International Journal of Engineering & Technology, 7 (4.8) (2018) 566-569

International Journal of Engineering & Technology

Website:www.sciencepubco.com/index.php/IJET

Research paper



Risks at Crypto-Currency Flow at International Financial Markets

Vyacheslav Voloshin[1]*, Nikolay Belopolsky[2], Svetlana Bessonova[3]

[1]Pryazovskyi state technical university, Ukraine
[2]Pryazovskyi state technical university, Ukraine
[3]Pryazovskyi state technical university, Ukraine
**Corresponding author E-mail: bessonovasvitlana71@gmail.com*

Abstract

Analyzed in the article are the problems of occupying the financial market and formation of crypto-currencies in today's financial world, also analyzed are the aspects of ambiguity in an approach to defining and attitude to crypto-currency in different countries. The objective of the article is discovering advantages and risks of application of crypto-currencies at international financial markets.
Analyzed were the factors of influence upon-bitcoin, the most popular crypto-currency. Comparative analysis of the legislation, regulating the flow of crypto-currencies at the financial markets and taxation was performed. Approaches to the essence of crypto-currencies, existing in different countries were studied. Also analyzed were possibilities of passing on to digital money for a number of countries. Conclusions, regarding the risks at passing on to electronic monetary flow for a certain group of countries were arrived at. For Ukraine it was concluded that the country were within the zone of financial risks and the perspective of avoiding payment in cash was out of the question for the immediate future.
In the work the advantages and disadvantages of crypto-currency application are listed and various views and hypotheses, regarding the prospects of its existence were considered. The conclusions contain recommendations regarding strengthening the existing standard and legislative base, made with due regard to the experience gained by the developed countries.

Keywords: *crypto-currency, risks, cash, bitcoin, digital money.*

1. Introduction

In the contemporary financial world crypto-currency, being the product of cyber-systems is but an innovative tool of the science and engineering progress.
The appearance of this kind of currency was promoted by interest of some users, economic globalization of clearing transactions and Its rapid development.

2. Formation of crypto-currencies in today's financial world

Bitcoin, as the kind of crypto-currency, was first introduced in 2009. Gradually their number reached several hundreds within a short period of time. Their wide expansion of various crypto-currencies during the last five year period and popularization led to their number exceeding 1,800 and this number is unlikely to stop growing [1].
This is primarily due to the fact that some countries create their own national crypto-currencies at the state level. Such crypto-currencies already exist in Belarus, Estonia, Ukraine, Venezuela, the USA, Israel, Hong Kong, Great Britain and other countries. The projects of creating their own crypto-currencies before the end of 2018 are being implemented in Norway, Kenya, Sweden, Turkey, Iran [2-7].

The possibility of tracing at the state level the operations with virtual currency seems to be beneficial for creation of national crypto-currency, as they will be reliable, protected from fraud, they cannot be the subject of forgery and they can be easily converted.
As far as the value of bitcoin, the most popular crypto-currency, it is largely influenced by such factor as customer demand. It is known that in 2016 the cost of bitcoin was 300$ and it became 23 tomes greater within the two succeeding years. It was supposed that bit would have become three times greater by the year of 2022, exceeding the 20 000 mark[8].
The multitude of converted digital currencies, protected by crypto-graphical methods has led to the variety of notions, definitions and attitudes to them. There are several terms for defining the notion of a crypto-currency in the world financial community, like "er-satz" money, digital currency, virtual currency, private currency, inferior money, stock house asset and many others.
In developed countries, like for example, Switzerland, Germany, the USA, Japan crypto-money is used as payment means, in the USA crypto-currency is also applied for emission of securities. In such European countries, like Bulgaria, Estonia software products are subjects of obligatory taxation. In Norway such type of crypto-currency is considered to be a stock house asset, and all risks due to its application are foreseen. Still the risks of application of such tools are essentially high, despite certain legal field and creation of protective measures. At present the rules of regulation, presuming formation of the system of monetary obligations for crypto-

Copyright © 2018 Authors. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

currency, a possibility to carry out control and a reliable tax field have not been created yet.

