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Cryptocurrency market in Poland and its institutional conditions

Streszczenie: Rynek kryptowalut już od czasu swojego powstania budził wiele kontrowersji oraz obaw związanych z zagrożeniami, które stwarza obrót walutą wirtualną. Gwałtowny wzrost wartości Bitcoina w 2017 roku, miał wpływ na znaczny wzrost zainteresowania inwestorów, instytucji oraz podmiotów związanych z rynkami finansowymi, które nie dotyczyło jedynie chęci wzbogacenia się. Technologia *blockchain* oraz bazujący na niej rynek kryptowalut, umożliwiają rozwój technologii, szybki i bezpieczny przepływ kapitału oraz mają wiele innych zastosowań, które w przyszłości mogą doprowadzić do rewolucyjnych zmian i odkryć. Jednakże należy również pamiętać, że rynek waluty wirtualnej stwarza warunki dla szeroko rozumianej działalności przestępczej i terrorystycznej, będących zagrożeniem dla funkcjonowania całego systemu polityczno- -gospodarczego. Kluczowym elementem dla zapewnienia pełnej wydajności rynkowej i wykorzystania całego zakresu możliwości rozwoju, przy zachowaniu bezpieczeństwa istniejących na nim podmiotów, jest kreowanie budujących rynek właściwych uwarunkowań instytucjonalnych. Umożliwią one zachowanie równowagi między poziomem ingerencji w system finansowy związanej z wprowadzeniem regulacji dotyczących waluty wirtualnej a swobodnym rozwojem rynku i możliwościami, które za sobą niesie.

Słowa kluczowe: kryptowaluty, bitcoin, techonologia blockchain, uwarunkowania instytucjonalne dla kryptowaluty, rynek finansowy

The cryptocurrency market in Poland and its institutional conditions

Summary: Since its inception, the cryptocurrency, a lot of controversy and concerns related to the threats posed by trading in virtual currency has aroused. The sharp increase in the value of bitcoin in 2017 had an impact on a significant increase in the interest of investors, institutions and entities related to financial markets, which was not only related to the desire to get rich. Blockchain technology and the cryptocurrency market based on, it enable the development of technology, fast and safe capital flow and have many other applications that may lead to revolutionary changes and discoveries in the future. However, it should also be remembered that the virtual currency market creates conditions for broadly understood criminal and terrorist activities, which pose a threat to the functioning of the entire political and economic system. The key element to ensure full market efficiency and use of the entire range of development opportunities, while maintaining the security of the entities existing in it, is the creation of appropriate

institutional conditions that build the market. They will make it possible to maintain a balance between the level of interference in the financial system related to the introduction of virtual currency regulations and the free development of the market and the opportunities it brings..

Keywords: cryptocurrencies, bitcoin, blockchain technology, institutional conditions, financial market

The market economy and globalisation have opened up new opportunities for allocating capital in various instruments that enable protection and multiplication of accumulated assets. Most financial instruments listed on the world's stock exchanges, which are traditional forms of investment, are linked to shares, bonds, or investment funds based on certain property or non-property rights.

In 2009, there was a breakthrough in the global financial markets as a result of Satoshi Nakamoto's manifesto and the implementation of Bitcoin, which had a huge impact on the global economy over the next decade. The phenomenon of this instrument lies in the complete conventionality of its rate, created by market supply and demand; consequently, it has no property or legal cover. Despite this fact, the cryptocurrency market capitalisation amounted to around USD 300 billion in mid-2020. This amount is equivalent to the valuation of JP Morgan&Chase, a bank operating since 2000 and belonging to the 15 highest-rated companies in the world.[1]

Significant price fluctuations in the cryptocurrency market have led to numerous speculations on the further value and future of the virtual currency. Bitcoin was created to introduce a new means of exchange to the market, but it is the possibility of exchange rate gains that is currently of the greatest interest to investors. Restrictions and legal conditions imposed on cryptocurrency exchanges and users have not stopped further market development. The man in the concept of *homo oeconomicus*[2], presented by John Stuart, is a paradigm of a rational man, aiming to maximise profits despite the existing barriers to development[3]. The same is true of the cryptocurrency market, where profit-seeking individuals are ready even to violate the standards of operation of the legal and financial system. It is crucial from the point of view of the state and of all market participants to ensure a balance between security and the freedom and independence of the virtual currency from external factors. This ambitious task can only be completed if the instruments of the state apparatus are used properly and sustainably.

The article aims to present institutional conditions of a legal and economic nature that are important for the sustainable development of the cryptocurrency market in Poland and worldwide. For the purpose of introducing into the virtual currency functioning system, the model of operation of the blockchain system and the cryptocurrency market based on it have been illustrated.

Cryptocurrency operation scheme

Technological development and globalisation have made it possible to develop new branches of the economy and trade. The widespread availability of the Internet began

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[1] FXSSI.com. (2020), *Most Valuable Companies in the World-2020*, https://fxssi.com, 10/08/2020.
[2] The Monist (1995), *The Virtual Reality of Homo Economicus*, vol. 78, issue 3, July 1, 1995, p. 308.
[3] Morawski W. (2001), *Socjologia ekonomiczna*, Warszawa, WN PWN, p. 27.

the era of remote transactions without the need for paper money. The main idea and aim of creating Bitcoin and subsequent cryptocurrencies are described in the manifesto of its creator, or a group of its creators, under the pseudonym Satoshi Nakamoto. The fundamental idea of the blockchain technology, on which all cryptocurrencies are based, was the possibility to transfer funds directly between the parties to a transaction without any intermediation by a third party or institution.

The basis for building institutional governance related to the virtual currency is to define and clarify this concept for the purposes of the operation of the state system. Many institutions have tried to define virtual money, but due to the complexity of the issue, they have not taken a uniform form. The European Parliament, as well as the European Central Bank and the European Banking Authority, have defined the concept of cryptocurrency as *a digital representation of value that is neither issued by a central bank or a public authority, nor necessarily attached to a fiat currency, but is accepted by natural or legal persons as a means of payment and can be transferred, stored, or traded electronically*[4].

According to the definition proposed by the European Central Bank in 2012, *virtual currency is a type of unregulated, digital money, which is issued and usually controlled by its developers, and used and accepted among the members of a specific virtual community or a virtual world.*

The definition of the European Banking Authority of 2014 states that *virtual currency is a digital representation of value that can be digitally traded and functions as a means of exchange, a unit of account, a store of value, but does not have a legal tender status – i.e. its value is not guaranteed by any government or central bank but can be regulated by the state.*

An identical definition has been provided by scientific institutions: *virtual currency is a means of payment not issued by any banking institution, being the unit of exchange between the issuer and the user or between a group of users, playing the role of the universal equivalent in a given network, within strict limits, and is mainly used to purchase virtual items*[5].

