the period of the gold standard, gold could value goods and services. For example: During the period of the gold standard, the price of gold was fixed. In 1834, the United States set the price of gold at \$20.67 per ounce, which remained until 1933. Gold can be freely traded in the market like any national currency.

2.2. US dollar

The US dollar is the most widely used currency in the world since the US economy is the most stable and there are most international transactions worldwide [7]. As the representative of the country's currency, the US dollar is able to value goods and services. For example, ten dollars could buy twenty apples in the grocery store, which value apples as currency. Also, in 2008, the California minimum wage was eight dollars per hour (Card). It presents US dollars valued labor force.

2.3. Bitcoin

In fact, Bitcoin is able to value goods and services as well. On March 24, 2021, according to Tesla's US official website, the purchase of Tesla cars already supports the use of Bitcoin for payment. At the same time, Tesla founder Elon Musk also announced on Twitter: "You can now use Bitcoin to buy Tesla." In addition, the price of Bitcoin surged 12% to at least \$43,200 after Tesla announced the purchase of \$1.5 billion in Bitcoin. Tesla's stock price also rose more than 2% [8].

However, due to frequent fluctuation, bitcoin cannot value goods and services completely. According to Figure 1, the price of Bitcoin changes every second, and the difference between the lowest and the highest value of it converts to the US dollar within one day could be huge. For example, as of July 19, 2023, the highest value is 301800 USD, which is 4:36 AM UTC. The lowest value is 29807.8 USD at 2:46 PM. According to the history of Bitcoin, the fluctuation is even greater. Before 2020, there is only one unstable period, which occurs at the end of 2017 and the beginning of 2018. From 2019 to 2021, the value of Bitcoin goes crazy and drops rapidly. Until today, the price of Bitcoin is still moving around the chart, and no one could really predict and guarantee the value of it.



Figure 1. Changes in Bitcoin prices Data source: Yahoo Finance [9]

3. Means of circulation

Means of circulation means that the related currency is able to sell goods or services to get money and use the money to buy equivalent goods and services. In other words, commodities are transformed into money which is transformed back into commodities.

3.1. Gold

Before the government's standard currency occurred, gold and other metals, such as silver and copper, played the same role as currency. People are able to use gold to exchange gold, and no one would reject that, since it was common sense to the people at that period (need more info). The value of gold is established by the market and government, the gold is used to create coins, and it could buy goods and services in the market.

3.2. US Dollar

The US Dollar follows Marx's idea, C-M-C, commodities change to money and money changes back to commodities. Producers or suppliers create products and sell them to consumers to obtain money. Later, they are able to use the money to buy other commodities that they are not able to produce. The US dollar presents the idea of currency in circulation. It plays the role of an exchange medium. Not just within the US, but also worldwide, many countries also use the US dollar to do the exchange. A farmer harvested one ton of apples in the fall. He contacted a grocery store and tried to sell his products for 1000 dollars. The store accepted the deal and pay the amount in cash to the farmer. After the farmer received money, he went to another store to buy seeds for the next season [10]. The US dollar here is played as the medium that people could use for buying and selling.

3.3. Bitcoin

Bitcoin is still working in the process. Unlike the country's currency, not everyone trusts it or has confidence in it. For instance, at the time of reporting, \$20 is equivalent to \$0.0011204, and upon the request of delivery, KFC embeds the amount of bitcoin equivalent to the price of the bucket of fried chicken onto the container."

There are limitations to using bitcoin in that period.

a) A lack of people using it, leads sellers couldn't find the "right" consumer that willing to use Bitcoin as currency to buy goods and services.

b) People who have Bitcoin may not be able to use it since the market doesn't have many merchants willing to accept it.

c) Bitcoin could not value goods and services right now, due to the massive fluctuation. Hence, it is not able to buy goods or to be received easily as gold and the US dollar.

d) The process of purchasing and selling action should be short and efficient. People need money or goods immediately instead of waiting.

e) Bitcoin only can be spent or transferred with two wallets. Once either side in the trading doesn't have a wallet, the trading ends because they can't receive the payment.

