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Money Infrastructure for Solidarity and Sustainability

Giacomo Bazzani*

Abstract: »Geld-Infrastruktur für Solidarität und Nachhaltigkeit«. The sum of an ideal view of society, with an abstract action model of social interaction, imbues money infrastructure that seeks to further a utopian view of society. This article analyses the cases of ordinary money as the euro and Sardex, a successful case of complementary currency born in Sardinia in 2009, with a specific focus on the different forms of solidarity and sustainability that these two types of money advance. The examples provide the basis for identifying two models of money infrastructure, namely the “indifferent” and the “situational.” The former is based on the historical model of self-interested utilitarianism of the monetarist approach with a specific focus on the satisfaction of individual preferences, but scant consideration of their formation and externalities. The latter, by contrast, has the potential to enhance cooperation and solidarity among its users to promote collective aims on a situational basis. This type of money appears to be much closer to a local, tangible level that can shape new policies for sustainability.

Keywords: Solidarity, cooperation, sustainability, infrastructure, money, Euro, utopia, Sardex.

1. Introduction

Money is a basic infrastructure of social interaction and economic exchange. Money is not only a commodity object and a symbol, but also an infrastructure because it provides the “background and substratum for the circulation of objects, people, and information” (Rella 2020, 238). Indeed, infrastructures are not identified by a list of stable characteristics, rather they are “vast sets of collective” that are capable to offer “equipment necessary to human activities” (Bowker et al. 2009, 97). They can be material, such as buildings, rail tracks, and communication networks, or immaterial, such as standards, memories, or imaginaries (Bowker et al. 2009; Flichy 2008; Larkin 2013; Rella 2020). Money infrastructure embodies both material and immaterial dimensions.

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According to classical economic definitions (Tobin 2008), money is a unique medium of exchange that relates to a common standard of value and may take several forms as a means of payment (notes, coins, etc.). In this sense, every commodity or “thing” that fulfils the following functions can be considered as money: 1) facilitates exchanges; 2) can be used as a store of value; and 3) serves as a unit of account (Tobin 2008). These roles are prerequisites for the dynamic functioning of a market, because a low-cost, stable, and exchangeable money system allows for comparability among different goods and services, thus favouring market exchanges. However, can the functions of money be understood only through its economic effects? Dodd (1994, 2005, 2014, 2015) has argued that people who project the functions of money always imbue money with an ideology related to society in general, and to social ties in particular. Referring to Simmel’s concept of perfect money ([1900] 2004), Dodd described how all monies are essentially designed and implemented for the purpose of shaping a utopian society. In the literal sense of the term, a utopian society is a society that does not exist, and money simultaneously foreshadows and favours its creation (Bazzani, forthcoming; Dodd 2015, 79). The utopian goals reveal underlying social projects but are also a response to pressing social problems that existed at the time when a particular money was designed. Utopian goals include attaining liberal equality (Gesell’s rotting money project, [1926] 1958), promoting social justice with anti-capitalist undertones (Proudhon’s people’s bank project, 1927), and attempting sustainability and monetary equilibrium (Douthwaite’s ecological money, 2000).

The sum of an ideal view of society, with an abstract action model of social interaction, produces money infrastructure that helps propelling a utopian society forward. This article discusses the effects of money infrastructure on solidarity and sustainability. Money infrastructure organises social interaction and exchanges with a precise set of rules; a model of social interaction is always necessary for designing money’s functionality. The model can span from the self-interested utilitarianism of the monetarist approach to the egalitarianism and fair behaviour embedded in Ruskin’s concept of labour and money (Bazzani 2021; Dodd 2015, 82; Ruskin 1928). In particular, this article considers two examples of money functioning: first, the ordinary form of money developed by nation states that also serves as a basis for supranational monies such as the euro or the dollar, and second, the Sardex case, a complementary currency born in Sardinia in 2009. Both cases represent different paths of socio-ecological development. The analysis does not aim to compare and account for the whole complex set of effects that these different monies bring about. Instead, it focuses on the different action logics that are embedded in their functioning. The discussion of ordinary money relies both on historical analyses and the theoretical debate developed over money functioning, while the discussion of Sardex uses evidence from recent analyses of the case together with data from the empirical research conducted by the author.

For both examples, the article examines what type of action model is embedded in their respective utopianisms, and the (expected) consequences on behaviour. In this context, a particular focus will be placed on the different forms of solidarity and sustainability that can be proposed due to different types of money infrastructure. The ordinary form of money finds its ethical and economic legitimisation in the secondary effects expected from the efficient functioning of financial markets: Financial capital should shift towards more productive, profitable, and prospering investments, thus prompting unproductive companies and regions to innovate and improve in order to remain competitive in the market. The action logic of this money focuses on the satisfaction of individual preferences with scant consideration of their formation and externalities. In contrast to ordinary money, Sardex has the capacity to enhance cooperation and solidarity among network members. This type of monetary network brings economic aims and expectations of economic outcomes much closer to a local, tangible level, and supports the socio-economic development of weaker economies. The two examples of money functioning serve as the basis for defining two models of money infrastructure: the “indifferent” and the “situational.”

