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Cryptocurrencies for social change.

The experience of MonedaPAR in Argentina.

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Abstract (no longer than 200 words)

Recent technological progresses made it possible for complementary and community currencies to be increasingly transformed into digital currencies. An increasing number of them run on blockchain, a technology that allows for greater decentralization and trustless systems.

This fusion between social and cryptocurrencies opens a series of questionings: can social currencies maintain their values regarding the creation of community and a fuller citizenship? Is the total decentralization an important value for the communities that use social currencies? Can “trust”, as defined for these monetary systems be replaced by a system that presupposes it?

These comprehensive questions conform our current research project. With an inductive and multidisciplinary plan of demonstration in mind, this particular document tries to put in discussion the characteristics and potentialities, as well as the problems, limits and tensions generated by the circulation of digital currencies that run on Blockchain (cryptocurrencies), leaving for future research the in-depth discussion that this new mixture of technologies brings up.

These issues will be addressed by studying the case of a digital social currency system running on blockchain, based on mutual credit, implemented in Argentina today: MonedaPAR, which was conceived as a defense mechanism against the economic crisis that plagues Argentina since 2016.

Keywords (3-5 keywords)

Social currencies, blockchain, local development, decentralization, trust

1. Introduction

The growing trend of recent decades - especially since the 1980s - towards monetary plurality at the local and regional levels is challenging the bank's monopoly over the official currencies. Since then, more than 5,000 experiences of complementary / alternative, local, community and social currencies have been developed, as estimated by Blanc (2018).

In the last ten years a new technology, Blockchain, has arisen and opened up a new range of possibilities for alternative currencies. Blockchain offers greater decentralization and trustless systems, which begs the question of whether and to what extent this constitutes new paradigm in the construction of complementary and social currencies. In this respect, it becomes important to reflect on the limits that alternative currencies have historically faced and whether Blockchain provides the tools to overcome them.

This article's purpose is to study the characteristics and potentialities, as well as the problems, limits and tensions generated by the circulation of digital currencies that run on Blockchain (from now cryptocurrencies). The focus will be on alternative currencies with social purpose and operating in solidarity marketsⁱ, in order to promote the restoration of social bonds that allow for an improvement in the quality of life of the "popular sectors"ⁱⁱⁱ (Orzi, 2011, 2015, 2017). In order to illustrate these issues, we analyse the case of MonedaPAR, an experience developing in Argentina since 2017. This medium of exchange is based on the idea of mutual credit and promotes monetary circulation over hoarding and speculation. For more than a year, it has been adopted by a large number of communities grouped into nodes, which operate with it as a social currency, in general agreeing with the values of the Social and Solidarity Economy (SSE), in search of mitigating the crisis that the country has been suffering since 2016ⁱⁱⁱ.

The advantage allegedly inherent to cryptocurrencies is that they allow to organize a network of decentralized exchanges that does not require intermediaries in the payment system and whose governance is horizontal and equal. Transaction verification is carried out by the members themselves, based on cryptography, and all the exchanges made are recorded in a ledger that is public and that is stored by the computers of the network. This is what according to Desmedt (2016) and Lakomski-Daguerre (2015) makes the record unforgeable, "*since any attempt to manipulate transactions results in a computer block incompatible with the previous one and the next one*". That is why researchers from the field of IT (Information Technology Systems) and Blockchain advocates call these systems trustless, because they replace the trust in the currency by a computer code with identical replications spread across the nodes of the network, thereby doing away with a centralized third party that validates the transactions.

The fact that a system is trustless in its technological dimension does not imply, however, that its underlying currency becomes easily adopted by the members of a given community. As Hawlitschek *et al.* (2016) have pointed out, there is a tension between the notion of trust used by the researchers of the IT and that of the researchers working in the field of alternative economics. The different ways of understanding trust when analyzing social digital currencies and their implications for the construction of community currencies is one of the focal points of this paper. The issue of decentralization exhibits a similar tension across the two research fields: while cryptocurrencies, are seen by researchers in the IT field as fully decentralized technologies, in the case of social currencies that operate in solidarity markets, a complete decentralization is not possible (regardless of the technology upon which the currency is built). Finally, completely horizontal governance by the peers of the network also raises difficulties when creating a community that works under the principles of a solidary market, experience shows that some degree of hierarchy is required to attain an efficient control of the currency.

In sum, the recent development of cryptocurrencies raises a number of questions regarding the issues of trust, governance and decentralization when dealing with social currencies. Can social currencies maintain their principles and values when they use a technology that advocates for complete decentralization? Can trust as defined for the sustainability of these alternative monetary systems (Orzi, 2017) be replaced by a technological system that presupposes it? Will Blockchain, with its advantages (lower costs, higher security and transparency), lead to a turning point in the construction of monetary plurality? Or does the emergence of Blockchain imply new, different challenges for social currencies? This paper provides some reflections on these issues, based on the experience of MonedaPAR.

The methodology applied in this document is sustained on an inductive and multidisciplinary^{iv} approach. The theorization effort starts from experiences that can teach us new ways of reconceptualizing currency and also economy itself, as proposed by Aglietta and Orléan (1982, 1998, 2002), Théret (2008, 2014), Coraggio (1998), Godelier (1974), among others. This paper thus features a predominantly qualitative approach, although we used transaction data available on the Bitshare's blockchain to contextualize MonedaPAR.

Because of that, the paper was structured on three simultaneous analysis instances:

1. The structural dimension, which refers to the economic, socio-political and institutional conditions in which these experiences are generated.
2. The procedural dimension, which points to the historical-social constructions in which the socioeconomic effects that occur and are generated by these experiences are produced.
3. The microanalytical dimension, that is the discourses and practices supported by the various social agents involved in them.

The investigative tools used in our field work includes over 20 interviews, open and semi-structured, that were carried out in different nodes of MonedaPAR such as the monetary communities (hereafter “*nodo*” or “nodes”) located in two Buenos Aires’ neighborhoods, Boedo, Chacarita, in the cities of Buenos Aires Province: Moreno, Escobar, La Plata, as well as in the cities of Mar del Plata and Gualeguaychú. Participant and non-participant observations were also made, along with a review of the constitutive documents of the different nodes, the mutual that legally supports the experience, and the federation of nodes that compose the current structure of MonedaPAR.

Field work constitutes for our research a nodal instance for the production of knowledge. It included alternative stages of permanence in the field and analysis of the data, for the purposes of control and adjustment to the knowledge of the phenomena investigated.

In the following section we provide a brief description of the MonedaPAR. Then we discuss the implications that Blockchain seems to entail for social currencies in the domains of trust, governance, and decentralization. Finally, some conclusions are drawn.

2. MonedaPAR: its origins and place in the world of alternative currencies

First a brief description of the history of MonedaPAR is provided. Then we introduce a typology of alternative currencies to get some insights on the main features of MonedaPAR. This analysis lays the foundations for the reflections provided in the third section.

2.1. The origins and evolution of MonedaPAR

In December 2015 a democratically elected neoliberal government took office in Argentina. For the previous four years the economy had been stuck in a stagflation process. Even though inflation - which was around a 25% annual rate -was a problem, the stagnation found the country at record levels of economic activity, consumption and employment^v. In order to solve the macroeconomic disequilibria and switch the growth pattern from a consumption-driven to an investment-driven model the new government led by the “*Cambiamos*” coalition (whose main political leader was Mauricio Macri) launched a fully-fledged neoliberal package.

As always that those packages were applied, the situation turned worse, and in the first months of 2016 it was clear that the economy was heading towards a deep recession. A group of intellectuals, opposition politicians, unionists and independent people worried by the political and economic situation gathered to

work out a solution to the adverse scenario that MSMEs, cooperatives and workers were facing. The solution would be oriented to productive sphere of the economy. A quick, practical and powerful tool was needed. After a couple of meetings in the second half of 2016 the groups gathered in this working alliance called themselves the “*Observatorio de la Riqueza Padre Arrupe*” (Father Arrupe Wealth Observatory)^{vi}.

Before long, the issue of money was on the central stage. The successful experience of the Swiss WIR Bank and, more recently, Sardex in Sardinia, proved that Gesellian and Keynesian theories could be put into practice to create a social currency. Once that it was agreed that a Local Exchange Trading System (LETS) organized nationwide could provide the agents of the productive sphere with a tool to keep economic activity going on, not so heavily exposed to the liquidity conditions of the financial system, a new issue arose: how could a nationwide LETS could be developed? Several problems had to be tackled: First, the immediate precedent of a massively adopted complementary currency in Argentina, the *Trueque Argentino* (Argentinian Barter) of the late 1990s and early 2000s taught the lesson that paper-based currencies are highly susceptible to counterfeiting. Thus, a more secure and scalable technology was required. Second, the multiplicity of barter networks, each of them with their own currency, gave rise to coordination problems which could be easily spread to other nodes. Hence, some sort of global and solid coordination was needed. Third, there should be no room for discretionary decisions at the level of the governance. A transparent and auditable governing structure was highly desirable.

