

**CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE**

**Faculty of Economics and Management**

**Department of Economics**



**DIPLOMA THESIS**

**BITCOIN — THE CRYPTOCURRENCY MEDIUM OF  
EXCHANGE, PURCHASING POWER, AND  
LONGTERM STORE OF VALUE**

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## **1. Abstract**

The diploma thesis looks at Bitcoin and bitcoins; the world's first mainstream digital and decentralized form of cryptocurrency. Money and Bitcoin are analyzed from medium of exchange, purchasing power, and longterm store of value perspectives. The history, origin, use, storage, acceptance, transaction abilities and costs, market dominance, valuation, volatility, and wealth distribution of currencies and bitcoins are examined. Alternatives such as gold or other currencies are also taken into consideration. The demand-side economies of scale are explained using Metcalfe's Law and a multiple regression analysis is performed, helping explain the rise in bitcoin's market price due to the network affect. Although not extraordinarily cost effective, bitcoin mining profitability is calculated with several scenarios, identifying possible use cases where mining is justifiable, even in the year 2018. As a result, the thesis includes hundreds of hours worth of research condensed into a general understanding of bitcoin and its economics, providing the reader with knowledge to make his or her own informed decision about potential involvement with the cryptocurrency.

**Keywords:** Bitcoin, blockchain economics, cryptocurrencies, virtual money, digital asset

## **2. Introduction**

Since its origin in 2008, bitcoin has been the talk around the world. From investors that swear by it, predicting that it will reach anywhere between \$100,000 to \$1,000,000 USD within the next couple of years; to non-believers of bitcoin, who say that it is a valueless bubble that is going to pop at any moment. With the proper data and reasoning, it is possible to make arguments for both sides, although no one is to say with 100% confidence what exactly the future of bitcoin involves. Ignoring the fact that there are hundreds or thousands of variables that influence the price of bitcoin, the truth of the matter is that bitcoin's price can go either way.

Bitcoin has puzzled economists, fascinated computer geniuses, and attracted the attention and interest of the regular public all over the world. The last decade has been the revolutionary birth of bitcoin and an endless number of other digital currencies, much like the birth of the Internet a few decades ago. If someone was told all the future possibilities of the Internet 30 years ago, nobody would believe them. The possibilities and applications of cryptocurrencies and the blockchain technology behind them have the possibility to make great change on this planet, revolutionizing the way that humans interact, the way the world's

economies transact, and taking away monetary policy power from banking institutions, governments, central banks — putting the power of money back into the hands of the owners.

This is why Bitcoin is an excellent cryptocurrency medium of exchange, purchasing power, and longterm store of wealth.

### **3. Objectives and Methodology**

#### **3.1. Objectives**

There are three main aims of the diploma thesis. The literature review includes gaining an in-depth understanding of currency in general as well as its history; evaluating and understanding Bitcoin – both the underlying technology and the purchase, storage, and transaction ability of bitcoins. Lastly, bitcoins are examined from a medium of exchange, longterm storage of wealth, and purchasing power point of view. Ultimately, the diploma thesis is to be used as a tool to help the reader decide how to purchase and safely store bitcoin, as well as a guide to the basic minimum amount of bitcoin to acquire.

#### **3.2. Methodology**

The methods used to carry out the theoretical part of the diploma thesis include a qualitative examination of currencies and the perception of value, a quantitative evaluation of bitcoin against other top fiat currencies, linear regression analysis to identify influences in the drivers of the price of bitcoin as well as their correlation, evaluation of bitcoin volatility, and the monetary economics of bitcoin using the general equilibrium theory to define a theoretical equilibrium price for one bitcoin. Strategic analyses such as SWOT and PESTLE are used as well as the demand-side economies of scale, using Metcalfe's law.

### **4. Conclusion**

In conclusion, bitcoin is a one of a kind legacy cryptocurrency whose future fate is neither known nor accurately predictable. What is certain however, is the limited amount of bitcoins, combined with the enormous number of lost bitcoins that will never be replaced or reintroduced. This creates a dwindling limited supply and any amount of bitcoin has extreme potential to be enormously valuable. With every passing day, the opportunity to own bitcoin decreases, as more and more individuals and businesses accept, own, and use bitcoins in everyday situations.

The most important factor in owning bitcoin is not how much is owned, but rather how and where it is stored, and whether the owner has access to the cryptocurrency. Having all the bitcoin in the world may be *valued* at hundreds of billions of USD, but without the ability to transfer them to another individual or business, they are deemed *worthless*.

Using Metcalfe's Law to explain the network effect with bitcoin, it is possible to explain about 89% of bitcoin's fluctuation in price with the number of unique users and the average transaction amount in USD (with a 95% level of confidence).

Although mining is not considered substantially profitable, it is justifiable in regions where electricity is free or nearly free, especially in areas with cold climates. The persistence of technological advancement will continue to increase the computational abilities of mining equipment and mining will remain profitable for large-scale operations even if the price of electricity increases. Mining will regulate and oversee itself; if miners are profitable, they will keep mining, and if mining becomes unprofitable in one region; it opens up new mining opportunities in other areas.

Bitcoin is the ultimate form of money in electronic form. There are no restrictions as to accessing one's wallet, sending or receiving money, or what the purchased goods and services include. When used properly, it is possible to create total anonymity from the rest of the world, something that has value in and of itself. The world may only wait and see where the power of bitcoin will take it.

As a final piece of wisdom — the biggest regret with bitcoin is not wishing to have invested earlier when the price of bitcoin was lower. The biggest regret is not the price of bitcoin decreasing after having already purchased. By far, the biggest regret involved with owning bitcoin is having had purchased it when the price was low, and not having access to the coins later, when the value has risen.

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