

Using Blockchain and Cryptocurrency: A Model of Resources Based Economy

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Abstract

Although this work seems utopic, it is an alternative or can work together with existing economic model. The goal is the idea of a coin that will gain value with respect to real economic resources, with high security, which can be mining according to the requirements, using blockchain or derivative technology shaped according to needs. In other words, it is to develop the financial instrument of the resource-based economy.

Keywords: Blockchain, Cryptocurrency, Economy Model.

Introduction

The money in our country is based on the gold reserves and is printed by representing the trust in the countries that use fiat money like America. There is no reference point for the amount to be produced during the mining (production) of crypto coins. Let's imagine that a crypto coin is issued according to the country's sources. Among the biggest problems of today are the negativities that exist in the economy. Various solutions and models related to these topics are presented. The inequality of income distribution is economic crises and scarcity are the first ones that come to mind. It will be assumed whether the monetary and economic policies that exist at the axis of the problems are of benefit or harm, to what extent the resource-based economy will be an alternative, and to what extent the crypto-money. Also we investigate how we can such an economy can be solutions to the problems.

1. Blockchain

1.1. What is Blockchain?

A blockchain² (The Economist, 2015; Moris, 2016; Popper, 2016), originally block chain (Brito and Castillo, 2013; Nakamoto, 2016) is a growing list of records, called blocks, which are linked using cryptography (The Economist, 2019; Narayanan, Bonneau, Felten, Miller and Goldfeder, 2016) . Each block contains a cryptographic hash of the previous block (Narayanan et. al., 2016), a timestamp, and transaction data (generally represented as a Merkle tree).

The Hash function is an algorithm or sub program that maps variable-length data sets to fixed-length data sets.

By design, a blockchain is resistant to modification of the data. It is “an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way”³ (Iansiti and Lakhani, 2017) . For use

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² The technology behind bitcoin lets people who do not know or trust each other build a dependable ledger. This has implications far beyond the crypto currency.

³ The technology at the heart of bitcoin and other virtual currencies, blockchain is an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way.

as a distributed ledger, a blockchain is typically managed by a peer-to-peer network collectively adhering to a protocol for inter-node communication and validating new blocks. Once recorded, the data in any given block cannot be altered retroactively without alteration of all subsequent blocks, which requires consensus of the network majority. Although blockchain records are not unalterable, blockchains may be considered secure by design and exemplify a distributed computing system with high Byzantine fault tolerance. Decentralized consensus has therefore been claimed with a blockchain.

Blockchain was invented by a person (or group of people) using the name Satoshi Nakamoto in 2008 to serve as the public transaction ledger of the cryptocurrency bitcoin (The Economist, 2019). The identity of Satoshi Nakamoto is unknown. The invention of the blockchain for bitcoin made it the first digital currency to solve the double-spending problem without the need of a trusted authority or central server. The bitcoin design has inspired other applications cryptography (The Economist, 2019; Popper, 2016), and blockchains which are readable by the public are widely used by cryptocurrencies. Blockchain is considered a type of payment rail (Brennan et. al, 2018).

In the light of this information in front of the blockchain technology for the management of an economy or a more advanced version. It can be updated according to need (manageable), flexible structures such as economy will benefit from a sensitive issue.

The security of the decentralized structure has proven itself, bitcoin etherium and so on. brims have unexpectedly gained popularity and eventually turned into a preferred investment instrument.

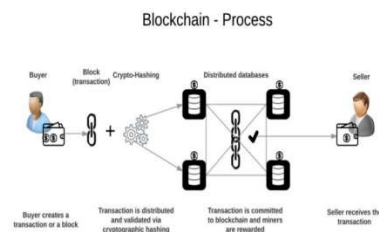


Fig1. Blockchain Process

1.2. Blockchain Security?

Bitcoin uses an algorithm called SHA-256 (Lewenberg, Bachrach, Sompolinsky, Zohar and Rosenschein, 2015). As can be seen from the table, the algorithm used by Bitcoin is the most complex algorithm among general use algorithms. The critical factor in using the hash algorithm in the Bitcoin system is that it enables both the input data to be transmitted over time without disturbance and to be turned off from external intervention (Lee, et. al., 2015).

Table 1. Complexity of Some Hash Functions

Algorithm	Çıktı Boyutu	Çarpışma Hesaplama Karmaşıklığı	Pratikteki Karmaşıklık
MD5	128	<64	128
SHA-1	160	<80	160
SHA-224	224	112	224
SHA-256	256	128	256

1.3. Why Cryptocurrency Preferred

As banks and other credit institutions can no longer meet the requirements of the era, the cryptocurrencies which have emerged in response to the conventional system and international financial policies, has expanded rapidly to the world financial ecosystem. In the contemporary digital cycle, especially in banking transactions (deposits or withdrawals) such as banks charging commissions during the client transactions, transaction costs, credit card annual fees to accelerate the world's transition to cryptocurrencies. Crypto coins and blockchain is the fastest train we live. the disturbing financial policies, will lead to more powerful economy alternatives. It is necessary to make use and improve at this break point. This structure, which is under the monopoly of banks and some economic forces, contains as much risks.