3. Advantages and disadvantages of crypto-currency application

It is worthwhile remembering that crypto-currency is not provided with guarantees and the rules of regulations of operations with crypto-currencies have not practically been written anywhere. Operations with crypto-currencies are not controlled by state structures and hence the ambiguity of approaches to its usage. As can be seen in table1, the approaches to taxation of such operations, their recognition and permitting such operations at the legislative level differ drastically

Table 1: Recognition, application and taxation of BTC in different world countries

Country	Recognition of crypto-currency	Taxation	Legal permis-sion or likely to be implementted (+), Prohibited (-)	
Germany	Private money	Not taxed	+	
Switzerland	Foreign currency		+	
Norway	Stock market asset	Profit tax	+	
Russia	Currency	10 % tax on operations with crypto-currency	+	
Russia	Ersatz money			-
Ukraine	Virtual assets	5 % tax is to be introduced. For legal and physical persons plus 1.5% war tax.	+	
Kazakhstan				-
Ecuador				-
Brazil			+	
Iceland				-
Vietnam				-
USA Great Britain Australia	Currency	Tax on capital growth.	+	
China	Virtual goods			Prohibited for legal persons
France	Derivate	19%	+	
Finland	Financial operations, valuable assets	VAT	+	
Belgium		VAT	+	
Canada	Valuable property, transactions	Tax on business income	+	
Japan	Electronic money	15-55%	+	
Denmark	Digital money		+	
Norway	Stock market asset		+	

Compiled in accordance with the data, listed in [9-12]

On the basis of the data, provided by HowMuch-the analytical portal in January 2018 application of bitcoin is permitted in 99 countries out of 246 countries of the world [9]. In such countries like Iceland, Bolivia, Kazakhstan, Ecuador et al. application of crypto-currency is legally prohibited. In China, Russia, South Korea legislation is being prepared for protection of national currencies and for opportunities of influencing operations with crypto-currencies. To the countries that intensely implement crypto-currency and popularize it belong Hong Kong, Singapore, the USA, Canada, Great Britain, EEC countries et al.

The appearance of virtual money, in the shape of changing crypto-graphical currencies and their roles in the contemporary monetary relations can be measured by their resistance to the our days challenges.

The risks, connected with the flow of crypto-currency appear to be impossible to be concentrated in one work. Nevertheless, it is possible to trace one of the latent risks, connected with refusal from the flow of real monetary currency and also take into account the tendencies that can be seen in many countries of the world. The criterion of transition of a country from cash to digital money can be taken as a basis.

Within the last five-year period the countries of Northern Europe, like Norway, Sweden, and Switzerland have been the leaders in refusal from operations with cash. Denmark, Finland, Singapore, South Korea, Great Britain and the USA are among the top ten [13]. Ukraine is missing in the list, consisting of 60 countries, as its share of cashless settlements is only 25%. The complex program of development of the financial sector until the year of 2020 envisages increase of such settlements up to 55%. The readiness of a country to refuse from cash money in financial settlements in favour of digital analogues of money shows the degree of its adaptation to the new trade rules and is determined by several criteria.

Digital evolution index in country's economy determines ability of the financial organization to control virtual money, while observing the conditions of preserving the real value of monetary mass.

Table 2: Readiness of separate countries to refuse from application of cash [14]

№ пп	Country	Index of parity between cash money and its digital analogues	Digital evolution index	Possibility of transition to digital money
1	Sweden	0,4	57	Acceleration of transition to digital money increases preservation of a possibility of creating real value of monetary mass
2	Denmark	0,5	51	
3	Kenya	0,3	18	
4	Turkey	0,65	33	
5	South Korea	4,4	51	Preservation of real value of money at stable country's economy for digital money
6	Japan	5,5	47	
7	USA	7,5	54	
8	Philippines	5,8	20	
9	Russia	8,5	26	
10	Belgium	15	45	At stable investments there is a possibility of creating real monetary value for transition into digital plane.
11	Germany	18	48	
12	France	36	48	
13	Mexico	26	28	
14	India	82	22	

Thus, currency exchange happens to be, which is based upon on application of digital codes and computer programs. Provision of infrastructure for making such operations seems to be an important aspect. To perform it you need: internet, information technologies, presence of terminals, computerization of population and its willingness to use electronic wallets, presence of computer cabinets and the desire to substitute cash with digital money.

In economic literature there exists the notion of the "absolute value" of cash, which is represented by the parity index between cash and its digital analogues.

