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THE GLOBAL DEVELOPMENT OF CRYPTOCURRENCIES

GLOBALNY ROZWÓJ KRYPTOWALUT

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Summary: The global crypto marketplace has an impact on the functioning of financial markets and has huge implications for entire economies. The article discusses the functioning of the global cryptocurrency market, and based on the analysis of the history of the most popular cryptocurrency, bitcoin, an attempt was made to determine possible development prospects. The aim of the article is to assess the development of the current crypto marketplace in the world and to present possible development prospects. The foresight method was used to implement the research objective, in particular trend analysis (quantitative data) and discrete event system (qualitative and expert data). This allows us to learn about the regularity of the cryptocurrencies in the sphere of investment management from the investors' point of view and the creation of an appropriate legal framework by the supervisory authorities and ensuring the social security of the financial system.

Keywords: cryptocurrencies, financial innovations, global financial market, legal regulations of the market, technological and financial changes (FinTech).

Streszczenie: Światowy rynek kryptowalut ma wpływ na funkcjonowanie rynków finansowych i powoduje ogromne implikacje dla całych gospodarek. W artykule omawiono funkcjonowanie globalnego rynku kryptowalut, a na podstawie analizy historii najpopularniejszej kryptowaluty – bitcoina, podjęto się próby ustalenia możliwych perspektyw rozwoju. Celem opracowania jest ocena rozwoju obecnego rynku kryptowalut na świecie oraz przedstawienie możliwych perspektyw rozwoju. Aby osiągnąć cel badawczy pracy, wykorzystano metodę foresightu, a szczególnie analizę trendów (dane ilościowe) oraz system zdarzeń dyskretnych (dane jakościowe i eksperckie). Pozwala to na poznanie prawidłowości na rynku kryptowalut w sferze zarządzania inwestycjami z punktu widzenia inwestorów oraz tworzenia odpowiednich ram prawnych przez organy nadzorujące i zapewnijące bezpieczeństwo społecznego systemu finansowego.

Słowa kluczowe: kryptowaluty, innowacje finansowe, globalny rynek finansowy, regulacje prawne rynku, zmiany technologiczno-finansowe (FinTech).

1. Introduction

Cryptographic currency, popularly known as cryptocurrency, is, in the definition, a distributed accounting system based on cryptography, which stores information about the state of ownership in conventional units. The state of ownership is related to individual system nodes (portfolios) in such a way that only the holder of the corresponding private key would have control over the given portfolio and it would be impossible to issue the same unit twice [Samiran et al. 2017]. The creator of the most popular cryptocurrency defines it as follows: an electronic coin as a chain of digital signatures. Each owner transfers the coin to the next by digitally signing a hash of the previous transaction and the public key of the next owner and adding these to the end of the coin. The payee can verify the signatures to verify the chain of ownership, as seen in Figure 1. However, the obvious problem is that the payee cannot verify that one of the owners did not double-spend the coin. The usual solution is to introduce a trusted central authority, or mint, that checks every transaction for double-spending [Satoshi 2008].

