Giuseppe Littera, Laura Sartori, Paolo Dini and Panayotis Antoniadis

From an idea of a scalable working model: merging economic benefits with social values in Sardex

Article (Accepted version)
(Refereed)

Original citation:
Littera, Giuseppe, Sartori, Laura, Dini, Paolo and Antoniadis, Panayotis (2017) *From an idea of a scalable working model: merging economic benefits with social values in Sardex.* International Journal of Community Currency Research, 21 (Winter). pp. 6-21. ISSN 1325-9547

DOI: 10.15133/j.ijccr.2017.002

From an Idea to a Scalable Working Model: Merging Economic Benefits with Social Values in Sardex

Giuseppe Littera
Sardex.net, Sardinia, Italy

Laura Sartori
Dipartimento di Scienze Politiche e Sociali
Università di Bologna, Italy

Paolo Dini*
Department of Media and Communications
London School of Economics and Political Science, UK

Panayotis Antoniadis
ETH Zürich and Nethood, CH

Abstract

The remarkable growth of Sardex as a local currency throughout the island of Sardinia over the past 5 years motivated an in-depth look at its starting assumptions, design and operational principles, and socio-economic context. The paper looks at Sardex as a social innovation start-up, a medium of exchange and unit of account, an online and offline mutual credit system, and a closed economic community or 'circuit'. The analysis relies on semi-structured in-depth interviews of circuit members and benefits from the reflexive point of view of one of its founders. The main findings are that trust was and continues to be fundamentally important for the creation and operation of the mutual credit system, and that Sardex encompasses and mediates both economic and social value(s). Compared to other mutual credit systems, in addition to its unique design features Sardex is distinguished by its federated model of expansion and its strong commitment to keeping a balance between the economic and social aspects. In Sardex, money's fungibility is defined by market utility and social values at the same time.

1. Introduction

This paper grew out of a small interdisciplinary EU project (http://compare-network.net/) whose partners were interested in different aspects of self-organisation. The COMPARE project was not only interdisciplinary, but it also brought academics and practitioners together in a few areas that share a "local" theme: urban development with 'do-it-yourself' (DYI) wireless networks, political theory with urban art and activism, and social and economic theory with a specific complementary currency (CC), the Sardex electronic business-to-business (B2B) mutual credit system. This paper is about the third of these topics.

Sardex has been operating successfully in Sardinia since 2010. Its role in offsetting some of the negative effects of the 2007/08 financial crisis has attracted a great deal of attention. It was inspired by the WIR system,[1] which was set up in Switzerland in 1934 in response to the lack of credit caused by the Great Depression (Studer, 1998) and follows its early design. As a mutual credit systems Sardex shares some similarities also with Local Exchange and Trading Systems (LETS, Croall 1997), although an important difference is that, like WIR, Sardex is mainly a B2B system, whereas LETS is mainly for individual members.

* Corresponding author: p.dini@lse.ac.uk

This paper recounts the highlights of the start-up phase of this phenomenon, provides an analysis of the Sardex system from the sociological and monetary theory perspectives, and proposes some reasons for its success. Our empirical methodology is based on three waves of semi-structured in-depth interviews of circuit members in different Sardinian towns (Dini et al. 2014-16).[2] Due to time and space limitations, very little effort was spent on comparing Sardex to other examples of B2B mutual credit systems, or to map the wide range of CC typologies. The main objective of the paper is to offer a sociological lens through which to read and understand Sardex. This view should make evident that Sardex can be read/interpreted as a market where economic benefits are created because there are also social values in the project that Sardex represents. It is 'money' because it bears different meanings; it may be an example of a phenomenon that reflects, at the same time, two views of money that have always diverged in the literature. Sardex is essentially trust, towards the organization itself and the members of the circuit.

Section 2 describes the birth of Sardex as a parallel currency that aims at balancing economic benefits with social values. The section describes how the idea took a concrete form, how it entered the local economy, and how it succeeded in becoming a network of exchange. In fact, Sardex is a living organizational form: it is a network in constant evolution that faces different challenges over time and seeks new and original solutions, as described in Section 3. Section 4 summarizes the two perspectives through which Sardex can be better understood and put into context. The sociological perspective highlights how a cultural project is essential to complementary currencies that offer a 'vision' – that is to say, an alternative socio-economic narrative of the context – to its members and their territory. The monetary theory discussion focuses on some specific design mechanisms that, by combining with its social aspects, make Sardex a unique example of complementary currency. Section 5 summarizes the primary points that make Sardex a successful and – possibly – replicable experience through best practices. Section 6 offers some conclusions.

2. THE GENESIS: FROM AN IDEA TO A WORKING MODEL

2.1 Time-Frame

In 2006/7 two of the Sardex founders started researching the features of the current international monetary regime and observing how it had a profound effect on the local economies and societies throughout the so-called developed world. During this research ('follow the money' phase) two major, even if unpolished, assumptions arose through intense dialogue:

1. The economic and financial system is very complex. Behind the complexity lie design decisions that make it unsustainable in many regards.
2. History shows that societies have often developed positive exceptions (e.g. WIR) to the familiar pattern (rate of interest/growth imperative/inequality increase/affluence/decline/ collapse)

In 2009 it became clear to the core team that something had to be done as no existing institution had any idea and/or interest in preparing for the economic depression that was on its way to Sardinia. As correctly forecast by Crenos (2014), in the years 2009-2014, credit conditions deteriorated 4 years in a row. Repossession rates soared, credit to SME decreased 3.5%, and non-performing loans stand at 12.6% of the total. Over the shorter period 2013-2014, credit to households decreased 2.2%. At the same time, the banking sector reduced lending for two consecutive years, cutting as much as 100b Euro previously lent to businesses and families (Ufficio Studi CGIA Mestre 2014).

Between 2009 and 2013 Sardegna's GDP per capita decreased from 80.3% to 77% of the national average. Unemployement grew from 15.5% to 17.5%, reaching 117,000 unemployed people. In percentage of workforce with a higher-education degree Sardegna ranks 257th out of 353 regions in Europe (Crenos 2014). Inequality figures are not very significant. The Gini coefficient appears to lag the crisis by a couple of years: it improved slighly (decreased) from 0.291 to 0.253 between 2004 and 2011, and then increased rapidly to 0.296 in 2012-13. The average Gini coefficient for Sardinia 2004-2013 is

0.281, for Italy over the same period it is 0.297,[3] while for Europe-27 from 2006 to 2014 it is 0.306[4]. So Sardinia is marginally less unequal than the Italian average, and Italy marginally less unequal than the European average.