In turn, the draft Polish Act on the Central Accounts Database stipulates that virtual currency means a transferable property right, whose object is a digital representation of value, having its equivalent in a means of payment, treated as a means of exchange and as a unit of account, not having the status of a legal means of payment and not being electronic money within the meaning of the Act of August 19, 2011, on payment services, which may be transferred, stored, or sold for means of payment electronically[6].

Both the institutions of the European Union and the Polish nomenclature have unanimously defined the cryptocurrency as a digital form of value representation, which is not an official means of exchange identical to a fiat currency. In addition, the above definitions emphasise the conventionality of virtual currency as a means of exchange between individuals or members of the community of a virtual world. These definitions are the foundation for further legislation by bodies at the national and international level and for setting further institutional conditions.

4   Proposal for a Directive of the European Parliament and of the Council Amending Directive (EU) 2015/849 on the Prevention of the Use of the Financial System for the Purposes of Money Laundering or Terrorist Financing and Amending, Directive 2009/101/EC, COM (2016) 450 final (July 5, 2016).

5   Chen L., Wu H. (2020), *The Influence of Virtual Money to Real Currency: A Case-based Study*, Beijing University.

6   Draft Act on the Central Accounts Database, version of December 14, 2016.

Transactions using virtual currency allow the free movement of capital without control and without costs associated with servicing financial institutions. However, the lack of supervision in the case of cryptocurrencies does not mean that the transactions carried out using them are insecure; on the contrary, it is the foundation of certainty and stability of capital flows. The security is guaranteed by the computing power of the processors of all the units that have cryptocurrencies in their portfolios and deal with mining cryptocurrencies. The current capitalisation of the cryptocurrency market is an evidence of the strength of the transaction encryption code, which is built on the total computing power of all related parties[7]. *Transactions are carried out without intermediaries – that is without banks. Bitcoin can be used to book hotels in Expedia, buy furniture from Overstock or Xbox games, but most interest is in getting rich through trade*[8].

To fully understand the process of operation of the cryptocurrency market and the course of transactions based on them, an in-depth analysis of the blockchain system that underpins the whole process is essential. Cryptocurrencies represent the largest subgroup of the so-called alternative currencies (complementary and substitutable), which are intended to supplement or replace the existing monetary systems[9].

Bitcoin uses peer-to-peer technology to operate without central authorities or banks; managing transactions and spending funds is done collectively through the network. The virtual currency operates in an open-source system, the whole project is public, no one owns or controls the market, and anyone can become a member of the network. With its many unique properties, cryptocurrencies enable exciting applications that none of the previous payment systems had[10].

The following diagram illustrates the difference between the way traditional money is exchanged, which takes place under the supervision of the financial state authorities, and the functioning of the virtual currency, which is limited to a direct relationship between the transaction participants.

Figure 1 **Money exchange model**
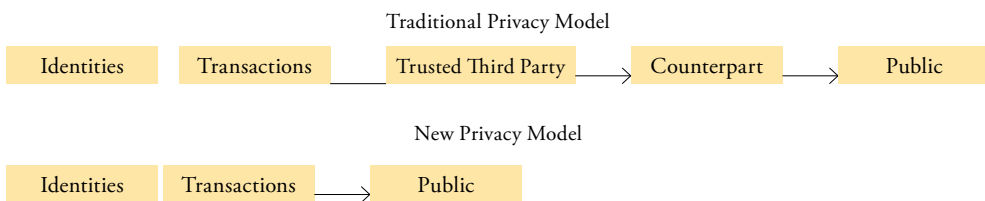
Source: Satoshi Nakamoto, *Peer to peer, electronic cash system*.

To understand the processes involved in cryptocurrency operations, the key factor is the analysis of the blockchain system, which is the basis of the operation of the entire network. The system is a chain of blocks into which transactions are grouped, and the process is linear and chronological. The chain of blocks is stored at each network

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[7]   Satoshi Nakamoto (2009), *Bitcoin: A Peer-to-Peer Electronic Cash System*.

[8]   CNN Money (2020), *What is Bitcoin?*, https://money.cnn.com.

[9]   Sobiecki G. (2017), *Regulowanie kryptowalut w Polsce i na świecie na przykładzie Bitcoina – status prawny i interpretacja ekonomiczna*, Wrocław, p. 4.

[10] Bitcoin.org, *How to use Bitcoin*, https://bitcoin.org/en/getting-started, access: 10/08/2020.

user's premises and the source code is open and transparent, thus guaranteeing the transparency of the whole project[11]. Cryptocurrencies are generated by searching for block solutions using a trial method, hence the higher computing power of the device enables more calculations. Transactions are then recorded in a public register where each user can find any operation but without being able to know its addressees. The means can be used only with a private key, generated by the blockchain technology. Each coin, as a unit, is a chain of virtual signatures, and during its transfer, another signature is added to allow for the verification of the chain of its holders. Security is ensured by the public availability of each data chain, preventing its recopying and guaranteeing its uniqueness.

Virtual currency units can be obtained in two ways. The first one is the acquisition from the previous holder, essentially typical of any traditional currency, and the second is their creation, which is a characteristic feature of virtual currencies. A user who provides computing power for "cryptocurrency mining" is called a miner, while an IT device for cryptocurrency mining is called a mining rig.

Figure 2 **Model of the blockchain system operation**
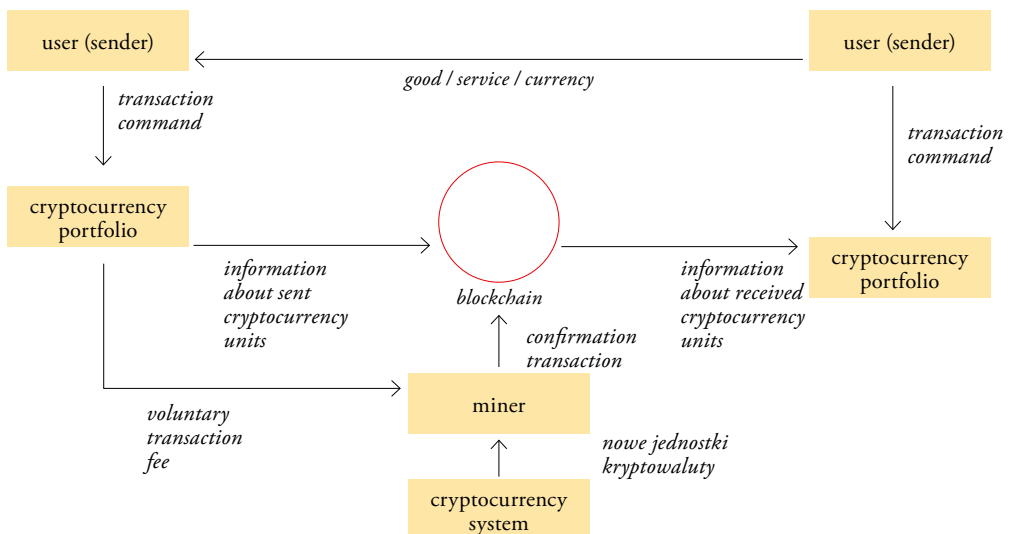
Source: Birski B. (2017*), Prawnopodatkowe aspekty kryptowalut na przykładzie bitcoina. Schemat funkcjonowania kryptowaluty*, Wrocław.