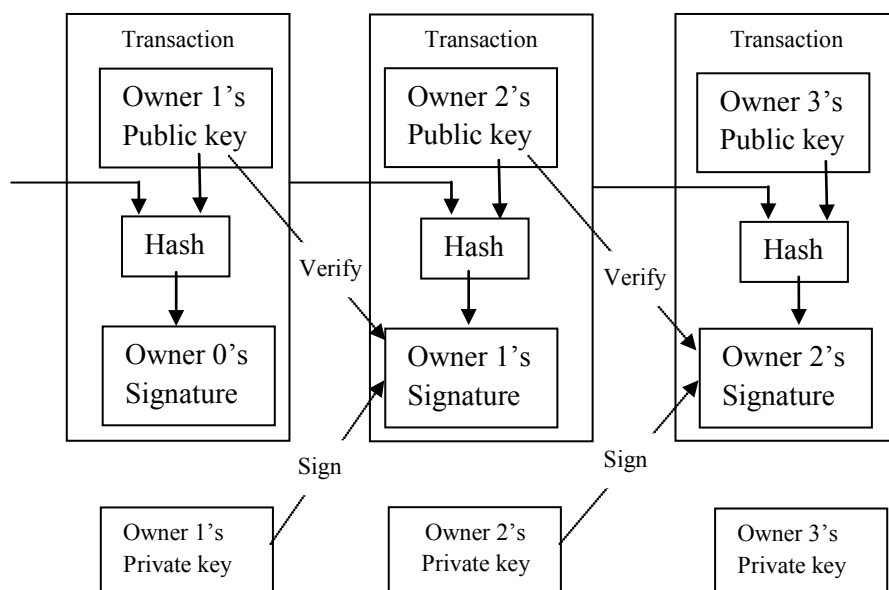


Fig. 1. Cryptocurrency authentication transaction

Source: own study based on [Satoshi 2008].

Currently, commerce on the Internet has come to rely almost exclusively on financial institutions serving as trusted third parties to process electronic payments. While the system works well enough for most transactions, it still suffers from the inherent weaknesses of the trust-based model because it cannot avoid mediating

disputes. Therefore, what is needed is an electronic payment system based on cryptographic proof instead of trust, allowing any two willing parties to transact directly with each other without the need for a trusted third party [Investopedia 2018]. A peer-to-peer version of electronic cash would allow online payments to be sent directly from one party to another without going through a financial institution. Digital signatures provide part of the solution, but the main benefits are lost if a trusted third party is still required to prevent double-spending [Satoshi 2008]. The entire operation system of cryptocurrency is based on cryptology, the field of knowledge about the transmission of information in a manner protected against unauthorized access [Christin 2013]. However, this system is also based on trust and institutions certifying the authenticity of even cryptographic keys.

On the other hand, the currently operating cryptocurrencies are mostly based on bilateral trust (sellers and investors), and additionally, right at the end, the creators have the ability to manipulate and change the operating principles of the algorithms on which the operating system is based. This is the biggest danger, as is evidenced by numerous cryptocurrencies that have gone bankrupt or stopped functioning overnight. That is why this topic is so important [Gandal, Halaburda 2016]. On the one hand, these systems seek solutions that could work without the need for third party trust. The global cryptocurrency system operates despite the lack of confirmation of trust from countries or institutions. At the same time, it gives the opportunity to speculate and create large estates for private individuals or enterprises, which are basically invisible in the global system to all. On the other hand, it can cause great systemic threats and great economic losses around the world and be a source of hiding large crime and financial crises. In this article we will explain the functioning of cryptocurrency together with the current developments, and in this context the authors will make an analysis and assessment of market cryptocurrency globally. In the article, for the implementation of the research objective the foresight method was used, in particular the trend analysis (quantitative data) and the discrete event system (qualitative and expert data). On the basis of the analysis of the short history of the cryptocurrency market [Böhme et al. 2015], regularities have been established that have their effects on various interest groups. This allows one to make the right decisions and to react from the point of view of the countries of the world and Europe, which are forced to manage the cryptocurrency market and create an appropriate legal framework. However, from the investors' point of view, the results of the study allow to indicate the possibility of investing and to draw attention to the emerging threats. This is indicated by the historical analysis carried out in the article, first of all regarding the most important bitcoin cryptocurrency, as well as the recognition of the problem of many short-lived cryptocurrencies, which results in many regularities for the cryptocurrency market, which translates directly into understanding and making the appropriate decisions by the investors and institutions responsible for the

management of the financial system in countries and international organizations, e.g. the European Union. These are measurable and significant results for both science and the practice of economic life.

