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Review

"Bit Standard"- Bitcoin between reality and risks of a "halfway-money"

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This work provides an explanation of the market underlying the evolution due to modern technologies and technical advances, especially in transactions. In this regard, the authors specify the aspect related to the creation of virtual currencies like bitcoin that can circulate thanks to the Blockchain system through miners' work. The authors consider areas related to the warnings on the use and exchange of virtual currencies. The aim is to conceptualize in a graphical way the current operational transaction in bitcoin through the existing exchange platforms. The authors try to attest the fickleness of the disintermediation ideal founding Bitcoin. The analysis purposed could be interesting and useful to provide a kind of interpretation of the phenomenon and a general overview about Bitcoin system.

Key words: Bitcoin, cryptocurrencies, transactions, blockchain, public administration.

INTRODUCTION

According to Hayek and Martino, (1995), a change of ideas and the strength of human beings made the world what it is now. The human desire to change and the aim connected to spasmodic improvement of position and role, in a more faster and insecure society (Bauman, 2013), just apparently certain, brought a group or a single people-dragger to constitute Bitcoin, behind the pseudonym of Satoshi Nakamoto (S.N.). It could be considered a "*myth*" and antithetical new "*American dream*". Today, it is a popular domain between reality and speculation. It could be also considered an old concept, but a new "*money god*" in the digital era. The underlying IT protocol (Blockchain) increases intellectual fervor because of its functionalities. Nowadays the need is to understand motivations, perspectives and risks at the base of technologies that are changing the nature of market and its mechanisms, bringing to light currencies like bitcoin[1]. Ever-expanding markets are changing borders, increasingly becoming similar to huge informative systems (Gallino, 2002).

The aim of the paper was to refute the assumption that bitcoin[2] and other virtual currencies are definable as "*money*".

In practice, people are losing the way, moved by blinded hope of easy potential profit thanks to speculation on virtual currencies. The authors analyzed the phenomenon, both directly the price trend of bitcoin (BTC) and by reviewing literature in the ambit. The work also attempts to trace a fil-rouge with the aim to make understandable the main aspects connected to Bitcoin system. On one hand, the analysis takes place through the monetary and conceptual point of view; on the other hand the authors identify potentialities and risks of a "*deinstitutionalized currency*", finished in its quantitative stock and based on "*miners' work*".

Bitcoin phenomenon changes its shapes and its

[1] The term "bitcoin" refers to the cryptocurrency.

[2] The term "Bitcoin" refers to the system created by Satoshi Nakamoto.

mechanisms extremely fast. The considerable difficulty of studying, analyzing and interpreting rapid growing phenomena, capable of impacting in a transversal and direct way the society led the authors to opt for an exploratory methodology of research. This type of analysis in social research is widely accepted thanks to the intrinsic capabilities in categorizing phenomena that otherwise would be more complex in terms of numerical and quantitative interpretation. The authors decided to orient the contribution towards a theoretical-qualitative approach, which takes knowledge from the direct observation of the phenomenon and from the existing literature with the aim to provide a more general interpretation. This kind of methodology does not pursue the objective to verify hypothesis, a general interest of knowledge development.

On the base of a first general overview on the theme, it should be possible to formulate hypothesis for further and more focused researches.

LITERATURE REVIEW

Background: Concepts on market and money

The connection between the production area and the consumption one traced the base for modern markets birth in Europe. Markets linked essentially to the existence of cities, identifiable as places where exchange made possible the meeting of supply and demand. Thanks to the development of urban systems, markets grow (Marchionatti and Mornati, 2012) and draw feeble borders. Relations between markets and society are crucial points in social research. The authors try to find interrelations between them highlighting markets as models of rational social action. More in detail, markets are self-fulfillment thanks to the act of exchange.

More in general market represents a succession and a multiplicity of rational associations. It could be considered a real community action in the exchange (Sylos-Labini, 1986). Assuming that the individual is a rational maximizer of objectives (Posner, 1997), markets highlight the fact that in it, actors engage rational behaviors moved by the aim of maximizing their own satisfactions through exchange (Le Galès, 2002). These ratiocinating behaviors take place at the micro level (Regini, 2015).

At the origin, the institution-market was a real place (tangible), but the technology cuts the link between producers, intermediaries and buyers (Gallino, 1998).

The physical distance remains unchanged due to the IT facilitators. Nowadays, markets appear dematerialized. This development is due to the technique advances able to transform markets from real places to virtual platforms. Gallino (1998) uses the verb "*to cut*" with a sociological meaning. The authors' interpretation would be more useful contextualizing the teleological meaning oriented to the efficiency of the exchange process and the reduction of physical distances through technological tools.

In the age of Internet, the world wide web is a reflex of the contemporary complex social systems (Davico et al., 2010). It constitutes a fractal geometry (Mandelbrot, 1989) of relationships and connections. To Conceive the market as information system makes possible to understand the reasons and potentialities that revolutionized its nature and its mechanisms since the eighties (Gallino, 2002) with irrepressible progression until today.