2. Effects of Blockchain in Economy

In the last months of 2017, the crypto coins, which almost exploded, were faced with uneasiness by the banks and the states. It is even banned in some countries. Algeria, Bolivia, Ecuador, Bangladesh, Nepal, Cambodia, Indonesia, Pakistan, China, Iceland. With the introduction of 2018, although it experienced a significant depreciation especially in January, February and March, it did not lose its popularity and started to rise again.

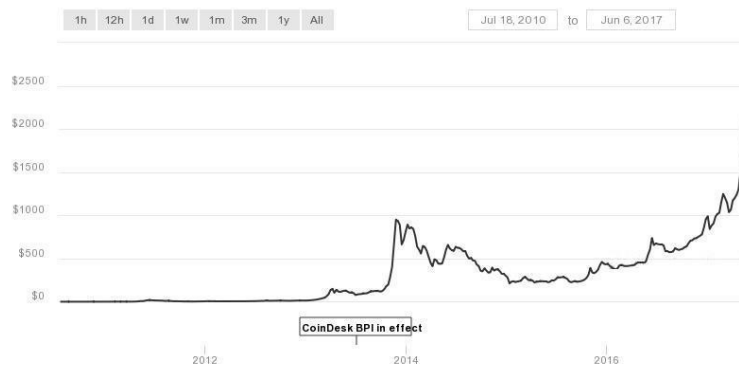


Fig 2. Bitcoin graph until the end of 2017

Some economists have interpreted it as revolution, some as balloons. Crypto coins have not yet slowed down. Serious investments are still underway. In the long run, investors' expectations are very high.

Table 2 Price increases and trading volume for the last 24 hours as of 16.6.2019

MARKETS						
BTC	USDC	ETH	XMR	USDT		
ASSET		LAST PRICE	24H CHANGE	24H HIGH	24H LOW	24H VOLUME
BTC Bitcoin		8969.00000018	4.28%	8973.12000000	8575.50794107	4195734.078
ETH Ethereum		269.85971769	2.37%	271.83000005	260.11100000	1121127.170
XRP Ripple		0.41793788	3.45%	0.42048662	0.40033907	724024.305
LTC Litecoin		135.24971348	0.56%	139.60126023	133.40058933	496550.106
EOS EOS		6.97499999	4.62%	6.97499999	6.57961448	153994.344
STR Stellar		0.12718598	1.40%	0.12790000	0.12373000	136503.056
XMR Monero		95.16187737	3.56%	96.00000000	91.63741330	116898.537
ATOM Cosmos		6.17072077	0.07%	6.24500000	6.10000005	110792.602
DASH Dash		155.86304837	1.02%	156.59999996	152.72727272	95218.829
ZEC Zcash		92.32996488	1.64%	93.07330002	90.11864439	90690.636
ETC Ethereum Classic		8.56461393	0.67%	8.66496990	8.38000000	64940.556

When we look at the figures, it seems that it will continue to be a more stable investment instrument in the future.

However, we need to take advantage of the opportunities that will arise and participate in this trend with new ideas to support.

3. Applicability

3.1. Design

Storing Records

The numerical value of the amount of the existing value is obtained by the determination of the source items and the entries made from the data collection points. Records are backed up on the data processing nodes to be created on the p2p network. It is also possible to synchronize with a central database for faster processing of this data

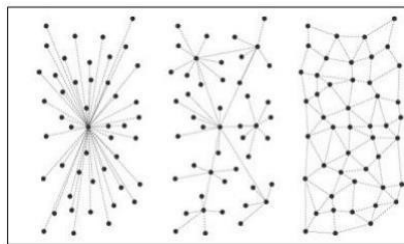


Fig 2. Blockchain security process validation transaction

Inspection

Government, central bank or independent institutions. The security of a blockchain and a derivative technology to be designed will be at the highest level. Distributed data recording system that can be connected with a database can provide rearranging errors. Inspection can be performed against incorrect record entries when records that are not consistent with the previous statistic of a particular data entry point are entered. In addition, people who p2p network transactions, companies and so on. IDs are associated with the database and name information is kept in order to prevent the unregistered economy and corruption, even it can be tax reduction.