4. Means of hoarding

4.1. Gold

As a valuable metal, gold has had a high value since ancient Greece (not sure, will change later). Its value compared to other currencies is much more stable.

Besides, gold plays an important and positive role in stabilizing the state-owned economy and maintaining the stability of currency value. As a unique asset, gold is not directly affected by any country's monetary policy and finance. The reserves of gold are very limited, and it is difficult for the earth to produce new gold in a short period of time so even if the country experiences inflation, gold will not depreciate. It has a strong storage function.

4.2. US Dollar

It would have value for a long period, due to the guarantee and the security of the government. The government would have control over it to ensure purchasing power. Regardless of inflation or dramatically increasing in the population, the purchasing power might change. The government has the power to influence the value of it. However, overall, it could be hoarding, the decrease in money value wouldn't be crazy. After COVID-19 started, the inflation rate continuously increases. The US government tried to stimulate the economy by printing money and lowering the interest rate. Although the action did help many small businesses and low-income families survive, the consequence is severe. Till today, the price of goods and services is too high, (the purchasing power of the dollar dropped dramatically). Without investing or creating goods and services, the savings would buy less and less stuff. Also, fake money: there is fake money that appears in the market which is created by the illegal group.

4.3. Bitcoin

Bitcoin is viewed by some as a reliable store of value. Due to the scarcity and increasing global acceptance of Bitcoin, some people choose to use it as a long-term investment to preserve value or obtain higher returns. This characteristic makes Bitcoin a certain investment value, especially in times of global financial instability.

Bitcoin is not completely safe, and cryptocurrency exchanges are also at risk of being attacked by hackers and stolen. According to a report released by network security company CiferTrace in October, the cryptocurrency stolen through hacking exchanges soared to 927 million U.S. dollars. Due to the lack of national-level supervision, many companies only consider benefits and ignore system security. In fact, most exchanges have security loopholes.

However, it is still safer than cash. The lost cash and stolen cash amount (evidence). In 2022, there are 1348.77 million dollars was paid to fraudsters in the United States. 24% of Americans had cash stolen in 2019, based on a survey of 1000 Americans from Lending Tree Company. The wallet is not a safe place for keeping money. It is the largest percentage of where the money was stolen. Home, cars, and office are also the other common places where people lost money.

5. Means of payment

5.1. Gold

Gold has been a recognized payment method since ancient times. It is hard to get change due to the high value of the gold while in the transaction. But the total amount of gold is limited, and when people continue to store gold, it will lead to a decline in gold on the market, which in turn will cause deflation [10]. Deflation leads to rising real debt, which will drive many producers out of the market. As a result, unemployment rose, consumer demand fell, and the economic contraction intensified.

5.2. US Dollar

The Bretton Woods system establishes the US dollar as the global payment currency. The system established a system of fixed exchange rates in which member countries' currencies were pegged to the U.S. dollar, which was pegged to gold. The dollar exchange rate was fixed at \$35 for an ounce of gold. Later, because direct payment in US dollars made the transaction more convenient, people gradually did not choose to exchange for gold. Despite the collapse of the Bretton Woods system, due to the strong military, political, and economic strength of the United States, this trading habit is still preserved, and people continue to use US dollars for transactions.

US dollar transactions have obvious advantages in global cross-border transactions. Many countries recognize the US dollar, and transactions are also very convenient. However, the U.S. dollar will still be affected by the exchange rate shock in the transaction, and it will be subject to national supervision, resulting in an increase in payment transaction costs

5.3. Bitcoin

The biggest advantage of Bitcoin payment is its completely decentralized nature. Traditional payment networks are controlled by central institutions, such as banks, payment systems, etc., while Bitcoin networks are composed of distributed computer networks without a single control agency [11]. This means that Bitcoin payments are not subject to the intervention or control of any central authority, and users can achieve direct peer-to-peer transactions, which are both fast and secure.