Mises (1934) explains what is considered in this contribution. In fact, it is possible to say that where the free exchange of goods and services is unknown, money is not a need and it would not be required. Money would not be necessary, in the way that it is today known. At theoretical level the reasoning appears true, but barter reveals its limits in practice (Smith, 1973). Two direct and indirect kind of exchange could be taken into consideration for the purposes of the authors' interest. The first one is part of the case in which two individuals exchange two quantities of goods for consumption. If the attribution of subjective value to the different goods allows the exchange of each unit for one of the others, a direct mode of exchange would be possible, also in the presence of different individuals and goods. If this hypothesis expressed fails, indirect exchange should emerge, integrating a demand for goods to satisfy consumption needs and a demand for goods that would be exchanged as payment for others. In this way those reputed more tradable gradually could replace the others. Inevitably it would become a medium of common exchange, identified in other words "*money*" (Mises, 1934).

Keynes (1936) praised money for its importance, in fact attributes to it the role-value to be essentially a connection between present and future. Changes in exchange tools and information technology make it possible to shape the future with certain probability based on the evolution in virtual currencies (VCs).

This kind of revolution might be called "*bit culture*". With regard to the nature of money for commodity theorists (Weber, 2014), money refers to a product of the invisible hand (Smith, 1973), which emerges spontaneously in the markets characterized by the barter methodology. The emergence of money was possible thanks to the fact that it could be the most marketable good turned the preferable medium of exchange (Menger, 1892) and capable of clearly improving the efficiency of the trade. The replacement of the meaning of "money - raw materials" with

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the legal tender meaning led to the establishment of the current systems. It is possible to affirm that money pursues the aim to be an optimal solution to the frictions existing in the barter mechanism.

Menger (1925) explains how money arose from a process of minimizing transaction costs, thanks to the capability to pass in a simple way from hand to hand. Money phenomenon presupposes an economic order, in which production is based on the division of labor. This kind of labor could be represented in the "*labor market*" necessary for the correct functioning of the Bitcoin system.

The balance of production and consumption takes place through the market. Bitcoin system turns markets into virtual places in which, the different users exchange goods as a result of negotiation and where the function of money explains the role of exchanges facilitator (Mises, 1934). This function enhanced the birth of money.

Anything, at this point, if used as a medium of exchange with a minimal intrinsic potential of general purchasing power, could be called money. This is true simply because every good would have utility in the perception of someone with the need to acquire something. From this idea took place the ascent of "*disintermediate*" virtual currency as bitcoin is.

According to the limited point of view aforementioned, it is necessary to say that money would resemble a potential tool usable for bartering purposes (Keynes, 1932). This characteristic needs to be emphasized in the bitcoin-universe. In fact, it is an aspect that on one hand supports bitcoin essence, but on the other hand could limit its potentialities.

In a nutshell, money emerged as a unit of account (Gioia and Perri, 2002). As a result, it immediately becomes "*arbiter*" of social relations in exchanging. Money enlarged its perspectives in an extensive manner towards the "*world-system*" (Wallerstein, 1974). Money could be expression of technology and innovation in economic ambit. It fortifies its consistency and its value in the feeble borders of the internationalization, founding itself in a more advanced form, the so called globalization (Magnier and Russo, 2002).

It is possible to say that people discovers new perspectives in exchanges at every step for social life needs. Exchanging tools switched from the past when the salt was the medium of exchange for ancestors to today's virtual currencies (or cryptocurrencies).

Bitcoin and other virtual platforms for creation and exchange of cryptocurrencies took place in a system facilitated by computer technology, online marketplaces and performing networks. Nowadays more than 1100 platforms are on the web (Joshi, 2017), sign of a monetary revolution or with more probability, emotional ferment based on psychological hope of easier profit.

Money holds the peculiarity to be accepted in a universal manner against goods and services or medium of debts extinction. An essential characteristic beyond money is the generalized trust (Pavanelli, 2003) to be accepted as a medium of exchange. The three money functions are considerable as intermediary, value measurement (numerical or unit of account), value reserve (Caloia, 2008). In literature two different points of views on money are identifiable: jourists and economists.

Money as a mere medium of payment and therefore of obligations extinction does not satisfy the economic vision, but only the jurists one. Money could be considered medium of payment in teleological view of its capability to be mainly a medium of exchange (Mises, 1934).

In fact, as affirmed by John Richard Hicks (1967): "*money is what it does*". For this reason it is a convention and /or a State creature (Dequech, 2013). Money is undoubtedly one of the main social technologies, constituted for human being by human beings in continuous development. Nowadays it moves the globalized world (Ingham, 2016).

Bitcoin: Origins

Braudel (1993) considered money as able to establish itself wherever; can change shape, but not its function. History teaches that money appears as a powerful indicator thanks to the way it runs, loses its vigor or for the fact that it lends itself to be an object of desire. Money seems an old technique, but it surprises man (Braudel, 1993).

Money induces people to talk about it and to show its various shapes. Nowadays, bitcoin, framed as crypto-currency, becomes object of desire, reveals its fluctuating characteristics, its virtues and its risks. In every society, money causes imbalances due to its intrinsic forces. States try to create economic institutions to face these forces. Bitcoin could be an exogenous intervention, a shock that imposes changing (Regini, 2015).

