

Virtual Currencies – monetary policy dilemmas and regulatory challenges

Alexis DAJ¹

Abstract: *Although the topic of virtual currencies is not completely new, the current technological developments and the extent of the globalisation process appear to have changed the scope of the research efforts needed to cover not only the advantages and opportunities, but also the disadvantages and threats that the expansion of virtual currencies can pose for monetary policy and the safety of the financial system. This paper comprises a brief presentation of the different types of virtual currencies and identifies some of the most significant implications of large-scale virtual currency adoption for monetary authorities and regulators, while providing an overview of the main trends in the evolution of virtual currencies. In the end, one conclusion is evident: whatever monetary policy or regulatory issues arise from the use of virtual currencies, their consequences are far from virtual.*

Key-words: *Virtual Currencies, Distributed Ledgers, Cryptocurrencies, Central-Bank-Issued Digital Currencies, and Blockchain Technology*

1. Introduction

In the last decades, the financial services industry has proved to be one of the most prone to the adoption of technological innovation and business model novelties. In the quest for providing cheaper and quicker financial services and products to a broader scope of customers, the financial sector ventured also in the field of virtual currencies, following the more general trend of disintermediation.

This research paper inspects the role that virtual currencies can play in the financial system, the problems they pose for monetary policy and regulators, while scrutinising some of the opportunities generated by the current trends of virtual currency evolution.

This study starts with a short description and classification of virtual currencies and the way their mechanism works, after which it continues with the analysis of how central banks can adapt their monetary policy instruments and regulatory principles in order to harness the opportunities and threats presented by

¹ Transilvania University of Braşov, alexis.daj@unitbv.ro

cryptocurrencies and blockchain technology. The paper concludes with an overview of the newest trends in virtual currencies.

2. Characteristics of virtual Currencies

The topic of virtual currencies is not only fashionable, but also a theme that gained increasing scientific relevance as the underlying technological solutions needed to implement the myriad of new virtual currencies are maturing and, thus, becoming interesting for monetary authorities and regulators.

The existence of different types of virtual currencies raises both macroeconomic and legal conceptual issues, and poses some practical problems related to the national and regional management of a world-wide phenomenon. Therefore, researchers have recently tried to identify and answer several relevant questions regarding these new financial instruments:

- Can public and private provision of money coexist in modern economies?
- Which are the differences between money in a traditional sense, electronic money, digital currencies and virtual currencies?
- Can a decentralised supply of virtual currencies safeguard the legitimate rights of their owners while complying with regulation in the field of anti-money laundering and combatting the financing of terrorism (AML/CFT)?
- Will the new digital currencies based on blockchain technologies and distributed ledgers offer to monetary authorities the opportunity to implement an additional new monetary policy instrument in relation to Central-Bank-Issued Digital Currencies?
- What are the challenges for regulators and which aspects of virtual currencies should be regulated?

The following sections will cover these aspects and summarise the main concepts which describe the characteristics of virtual currencies.

2.1. Public and Private Provision of Money

In trying to determine if virtual currencies can be seen as “money”, researchers like Sauer (2016), Dong He et al. (2016) or Rogojanu and Badea (2014) have examined the different situations of public and private provision of money.

Dong He et al. (2016) emphasise that virtual currencies are analogous to high-powered money (also referred to as “central bank liability, base money, or outside money”), functioning similar to banknotes, coins, and other liabilities of the issuer - the central bank in a contemporary monetary system. They also underscore the role of the various regulated or unregulated financial institutions in providing (in a decentralized way) a very large part of the money supply.

Other researchers - like Rogojanu and Badea (2014) - draw a parallel between the current development of alternative virtual currencies (e.g. Bitcoin) and the ideas presented by the 1974 Nobel Laureate in Economics - Friedrich August von Hayek in his 1978 “Denationalization of Money-The Argument Refined: An Analysis of the Theory and Practice of Concurrent Currencies”. Hayek’s conviction that free competition between private suppliers of currency is the ideal method to obtain a healthy currency would - in extremis - remove legal tender laws, and permit every individual and organization “to issue its own currency, as paper tickets with its own names and marks attached” - without the possibility of financial and banking institutions to avert people from favouring another manner of making payments.

Sauer (2016) is also convinced of the foreseeable “crowding out of a national currency both as payment vehicle and speculation asset” - as an outcome of Hayek’s paradigm of competing private money and concurrent currencies. Nevertheless, because Hayek promoted the idea of competition between many private currencies and not a model in which private money compete with any currency issued by a central bank, the current situation of virtual currencies rivalling officially recognised types of money bears a resemblance rather to Gresham’s law “in an adapted version, even if the underlying conditions are not fulfilled in detail: Bitcoins are bad money (no commodity value, no regulation, et cetera) that will drive out the national money as good money”.