The second advantage is information transparency. All the trading information would be published on the blockchain, including time, wallet address, and rest of the bitcoin, in order to trace back.

Bitcoin transactions also have some other advantages, including transaction security, irreversibility, and it is difficult for Bitcoin to be physically stolen. Besides, it can be transacted all over the world, and the value is accepted by all races of people.

6. Universal Currency

6.1. Gold

Gold is also a global precious metal whose value is recognized by residents of all countries. Therefore, the use of gold can transcend the regulatory restrictions of countries and regions and can be circulated and traded conveniently. The global nature of gold also makes it representative of world currencies.

Gold can be easily divided and merged without losing its value, so it can be conveniently used in various transaction occasions without the need for certification by authoritative institutions and other expenses.

Although the international monetary system has changed and is mainly dominated by the US dollar, gold, as an important precious metal, still has a high value and status.

6.2. US dollar

The universal currency needs to be certified by governments, which government should support people to use them. The U.S. dollar gradually became the world currency after World War II. It is not

issued by the U.S. government, but by an independent institution, the Federal Reserve, which guarantees the independence of the U.S. dollar.

Behind the U.S. dollar is the credit endorsement of the U.S. government. The United States is a superpower with relatively high credit and ranks among the top in the world in terms of economy, technology, and military. This also further contributes to the strength of the dollar.

In addition, as a world currency, the U.S. dollar is relatively stable. Since World War II, the purchasing power of the U.S. dollar has basically not changed much. In contrast, the purchasing power of most currencies in other countries has shrunk.

The United States is the world's largest commodity importer, and American imports must be paid in dollars, which means that the dollar has a natural advantage as an international currency.

6.3. Bitcoin

Bitcoin is an emerging digital currency, its issuance and transactions are based on the network, there is no central management agency, and there is no monetary policy restriction. It is a currency without borders, has the characteristics of globalization, and can be traded on a global scale. Its transactions are fast. Since the transaction process is based on the network [12], Bitcoin can be traded globally, the transaction speed is very fast, and a transaction can be completed within a few seconds, which greatly saves time. Bitcoin also has a low cost of transactions. Its transactions do not have any intermediaries or fees and only need to pay some small network fees to complete a transaction, which greatly reduces transaction costs.

However, the anonymity of Bitcoin transactions will also breed illegal activities such as money laundering and tax evasion, which is not satisfy the government's supervision.

7. Conclusion

Based on the decentralized and anonymous nature of blockchain technology, Bitcoin could be the leading currency that has an impact on the world, including government policies, investor activities, business decisions, etc. Given that the value of the official currency is steadily declining and growing public mistrust of governmental decisions, Bitcoin may become the next major reserve currency.

This article considers the insights of Marx's theory of monetary function and proposes the measured value, means of circulation, means of hoarding, means of payment, and universal currency of bitcoin. Besides, the paper also compared the above monetary function with other currencies, such as gold and the US dollar. We found that Bitcoin has the characteristics of decentralization and high security, which can ensure the transparency and fairness of Bitcoin transactions. However, Bitcoin also has some disadvantages, and its value is greatly affected by market fluctuations. In addition, the anonymity of Bitcoin can easily lead to its use in illegal activities such as money laundering and tax evasion. Although Bitcoin has the potential to become a world currency technically, it is still necessary to regulate laws to ensure the legality, stability, and security of Bitcoin, so that Bitcoin can truly become a world currency.

The article also has some limitations. This article only conducts qualitative analysis in theory and does not use complex mathematical models and experimental investigations for quantitative analysis to verify the value function of Bitcoin. In the future, the research will conduct questionnaire experiments and collect Bitcoin data, and use more scientific quantitative analysis to verify the monetary properties of Bitcoin.

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