Literature defines Bitcoin and its motivations as a cryptographic payment and registration system (Amato and Fantacci, 2018). It is not possible to ignore the dictates of its creator Satoshi Nakamoto (S.N.), veiled by this pseudonym. In 2008 he became a promoter of a revolution with a huge resonance all over the world. Bitcoin, moreover, is not only limited to be an IT protocol thanks to Blockchain. In fact, Blockchain could be con-sidered the most persistent character at the expense of the haughtiest and disruptive aspect, but unrealistic one, that features bitcoin as money. Bitcoin aims to impose it presence on the market to supersede the intermediation in a system based on trust and made by weights and balances.

The authors take distance from judgmental notes, which in this introductory phase could mislead the reader from his own interpretation, but it is necessary to report a paragraph in which Satoshi Nakamoto (2008) expressly states his hope through the so called "*White paper*".

"*Commerce on the Internet has come to rely almost exclusively on financial institutions serving as trusted third parties to process electronic payments. While the system works well enough for most transactions, it still suffers from the inherent weaknesses of the trust based model. Completely non-reversible transactions are not really possible, since financial institutions cannot avoid mediating disputes. The cost of mediation increases transaction costs, (…) These costs and payment uncertainties can be avoided in person by using physical currency, but no mechanism exists to make payments over a communications channel without a trusted party. What is needed is an electronic payment system based on cryptographic proof instead of trust, allowing any two willing parties to transact directly with each other without the need for a trusted third party"* (Nakamoto, 2008).

Thanks to these words, Nakamoto became a promoter of what he wants to make known as a "*disintermediate revolution*". He tried to make free users from intermediation costs, through his "*messianic message*". At first, in this way he tried to allow money transfer and consequently every kind of data, in a direct way between peers (P2P). This purpose could be able to subtract power at the "*third parties order*".

On the wave of the economic crisis and the criticisms on monetary governance, Bitcoin shows itself to the world as an innovative counter-proposal. Satoshi Nakamoto's aim is to present himself as a creator of a new way to exchange; an alternative to what exists. In fact, in the real economy, bitcoin strives to be money, but it could be considered as just a computer-based-code system without legal tender.

The following paragraph explains the first aspect; the last part of the contribution tries to explain the second one.

Bitcoin mechanism

Now popular definitions of Bitcoin/bitcoin are payment system and "money" (Amato and Fantacci, 2018). Bitcoin system was born as a finite stock. It appears in this way concerning its actual configuration, and it will remain finite. It appears as a predestined quantity of scarce good, determined in 21 million units of "*virtual coin*".

Unavoidable "*pseudo-currency*", which in order to be able to circulate requires a "*material extraction*". We intend materially, because the energy expenditure to extract (create) coins is significant; about 30 terawatt hours per year, more than Ireland's energy consumption. A single transaction would use enough electricity necessary for ten American homes in terms of energy (ANSA, 2017). The functioning mechanisms of bitcoin, in other words, is based on an open source software (Walch, 2015).

It is a tool that allows users to produce bitcoins. It would be possible to exchange coins in legal tender currencies through ad-hoc platforms, after the creation mechanism (mining activity).

The aforementioned cryptocurrency is ideally "*mined*", but materially produced. The assumption appears true because of the reason that its production costs are higher. For mining activity are necessary assets as personal investments to ensure the subsequent production of new "*coins*". The "*production process*", obviously inspired by "*gems extraction*", bases the pillars on a system of reward for "*miners*"[3] (workers).

In details, every time a user sends bitcoins to another user, the system composes a cryptographic puzzle. Network nodes provide the validation system. Miners' network solves the problem and decrypt transfers. This kind of mechanism certifies transactions adding new blocks to the system (chain of blocks). Every added block is the proof of evidence that the transaction is signed into a "*ledger*", keeping track of it (Weber, 2014).

Obvious difficulties are present in the mechanism due to the time consuming process; every 10 min the system is able to release a certain amount of new bitcoins (Deshpande et al. (2017). Users, or interested parties, invest in increasing computing power to participate to the network of nodes in order to compete in production and in some cases to cooperate. In this regard, mine-pooling actions are becoming practices for creating new bitcoins, widely recommended to coin new cryptocurrencies (Guttmann, 2014).

Therefore, it could be possible to shape bitcoin as a "*currency*" without a State legitimization and without a master, "*de-institutionalized*" and "*self-coined*" by the network nodes (users).

Due to the main characters expressed, the Blockchain protocol (shaped in our contribution as IT protocol) links the nodes to each other on the net. Nowadays, it is possible to guarantee anonymity, or better "*pseudonymity*" to exchange bitcoin on Blockchain platforms (De Biase, 2016).

Multiple faces of bitcoin

On one hand, the economic aspect related to Bitcoin is the main that today provokes greater excitement and emphatic enthusiasm for the potentialities in bypassing actual systems of forced fiduciary intermediation. On the other hand, the ascent of Bitcoin is due to the deviant features of the "*speculative dream*".

Another aspect would create "*rational exuberance*" (Tapscott and Tapscott, 2016) related to further applications. Additionally it is possible to recognize the exciting dark side in the actual Bitcoin Blockchain model.