According to the manifesto, a transaction initiating the creation of a new coin, owned by the creator of the block, is a special transaction. This encourages the nodes, i.e. the users, to operate the network and provides a way of the initial distribution of coins for circulation because there is no central authority that would issue them. The steady increase in the number of new coins is analogous to the situation where miners extract gold in order to put it into circulation later on. The total number of Bitcoin currency units cannot exceed a total of 21 million units[12].

The monetary function of cryptocurrency goes far beyond the previous understanding of the means of exchange and thesaurisation. Over time, Bitcoin has deviated from its

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[11] Wiciak K. (2017), *Zapobieganie i zwalczanie cyberprzestępczości*, materials developed as part of training financed by the European Social Fund under the Operational Programme Knowledge Education Development 2014-2020 for employees of public prosecution units in the field of law.

[12] Bala S., Kopyściański T., Srokosz W. (2016), *Kryptowaluty jako elektroniczne instrumenty płatnicze bezemitenta. Aspekty informatyczne, ekonomiczne i prawne*, Wydawnictwo Uniwersytetu Wrocławskiego, Wrocław, pp. 77-78.

Figure 3 **Historical Bitcoin price variations**
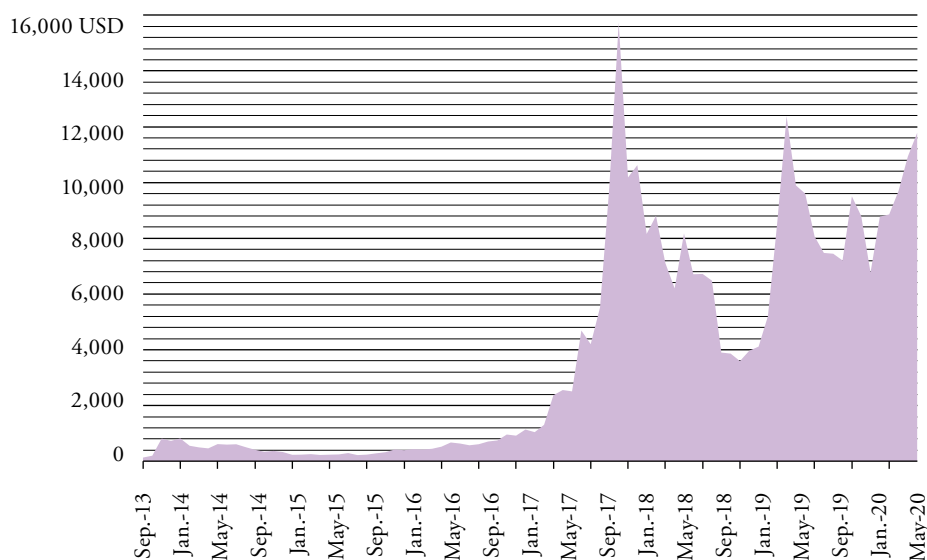
Source: Marketinsider.com.

intended function as a means of payment and has also become an investment. Price fluctuations in the cryptocurrency market reflect the number of transactions made on the market, leading to a speculative perception of this asset[13]. Bitcoin does not, in fact, have many other features that were supposed to be the essence of the system. Users specify the following features:

- lack of intermediaries (in fact, there are many intermediaries: user-application, exchange office-wallet-acceptor),
- very small commissions (actually, commissions will increase on a scheduled basis, and currently BTC[14] price fluctuations may be a higher cost than commissions),
- instant transactions (only the initiation of the transaction is quick, its approval by the network takes many minutes and even hours, preparation and learning also takes time),
- it is very simple to use (it is quite simple, but requires getting used to),
- it is not possible for someone to block the account (in practice, the password can be lost and the network wallet can be blocked),
- security (many exchanges and other services have already gone bankrupt, many users have lost Bitcoins through theft),
- convenience: no registration, no account, no bureaucracy (often you have to prepare everything in advance: install an application, buy or mine Bitcoins, learn how to use them)[15].

Among the many doubts related to the monetary function of cryptocurrencies, the virtual currency is an innovative counter-proposal to the existing system and presents itself as a real, existing, and alternative monetary and payment system[16].

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13   Shatin N.T (2018), *Does Bitcoin behave as a currency?*, Hong Kong, China.

14   Iso.org, *Funkcjonowanie rynku bitcoin*, http://www.iso.org/iso, access: 14/04/2015.

15   Sobiecki G. (2017), *Regulowanie krypotwalut w Polsce i na świecie na przykładzie Bitcoina – status prawny i interpretacja ekonomiczna*, Wrocław p. 4.

16   Weber B. (2018), *Bitcoin and the legitimacy crisis of money*.

One may risk a claim that the uniqueness of Bitcoin and other cryptocurrencies is that it splits the previously integrated idea of money as simultaneously fulfilling four fundamental economic functions: means of exchange, payment, storage of assets, and measurement of value. The multiple personality of cryptocurrencies makes them behave like "normal" money in the function of a means of exchange and means of payment, combining the features of cash and electronic money[17].

Cryptocurrency market analysis

The next step in the process of understanding the factors affecting the operation of and trade in virtual currencies is the historical analysis of the price fluctuations of Bitcoin, treated as the base currency. There are more than a hundred cryptocurrency exchanges around the world, the largest of which are: Binance, Huobi Global, Coinbase Pro, whose daily turnover volumes exceed USD 1 billion[18]. The historical level of the cryptocurrency market valuation is characterised by significant fluctuations; however, assuming the average price of Bitcoin at the level of USD 10 thousand, it can be assumed that the total value of the cryptocurrency market is about USD 300 billion.

Bitcoin really started to grow in 2013, when its price was around USD 13.5 per unit. At the beginning of April 2013, the price rose to over USD 220, and then fell to around USD 70 by mid-April – the first real rally associated with this currency. Then Bitcoin started to gain in value in October and November 2013, when the exchange rate was around USD 100 in early October, and it reached around USD 195 at the end of October. In November, the price rose from around USD 200 to over USD 1,075 at the end of the month. The rally was caused by new Bitcoin exchanges and the entry of Chinese miners into the market. At that time, there was the Gox exchange, which was involved in around 70% of all currency exchange transactions. Reaching the peaks was the beginning of dynamic price changes, which were linked to rumours about insecurity on the Mt. Gox exchange. Users have had problems withdrawing money from their wallets. Then, on December 4, 2013, the price reached a record level of USD 1,079, and on December 7, 2013, it fell to USD 760, i.e. by around 29% in a few days.