Among the participants of the weekly meetings of the *Observatorio* were some members of the Espacio Bitcoin (Bitcoin Space), an NGO that gathered different people who were somehow involved in the Blockchain ecosystem. In these meetings, when the members of the *Observatorio* understood the advantages of Blockchain they decided to join efforts with some of the members of the Espacio Bitcoin to develop the software where the complementary currency would run.

Then, the beginning of a solution, the eagerness, the inspiring cases and the technology were all exposed. The only thing missing was where to validate the idea. It was the “*Movimiento Nacional de Empresas Recuperadas*” (MNER, National Movement of Recovered Enterprises) which offered its network of cooperatives for the first implementation^{vii}.

The proposal was given the name PAR (the Spanish word for “peer”), in line with the Blockchain proclamation of decentralization. The goal was to free the productive power of the different agents that comprise the economy from the yoke of the traditional financial system. The value of the complementary currency created was to be derived from the cooperation of the different peers that were part of the network and their ability to produce value. All these features made PAR a reasonable name for the system (the word

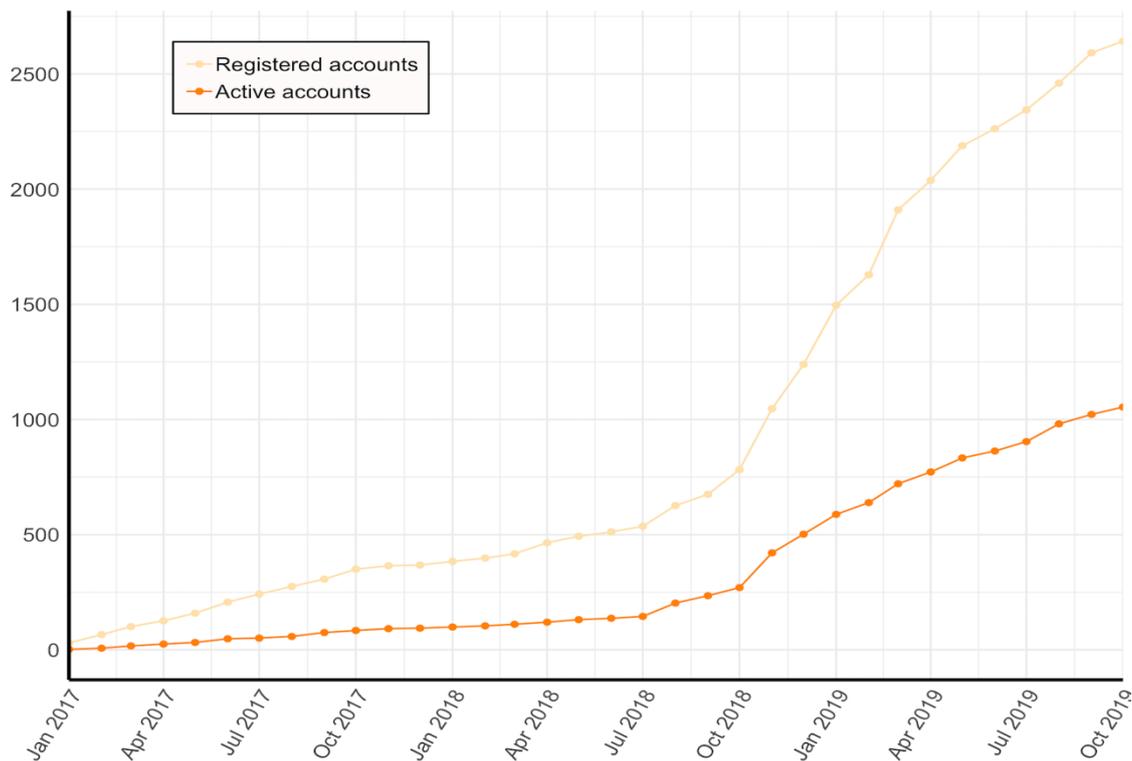
moneda translates to “currency” or “coin”). The only issue that had to be decided upon were the criteria by which participants would be allowed to join and use the system. An endorsement mechanism whereby trusted participants could be granted an overdraft facility was designed to address the money creation issue in a secure manner. The founding members could delegate the money creation function on specific participants who, in turn, could endorse new members^{viii}. The unit of account of PAR would be the Argentinian peso and a non-convertible parity of one-to- one was agreed. The fact that the issuances of endorsements was traceable thanks to the Blockchain reduced moral hazard, but as it will be shown, was not enough to create a trustless structure.

In May 2017, the system of endorsements was incorporated into the software upon which MonedaPAR LETS was working. In the second half of 2017 the founders carried out different activities to foster the adoption of MonedaPAR within the MNER, but none of them was successful^{ix}. The year 2017 ended with very few, isolated, transactions. Tackling the supply chain problem seemed almost impossible given the lack of resources. A new strategy was needed.

By the beginning of 2018 MonedaPAR did not have a real use case. Nevertheless, there had been some promotion in the media^x. As a result, some people that were working along similar lines became aware of the initiative. One of those cases was the organization *Proyecto Sierra*, from the city of Sierra de los Padres. After a meeting with one of the founders of MonedaPAR in Sierra de los Padres in January 2018 it was decided to open a node in Mar del Plata (a big city 20 kilometers away from Sierra de los Padres). The idea of a node implied that, once the founders of MonedaPAR consented to its creation, those who constitute the node would have the autonomy to give themselves a regulation and define an action plan.

As of October 2019, MonedaPAR has five nodes running and regularly using the system. More than 2 100 000 PAR-worth goods and services had been realized through about 9000 transactions^{xi}. Accounting for inflation using the CPI of the Great Buenos Aires^{xii} These nodes are spread across the center-east wing of Argentina comprising the cities of Gualeguaychú, Escobar, Moreno and Buenos Aires (where there are two nodes, one in the district of Boedo and another one in Chacarita). Except for the Boedo node in Buenos Aires, MonedaPAR is being used in fairs of the so-called “popular economy”^{xiii}. These places appear to have been quite receptive to the project because illiquidity is perceived as one of the main obstacles for the satisfaction of their needs. Most of the transactions take place at the fairs that are weekly organized by the nodes. Both the fairs and the meetings are important spaces because as people meet one another trust starts to be built. Social ties are consolidated upon this trust, which lays the foundations for the building of a team that designs and executes the action plan in the field.

Fig. 1: Evolution of registered and active accounts over time



Note: An active account is defined here as an account which has done at least one transaction since its creation.

Source: Bitshare’s blockchain, accessed through the block explorer <http://bts.ai>, authors’ elaboration.

The process of founding these nodes has been case-specific because different alliances have been built in each of these cities. In the case of Moreno, the node was the outcome of a presentation that the founders of PAR gave at the local university. After the presentation some of the attendees were so enthusiastic about the project that they decided to contact different social organizations of the town. After a couple of meetings, they decided to join the project and start using the system.

The case of Gualeguaychú is quite different because, unlike the others which were built bottom-up, MonedaPAR has been there boosted by the local government. Convinced that new technologies have a lot to offer to the problems of contemporary societies, the local authorities helped the organization in the establishment of the node. The local government actively participates in the fairs having its own stand, where fruits and vegetables can be bought in exchange of PAR.