The dark side concerns the possibility to create pseudonym identities. Plausibly it could be the most

[3] Miners are volunteers. Thanks to their hardware and computing potential (processors installed in today's computers) would facilitate the necessary decryption actions, more generally for the transmission of data and specifically for payments between users.

dangerous aspect. In fact, it would create a vehicle for the "*deep web*" and illicit activities connected to it.

The authors treat in detail this issue in the following paragraphs, but at this moment, the aim is to stimulate interest and guide to understand the different faces of a dado that includes various factors: high expectations, large risks and considerable potentialities.

Readapting with other words and rethinking a Hayekian thought in today's epoch, as a new cycle of history, the sense of power over the future and the unconditional trust in possibility of improving people destiny, increase ambition in human beings. People have total right to be ambitious (Hayek and Martino, 1995), but on one hand the world is going towards an unjustified continuous metamorphosis. These changing, if not regulated or managed, could lead to the so called process of "*creative destruction*" (Schumpeter, 2013). By contrast, the Weberian view remains true: possible would not be achievable without impossible attempts (Benevolo, 1999).

Assuming these words, in light of a hypothetical new historical phase in monetary field, the first transaction in bitcoin, took place on January 3rd 2009. It was called "*genesis block*" (Capoti et al., 2015). In this way Satoshi Nakamoto began his mining activity, an operation that the authors analyze in the following paragraph on its salient and peculiar traits.

A year after the genesis block over 32.000 blocks had been added to the original, producing a total of 1.624.250 bitcoins (cryptocurrency) (Guttmann, 2014). On December 26th, 2014, North Carolina State Wolfpack and the Cavaliers of Central Florida University challenged each other. The online presale was restricted. Tickets were available through bitcoin payment. This significant event exemplifies the rise of virtual currencies on the market (Kiviat, 2015).

Work for bitcoin: Mining activity

Bitcoin system increases interest for its future applications in different fields. Bitcoin functionalities are focused on keeping track of information and self-compiling process related to all transactions, thanks to the mechanism explained in the paragraph. Bitcoin is known as a register based on Blockchain technology, or in a more simpler words, a database distributed in chained blocks. Miners' activity focuses, through Bitcoin system, in verifying transactions and adding other block-groups to those existing (Capoti et al., 2015). The authorization of the transactions is not provided by centralized bodies, but thanks to a rewarding system (Amato and Fantacci, 2018), competitive and decentralized, that ideally tries to reproduce a "*labor market*".

Adam Smith (1973) took into account labor, in a conceptual way, as the true measure of the exchange value of all goods.

The assumption provided by Smith (1973) led the authors to consider that a miner, as an individual worker, receives a certain amount of bitcoins as a reward for each added block, ensuring the well operation of the mechanism. In other words the amount of bitcoin received as reward by miners, could represent a payment for work.

The initial reward was 50 bitcoins, but every 4 years it reduces the amount about 50% and in any case every 210.000 blocks (Capoti et al., 2015). Bitcoin intended as payment system, appears "*without transaction costs and commissions*". The cost-free mechanism is made possible thanks to the fact that a sum of new coins issue covers the costs. Costs are attributed to the miners. In fact, they support decryption costs and authentication activities.

In the authors' point of view, this kind of labor market would be the first price of bitcoin, as the original purchase currency with which to pay for all things (Smith, 1973). It is possible to consider this kind of first price as the only true value of bitcoin and no other value should be attributed to it.

Nowadays, thanks to a virtual reconstruction of an "*economy in the economy based on work*", Nakamoto made possible to obtain, in Bitcoin system 25, bitcoins for each block undermined. Anyone could be a "*miner*", and technically could coin "*virtual currency*" (i.e. bitcoin). The open-source software is user-friendly; the only effort would be the "*work*" and investments in increasing the power contribution. The main character of Bitcoin system engages the self-updating algorithmic parameter able to increase the difficulty in reaching the solution of the cryptic framework to compensate for the growth of computing power (Guttmann, 2014).

The interesting aspect refers to the finished stock of 21 million units of "*virtual coin*". The majority of bitcoin production took place in the first two years. In 2024, about 94% of the total stock will be on market. From 2024 to 2140 the overall offer will be finally completed (Capoti et al., 2015). Paradoxically, the "*bitcoin rush*" becomes faster both on the supply side and on the demand one thanks to the system based on a finite stock, able to function due to a "*labor market*" based on inversely proportional incentives for the "*miners*". This could be the reason of the establishment for numerous exchange platforms on the web and the rise of bitcoin.

In practice, these platforms are intermediaries. Intermediaries undermine Nakamoto's ideal of disintermediation in exchanging, creating a kind of "*bit-standard*", explained in following paragraph.

Hundreds years ago, in choosing which metal to use for coins, the dilemma was between gold and silver. These metals are similar for the intrinsic features and equally useful for human desires' satisfaction (Mises, 1934). In the digital era emerges the dilemma between the proponents of virtual currencies and the detractors.

