

## **FRONTIER ECONOMY: THE GLOBAL PERSPECTIVES OF CRYPTOCURRENCIES DEVELOPMENT**

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In this article the author analyzes the perspectives of cryptocurrencies development in modern life and economy as a symbol of frontier economy and extremely new financial matter. A brief overview of electronic payments and virtual currency structure is given alongside with technical background. The emergence of electronic money and cryptocurrencies was an inevitable step in the evolution of Internet and electronic commerce. The author investigates the question how far cryptocurrencies might go in the nearest future as a symbol of frontier economy trends, keeping in mind that famous investors already buying cryptocurrencies, but governments are trying to ban this newly emerged threat to controlled money emission. The author therefore attempts to understand the phenomenon and explain why cryptocurrencies might undermine the existing financial systems.

Keywords: Frontier economy, cryptocurrency, structure of cryptocurrencies, electronic money, virtual currency, e-commerce.

Not so long ago, namely in 2013, the electronic payments system market was shocked by a sudden boom of a new financial tool named cryptocurrency. It emerged in 2009 when an unknown and anonymous person calling himself Satoshi Nakamoto introduced to the world the system of cryptocurrency generating. In this article the author attempts to analyze the phenomenon of cryptocurrencies genesis and development as a very new financial tool, understanding this kind of “brave new money” as a symbol of frontier economy, possibly representing a serious challenge or even an alternative to the traditional payment instruments that have been developed through the global economic history. However, in order proceed, one has to understand the different approaches to the term “frontier economy” and investigate what electronic currencies are in general.

There are two main definitions for frontier economy in the modern science. According to Harvard Business Review, the first one deals with the developing countries that are characterized by politically dependent markets, instable legal systems, unpredictable GDP dynamics and relatively low income per capita. Among the 25 economies that are expected to show growth in the nearest future, there are 19 that are considered frontier economies, such as Bangladesh, Bhutan, Maldives, Mozambique, Vietnam, Myanmar and Rwanda. Many of these countries possess large natural resources that attracts global

investors. The growth of frontier economy hardly depends on global trends but relies on the investments (Musacchio A., Werker E., 2016). The next stage of development for such countries is turning into emerging markets (Husain T., 2016).

The second definition of frontier economy can be understood as the transitional stage between the classic economy as we know it with traditional financial and monetary institutions – and the breaking new type of electronic economy based on absolutely new functional principles, hyper-fast global transactions and absence of institutional control, which presumes redefining money as we know it. This is the concept that this article is focused on.

*Digital (electronic, virtual) currency* — is electronic money that is used as alternative or additional currency, mostly in the systems of internet transactions for buying goods and services in the global network. At present, digital currencies are not emitted by national central banks. In most cases their value is linked to the national currencies, but there are also other exchange bases: they can also be linked to precious metals or have a floating exchange rate. The majority of modern Internet users have already become familiar with e-shopping and e-payments, already using electronic currencies and electronic payment services, such as PayPal or WebMoney, which allow users to make fast direct online transactions.

In 2013, Financial Crimes Enforcement Network, which itself is a bureau of the U.S. Department of the Treasury, has published a special report which gives an official interpretation for application of federal banking laws to the virtual currencies. FinCEN offers to define real and virtual currencies. A real currency is coins and bills of any country that are legally established as a payment means, have a free circulation and are commonly accepted as an exchange tool within the emitting country (Application of FinCEN's Regulations to Persons Administering, Exchanging, or Using Virtual Currencies, 2016). The emerging of virtual currencies has quite logically given the grounds for the virtual payment systems development, which itself symbolizes a gradual but fast emerging of the new economy type. European Central Bank defines a payment system as a set of instruments, procedures and rules that service the financial transactions among the participants of such system (Kokkola T., 2016).

A virtual currency is understood as a tool for exchange that does not have the attributes of a real currency, but at the same time acting as a currency in certain areas of economy. What is more, neither jurisdiction can provide a legal payment means status for a virtual currency. Such currency can be considered convertible if it has an equivalent in real currency, or if it is used instead of real one. As a rule, electronic money is easily converted into the national currencies in the 1/1 ratio – for instance, one real US dollar is equal to one WebMoney USD. Using WebMoney, one can make almost any kind of

online payment. The only difference is that the regular clearing settlement or money wire is a strictly *personalized* transaction: both sides know each other's names, company titles, addresses and bank account details, whereas a virtual currency transfer does not require any details about the participants except for the number of receiver's electronic wallet. Another point is that a virtual transfer is way much faster than an ordinary money wire; it has a simplified verification system and usually takes only several seconds to complete. It is also very simple to start using the virtual money: the registration procedure is fast and takes minutes to accomplish, and the electronic wallet can be recharged using lots of common ways, including debit or credit card, bank terminals, ATMs, cash, etc.