In the case of Boedo (Buenos Aires) the node comprised of middle-class people who adhere to the social and sharing economy movements. The dynamics of the fairs of this node is very similar to the others with

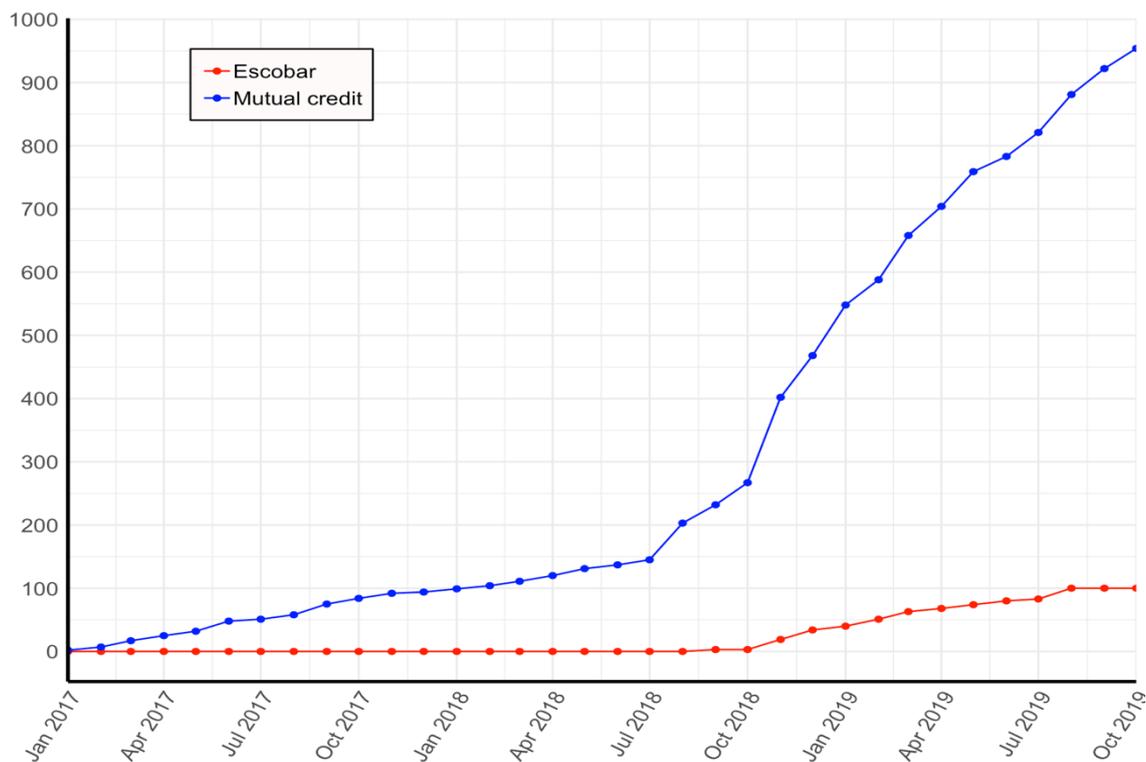
the exception that in this case most of the participants are independent persons, not affiliated to a certain social organization or group of organized producers.

In Chacarita, on the other hand, the project was built among the same lines than in Moreno, i.e., by establishing a direct relationship with a social organization (the *Mutual Sentimiento*) with a very important track record on the social economy.

Finally, in Escobar the system has been adopted by a mutuality of bus drivers that wanted to replace an old-fashioned purchasing order system with MonedaPAR. By means of PAR, the mutuality provides credit to the workers who, in turn, use it at many shops of the town. It is worth mentioning that in this case the system is not being used under the form of a LETS but as a credit card with zero interest rate. Money is not created out of thin air but as a result of the wages that the bus drivers earn every month.

In MonedaPAR thus coexist two distinct systems: in Escobar, a purchasing order system and in the rest of the nodes, a “pure” mutual credit system. While the latter exhibits the largest number of active accounts, both monthly and since the inception of the whole PAR system, the monthly mean of transaction values in the former is far greater. This reflects the differing necessities and thus ways to construct trust in the alternative currency.

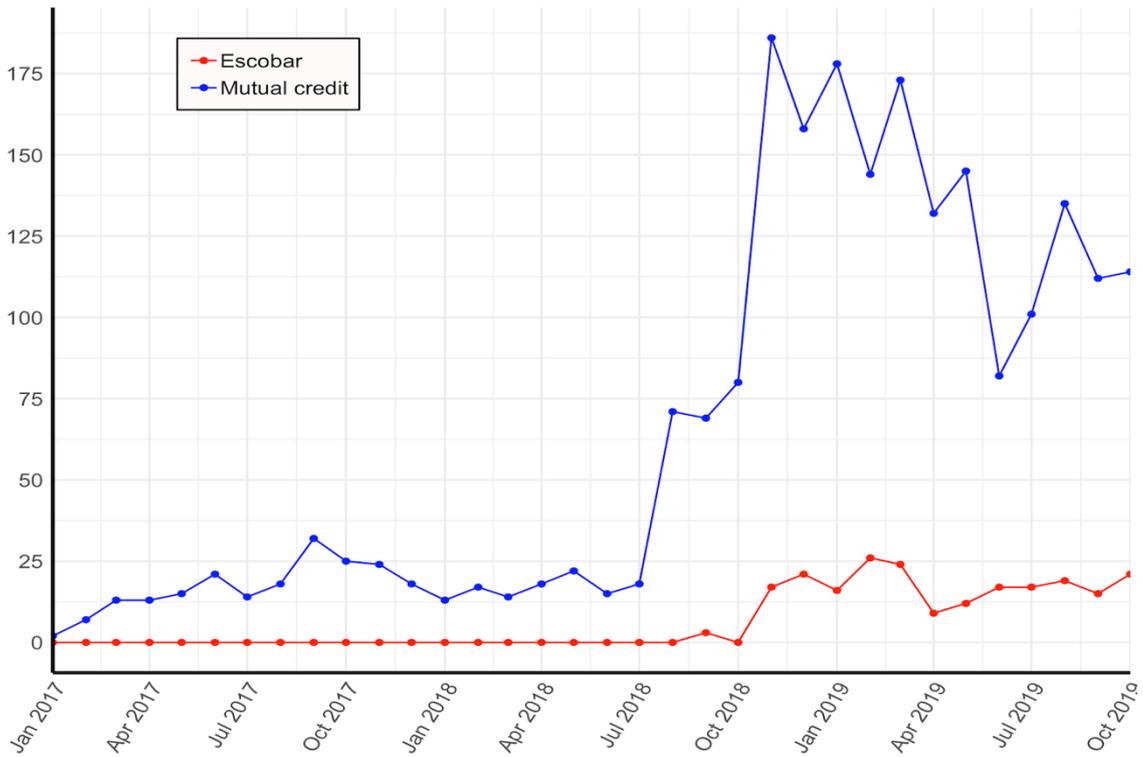
Fig. 2: Evolution of active accounts in Escobar and in the “pure” mutual credit system



Note: An active account is defined here as an account which has done at least one transaction since its creation.

Source: Bitshare's blockchain, accessed through the block explorer <http://bts.ai>, authors' elaboration.

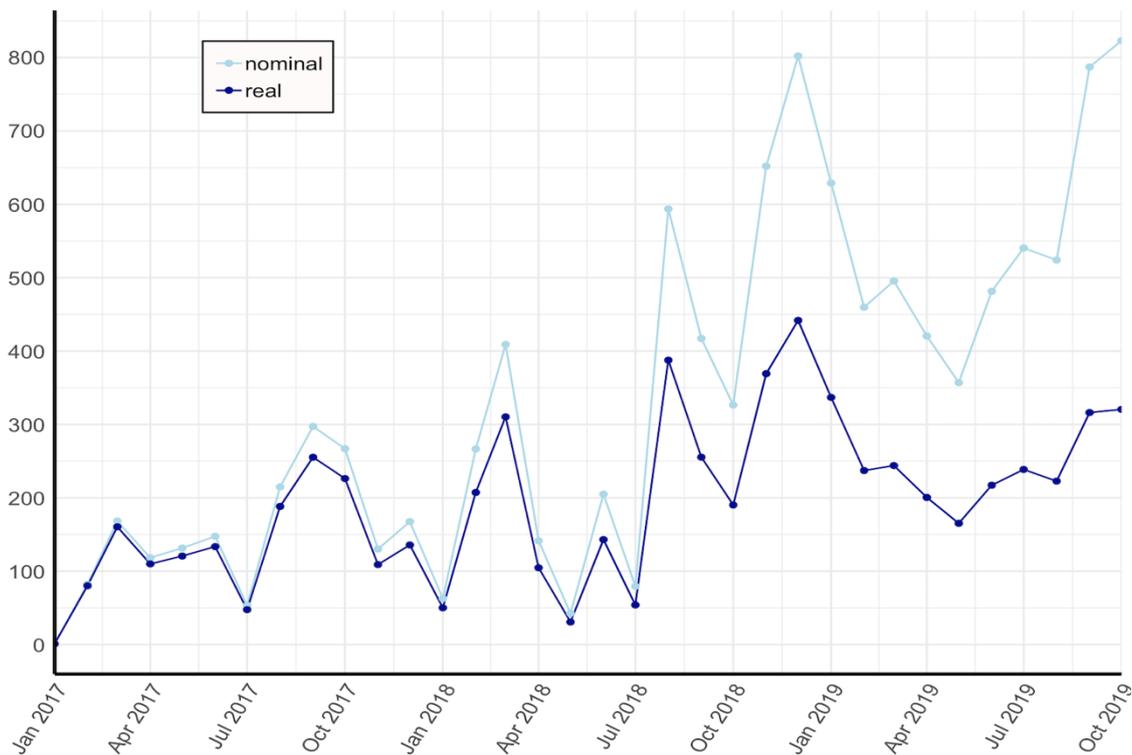
Fig. 3: Monthly active accounts in the two monetary sub-systems



Note: An active account is here defined as an account that has done at least one transaction in the month.