The next section presents the case of the ordinary indifferent money, with particular consideration paid to the types of solidarity and sustainability embedded in their aims and action logic. Then, the case of Sardex as an example of situational money is introduced, and its effects on solidarity and sustainability are compared with the effects of ordinary money on solidarity and sustainability. In the discussion, some limitations, and the potential for further development, of situational money are presented. The conclusion highlights a selection of the benefits that the model of situational money can bring to money infrastructure.

2. Indifferent Money

Concerning the nature of money, classical sociologists have tended to converge with economists on the idea of money as an indifferent “neutral veil.” Both Marx (1904) and Parsons (1950) described money as being part of structural processes whose specific contribution is not easily identifiable, other than in facilitating exchanges favouring social dynamics exogenous to the exchanges themselves. In the realm of monetary policies, by contrast, different tendencies emerged during the 20th century. From the end of the Second World War until the mid-1970s, Keynesian-inspired development policies prevailed in many countries (Hall 1993). This historical phase came to an end in the second half of the 1970s with the election of Thatcher in the UK and Reagan in the US, as well as due to the coeval strategy changes implemented by the major central banks, from the Bundesbank to the Federal Reserve

(Connell and Dados 2014). These changes marked a momentous shift in industrialised countries regarding the definition of the relationship between politics and economics towards so-called “neoliberal policies” (Davies 2016; Mirowski and Plehwe 2009).

The new course of neoliberal policies was linked to a conception of money different from the previous one. In the new monetarist perspective, money is regarded as a commodity like any other: a scarce resource whose optimal price can only be correctly defined by the interplay of supply and demand (Blanchard 2008). In contrast to the earlier Keynesian approach, it rejects the notion that an increased supply of money can affect economic growth in the long run, and instead considers it to merely be a “neutral veil.” In fact, the monetarist approach holds that economic actors form their preferences exogenously from the functioning of the economic system. This implies, for example, that an investment made today due to a lower cost of money is merely an anticipation of a future investment, a sort of alteration of the market’s “natural” course with no real long-term effect.

This kind of neutrality of the economic infrastructures, indifferent towards the goals and consequences of its workings, is deeply rooted in economic thought, despite the fact that it remains hotly contested (Blanchard 2008). Indeed, the distinction between economic and moral value is a classic proposition of neo-classical economics that provides the basis for the idea of money’s neutrality towards preferences.¹ Despite the difficulty of observing this type of separation between economic function and its (im)moral consequences, it supports the traditional division between the social role of economics and politics, which is also a widespread notion among the general population. The idea of the indifference of economic infrastructure legitimates a theory of money that regards it as an infrastructure with its own logic that is separate from the political struggles. This type of infrastructure is a necessary element for the progressive liberalisation of financial flows, first on a national and then on an international scale (Epstein 2005; Palley 2013), as well as for the

¹ Different attitudes towards preferences can be seen in the classical debate of the *Methodenstreit* (“method dispute”) that brought about the formation of the Austrian School in economics that was – together with other neo-classical approaches – opposed to the German Historical School. The Austrian approach directed a major interest to subjective preferences, whereas the German School focused on the use of statistics and historical material to explain human action (see Louzek 2011). This famous citation from the French economist Léon Walras, a pioneer of the general equilibrium theory, provides a clear example of the expected indifference of economic functioning towards any moral evaluation of its aims and consequences: “I say that things are useful whenever they can serve for any use, whenever they can be applied to any want and permit its satisfaction. [...] Furthermore, neither is it necessary to take account here of the morality or immorality of any need to which a useful thing can be applied and that it can satisfy. Whether a substance is sought by a doctor to cure a sick person, or by a murderer to poison his family are very serious matters from some points of view, but a matter totally indifferent from ours. To us, the substance is useful in both cases, and may even be more so in the latter case than in the former” (Walras [1899] 2014, 20-1).

free fluctuation of exchange rates.² Indeed, if money were only a commodity, from an economic perspective, its free circulation should favour its optimal allocation through the market's competitive mechanisms.

An example of this progressive liberalisation of money flows on an international scale is the euro project, one of the more developed utopian projects of supranational money infrastructure. The euro was introduced in 1999 and represents the most ambitious attempt at monetary unity among the national monies of developed countries. It can be seen as the last step in the process of European integration that commenced after the Second World War in accordance with the integration model proposed by Jean Monnet. The advancement of European economic, social, and political integration had until then been achieved primarily through a *de facto* integration of economic and governance infrastructures, and it was assumed that this progressive integration would lead to the establishment of a common political and constitutional ethos of the European peoples (Habermas 2012). Thus, the ambitious euro project was organised around the idea that "you can create a European society through economic means" (Swedberg 2013, 2). The supranational infrastructural integration and the economic prosperity expected by the new money have been seen as a means of fostering social and political integration between citizens of different nation states. Krugman clarified the terms of the utopian Euro project thusly: "The point is to deliver a series of economic integration plans that do double duty: they're economically productive, but they also create *de facto* solidarity" ("The Euro and the European Project" cit. in Dodd 2015, 97; cit. in Swedberg 2013, 13). Although the creation of the euro was clearly the result of political objectives, institutions, and actors, the action logic of the indifferent money was a perfect ally to elaborate an economic mechanism that was supposed to support European integration. Indeed, the competition mechanism embedded in the indifferent money should contribute to facing the problems of power and economic inequalities across countries with the expected solidarity of efficient markets, and to mitigating the related political conflicts. The free movement of money is in fact one of the four principles underpinning the functioning of the EU's single market, along with the free movement of goods, services, and labour (Barnard 2010), and it is also the basis of current monetary policies. The next paragraph describes the expected solidarity consequences of the competition mechanism.