2. The current development of cryptocurrencies globally

The vast interest in cryptocurrencies stems from two reasons. First of all, this is due to the idea of freedom and independence from third parties, such as the state or financial institutions. Secondly, from the point of view of possible investment gains, both legal and illegal. One of the main features of cryptocurrencies is that it acts like a virtual currency. The holder of such a cryptocurrency stores it on his/her computer or in a smartphone application in a so-called 'wallet' that only he/she can access. If he/she wishes to make a transaction, it takes place electronically, directly between him/her and the contractor. Each unit of cryptocurrencies has a unique code which contains information preventing its copying or re-spending. The key to the concept of cryptocurrencies is also the fact that there is no regulator in circulation [Zhu, Iansiti 2012]. Therefore, there is no Central Bank of Cryptocurrency which may decide, for example, to increase the supply of cryptocurrency and thus to decrease its value. The originator decides how much of a given cryptocurrency is in circulation at the stage of creating the system. Its value is in the hands of the free market. Trading in cryptocurrencies takes place electronically, without the participation of any banking system directly between the users of the cryptocurrency, i.e. in peer-to-peer technology. This means that the transaction is not supervised in any way. Therefore, there is no entity that will inform the tax authorities if one wants to sell a large number of cryptocurrencies, as happens in the case of banking transactions for amounts exceeding the equivalent of 15,000 Euro. No-one can block our account, and the bailiff will not come. Considering the above, it turns out that the mission of cryptocurrency really boils down to one word, which is "freedom." Cryptocurrencies are electronic currencies completely free from the control of politicians, domestic or international financial institutions, whose turnover is not controlled in any way, and is subject only to a strong system of electronic, automated securities.

Cryptocurrencies are, first of all, breakthrough internet technology, and using it as a means of payment is just one of its possible applications. It is a system based on a peer-to-peer network, i.e. fully dispersed, without a central unit, organization or place that controls it. The system users, their computers, are network nodes through which transactions are exchanged, authorized and settled. This system stores information on the state of ownership in contractual units of cryptocurrency. The possession of a given cryptocurrency is related to individual portfolios containing information about the cryptocurrency of a given user. The wallet is created automatically during the first user authorization in the system. Only the owner of the corresponding encrypted private key has control over the portfolio. Advanced mathematical and cryptographic methods

make it impossible to double-issue cryptocurrency, counterfeit or theft. The whole system is based on blockchain technology.

Cryptocurrency is the first invention in the financial system that was developed outside of the financial institutions, and even without any cooperation with them. It is innovative, simple and does not use the existing financial systems. Moreover, it poses a threat to the status quo of the financial system. Therefore, many market regulators, including countries and international financial institutions, regard this system as a threat primarily to their own revenue and generally acknowledged power and authority. For this reason, we observe the very different reactions of countries around the world.

Starting from Japan (as an example of the most far-reaching regulation), one can point to the rapid evolution of the Japanese regulators' approach. Starting from the recognition of cryptocurrency as a means of payment, but not yet as the currency introduced by the act on payment services of 25 May 2016, until the adoption in April 2018 of new regulations fully recognizing cryptocurrencies as legal tender. What is more, the Japanese Central Bank began work on creating its own digital currency, whose working name is J-Coin. However, there is a contrast. For example, in China there is a ban on making cryptocurrencies, yet Bangladesh and Nepal, by introducing the relevant regulations, have penalized the marketing of cryptocurrencies. In Bangladesh the use of cryptocurrencies is currently regarded as a violation of the provisions on money laundering and is punishable by imprisonment of up to 12 years. In Nepal, after introducing changes prohibiting the circulation of crypts, the first detentions for such activities have taken place [Abram, Szymura 2017].

As yet many countries have no regulations on this matter and, in principle, are considering which party to address in relation to cryptocurrencies. For example, in Europe so far no country has banned trading in cryptocurrencies, however many countries are preparing the appropriate law because they are aware of the facts that point to the rapid growth of transactions in cryptocurrencies. Most countries see this as primarily a threat to the system, which would have taken on the role of management, with the obvious opportunity to influence the financial and economic phenomena. Perhaps a system in which there is no supervision of specific organizations due to a change in rules is a good direction of the development. However, this is certainly not a cryptocurrency system where one person can play such a role [Moneycontrol 2018].

