



The typology problem of digital currencies and their role in global digital economy development

El problema de la tipología del dinero digital y su papel en el desarrollo de la economía digital global

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ABSTRACT:

The main purpose for this article is generalization and evaluation of digital money future usage from the point of their potential influence on modern political systems and its participation in international relations. The author comes to conclusion that governments have to adapt to technological development from the position of a player catching up with technology. Digital economy and digital currencies development prepares significant political risks for state institutions, what will inevitably split countries into followers of the development and followers of the protection of own traditional economic models. Who would benefit of that rapid revolution? National traditional institutions, corporations or netocrats.

Keywords: cryptocurrency, netocracy, digital money, digital economy, political influence

RESUMEN:

El propósito de este artículo es resumir y evaluar el uso digital, virtual y criptomonedas en futuro en relación con su influencia potencial en el desarrollo del sistema político del país moderno y su participación en las relaciones internacionales. El autor concluye sobre la necesidad de adaptación del Estado al desarrollo tecnológico desde la posición del jugador que se está alcanzando a la tecnología. La digitalización de la economía y el desarrollo del dinero electrónico preparan riesgos políticos sustanciales para las instituciones estatales, que inevitablemente dividirán a los estados en partidarios del desarrollo y partidarios de la protección de sus propias economías tradicionales. Quién ganará esta revolución sólida: las instituciones nacionales tradicionales, las corporaciones o los netócratas.

Palabras clave: Criptomoneda, netocracia, dinero digital, economía digital, influencia política

1. Introduction

Gradual development of political economy science and management has led to separation of two different directions that lately exist in parallel successfully. One of them is a large corporate segment of economy, which actively interacts with government. The other one is the retail segment that serves for people and small businesses. The growth of the economy

of services for the population at some point forced large companies to reorient their businesses, gradually abandon traditional production and specialize on production and financial management.

Global transformation of the society and consumption model affected European and Asian countries. Technical developments of communications and marketing have led to remote sales of not only goods, but also services. With limited offer of payment instruments by banks, skepticism and conservatism towards new digital payments spaces, the demand provokes the emergence of qualitatively new payment instruments. Those instruments have to be oriented on fast, almost instantaneous, payments; on availability of L/C instruments and micro-financial nature of operations. By the 2000s, micro-financial technologies gradually developed into mobile payment services. Local payment instruments such as PerfectMoney, Webmoney, Yandex.Money have gradually developed into global ones, like PayPal.

Future step of evolution has been made when transactional fees continued to cost less and when was made the intensification of the struggle for the independence and anonymity of netocracy. New technologies of the first virtual money appear. Cryptocurrencies that very soon will infect traditional investors with their speculative excitement. However, against the hype and incoming fashion, all of these instruments led the World Economy to the new understanding of the reality. Government ceases to be a depositary and a guarantor; banks cease to be the only one who gives L/C, insurance companies - a tool for insurance against contract noncompliance. New economic approaches came to the live with digital and crypto currencies, have started to challenge the traditional role of government in the political economy sense. They have shown up the new set of market players and new balance of power for modern and upcoming days.

In this article, the author analysis the tendency and offers a typology of different digital currencies from the point of risks for traditional political and economic role of the government. Also, he concludes that there is a forming tendency of digital currencies development, in which governments face competitive issues in the near future.

2. Methodology and research approaches

Despite significant amount of overviews on digital currencies and cryptocurrencies (Ali et al., 2014; Bjerg, 2016; Bolt et al., 2016; Clemons et al., 2017; Dwyer, 2015; Weber, 2016; Kucherov, 2016), to a large extent, understanding the prospects for the technological revolution has yet to be. Traditional research approaches on digital currencies and cryptocurrencies concentrate about two points - legal uncertainty and applied aspects. When it goes to law perspective, there are many examples of application of various legal methods aimed to acceptance or denial of digital assets as independent payment instruments. The great controversy of masters of law, economics and philosophy, are digitals assets or cryptocurrencies actually money or goods, or not. It often comes to method of "*Grundiss*" that claims: "The carrier is predetermined by the monetary relation, but it also reveals the inconsistency of their connection - these two elements of natural categories of money are mutually subordinated" (Pshenichnikov et al., 2017, p.35). Characteristically, various authors come to opposite conclusions, using similar arguments.

From the point of technological and applied aspects of digital currencies popularization led researchers to exploring the capabilities of distributed storage technology and blockchain data signature. In connection with this, the second direction of research is connected with the analysis of technology, the speed of processing and confirmation of transactions, and not the study of the consequences of its development.