The trade stabilised to some extent at USD 920 in January 2014, but there was another major crash in early February, more or less in time, when the Mt. Gox exchange applied for bankruptcy protection in Japan.

Over the next few years, the price of Bitcoin ranged between USD 300 and USD 800, and it was only in 2016 that it began to grow steadily, exceeding USD 1,000 in early 2017.

In the autumn of 2017, the price of Bitcoin started to rise, in October of that year it exceeded USD 5,000, and in November it doubled again to USD 10,000. Then, in December, the price of one Bitcoin reached almost USD 20,000. Several commentators and critics called it a price bubble, many compared it to the Dutch Tulip Mania of the 17th century. Indeed, just a few weeks later, the price of Bitcoin dropped sharply, falling below USD 7,000 by April 2018, then below USD 3,500 by November 2018.

The revival of prices took place in 2019, when Bitcoin again recorded an increase in volume, exceeding the USD 10,000 limit. However, at the end of the year, the price of Bitcoin fell to around USD 7,000 and has fluctuated since then.

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[17] Sobiecki G. (2017), *Regulowanie krypotwalut w Polsce i na świecie na przykładzie Bitcoina – status prawny i interpretacja ekonomiczna*, Wrocław, p. 4.

[18] Coinmarketcap.com, *Top Cryptocurrency Spot Exchanges*, https://coinmarketcap.com/, access: 09/08/2020.

Rysunek 4 **Countries with the largest share in the world cryptocurrency market**
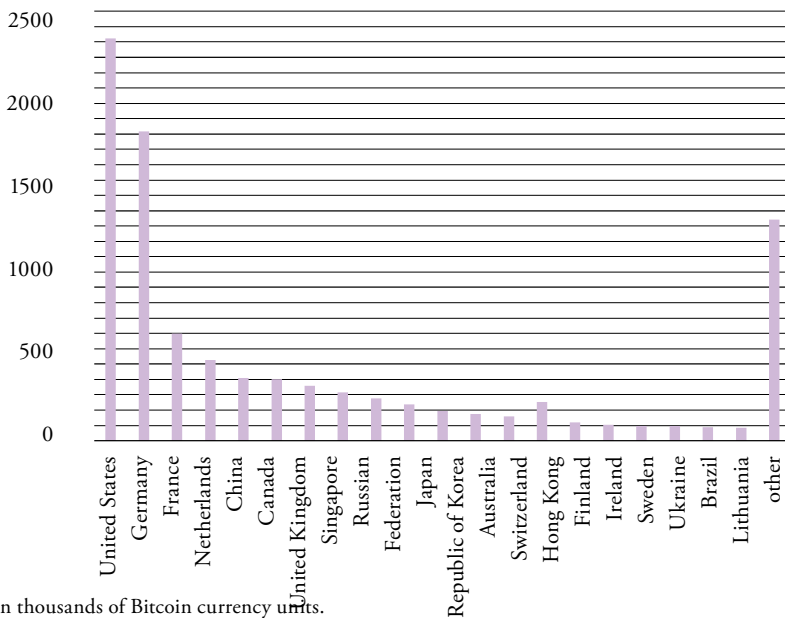
Quantities given in thousands of Bitcoin currency units.
Source: Thenextweb.com.

In 2020, the lowest Bitcoin price was around USD 5,000, after the crash caused by the COVID-19 pandemic on the market and the closure of the global economy – since then, the price has been constantly recovering, reaching over USD 12,000 in August. High inflation and increased investor interest, according to numerous forecasts, may lead to new historical peaks for the cryptocurrency.
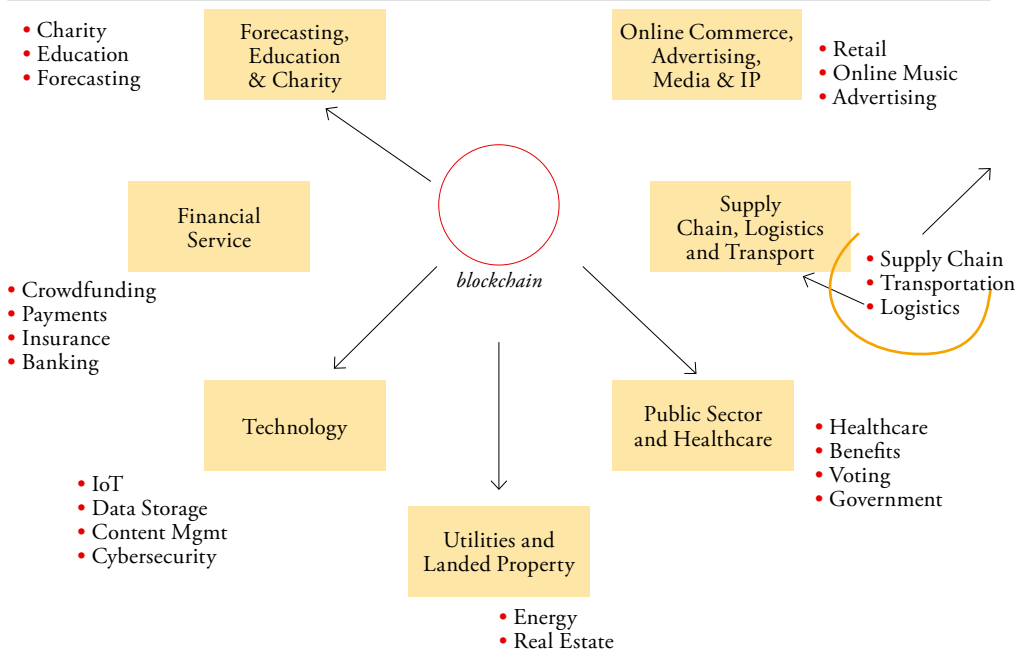
There is a lot of speculation related to the identification of entities with the largest cryptocurrency market shares. The theory is that most of them belong to large exchanges, funds, or mining companies that use their position to influence the market.

The United States is now home to most cryptocurrency-related projects and activities, with a large number of exchanges, trading platforms, funds, cryptocurrency facilities, and blockchain-oriented projects.[19] Germany, France, the Netherlands, China, and Canada are also among the countries with the largest market shares. While the country which is by far the most involved in cryptocurrency mining is China.