2.2 Entering the Local Economy

The main reason the founders chose to set up a complementary currency network, which at the time people in Sardinia had never heard about, was that they shared the 'vision' that it could have a positive impact on the island's economy and that it would also be an interesting enterprise/endeavour to engage in – more specifically, what we are calling a cultural/political project (Section 4.1). Thus, while the founders had been originally alarmed and triggered into action by the international banking crisis and the general structural properties of the financial markets, the form their actions took was to set up a context-specific enterprise with a strong commitment at the collective or community level.

So, on the one hand, the Internet played an essential role, and still does, in facilitating the exchange of information and in providing the backbone of the circuit's infrastructure. On the other hand, the culture of collaboration that was prevalent among the core team members was layered on a strong bond built through years of common struggle. For example, most team members before the foundation of Sardex.net had already tried to make a positive impact on Sardinian society through various social, cultural and political projects. Their shared history coupled with wilful determination became the foundation of a group effort which, at the same time, was also a big leap of faith in the Sardinian people who are known to be rather conservative and slow in the adoption of novelties (see Section 4.1.3).

It was important for all the founding members to see whether small and medium-sized enterprises (SMEs) and local businesses in Sardinia were ready to enter an additional and different market. Today, Sardex membership is overwhelmingly composed of SMEs, there are only a few large companies. Even more relevant, founders wanted to test whether SMEs were ready to *choose* to trust each other by paying and receiving through a non-state currency issued not in a prescriptive linear way but based on real market activity (social and economic). Rather than aiming at social change as external benefactors, the founding team wanted to provide a service and through it create employment opportunities for themselves and others. At the time Sardex was incorporated three of the founders were in their late 20s and one in his early 40s. All the founders are male.

The decision to turn an idea into a 'for-social-benefit' service provider ('social innovation start-up') was not an easy one. It came after reviewing all possible legal entity forms permissible in Italy and the related pros and cons. The choice of providing a service with added value requires economic viability, sustainability and compliance with existing legal frameworks. Therefore, being a service provider in a professional way and choosing to incorporate as a limited (Ltd, s.r.l. in Italian) company was the only way possible to kick-start operations and to build the network from the ground.

Sardex.net is built on the social relations of the founding team and their shared vision. The founders all had more than one strong relation with each other: from kinship, to childhood friendship, to having worked together on business or political efforts, to the fact that they were all from the same hometown (Serramanna). None had a background in economics or computer science, or had any training in finance, which, in retrospective, it is believed to have helped the team be creative in the research and initial implementation phases. Only one of the four core team members had any previous experience in running a business (advertising and marketing consultancy), so the commitment to learn was higher than the skills readily available and the emergency situation (i.e. the onset of the economic crisis following the financial crisis) just added a sense of reality to the endeavour ahead. In a nut-shell, C3 stands for Circuito di Credito Commerciale, Sardex is the name of circuit, Sardex.net is the name of the url, Sardex (SRD) is the unit of account, and Sardex S.p.A. is the company that runs the credit-clearing service.

3. THE 4 EARLY PHASES OF SARDEX (2009-2015)

The development and establishment of Sardex can be subdivided into four stages, during each of which different insights were gleaned, structural decisions were made, and results were obtained. In this section we summarize these points in tabular form. First, however, we provide for the sake of clarity a very brief high-level description of Sardex as a mutual credit system.

Sardex is a *complementary* currency that is used alongside the Euro and provides a zero-interest credit buffer for the participating SMEs. Its complementary nature suggests that it can support profit-oriented market activity while, at the same time, providing resilience to the system in times of capitalist crises through its ability to protect the weaker members of the local economy. Sardex is also the name of the Sardex credits as a unit of account (1 Sardex = 1 Euro), the company that provides the credit-clearing service (Sardex SpA), the economic circle or 'circuit' (Zelizer 2005; Sartori and Dini 2016), and the online environment (http://sardex.net/blog). The main service Sardex SpA offers is (electronic) credit-clearing; however, it also offers the help of brokers who help supply and demand meet within the circuit, as explained further below, as well as other marketing aids such as a newsletter, online search, and an online space where companies can advertise themselves.

Sardex can only be "spent" and "earned" through economic participation in the network. It is a digital (electronic) currency; it does not have a physical embodiment in paper notes. The emphasis in the previous sentence refers to the peculiar manner in which these operations are carried out in mutual credit systems, since Sardex credits can be *created* (if the buyer has a zero or negative balance) or *destroyed* (if the seller has a negative balance) at the time of the transaction. In all other cases Sardex credits move between accounts like 'regular' money. As with WIR, in Sardex transactions involve a positive entry in the centralised electronic ledger (in the seller's account) that balances the equal and opposite negative entry (in the buyer's account) according to double-entry book-keeping. The absence of interest motivates the holders of positive balances to spend them, stimulating the local economy. The absence of interest on negative balances, on the other hand, means that there is no penalty during negative cashflow fluctuations, i.e. when the buying party is in need of credit, which is particularly relevant since the core of the membership is constituted by SMEs. The maximum amount of credit a given company is granted depends on vetted indicators such as that company's history, turnover, etc.

<table>
<tr><th colspan="4">Phase 1</th></tr>
<tr><th>Time</th><th>Tagline</th><th>Main Motivation</th><th>Organization</th></tr>
<tr><td>2009-2010</td><td>Rete Sarda di Scambio Commerciale (Sardinian Exchange Network)</td><td>'Do something' and be the best at enabling new economic activity</td><td>15 people</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Reflections</td><td colspan="3">This was the hardest time since the 'cultural project' with all its ideas and assumptions had to be tested against real market conditions. The most precious first feedback came from the market, i.e. from the SMEs. For instance:

• 'You're all too young for me to take this currency thing seriously'
• 'I don't believe in the Internet'
• 'The project is wonderful, yet you are too small / too big for it'
• 'Is it really, truly, legal?'