Weight index of national currency stability as compared to other currencies is used in international practice. As a rule US dollar is considered for such purpose. The priority is in this case given to a possibility of preservation of the value of the monetary mass by transition to digital currency

So far, it is not possible for any country of the world to ensure a complete transition from cash to its digital analogues. But nearly in all relatively developed economically countries of the world the vector of gradual reduction of cash money can be clearly seen.

Refusal from cash currency or reduction of its volumes of its flow in trade and other operations will promote alternations in the rules of the world trade and the world trade rules.

Such process is impossible without any substantial blows for any financial system. We can make quite a reasonable assumption that the risks, due to escape from cash can be illustrated, for instance, by Whitney's diagram of catastrophes. Whitney's diagram in OXYZ coordinates, where X represents the absolute monetary mass, related to its alternating part $(M_к/\Delta K)$, which is controlled by the state financial system, Y –is a time coordinate (T) (years), while Z – is the dynamics of changing cash (ΔK), existing in the country in the current time span, showing the area of financial instability, which can exist at the flow of a particular currency. In the indicated coordinates the power function of Whitney's diagram is described by the equation of the type of :

$$W(\Delta K) = \frac{d(0{,}25\Delta K^4 + [0{,}5b\Delta K^2 M_k + cT\Delta K])}{d\Delta K} = \\ = \Delta K^3 + bM_k\Delta K + cT \quad (1)$$

The general evaluated tendency is like that: the bigger the cash volume in the country is, related to its alternating part $(M_к/\Delta K)$, flow towards its reduction is more likely to cause irreversible changes un the national economy. But this is only in theory. Actually it may happen in quite a different way. For instance, $\Delta K(T)$ dependence, according to the data provided in [15] for the countries with different economic development is represented in Table 3. Comparing it to the data provided in Table 2 we may speak of a multitude of situations, due to the risks of transition to electronic flows for different countries. Nevertheless, such risks always exist. Now, let us detach some groups of countries, depending on their adaptation to digital technologies (see Table 2) and depending on their drifting towards reduction of their own cash (see Table 3).

Tabl. 3: The dynamics of cash flow (ΔK) on different countries of the world (billions of $)

Country	Control periods, years							Group characteristic
	2008	2009	2010	2011	2012	2013	2014	
USA	4,25	3,53	3,37	2,92	2,05	1,35	0,65	Stable refusal
China	14,8	13,1	11,38	9,31	6,96	4,10	2,17	
India	0,74	0,65	0,47	0,21	0,35	017	0,05	
Switzerland	0,54	0,40	0,39	0,15	0,18	0,093	-0,045	
UAE	0,14	0,13	0,12	0,09	0,10	0,73	0,16	
South Korea	0,69	0,82	0,65	0,45	0,51	0,35	0,58	Stable balancing
Sweden	0,022	0,061	0,062	-0,02	0,0	-0,04	-0,06	
Belarus	-0,00	0,00	-0,00	0,00	0,00	-0,02	-0,02	
Great Britain	0,21	0,47	0,57	0,28	0,34	0,24	-0,012	
Poland	0,01	0,067	0,060	-0,01	0,04	0,00	-0,04	Balancing in case of exube-rance or shortage
Romania	-0,00	-0,00	-0,01	-0,01	0,01	-0,04	-0,04	
Czech Republic	-0,02	-0,0	0,0	-0,03	-0,0	-0,02	-0,03	
SAR	-0,01	-0,01	-0,02	-0,05	-0,02	0,00	-0,01	
Ukraine	-0,04	-0,02	-0,02	-0,04	-0,04	-0,06	-0,04	

The first group comprises Sweden, Denmark, Finland, China, New Zealand. These are the countries that do not need any additional efforts for transition to electronic transactions, as they possess financial stability. However, in order not to destabilize the national currency they have to be careful in international trade. Still, some countries of this group, like, for instance, China and Switzerland systematically reduce cash. Other countries belonging to that group, for example, South Africa, Turkey et al. are not ready yet to such transition, but keep such opportunities at external support of their national currencies. Still, such support is not available for all. The dynamics of the general cash flow is such, that minimization of the real currency does not lead to risky relations in economy.