Moreover, Dong He et al. (2016) point out that “both history and economic theory broadly seem to support a monetary regime with public provision of currency over a competitive private system”- especially when two main aspects are taken into account:

- 1.) Resilience against inflation (because, without systems to restrain the predisposition of private entities to excessively provide nonconvertible fiat money, inflation would often occur), and
- 2.) The need for a credible lender-of-last-resort (LOLR) - since “provision of liquidity becomes insufficient and leads to a crisis without public outside money if a systemic shock hits the system, and contagion risks are imminent”.

2.2. The place of virtual Currencies within digital Currencies

Currently, new terms like “digital currency”, “electronic money”, “cryptocurrency”, “e-money” or “virtual currency” are often used interchangeably by the general public. Thus, a conceptual clarification of the place of virtual currencies within digital currencies and money - in general - is required.

According to the Bank for International Settlements - BIS (2015), there are important distinctions between money in a traditional sense, “electronic money” (e-money), and “digital currencies”:

- “Money denominated in a particular currency (money in a traditional sense) includes money in a physical format (notes and coins, usually with legal tender status) and different types of electronic representations of money, such as central bank money (deposits in the central bank that can be used for payments) or commercial bank money. [...]

- E-money balances according to the legislation applicable in a particular jurisdiction (e-money in a narrow sense) are usually denominated in the same currency as central bank or commercial bank money, and can easily be exchanged at par value for them or redeemed in cash. [...]

- While digital currencies may meet the broad conceptual definition of e-money, in most jurisdictions they typically do not satisfy the legal definition of e-money. For example, in many jurisdictions, the value stored and transferred must be denominated in a sovereign currency to be considered e-money. [...] In the case of the EU, the legal definition of e-money includes the requirement that the balances issued should be a claim on the issuer, issued on receipt of funds.”

The place of decentralized peer-to-peer virtual currencies and the characteristics of the different monetary instruments - related to the physical or electronic form of the asset and to their exchange mechanism - can be seen in Figure 1 below.

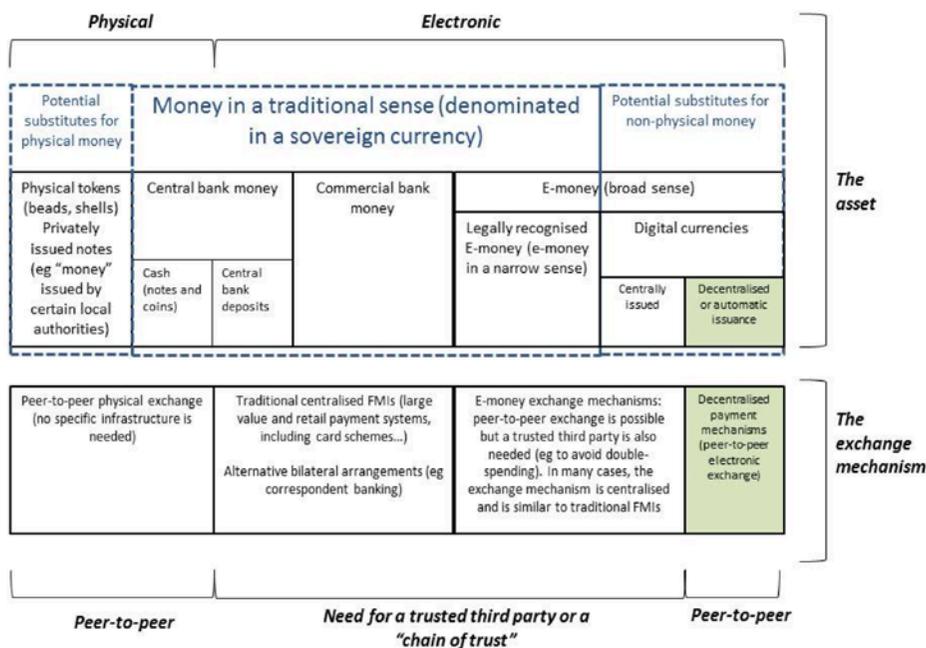


Fig. 1. Taxonomy of money and exchange mechanisms

(Source: Bank for International Settlements - Committee on Payments and Market Infrastructures - Digital currencies, November 2015)

3. Opportunities and threats presented by Cryptocurrencies and Blockchain Technology to monetary policy and financial regulation - future trends

According to BIS (2015), the value of virtual currencies is determined by supply and demand. Nevertheless, dissimilarly to commodities (e.g. silver, oil, gold etc.), virtual currencies have no intrinsic value. Furthermore, virtual currencies are not a liability of any individual or institution (unlike conventional e-money), nor are they backed by any authority - while the generation of new units (i.e. the control of the aggregate supply), is typically decided by a computer protocol. Consequently, the expansion of virtual currency systems - especially of cryptocurrencies like Bitcoin - poses significant problems to monetary policy and financial regulation.