2.1 The Solidarity of Indifferent Money

The implementation of this specific form of money infrastructure, linked to the idea of competition between individuals and organisations, finds its ethical as well as economic legitimisation in the secondary effects expected from

² Also, with respect to the free floating of exchange rates, Keynes brought the alternative proposal of adopting the Bancor to Bretton Woods (see Amato and Fantacci 2014).

the efficient functioning of financial markets: More productive and profitable investments will unfold, thus prompting companies and regions that are relatively unproductive to innovate and improve in order to become more competitive in the market. The mechanism should thus have win-win effects for both businesses and consumers.³ The free fluctuation of exchange rates on an international scale is also inspired by this principle of creating competitive pressure on states to operate more efficiently and productively. In this way, incumbent governments, driven by market pressure to defend the value of their money against the risk of inflation (and the consequent negative electoral returns), should avoid the moral hazard of issuing “too much” money for employment and/or electoral purposes (Bhattacharya 1982), by which they would alter the free interplay of supply and demand to the detriment of “natural” market competition.

However, the transition from a theorisation of a specific form of money infrastructure *in vitro* to its application *in vivo* necessarily generates a gap between its expected and observable effects (Callon 2009). The progressive opening up to the competition of ever greater spheres of social life seems to have accentuated inequalities and produced social, environmental, and political externalities that cannot be easily ascribed to a unitary logic of improved well-being. In fact, while the implementation of an effective mechanism of competition is difficult even for small markets of goods, the higher the scale of complexity of the functioning of the market, the more interdependencies and externalities become important, and the greater the inequality of resource distribution (economic, social, cultural, political) will tend to reproduce itself, or even expand (Piketty 2014). Thus, despite the expected long-term benefits of this mechanism, negative externalities such as unemployment and firms’ closures may result in the short term. This condition shows that ordinary money is not in fact neutral towards goals and preferences. The declared neutrality of money works for the negative consequences that can arise during the deployment of the competition mechanism, but neither for the implementation of the mechanism itself that needs to be pursued nor for the chance of directly facing these negative consequences that need to be avoided. In this sense, the idea of neutrality does not fully account for the action logic embedded in this money functioning. This money is not neutral towards the diffusion of the competition mechanism that needs to be pursued and aims also to be indifferent toward the negative social and economic consequences that may arise during its implementation within the situation.

The attempt to apply the competition mechanism also to the circulation of money on an international scale may appear as a borderline case of

³ The mechanism of competition is inspired by what can be observed at auctions, where the prices of goods fluctuate constantly and are freely determined by the meeting of supply and demand. However, certain preconditions that need to be implemented by specific policies are necessary for its optimal functioning (see Bork 1993).

replicating the mechanism in an area where it can hardly be realistically applied to produce the expected equilibrium effects. In the case of money, it is easy to observe how the outflow of capital from the country that issued the money does not free the issuing state (and, therefore, all its citizens) from the debt constraint on which the emission of the money originates and whose validity it bears. Unlike other commodities, money does not allow the seller to resolve the link with the sold commodity. For economically weak countries, it is reasonable to expect that the outflow of capital exposes them to greater financial fragility. That this outflow then leads to an increase in the country's productivity due to competitive pressure and not to bankruptcy or a prolonged recession is a further assumption that is difficult to prove. Referring to the principles of competition, this would hypothetically be possible as long as all citizens have equal levels of information, assimilable desires, and behaviour that is equally as rational as, and consistent with, the behaviour of citizens of other states. Unsurprisingly, this series of conditions cannot be hypothesised, let alone empirically proven.

2.2 A Sustainable Indifferent Money?

The action logic of the indifferent money focuses on the satisfaction of individual preferences with scant consideration of their formation and externalities. At first glance, this approach to money functioning seems unaligned with the sustainability approach that seeks to inform current policies. The concept of sustainability is highly discussed, but it remains a keyword in the planning of future policies and many academic debates (Meyer 2009). As in the case of the United Nations' (2015) agenda for sustainable development, a sustainability programme refers to a well-advised use of limited natural resources, together with the development of the economic and social resources necessary to promote wealth, public solidarity, and democracy. In particular, the sustainability agenda aims to satisfy these needs of the present generation, but not at the expense of future ones (World Commission on Environment and Development [WCED] 1987).

Different perspectives of social change are developed under the broad umbrella of sustainability, often connected to different ideological standpoints. Adloff and Neckel (2019) suggested considering three ideal types of sustainability approaches connected to different social structures, practices, and imaginations: the imaginaries of sustainability as modernisation, transformation, and control. The idea that indifferent money could support the sustainability agenda relies on the modernisation approach and the assumption that there is a future that can be "technologically fixed" (Keith 2000; Weinberg 1966). In this context, ecological modernisation includes ideas of green finance and monetary policy (Chiapello and Knoll 2020). While indifferent money is not expected to play a role in preference formation, when

sustainable preferences are formed, indifferent money should support their satisfaction via market competition. For instance, the European Central Bank's (ECB) action plan for a green monetary policy relies on the modernisation paradigm of expanding activities to include climate indicators in the different areas of ECB activities in the analysis.⁴ In line with this approach, recent attempts have focused on developing or expanding ecological macro-economic models that can account for these phenomena (Fontana and Sawyer 2016; Rezai and Stigl 2016).