Currently the most popular cryptocurrency in the world is bitcoin. It has the highest market capitalization and the highest rate, and often when discussing this topic, cryptocurrencies are used as a flagship example. The most popular cryptocurrency in the world, bitcoin, was created in 2008 and its creator is not known. Almost simultaneously, three IT specialists (King, Oksman, and Bry) patented solutions similar to those on which the bitcoin system was based [Rosic

2018], thus we see that bitcoin is ten years old. The review of Bitcoin's development history is presented below:

- February 9, 2011 – for the first time in history, one bitcoin was priced at the same rate as the US dollar,
- 5 April, 2011 – the Polish bitmarket.eu market was established,
- June 2, 2011 – 1 BTC was valued at \$10,
- August 26, 2011 – the Polish bitomat.pl stock market collapsed, with 17,000 BTC lost,
- November 19, 2013 - 1 BTC was valued at \$ 1,000,
- February 13, 2012 - the collapse of the large TradeHill exchange,
- May 11, 2012 – the fall of the Bitcoinica platform,
- July 2013 – the billionaires, the Winklevoss brothers entered the bitcoin market,
- March 25, 2013 – Denmark exempted bitcoin sales from tax,
- September 20, 2013 – bitcoin was recognized as a fully-fledged private currency in Germany,
- December 5, 2013 – beginning of the bitcoin ban in China,
- February 28, 2014 – the demise of the largest bitcoin exchange, Mt.Gox, one could observe characteristic phases for the entire cryptocurrency market.

The first phase, which is noticeable in the graphs of all new cryptocurrencies, is the so-called phase of gaining confidence. It is visible on the cryptocurrency charts, which have passed to the following phases: the second (interest, growth) and third (determination of the maximum value for the period). The time between consecutive phases is different for specific cryptocurrencies and depends on many factors. There are many examples of cryptocurrencies that have risen and fallen in the first phase of the life-cycle. There are also many examples, often local cryptocurrencies, which have passed to the third phase, where the achieved maximum value is visible, followed by a very fast drop in value or even a momentary fall and the cryptocurrency ceases to function. We also see this in the example of the most popular cryptocurrency, bitcoin. On November 19, 2013, it reached its maximum value of \$ 1,000 after which, among others due to the collapse after three months of the largest bitcoin exchange, this recession lasted for two years, when the value accounted for a quarter of the maximum value achieved in this period, as seen in Figure 2. The return to the value of 1000 dollars for one bitcoin occurred at the end of 2016, so after three years. The actual revival and return to the maximum value from 2013 took place in 2016. This additionally shows very dynamic movements, both upward and downward, in comparison to the existing system of recognized means of payment. There are many examples where there is not so much interest on the part of investors and co-financing as in the case of bitcoin, which causes bankruptcy of the system and the collapse of these cryptocurrencies. This caused a lot of damage to the trust in the cryptocurrency system and gave arguments to its opponents, showing the use of the system to create financial pyramids and other scams. The same negative consequences for the system were caused by the collapse of exchanges and cryptocurrency exchange

platforms. Although in this case it often happens that the defenders of the current system, that is the state and financial institutions, also bear responsibility for these events. For example, additional taxes are imposed in Poland, and financial institutions such as banks, refuse to provide services to such entities. Analyzing the history of the most popular cryptocurrency, we see that countries have different approaches to the cryptocurrency system, from a total ban and establishing penalties to full recognition. Some countries often use the imposed tax burden imposed on cryptocurrencies, but do not intend to lay down specific legal provisions on this matter, although it considers this activity to be legal.

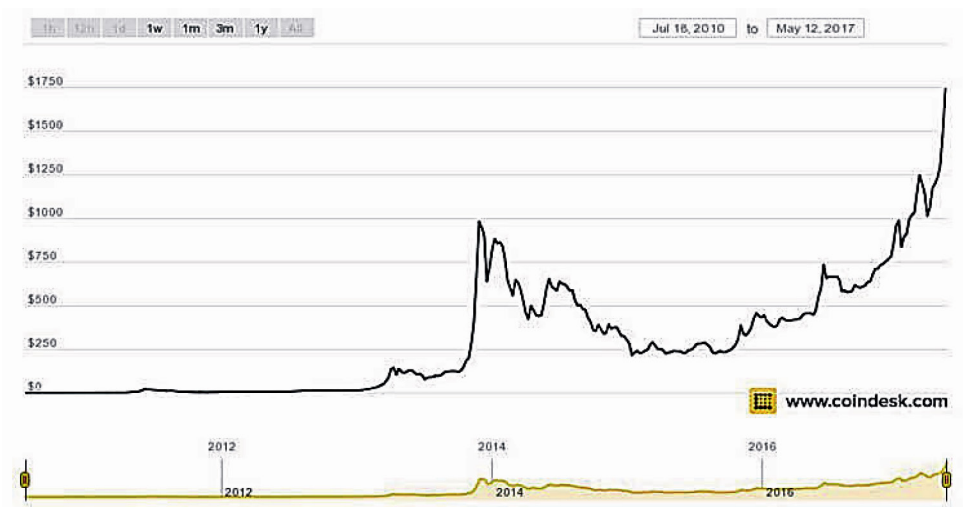


Fig. 2. Bitcoin exchange rate in 2010-2017

Source: [Coindesk 2018].