Bearing in mind the share of individual countries in the virtual currency market, it is also important, from the perspective of a proper interpretation of the market, to determine the assets that exist on it. There are about 5,392 cryptocurrencies on the market, but not all monetary units have gained significant popularity. The majority of the capitalisation of the virtual currency market is covered by the 10 highest-valued units, which include:

- Bitcoin (BTC) USD 128 billion
- Ethereum (ETH) USD 19.4 billion
- XRP (XRP) USD 8.22 billion
- Tether (USDT) USD 6.4 billion
- Bitcoin Cash (BCH) USD 4. 1 billion
- Bitcoin SV (BSV) USD 3. 4 billion
- Litecoin (LTC) USD 2.6 billion

19   Medium.com, *Biggest Bitcoin Hosts*, https://medium.com/@skatewars666, access: 05/08/2020.

Rysunek 5 **Blockchain technology applications**

- Charity
- Education
- Forecasting

Forecasting, Education & Charity

Online Commerce, Advertising, Media & IP

- Retail
- Online Music
- Advertising

Financial Service

Supply Chain, Logistics and Transport

- Supply Chain
- Transportation
- Logistics

blockchain

- Crowdfunding
- Payments
- Insurance
- Banking

Technology

Public Sector and Healthcare

- Healthcare
- Benefits
- Voting
- Government

- IoT
- Data Storage
- Content Mgmt
- Cybersecurity

Utilities and Landed Property

- Energy
- Real Estate

Source: Robert H. (2019), IT NOW, BEYOND BITCOIN AND THE BLOCKCHAIN.

- EOS (EOS) USD 2.4 trillion
- Binance Coin (BNB) USD 2.4 billion
- Tezos (XTZ) USD 1.5 billion[20]

The creation of the first Bitcoin cryptocurrency was of fundamental importance for the functioning of the market; although it is widely considered to be a pioneer in the world of the virtual currency, analysts take many approaches to assessing the remaining assets functioning in the market. The first alternative currency to Bitcoins was Ethereum, which is a decentralised software platform that allows the creation and launch of intelligent contracts and decentralised applications without any downtime, fraud, control, or third-party interference. Ethernum, launched in 2015, is now the second-largest digital currency in terms of market capitalisation after Bitcoin, although it lags behind the dominant cryptocurrency; since January 2020, the Ether's market capitalisation has been about 1/10 of the size of Bitcoin.[21]

Ripple is a global network of real-time settlements that offers immediate, secure, and affordable international payments. Ripple, launched in 2012, "enables banks to settle cross-border payments in real-time with full transparency at lower costs".[22] Ripple differs from Bitcoins and many other Altcoins because its structure does not require exploration, i.e. mining, it reduces computing power consumption and minimises grid delays and energy consumption.

The third most popular virtual currency is Litecoin, launched in 2011. It was one of the first cryptocurrencies to follow the footsteps of Bitcoin and is often referred to as "silver to Bitcoin's gold".[23] It was created by Charlie Lee, an MIT graduate and a former

[20] Finance.yahoo.com, Top 10 cryptocurrencies by market capitalisation, https://finance.yahoo.com, access: 01/08/2020.

[21] Ethereum.org, *Ethereum for Beginners*, https://ethereum.org, access: 01/08/2020.

[22] GitHub Ripple, https://github.com, access: 02/08/2020.

[23] Litecoin.org, What is Litecoin?, https://www.litecoinpool.org, access: 04/08/2020.

Google engineer. Litecoin is based on a global open-source payment network that is not controlled by any central authority. Although Litecoin is in many ways similar to Bitcoin, it has a faster rate of block generation and therefore offers faster transaction confirmation times. In addition to programmers, the number of vendors who accept Litecoin is growing. As of January 8, 2020, Litecoin had a market capitalisation of USD 3 billion and the value of one token of USD 46.92, making it the sixth-largest cryptocurrency in the world.[24]

The Polish Financial Supervision Authority (KNF) is the main entity dealing with the registration and licensing of deposits and cash trading in Poland. Each entity providing payment services is obliged to obtain a permit from the KNF for its activities, the absence of which may result in a penalty of up to 2 years imprisonment or a fine of up to PLN 5 million. In 2018, the Polish Financial Supervision Authority issued a communication highlighting the obligation for entities depositing client funds in their accounts to comply with the Act of March 1, 2018, on counteracting money laundering and terrorist financing. The Act imposes an obligation to report the activities to the General Inspector of Financial Information.

The largest cryptocurrency exchange on the Polish market was BitBay, which started its operations in 2014. The introduction of new legal regulations concerning the functioning of exchanges into the legal system in 2018 led to the inclusion of BitBay in the list of KNF warnings.[25] To avoid legal regulations and to reduce tax liabilities, in 2018, the largest cryptocurrency exchange in Poland moved its headquarters to Malta and then to Estonia. Malta has been named "Silicon Valley of Blockchain Technology" thanks to the introduction of law favourable to the blockchain industry and the cryptocurrency market. The country has issued licenses for cryptocurrency operators and developed an industry support programme. Binance, one of the world's largest cryptocurrency exchanges, is currently operating in Malta.

At this point, it is worth pointing out that the blockchain technology can be used not only to create a cryptocurrency system because these technologies are nothing more than a way of transmitting information online. Moreover, these solutions can be modified, improved, and used in many industries.

The described blockchain technology and its derivatives are of great importance for the Internet, e-commerce, the world of finance and law. For example, they enable the creation of the so-called smart contracts, i.e. legal relationships that are created, monitored, and enforced in an automated manner.[26] With the blockchain technology and encryption of transaction parties' addresses, it is possible to transmit information through the network without fear of an unauthorised person being able to read or modify it. It is worth mentioning that the blockchain technology has revolutionised public administration in some countries with regard to the accessibility of government e-services (Estonia, for example, has introduced them on a wider scale).[27] The Polish administration is also considering the implementation of this system as part of e-administration.

[24] Coinmarketcap.com, *Top Cryptocurrency Spot Exchanges*, https://coinmarketcap.com, access: 09/08/2020.

[25] Businessinsider.com, *Rynek kryptowalut nie jest w Polsce regulowany. KNF wiele razy zwracała uwagę na problem*, https://www.onet.pl, access: 01/08/2020.

[26] Birski B. (2017), *Prawnopodatkowe aspekty kryptowalut na przykładzie bitcoina. Schemat funkcjonowania kryptowaluty*, Wrocław, p. 34.

[27] PWC.Com, *Blockchain security*, https://pwc.blogs.com, access: 30/07/2020.

