CRYPTOCURRENCY: IS THE NEW INVESTMENT OPPORTUNİTY? A COMPREHENSİVE LİTERATURE REVİEW

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Abstract

The aim of this study is to examine the previous studies published in the literature on whether crypto currencies are an alternative investment tool for short and long-term investors. For this purpose, crypto currencies, which are among the newest and most popular topics in the financial world, have been examined as an alternative investment tool. Studies in the international literature on this subject are analyzed and the findings obtained in these studies are evaluated. Throughout the studies, it has been determined that crypto currencies, especially Bitcoin, attract a lot of attention by investors, but due to excessive volatility in price movements, it is not yet a complete alternative to basic financial instruments such as gold, foreign exchange and the stock market.

Keywords: Crypto currencies, Bitcoin, Blockchain, P2P, Digital Money, Foreign Exchange.

JEL Codes: G10, G15, G19

1. Introduction

Cryptocurrency is one the most discussed financial issues in the world. It has been grabbing attention of both governments and investors all over the world. Cryptocurrency is a new type of money and is totally based on blockchain technology and peer to peer (P2P) transactions (Nakamoto, 2019). It is a decentralized process, which is not under the control of any central bank or authorities. A good example for cryptocurrency is Bitcoin.

Bitcoin, which is popular for digital money, is a kind of cryptocurrency that facilitates virtual money via digital payments (Ozyesil, 2019). Nakamoto an anonymous person introducedBitcoin for the first time in 2009, since then it has been traded for about 2.5 million transactions between 109 million accounts, while in values it reached to 71 Billon USD in 2019. Bitcoin is essentially a form of digital money that can be converted from one economic value to another and is verified by the balance that the issuer of the currency holds (Ozyesil, 2019).

1.1 Purpose of the study

The goal of this comprehensive literature review is to develop a broader understanding of what cryptocurrency is based on the knowledge of previous scholars, and to see which investment opportunities on cryptocurrencies are existed. As cryptocurrency is getting world attention and is often discussed in financial world, so there is a need to study it and summarized for interested

parties. Probably one day economic world will witness a day where fiat currencies would be replaced by crypocurrcies.

1.2 Organization of the paper

This study is conducted based on qualitative research, which followexplanatoryapproach in the study. In other words, the researcher has collected the data and analyzed the data rather than testing the outcome as they are already tested by scientific researchers. This means that finding of previous researchers will be discussed one by one in the literature part and at the end a comprehensive conclusion will be given for public awareness, investors and a guide for prospect researchers.

2. Conceptual Framework
2.1 Basic Concepts of the Cryptocurrency

Cryptocurrencies are actually digital exchange tools that are uses to buy or sell things that have a value like fiat currency (TL, dollar, euro, etc.).Cryptocurrenciesdoesn't carry value, such as precious metals, arising from the value of metals or from the state reputation such as paper money. Its value comes from the fact that its users accept it as a medium of exchange or see it as a commodity (Çetinkaya, 2018).Cryptocurrencies have many different aspects from the coins we traditionally use. The most important of these is that there is no "authority", "state" or "government" behind cryptocurrencies.

Main differences between traditional money and crypto currency are outlined in Table 1 as follows

CRYTPOCURRENCY	TRADITIONAL MONEY
It is generated in computer.	It is issued by the governments.
Decentralized	Centralized
Digital medium of exchange	Physical medium of exchange
Limited Supply	Limitless Supply

Source: https://www.bfmedia.io/

Thanks to the blockchain technology that creates the infrastructure of cryptocurrency, you do not have to trust another person.Thanks to the consensus algorithm, reward mechanism and distributed structure it hosts, the system is not based on mutual trust (Bonneauet. Al, 2015). To be more precise, the blockchain is acting as a "database" where records are kept on multiple nodes, decentralized, where records cannot be changed or deleted (almost never).

2.2. Cryptology

The original BitcoinBlockchain protocol created the concept of Cryptoeconomy with a combination of economic incentives and cryptography to create fault tolerance and resistance to attacks.

While cryptography maintains privacy and transparency, it also offers economic incentives to users who do not trust each other or do not have any agreements.

Bitcoin, Ethereum, and similar protocols are permissionlessBlockchains, so they work based on a combination of three technologies: Peer to Peer Network, Cryptography and Game Theory. The aim here is to make sure that the network users agree on the correctness of the transaction, without being connected to or needing any center. That's why this protocol is also called

consensus protocol. This mysterious combination allows us to make peer-to-peer transactions without the need for intermediary institutions. The BitcoinBlockchain uses a hash algorithm and asymmetric encryption to achieve this goal.