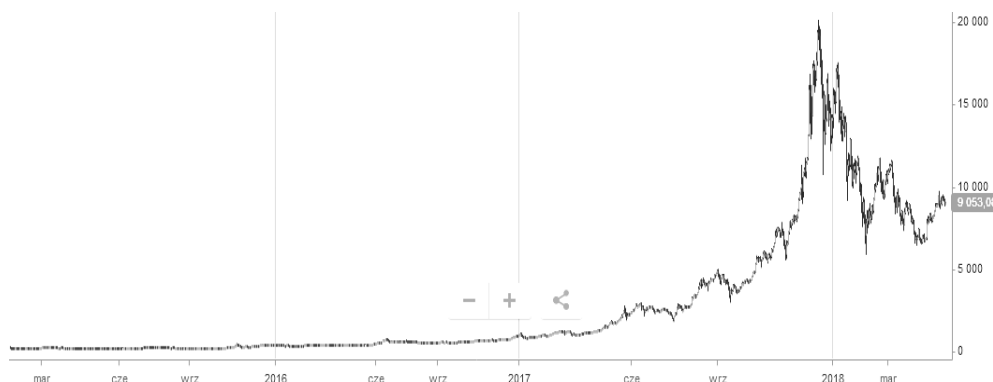


Fig. 3. Bitcoin exchange rate in 2015-2018

Source: [Money 2018].

The recent history of bitcoin, basically from the end of 2017, shows renewed interest and an almost unimaginable increase in value, from the return and breakthrough value of \$ 1,000 to as much as \$ 20,000 in mid-December 2017 for one bitcoin. Since then, for less than half a year we have seen a decline of around a quarter of the historical maximum value, and another increase and oscillation to around half of this value, as shown in Figure 3.

- February 20, 2017 – one can receive 1055.26 USD for 1 bitcoin,
- March 2, 2017 – bitcoin worth more than gold at \$ 1268 for 1 BTC,
- December 2017 – historical maximum value of 1 bitcoin worth 20,000 dollars,
- May 1, 2018 – for 1 bitcoin one can receive 8951.64 USD (31,105 PLN).

Bitcoin is a flagship example of the cryptocurrency system, most of which repeat the regularity of the system's behavior. However, there are several hundred other cryptocurrencies, which are referred to as altcoins (alternative coins, including the "bitcoin's younger brother" the ethereum currency). The creation of some of them had at the same time to achieve other goals, for example namecoin creates a decentralized DNS system, and peercoin tries to spread the income from the extraction of its units more evenly. There are also plans to build cryptocurrencies on the forecasting market. New cryptocurrencies are constantly being created due to the use of open source software and P2P networks. The source code is based on free software, so anyone can download it and create one's own cryptocurrency. Currently, there are more than one thousand five hundred individual cryptocurrencies. Many of them work on the same code principle, and they present only a few minor changes and different parameters (time distribution of blocks or number of coins) in contrast to the original coin.

Today more than one thousand five hundred cryptocurrencies are listed on more than seven thousand special exchanges market. Each of them has some advantages and unfortunately also disadvantages. A large number, especially local cryptocurrencies, have a short history of functioning and then disappear from the market. This has the negative effect of accepting the cryptocurrency system as a whole, because there are many examples for using it for financial fraud purposes. Undoubtedly, however, there are also advantages, the emphasis and full use of which would require certain legal and technological solutions. To confirm the importance of the subject matter in the world of finance and economies in the world, Table 1 presents cryptocurrencies whose market capitalization currently amounts to over one billion US dollars.