Source: Bitshare's blockchain, accessed through the block explorer <http://bts.ai>, authors' elaboration.

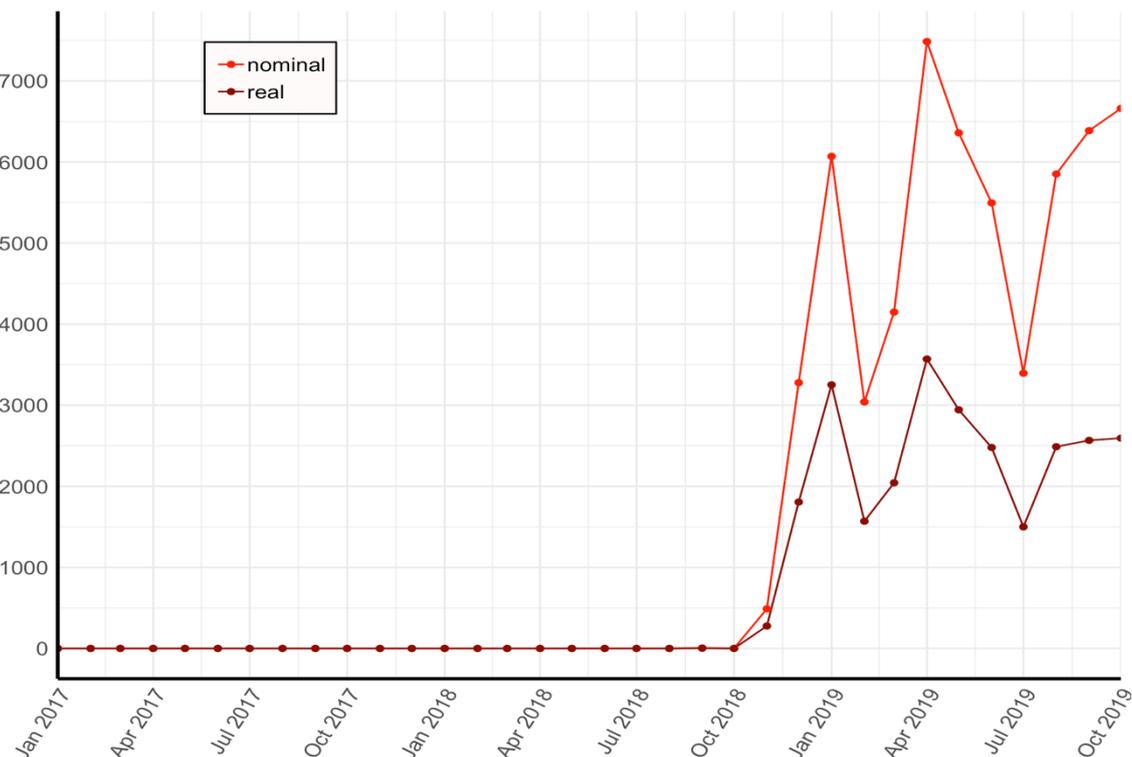
Fig. 4: Monthly mean transaction value per active account in the “pure” mutual credit system



Note: inflation has been proxied using the CPI of the Great Buenos Aires computed by INDEC. An active account is one which has realized at least one transaction during the month.

Source: Bitshare’s blockchain, accessed through the block explorer <http://bts.ai>, authors’ elaboration.

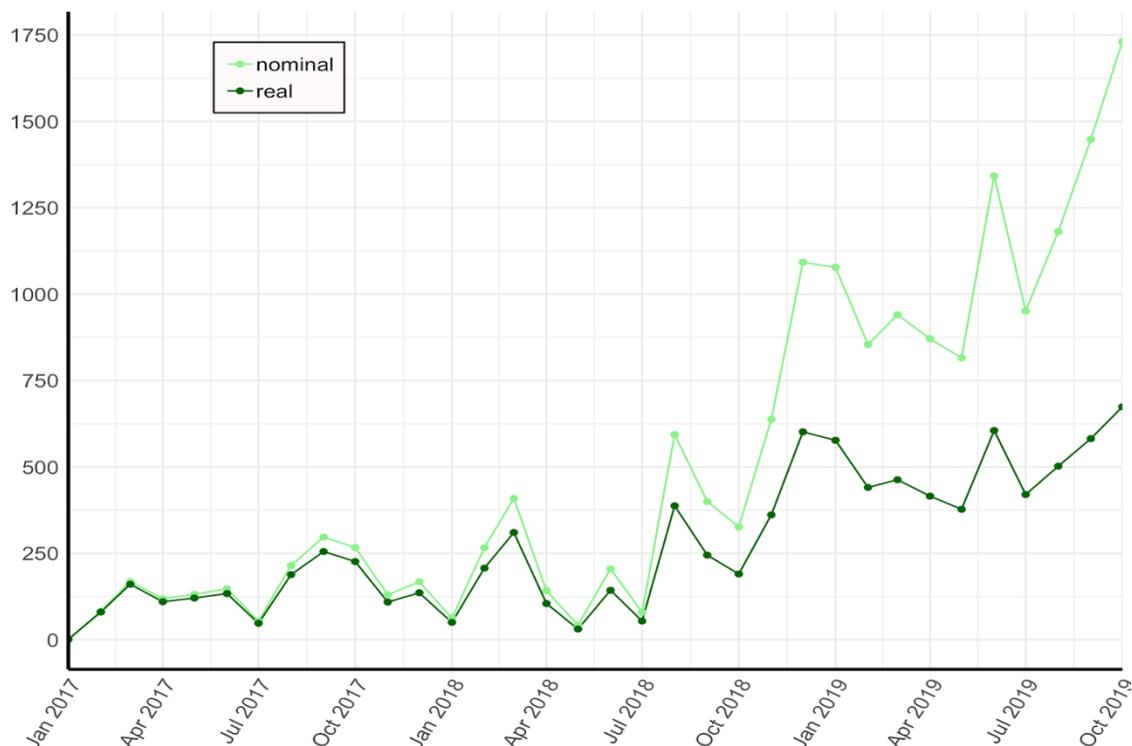
Fig. 5: Monthly mean transaction value per active account in Escobar purchasing order system



Note: inflation has been proxied using the CPI of the Great Buenos Aires, computed by INDEC. An active account is one which has realized at least one transaction during the month.

Source: Bitshare's blockchain, accessed through the block explorer <http://bts.ai>, authors' elaboration.

Fig. 6: Monthly mean transaction value per active account in the whole PAR monetary system



Note: inflation has been proxied using the CPI of the Great Buenos Aires, computed by INDEC. An active account is one which has realized at least one transaction during the month.

Source: Bitshare's blockchain, accessed through the block explorer <http://bts.ai>, authors' elaboration.

Nodes have full autonomy to define their regulation, strategy, and decision-making procedure. This implies that the criteria for granting credits can vary across nodes. This is reasonable considering the heterogeneity of communities that can be found across our wide territory. The only aspect where nodes do not have full control is in money creation. This obeys to the lessons learnt from previous experiences like the *Trueque Argentino*^{xiv}. However, this does not imply that nodes have no control of money supply. The monetary policy of MonedaPAR is conducted by mutual agreement with the Federation of Nodes.

The Federation of Nodes is the governing body of MonedaPAR at the nation level. Its mission is to define the goals of the project and to design the strategies to achieve them. One of the main duties of the Federation of Nodes is the execution of the monetary policy. Another important task is to help new nodes in the process of implementation of the system. It is comprised of one representative of each of the nodes of the network.

Each node chooses its own representative, which can be changed at any time. This implies that the power within MonedaPAR is built bottom-up.

With regard to the relationship with state regulatory bodies, there have been no relevant interactions to date (possibly due to the fact that MonedaPAR's experience is still very small). Given that the monetary issuance of MonedaPAR is not carried out by a government but by the associative private sector (that is, people or productive units framed in the logic of reciprocity), no Central Bank regulations are being violated. In order for exchanges in PAR currency to be formalized (including the possibility of issuing invoices), a payment order service was created within the framework of a mutual, appealing to a common and historical practice in the solidarity economy ecosystem. This service was presented to the competent authority (the INAES, National Institute of Associativism and Social Economy) enabling the possibility that payment orders, the technical name of each unit of PAR, could operate with any digital technology, including Blockchain. The approval of the payment order service by the INAES in December 2017 implied that, as long as MonedaPAR transactions are carried out by people registered in a mutual adhered to the service, they will be totally formal and legal.