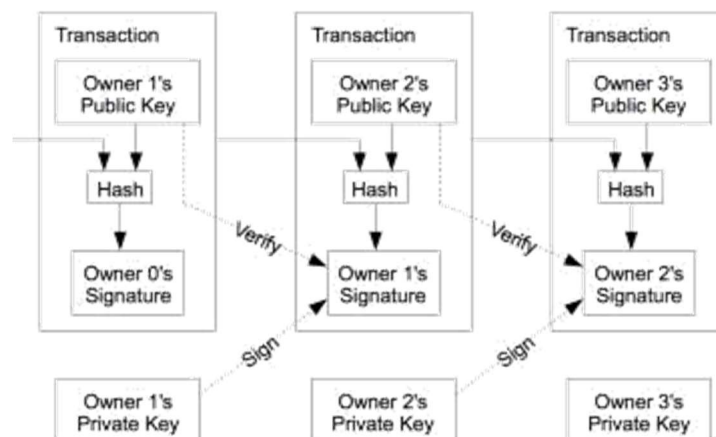


Fig 3. Authority Structures of Virtual Currencies (www.jrc.ec.europa.edu)

Measurement of Unit Values

Similarly, if the purchase value of money is available, it is necessary to install a coin value which is equivalent to resources. The actual amount of production is the capacity to produce rather than its quality or quantity. The main source at this point is growth and durability in production. To illustrate, it is not the value of the agricultural product produced for that year, but the increase in production quality, quantity and holding in the market against the previous level, or soil fertility. Similarly, information and technology is a continuously used resource without a limited lifetime.

Mining Quantity \equiv Growth in Resources

Mining should be under the supervision of the state or central bank because they can ensure that the measurement and control of resources are consistent.

The amount in which the value represents the real money in the economy will be realized with the purchase demands. In this case it is necessary to exit the blockchain definition and create a different distributed data system.

The increase in the output of resources and the growth in production reveals a situation that contradicts the economy. The more something, the lower the value. In this case, the meaning of the word growth should be the following, It is to be understood that there is a corresponding market or demand. Otherwise, it would be more accurate to define it as waste.

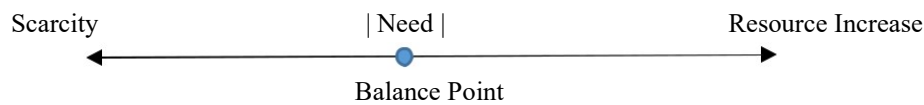


Fig 4. Balance of output from source

The change in equilibrium becomes a means of warning and the state, individuals and institutions have taken precautions in advance. For example, if urbanization increases more than the need can be considered as an unnecessary waste.

3.2 Sample Model

3.2.1 Application of the Model

Classification of Resources

In order to apply this model, resources should be classified first. The common set of intersections should also be factors affecting the existing economy. Resources can be grouped under three main classes.

1. Humanities
2. Capital and Technology
3. Natural Resources

Humanities Resources

In addition to the standards such as occupation, education level, life span, human resources, increase in the number of entrepreneurs, how much innovation took place in that country, sports achievements, the plurality of people prone to art, in short human productivity and achievements can be shown among the sources. Although these features are indirect, they contribute to the economy. For example, if we were to adopt an indicator of business discipline and this was an accepted variable all over the world, it would be possible to provide incentives for investors or firms to carry out joint projects.

More simply an example; To work with Japan (at infrastructure and architecture projects of turkey) whose experiences about the earthquake and work disciplines are known. In this respect, people can be encouraged to work more efficiently.

Capital and Technology

Capital and technology can be regarded as the most dominant sources. As a requirement of the era, knowledge is more valuable than many elements. These can be a reference for monitoring progress. Already today's stock markets and investments are predominantly based on the foundations here.

The model to be implemented can be placed as a backbone of the stock market. It can also benefit from this. Instant stock market movements can cause losses. The model we will produce can be a safe haven for those who can invest with long term. The values may change momentarily, but unless you have no resources, what you have is a value that will be raised with caution. However, there will be a warning mechanism for the economy mentioned in horizontal movement or downward movement. If a similar model had been applied in our country and the graph of the decline in the industry in recent years had affected the economy as in the graph, people would be sensitive to this issue as well as the dollar. There could be a perception that would make domestic products more preferred.

Natural Resources

Natural resources are important elements for the development of countries. It can give direction to many things. Countries with rich resources or managing resources can be more stable in the economy.

So natural geographic resources are relatively more stable and changes take longer time.

If we want to group them;
 Underground mines,
 Natural richness of vegetation,
 Geopolitical location,
 Environmental pollution rate, we can say.

For example, if we talk about natural wealth, the length of a country's coastline contributes to the tourism of that country. Contributes to the economy in tourism. Similarly underground resources too. At this point, apart from the existence of these resources, it also brings the element of management. To ensure the continuity of resources, they need to be managed and protected. Wind turbines for energy production can be made by looking at the geographical structure of the country where there is no source such as oil. In this way, we have accelerated up the static resource into dynamic.