The second group is quite adapted to the possibility of transition to electronic money. Such countries like the USA, Japan, the Netherlands, South Korea et al. comprising the second group have a high index of digital evolution in the financial domain. The stability of the value of national currency is a proof of that. But the USA and Japan gradually reduce their cash in favour of electronic money. The third group comprises the countries that are prepared for such transition, but due to some circumstances they have certain limitations. Leaders of the EEC, like Germany, Austria, France are meant. They are limited by the opportunities of their partners in the union, i.e. Spain, Czech Republic, Poland, Lithuania, Hungary to name but a few, the countries that are balancing in the zone of cash exuberance, but outside the zone of financial risks. These countries need substantial investments to support their national currencies: Polish zloty, Czech crona, or Hungarian forint.

Ukraine, like some other countries of the former USSR belong to intermediate countries, in which state cash money will exist for quite a while, as its financial system has stayed for many a year within the zone of different financial risks and the country does not possess their own opportunities for systematic reduction of cash.

However, minimization of application of cash means is bound to lead some day to a wider use of digital analogues. At present it is urged by the ever growing volumes of contemporary trade and substantial acceleration of monetary transactions, it certainly exerting some influence upon changes in trade procedures and the essence of trade balance. For many countries , especially the ones with underdeveloped, in the true sense of the word, economy, such distortion can lead to unpredictable consequences. The role of bitcoin in the economy of nowadays is connected with the world trade opportunities. Some economists suppose that it will be possible to replace the banking system with the help of bitcoin. Several advantages of application of crypto-currency are mentioned at that:

- reduction of expenses on manufacturing and storing of paper money;
-cheap payments;
- attraction of investors;
- high liquidity, as it can be used as payment, savings and circulation means;
- quickness of operations, simultaneously performed by many participants;
- development of business;
- assignments to the budget;
- convenient and efficient settlement of accounts;
- development of computer systems and innovative technologies;
- absence of the need to convert money at payment operations;
- formation of new jobs for IT specialists.

So, why some countries are not willing to implement such efficient electronic transactions and some even prohibited them [16]? Venezuela, for instance, declares the provision of Petro, its national crypto-currency with oil, but there is an opinion that it not supported at all [17].

However there are some disadvantages and apprehensions:

- decentralization of control;
- absence of a unified emission centre;
- imperfection of the legislative foundation;
- limited number of operations (21 mln units, even less in reality);
- it is not possible to identify the subject of payment at performing operations, hence, there is a chance of concealing incomes;
-it is possible to avoid taxation;
- financing of "shadow" sector;
- impossibility of freezing accounts;
- increased expenses on licensing and registration of operations (in some countries it is an obligatory condition for carrying out operations with crypto-currency);
- high risk of undergoing attacks by hackers , as it happened in South Korea in 2017, after that the value of bitcoin dropped by three times;

- high level of risk from operations, connected with cessation of block-chain agent's participation or its complete withdrawal from the market;
- loss of deposits;
- influence of mass media upon coverage the data, regarding the rate of crypto-currency;
- influence of political and economic crises.

Contradictions of views, regarding the perspective of bitcoin existence allow appearance of hypotheses about births of new "soap bubbles" or new global financial pyramids. Some do not agree with this hypothesis, as they believe that financial pyramids exist due to new investors, who provide income for the participants, who joined earlier, but for operations with bitcoin the users remit money between themselves, while miners get their bonuses for keeping the system in order, and they are not considered to be dividends.

The only thing that unites them-those who joined the system earlier get advantage they become richer [18-19].

4. Conclusions

Crypto-currency is a popular electronic currency, having some new qualities and peculiarities. Investigations showed that the views regarding the prospects of its existence differ. Still there is a need of developing national regulations for application of crypto-currencies for transactions and it should be done, on the basis of experience and legislative standards of economically developed countries.

References

[1] Ukraincy privlekli 100 millionov za schet ICO kriptova-lyut. [EHlektronnyj resurs]. – Rezhim dostupa:https://finclub.net/news/ukrainci-privlekli-100-mln-za-schjot-ico-kriptovalyut

[2] Keniya gotovitsya k zapusku pervoj sobstvennoj kriptovalyuty. [EHlektronnyj resurs]. – Rezhim dostupa:: https://bitnovosti.com/2018/08/30/keniya-gotovitsya-k-zapusku-pervoj-sobstvennoj-kriptovalyuty/

[3] Nigeriya ishchet mesto dlya bitkoina v svoej ehkonomike. [EHlektronnyj resurs]. – Rezhim dostupa: https://freedman.club/nigeriya-ishhet-mesto-dlya-bitcoin-v-svoej-ekonom/