Cryptography (encryption) is a method, art, science of writing that protects information and connections by encrypting them and ensures that only relevant persons can access these data.In 1900 BC, Egyptians used non-standard hieroglyphs in their inscriptions. These inscriptions are the first known written cryptographic documents. Some experts argue that the science of cryptography emerged sometime after the discovery of writing and is applied in areas ranging from wartime combat plans to diplomatic correspondence. Encryption has always had one purpose that is to protect information. Today, with the development of computer technologies, different forms of encryption have emerged. It can be seen how important encryption is when communicating on any untrusted intermediary.

Today, cryptography has 4 main functions: (bfmedia.io, 2020).

1. confidentiality: making sure that no one except the recipient will read the message.

2. verification: the process of authenticating the person

3. honesty: the recipient is sure that the message sent has not been altered in any way from the original

4.key exchange: sharing crypto keys between sender and receiver

Cryptography is a technique applied for secure communication with the participation of third parties. In the cryptography literature, the sender is named as Alice, namely A, the receiver as Bob, or B, and the enemy as Eve, ie E.

2.3 History of Cryptocurrency

Many attempts have been made to create a digital currency since the 90s, the bouncing age of technology. Systems such as Flooz, Beenz and DigiCash have been developed, but these attempts have failed due to fraud, financial difficulties, and internal disputes. All these studies developed the idea of a reliable, third-hand approach.

Bitcoin, the first crypto currency, was developed by the person or persons who came up with the code name Satoshi Nakamoto in early 2009. Although it is said to have been developed by Satoshi Nakamato, it was shared as open source software by an unknown person (s). This network runs on a platform with a similar concept to end-to-end encrypted file sharing platforms.

2.4 Security of Cryptocurrencies

One of the most important problems with payment systems is the possibility of spending the same money twice. The traditional method used to prevent this is to put in a central broker (banks) that keeps track of the transactions made. However, this method means that an authority that can control all the capital intervenes. This reduces reliability.

However, in a decentralized, in other words, distributed network, such as Bitcoin, every part of the system must give approval for the transaction to take place. These transactions are done through the blockchain, so every transaction made can be seen by everyone.

All transfer transactions are made with the wallet addresses of the sender and receiver and the amount to be sent. The exchange or shipment

transaction must be verified by the sender and then confirmed by the system. Verification can only be done by miners by solving a cryptographic puzzle. Once a transaction is approved, it cannot be reversed. The biggest risks for cryptocurrencies are the possibility of hacking and attack.

2.5 Cryptocurrency Mining

The production of crypto coins is carried out over a distributed system like themselves. So it is user based. Cryptocurrencies have a production limit, so as the amount of cryptocurrency produced increases, the transactions that need to be solved to produce cryptocurrencies become more difficult.

The production process is through mining, even if there is no physical mining, operations based on solving mathematical problems are performed. So if you have processor power and internet connection, you can undertake the mining task without being assigned by someone.

2.6 Advantages of Cryptocurrencies

Since it is not affiliated with any central bank, it is not affected by the economic conditions of the countries.

It is not possible to freeze or seize the account.

3. Literature Review

Ozyesil (2019), studied interaction betweenbitcoin and foreign exchange rate, whether there is any chance for bitcone to be replaced for fiat currencies. He analyzed data from 27.10.2017 to 25.02.2019. He used Var model to explore the relationship between closing rate of both bitcoin and exchange rates, to find out if there is any regular joint connection among exchange rates and Bitcon. Therefore, he attempted to find out the impression of bitcoin and exchange rate on each other.

Ozyesil's variance model resulted that Euro and bitcoin could be mostly external variables and they are not substantially influenced by USD(Ozyesil, 2019). Vice versa, his findings discovered that the euro currency prices had a very close impression on USD. Based on his analysis he concluded that bitcoin and exchange prices are yet to be used interchangeably or alternatively.

Böhme et.al (2015), introduced a basic theoretical framework for Bitcoin. They provided a brief figures for the Bitcoin by stating its daily transaction volume was 200.000 Bitcoins and market value of Bitcoins traded as of article publishment day was 3.5 Billion USD. They stated that rules for the Bitcoin were defined by the engineers rather than lawyers. They also underlined that Bitcoin is based on on a transaction log that is distributed across a network of participating computers instead of single server. They Bitcoinmechanisim as rewarding honest participation to boostrap acceptance by early adopters and to protect against concentrations of power.