The transition towards a sustainable society requires a massive change in all of its sectors. On the one hand, from a normative standpoint, one could ask to what extent it is legitimate to continue supporting money indifference to the consequences of economic functioning. The ECB's plan to adopt indicators of climate consequences of money circulation appears to be a first attempt to reduce money indifference, even though the action logic that informs economic decision-making still retains its focus on exogenous preferences. On the other hand, money neutrality raises questions about its efficacy in supporting societal transitions towards sustainability. Money is a pervasive mediator of social life that can influence individual behaviour far beyond the propensity to save or spend that is managed by central banks' changes to interest rates. The next section presents the case of Sardex, a money functioning model that is not indifferent to its consequences, and also has the capacity to support a shift in preferences towards sustainable aims.

3. Situational Money

Over the last 30 years, at the local level, money innovation and experimentation have shaped the creation of 4,500 complementary currencies, community credit, and alternative financial systems (Servet 2013). Complementary currencies do not aim to replace ordinary money, instead they are often created to satisfy needs and aims that are not met by ordinary money. These systems have generated a large variety of currencies which have sought to address a wide range of specific cultural, governmental, economic, social, and environmental aims and objectives (Place and Bindewald 2015). In contrast

⁴ See the ECB press release 08.07.2021 and its annex (https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr210708_1~f104919225.en.html [Accessed 10 May 2022]):

“The ECB's Governing Council is strongly committed:

- to further incorporating climate change considerations into its monetary policy framework;
- to expanding its analytical capacity in macroeconomic modelling, statistics and monetary policy with regard to climate change;
- to including climate change considerations in monetary policy operations in the areas of disclosure, risk assessment, collateral framework and corporate sector asset purchases;
- to implementing the action plan in line with progress on the EU policies and initiatives in the field of environmental sustainability disclosure and reporting.”

to indifferent money, these money innovation experiments have been identified as purpose-driven and many of them directly address solidarity and sustainability aims (see Blanc 2018; Degens 2016; Place and Bindewald 2015; Tichit, Mathonnat, and Landivar 2016; Seyfang and Longhurst 2013). In the following, I discuss the functioning and the effects of Sardex money, which can be considered one of the most successful cases in terms of growth capacity and impact on solidarity and sustainability (Bazzani 2020a, 2020b, 2021; Dini and Kioupkiolis 2019; Iosifidis et al. 2018; Motta, Dini, and Sartori 2017; Sartori and Dini 2016).

Sardex is a complementary currency (CC) established in Sardinia in 2009. Sardex Ltd. is the company that runs the lending service with roughly 70 employees. The company was founded by a group of friends from Sardinia and during the years also received new capital from investors. Sardex Ltd. operates as a clearing house that tracks exchanges between members through an online platform and enables a multilateral exchange system between companies. Within the Sardex system, credit is mainly lent to companies that spend it to buy products from other network members. This type of money is a form of mutual credit system that allows for a multilateral barter system analogously to the previous examples of Local Exchange Trading Systems (LETS) (Bazzani 2020a). No interest is charged on the debts or credits that companies take out from Sardex. Sardex money has a nominal value equal to the euro but cannot be converted into it. The non-convertibility restricts the use of Sardex to a defined circle of participants. The money does not exist in the traditional forms of coins or banknotes, but solely as digital credit or debit on the online accounts of network members. Until 2021, only firms based in Sardinia were granted admission to the circuit, paying Sardex Ltd. an annual fee that varies according to their size. The present analysis focuses on the characteristics and effects of Sardex functioning restricted to the regional boundaries. The recent opening of the money circulation to other Italian regions is a new monetary experiment that will need future analyses.

Sardex is complementary to the euro market in that it does not aspire to replace the euro, but rather to perform functions not conducted by ordinary money. For participating companies, the initial credit granted is close to 10% of the respective company's annual turnover in euros. Sardex acts as an incentive for the circulation of goods and stimulates purchases because it cannot be hoarded. In fact, there is no advantage for a company to keep its Sardex balance in surplus as no interests are given. Moreover, there are contractual rules that incentivise the money's circulation: Unspent Sardex credits are written off after one year, just as Sardex debts not repaid through sales must be repaid in euros after one year. The optimal condition for companies is therefore to have a balanced budget between Sardex spent and collected.

Sardex Ltd. acts as a business advisor, prompting new companies to join the Sardex network and helping members to use the network for their own

businesses to the greatest possible benefit. A broker service facilitates the matching of supply and demand in the circuit, while members are free to choose their suppliers and buyers. Transactions adhere to a regulation of total fiscal transparency: They are fully traced and the state VAT in euros is regularly applied to transactions.

Sardex's money infrastructure was designed with the aim to support the socio-economic development of Sardinia, which is one of Europe's less economically developed regions (Bazzani 2020a). Sardex's implementation can be seen as an example of a reaction to the supposed neutrality of ordinary money. Sardex is a type of money infrastructure that favours local exchanges and is a tool for supporting the self-development of local firms in a weak economy. The model can be considered situational because it imbues a general action model of economic functioning with more contingent and situational aims.