2.2. MonedaPAR in the ecosystem of “alternative cryptocurrencies”

Many typologies of alternative currencies have been proposed in the literature^{xv}. However, Jerome Blanc's Polanyian typology of systems (2018a) seem to be the most useful one for the purpose of this paper, not least because it aims at more systematicity in the theoretical construction. Indeed, instead of classifying “objects”, that is, specific alternative monetary system, it distinguishes three ideal-types of monetary systems, may they be alternative or not : public money, which “relates to logic of authority and sovereignty via a fiscal circuit in which the treasury historically has pride of place. [They] comes from political entities with rationales of political control”; Business money, which “relates to logic of resource seeking by business organizations. Currency issuance and management are the ways they capture resources”, and associative money “relates to the construction of schemes by groups of people who voluntarily associate for the purpose of collective utility”.

Ideal-types	Subtypes	Cases
Public money	Sub-State public money	Argentinian provincial currencies (1984-2003)
	State public money	National <i>fiat</i> currencies
Business money	Convertible business money	Bank money
	Inconvertible business money	WIR, Sardex ; tokens of colonial landowners ; purchase of loyalty schemes
Associative money	Market-value associative moneys	Bitcoin
	Fixed-value associative moneys	Local currencies (e.g. Chiemgauer), Anglo-Saxon LETS
	Non commensurable associative money	Time banks, and some LETS-type systems

Source: Blanc, 2018a, p.13, authors' own translation.

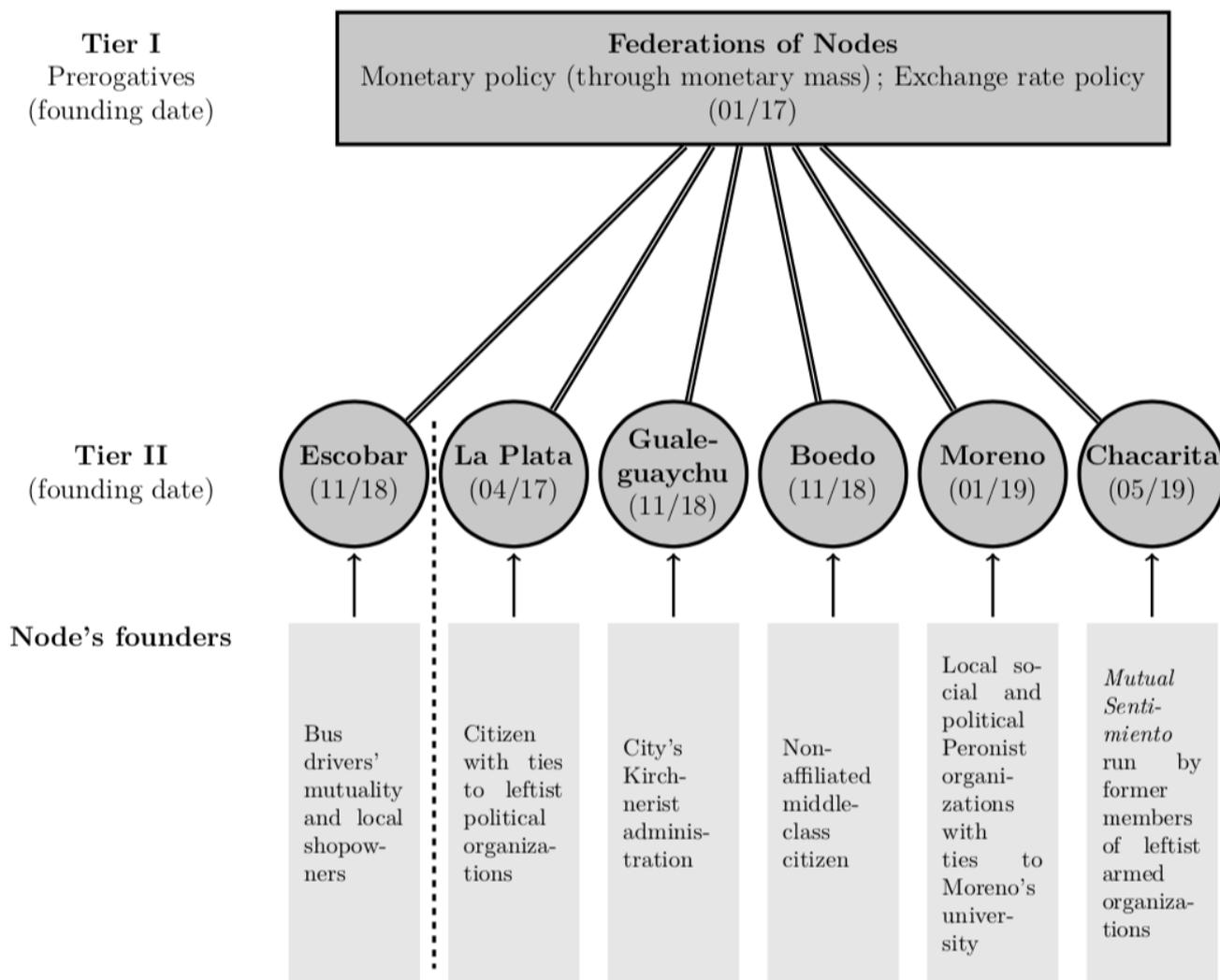
Each type in turn is subdivided in several subtypes. As MonedaPAR would best fit within the associative category, only the latter's subtypes will be briefly explained. The main criteria to differentiate sub-types is the way their value is defined rather than their convertibility into ordinary money. Blanc distinguishes three cases : "when the value of the associative money is defined by market exchanges; when it is fixed to the public money; and when it is defined independently" (*ibid.*) corresponding respectively to the three emblematic cases of the cryptocurrencies of the Bitcoin type, the French "*monnaies locales complémentaires*" fixed at par with public money and based on previous monetary issuance (through the conversion of ordinary money inflows) and time banks and other LETS-type experiences generally based on mutual credit in which the definition of value is inward-oriented.

In that perspective, MonedaPAR would be a peculiar case of fixed-value (i.e. commensurable) unconvertible associative money. Indeed, its value is fixed at par with the Argentinian pesos (1\$ equal to 1 PAR). However, no effective convertibility mechanism is contemplated. At its current development stage, it therefore stands at the intersection of two sub-types of the associative monies.

Accordingly, it exhibits both mutual credit (*clearing* principle) and monetary emission (*liquidity* principle) technical features. The *nodos* can be seen as higher-order individuals allowing the lesser-order individuals to enter into mutual credit relations with one another within the limits set by the *Federación de Nodos*. The latter are fixed essentially through two channels. One parameter is the number and type of network members, as each one receives a maximum level of indebtedness (*descubierto*) he can go into with respect to the entire network. Another one, is the specific rules to each node, whose members decide if (and when applicable, how much) each new candidate should receive a certain amount of credit from the node in order to start with a negative balance. The amount of credit each node can distribute to its members in turn depends on the overdraft limit set by the Federation of nodes.

In that sense, MonedaPAR could be seen as a network of mutual credit systems unified through the implementation of the Blockchain. The last is indeed the tool allowing the synthesis of the fixed-value/non-commensurable associative subtypes, as it lifts the drawbacks respectively affecting mutual credits schemes, and schemes based on monetary emissions: on the one hand, the transactions are automatically recorded into the Blockchain, thus there is no need to tediously centralize all the information ; on the other, as all transactions are recorded into a decentralized public unforgeable ledger, no falsification is possible, and the monopolization of the monetary creation power is more difficult.

Fig. 7: Organizational structure of MonedaPAR



Source: participating observation and Bitshare's blockchain, accessed through the block explorer <http://bts.ai>, authors' own elaboration.

MonedaPAR is thus a mutual credit currency allowing for monetary emission which runs on Blockchain. It formally reproduces the two-tier structure of ordinary monetary systems, the federation of nodes acting as the central bank, while the nodes are in direct contact with the participants. The major difference is the

nature of the ledger recording the history of the system: instead of being fragmented into the ledger of the central banks and those of the second-tier banks, that is, privately owned by the core institutions of the monetary system, it is now public and unified. The latter feature is the reason why there is no distinction between the nodes' money and the nodes federation's money as there is one between high-powered central bank money, only available to second-tier banks, and ordinary bank credit money, the only one common individuals can gain access to.

As described in subsection 2.1 the use of MonedaPAR is mainly restricted to P2P exchanges, reproducing on a much smaller scale the *clubes de trueque* subsistence-oriented economy. This implies that the exchanges with MonedaPAR are embedded in the logic of reciprocity, exchange taking place in regulated solidarity markets. However, it has the potential to blend several forms of solidarity, from the organic solidarity of prosumers^{xvi} and firms, to the vertical solidarity from the local government to its citizens^{xvii}, both remaining, at least in intentions, subordinated to democratic solidarity between all the participants.

Therefore, MonedaPAR proves to be a very flexible instrument which is not « technologically-wise » preferentially bound to one type of users only. It is available for use by private individuals as well as by businesses in their relationship with one another and with consumers. Its potential uses are thus not to be vindicated on its current uses only.