Initial evaluations regarding adoption and acceptance proved that the founders were right in being highly conservative in their expectations of success. Yet, being mostly composed of first-time entrepreneurs, the team asked a traditional business consultancy before starting up. By altering the original operational and business plan with overly optimistic projections and costs and miscalculating the repercussions of the on-going financial systemic crisis, the consultancy ended up posing a serious threat to the very existence of Sardex.net. Luckily the team changed strategy in early 2010 and this led to a restart with a smaller yet more committed team in June 2010.</td></tr>
</table>

Focus	Listening and understanding SME needs, their dire straits, and their strengths. The communication focused on social aspects in addition to the economic benefits accruable from participating in the network.
Trials, errors and lessons learnt	During this time different pricing combinations for the participating SMEs were tested, going from free subscription plus high-transaction fees (terrible results) to monthly fees and lower transaction fees (moderately positive results, but extremely difficult to collect). In mid-2010 it was realized that all members needed to be 'educated' and taken care of until they were confident enough to operate on their own. At this time it was decided to host the first meeting where the network attracted around 30 between actual and prospective participants. Most of the early members were close to the founders in that they knew either some or all of the team members personally. It became clear that in order for the initiative to gain a foothold on the island all team members could not rely on the Internet or word-of-mouth alone to increase the number of participants. So the whole core team actively and consciously decided to move forward by taking a more traditional approach and started to visit local businesses in person.
Tools	• Online: Website; Internal B2B portal; Cards; Credit lines • Offline: Paper receipts for card transactions; Networking events; Broker visits
Design Principles	1.1- Standard transaction fee-based model (like the WIR and existing barter companies). 1.2- If you cannot update or modify software, you can improve market share and adoption by focusing on customer care. 1.3- Each member was allowed an initial credit line based on size and turnover.

Phase 2			
Time 2010-2011	**Tagline** Soluzioni per l'economia locale (Solutions for the local economy)	**Main Motivation** 'Do something' and be the best at enabling new economic activity. Prove it can be done in a sustainable way even in an economically distressed area	**Organization** 7-10 people
Reflections	Working to reach a critical mass (estimated at 500 members, all SMEs at this point). All initial ideas tested in Phase 1 were now subject to scrutiny, especially regarding the product offering and pricing. Initially the value of service was not properly priced (it was based on a mix of transaction fees, joining and monthly service fees), this was changed and later modelled on company indicators (size, number of employees, turnover, etc). All actions were aimed at finding a new identity which could include both the social as well as the economic layers composing Sardex.net, since existing models did not apply nor fit because were either too socially-oriented or too business-oriented.		
Focus	On reaching a critical mass of 500 SME members.		
Trials, errors and lessons learnt	By mid-2011 the perception that all members needed 'hand-holding' until they were confident enough to operate on their own was still relevant. The key observation that led to the ability to address this issue was the fact that the e-commerce platform, which was supposed to facilitate participants' trading, only generated very few transactions. The main objective was to stimulate trade and educate participants. So it was decided that to increase confidence all members needed to: a. be promoted inside the network through online search and advertising, as mentioned above b. be followed by a broker as if she/he were an extra sale/purchase manager c. receive and make quotation offers to each other about the price of products and services for sale.		

	The company focused on improving the service and the work of the team of CTA (community trade advisors, or brokers) on the ground by simplifying the message without diluting the values, while still looking for the right balance between economic benefits and social values.
Tools	• Same as Phase 1
Design Principles	2.1- The standard is not enough: innovation is urgently needed in software and overall platform model 2.2- Principle 1.2 still applies.

Phase 3			
Time 2011-2012	**Tagline** Circuito di Credito Commerciale: (Commercial Credit Circuit)	**Main Motivation** 'Do something' and be the best at enabling new economic activity. Prove it can be done in a sustainable way even in an economically distressed area	**Organization** Over 15 people
Reflections	Reached first minimum critical mass and initial recognition by national press after having entered into a business deal. In mid-2011 one of the members (an event organizer) mentioned the Sardex story to a venture capital advisor and partner from dPixel who was then so captivated that he came to Serramanna to meet the team. After 6 months of discussions around contract terms and rights, by the end of 2011 an investment was agreed. A total of 150k € were invested in developing the network infrastructure. In January 2012 Sardex.net was featured in La Repubblica Newspaper (La Repubblica 2012) as a prime example of a new economic model and was also portrayed for the first time as a start-up, a less-than-4-year-old enterprise with innovative, creative, and intellectual capital. Both these factors were decisive for the expansion of Sardex.net since they both attracted major interest. The ideas and concept coupled with, at that time, 3 years of solid growth in the number of circuit members (mainly SMEs) and the volume of credits transacted slowly began to attract a broader audience and gain social acceptance. In this period the number of pricing options (i.e. not the fees themselves) started to shrink (from over 20 to 5) simplifying the onboarding/introduction to prospective members. Since complete freedom was not achievable, there was a major push towards changing software platform. Heavy work took place on the ICT side as well as on communication and dissemination (magazine, events) and commercial developments (new partnerships being formed). New software for the institutional site, accounting and payment system, and internally custom-developed tools like vSales 1.0 were implemented, all resulting in improving market access and market liquidity and activity. By the end of 2012 interest came also from the Regional Government of Sardinia. From that point, major discussions took place and led to a formal collaboration within the scope of the European Project DigiPay4Growth, currently active.		
Focus	On reaching a mass of 1000 or more SME members.		
Trials, errors and lessons learnt	In mid-2012 the founders realized that fees on transactions can create "friction", meaning and impediment to trade, and may prevent meaningful and often mutually convenient transactions from being made. Thus, it was decided to eliminate transaction fees as this would strengthen a message of empowerment towards the members. The message was also explicitly made by pointing out that it is *their* coordinated effort that makes the network valuable. In other words, as the transaction fees seemed to exacerbate perceptions of competition between members, these actions shifted the emphasis towards cooperation. Yet, if self-interest remains the culturally dominant attitude, the main reason for failure is not a question of quality of		

	service but a matter of culture.
Tools	• Same as Phase 1
Design Principles	3.1- Principle 2.1 still applies. 3.2- Principle 1.2 still applies.