The next paragraphs analyse the effects of Sardex on solidarity and sustainability. The analysis uses 37 semi-structured interviews, conducted in 2017, with entrepreneur (E) members of the Sardex network, and 11 interviews with management and employees of Sardex Ltd.'s different areas of activity (see sampling and recruitment details in the appendix). The interviews took place in person and were designed to be open and flexible so as to allow participants to drive the interview focus (Crouch and McKenzie 2006). Most of the information and the collected data were inserted into a numerical matrix with 151 variables, while the qualitative part was transcribed and coded. The qualitative data were coded according to grounded methods (Charmaz 2006; Corbin and Strauss 2015), which made it possible to use the entrepreneurs' perceptions to formulate theoretical considerations.⁵

3.1 The Solidarity of Situational Money

Several authors have stressed that complementary currency schemes could have several potential benefits for social cohesion (Guéorguieva-Bringuier and Ottaviani 2018; Oliver Sanz 2016; Servet et al. 1999). Sardex is able to enhance cooperation and solidarity among network members. If the capacity for cooperation in economic relations is mainly considered to be the ability to conduct economic transactions, the Sardex project was born exactly with the main purpose of encouraging said transactions between Sardinian companies. The quantity of transactions made is also one of the main assessment criteria of its functioning used by members to decide whether to remain within the network or not.

From the perspective of the theory of money as a neutral veil, where preferences are considered exogenous to the economic system and attributable to the cultural context, the presence of Sardex CC should not affect

⁵ For an extensive analysis of the interviews, see Bazzani 2020a.

exchanges. If money is only a means to realise already defined ends, the possibility of exchanging goods and services in Sardex or euros should not impact the number of transactions made. From this point of view, it could be argued that the only effect that a CC could have is to replace exchanges made with ordinary money. The CC's economic impact would thus be nil or even negative since the two currencies would reduce the market exchangeability of goods and services denominated in one or the other currency, and increase transaction (e.g., exchange) costs. Less exchangeability should consequently also lead to less competition between economic actors with resultant increases in prices. In spite of these predictions, a recent study has shown that, on average, the number of customers increases by 23%, and revenue by 26%, when businesses join Sardex – both values are net of the estimated substitution effect between the euro and Sardex (Bazzani 2020a). It is worth bearing in mind that the data refer to the years following the 2008 economic crisis when Sardinia's GDP saw a 9.1% drop (Banca d'Italia 2018, 13). Unlike trade in Sardex, the same period saw the average performance of the euro business of the companies in the sample remain stable or decline.

This trend in exchanges is consistent with the perceptions of entrepreneurs regarding the performance of their businesses after joining the Sardex circuit (Bazzani 2020a, 2020b, 2021). From the first days of joining the circuit, the Sardex Ltd. broker area is active in signalling the new company's presence to firms that might be interested in their products. For small artisan enterprises, where, for example, the business owner is also the sole employee, joining the Sardex circuit may represent a turning point in their business endeavours. As one interviewee stated:

In Sardex I have a very long waiting list, I program jobs for clients seven months ahead because I have so much work. I have several clients who are waiting for very nice furnishings of a certain quality. My first customer was a jeweller in a nearby town for whom I did 5,000 Sardex of work and he is still waiting for me for other work he has commissioned [...]. Sardex has turbo-charged my business! It has given me a heap of work. Before I used to hope clients would call me now, I hope they won't because I am behind in deliveries, I have to ask them to wait. (E 4)

This increase in economic exchanges can be explained as the effect of a high capacity for cooperation among members, the low cost of Sardex money, and the broker area's deliberate intention to support transactions within the circuit. Cooperation in Sardex is facilitated by monitoring and sanctioning mechanisms both horizontally between members, and hierarchically by Sardex Ltd. itself. The horizontal monitoring conducted by members with respect to fairness in economic transactions can have horizontal sanctioning outcomes of a reputational (by word of mouth or through members' social media groups) or hierarchical type (by misconduct being reported to Sardex Ltd). The rapid circulation of information by word of mouth and the social tools available to network members enhance the effects of reputational

sanctions, thus amplifying their deterrent power.⁶ In this context, the truster has numerous effective sanctioning tools at its disposal that make any defection disadvantageous. Monitoring and sanctioning foster an environment for relationships based on a high level of trust and the ability to cooperate that strengthen these weak social ties (Granovetter 1973).

Monitoring and sanctioning mechanisms support the perception of the presence of an ethical code of conduct among members, which stabilises expectations of *alter* behaviour and allows for easy economic agreements and transactions. The ethical code of conduct is perceived as a guarantee of the quality of the exchanged goods, and of compliance with the expected payment agreements:

We are very protected, because worst case scenario, you can call your broker and then everyone knows that someone took you for a ride and that is not good publicity for them. There is an ethical code. You don't enter Sardex like that, just applying and entering. There is an ethical code, otherwise it would become a jumble of companies that don't benefit anyone. (E 19)

The high level of reliability estimated in *alter* within the Sardex network allows entrepreneurs to accept payment terms usually considered too risky to be accepted within the euro market. Forms of cooperation emerge within the Sardex network that members typically consider too unrealistic for the euro market. The propensity to cooperate is occasionally so strong that it can change traditional working habits even without an expected immediate advantage. The ability to cooperate is perceived even more explicitly by some entrepreneurs as an attitude of mutual aid that emerges within the circuit:

