

## WHY DO BITCOINS HAVE VALUE

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### Abstract

The article considers the creation and operation of the peer-to-peer cryptocurrency bitcoin, the possibility of using bitcoin in the field of global financial relations. The issue of acquisition of bitcoin, its differences from fiduciary money, the process of bitcoin conversion. An analysis of the dynamics of the bitcoin exchange rate.

**Keywords:** Bitcoin, cryptocurrency, no physical money, capitalization, digital money.

### Introduction

Digital money is being spread today. Bitcoin is a digital currency that was created in January 2009. It follows the ideas set out in a whitepaper by the mysterious and pseudonymous Satoshi Nakamoto. The identity of the person or persons who created the technology is still a mystery. Bitcoin offers the promise of lower transaction fees than traditional online payment mechanisms and, unlike government-issued currencies, it is operated by a decentralized authority.

### Results of the research

Bitcoin offers an efficient means of transferring money over the internet and is controlled by a decentralized network with a transparent set of rules, thus presenting an alternative to central bank-controlled fiat money.<sup>1</sup> There has been a lot of talk about how to price Bitcoin, and we set out here to explore what the cryptocurrency's price might look like in the event it achieves further widespread adoption. First, however, it is useful to back up a step. Bitcoin and other digital currencies have been touted as alternatives to fiat money.

However, as countries left the gold standard in an effort to curb concerns about runs on federal gold supplies, many global currencies are now classified as fiat. Fiat currency is issued by a government and not backed by any commodity, but rather by the faith that individuals and governments have that parties will accept that currency. Today, most major global currencies are fiat. Many governments and societies have found that fiat currency is the most durable and least likely to be susceptible to deterioration or loss of value over time.

Unlike other currencies, Bitcoin isn't controlled by any financial institution or government. When fraud is committed in Bitcoin's name, its lack of a central authority is exactly what makes it impossible to recover any losses. Once a victim is duped, the buck stops there: no bank or credit card issuer can bail them out in this regulatory vacuum, as shown in Figure 1.

Traits of Money	Gold	Fiat (US Dollar)	Crypto (Bitcoin)
Fungible ( <i>Interchangeable</i> )	High	High	High
Non-Consumable	High	High	High
Portability	Moderate	High	High
Durable	High	Moderate	High
Highly Divisible	Moderate	Moderate	High
Secure ( <i>Cannot be counterfeited</i> )	Moderate	Moderate	High
Easily Transactable	Low	High	High
Scarce ( <i>Predictable Supply</i> )	Moderate	Low	High
Sovereign ( <i>Government Issued</i> )	Low	High	Low
Decentralized	Low	Low	High
Smart ( <i>Programmable</i> )	Low	Low	High

Figure 1. Rating of value in the world recently

The technology used by miners has advanced over time. Early miners were able to earn Bitcoin relatively

easily with affordable equipment. Bitcoin could initially be mined on a central processing unit (CPU) such as a personal laptop or desktop computer. As interest in Bitcoin mining increased, miners discovered that graphic cards could more efficiently run hashing algorithms and aid in mining. Field Programmable Gate Arrays (FPGAs) then replaced graphic cards

"Mining" for the cryptocurrency is power-hungry, involving heavy computer calculations to verify transactions. In order to "mine" Bitcoin, computers - often specialised ones - are connected to the cryptocurrency network. They have the job of verifying transactions made by people who send or receive Bitcoin. This process involves solving puzzles, which, while not integral to verifying movements of the currency, provide a hurdle to ensure no-one fraudulently edits the global record of all transactions.

As a reward, miners occasionally receive small amounts of Bitcoin in what is often likened to a lottery. To increase profits, people often connect large numbers of miners to the network - even entire warehouses full of them. That uses lots of electricity because the computers are more or less constantly working to complete the puzzles. The University of Cambridge tool models the economic lifetime of the world's Bitcoin miners and assumes that all the Bitcoin mining machines worldwide are working with various efficiencies [2].

Using an average electricity price per kilowatt hour (\$0.05) and the energy demands of the Bitcoin network, it is then possible to estimate how much electricity is being consumed at any one time.

The online tool has ranked Bitcoin's electricity consumption above Argentina (121 TWh), the Netherlands (108.8 TWh) and the United Arab Emirates (113.20 TWh) - and it is gradually creeping up on Norway (122.20 TWh), as shown in Figure 2. The energy it uses could power all kettles used in the UK for 27 years. However, it also suggests the amount of electricity consumed every year by always-on but inactive home devices in the US alone could power the entire Bitcoin network for a year.

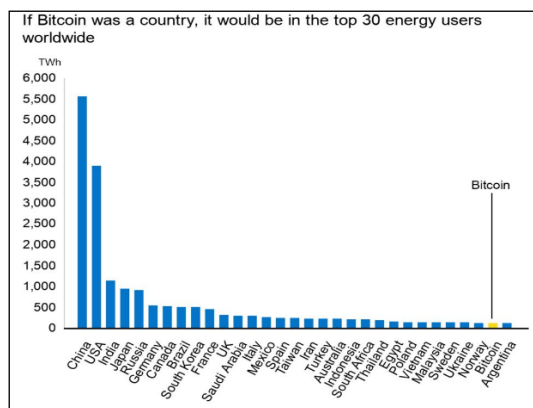


Figure 2. Schedule of electricity use in the world

Mining cryptocurrency seems like a no-brainer. Set up a computer to help solve complex math puzzles and you are rewarded with a coin or a fraction of a coin. The first bitcoin miners were able to earn coins relatively quickly just using what computing power they had in their homes [3].

In addition to the challenges that cryptocurrency mining presents to the energy sector, there are also opportunities, particularly for blockchain. These may include electric vehicle charging infrastructure and distributed energy resources, among others. The U.S. electricity grid is critical infrastructure and subject to certain regulations to maintain safe and reliable operations. Opinions differ as to a potential role for blockchain technology in the energy sector.

Another angle at modeling the price of Bitcoin, and perhaps a useful one for the near-to-medium term, would be to look at specific industries or markets one thinks it could impact or disrupt and think about how much of that market could end up using Bitcoin. The World Bitcoin Network provides a nifty tool for doing just that.

## Conclusion

Given the digital nature of Bitcoin, it's hard to compare them to prized physical artworks, such as statues and paintings. On the other hand, we live in a world where one Bitcoin is worth more than \$50,000, so things from the digital realm can certainly be very valuable and even sustain that value over longer periods of time.

## REFERENCES

1. Bitcoin Scams on Social Media: The Dark Side of Digital Currency [Електронний ресурс] // zerofox. – 2020. – Режим доступу до ресурсу: <https://www.zerofox.com/blog/bitcoin-scams-social-media/>.
2. Criddle C. Bitcoin uses more electricity annually than the whole of Argentina, analysis by Cambridge University suggests. [Електронний ресурс] / Cristina Criddle // BBC. – 2020. – Режим доступу до ресурсу: <https://www.bbc.com/news/technology-56012952>.
3. Frankenfield J. What Is Bitcoin? [Електронний ресурс] / Jake Frankenfield // investopedia. – 2021. – Режим доступу до ресурсу: <https://www.investopedia.com/terms/b/bitcoin.asp>.

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