Legal money, electronic money and bitcoin in the light of the Eurozone

The theoretical effort of this work, at this stage, is to explain

why economic agents accept virtual currency (bitcoin) as a medium of payment. In terms of governance analysis, monetary systems are based on market governance, under the influence of state hierarchies (central banks, regulation and supervision) (Weber, 2014). The main long-term objective of central banks is price stability. In this regard, it should be noted that the Treaty of Maastricht (Mishkin and Eakins, 2012) at art. 4 A, establishes a European System of Central Banks (ESCB) and a European Central Bank (ECB) (European Union, 1992).

Art. 105 c.1 of the Treaty reports the main objective of the ESCB in the maintenance of price stability. According to this orientation, the leaders of governments around the world are working to reach this objective (Mishkin and Eakins, 2012). Similarly, the ECB forms the core of the ESCB, which is responsible for ensuring the success of the above mentioned objective (price stability) (European Union, 1992 art. 127) and supporting the general economic policies of the Union (European Union, 1992 art. 282).

From the 1st January 2002, the Bank of Italy and the other 11 National Central Banks (NCBs) of the European Union (EU) countries adopted the euro and start issuing (Bank of Italy, 2015). By carrying out the usual functions of an issuer bank, the ECB and the NCBs issue the single currency banknotes and coins. Thus, euro banknotes and coins are legal tender in the euro area (Bank of Italy, 2015). Why is money accepted in social relationship?

The main answer focuses on the fact that money acceptance is due to the generalized trust and expectation that others will accept it. This mechanism could represent a self-fulfilling prophecy (Merton, 1973), made sure by the protection of third parties (national or supranational) that embody the consecration of the legally regulated social commitment (Barcelona, 2000).

The aforementioned concept is one of the missing parts of Bitcoin system. In fact, the authors purpose that bitcoin is limited just to be a self-fulfilling prophecy (Merton, 1973) without legal protection. In practice, at the same time bitcoin reinforce itself thanks to mass media ferment, but tends to reduce its potentiality because of its fluctuations.

The totality of transactions takes place daily through the intentions of the vast audience of economic actors. All transactions currently present in the economy are carried out by means of intentions meeting (Kokkola, 2010). It could be understandable that payment systems become an interposed condition within the relation of exchange.

Bitcoin is not very different from a system based on barter. It finds one of its fortunes as IT protocol. It could be able to provide guarantees for transactions with good levels of certainty and security (Nofer et al., 2017; Khan and Salah, 2018). On the other hand, in light of the payment systems definition, Bitcoin lacks a notion, in particular: the presence of intermediation (interposed condition). In this way the aspect that wants to change (intermediation), it could become the first risk able to nullify its legitimacy, but not its existence.

Modern economy, included the euro area, bases its functioning on fiduciary currency. Central Bank provides for Euro zone the declaration of legal tender and coin issuing. Legal currency has the power to extinguish money obligations (Bank of Italy, 2015), in practice is legally recognized. The only form of legal currency is the one issued by a central bank. In fact, it bases its founding pillars on the mechanism of generalized trust, previously identified as self-fulfilling prophecy, in addition to a stable value over time and legal recognition.

Cryptocurrency indicates the set of instruments managed and organized by banks and other authorized intermediaries to provide payment services: checks, bank transfers, direct debits, payment cards (Bank of Italy, 2015). In this context, virtual currencies take place.

The authors highlighted the intrinsic features of a legal tender currency and the aim to provide guarantee systems that permits issuance and circulation. The authors provided also a definition for payment systems.

In order to ensure an exhaustive overview, the authors point the attention on the electronic money. E-money could be confused with cryptocurrency or virtualcurrency, but these terms identify different cases.

European Banking Authority (2014), Bank of England (2014), Bank of Italy (2015) and FinCEN (2013) traced risks of these currencies through warning documents ad-hoc published.

"*Electronic money*", or e-money, is the term used in practice to refer different types of payment in electronic manner. The Directive 2009/110/EC, implemented in Italy by Legislative Decree 45/2012, defines electronic money as electronically stored monetary value, including magnetic storage, represented by a credit towards the issuer that is issued to carry out payment transactions. This turns out to be the result of a process undertaken with a press release of the European Commission on 29/07/1998, which stated the aim of the future use of electronic money (Guerrieri, 2015).

The peculiarities of e-money have been identified through the electronic memorization value, in its representation of a credit towards the issuer and in its issue to allow payment, transfer and withdrawal of funds. Important feature is the acceptability tout court as a medium of payment. In fact, it distinguishes legal tender currencies form the bitcoin and other virtual currencies in the actual conformation.

It could be erroneous to define virtual currencies or cryptocurrencies as e-currency (or e-money). Unfortunately, this term is used in the common language to identify the similar, but different cases of rising phenomena.

Regarding electronic money, the text of art.8 c.4 of the Commission Recommendation dated 30th July 1997 n. 489 transmits responsibility to the issuer for the loss due

to transactions by use of electronic payment tools. For example the case could take place when an incorrect execution of the operation and the deriving loss is attributable to a failure of the tool used. The text excludes the issuer from the responsibility if the default caused by the holder voluntarily (Recommendation 97/489 / EC).