The combination of systematic functional and technologically scripting approaches, which is base of the method used by the author, let bounce of functional tasks of each digital currencies and valuate the influence on economy and government. In our days, global digital economy includes up to thousand varieties of different technological solutions implemented in digital currencies. Creating topology principles of evaluation the perspectives and lines of influence of that modern technology implementation is the only right approach to achieve the objectives of this study.

3. Results

The speed of popularization of electronic money, fast switch of technological solutions and different law environments caused terminological uncertainty in determining the status of digital money. Today, combination of characteristics as emission centers, forms of existence and functions performed have become the key factor allows formalizing full spectrum of digital currencies. Traditional money as the starting point in this classification characterizes with monopolistic role of government as the center of emission, with its' traditional form (coins, bank notes) and digital form (but only with national marks of value), with fixed set of payment functions determined by the state.

3.1. Digital Asserts Typology

During the study of various types of electronic money and cryptocurrencies, taking into account the peculiarities of the impact of their turnover on fundamental polyeconomic values, it is advisable to distinguish several categories. First type of electronic money is a continuation of the fiat money, with the only difference - they extend the functionality of payments through technological support of fast micro-payments. This type has nomination in national cost marks. Issuers of this money have to be companies registered and licensed by National Banks. Operations with the first type of digital money equivalent to operations with national money, because each unit of that money is equivalent to a unit of traditional money on a bank account or other storage. All of these characteristics make digital money just another one step of traditional money development. Classic example for the post-Soviet region is Yandex.Money, and globally it is PayPal.

<i>Criteria:</i>	Digital Money
	Type 1
<i>Form</i>	Digital form
<i>Money supply</i>	Fixed
<i>Regulated by the government</i>	Yes
<i>Distribution, reception and circulation</i>	Widely in digital environment
<i>Money nomination</i>	National currency signs
<i>Status</i>	Legal tender, governed by the National Central Bank
<i>Issuer</i>	Licensed Finance Companies
<i>Principle of organization of the monetary system</i>	Centralized
<i>Fiat-money convertibility</i>	Yes
<i>Exchange mechanism</i>	Peer - emission center - peer
<i>Mechanism of the operation confirmation</i>	Depositary Center Records

<i>Currency value</i>	Equal to the value of the national currency
<i>Risks within the national financial system</i>	Operational risks
<i>Example</i>	Yandex.Money - rubles, PayPal - dollars.

The second type of digital money is mostly belongs to categories of virtuality. They might be nominated in units that have no connection to the national currency, even though some of them might sound alike. For example, USDT - USD ticket. Private funds and companies, oftenly noncommercial and educational, are the issuers of type 2 money. However, due to the law uncertainty, electronic money of the second type have no regulation basis, so they have not legal status of a payment instrument and have no guaranties of fiat money exchange (more on that: ECB, 2012, p.16; Kuznetsov, 2016, p. 21-22; Kucherov, 2016, p. 107-119).

<i>Criteria:</i>	Digital Money		
	Type 2		
	"Virtual Money for Communities"	"Virtual Money"	"Crypto-currencies"
<i>Form</i>	Commodity (chips, stickers, vouchers) and electronic	Electronic	Electronic
<i>Money supply</i>	Not fixed	Not fixed	Fixed by the algorithm
<i>Regulated by the government</i>	No	Limited	Limited
<i>Distribution, reception and circulation</i>	Only the issuer	Professional Environment	Widely through professional electronic environment
<i>Environment</i>		Electronic Environment	Restricted environment in a number of jurisdictions
<i>Money nomination</i>	Arbitrarily	Arbitrarily	Arbitrarily
<i>Status</i>	Does not have the status of legal tender.	Usually, does not have the status of legal tender. The status of the bill, securities is possible.	Does not have the status of legal tender. The status of the bill, securities is possible.
<i>Issuer</i>	Non-financial companies or "communities"	Private companies	Arbitrarily
<i>Principle of organization</i>	Centralized	Centralized	Decentralized with varying

<i>of the monetary system</i>			degrees of decentralization
<i>Fiat-money convertibility</i>	Usually not	Determined by the issuer	Yes
<i>Exchange mechanism</i>	Emission center - peer - emission center	Peer - emission center - peer	Peer-to-peer
<i>Mechanism of the operation confirmation</i>	Emission center Data	Emission center Data	PoW, PoS, Decentralized Depository Records
<i>Currency value</i>	Determined and recalled by the issuer	Determined by the issuer	Determined by product features: Supply and Demand
<i>Risks within the national financial system</i>	Has no connection with the financial system There is possibility of barely legal schemes and single sales	Legal risks, liquidity reserves risks, operational risks	Legal risks
<i>Example</i>	Domestic currencies used in games, bonuses with payment function	Webmoney, PerfectMoney	Bitcoin, Ethereum, Ripple