The table contains a list of cryptocurrencies with a market capitalization exceeding USD 1 billion. Currently, such cryptocurrencies number 25. Market capitalization is the value of all coins in circulation, multiplied by their current value (Eq. (1)).

$$\text{market capitalization} = \text{number of coins in circulation} * \text{current value of one coin.} \quad \text{Eq. (1)}$$

Table 1. A list of cryptocurrencies with a market capitalization of over USD 1 billion

No.	Cryptocurrency	Code	Exchange rate	Number of coins	Market capitalization
1	Bitcoin	BTC	\$ 8951.6394	17 180 188	\$ 153,790,855,757
2	Ethereum	ETH	\$ 646.5789	100 154 753	\$ 64,757,950,249
3	Ripple	XRP	\$ 0.80371665	39 541 619 593	\$ 31,780,258,035
4	Bitcoin Cash	XBC	\$ 1281.7728	17 275 946	\$ 22,143,838,920
5	EOS	EOS	\$ 16.7904	835 329 772	\$ 14,025,521,010
6	Cardano	ADA	\$ 0.3254823	26 188 960 137	\$ 8,524,042,980
7	Litecoin	LTC	\$ 143.9658	56 898 395	\$ 8,191,423,098
8	Stellar Lumens	XLM	\$ 0.39935016	18 759 309 869	\$ 7,491,533,398
9	Tronix	TRX	\$ 0.09088398	66 412 089 292	\$ 6,035,794,995
10	NEO	NEO	\$ 80.4078	65 659 718	\$ 5,279,553,500
11	IOTA	IOT	\$ 1.8513	2 800 940 157	\$ 5,185,380,514
12	Monero	XMR	\$ 230.3433	16 146 465	\$ 3,719,230,081
13	Dash	DASH	\$ 454.2615	8 121 006	\$ 3,689,060,743
14	Nem	XEM	\$ 0.39074508	9 090 909 088	\$ 3,552,227,999
15	Tether	USDT	\$ 0.99	2 450 101 824	\$ 2,425,600,806
16	Vechain	VEN	\$ 4.3362	530 773 566	\$ 2,301,540,339
17	Etherum Classic	ETC	\$ 20.7207	102 514 915	\$ 2,124,180,807
18	Qtum	QTUM	\$ 21.4731	89 476 920	\$ 1,921,346,857
19	OmiseGO	OMG	\$ 16.1964	103 074 544	\$ 1,669,436,555
20	Binance Coin	BNB	\$ 13.7511	115 221 419	\$ 1,584,421,260
21	Lisk	LSK	\$ 12.2463	106 472 521	\$ 1,303,894,445
22	RaiBlocks	XRB	\$ 9.4347	134 639 002	\$ 1,270,278,593
23	Bitcoin Gold	BTG	\$ 69.7455	17 146 505	\$ 1,195,891,577
24	Verge	XVG	\$ 0.07307982	15 092 890 527	\$ 1,102,985,723
25	Zcash	ZEC	\$ 272.6064	3 856 723	\$ 1,051,367,505

Source: own study based on the exchange rates of 01/05/2018.

The rate defines the price of one digital coin in US dollars. Cryptocurrency is the first invention in the financial system that was developed outside of the financial institutions, even without cooperation with them. It is innovative and does not use the existing financial systems. Moreover, it poses a threat to the status quo of the financial system. Undoubtedly, this trait of independence and lack of trust in the third party (institutions that create and regulate the financial system) would be a revolution in the world of finance where only two parties would be required. This is the main argument for creating a system that is not dependent and subject to the influence of financial regulators. Unfortunately in practice, despite the vision of the scattering of the system and the dependence only on the parties to the transaction it does not work. In fact a technology-based system also has regulators and is based on trust, but this can be a natural feature of social systems that must be based on social recognition.

However, many cryptocurrencies and exchange markets depend on a group of people or even one person who may have malicious intentions, as exemplified by

the many scams related to the cryptocurrency market. On the one hand, manipulations are made by the creators or regulators of the rules of operation, including changes in the algorithm itself, and on the other, players who have a huge impact on the entire market. An excellent example is the most popular cryptocurrency (bitcoin), where 97 percent of the currency is in the hands of only 4 percent of all portfolios [Chaparro 2018]. Therefore more and more people and institutions from the financial world warn against investing in cryptocurrencies, referring to the financial pyramid, the speculative bubble, or just ordinary fraud.