I entered the network three months ago and I have seen that what we talked about with the broker or with friends is really true. [Sardex] is a sort of group where everyone embraces this philosophy. Belonging to the network is a way of helping yourself. I have spoken to customers who have been with Sardex for a long time, and they talk about it really enthusiastically because they have had excellent results. (E 12)

In the Sardex case, a system of social relations based on a high level of cooperation together with the limited circulation and use of money seem to be the elements which determine the emergence of solidarity-based behaviours, identifiable in the forms of collective action with the specific aim of the self-development of one's own region (Bazzani 2020b). The context of opportunity

⁶ The hierarchical monitoring conducted by Sardex Ltd.'s broker area was primarily based on horizontal monitoring conducted by members who reported misconduct in a similar way to the procedures of the civil justice system in the event of damages suffered. Unlike ordinary justice, however, the monitoring and sanctioning activity carried out by Sardex Ltd. was perceived as more efficient in enforcing the rules due to its immediate responses and efficiently disruptive sanctions (e.g., exclusion from the Sardex network). For a detailed description of the social mechanisms that further cooperation in Sardex, see Bazzani (2020a, 2020b). Currently, at a relatively mature stage of Sardex's money functioning, the deterrent power of the monitoring activity in the face of the risk of sanctions is so effective that it seems sufficient to deter opportunistic behaviour without the need for actually implementing sanctions.

directs preferences towards Sardinian-based companies. This limitation of the Sardex money has been interpreted by entrepreneurs as a solidaristic choice that offers a competitive advantage to Sardinian companies at the expense of larger, internationally based companies. In fact, for almost half of the interviewees, the use of the Sardex money was motivated by ethical reasons (“the network benefits the entire community”) as well as expectations of personal economic utility. This double perspective on the effects of the Sardex currency is in line with the recent analyses of the Sardex functioning (Dini and Kioupkiolis 2019; Motta et al. 2017). Indeed, according to their findings, “Sardex has features in common with these kinds of proposals because goods and services that are traded in Sardex carry additional social values, such as trust, identity, and solidarity” (Motta et al. 2017, 13). Moreover, it is interesting to note that these attitudes regarding the use of money seem to change from being business-oriented to more ethically-minded with the use of Sardex (Bazzani 2020a, 126-37).

As Sardex can only circulate in Sardinia, members are able to adopt an idea of this money as being less abstract, and more embedded in the social context than the euro. Access to “ordinary money” is either too expensive or impossible for many entrepreneurs, while access to Sardex money is inexpensive. Moreover, Sardex Ltd. provides entrepreneurs with free marketing opportunities for increasing the number of their customers.

The participating entrepreneurs thus find themselves readily associating the use of Sardex with collective purposes concerning Sardinia’s socio-economic development. Using Sardex thus becomes a way of contributing to the community (identified within regional boundaries) and expanding one’s own business. Although the Sardinian community had close ties even before the creation of Sardex (Pinna 1971), a particular high level of trust and cooperation emerged within the Sardex market that does not exist in the euro market. The Sardex device as a whole allows entrepreneurs to associate the effects of their economic activity with the positive effects that this activity can have for the collective (the Sardinian people). Within this type of social action orientation, many members have also spontaneously become promoters of Sardex membership among their acquaintances. The identification of a collective value in the Sardex network inspires some members to recommend membership to individuals within their social circles, even when there is no chance of them benefitting from economic transactions due to their companies belonging to different production chains. This form of social action is thus more comparable to a value-oriented action type than the more common instrumental action with which economic activity is traditionally interpreted.

3.2 Situational Money for Sustainability

Sustainability is a widespread goal among CCs (Brooks 2015; Seyfang and Longhurst 2013). CCs should help restrict exchanges to the local level, thereby raising environmental awareness and reducing pollution due to transportation (Brooks 2015; Seyfang and Longhurst 2013). However, the most famous and debated proposal for an ecological money system is the “Ecology of Money” proposed by Douthwaite (2000, 2012), Lietaer, Ulanowicz, and Goerner (2009), and Lietaer et al. (2010, 2012). They developed this proposal from the assumption that recurrent financial and economic crises result from the lack of monetary plurality, thus prompting them to suggest incrementing this plurality.⁷ In their proposal, different actors such as states, banks, and citizens promote different monies that coexist and circulate within the same jurisdiction. The different types of monies vary in their geographical extensions from local to regional and national monies, and in their functioning model span from LETS to barter systems (Douthwaite 2000; Lietaer et al. 2012). Moreover, Douthwaite argued for the creation of an international “energy-backed” money that would serve as the “gold standard” to which every other money could be connected. The creation of such an energy-backed money would be related to the availability of CO₂ emission permits in order to link economic development to the environmental limits of the planet. This complex set of monies would be connected by exchange mechanisms. However, the extent to which this type of money infrastructure would be feasible, and able to foster a more stable, resilient, and ecological economy, remains up for debate (Larue 2020).