In October 2012 European Central Bank has published a special report named "Virtual Currency Schemes". The report stated that "virtual communities have created and circulated their own currency for exchanging the goods and services they offer, and thereby provide a medium of exchange and a unit of account for that particular virtual community". According to this report, a virtual currency can be defined as "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"(Virtual Currency Schemes 2012).

Cryptocurrency is the next stage of electronic money evolution. With the growing development of peer-to-peer technology (P2P), high-speed LAN-based Internet, which does not depend on the phone lines any more, and the constantly increasing calculating power of personal computers, the emergence of cryptocurrencies was only a matter of time. The general definition of all cryptocurrencies existing today can be as following: cryptocurrency is a kind of digital currency, which is emitted and accounted on the basis of asymmetric encryption protocols and the use of various cryptographic security methods (Davidson J., 2013).

Scientific research of cryptocurrencies as new economic phenomenon has only started to take up its place in economic thought quite recently. First attempts to study this trend can be found in the books by D. Davidson, F. Tudor, P. Vigna, M. J. Casey, N. Daniels, etc (Vigna P., Casey M.J., 2015). Professor O. Marian from The University of Florida believes that "cryptocurrencies are "super tax havens," and says that "while cryptocurrencies are already considered taxable assets (under US tax law), the inability of the government to monitor blockchain transactions could mean a lot more people opting out of the tax system" (Caraluzzo C., 2014). Therefore, we may discover that the frontier economy possesses an absolutely new payment system that is *not linked to banks and other classic financial institutions*.

The structure of cryptocurrencies is totally decentralized. In the cryptocurrency systems there are no unified banks or centers: the whole network is an independent distributed system of peer client programs. Each of these

programs, in turn, is a fully autonomous structure which is connected to the global cryptocurrency network, which works 24/7 and is also fully automatic (Information on electronic payments system, 2015).

The most popular and widespread cryptocurrency today is called bitcoin. Open source code system of bitcoin generation, invented by Mr. Nakamoto, caused lots of analogues to emerge, such as Litecoin, Dogecoin, etc. These bitcoin analogues are generally called “forks”. Litecoin takes second place in the world after Bitcoin, other forks are falling behind these two leaders considerably. It is still unknown, whether Mr. Nakamoto is a real person or not, is it an individual or a group of talented developers – but since 2009 the term “cryptocurrency mining” has become widespread among the most advanced part of Internet users.

As described by the cryptocurrencies’ generation features, there can be no unified emission centers, so their emission is made by means of a so-called “mining”. This means using the calculations power (central processor or graphic processor) of a personal computer or a network of computers to generate a sequence (blockchain) of cryptocurrency transactions. This process uses hashing algorithms in order to make every block correspond to the strict rules prescribed by the system initially. Accordingly, generation of new coins is implemented simultaneously with transactions in the system, which means that if miners stop working, the whole system comes to a halt.

Starting from the middle of 2014 Bloomberg agency has launched a systematic tracking of bitcoin. According to Bloomberg, bitcoin as a currency is very unstable: after a continuous period of growth till December 2014, in January 2015 the price of one BTC suddenly dropped from 272 to 200 US Dollars, which, quite logically, should have made it very unlikely for the investors to continue buying bitcoins, even if compared with decreasing prices of Russian Rouble and oil (Kharif O., 2016). However, most analytics believed in a positive scenario for bitcoins and many financial experts continued to invest into bitcoin and other types of cryptocurrencies (Cryptopilot, 2016). This positive vision has come true: by the January 2017 one BTC equals to 831 USD (According to the exchange rate at coindesk.com, 2017), showing rocketing growth within just two year period.

In the context of current research it is necessary to note that high anonymity of electronic money makes governments and central banks really nervous about legal aspects of virtual money usage and also impossibility to apply traditional taxation frameworks to electronic financial transactions. Due to this fact in several countries, including Russian Federation, governments together with central banks plan to introduce official prohibition of cryptocurrencies’ usage, also emphasizing the fact that it’s the state that

possesses the exclusive authority of money emissions (Cryptocurrencies in Russia to be banned in spring 2015, 2015).