The system related to the functioning of the virtual currency is constantly developing and is subject to numerous changes. Along with it, the number and complexity of relations between the entities of economic processes increases, which in turn also affects the overall environment of the cryptocurrency market, generating threats for users and the economy as well as the state as an institution as a whole. The key threats that the state should face using the apparatus of state institutions are:

- private law problems (ownership, settlement of obligations),
- the problem of introducing Bitcoins into circulation (primary acquisition: production, mining, emission),
- the problem of taxation of transactions (VAT) and income (PIT, CIT),
- the problem of the financial system: monetary and banking (licenses, control, information obligations),
- criminal problems (user security, fraud, theft and misappropriation, money laundering, terrorist financing),
- the problem of accounting classification and valuation (inventories, intangible and legal assets, investments, securities, financial instrument).[28]

The existing threats resulting from the functioning of the virtual currency market are a cause for concern for national institutions and for divergent positions related to the legality of trading in cryptocurrencies. Globalisation and the universal access to networks make it possible to use the virtual currency for criminal purposes, but with a precisely structured normative system and efficient state institutions, it is possible to limit illegal activities.

Institutional conditions of the cryptocurrency market

To determine the institutional conditions affecting the functioning and development of the cryptocurrency market in Poland, it is required to define the elements of the economic policy creating the functioning of the financial system. The economic policy sets out the methods in which a state influences a market using specific tools. The implementation of tasks by economic policy entities takes into account legal and economic conditions prevailing in a given country, which may be internal, external, developmental, and doctrinal.[29]

The authority which determines the perception of the cryptocurrency market by universal state bodies, which with the help of specific institutions create an environment for the functioning of market elements, has a fundamental impact on the setting of internal standards regulating the financial market in Poland. The macro-economic nature of the state policy is built with the conscious use by the state administration of certain instruments in the form of tax and legal standards.[30]

The Polish Financial Supervision Authority represents a negative approach to cryptocurrency trading issues. Mining of, payments using, and trading in virtual currencies are not prohibited in Poland, but state authorities have repeatedly stressed

28 Sobiecki. G. (2017), *Regulowanie krypotwalut w Polsce i na świecie na przykładzie Bitcoina – status prawny i interpretacja ekonomiczna*, Wrocław, p. 65.

29 Gajda M., Tarnawska K. (2009), *Kontrowersje wokół roli „Paktu Stabilizacji i Wzrostu" jako instrumentu koordynacji polityki gospodarczej w ramach Unii Gospodarczo-Walutowej*, Studia i Prace Wydziału Ekonomii i Stosunków Międzynarodowych, Zeszyty Naukowe nr 2, Cracow University of Economics, pp. 9-28.

30 Borodo A. (2005), *Polskie prawo finansowe*. Zarys ogólny, Toruń.

the danger related to the speculative nature of this asset. Cryptocurrencies have not achieved an equal position with the fiat currency but their use in private payments is allowed. The reluctance of state authorities to implement virtual currency systems led to the issuance of a warning by the National Bank of Poland and the Polish Financial Supervision Authority on July 7, 2017, which resulted in the transfer of the headquarters of the BitBay exchange to Malta. The financial market regulators stated that trading in cryptocurrencies in Poland did not violate national or European law, but virtual currencies were not considered legal tender.[31] The warning issued by the National Bank of Poland and the Polish Financial Supervision Authority also includes a provision that state regulatory authorities consider the purchase, possession, and sale of virtual currencies to be incompatible with the principles of a stable and secure state management. Moreover, establishing relations with entities involved in cryptocurrency trading is a legal and reputational threat to Poland.[32]

On January 24, 2018, Prime Minister Mateusz Morawiecki issued a statement in which he stressed that Poland would either ban cryptocurrency trading or introduce stricter regulations protecting users of the virtual currency market.[33] The government's fears were caused by the drastic fall in the Bitcoin value in January 2018, following the historic peak of the entire crypto index in December 2017. The announced legal regulations were to protect the holders of the virtual currency against participation in a pyramid scheme similar to Amber Gold, but operating on a global scale.

Subsequent regulations relating to cryptocurrencies were about tightening the fiscal discipline. On April 4, 2018, the Ministry of Finance published guidelines on the tax implications of virtual currency trading.[34] The definition of revenue from cryptocurrencies is indicated in Article 17(1)(f) of the Act on Personal Income Tax. According to the Act: *the disposal of the virtual currency against payment is understood as the exchange of the virtual currency for legal tender, goods, services, or property rights other than the virtual currency or the settlement of other obligations using the virtual currency.*[35,36]

The established cryptocurrency tax is 19% of the base, i.e. 19% of revenue after deducting tax-deductible costs. The act of sale or purchase of the cryptocurrency is considered as a transfer of property rights, which is subject to a fee of 1% of the transaction value. The amount of the tax base cannot be reduced by the value of tax exemptions and deductions, the pure value of income is taxed. The revenues from the exchange of the virtual currency for the means of payment, goods, services, or property rights other than the virtual currency or from the settlement of other liabilities in the virtual currency are considered revenues from capital gains. Thus, it is necessary to determine the revenues from:

- the sale of the currency on an exchange – the value of revenue is the value of cash received in exchange for cryptocurrencies after they are converted into zlotys at the average exchange rate of the National Bank of Poland (NBP) on the business day

[31]   Library of Congress (2018), *Regulation of Cryptocurrency Around the World*, The Law Library of Congress, June 2018.

[32]   Statement of the National Bank of Poland (NBP) and the Financial Supervision Commission (KNF) on "Virtual Currencies", July 7, 2017.

[33]   Żuławiński M., Morawiecki G. (2020), *We Will Ban Cryptocurrencies or Regulate Them. We Do Not Want Another Amber Gold*, Bankier.pl, https://www.bankier.pl, 07/08/2020.

[34]   Skowron D. (2019), *Bitcoin jako przedmiot zabezpieczenia w postępowaniu karnym*, Warsaw.

[35]   Rusin K. (2020), *Zasady rozliczania kryptowalut w 2020 roku*, https://podatki.gazetaprawna.pl, 09/08/2020

[36]   E-pity.pl, *Kryptowaluty a podatek PIT*, https://www.e-pity.pl, 04/08/2020.

preceding the revenue generation date,

- the exchange for another value of the goods or the value of the service or other property right received in exchange; in the case of barter agreements with the settlement using cryptocurrencies, the parties determine the value of the consideration.[37]

It is also common for taxpayers conducting business activities to settle accounts using virtual currencies. Despite the settlement of an entity in the course of its business related to the operation of the business, the tax treatment of a transaction should always result in the recognition of an expense or revenue from the purchase or sale of the cryptocurrency outside the business. The regulation introduced implies the impossibility of buying a virtual currency as part of business activity.

External institutional arrangements have a key impact on the regulation of internal financial markets and complement the underlying national regulations of each country. The institutions that influence the regulations of the monetary policy in the global markets are currently characterised by extreme approaches to the legal and financial regulations associated with the trade in cryptocurrencies. In the initial phase of the existence of virtual currencies, between 2009 and 2015, the use of virtual currencies was not formally prohibited in any country of the world.[38] At present, depending on their cryptocurrency market policies, the countries have opted for different legal solutions in this respect.