Phase 4			
Time 2013-2015	**Tagline** Circuito di Credito Commerciale (C3) (Commercial Credit Circuit)	**Main Motivation** ‘Do something’ and be the best at enabling new economic activity. Prove it can be done in a sustainable way even in an economically distressed area	**Organization** Complex and diversified
Further objectives and motivations	Employees are being included in the network (give them access to the currency) to: • give them additional purchasing power • stimulate local consumption to render the network interesting for larger companies with many employees • motivate an increase in retail presence • try and establish a framework of cooperation between labour force and entrepreneurs <u>New motivation</u>: Try to institutionalize a practice without reducing its power and inherent dynamic nature. Major interest came from outside Sardinia. Especially after 2012, Sardex.net has been contacted by countless organizations, people, groups of people of any nature. Among all of these groups there were some people from mainland Italy who had an understanding of the model and appeared to have the capability to bootstrap a network bottom-up in response to the national on-going deepening economic depression. These became prospective partners in the new networks created on the Sardex model that started springing up in other regions of Italy.		
Organization	Over 20 people in Sardinia / 7 network start-ups outside of Sardinia, each employing 5 to 10 people on average: • Lazio tibex.net, • Piemonte piemex.net • Abruzzo CircuitoAbrex.net • Marche CircuitoMarchex.net • Sannio CircuitoSamex.net • EmiliaRomagna CircuitoLiberex.net		
Reflections	In Sardinia: Sardex.net reached a strong and loyal customer base while first testing and then implementing the inclusion of employees in the circuit (individuals can now hold Sardex credits if their salary or a part thereof is paid in Sardex). Intense work on the ICT side as well as on communication and dissemination (magazine, events) and commercial developments (new partnerships being formed). New and open source account and payment system and internal tools like vSales 2.0 get implemented, all resulting in improved market access and market liquidity and activity. In other Italian regions: Replication 1-to-1 is impossible. Managing the dissemination of knowledge without losing market position and/or integrity is really difficult. Indeed, life trajectories, the right combination of skills, teamwork ability, and goodwill all come in different proportions and are extremely difficult to measure while also being essential to lead to a stable network. The most difficult part turned out to be and somehow still is the underestimation of the amount of relational/social/educational effort needed to promote a complementary currency network		

	from scratch. Other circuits made two major underestimations. It was often assumed that if such a young local team (founders have an average age of 30) succeeded, the expertise/workload must have been feasible without much effort (and therefore possible, for example, in addition to another job). This appears to reflect the prejudice that young people lack in experience, commitment, and ability to deliver. The second major misunderstanding lies in the perception that the driving force behind the trading activity generated inside the Sardinian network is the IT infrastructure.
Focus	On reaching a mass of 2000 or more members.
Trials, errors and lessons learnt	B2E (business-to-employee) adoption and use.
Tools	• New website • New Internal B2B/B2E portal • Cards B2B / B2E • Phasing out the paper receipts for transactions • Variable Credit lines (only when needed) • Intertrading among networks: Alpha test being carried out to verify if and how trading of surpluses among regional networks can be used to further balance and strengthen regional economic activity.
Design Principles	4.1- Learn / unlearn / relearn as a mantra 4.2- If you cannot modify the core of the software you need to use, remember that you can bend it or hack it: there is always room to test its limits and see if they fit given requirement. 4.3- All networks (even those designed in the same way) originate differently and grow differently, just like plants, in part in response to the effects of the main economic trends. 4.4- The only safe credit is a credit that isn't granted. In any credit system, no matter how regulated or supervised, there is a portion of risk, which is directly embedded in the relational nature between creditor and debtor (be they a group or a single entity). By removing interest from the economic model (setting the rate of interest = 0 on all positive and negative credit balances) the core team tried to reduce this tension. Yet, they remained aware that the risk of defaults and non-compliance cannot be entirely removed in a mutual credit system, just as they cannot be removed in the traditional economic system.

Table 1 summarizes the circuit data since 2010.

	2010	2011	2012	2013	2014	2015
Members	237	439	852	1,457	2,153	2,978
Transaction volume	€354k	€1.2m	€3.5m	€14.9m	€30.8m	€51.2m
N. of transactions	402	1,195	4,556	24,991	57,773	109,410

Table 1: Data on transaction volume and business membership

4. TWO PERSPECTIVES ON SARDEX

4.1 Sardex from the Sociological Perspective

Having sketched the different phases of Sardex's birth and evolution, we now look at Sardex as a local institution that mediates different actors' needs and that resembles some of the functions of the State. A more in-depth sociological analysis, including social value, is presented with empirical evidence in a separate study (Sartori and Dini 2016). The combination of several concepts from the sociology of money and credit within an economic sociology perspective captures the winning idea of Sardex as a combination of trading at the local level and a cultural project with a vision. Here, we address three main points: market, money, and trust. A more anthropological perspective can be found in Dini et al. (2016).

4.1.1 Sardex as market

Sardex is a local currency designed – among other things – to meet firms' need to trade in a low-trust socio-economic environment and to create a self-sustaining financial system. As such, Sardex is a novel economic space (mostly) equivalent to a proper market. Yet, we address that proposition within an economic sociology framework that has tried – over the past 30 years – to address the main shortcomings of the neoclassical economic model, such as the atomistic conception of economic action (White 1981; Granovetter 1985), by discovering and highlighting useful concepts such as the importance of relational networks to economic action; the variety of market structures; the autonomous role of cultural and cognitive factors; and the constitutive role of the State in setting the rules.

Within this framework, we refer to Neil Fligstein's definition of market as a social situation where there are property rights, governance structures, conceptions of control, and rules of exchange (1996). The institutional and cultural requirements are central to our analysis. As other social processes, markets lead to the emergence of institutions by engaging actors through specific rules and mechanisms. If we think via the 'market as politics' metaphor, it is possible to imagine market institutions as 'a cultural project in several ways' (Fligstein 1996, 657), where actors interact through economic and social values combined with specific political cultures.

Compared to other typologies of local and complementary currencies (such as LETS and Time Banks), Sardex is designed to support B2B interactions.[5] In addition, Sardex is not only the organiser of a market and a mediator between firms, but the founders are explicitly a part of the economic value-creation process. They are not just a group of advocates or activists with partisan ideas about complementary networks. The founders make possible an environment where arrangements and societal solutions to problems (such as property rights, governance structures, and rules of exchange) are solved through experimentation following a more general 'cultural project' that is ultimately based on trade. Hence, Sardex emerges and is perceived as an institution that plays the role of a laboratory for multi-level governance (Sartori and Dini 2016).

4.1.2 Sardex as money

Although the state has always tried to impose a 'standardized national currency', controlling for state-issued money and outlawing private coinage and counterfeit monies (Zelizer 1999), people have continued to try to differentiate their use of money and to create multiple forms of money. One example of differentiation is the emergence of local currencies as territorially bounded monetary systems that coexist with the national currency, when the latter fails to meet some local needs. Local currencies are not equivalent to national money not only because they are narrower in scope but because they incorporate values in the exchange. They especially express a belief in the ability of local social values to sustain economic exchanges. Sardex is no exception.