While Douthwaite’s project has the benefit of linking money infrastructure to ecological aims, the mechanisms of coexistence and development of money plurality need to be more comprehensively developed. This proposal relies on the idea of the greater resilience of biologically developed diversity. While the assumption needs to be empirically tested in the realm of money infrastructure, the ordinary functioning of the coexistence of money plurality is at risk of being associated with an abstract action model of competition among monies not necessarily oriented towards sustainable goals (Larue 2020).

According to the types of sustainability suggested by Adloff and Neckel (2019), the Sardex case would be classified as a form of transformative democratic experimentalism with a pragmatic approach that aims to enable people to experience reformist alternatives to the ordinary money functioning and related social interactions. Sardex functioning is designed to encourage new and alternative forms of social ties characterised by a high level of cooperation and economic transactions as a form of collective action oriented towards the regional collective good (Bazzani 2020a, 2020b). Orléan (2013)

⁷ For recent analyses of money plurality, see Gómez 2018 and Blanc 2018.

noted how money's ability to establish equivalences of value and the convertibility of certain goods can be defined as the ability to establish "values." Although the definition and quantification of such values in economic or moral terms follows complex paths, the possibility of establishing hierarchies and classifications of economic or moral values could be enabled by the same unit of account and means of exchange provided by the money infrastructure. The extension of the money infrastructure is the horizon within which different elements can be included in exchanges, compared with each other, classified and/or ordered hierarchically, thus combining them with the same network of exchanges, but also attributing different values and positions to them within this network.

The capacity to more closely connect economic activity and expectations of economic outcomes to a local, tangible level, and to support the socio-economic development of weak economies are clear merits of Sardex's functionality. Following Zelizer's definition of a circuit (2006), recent literature suggests that Sardex supports five out of the six conditions proposed by Zelizer (Motta et al. 2017; Sartori and Dini 2016). This functioning model "stabilizes trust, strengthens reciprocity and reduces credit risk" and, in this way, Sardex money "can help understand the conditions under which mutual credit systems become sustainable" (Motta et al. 2017, 9). This type of money can increase resilience and "make a significant contribution to the sustainability of local economies" (Dini and Kioupkiolis 2019, 9). However, other dimensions of sustainability remain uncovered. For example, while Sardex enhances a community's resilience, cohesiveness, and coordination, it is still unclear whether (or to what extent) it can support goals that overcome the local dimension of the community. The experiences of CCs show how they may have a broad range of goals (Place and Bindewald 2015), as well as how they can mobilise collective movements (Cumbers, Routledge, and Nativel 2008). New digital money experiments could include broad global aims (e.g., reduced carbon emissions) through, for example, the traditional tools of monetary costs and incentives. Digital money tracks every transaction, and the carbon emissions could be easily offset with the payment price. Moreover, other strategies aimed at considering the right of future generations to live on a safe planet within the economic exchanges could be also imagined by money innovators (Bazzani 2019, 2021).

4. Discussion

The Sardex case shows how money can be conceptualised in forms other than the universal equivalent and how it can support the formation of situational collective aims. Members of the Sardex network are obliged to choose other members for economic exchanges. Its limited circulation and non-

convertibility make it a “closed” form of money that does not favour external exchanges (Larue 2022; Larue et al. 2022). However, the complementarity and non-alternative nature of Sardex money does not hinder exchanges with the outside world because members are “forced” to remain active and competitive in the euro market for most of their business. Thus, this type of money does not restrict formal freedom but is an incentive to the local economy that does not ban transactions with external economic actors. This approach is in line with certain green money proposals that do not include restrictions/sanctions, but simply reward the purchase of environmentally sustainable products (Seyfang 2009). This mechanism is the same as the one used by several CCs implemented as marketing strategies, such as air miles or other types of incentivising loyalty schemes (Larue et al. 2022, 310).⁸

The way in which entrepreneurs relate to each other in Sardex shortens social distances and makes economic relations a stronger form of social bonding than the traditional weak ties present in the economic sphere. In this sense, Sardex money can be described as a form of “community money” (Bazzani 2021; Degens 2016; Michel and Hudon 2015; Seyfang 2001; Seyfang and Longhurst 2013). However, this money type is not based only on the presence of a community with strong pre-existing social ties because some of the features of the community bond only emerge in the context of the social interaction between Sardex members, not in the context of the use of the euro. These findings are in line with those of other authors who found a positive correlation between the use of CCs and social cohesion (e.g., Fare and Ould Ahmed 2017; Graugaard 2012; Michel and Hudon 2015; Nakazato and Hiramoto 2012; Ould Ahmed 2015).

Sardex is thus a form of money that leads to the building of strong social ties not common in ordinary economic relations, without necessarily resulting in outward closure. However, the strong social ties associated with this form of money are not necessarily always desirable, regardless of the different historical and geographical contexts. On the one hand, strong community ties can be seen as an answer to the spread of uncertainty caused by globalisation and the market economy (Polanyi [1944] 2001; Sandel 2012). On the other hand, it could be speculated that in the case of social tendencies towards identity closure, this type of money could reinforce normatively undesirable tendencies. Moreover, in contrast to weak economies, the economic effects of this type of money infrastructure may not be significantly relevant for strong economies that are able to compete independently on external markets.

Sardex money shows money infrastructure’s great potential for influencing social interaction and shaping individual and collective aims. However, the Sardex case is neither the only nor the final solution to money infrastructure.