However, from the study of MonedaPAR, three big questions need to be introduced, not to exhaust the subject but to incorporate it in future discussions on the use of this mixture of technologies that are produced when working with a social currency that runs on blockchain.

In the first instance, it is essential to work on the issue of trust in currency (Aglietta and Orléan, 1982, 1999, 2002), considering that the vision of information technology (IT) professionals (Diniz et al. 2016) is very different from the social complementary currencies researchers analysis (Orzi, 2011, 2017). Decentralization is also positioned as a problem to be solved, since IT professionals propose complete decentralization, when this is not possible for social currency systems (Hawlitschek F. et al. (2016); Orzi, 2011, 2017). Finally, the issue of governance emerges as a second dimension of the discussion about decentralization: does technology in general and Blockchain in particular have something to offer for the creation of governance systems that rely more on the principle of identity - which implies greater participation and autonomy - than on that of representation? These problems and theoretical tensions will be presented and discussed in the next section.

3. Analysis of MonedaPAR's characteristics

3.1. MonedaPAR and Trust

Before considering the specific issue of trust, it is useful to recall the debate between two groups of people studying and developing cryptocurrencies but differing in origins (Hawlitschek *et al.*, 2016): the IT groups (Information Technologies) on the one hand, and those of SSE and collaborative economies (EC) on the other.

According to Hawlitschek *et al.*, there is a tension on the respective conceptions of trust between these two groups. This conceptual difference has important implications for both theory and practice and can compromise the sustainability of cryptocurrencies. IT professionals hold the Blockchain as a "trust-free system". However:

"When it comes to more complex social relationships, involving the sharing of resources and assets, Blockchain technology alone is not enough for people to develop interactions based on trust" (*ibid.*, 2016).

This dispute has not yet been settled and it is vitally important that both groups can agree on a set of concepts that will allow them to talk about the same thing when considering the issue of trust in the currency. For the SSE and proponents of collaborative economies, trust in money is an essential condition for its development.

Considering the current situation of this dispute and the insufficiency of the idea of Blockchain as a "trust free system" for its implementation in social cryptocurrencies, it is useful to use the conception of trust from Aglietta and Orléan (1982), whose theoretical framework has been repeatedly applied in contemporary studies on money. They consider currency as the "cohesive link of our mercantile society", and not the mere "veil" conceptualized by classical and neoclassical economists (*ibid.*). That analysis will allow us to characterize the advantages and the difficulties that the cryptocurrencies present, with special mentions to MonedaPAR.

"The currency becomes recognized value through the establishment of mutual confidence in each one of the other" (*ibid.*, authors' translation).

Trust in money designates a multiplicity of phenomena, which can be grouped according to these authors in three types or forms. These forms interact in an articulated way, each one developing from its own logic: ethical trust (*trust* as such), hierarchical trust (credibility) and methodical trust (confidence).

Ethical trust is of higher order than hierarchical trust, which refers to the credibility of the institutions regulating the monetary system. While the latter defines the *legality* of a given system, the former aims at its legitimacy. In today's mercantile societies witnessing the prevalence of individualism, ethical trust is based on the recognition of human rights' universality. This is due to the disembedding of the market economy from the wider social whole. The difference compared to pre-capitalist societies in which the group subordinates the individual, is that now this is the individual whose well-being represents the supreme value. Of course, this individual is but an abstract notion: it reduces to the "homo economicus", hiding "the difference in social status" behind "the homogeneity of mere quantitative evaluations" (*ibid.*). Where do the values inherent to the monetary order that a social currency seeks to institute come from? It necessarily implies the revaluation of the community with respect to the individual - re-embedding the economic realm within the social totality, as Polanyi (1957) proposed. The objective is to promote the values of reciprocity, solidarity, autonomy, and participation that constitute the bases on which both the SSE and the collaborative economies are based.

Hierarchical trust (credibility) recognizes the necessity of a higher-order instance with respect to mere inter-individual relations. It establishes a relation of subordination that allows to bear the uncertainties of the day to day. It fulfils the function of norm. Through this institutional mediation, the bond to the other is transformed into a *social* bond, hierarchically structured. In the monetary order, hierarchical trust is expressed in the form of an institution that enunciates the rules of use of currency and that issues the official currency. When it comes to legal tender, the prevalence of hierarchical trust requires belief in the good performance of the Central Bank in the process of finalizing payments, in defending the value of the currency and, in the face of turbulence, in its performance as lender of last resort. In the case of a social currency, at the top of the hierarchy is the organization (or group of organizations, for example the Federation of Nodes) that ensures compliance with the specific properties given to the currency (convertibility, liquidity, etc.).

How do these hierarchies change when the social currency runs on Blockchain? In line with the idea of decentralization in the sphere of government, hierarchical positions at the super structural level should be diluted and replaced by technology. This is reflected in the phrase commonly read in the Blockchain community "the code is law" or in the ideas of decentralization both in the operational and governance dimensions. In that perspective, currency credibility changes content and form: rather than stemming out

of the action of a centralized institution, it is deemed as resulting from the disappearance of *any* hierarchy: it should not be possible anymore for any actor to reach dominant positions enabling them to impose decisions foreign to the will of the majority. However, in the case of social cryptocurrencies, the total decentralization allowed by the Blockchain technology is difficult to apply. Social cryptocurrencies are currencies that operate according to specific social values. Because the latter are not the dominant ones, they are in a state of continuous construction, through the operation of social cryptocurrencies in solidarity markets that promote a horizontal hierarchy in decision making, reciprocity, solidarity, autonomy and participation. To uphold them, rules therefore need to be created to regulate monetary emission and circulation and the fixation of price ratios: this requires some higher-order authority, to be sustainable. This is the case of MonedaPAR in which sovereignty rests on those values. In this experience, the authority in charge of generating and maintaining hierarchical trust (that is, PAR's credibility) is the Federation of Nodes.

Methodical trust (confidence) is the simplest and the lowest form of trust. It refers to the stability and trustworthiness of the chain formed by individual transactions. The repeated successful completions of acts of buying and selling lead its establishment. The outcome is a social bond located at the inter-individual level. In the case of a social currency, methodical trust implies that transactions can be carried out in a habitual manner. The successful repetition of these tends to install the idea that the currency effectively fulfils the function for which it was created. When it comes to social currencies used in a digital format (and running on a Blockchain in particular), the fulfilment of the methodical trust not only requires the good performance of the currency in the functions for which it was created, but also the correct performance of the technological platform (security, high availability, purpose, etc.).

Considering MonedaPAR, the main challenge is in the generation of methodical trust. The growth limit which has been experienced does not seem to be linked to issues primarily related to ethical and hierarchical trust. MonedaPAR currently finds itself in a stage in which a series of virtuous markets must first be consolidated. This early stage of development may explain why the first attempt to integrate "workers' recovered enterprises" (*empresas recuperadas* del MNER) in the PAR system was not successful. There was simply no previous community construction. As pointed out by Desmedt *et al.* (2016) "to become a true monetary project, the robustness of the technical processes alone is not enough".

An alternative strategy was thus needed: people and community organizations that wanted to exchange among themselves became the primary development axis. The creation of community simultaneously with the incorporation of the currency allows confidence to develop more easily.

3.2. MonedaPAR and decentralization

Money as social relationship can acquire different meaning depending on the specific combination of integration forms (Polanyi, 1944) that predominates. Ordinary money is a hybrid of state money and bank credit money: it is issued through an “oligopoly” formed by the state and the two-tier banking system headed by the central bank. Here, (captative) exchange predates reciprocity and redistribution. In the case of a social currency, the dominant form of integration is generally reciprocity, which is usually associated with participation and an autonomous management of the circulation, which links us to the idea of decentralization.

The blockchain's technology proposal is one of total decentralization, a perspective that, as it has been pointed out while discussing on the three forms of trust, is not currently a present possibility in the case of social currencies. Indeed, in order to uphold their alternative social values, they have to circulate in solidarity markets, which implies some degree of hierarchy and concentration of decisions.

In this sense the work of Rolland and Slim (2018), taking up contributions from De Filippi and Loveluck (2016), allows us to reflect on the subject. They argue that even the Bitcoin cannot escape the general rule wanting that socio-technical systems to be integrated into their social, cultural and political context. An institutionalist perspective of the Bitcoin is therefore, and despite what could be inferred from the imaginary of an a-political monetary system associated with it, necessary. The key idea of a dual governance: "to the governance by the infrastructure (internal) is superimposed a governance of the infrastructure (external) and that concerns the code and its modifications". They dedicate their article to study the latter dimension, labelling it “superstructure”, which would be in the case of MonedaPAR and other social currencies, their institutional dimension - made up of actors, networks and representations, not exempt from complex power struggles.