In the sociology of money, there are two competing streams of literature (Evans 2009). On the one hand, the 'money changes values' perspective interprets money as a neutral generalized tool that all will destroy, objectify and commodify (Marx, Simmel, Polanyi), leaving out all social meanings people share and attach to money. On the other hand, the 'values change money' perspective (Zelizer, but also Veblen, Bourdieu) sees money as expressing social values. It is a function of social complexity where heterogeneity of social relations leads to new and multiple forms of money that express different social values. In the first perspective, market utility defines money's fungibility, i.e. the ability of money to be substituted for other forms of value. In the latter social values do.

Sardex does not entirely fall in either perspective. It is not a colorless medium for economic exchange à la Simmel, that is to say, a mere quantifier of values. Also, it is more than just laden with values à la Zelizer. Sardex seems to have found the right compromise between economic benefits and social values that characterizes the ability of a local currency not only to emerge and survive, but also to compete and scale up. One explanation is that money is a 'social relation between credits and debts' as throughoutly stated and demonstrated (Ingham 2004; Amato and Fantacci 2012).

We can draw a parallel between a local currency system and a social movement, following a resource mobilization theory approach (McCarthy and Zald 1977; Tarrow 2011). As for the latter, empirical findings suggest that a resource-rich social movement is more successful than those led by the more economically marginalized (Collom 2005). The same holds for local currency systems that cannot rely on voluntary involvement and actors too marginal to the economic environment. At the same time, economic benefits alone are not a guarantee for success because participation needs to be fuelled by social values (which are the main reason why local currencies are created when the national system fails to meet local demands). Sardex found the right balance for success choosing specific design mechanisms and tools that generated and maintained a form of participation fuelled by social values, in addition to economic benefits.

4.1.3 Sardex as trust

Trust is a fundamental feature of Sardex. It is community-specific and it relies on values and reciprocal expectations. In the case of money, trust is built around actors' beliefs about how money is used by others within a specific system. Trust could work at two levels: as a starting point to join the network and towards the Sardex organization (direct), and as a transactions' lubricant between members (indirect).

Traditionally, Sardinia has a reputation for solitary individualistic attitudes (Lodde 1998) and, at the same time, for very close-knit family networks that do not facilitate and foster generalized trust (Pinna 1971). The experience of Sardex (both in the words of the founders and the members) is remarkable in part because reveals that it broke a widespread attitude of scepticism towards innovations since everyone deems the others to be reluctant to collaboration, sceptical of social relations or even champions of diffidence towards market laws (search for new businesses or new partners). In terms of relational social capital (Coleman 1990; Granovetter 1985), we could state that both strong and weak social ties mediate and support innovation actions such as joining the network and trade with others.

Once members are educated, the recognized value of 'networking' reinforces itself in a positive loop. For example, it happens when they realize that one of the design mechanisms wants to incentivize spending (not saving) the money, since there is no interest on positive balances (See Section 4.2). In this way, Sardex helps in establishing relations of trust needed for trading with unknown actors and it becomes – at the same time – a trustworthy organization that helps face transactions costs and market uncertainty, supplying new economic transactions with trust (Uzzi 1996). Trust in the Sardex operational team comes also out of solved problems, kindness demonstrated in fielding all questions, assistance provided to community members, and the suggestion of timely competitive ideas. As a result of all phases that Sardex experienced, it appears as an integrated network of economic and social ties where a good balance of self-interested and cooperative actions has been reached, making the cultural and social *embeddedness* of economic action clear.

In sum, Sardex's self-assigned figure of mediator (not in the sense of a broker between two circuit members but more generally as the credit-clearing service for the circuit as a whole) balances out those negative characteristics that caused other local currencies to fail: decreasing enthusiasm by the participants – main cause of LETS' (Croall 1997) and Time Banks' failures; being shut down by state or regulatory intervention; and absence or poor replacement in the administrative staff and leadership – as for the Argentinian case Treuque, Gomez 2013. In addition to the previous paragraph, we can argue that the main difference between Sardex and other complementary local currencies is the role of the core team/service company as a mediator. By being a mediator and having chosen a precise role in the network, Sardex can be open to interaction with regulatory or political powers coming from the top. By being a service company, Sardex doesn't suffer from decreasing enthusiasm/voluntary action by participants and can support the network even if one of the core team members leaves or cannot continue working. For a more detailed analysis of the empirical material gathered through the fieldwork, see Sartori and Dini (2016).

4.2. Sardex from the Monetary Theory Perspective

A more thorough discussion of Sardex from a monetary theory point of view can be found in Dini and Kioupkiolis (forthcoming). Here, we include only a brief summary of some points about its design mechanisms: Sardex is a mutual credit system, it has zero interest rate, and it requires tax transparency.

Kennedy, Lietaer, and Rogers (2012) divide regional currencies according to two principal variables: their main purpose (i.e., to support the local community or to strengthen the community) and their core mechanism (circulating currency or mutual credit). Sardex is a mutual credit system, as already stated, and has both objectives. However, the first, economic, objective is more explicit, and the cultural/political project is largely seen as an enabler and an important part of the first, rather than a separate goal.

In a mutual credit system when a purchase is effected the buyer subtracts the cost from their balance, and the seller adds it, just like with normal money. What's different is that if the buyer's balance is less than the cost amount it will simply go negative. Furthermore, all balances start out at zero, so that at any time the sum-total of all member accounts remains zero. The prototypical transaction that is generally used as an example, in fact, involves a buyer and a seller both of whose balances are at zero. The buyer's balance will go negative by the cost of the item or service being purchased, while the seller's will go positive by the same amount. Under these conditions it is clear that the mutual credit mechanism *can create money* at the time of the transaction. If both balances are positive no money is created, the cost amount is simply transferred from the buyer's account to the seller's account. If the buyer's balance is positive and the seller's negative, on the other hand, an amount of money corresponding to the cost of the product or service is *destroyed*.

The amount one can go negative is not arbitrary, it is tightly controlled and depends on the size and turnover of the company; for the sake of this discussion it can be assumed 1% of a company's turnover. Also, it is open to renegotiation every year when the membership contract is up for renewal. The maximum positive balance is also negotiated and is also dependent on company size and turnover. For the sake of this explanation it can be assumed 10% of a company's turnover. The sum-total of all the positive balances is the value of all the products and services that are expected to be produced in one year in the circuit; that is, it constitutes the *backing* of the currency. In 2015 it was approximately 80m Euro. Although the average ratio of maximum positive balance to maximum negative balance (i.e. credit line) is about 10/1, the money mass actually created is about half that, for a ratio of backing to money created of 20/1.[6] This is the opposite of what happens with 'leverage' in speculative financial bubbles, meaning that Sardex is extremely stable. and resistant to free-riding behaviour. For example, a member that accumulates the maximum allowed negative balance and "disappears" or goes bankrupty does not constitute a threat to the circuit as a whole.