In terms of the existing 246 countries, 99 of them, or 40% of the total number, have either adopted Bitcoin's legality or taken a neutral position, while 10 countries have introduced restrictions on the trade in the virtual currency, and only 3% of the total number of countries, including Russia, has declared Bitcoin illegal.

Other countries (130) have not defined their clear positions regarding the trade in Bitcoin on their territory.[39]

The key source of external regulations for Poland concerning the trade in the virtual currency is the European Union law, in terms of the entire *acquis communautaire*, which each Member State is obliged to observe based on the provisions contained in the accession treaties. One of the first acts related to the trade in the virtual currency in the European Union was the ruling by the European Court of Justice on October 22, 2015, on the exchange of a traditional currency for Bitcoin or other virtual currencies and vice versa. The ruling set a precedent because it specified that transactions using Bitcoin currency constituted a provision of services against payment, but were exempt from value added tax (VAT). The purchase or sale of Bitcoins has therefore been exempted from VAT in all EU Member States.[40]

The beginning of the European Commission's activities to legally regulate the trade in cryptocurrencies was a legislative proposal issued on July 5, 2016, concerning the prevention of money laundering. It was intended to cover providers of trust portfolios and virtual currency exchange platforms, who would be required to meet due diligence

[37] Bala S., Kopyściański T., Srokosz W. (2016), *Kryptowaluty jako elektroniczne instrumenty płatnicze bezemitenta. Aspekty informatyczne, ekonomiczne i prawne*, Wydawnictwo Uniwersytetu Wrocławskiego, Wrocław, p. 118.

[38] Reminanto.Com, Bitcoin Legitimacy Around the World, https://www.fxempire.com, access: 05/08/2020.

[39] Case C-264/14, Skatteverket v. David Hedqvist, ECLI:EU:C:2015:718.

[40] Proposal for a Directive of the European Parliament and of the Council Amending Directive (EU) 2015/849 on the Prevention of the Use of the Financial System for the Purposes of Money Laundering or Terrorist Financing and Amending Directive 2009/101/EC, COM (2016) 450 final, July 5, 2016.

Figure 6 **Elements creating the monetary function of the virtual currency**
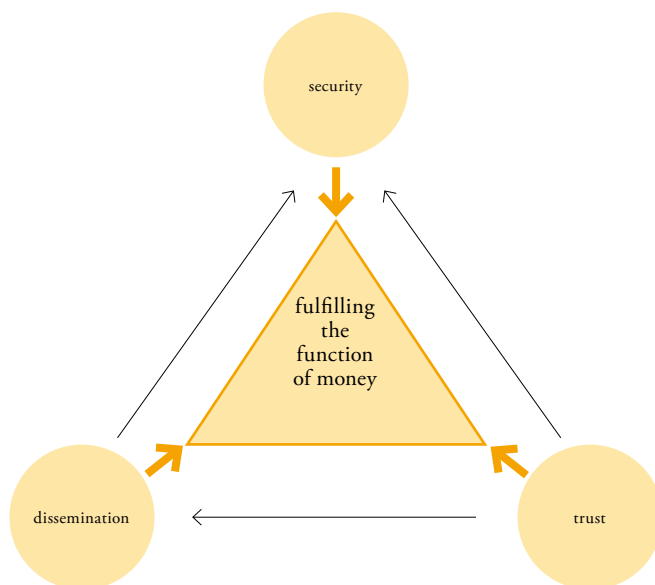
Source: Michalczyk W. (2018), *Barries of Development of Bitcoin as a New Form of International Money*, Wrocław.

requirements and have policies and procedures for detecting, preventing, and reporting money laundering and terrorist financing.[41]

The content of the Directive was agreed upon on January 29, 2018, during interinstitutional negotiations between the European Parliament and the Council. Its content was subsequently approved by the European Commission, and the European Parliament adopted the text at a plenary session of April 19, 2018. The Directive entered into force three days following its publication in the Official Journal of the European Union.[42] The European Securities and Markets Authority (ESMA), the European Banking Authority (EBA), and the European Insurance and Occupational Pensions Authority (EIOPA), jointly issued a warning to consumers on February 12, 2018, regarding virtual currencies, stating that these are *highly risky and unregulated products which are not suitable as investment, savings or retirement planning products.*[43]

The increased interest in the cryptocurrency market and blockchain technology has led the European Commission to present a plan for its development to exploit the opportunities offered by technological innovation in financial services (FinTech), such as blockchain, artificial intelligence, and cloud services.[44] The plan included the recently launched Observatory and the EU Blockchain Forum, which provided information on the challenges and opportunities of cryptographic assets. In addition, the work has begun on a comprehensive strategy for distributed book and blockchain technology, covering all sectors of the economy.[45]

[41]   *European Parliament, Anti-money Laundering: MEPs Vote to Shed Light on the True Owners of Companies*, Press Release, April 19, 2018.

[42]   European Supervisory Authorities, WARNING. ESMA, EBA and EIOPA Warn Consumers on the Risks of Virtual Currencies, February 12, 2018.

[43]   Communication from the Commission to the European Parliament, the Council, the European Central Bank, the European Economic and Social Committee and the Committee of the Regions. FinTech Action Plan: For a More Competitive and Innovative European Financial Sector, COM 109 final, March 8, 2018.

[44]   European Commission, European Commission Launches the EU Blockchain, Press Release, Observatory and Forum, February 1, 2018.

[45]   Woźniak M.G, (2017), *Instytucjonalne uwarunkowania spójności społeczno-ekonomicznej*, Warsaw.

The second group of institutional conditions creating the system of functioning of the virtual currency market in Poland are economic assumptions. The institutional conditions of an economic nature define a wide range of activities related to the functioning of the state and social awareness of citizens. They are linked to the state financial policy, social standards, and the level of development and innovation in the economy. *There is no consensus of views on the structure of the institutional system of the national economy, which is conducive to convergence to an established pattern of development in social and economic terms.*[46] The level of development of individual spheres of state activities that build economic institutional conditions is not a universal value and is country-specific.

The basic tool which affects the financial condition of the state is the monetary policy; although its assumptions relate to fiat money, there are numerous links to the functioning of the virtual currency market. Building a monetary sphere, which is a balance between inflow and outflow of capital or influence on the value of the exchange rate, is a natural implication of the activities of state authorities. In the case of the cryptocurrency market, hindering the activity of exchanges and entities interested in using this asset will result in the outflow of capital and a decrease in interest.