In Russian Federation legal persons are already banned from using cryptocurrencies. Again, Government and Central Bank motivated this decision by the will to ensure that money is emitted exclusively and only by the state. The full anonymity of transactions is another problem: there is no possibility neither to acquire any factual data about counterparties, nor to locate them anywhere on the network. This brings up another question of whether or not any obligatory personal identification can be introduced and how to do that taking into account the basic features of the system. It is also still questionable if such identification would be righteous and would it violate privacy of citizen. Another issue is how to protect the interests of counterparties on the legal basis should any misunderstandings or disputes occur as a result of cryptocurrency transactions. The problem can be generalized as following: nowadays governments lack comprehensive legal regulation systems of electronic currencies and they feel that they need to introduce such systems as soon as possible in order not to lose control over large flows of online capital. This is one of the most distinct features of today's frontier economy.

There is a number of famous entrepreneurs and large international corporations who are quite optimistic about the future of cryptocurrencies – and one of them is Virgin Group (Frisby D., 2016). It can be generally assumed that the society is tired of constant market volatility and fluctuations, instability and crises – and because of this fact the emergence of alternative currency that would be uncontrolled and virtually inaccessible by governments was also quite predictable. This also means a great potential for growth of the frontier economy trends. Some people also express an opinion that there is nothing illegal about cryptocurrencies, for the coins and bills that we use every day as money is not more than a commonly used matter of payment that resembles gold, silver and other precious metals. This is why bitcoin and other cryptocurrencies are not truly illegal – they are just a brave new emerging kind of money, flowing freely in the virtual world without any control from any single state on Earth, hence independent and dangerous for the traditional money emitters.

Because of this it would be quite logical to assume that in a long term cryptocurrencies could deliver a potential threat to the global financial order as we know it today both on national and international levels. If the process of switching to virtual money and cryptocurrencies would be somehow similar to the process of the global development of Internet, one might also think about large uncontrollable transactions made in total anonymity, provoking colossal turnovers of virtual currencies in the shadow economy. This might also result in:

1. Avoiding taxation on the level of large international companies.



2. Fully anonymous transactions, shifting the economy and counterparties to the shadow economy schemes and black markets.

3. Widespread use of crypto payments for financing terrorism and international criminal structures.

4. A greater clash between traditional economy and a frontier economy.

To conclude, it is hard to deny that cryptocurrencies have already developed into a new, fully functional and perspective financial tool, which is acknowledged by the leading investors and entrepreneurs, also becoming a clear symbol of frontier economy development. Even today, while the cryptocurrency systems still remain something new for the majority of people, it can also be noted that there is a high potential for radically shifting the traditional fundamentals of economic, taxation and financial law systems that have been existing for a long time and so far remained mostly unchanged. The challenge that cryptocurrencies are bringing are evident and it would probably take another five years to let the crypto payments spread widely across the world, but even now the governments are already making certain attempts to soften the possible shock of the freedoms and risks that this new frontier economy instrument offers to the people. The idea of financial liberalization and formation of the new type of economy by the means of Internet transactions described above seems to be quite popular among the citizen who are completely unsatisfied with the existing economic and financial practices. However, the perspective of development of a comprehensive legislative complex in the nearest future seems rather impossible due to the fact that governments cannot enforce control over online resources. In general, we might rightfully assume that with its breaking new financial tools the frontier economy represents not just a theoretical concept in the minds of several university professors, but becomes a reality when the old models of economic behavior are replaced by the new approaches and high-tech innovations that allow more freedoms in payments and global money transfer at the cost of increasing role of black market and shadow economy sector around the world.

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## ФРОНТИРНАЯ ЭКОНОМИКА: ГЛОБАЛЬНЫЕ ПЕРСПЕКТИВЫ РАЗВИТИЯ КРИПТОВАЛЮТ

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В настоящей статье автор анализирует перспективы развития криптовалют в современной экономической жизни как символ фронтальной экономики и абсолютно новую финансовый инструмент. Приведена краткая техническая информация, общий обзор электронных транзакций и структуры виртуальных валют. Возникновение электронных денег и криптовалют было неизбежным этапом в процессе эволюции Интернета и электронной коммерции. Автор задается вопросом, насколько далеко криптовалюты могут шагнуть в ближайшем времени как символ трендов фронтальной экономики, учитывая при этом тот факт, что крупные инвесторы уже всерьез закупают различные виды криптовалют, тогда как государственные структуры стараются запретить этот платежный инструмент как угрозу централизованной эмиссии денег. Таким образом, автор делает попытку понять данный феномен и объяснить, каким образом криптовалюты могут подорвать стабильность уже существующих финансовых систем.

Ключевые слова: Фронтальная экономика, криптовалюты, структура криптовалют, электронные деньги, виртуальная валюта, электронная коммерция.

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