Leckow (2016) considers that virtual currencies are included in the broader notion of “digital currencies” while having, nevertheless, a differentiating characteristic: they are not denominated in a fiat currency. Virtual currencies are therefore “digital representations of value issued by private developers and denominated in their own unit of account”. “They can be obtained, stored and transferred electronically and used for a variety of purposes by parties who agree to use them” - some being non-convertible (merely operating within the system - not transformable into fiat currency) and others being convertible (i.e. transformable into fiat currency and used for making payments in the real economy).

As Leckow (2016) shows, the most important features of virtual currencies are: “(1) the virtual currency itself or digital representation of value that parties hold and use; and (2) the underlying framework of rules and protocols that govern the operation of the system”. The virtual currency system can be centralised (managed by a central private entity), decentralised (when the central administrator is substituted by the protocols that control the functioning of the system, and many administrative tasks are executed by the system’s members themselves - acting as so-called “miners”) or a hybrid between the two.

Cryptocurrencies are virtual currencies that are generated by decentralised schemes based on distributed ledgers and on blockchain technologies that keep track of the history of all transactions - i.e. “a distributed verification of transactions, updating and storage of the record of transaction histories. [...] Miners (i.e. transaction validators) compete to solve a computationally costly problem (called proof-of-work)”. (Chiu and Koepl, 2017) This mechanism implies high computing power and energy consumption, posing a problem for the scalability of the system. Additionally, cryptocurrencies generate not only individual threats related to the safety of transactions and the possibility of theft from the owner’s digital wallet, but also systemic difficulties by undermining the efficiency of monetary policy, circumventing the AML/CFT regulations and eroding the stability of financial institutions. Nevertheless, they offer also opportunities to reduce or eliminate transactional or cash-management costs.

As a future trend, noticing the rapid expansion of cryptocurrencies (in 2017, total market capitalization has surged almost 800% to more than 150 billion USD - according to Forbes.com), central banks (like People’s Bank of China, Bank of Canada, Monetary Authority of Singapore or Deutsche Bundesbank) began newly to investigate the

implementation of cryptocurrency and blockchain technologies for retail and large-value payments. These official Central-Bank-Issued Digital Currencies (enjoying legal tender status) could also represent a promising new instrument of monetary policy, alongside the classical ones (e.g. with the injection of additional CBIDC as an alternative to negative policy rates).

4. Conclusions

The current rapid technological developments and a potential large-scale virtual currency adoption have major implications, especially for monetary authorities and regulators, posing both significant threats and opportunities - the macroeconomic consequences of which cannot easily be evaluated, considering the lack of historical experience and due to a quasi-complete absence of data for empirical work.

5. References

- Bank for International Settlements (BIS) - Committee on Payments and Market Infrastructures, 2015. *Digital Currencies, November 2015*. Available at: <<http://www.bis.org/cpmi/publ/d137.pdf>> [Accessed 1 October 2017].
- Chiu, J. and Koepl, T., 2017. *The Economics of Cryptocurrencies - Bitcoin and Beyond*. Bank of Canada.
- Dong, He, Habermeier, K., Leckow, R., Haksar, V., Almeida, Y., Kashima, M., Kyriakos-Saad, N., Oura, H., Saadi Sedik, T., Stetsenko, N., and Verdugo-Yepes, C., 2016. Virtual Currencies and Beyond: Initial Considerations. *IMF Staff Discussion Note (January)*. Available at: <<https://www.imf.org/external/pubs/ft/sdn/2016/sdn1603.pdf>> [Accessed 25 September 2017].
- Hayek, F. A. v., 1978. Denationalization of Money: The Argument Refined. An Analysis of the Theory and Practice of Concurrent Currencies. *Hobart Paper (Special) 70*. London: Institute of Economic Affairs.
- Leckow, R., 2016. Virtual Currencies: The Regulatory Challenges. *ESCB Legal Conference 2016*, pp. 132-142. Available at: <https://www.ecb.europa.eu/pub/pdf/other/escblegalconference2016_201702_en.pdf> [Accessed 22 Sept. 2017].
- Rogojanu, A. and Badea, L., 2014. The Issue of Competing Currencies. Case Study - Bitcoin. *Theoretical and Applied Economics*. Vol. XXI. No. 1(590). pp.103-114. Available at: <<http://store.ectap.ro/articole/946.pdf>> [Accessed 1 Oct. 2017].
- Sauer, B., 2016. Virtual Currencies, the Money Market, and Monetary Policy. *International Advances in Economic Research*, 22, issue 2, pp. 117-130. SpringerLink. Av. at: <<https://doi.org/10.1007/s11294-016-9576-x>> [Accessed 1 Oct. 2017]