Due to the specifics of the organization of emission centers, type 2 electronic money is evaluated by users and operators in terms of the level of risks and mass trust. Thus, to valuation of a particular digital currency popularization, their emission centers' polyeconomic characteristics have to be taken in account. Such features as openness of the center, principle of depository center organization. The emergence and popularization of the blockchain technology made possible by formation of the minimal required mass of high performance devices, that allows solving mathematical fixation and approval with the cryptographic algorithms (Evans, 2014, p.12). That has pushed the possibilities of independent storage and confirmation of transactions to another level. From the one hand, it challenged banks and government agencies, that just a short time ago were the monopolists owning depository and transaction validation functions. From the other hand, distrust of the government as institution and economical area actor, especially in the developing countries, has been accumulating for decades and has formed the demand on alternative ways of economy. Blockchain has become for short period a hype panacea, which was oriented on apolitical mathematical rules, which has been guaranteeing transparency of transactions. Despite a wide range of e-currency algorithms of type 2, technologically used two fundamental approaches of transaction validation. One is based on *proof-of-work* algorithm (PoW, like Bitcoin or Litecoin). The other one uses *proof-of-stake* algorithm (PoS, for example Nextcoin). Some companies try to combine algorithms, like Peercoin, but it mostly leads to slower processing of transactions. It should also be noted that in addition to the mathematical guarantees, the world of cryptocurrencies allied some organizational exemptions, which allows to set validation computing centers (mining machines) not for everyone, but for the desired corporative environment. A good example of that kind of project is Ripple, which is partly corporative coin.

It is important to understand that second type of digital money and it's development is mostly work on technology itself, not on economy. The economy commonly flows into technologically developing environment, where the financial results get ready to pump up.

Even though it is often speculative. Thus, despite the speculative capital out-flowing of the crypto-market of recent time, despite the potential effect on soft financial security of national economics, usual sanctions regimes and inviolability of national sovereignty in the scope of implementation of financial and monetary policy with innovative economic transformations from the point of netocracy development - perspectives are highly bright.

3.2. Selection of factors of the influence of electronic money on the digital economy

Supply and demand are two factors that might characterize the second type of digital currencies. To the demand factors may be attributed *trans-boundary* and *low transaction confirmation cost* (for example, against traditional interbank transfers), which does not depend on geographical distance and national jurisdiction. This resource forces economy players to abandon clear and transparent economy for governments, and shift to the world of e-currencies. That causes the development of digital economy, even though there is just partial process participation of different countries in netocracy development. From the perspective of government as an institution with all of its monopolistic ambitions on the management of national economy and international economic relations, the existence of parallel cheap and fast system of transactions forms sovereignty exemptions. It is a great opportunity to build around a protectionist wall hiding behind protectionist motives, and to cut own economy off the digital evolution. Without control of digital currencies, governments loose ability of defining is transaction legal or not. That is just other one issue for national sovereignty.

The reputational appeal of electronic currencies of type 2, along with their anonymity resource, speed and usability against high level of security, lead to innovative hype inadequate interest to just a simple instrument of digital payments. Choosing between currencies of type 1 and 2, their users commonly prefer the second type for it's cheap price and convenient usage, also the point is about hiding from fiscal observations. Many countries put a limit on e-currency transactions that have not met digital economy expectations. Following the demand requested by hype in masses, type 2 currencies are accepted by Microsoft, airBaltic, Home Depot, Virgin Galactic from time to time.

Finally safety and irrevocability of committed operations, imperfection of anti-corruption legislation (especially in Africa, South America, Asia and post-Soviet region) let electronic transactions not only to ignore the boarder, but also to hide legal abuses. Barbarism of the regulators, in the best case like in India, where they offer to implement mandatory non-cash transactions at a certain threshold of transactions, simply provokes market actors find a way of hiding their transactions (Greengard, 2017, p. 170-192). Because of smart-contracts and built-in L/C approval process, which offered in second type of e-money, market participants feel more protected then with the regular transactions, also, it allows avoiding high taxes.

Cryptocurrencies are also preferable to the people that ready to oppose the government. Such folks might be found in vulnerable regions of USA and Africa. Distrust of state financial institutions, inefficiency of pension savings and hyperinflation provokes anarchic sentiments that have much in common with netocracy followers. 2 type of digital money and even better private decentralized cryptocurrencies are pretty challenging for the government institutions. Governments try to have control on money operations, to look after the funds that might be reinvested into the state economy. Thus, this anarchic mood in economy is dangerous, due to funds, which outflow bank system. In the opposite case, this money outflow will increase the money price, so people and businesses will get higher loan rate.