This mechanism of mutual credit highlights the nature of money as a relation of credit and debt (Ingham 2004). However, the credit and the debt are not bilateral, each is towards the circuit. In Simmel's terminology, whereas a credit is a claim by the member upon the circuit similar to regular money ('claim upon society', Simmel 2004: 190), a debt is a claim of the circuit upon the individual member: the member is expected to sell products and/or services to the circuit to recover the debt. In Sardex all balances carry zero interest, and the period within which a negative balance must be recovered is 12 months, after which the amount must be returned in Euro. After a negative balance has been recovered, by continuing to accept credits and going positive a member continues to contribute to the circuit. However, holding a large positive balance is as bad as holding a large negative: for the health of the circuit it is best if each member goes through zero as often as possible.

Sardex as a unit of account equals the Euro. In Lietaer's (2001) terminology, the Euro is the unit of account whereas Sardex is the medium of exchange. However, unlike the well-known case of Brixton Pound, Bitcoin, and many others, Sardex credits are not convertible into Euros, they can only be spent locally. The absence of interest motivates the holders of positive balances to spend them, stimulating the local economy. The absence of interest on negative balances also means that there is no penalty during a company's negative cash flow fluctuations, i.e. when the buying party is in need of credit. This is particularly relevant especially during a crisis since, like for WIR, the core of the membership is constituted by SMEs.

The absence of interest means that Sardex as a currency is not itself a commodity, leading to the perception that mutual credit systems are a form of barter; in fact, WIR and Sardex are sometimes characterised as multilateral barter systems. However, based on the textbook definition of money as performing the three functions of unit of account, means of exchange, and store of value (Ingham 2004: 3), Sardex is able to perform all three and is therefore a type of money. To be sure, its perception as a store of value is weaker than "regular" money's due to the absence of interest, but its ability to store and transfer value across time is the same.

Ingham also discusses a fourth function, means of payment or settlement, which is mainly associated with the payment of taxes. According to the state theory of money (Knapp 1973[1924]), money derives its legitimacy from the authority of the State: more succinctly if perhaps reductively stated, money is that which the State exacts as tax. On that basis, Ingham (2004) argues that community currencies are not 'real' money since they tend to emerge when the state-sponsored money is not able to perform the functions that the community in question needs. Argentina after 2001 is a good example of the government's inability to exact taxes in Pesos. As explained by Ingham (2004), Argentina's consequent inability to service the interest and the principal on its foreign debt led to its default. Differently from WIR and Sardex, most of the community currencies that emerged to fill the vacuum left by the Peso were not taxable and did not have the State's backing. This is one of the reasons for their demise (Gomez and Dini *forthcoming*).

By contrast, not only is Sardex a medium of market exchange, but each transaction can involve both credits and Euros. The first 1000 Euros of any transaction must be paid entirely in credits, whereas the amount above 1000 can be paid partly in Euros and partly in credits. The percentage (usually 25%, 50%, 75% or 100%) is one of the parameters negotiated with the seller when they sign the membership contract. However, VAT is paid on the *whole* amount, in Euros. As Sardex transactions are electronic and centrally-mediated, 100% tax transparency is guaranteed, by contract. Thus, although Sardex is not itself a 'means of tax payment', Sardex transactions indirectly contribute to the State's fiscal revenues – and to positive GDP accounting due to transactions that would not have taken place without the credits (as does WIR, Studer 1998). The former of these two effects strengthens its legitimacy as a currency.

5. Why Sardex Succeeded

There are many useful books and online resources trying to analyse the different dimensions of the design and deployment of a local currency. However, success stories like Sardex are very rare and they all look so different that any effort to provide "best practices" from existing efforts seems futile. Nevertheless, some relevant elements can be identified. Like many other experiences in the family of "People's Money" (Kennedy et al. 2012), Sardex provokes a strong and widespread enthusiasm when is first encountered (and of course among its members), while an awareness of how difficult it is to start such a project and reach sustainability is lacking or strongly underestimated.

From a practitioner's perspective, the success of a complementary currency can be defined in the most utilitaristic way as a sustained growth in the number of members and a low and decreasing percentage of member dropout, since this implies a sustainable level of satisfaction. Success, however, also involves intangibles such as community identity, social ties, high trust levels, and solidarity between the members. Finally, success can also be found in the level of replicability of a given model in different contexts. Even if not every year in the same way and not uniformly across the circuit, Sardex has so far achieved these mesaures of success to a significant degree. This can be ascribed to several innovative strategies and organisational/institutional features, the main ones being (not in order of importance):

- Educating users about how to use the network and what the network aims to achieve is a never-ending task.
- Sardex has developed a very sophisticated active brokering methodology that supports the economic activity by connecting supply and demand, but also builds trust since the brokers do not get any commission from successful matches.
- The adoption of a "conservative" credit line strategy protects the circuit from free-riding behaviour and makes speculative bubbles impossible: the backing is always many times (approximately 20) the circulating currency.
- The commitment of the members to accept up to a maximum number of credits (roughly 10 times the credit line) cements a certain level of commitment to the network.
- By collaborating actively with academics from multiple disciplines Sardex remains open to fresh ideas and contributes to the academic research community. This is related also to an increasing interest in educational programmes, as well as professional communication and marketing campaigns.
- Non-convertibility to/from national fiat currency is a strength, not a limitation. It helps the local economy withstand the strong credit shocks originating in the global financial markets that are transmitted to the local level by Italy's weak position in that landscape (e.g. austerity measures).
- Network interests were built into the economic model before profit (painful short-term sacrifices provide solidity in the long run)
- The growth expectations are modest: growth is possible and desirable rather than mandatory (it's a marathon not a 100-metre run).
- Sardex is non-partisan in terms of common political discourse, but with a clear 'cultural project' to develop. The founders had a clear project they wanted to implement with the goal of helping the region face the economic crisis that affected an already depressed economic context. They invented and experimented with a business model that was non-partisan and non-ideological, differentiating Sardex from many other examples, such as LETS, that are often influenced by a partisan interpretation of what a complementary currency should look like.
- Finally, geography also played a role, since the fact that Sardinia is an island strengthens the Sardinian cultural identity. In addition, Sardinia is one of a few autonomous regions in Italy with devolved powers from the national government. For some of the respondents the question of autonomy, if not quite political independence, from the national government was an important factor for their joining and supporting the initiative.