When referring to decentralization, then, three dimensions must be distinguished: the technological dimension, the one on which the currency is mounted; the institutional dimension (super structural), the one where the governance of the system is exercised; and the operative dimension, the one referring to the daily routine of the system.

Decentralization in the technological dimension occurs by definition at the moment of choosing Blockchain as technology. The discussion should focus, at this level, on the degree of decentralization chosen, which depends on the specific type of Blockchain used by the currency circulates. The aspect where, perhaps, the degree of technological decentralization ends up being most decisive is the finality of

the transactions; a highly decentralized Blockchain with high finality times becomes impractical for a currency that seeks to fulfil the function of medium of exchange. The choice of MonedaPAR has been to use Blockchains such as Bitshares or EOS, with a lower degree of decentralization than others -like Ethereum-, but, at the same time, with lower transaction costs and shorter finality time. It is a good example of how the question of technological decentralization enters a social currency that runs over Blockchain.

The use of Blockchain technology not only entails a decentralization that provides the system with enhanced security and transparency, but it can ideally reinforce the (moral) rules that in daily practice reproduce the intrinsic social values of the system. That is, using the blockchain may help to increase the legitimacy of the monetary system, fostering ethical trust. As it is used in digital form, it is much easier to delimit the sphere of transactions that can be carried out through the currency. Moreover, since all interactions are recorded, accessible to all and it is possible to develop metrics that quickly inform the behavior of each member of the network, there seems to be more incentives to follow the rules.

But the question of decentralization cannot leave aside the analysis of the institutional dimension, reviewing the forms of governance that a social currency can adopt.

3.3. Governance of MonedaPAR

The second dimension of the discussion about decentralization, which has to do with the exercise of power in a community, does not arise from the Blockchain itself. Indeed, the promoters of the latter technology have joined hands with the numerous initiatives from civil society to demand a better exercise of representation by political professionals, putting in the center of the debate the question of the governance of organizations.

The Decentralized Autonomous Organization (DAO) model^{xviii} is, at a theoretical level, one of the most complete realizations of the idea of decentralization applied to the governance of a community. Projects such as Democracy Earth or Aragon^{xix}, which combine the claims of citizens with Blockchain technology, are a good example of the revival of the calls for greater decentralization in governance. The question is whether technology in general and Blockchain in particular have something to offer for the creation of governance systems that rely more on the principle of identity - which implies greater participation and autonomy - than on that of representation. A priori, it would seem that the security and transparency offered by technological decentralization are an essential element to progress towards greater decentralization in governance.

The contending issue is that of the optimal degree of decentralization in the governance of each community and, fundamentally, what are the criteria to define the optimality. When analyzing decentralization in governance, the determination of levels of "optimality" must also consider other variables. The tensions between the horizontal and vertical modes of construction appear here, the former more associated with the idea of decentralization and the latter more linked to centralized systems. It seems that the creation and consolidation of a project (on Blockchain or not) requires an initial phase in which a person or small group of people occupy a leadership position that, if not exercised, leads to the stagnation of the project.

However, progress towards greater decentralization in governance seems necessary not only because of the problems mentioned above associated with the preservation of the project's core values, but also because of issues of growth and scalability. Analyzed under the angle of governance, the structural configuration of MonedaPAR experience confirms these reflections. At its beginning, what seems to dominate was a "missionary governance" based on the ideology and values of the creators. This type of governance, with which the project arises, is a combination of *utopia* (mobilizing project) and *ideology* (norms that keep us united), which build the identity of each organization. In democratic institutions it is a question of adhesion, which has to do with the strength of cohesion (Maló, 2003). It is expected that this experience will evolve through "mutual adjustments" towards a governance more related to the experiences that seek a more horizontal and decentralized decision making (cooperatives, for example).

This will thus allow to finally consider the third and last dimension of decentralization in the experiences of crypto-currency and social currencies in general: the operational dimension. This includes all the aspects associated with the daily working of the system and its growth. Questions such as the following: who is in charge of assisting users who encounter issues? Who is in charge of dissemination? Who is in charge of issuing money? Who is in charge of monitoring the state of the system? If there is no decentralization here, the potential for growth will be limited by the ability of those in charge of these functions to respond to the needs of users. It is therefore necessary to generate a network of "promoters" who oversee disseminating the project and accompanying those who decide to join and integrate the different tasks. In the case of MonedaPAR, the creation and maintenance of the nodes that are currently in operation would not have been possible without the effort of the territorial referents who took charge of the multiple required tasks (convene meetings, prepare presentations to give in front of the audience, encourage the drafting of regulations, organize logistic, carry out communication, etc.) to enable the construction of the (market) exchange situation.

4. Conclusions

Many of the advantages of blockchain adoption for social currencies are the same as those that can be described for cryptocurrencies in general: reduced transaction costs, data integrity, data replication at network nodes, transparency, and auditability (Alves Rodrigues *et al.*, 2018).

Particularly, for social cryptocurrencies, in addition to ensuring the auditing of transactions, it would allow solving problems regarding storage security, facilitated administration, making fraud and counterfeiting more difficult and allowing control of circulation and prices, from its computer platform open to all its members. As argued by Alves Rodrigues *et al.* (2018), the adoption of blockchain technology in digital social currencies is based on the search for trust, security and scalability. In turn, it is adopted with the necessary modifications in its superstructure to allow governance in accordance with the values of these currencies that operate in solidarity markets.

This situation was verified by the fast construction of nodes around this new technology applied by MonedaPAR. Within a year, more than 9 new nodes began their activities^{xx}. Their sustainability seems to heavily depend on their diverse organizational characteristics, which will be a topic for future research. As it has been exposed in the case of MonedaPAR, the solution to governance brought about by the Blockchain, a total decentralization based on the idea of a trust-free system, cannot currently be applied to the construction of solidarity markets with social currency. Total decentralization might lead to the dilution of the alternative social values sustaining these currencies, and to the predominance of the dominant power groups.

The experience of MonedaPAR entails that social currencies depends on underlying solidarity markets to endure. This implies a previous or concomitant construction of communities (Orzi, 2011). This difference with fully decentralized markets is a challenge for communities and investigators on the subject. In this sense, the consideration of a democratic, horizontal, and participatory governance is fundamental in currencies of the MonedaPAR type. This argument arises from the experience of the different nodes, on which -for reasons of space- we could not extend.

Another potential obstacle deriving from the implementation social crypto currency has to do with the irruption of new actors that come from technology (IT), as argued by Diniz *et al.* (2016). If no way can be found to integrate them in a broader set of values still upholding the core principles defining the experiments as alternatives to the dominant monetary system, these practices could be compromised.

In relation to the current limits exhibited by MonedaPAR and social crypto-currency, and social currencies in general, there are still challenges to be resolved. These have to do with the scalability from the local to the meso- and to the macro-economic, the difficulty of not using money as capital and the scope of these currencies in a society that naturalizes and institutionalizes the monopoly of the currency by the national states (Orzi, 2017). However, blockchain technology, by facilitating the appropriation of these alternative monetary systems, seems to open the way for us to concentrate in the research for remedies to those problems, which would contribute to overcome of the anachronistic, though contemporary, monetary and financial system.

References:

- Aglietta M. and Orléan A. (1990, [1982]), *La violencia de la moneda*, Mexico: Siglo XXI editores.
- (1998). *La monnaie souveraine*, Paris : Odile Jacob.
- (2002). *La monnaie entre violence et confiance*, Paris : Odile Jacob.
- Aglietta, M., Ahmed P. O. and Ponsot J. F. (2016), *La monnaie entre dettes et souveraineté*, Paris : Odile Jacob.
- Blanc J. (2018a). Making sense of the plurality of money: a Polanyian attempt. In: Gómez G. (ed.), *Monetary Plurality in Local, Regional and Global Economies*. London, New York : Routledge, 48- 66.
- (2018b). *Les Monnaies Alternatives*. Paris: La Découverte.
- Chohan, Usman W. (2017). *The Decentralized Autonomous Organization and Governance Issues*, 4 December 2017. Available at SSRN: <https://ssrn.com/abstract=3082055>, December 4, 2017. . Last accessed on the 13th of October 2020.
- Coraggio José Luis (1998). Las redes de trueque como institución de la economía popular. In Hintze S. (ed.): *Trueque y Economía Solidaria*. Buenos Aires, Argentina: UNDP-UNGS- Prometeo.
- Davidson S., De Filippi P., and Potts J. (2018). Blockchains and the economic institutions of capitalism. *Journal of Institutional Economics* 14(4): 639-658.
- De Filippi P. and Loveluck A. (2016). The invisible politics of Bitcoin: governance crisis of a decentralized infrastructure. *Internet Policy Review* 5(4).
- Desmedt L. and Lakomski-Daguerre O. (2015). L’alternative monétaire Bitcoin : une perspective institutionnaliste. *Revue de la régulation. Capitalisme, institutions, pouvoirs* 18.
- (2016). Du bitcoin au faircoin et au-delà. *Alternatives économique*.
- Diniz E.H, Siqueira E.S. and V.H. Eric (2016). *Taxonomy for understanding digital community currencies: digital payment platforms and virtual community feelings*, Paper presented at *SIG GlobDev 9th Annual Workshop*. Dublin, 11-14 December 2016.