The main elements aforementioned, clearly distinguish the e-currency from virtual-currency or cryptocurrencies (bitcoin). The first case is legally recognized as an electronic manner of money detection. The second one outlines the absence of any type of guarantee. In fact, virtual currencies and the sub set of cryptocurrencies are unregulated.

The organizational system beyond bitcoin and other cryptocurrencies guarantees their use and circulation, but not their value and acceptability. It delegates the attention and the responsibility to the individual. The use of this kind of money as medium of exchange is frequently improper. In fact, it could be considered similar to cash, but without legal basis, able to circulate in a P2P (peer to peer) market that attributes huge and fluctuating values to a good (bitcoin) with zero value (Cheah and Fry, 2015). Its use value would appear to be the exchange value and no more (Amato and Fantacci, 2018).

It could be possible to assume that, users fix and estimate bitcoin values on emotional perceptions. In any case, its value remains true solely as long as users decide to shift their preferences to other interests. The authors purpose a plausible consequence of an imitative trading that follows the overshoot in prices and vice versa.

Bitcoin, intended as money, reaches vertiginous peaks due to its intrinsic ability to move what Alan Greenspan defines the irrational exuberance (Greenspan, 1996) of speculation. At least, bitcoin is a finite and unchangeable quantitative stock that creates possibility of anonymity / pseudonymity for illicit activities and subversive motivation. Bitcoin attempts to acquire the capability to reserve of value (relative), due to the convertibility in legal tender currencies. It impacts the real economy in transversal way, reaching a considerable success due to its pioneering first mover aspects (Schilling, 2010).

DISCUSSION

"Bit standard"

The amount of "*virtual coin*" established by Nakamoto in Bitcoin system captures academic attention (Amato and Fantacci, 2018; Capoti et al., 2015; Guttman, 2014). Twenty-one million is the quantity fixed and predetermined, hypothetically to reconstruct a virtual mine. It seems to be an exhaustible deposit, which does not give the benefit of doubt, nor hope on the discovery of new sources. Bitcoin seems to be a scarce and irreproducible good. It could be possible to define bitcoin as a "*stand-alone good*", an "*independent conventional entity*". Bitcoin as currency, due to its nature, could be represent an "*item for collectors*" or a kind of "*virtual commodity*". At theoretical level, Bitcoin appears similar to the system that in the participating countries guaranteed a free convertibility of gold in foreign currencies, and vice versa of domestic currency in gold. This mechanism is known as Gold standard (1815) (Demattè and de Sury, 1992). In fact, as currency, bitcoin is tradable and exchangeable due to the innumerable platforms on the web that permits an immediate convertibility at low cost in legal tender currencies. This kind of system could be called "Bit standard", in which bitcoin as "representative" value would be exchanged in other legal tender curriencies (Figure 1).

The aim is not to technically explain the functioning of the Gold Standard. The authors want to raise interest on the conceptual similarity between Gold Standard and Bitcoin mechanism.

The conceptual similarity and the overview proposed made it possible to assume bitcoin: as a "*good*" could re-propose a system of direct exchange based on barter; as a "*payment system*" it is valid until people accept it for payments with the expectation that it will continue to be accepted; and as a "*reserve of value*" it cannot "*break the chains*" because of the limit for convertibility into legal currencies and the congenital instability of its structure.

Risks of a "Deep-coin"

The Financial Crimes Enforcement Network (FinCEN, 2013) edited the interpretative guide on the connections of virtual currencies and the "*deep-web*" to clarify the applicability of the relevant regulations to the people who create, obtain, distribute, exchange, accept or transmit virtual currencies. It is possible to read in the guide, that a person who creates units of convertible virtual currencies and uses them to buy real or virtual goods and services is a user and is not breaking the law. By contrast, a person who creates units of convertible virtual currency and sells those units to another person to reach real currency or its equivalent is engaged in the so called MTB (money transmitting business).

The common use of VCs and in detail bitcoin is linked with purchases on markets, before October 2013, reachable by the Tor.Silkroad network, one of the many access portals to the "Deep-web"[4]. A potential money laundering tool, an anonymous and illegal digital network market, reachable by downloading an application capable of masking IP addresses, facilitating access to sites with .onion domain and not the classic .it, .com,. org, which the simple web users know.

Silkroad stopped its activity on 3 October 2013 because of the intervention of the FBI, with noteworthy legal and media repercussions (Guttmann, 2014). The

[4] The Deep-web is the dark side of the Internet that can only be reached with specific software