Scale and fragmentation factors make electronic money of the second type seems more acceptable. Let's come back to the *smart-contracts* mentioned previously. They allow to increase the efficiency of management automation. Despite the future of Bitcoin or Nextcoin, the concept that has been appeared, will never be changed - only transform. It is much more important for digital economy to focus on the scale problem: Popularization of the idea acquires the effect of a chain reaction only after gaining a critical mass. Constant separation of technological progress, the lack of a unified center of standards divide and marginalize

participants in the digital financial economy. It fragments the market, so it comes to be impossible to concentrate on political and economic pressure [Levi, 2016, p. 149-150].

3.3. Possible results of e-currencies effect on the government institution and international relations.

Despite the inconsistency of signals sent by digital money market, the transformation of technological achievements and demonstration of its' abilities have been already happen. Digital currencies with their regular money characteristics, features of a property, logic program property, are the alternative to traditional financial system. Though it is not the time to predict the future path of development of the digital economy, it comes obvious that the government and its' role in international financial system are overvalued.

There are two possible key-factor-ways for cryptocurrencies and e-money to develop and become adopted. First factor is connected with the alternative approach to government functions, that is always is searched by people. It is based on the criminal motives on the one point, and on the deep understanding of inefficiency of government institution and income redistribution on the other. It is easily seen in hyper inflated and corrupted economies. The combination of anarchic resistance and netocratic ideology supports the alternative financial system. It also erases any legal boundaries. Governments have to face a competition in investment attraction for the capital, which lay down on the bottom of crypto-economy. It is not mostly about the amount of money, it is about the "brains", participating this market. Such *smarties* are visionaries that will develop the tech-product of tomorrow. Indeed, in that environment, the transformation of political preferences in society and ideological restructuring will surely happen.

The other factor is connected with functional specifics of cryptocurrencies that open doors of the unburdened investing World. In our days, the investment institute is connected with some sort of regulatory limits, which are commonly high in price. In other words, it is impossible to become an investor with 10 or 100 dollars, because the entrance limits set by banks and investing funds start from 1000 dollars. Even in that case, an investor gets nameless investment pack, not stock papers of a specific project or company.

Cryptocurrencies have given a new live to crowd-funding projects, which allow to invest on a small budget. These instruments brings investors and recipients of funds together. Even though there are nine scum out of ten projects and companies have yet no proper development, the system is self-developing and self-regulating, gaining new instruments of "smart investing" and funds control. Governments that rely on bank system in economy management and industrial tasks, will face small businesses that have grown without the support of the banking system and unrelated to banks. Maybe, those businesses will be more efficient and viable against the traditional ones. With technologies and without chains put by national finances, such companies will get an opportunity to choose the jurisdiction to belong to. Governments will have no other option, but balance between expectations of these companies and their employees. New competitive factors, such as climate, standard of living and security, transport development and social security, will stay next to low taxes and citizenship. Tendencies aimed at specializing in the international labor market might be seen on examples of USA and Europe. Once IT companies extend their role in tax formation, these factors will be evaluated into instruments of political pressure. [Levi, 2018, p. 376].

Internationally, this type of digital money will push out other challenges. In that crisis situation, when trust to government has been lost, new centers of trust will pop up. It is unclear, which one would be chosen as the trust center: a company, like Canon, or a small country. What will be the outcomes, if a corporation would have released and implemented own cryptocurrency, at least on their own facilities, and then spread on a spill-over principles?

It is danger for government institution, if corporations would have gained more power with their own money. However, the companies have already become a factor, which influences on governments. So why should not they release their own money and run own police, at a particular moment? It would sound like a fantasy, if semi-corporative currency Ripple was

not stable for more than a few years, or if Ethereum had no demand by Middle Eastern financiers.

4. Conclusions

In the conclusion, it has to be mentioned that e-currencies development makes our future, and each upcoming day may change perspectives that technologies bring. It is a risk factor and stability factor at the same time, that digital payment methods break the chains of governmental institutions. Even though the discussion on cryptocurrencies has not yet to be finished, it is a significant fact that this technology affect and force to develop government institutions, and, as a result, the institution of international relations. If not with its circulation in parallel with the main national currency, but with the "smart contract" technology implementation, type 2 digital money will have the most significant impact on the future of national economies. Individual countries will take decisions to fight offensive on their sovereignty through protectionist prohibitions and restrictions. Others will try to create a favorable legal environment, and at the next stage lay the tools for taxing crypto-capital. In any case, it is the government will have to adapt to technological rapidly changing way of life, not the technologies adopting to a sluggish government regulations.

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