Associating a Resource with a Crypto Currency

The required part of a crypto currency to be mined in the hands of an impartial authority should be kept as a deposit on behalf of the state. These resources normally belong to the state and the society within it. Some amount can supply as a commodity.

It will gain value against currencies as investment gets, will be mining when resource increase is achieved.

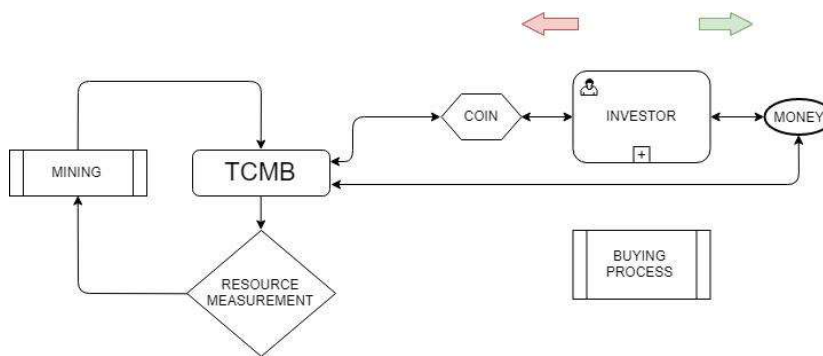


Fig 5. Coin mining & buy-sell process (www.cryptocoinsociety.com)

Products and outputs from sources indicate the efficiency of the activity of that source. It is also important that the output from the source to be measured is consumed as much. As we said before, not too much production, but the aim should be to increase production in a growing market. Otherwise it will only lower its value unless there is too much product and output market and more products that can not find the market will point to extravagance.

Production control should be supported by the production mechanism as much as this need, and innovation with higher capacity should be applied in order to ensure a different usage in this case.

The increase in production will only be at the specified deposit price. The increase in the stock exchange will be achieved by selling-buying transaction volume again. Of course, the decrease in deposity will again affect the transactions in the stock market. In this way, we have achieved a non-zero value and a model that can gain as the correct steps are taken.

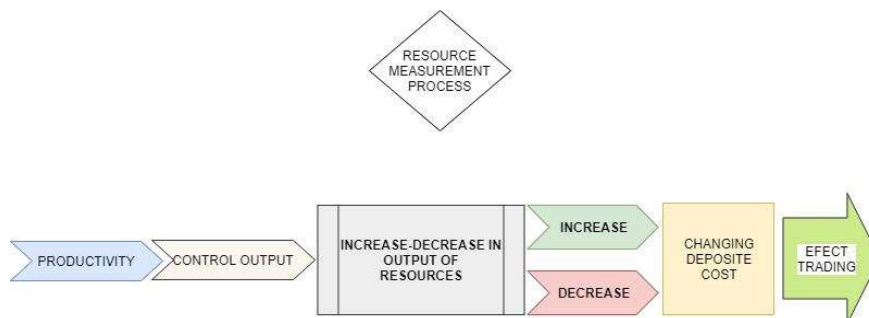


Fig. 6. Resources control and effect of deposit cost of coin (research.binance.com)

3.2.2 Mechanisms

Here, the most important mechanisms are data entry points, evaluation, audit mechanism, stock exchange to be implemented. It is important that the information is accurate and able to describe the truth. The process of entering and evaluating real data without being manipulated and streamlining is important for investors' trust. Unpredictable risky processes can be experienced because the resources modeled here are not only providing value to a crypto currency, but also aiming to virtualize existing money.

3.2.3 Usage

Tax, public, debt, SGK payments, payments to government-related institutions can be made with this crypto money. In this way, it is actually used as a payment tool at the moment it is put on the market. Even a discount in payments may increase the frequency of use and business firms may be encouraged to keep their deposits as crypto currency. Since the system includes its own monitoring mechanism, it relieves the burden of financial audits. Other than that, it is possible that the accounting norms will be change because companies provide us with a decentralized general ledger structure for all account transactions and payments.

4. CONCLUSION

A crypto currency released by the state or the central bank will attract attention. The aim is to produce an alternative investment tool that can be preferred in addition to the existing economic structure. Their investments are less risky, put on the market by the central bank and a reliable coin currency, interest, alternative to the stock market can create. In addition, with the investment provided here, resources can be expanded and improved.

Apart from this, it will attract foreign investors with its stability and popularity. A situation in which overseas stock exchanges are being traded means that they finance us for the development of our resources. Here we need to think about the possibility of investing in every person in the world who could invest in with \$ 1 rather than the big investors.

Again, this coin will increase in developing resources. Just as a small negative or positive development will have an impact on the economy, it is possible that in this model, the crypto money will gain value due to the increase in the resources of the fuel.

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