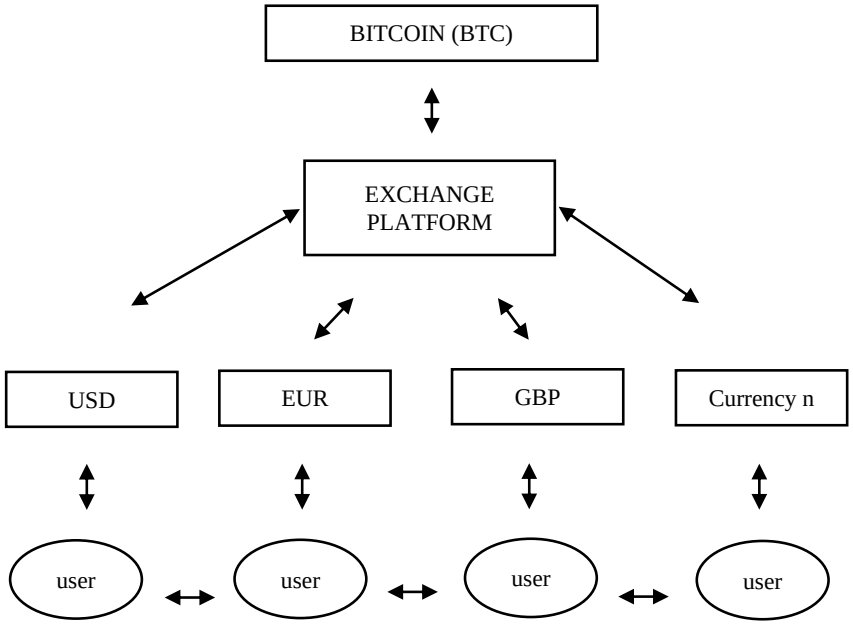

Figure 1. "Bit standard model"

authors leave the technical aspects to specialists, assuming that the construction of an economy in the economy, or better parallel and multi-dimensional economies, have been facilitated by the advent of VCs and special marketplaces, in which Silkroad was just a known case in the jungle of a huge network. These kinds of markets made possible the meeting of not recommendable purposes of supply and demand, through virtual currencies like bitcoin. In practice, VCs masked by wonderful ideals and mediatic ferment about their potentialities. These potentialities are not excluded, but the current use hides deeper meanings, identifying VCs as "*Deep-coins*" of submerged markets.

In the Italian practice, the Ministry for the Economy and Finance is working to detect the phenomenon drafting a decree scheme to regulate operation in VCs. The obligation to communicate to the Ministry the operations made in VCs includes commercial operators who accept virtual currencies in selling goods, services or other benefits. The forecast of the obligations mentioned above are compliant with the anti-money laundering regulations and the prevention of financial crimes (Source: MEF).

Institutional warnings

According to the bitcoin disruptive emergence, authorities worked to warn the population through the publication of documents specifically written on the use of VCs.

In 2014 the European Banking Authority defined VCs (bitcoins) as digital representations of money (also considered as commodities) that are not distributed by a central bank or an authority. They are considered without legal tender by any jurisdiction. They are not fixed necessarily to a traditional currency (dollar, sterling, and so on...), but are accepted, in some cases, as a medium of payment, they can be transferred, sold or exchanged electronically. Characteristic of the VCs is that they can be converted into one of the traditional currencies, even if they are not a direct representation of FCs (Fiat currencies). The EBA / op /2014/08 document, better identified as "EBA: Opinion on virtual currencies" (European Banking Authority, 2014), makes a list of the advantages and risks associated with the use of VCs.

The advantages are: i) reduction of transaction costs, ii) absence of an intermediary, iii) absence of regulation, iv) transaction speed, but focuses on the fact that many of these advantages are only hypothetical and not real, which at the current state of development of these tools remain at potential level.

On one hand, the risks identified shows traits in common with traditional financial instruments, while others are specific. The EBA warned users against risks of the quick loss of value. There are problems related to the authorization of transactions, conversion to FCs (Fiat currencies), also the absence of protection for payments or against the theft of credentials (European Banking Authority, 2014) from the cybercriminals' attacks to digital wallets. These cyberattacks have been identified under the name of Trojan.-Win32.CryptoShuffler.gen or Win32.DiscordiaMiner and others (Rus, 2017).

The EBA recognized other risk, for example insolvency of the "system administrators" and another one related to unexpected tax and implications linked to money laundering, etc. (European Banking Authority, 2014).

The year after, Bank of Italy intervened and published a warning document on the use of VCs. The scheme provided seems to recall the document published by EBA. Bank of Italy (2015) defined virtual currencies as digital representation of value, used as a medium of exchange or for investment purposes, which could be transferred, archived and electronically negotiated. VCs would not represent the common currencies in legal form, as widely stated above. Because of the absence of legal tender, people are not obliged by law to accept VCs in exchange of extinction of monetary obligations, but if accepted, VCs could be used to buy goods or services. Bank of Italy shared with the EBA's opinion to discourage banks and other supervised intermediaries from buying, holding or selling VCs (Bank of Italy, 2015).

Bank of England (2014) actively participated in the drafting of a document identified by the title: "Innovations in payment technologies and the emergence of digital currencies". In it, Bank of England explained that payment and money systems are intrinsically connected. They evolve together and this connection remains evident in the responsibilities of central banks, including the role of guarantor of both currency stability and payment systems. The Bank of England focused the attention on the risk of a direct use of VCs in relation to the misleading interpretation of e-money. Therefore, in the document it could be recognized the nature of the risk of fraud according to the payment systems. In fact, payment systems show two connotations: centralized and decentralized. In the second case, the risk of direct loss of digital currencies (VCs) is higher than deposits (electronically) through contracts with commercial banks, as aforementioned. For example, in the case of bitcoin and other similar currencies, once lost the private key is not recoverable to access the digital wallet. By contrast, for internet banking purposes, the contractual party (that is, bank) could recover or restore the personal password. In this sense, a digital wallet (that is, bitcoin digital wallet) becomes much more similar to a physical wallet containing physical currency (Ali et al., 2014) and easily subjected to fraud and implicitly to the non-recoverability of content.