[4] Mnogoobeshchayushchie plany i real'nye perspektivy. [EHlektronnyj resurs]. – Rezhim dostupa: https://cryptorussia.ru/zametki/nacionalnye-kriptovalyuty-mnogoobeshchayushchie-plany-i-realnye-perspektivy

[5] Zachem stranam vypuskat' nacional'nuyu kriptovalyutu. [EHlektronnyj resurs]. – Rezhim dostupa:https://vc.ru/crypto/31814-zachem-stranam-vypuskat-nacionalnye-kriptovalyuty

[6] Belarus' sozdala svoyu kriptovalyutu. [EHlektronnyj resurs]. – Rezhim dostupa: https://www.segodnya.ua/economics/enews/belarus-sozdala-svoyu-kriptovalyutu-1102639.html

[7] Centrobank Norvegii zadumalsya o vedenii sobstvennoj kriptovalyuty. [EHlektronnyj resurs]. – Rezhim dostupa: https://iz.ru/745141/2018-05-18/tcentrobank-norvegii-zadumalsia-o-vvedenii-sobstvennoi-kriptovaliuty

[8] Kurs bitkoina prognoz 2018-2019-2020-2021- bitkoin segodnya. [EHlektronnyj resurs]. – Rezhim dostupa: https://apecon.ru/kurs-bitkoina-prognoz-2018-2019-2020-2021-bitcoin-segodnya

[9] Gde bitkoin yavlyaetsya nacional'noj valyutoj? [EHlektronnyj resurs]. – Rezhim dostupa: https://howtobuycoin.com/bitcoin/bitcoin-official-cryptocurrency/

[10] Pravovoj status bitkoina v raznyh stranah. [EHlektronnyj resurs]. – Rezhim dostupa: https://unichange.me/ru/articles/legal_status_of_bitcoin

[11] Bitkoin v raznyh stranah: smozhet li kriptovalyuta preodolet' strah, neopredelyonnost' i somneniya. [EHlektronnyj resurs]. – Rezhim dostupa: https://bitgid.com/bitkoin-v-raznyh-stranah-strah-neopredelyonnost-i-somneniya/

[12] V Ukraine hotyat vvesti nalog na kriptovalyutu. [EHlektronnyj resurs]. – Rezhim dostupa: https://www.epravda.com.ua/rus/news/2018/08/6/639342/

[13] Cifrovaya planeta 2017. [EHlektronnyj resurs]. – Rezhim dostupa:https://sites.tufts.edu/digitalplanet/files/2017/05/Digital_Planet_2017_FINAL.pdf

[14] Rynok Foreks: novosti, prognozy i analitika [EHlektronnyj resurs]. - Rezhim dostupa: https://forexstandard.ru/

[15] Kazahstan i Nigeriya dobavlyayut negativa v kopilku. [EHlektronnyj resurs]. – Rezhim dostupa: https://bitnewstoday.ru/video/kazakhstan-i-nigeriya-dobavlyayut-negativa-v-kopilku/

[16] Venesuehla pervoj v mire vypustila nacional'nuyu kripto valyutu – v nee pochti nikto ne verit. [EHlektronnyj resurs]. – Rezhim dostupa: https://meduza.io/feature/2018/02/21/venesuela-pervoy-v-mire-vypustila-natsionalnuyu-kriptovalyutu-v-nee-pochti-nikto-ne-verit

[17] Chto otlichaet bitcoin ot finansovyh piramid [EHlektronnyj resurs]. – Rezhim dostupa: https://biz.nv.ua/experts/bazanov/chto-otlichaet-bitcoin-ot-finansovyh-piramid-1802690.html

[18] Nikolajchuk O.A. EHlektronnaya valyuta v svete sovremennyh pravovyh i ehkonomicheskih vyzovov [EHlektronnyj resurs]. – Rezhim dostupa: https://cyberleninka.ru/article/n/elektronnaya-valyuta-v-svete-sovremennyh-pravovyh-i-ekonomicheskih-vyzovov

[19] Varnaliy, Z., Onishchenko, S., & Masliy, A. (2016). Threat prevention mechanisms of ukraine's economic security. Economic Annals-XXI, 159(5-6), 20-24. https://doi.org/10.21003/ea.V159-04