When they do not function as legal means of payment, they are a form of speculation or thesaurisation of values. Undoubtedly, this technology offers great possibilities which is why it is so difficult to define a system that would function in a safe way. One can store any type of transaction in transaction books. It does not matter if bitcoin represents currency, property, real estate or shares. The users can decide themselves by defining the bitcoin parameters which the given bitcoin unit represents. Each bitcoin is individually identifiable and programmable, which means that users can assign different properties to each individual. The user, using specialized applications, can program bitcoin to represent eurocents, company shares, kilowatt hours of energy, votes in elections, loans or digital holding certificates. Because of this, such a cryptocurrency is much more than just money and payments. Bitcoin behavior rules can also be programmed as needed. They can be automatically deleted after the expiration date, can be exchanged, they can automatically return to the owner, if the recipient does not meet, for example, the agreed terms of the transaction, will not pay on time or will not send the goods to the buyer. Just this feature could be used against fraudsters. However, establishing such a system is in fact not an easy task and undoubtedly requires a trusted party, or regulators, who will somehow watch over the safety of turnover. It seems that a financial system based on the discussed technology should go this way. Nowadays, despite the great interest, the problem itself is not fully recognized as evidenced by, for example, the different approaches of countries around the world to properly apply this technology.

3. Conclusion

Cryptocurrencies are not controlled by governments or central banks. Countries usually use two tactics. Some adopted the ostrich strategy, hoping that the fashion will pass by itself and generally does not introduce any regulations on this subject, only those that result from the law of the associated countries, i.e. refer to, for example, the European Union Member States, as in the case of Poland. The other part, however wants to try and partly take control and profit from it. For example, in Japan, bitcoin has become a fully-fledged payment instrument. However, due to experience (the collapse of the Mt.Gox stock exchange in 2014 and the disappearance of 850,000 bitcoins), the government of Japan has clearly defined

regulations. For example, entities that want to run cryptocurrency exchange services must appear in the register of the Financial Services Agency of Japan, which carries out additional supervision. Countries such as Russia, Ukraine, Belarus and Lithuania are in favor of earning money. These countries, located near Poland, due to the restrictions and unclear actions of the state authorities, will simply take over cryptocurrency market participants and they will be earning money, while the Polish government does not take part in the actual activity. Admittedly, the chaos related to the tax interpretation of the cryptocurrency market has finally been partially resolved, but doubts have not been completely resolved. This has a negative impact on investors because the Polish government stated that it is not going to issue a general tax interpretation in this matter. According to analysts, such negligence (lack of legal regulations) and lagging behind simply loses the opportunity for large revenue. For example, in 2016 the cryptocurrency industry in Poland paid over PLN 100 million in taxes.

An example is the Auroracoin cryptocurrency (Iceland's national coin) introduced in 2014. During the year, half of all the coins were distributed to Iceland's citizens. Everyone was interested (the Icelandic population is about 330,000 people), and received 31 coins, worth about 380 dollars. The goal of the creators is to decentralize control over money and revive the local economy, which has long been struggling with the fall in the value of the Icelandic crown. In the coming years, all eyes will look to Iceland. What the Icelanders will do – whether they are interested in the coin and whether they will start trading it – may depend on the future of national crypts in other countries. According to the Wall Street Journal, more than 70 hedge funds are currently investing in cryptocurrencies, and every day the value of operations carried out with bitcoins amount to 750 million dollars. For the development of the cryptocurrency market, solutions that increase the security of cryptocurrencies will be necessary, which is another fundamental problem to be solved [Extance 2015].

The most important factors that fundamentally affect cryptocurrencies include:

1. Confidence of users and investors – cryptocurrencies are virtual money that do not settle in any physical form. Their value is mainly justified by the offer and demand of users [Miciuła 2014]. If the demand for cryptocurrencies increases, their exchange rate also increases. Conversely, if people get rid of cryptocurrencies, their exchange rate will decrease.