Bonneauet. al (2015), provided the first exposition for the Bitcoin and many other cryptocurrencies.Related to design of the Bitcoin, they identified 3 key components that allow more detailed analysis for features of Bitcoin and its price stability. In their study, authors provide a map design for many modifications based on comparative analysis regarding alternative consensus mechanisms, currency allocation mechanisms, computational puzzles, and key management tools. As a result of the analysis, they concluded that they still do not have scientific model with adequate estimating power.

Dyhrberg (2016),aimed to investigate hedging capabilities of bitcoin through asymmetric GARCH model used in examination of gold. According to test results, author found out that bitcoin can obviously used as hedge instruments for the stocks traded in Financial Times Stock Exchange Index. He also point out that bitcoin can be applied as hedge against USD for the short term.As result of the analysis, he clearly concluded that Bitcoin has same hedging power as gold and therefore can be used by the market participants to protect market specific risk.

Dyhrberg (2018), studied on the same sample and used the same econometric model of prior article, and found out that Bitcoin indicate very different features in term of return, volatility and correlation compared to gold and US dollar.

Corbetet.al (2018), investigated relationship between 3 most popular cryptocurrencies and a various other financial instruments. Their findings suggest that cryptocurrencies may provide some diversification benefits for investors looking for short term investment opportunities. They also found that time variation in the linkages reflects both external economic and financial shocks.

Baur et.al (2018), tried to define Bitcoin's status to answer the question whether Bitcoin is medium of exchange or an asset. They also analyzed usage of Bitcoin for the future periods. They predicted its future characteristics of usage. They found out that Bitcoin does not have correlation with conventional asset types like stocks, bonds and commodities. This finding is valid for both normal economic conditions and financial turbulence. Based on results of the statistical analysis, they claimed that Bitcoin is used as speculative investment tool rather than an alternative currency or medium of exchange.

Klein et.al (2018), calculated and compared conditional variance properties of Bitcoin and Gold and other assets. They found some differences between them. They also conducted BEKK-GARCH model to predict time varying conditional correlations. They found out that Bitcoin move direct opposite the gold and it has positive correlation with downward markets. They evaluated Bitcoin as financial instrument but they didn't reach any finding that Bitcoin provides stable hedging ability. As a result of the analysis they performed, they observed that Bitcoin does not reflect any distinctive features of the gold.

Chuen and Guo (2018), described basic characteristics of the Bitcoin and altcoins and market structure of the cryptocurrencies. Authors analyzedcyrptocurrencies as a financial asset and measured their performance. They conducted both dynamic and static correlations to compare their characteristics. Based on their anaslysis, it was found out that CRIX and cryptocurrencies can be good alternative to help diversify portfolio risk since they observed that correlations between cryptocurrencies and traditional assets are consistently low andcryptocurrencies provide higher returns than traditional assets in terms of average daily returns.

Devries (2016) draw a basic theoretical framework for the cryptocurrencies, bitcoin and make some predictions about their future. He first provide basic terminology about both cryptoucrrencies and bitcoin and also he made some comparisons between cryptocurrencies and traditional assets. He underlined advantages of the cryptocurrencies compared to fiat currencies. Finally he prepared a swot analysis for the bitcoin.

Al-Yahyaee et.al (2018), made comparison analysis between bitcoin and other traditional financial assets such as gold, stocks and foreign exchange markets. They performed MF-DFA approach in their analysis. According to their empirical findings, they observed that long-memory feature and multifractality of the Bitcoin market is more robust. They also found out that Bitcoin is more inefficient than the gold, stocks and currency markets.

4. Conclusion

Cryptocurrency and its first example, Bitcoin, are among the most interesting topics in today's financial world.Cryptocurrencieshave many advantages compared to traditional money and financial instruments, such as being based on Peer to Peer transactions, decentralized structure means not having a central authority, and recording transactions with full transparency.

It is seen that the researches on cryptocurrencies in the literature focus on two headings.The first is the analysis of whether cryptocurrencies are an alternative to classical money or not in terms of medium of exchange.The second is whether cryptocurrencies are an alternative investment tool to foreign currency, gold and stock markets.In particular, Bitcoin's price volatility has increased research on this issue.In this study, basic theoretical information about cryptocurrency has been given and the analyzes made on cryptocurrency and especially Bitcoin in the literature are examined in detail.

The general conclusion that can be drawn from the analysis made is that cryptocurrencies are not yet considered as an alternative medium of exchange tool to classical money concept.

Instead, it can be concluded that investors who want to take advantage of the price movements of cryptocurrencies are starting to perceive it as an alternative investment tool.

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