Diniz, E.H., Cunha, A., Meirelles, F. and Rodrigues, D. (2018). *Benefits of Blockchain for Digital Social Currency*. Paper presented at the *Twenty-fourth Americas Conference on Information Systems*. New Orleans, 16-17 August 2018.

Godelier, M. (1974). *Racionalidad e Irracionalidad en economía*. 4º ed. en español. Mexico: Siglo XXI editores.

Gómez G. (2008). “Making Markets”: The institutional rise and decline of the Argentine Red de Trueque. Phd thesis, The Hague: Institute of Social Studies.

Hawlitsek F., Teubner T. and Weinhardt C. (2016). Trust in the Sharing Economy. *Die Unternehmung* 70(1): 26-44.

Maló M.-C. (2003). La cooperación y la economía social. In: Vuotto M. (ed.) *Economía Social. Precisiones conceptuales y algunas experiencias históricas*. Buenos Aires: UNGS editorial.

Marx K. (1867). *Le Capital. Critique de l'économie politique*. Vol.1, Paris : Quadrige.

Melo-Lisboa A. (2004). Mercado Solidario. In: Cattani A.D. (ed.), *La otra economía*, Buenos Aires: Altamira.

Orzi R. (2018). *La moneda social como Lazo Social. Su viabilidad actual y su proyección futura en el marco de una Economía Social y Solidaria*. Phd thesis; Buenos Aires: Universidad de Buenos Aires.

— (2012). *Moneda Social y Mercados Solidarios II: La moneda social como lazo social*. Buenos Aires: Ciccus.

— (2015). French complementary currency systems: exploring contributions to promote social currency Argentina. *International Journal of Community Currency Research* 19: 94-105.

— (2017). La sustentabilidad de una moneda social a partir la gestión estratégica de su respaldo. reciprocidad, redistribución y mercado en la ‘cooperativa y banco de horas Olga Cossettini (1998-2014). *Cadernos de Gestão Social* 6(2).

Plasencia A. and Orzi (eds.) (2007). *Moneda Social y Mercados Solidarios. Potencial Pedagógico y Emancipador de Los Sistemas Monetarios Alternativos*. Buenos Aires: Ciccus.

Polanyi, K. (1944). *The Great Transformation: the political and economic origins of our time*. Boston: Beacon Press.

— (1957). The Economy as Instituted Process. In: Polanyi K., Arensberg C.M. and Pearson H.W. (eds.) *Trade and Market in the Early Empires. Economies in History and Theory*. New York, London: The Free Press, Collier-Macmillan Ltd, 243–70

Rolland M. and Slim A. (2015). *Le Bitcoin, une monnaie sans banques*. CEMI-EHESS. Working Paper WP 2015-05.

— (2017). Économie politique du Bitcoin : l'institutionnalisation d'une monnaie sans institutions. *Économie et Institutions* 26.

Seyfang G. and Longhurst N. (2013). Growing green money? Mapping community currencies for sustainable development. *Ecological Economics* 86:65–77.

Sotolongo Codina, Pedro et al. (2006) The complexity and the transdisciplinary dialogue of knowledge. Buenos Aires: CLACSO.

Théret B. (2008), Les trois états de la monnaie. Approche interdisciplinaire du fait monétaire. *Revue Economique* 59 : 813-841.

Théret B. (2014), Annexe : Un antécédent historique : le bocade de la province argentine du Tucuman (1985-2003). *Revue du MAUSS Permanente*.

Tichit A., Mathonnat C. and Landivar D. (2016). Classifying non-bank currency systems using web data. *International Journal of Community Currency Research* 20: b24-40

— (2018). Les monnaies virtuelles décentralisées sont-elles des dispositifs d'avenir ? *Revue Interventions économiques* 59.

ⁱ For an exhaustive description of the characteristics of solidarity markets and social and complementary currencies, see Plasencia and Orzi (2007).

ⁱⁱ In Latin America, by “popular sectors” is meant those self-employed workers that, having been expelled from the labor market, make their living by doing temporary informal works or producing goods or services at a small and local scale.

ⁱⁱⁱ See MonedaPAR’s website: <https://monedapar.com.ar/#queEs>. Additional sources come out of the use of ethnographical methods, such as informal discussions between the researchers and actors of MonedaPAR and participating observation sessions during fairs or organizational meetings.

^{iv} We understand “multidisciplinarity” as the convergent investigative effort of several different disciplines towards the approach of the same problem or situation to be elucidated. In general, such problem or situation has been being investigated by one or another discipline as its object of study and, at a certain point, that object of study begins to be approached "multidisciplinary" with the convergent contest (sometimes of the methods, sometimes from conceptual developments) from other disciplines (Sotolongo Codina *et al.*, 2006).

^v See the website of the national statistical institute, INDEC: <https://www.indec.gob.ar>. Figures can also be accessed through the usual international organizations databases, or else in the Penn Tables (<https://www.rug.nl/ggdc/productivity/pwt/?lang=en>).

^{vi} Father Pedro Arrupe was a Spanish priest that claimed that the religious order should develop a close tie with the poor sectors of society. He was among the advocates of the promotion of Jorge Bergoglio (Pope Francis) as the leader of Argentine Jesuits.

^{vii} According to the leaders of the MNER, they had been thinking on the possibility of launching their own currency for a long time, but they had never managed to successfully deal with the process that this challenging endeavor entails.

^{viii} The beneficiaries of these endorsements were susceptible to accessing a credit facility, which in practice gave them the possibility of having a negative balance in their accounts (at a zero-interest rate cost). In order to distinguish between the different types of participants of the network three credit categories were defined: individuals could be given an overdraft facility of up to 1,000 PAR, small producers (self-employed) could be granted a credit facility of up to 10,000 PAR and enterprises were able to access an overdraft facility of up to 30,000 PAR.

^{ix} Out the conversations with the managers of the cooperatives another hypothesis came up: the system, though attractive in ideological terms, does not bring value if the whole supply chain is not incorporated. The claim of the managers was valid, but the solution was very difficult.

^x For instance, in Pagina12, a newspaper with national coverage: <https://www.pagina12.com.ar/53217-monedade-pares>.

^{xi} All MPAR statistics are public datas that can be accessed through any Bitshares block explorer. See, for instance, <http://bts.ai>.

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- ^{xii} This is a rough estimate likely to overestimate inflation in PAR. Indeed, it includes the evolution of prices of goods and services that are not readily available for PAR, as transportation or electricity.
- ^{xiii} What in Latin America is referred to as the “popular economy” is sometimes translated as “grassroots economics”. However, the translation does not seem to accurately describe the entire meaning of the concept in Spanish. Broadly speaking, the “popular economy” gathers all the self-employed workers that, having been expelled from the labor market, make their living by doing temporary informal works or producing goods or services at a small and local scale.
- ^{xiv} For those interested in the history of the Argentinean barter networks of the 1990s and early, see the doctoral thesis of Georgina Gomez (2008).
- ^{xv} Kennedy and Lietaer (2004) were one of the first to offer a typology, but received criticisms from Martignoni (2011), which argued that they fail at providing a systematic typology, that is, one that would not rely on the features the authors considered relevant. Seyfang and Longhurst (2013) tried to avoid the overlapping categories justifying Martignoni critique to Kennedy and Lietaer, but their choice of four types of monetary experiments (credit services, mutual exchanges systems, local currencies and barter clubs) has been in turn questioned by Tichit *et al.* (2016, 2018). The latter authors consider the definition of barter clubs and local currencies provided by Seyfang and Longhurst to be “nearly equivalent” and use lexical analysis on French-language web data to reconstruct the way the actors themselves classify alternative currencies.
- ^{xvi} *Prosumers* is a concept created by Alvin Toffler that means producer-consumer, trying to recover the capacity of production of goods and services which is parts of every person.
- ^{xvii} This could happen in the case of Gualeguaychú, where MonedaPAR is being sponsored by the local government.
- ^{xviii} See for instance Chohan (2017).
- ^{xix} <https://democracy.earth> and <https://aragon.one>.
- ^{xx} The MUYU in Ecuador, y el SOL en Uruguay are two recently created alternative currencies based on the technology used by MonedaPAR, which they replicate.