From a social science point of view, on the other hand, in addition to the economic and technical dimensions, which Sardex supports and implements very effectively, its success can be understood from four points of view: human, social, political, and institutional.

First, as discussed in Section 2, a key factor in the success of Sardex is the specific group of people that decided to take on this challenge. Being at the same time friends since childhood and with complementary skill-sets led to a very powerful and efficient team that enjoyed absolute trust between its members.

Second, from our sociological analysis it is evident that trust plays a key role. Although an initial level of trust in the founders of the circuit is essential, the operation of the circuit itself also constantly reinforces it. Personal trust towards people you know directly or friends of friends is fundamental to make the first move (as of entering a complementary commercial network) in a depressed economic context as Sardinia is. Then, trust is developed in a virtuous self-reinforcing loop through first hand experience.

Third, it seems also crucial for the success of Sardex the fact that its members followed a pragmatic approach and transformed the more "suitable" organization framework for the specific context (a limited liability company) to a local institution that has stayed committed toward social objectives while at the same time ensuring its own economic sustainability.

Fourth, from an institutional perspective an interesting question is to ask whether Sardex resembles the role of the State in a narrow, newer, finite, regional market. The answer is affirmative: Sardex does resemble the state, albeit at a different scale, as a local institution and reference point to turn to for help and advice. Another role of the state is as regulator. In this, Sardex does not play a very strong role, but it does invoke the contractual agreements with its members when they do not follow the agreed rules. Some of the regulatory functions, however, are performed by the members themselves when, for example, they report "antisocial behaviour" such as charging more for a given product or service if its paid in credits relative to its Euro price. Thus, some regulation is achieved more simply through social norms. In fact, just as the state usually reflects a legitimate public interest, Sardex builds its legitimacy on the process: founders were (and are) able to push forward in the name of the territory while anchoring the economic exchange on solid networks of trust relations between firms. This is key to creating a 'public interest' for the community, that is to say, a common interest that helps the community integrate and interact. Finally, the mutual credit networks being started in different regions on the Italian mainland are also loosely bound by service agreements and guidelines, amounting to a federated system based on a high-level template that takes slightly different forms in different regional contexts.

These four features have led Sardex to serve as a building block of the local territory, helping integrate smaller, sparse firms into a community that is not only economic but bears social values. As for the role of the State, Sardex aims at building a stable market representing an alternative economic and social space that glues together and balances economic benefits and non-mainstream social values.

A notable set of challenges for the future of Sardex lie in its relationship with the public sector and in its expansion to other regional networks. Collaboration with the public sector has started at the level of the regional government an in the form of time-delayed credits for the payment of public sector suppliers, through the EU project DigiPay4Growth mentioned above. The idea is that the regional government can pay its suppliers with type of credits that are similar to Sardex, but that "expire" after a few months, when the government has enough Euros, and become themselves Euros. Since all these payments take place electronically it is technologically feasible to set up such a system. Although not yet operational, the discussion and implementation are at an advanced stage.

A second area of expansion is with city governments. This idea was explained to us by a Sardex member from Sassari during a recent bout of interviews in February 2016 (Dini et al. 2014-16). Whereas it is not possible to collect taxes in Sardex at the national level, at the city level there is nothing stopping the city government from collecting local taxes in Sardex, and using them to pay for (part of) public services such as busses, rubbish collection, sport facilities, and parks.

Finally, as already mentioned there is keen interest to reproduce the Sardex experience in six other Italian regions. Since each local context is different, each new instance of a Sardex-like mutual credit system will encounter different challenges, all very difficult. Sardex s.r.l. is currently offering its software platform to mediate on behalf of these other regional networks. It is not clear how the system will scale technologically as the size and number of circuits increase and institutionally as ways to trade between circuits are explored and implemented.

6. Conclusion

As discussed at various points in this paper, compared to other alternatives (such as LETS and Time Banks), Sardex plays a distinctive role as mediator, which reflects its founders' specific 'cultural' project (Sartori and Dini 2016). Not only does it mediate economic exchanges between members, but it has become a trustworthy actor over the whole Sardinian territory. The core team of Sardex was able to tackle all the main dangers (e.g. decrease in enthusiasm and participation, internal organizational changes, scale-up) that usually lead to failure. Sardex also succeeded in creating a trusted network of exchange that counterbalances the poor performance of an economically depressed region with a long-standing tradition of low-level civicness, closed family networks, and negative social capital. Sardex also achieved the goal of embodying the social relations of credit and debt incorporated in money by engaging the two main streams of sociological literature on money. In Sardex, money's fungibility is defined by market utility and social values at the same time.

Compared to other mutual credit systems, like WIR, RES,[7] the many systems listed by CES[8] in South Africa, and various small-scale trade exchanges in the US, in addition to its unique design features Sardex is distinguished by its federated model of expansion and its strong commitment in keeping a balance between the economic and social aspects.

In sum, Sardex is a successful original blend of economic alternatives to an actual market. It serves economic purposes but at the same time it is imbued with and promotes a specific vision of economic and social development at the local level. We conclude that the metaphor of 'market as politics' applies to Sardex because it emerges from a political process shared by economic actors in the social construction of a market. It solves coordination problems, opens up new markets and business opportunities and, at the same time, it promotes an alternative endeavour connected to trust, common meanings, and the sharing of resources.

ACKNOWLEDGEMENTS

The authors are grateful for the partial support for this work provided by the EU projects COMPARE/EINS (CNECT-288021) and OpenLaws (JUST/2013/JCIV/AG/4562).

REFERENCES

Amato, M and Fantacci, L (2012). *The End of Finance*. Cambridge: Polity.

Coleman, J S (1990). *Foundations of Social Theory*. Cambridge, Mass: Belknap Press.

Collom, E (2005). Community Currency in the United States: the Social Environments in which It Emerges and Survives, *Environment and Planning A*, Vol 37, pp. 1565-1587.

Crenos Territorio (2014). Appendice Statistica, 210 Rapporto sull'Economia della Sardegna, http://crenos.unica.it/crenosterritorio/

Croall, J (1997). *LETS Act Locally: The Growth of Local Exchange Trading Systems*. London: Calouste Gulbenkian Foundation.

Dini, P and Kioupkiolis, A (Forthcoming). Complementary Currencies as Laboratories of Institutional Learning: Pluralist Money-Creation Power and Implications for Governance. In preparation.