Bitcoin virtues

Bitcoin phenomenon and the media fervor around it are constantly increasing. Blockchain appears on the background, but by contrast, it could be the real innovation. The IT protocol, capable to eliminate the intermediation currently present in transaction flows, in co-evolution connected to the advent of the "smart contracts", could redraw organizational traits, especially for public sector. Blockchain stands not just as a connection between bitcoin, but it appears as a fundamental infrastructure for further applications. The need of control connects bitcoin, its feeble legal basis, its security problems and institutional warnings. Beyond the uncertainty that afflicts bitcoin, the fundamental technology could be blockchain, able to build possibilities and developments.

In light of a new IT evolution for public administration and a fourth industrial revolution, the blockchain protocol could be considered for its "*disruptive power*". Blockchain process could be the same for communications, transmission of documents etc. both in private and public sector. In the second frame, it could provide a good solution for a direct certification of informative flows. Blockchain could provide the accuracy and efficiency of payment processes and consequently invoicing, minimizing disputes arising from errors (Alarcon and Ng, 2018). In the literature, blockchain assumes takes on many facets in term of purposes and uses. Its potentialities extending can be extended from cryptocurrencies to areas such as automatic machine to machine transactions, , asset tracking, supply chains banks and insurance, , e-voting, automated access control and sharing, digital identity transaction and healthcare data certification (O'Leary et al., 2018; Tarr, 2018; Iansiti and Lakhani , 2017; Azaria et al., 2016).

LIMITS AND FUTURE DEVELOPMENT

Bitcoin has been capable in enhancing interest from smaller communities in view of the request of the municipality of Berceto (Parma, Emilia-Romagna, Italy) to issue its own digital currency (Benedetti, 2018), to bigger examples like Sweden, United Kingdom (Jadeluca, 2017) and Venezuela (Ciai, 2017). Africa is looking for adoption of virtual currency. The South African Reserve Bank said that it want to issue a national digital currency based on Blockchain technology; for example "*eCFA*" in Senegal, the digital version of the West African Franc (Caboz, 2017). Markets bring with them the aim of collect together durably or at least periodically, interested parties that can influence price formation (Menger, 1925). Bitcoin does exactly that, but replaces physical places with virtual platforms and any exchange goods used in barter with a hypothetical money-good (bitcoin).

As stated in an interview with Nobel Prize winner Joseph Eugene Stiglitz (2017), the only cause Bitcoin success is the elusive potential and absence of supervision. Stiglitz (2017) shaped bitcoin as a bubble that will give exciting moments when it goes up and down. Explanatory methodology could be extremely useful in interpreting rapid growing phenomenon as the one studied. Explanatory Research is useful to help the researcher in finding problems less studied or growing. The main objective of explanatory research is to increase the knowledge on a specific ambit. The aim is not to provide exhaustive results, but to frame phenomena, the reason for their occurrence, possible interpretations and potential future perspective. The explanatory approach of the research aims to explain the phenomenon studied

through description of risks and virtues related to Bitcoin system. On one hand, the historical and general overview based on the observation of the phenomenon and literature provide a first step in the research. In fact, the suggestions purposed are not considerable as results, but the basis of the interpretation process. On the other hand, the qualitative setting could frame the bitcoin system, but the lack of statistical force intrinsically embedded in this approach, could represent a limit. It could be possible to recognize other limitations in subjectivity and variability. Quantitative and qualitative analysis could trace future perspectives; thanks to theoretical frameworks and empirical data.

CONCLUSION

The authors provided a general and critical overview on Bitcoin system through an explorative analysis of the phenomenon. The aim is not to deny the existence of potentialities inherent in bitcoin or in any case, in VCs, but to create a fil-rouge, including an historical perspective connected to the theoretical concept of market and its development. The authors attempt to interpret the bitcoin system in light of its risks and virtues, providing suggestions for further application of the Blockchain technology.

In fact, bitcoin was born from the idea of encouraging speed of direct exchanges and inclusion for the certification of flows on the blockchain, but in practice, it disregards itself and the ideals of its creation, favoring inequalities, intermediation of convertibility, fraud and illicit uses, guaranteed by the not immediate identification of users. Bitcoin has no intrinsic nominal value, other than the market value attributed by small groups of users on a growing trend governed by emotional variables between supply and demand. Bitcoin would be unequally distributed and unequally distributable. The aim of bitcoin creation is to speed up and disintermediate exchanges. By contrast, it becomes similar to a financial product, governed solely by logic of "*bet*". The intrinsic instability is one of the reasons that do not allow it to be"*real money*", but solely"*half-way money*". Therefore, as all novelties, it presupposes risks and pheno-menological problems. For this reason, authorities, academics and policy makers should observe the phenomenon and manage risks.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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