2. Use of cryptocurrencies – cryptocurrencies were created as a virtual currency for fast and cheap internet transactions. The more vendors support and accept cryptocurrencies, the more they are used in practice and the greater the user community will be. Due to the long-growing value of cryptocurrencies, they are increasingly used for investment purposes. In countries with an unstable economy, virtual currencies are bought in order to preserve the value of their own money. Some cryptocurrencies (eg. ethereum) are also used by the so-called smart contracts. Cryptocurrencies without practical use sooner or later cease to exist.

3. Intervention of regulatory and supervisory authorities – if the government of an economically-significant state starts supporting cryptocurrencies, the trust of users will usually increase, which will also increase the value of this cryptocurrency [Miączyński 2017]. For example, when in April 2017 Japan recognized bitcoin as a legal currency, its value increased significantly. Yet it also works the other way round. Restrictions or bans on cryptocurrencies by state authorities may start a sharp drop in the market. For example, in September 2017, China banned cryptocurrencies, which resulted in a fall in the exchange rate. Bitcoin and cryptocurrency regulations are also prepared by the European Central Bank.

4. Media attention – information about the growing value of cryptocurrencies attracts new investors, which then increases demand and the cryptocurrency rate rises. The views of well-known personalities and companies also influence price increases or decreases. An example was the opinion of J.P. Morgan's General Director, Jamie Dimon, from September 2017, who described bitcoin as a fraud and said that the owners of bitcoins will suffer great losses in the future. The bitcoin market reacted to this message with a decline [Investplus 2018].

5. Manipulating courses – investors use a manipulation technique known as "pump and dump". This technique involves the purchase of cryptocurrency for a low rate and its subsequent media propagation. This will attract new investors who will increase the rate. In the case of liquid markets, we can also increase the price by buying currency in large quantities [Miciuła 2015]. When people notice that the rate of a given cryptocurrency increases, they will start investing, which will increase it. In the meantime, we can gradually buy a cryptocurrency for a much higher price than the purchase price. Without media propagation and other investors, the cryptocurrency will start to fall, but this does not apply to us because we have already sold the currency. This often also applies to the creators themselves or the organizers and managers of many cryptocurrencies, which appear in order to create such a specific pyramid of finance, merely for the purposes of their own income. This method (buy cheap – to convince others to buy – sell expensively). Unfortunately the natural development of cryptocurrencies is not conducive to stability and increases the high volatility of cryptocurrencies.

6. Technological factors (creators, managers, regulators) – a change of course can also be manipulated by changes in the source code, for example by implementing various improvements or changes in the number of coins available on the market.

7. Organizational factors – for example, factors affecting the extraction of cryptocurrencies (difficulties in mining, or the price of energy, which, as studies in the literature show, reach huge values comparable to the energy needed to satisfy thousands of households) [Luther 2016].

8. Substitutes – after all, even assets on the stock exchange affect each other, the growing interest in bitcoin is believed by some to be related to the fall in the

price of gold, etc. Bitcoin's value influences the rates of other crypto currencies, which have become an alternative to other investments or speculation.

The maximum number of bitcoins created by creators is 21 million, and currently over 17 million are in use, so there will certainly be changes in the assumptions and functioning of entire cryptocurrency markets [Antonopoulos 2015]. The most common opinions are that virtual currencies will be a new stage of development or a haven for fraudsters. Certain solutions and regulations should be introduced, including possible ones based on trust in international institutions that will cause a shift in the likelihood of the possibility of using cryptocurrencies towards the development of the information society, thus limiting the opportunities of fraudsters and other crimes. Therefore, the main conclusion of the analyses carried out regarding the cryptocurrency markets is that it will undoubtedly be the future of the financial payment system, but certainly not in its current form. Many local markets will repeat the already known cryptocurrency history, many of which will cease to function in a short time, just like the financial pyramids. Certainly cryptocurrency markets will develop and limit the negative phenomena that affect confidence in the entire market. It is also possible that, as a result of the lack of other solutions, there will be a need to base cryptocurrencies on trust in countries or international organizations. One thing is certain – some solutions will sink, and some will go into widespread use, laying the foundations for the digital financial system of the information society.

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