Dini, P, Sartori, L and Motta, W (2014-16). Twenty-nine semi-structured interviews conducted in various Sardinian towns (Serramanna, Cagliari, Carbonia, Terralba, Oristano, Sassari) in July and October 2014 and February 2016.

Dini, P, Motta, W and Sartori, L (2016). Self-Funded Social Impact Investment: An Interdisciplinary Analysis of the Sardex Mutual Credit System. 8th Social Innovation Research Conference, ISIRC 2016, Glasgow, 5-7 September.

Evans, M S (2009). Zelizer's theory of money and the case of local currencies, *Environment and planning*, Vol 41, pp. 1026-1041.

Fligstein, N (1996). Markets as Politics: A Political-Cultural Approach to Market Institutions, *American Sociological Review*, Vol 61: 656-73.

Fligstein, N (2001). *The Architecture of Markets: An Economic Sociology of Twenty-First-Century Capitalist Societies.* Princeton: Princeton University Press.

Gomez, G (2013). Balancing Growth and Solidarity in the Argentine Community Currency Systems (Trueque), paper prepared for the UNRISD Conference Potential and Limits of Social and Solidarity Economy, 6–8 May 2013, Geneva, Switzerland.

Granovetter, M (1985). Economic action and social structure: the problem of embeddedness, *American Journal of Sociology*, Vol 91, No. 3, pp.481–510.

Greco, T (2015a). Interview video. http://www.sardex.net/blog/videos/video/conversation-with-thomas-h-greco/

Greco, T (2015b). Blog. https://beyondmoney.net/2015/08/20/sardex-an-emerging-model-for-credit-clearing-exchanges/

Ingham, G (2004). *The Nature of Money*. Cambridge: Polity.
Kennedy, M and Lietaer, B, and Rogers, J (2012). *People's Money - the promise of regional currencies*. Triach Press.
La Repubblica (2012). Vivere (bene) senza denaro. http://www.repubblica.it/tecnologia/apps/2012/01/20/news/moneta_km_zero-28478109/
Lodde, S (1998). Invidia e imprenditorialità: alcune considerazioni sul ruolo delle emozioni nello sviluppo economico. http://veprints.unica.it/324/1/98-5.pdf
McCarthy, J D and Mayer, N Z (1977). Resource Mobilization and Social Movements: A Partial Theory, *American Journal of Sociology*, Vol 82, pp. 1212-1241.
Pinna, L (1971). *La famiglia esclusiva. Parentela e clientelismo in Sardegna*. Bari: Laterza.
Sartori, L and Dini, P (2016). From complementary currency to institution: A micro-macro case study of the Sardex mutual credit system, *Stato e Mercato*, 107, pp. 273-304.
Simmel, G (2004). *The Philosophy of Money*. London: Routledge.
Studer, T (1998). *WIR and the Swiss National Economy*. Basel: WIR Bank.
Tarrow, S (2011). *Power in Movement: Social Movements, Collective Action and Politics*, 3rd Ed. Cambridge University Press.
Ufficio Studi CGIA Mestre (2014). Comunicato - Aumenta il rischio usura per famiglie e imprese, http://www.cgiamestre.com/wp-content/uploads/2014/08/COMUNICATO.pdf
Uzzi, B (1996). The sources and consequences of embeddedness for the economic performance of organizations: the network effect, *American Sociological Review*, Vol. 61, pp. 674-698.
White, H C (1981). Where Do Markets Come From? *American Journal of Sociology*, Vol. 87, pp. 517-547.
Zelizer V (1999). Multiple Markets: Multiple Cultures, in *Diversity and its Discontents*, N Smelser and J Alexander (Eds.), Princeton: Princeton University Press.
Zelizer, V. (2005), *Circuits in Economic Life*, Working Paper, University of Milan. http://www.socpol.unimi.it/papers/2009-06-26_Viviana%20Zelizer%20.pdf

---

[1] WIR is short for Wirtschaftsring, German for 'economic circle', but also means 'we' in German, emphasizing the community and solidarity aspects of the currency. WIR is B2B and refers to the network of SMEs as well as to the currency itself, which is nominally held at the same value as the Swiss Franc (CHF) to simplify accounting (the unit of account is equal to the CHF).

[2] We conducted 29 semi-structured interviews in three waves in Summer 2015-Winter 2016 with circuit members following a city-campaign criterion: 1/3 of the interviews in Cagliari; ½ in smaller towns such as Serramanna (where the headquarters are), Assemini, Carbonia, Terralba and Oristano; and the rest in the larger town of Sassari. We selected a wide range of business types: professionals (lawyers, notary, professional association of private training instructors, translators); food and hospitality sector (supermarkets, restaurants, bars, catering); artisans and small manufacturing (blacksmith, decorator, plastic bags, neon signs); retail (clothes, sports, electronic appliances, plumbing materials, tyres, crockery and household); other services (printing, postal service). For the last wave, Sartori and Dini thank the insightful comments and suggestions for the interview script by Dr Wallis Motta, anthropologist at LSE.

[3] http://dati.istat.it/Index.aspx?QueryId=4836

[4] http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_di12

[5] There is also an important difference between Sardex and other B2B regional currency examples, in that the latter tend to stay small. As Thomas Greco highlighted in his interview during a visit at Sardex's headquarters (Greco 2015a; see also Greco 2015b), 'The reason why trade exchanges in the US have not a higher impact, have not reached a higher scale, is due to complacency'. More specifically, because 'they are for-profit businesses by small entrepreneurial groups and they are pretty much content with the level of business that they are doing and the level of profit that they are making' and because of their 'unwillingness to risk what they have, to venture into something new and unknown'. By contrast, Sardex seems to be willing to take such risks.

[6] The 80m Euro of backing is only a theoretical figure since at any one time the maximum amount of money created is capped by the sum of all the credit lines (maximum *negative* balances), which are on average about 1/10 of the maximum positive balances. The theoretically maximum monetary mass that can exist at any one time, if we assume this average ratio, is close to 7.2m. The average monetary mass of 4m observed towards the end of 2015 results from many members' tendency not to use their entire credit line, and the 51m of transaction volume results from its velocity, i.e. the fact that credit money is created and spent multiple times before it is destroyed. In fact, 51m/4m = 12.75, which is close to the 10x velocity estimate usually quoted for Sardex credits.

[7] http://www.res.be/

[8] https://www.community-exchange.org/joinexchange.asp?country=ZA