The actions taken by the state may be important for the functioning of the global market and the creation of the virtual currency exchange rate. Poland is not a large market on a global scale, but the decisions of the governments of the largest players in the international arena may be crucial for the further development of the market. An example is the position of the Chinese government, whose representative announced at the annual session of the National People's Congress in March 2018: *Chinese regulators are not recognising virtual currencies such as Bitcoin as a tool for retail payments like paper bills, coins, or credit cards. The banking system is not accepting any existing virtual currencies or providing relevant services.*[47]

This has resulted in a significant drop in the Bitcoin exchange rate and general uncertainty in the global virtual currency market.

Bearing in mind the capacity of state institutions to create the cryptocurrency market environment and the foundations for its further development, it is crucial to secure the system by eliminating barriers to its operation associated with:
• regulation,
• security,
• dissemination,
• stability.

Regulation is linked to the intervention of state institutions and governments to define a clear position of the authorities towards the cryptocurrency market and to safeguard, ensure the certainty and stability of these provisions. The issue of security of transactions made using Bitcoin is an important determinant of its function as money. Security, understood as a low level of risk associated with owning cryptocurrency and using it for payments, is an indicator of confidence in money.[48]

It is difficult to determine the number of Bitcoin users precisely because of the variety of portfolios used to store them, the possibility of obtaining them from multiple

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[46] Zhou Xiaochua (2018), *Future Regulation on Virtual Currency*, Hong Kong, China.

[47] Michalczyk W. (2018), *Barriers of Development of Bitcoin as a New Form of International Money*, Wrocław, p. 78.

[48] University of Northampton, (2020), S*elf-reported motivations for engaging or declining to engage in cyberdependent offending and the role of autistic traits*, United Kingdom.

sources, and the use of multiple coins by one entity. The spread of the currency is a consequence of the introduction of regulations and the security associated with its trading and represents a challenge for state institutions and stakeholders.

The last element, crucial for the development of the cryptocurrency market, is to ensure the stability of the exchange rate of the coins functioning on it. Currently, exchange rate fluctuations are largely due to the lack of a structured legal and economic system with a global dimension, which results in the virtual currency taking on a speculative nature. Stability may also be affected by the cost of energy required to mine cryptocurrency and its contribution to global warming.

The formation of institutional conditions of an economic nature is also linked to social factors, the technological advancement of the state, and the wealth of society, determined by the level of national income or the structure of the economy. Individual elements of the national innovation system are determined by several factors, which include:

- social and cultural factors, such as historical experience, value systems, education, culture; they determine the quality of human and social capital, which are the main drivers of modernisation and economic development,
- technological factors, such as trends in technique and technology, forms of cooperative relations and access to technological novelties,
- political factors which determine the general conditions for the operation of the various elements of the system, mainly institutions conducting innovation policy
- in the state and institutions that create the environment for the development of science, technology, and entrepreneurship,
- international factors which shape the relations of the innovative system with other systems, including international cooperation, but also processes such as globalisation or the development of transnational business through the influence of transnational corporations and mutual relations of these entities and institutions.[49]

The variety of factors affecting the construction of institutional conditions that function in Poland makes it possible to regulate the market using various economic and legal activities. Each society has an individual level of development within these areas. The authorities, having knowledge related to the level of advancement of particular factors, should create an institutional environment friendly to the development of the cryptocurrency market in Poland.

Conclusions

The emergence of the virtual currency and its functioning in the global market pose new challenges to the authorities and forces them to introduce legal and financial regulations. The fundamental element of this process is to determine the institutional conditions affecting the creation and operation of the cryptocurrency market in Poland. Achieving market efficiency while ensuring the security of entities existing on it requires specific steps to be taken, taking into account the balance between the level of interference in the financial system and its free development. In order to enable the evolution of the financial and technological system, as well as accessibility to the market and raising capital, state institutions in Poland, when creating the state system of conditions, should, in particular, take into account:

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[49] Woźniak M. (2017*), Instytucjonalne uwarunkowania spójności społeczno-ekonomicznej,* Warszawa.

- the macroeconomic economic environment that creates incentives for domestic and foreign investments,
- cultural conditions and human capital,
- institutions that consistently respond to stimuli and mechanisms regarding rapid information flows and absorption,
- broadly understood institutional system (property rights, judicial system, banking supervision, chambers of commerce), which determines the effective operation of markets,
- institutions that create an environment for the development of science, technology, and entrepreneurship,
- market-friendly state intervention activities where there are market failures.[50]

In Poland, as a result of political forces, an ineffective system of institutions has been built, with the result that the development of the cryptocurrency market is being held back and the market is inefficient. The introduction of stricter regulations has led to a reduction in the competitiveness of the market and to uncertainty in relation to virtual currency trading. An example is the relocation of the headquarters of the largest cryptocurrency exchange operating in Poland – BitBay – to Malta, caused by the authorities' aggressive and unbalanced policy. Currently, the entities interested in trading in virtual currency are forced to use foreign platforms, which often requires currency exchange and, in the case of the state budget sector, leads to a loss of tax revenue.

Building a market and stable virtual currency trading requires an analysis of institutional determinants of the market efficiency, economic policy, real economic convergence, and economic development, and cohesion of a social and economic dimension. The underdeveloped infrastructure of the FinTech technology, related to the cryptocurrency market in Poland, together with the restrictive state policy, will in the long run lead to the loss of numerous market opportunities and hamper the development of this sector. Uncertainty related to the institutional governance of the virtual currency in Poland will result in a decrease in the interest of foreign investors and backwardness of technological solutions. The effects of such an action may cause difficulties in obtaining investment capital or failure to use the entire range of innovations related to asset trading and the development of banking technologies.

Building a market balance requires the development of social awareness through education, political, and administrative apparatus. However, the position of the representative of the key financial authority in Poland is clear; the President of the NBP indicated that *there is no point in introducing cryptocurrencies in Poland, and the cryptocurrencies that exist at the moment bring enormous anxiety, a field for speculation, something that may not be available to the criminal services and tax administration*[51]. Of course, those involved in virtual currency trading do not expect the cryptocurrency to be introduced to the general public, as this is only available in a few countries, such as Switzerland, for example. However, the reluctance and "fear" of the challenges posed to state institutions by the development of the virtual currency market may have negative economic effects on the whole country in the future.

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[50]   Bankier.pl, *Charakter prawny kryptowalut,* https://www.bankier.pl/forum, access: 28/07/2020.

[51]   University of Northampton, (2020), *Self-reported motivations for engaging or declining to engage in cyberdependent offending and the role of autistic traits*, United Kingdom.

Ensuring the development of the virtual currency market in Poland should be dictated by the introduction of appropriate institutional conditions in the legal and economic sphere and by economic liberalism and clearly defined criteria for the functioning of the market. Institutional governance should be built respecting the balance between the activities of the authorities and the free functioning of the financial sector, in order to take advantage of the whole spectrum of opportunities offered by the development of technology.

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