⁸ The use of incentives instead of restrictions is a way of “nudging” consumers. For a discussion of the legitimacy of nudging within CCs, see Larue et al. 2022.

CCs can be seen as examples of niche innovation in the context of socio-technical transition that demonstrate that experimental types of money functioning can also be applied at different scales and different contexts with progressive refinement (Geels 2004, 2011). The key contribution of these types of monetary experiments is their capacity to elaborate alternatives to neutral indifferent money. A clear merit of this type of money experiment is that it avoids linking money functioning to a secure long-term, self-balancing of markets with the associated expectation that this will necessarily lead to the best collective utility, but instead favours a medium-term, smaller-scale economic development perspective. In the latter perspective, the expected long-term benefits cannot be achieved by the rapid destruction of the local economy (business failures and unemployment) and communities (youth emigration). The case study shows how the benefits of market competition can be achieved not only by a progressive opening to external competition but also by a gradual strengthening of local businesses' capacity for cooperation. Moreover, it is interesting to note that, in the Sardex case, the solidaristic aims that legitimise the spread of competition are pursued through the development of cooperation in the economic sphere and changes to preferences.

The total transparency of the market transactions stored in the database of digital monies such as Sardex offers an enormously powerful tool for monetary, economic, and social policies. Taxation, for example, can be easily collected directly during the transaction and it can also, if necessary, be changed and diversified over time at regional, local, and individual levels for specific policy purposes. However, along with this powerful tool for social coordination comes the risk of it being used despotically by the authorities, a risk that has already been identified as the danger of the techno-leviathan (Dodd 2018, 44), or the risk of the digital kleptocracy which may materialise if the data are owned by a handful of private companies, as in the case of tech giants promoting the Libra (Khera 2019, 7). While the main problem raised by the international financial markets is the risk of taking money out of the control of political and democratic authorities, digital money, conversely, would allow monetary authorities to obtain perfect information on economic transactions and to exert a potentially enormous influencing capability on markets. This ability, of course, also comes with the risk of excessive control over individual freedom. However, the issue seems much more related to the quality of democratic control than to the possibilities of tracking transactions offered by digital money. Totalitarianism, surveillance, and exploitation, which are possible effects of big data (Rao 2019), are also possible without big data. Meanwhile, big data and digital platforms are used also by anarchist groups (e.g., with the Bitcoin project). However, it seems clear that social control can be facilitated by the information provided by digital money. The increasing availability of personal data needs an advanced form of democratic control.

5. Conclusion

The Sardex case offers an example from which to understand how much a theory of money functioning (supposed to explain its functionality) can, in reality, help implement a specific form of money infrastructure with subsequent expected social dynamics (Bazzani 2019). Money infrastructure can contribute to the achievement of redistributive and equity aims by supporting specific forms of solidarity or types of societal transitions towards sustainability thanks to the performative capacity of socio-material infrastructures (Rydin et al. 2018; Silvast 2017).

Given the utopian goals that money infrastructure carries, it seems legitimate to ask whether these aims can be pursued by using it only as an instrument to foster competition, or whether more articulated social dynamics could be considered. For instance, to remain only within the economic sphere, it is well known that the functioning of markets requires economic actors to have the ability and possibility not only to compete but also to cooperate with one another (Beckert 2009). Exchanges and the market itself are only realised in the presence of trust between actors (Beckert 2009, 258; Cook 2001; Gambetta 1988). Thus, money infrastructure can become a conversion factor for shaping cooperative capacity (Bazzani 2022).

Simmel identified money's contribution to the development of the modern social bond. This is characterised by the fragmentation and impersonality of everyday experience that finds its perfect expression in money: "the more the life of society becomes dominated by monetary relationships, the more the relativistic character of existence finds its expression in conscious life" (Simmel [1900] 2004, 518). Sardex money is a very different form of money from the abstract and impersonal money described by Simmel ([1900] 2004). Indeed, Sardex shows how this crucial infrastructure can be conceptualised in light of context-dependent mechanisms that raise situational goals related mainly to regional socio-economic development.

The Sardex case shows how money infrastructures can be "real utopias" (Wright 2010) that bring about democratic experimentalism useful for imagining powerful tools with which to realise sustainability trajectories (cf. Schiller-Merkens 2022 on prefigurative politics, in this volume). Indifferent money can be classified as a modernisation path towards sustainability, while situational money more effectively allows its transformative capacity to emerge (Adloff and Neckel 2019). Situational money, such as Sardex as well as many other money experiments, can create a rupture from the expected long-term infinite growth of indifferent money to more situational and contextual aims. Indifferent money should help realise the collective aims of economic growth and redistribution, due predominantly to the expected long-term benefits of market competition. Conversely, situational money

infrastructure includes collective aims within economic exchanges without demanding them to be the secondary effects of self-interested behaviour. This situational way of thinking about money functioning could also support the innovation of the monetary policies of central banks that now seek new ways to shape more sustainable monies. The monitoring of sustainable indicators of money circulation could be a limited response of monetary policies to the challenge of the sustainability transition. On the other hand, a situational account of money functioning could support broader and more effective monetary policies oriented towards sustainability.

Money innovation is a vibrant field of social innovation and research. Many situational money experiments are now being conducted, and further comparative research is needed to more accurately assess their impact on solidarity and sustainability.

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Appendix

The sample was constructed by differentiating according to 1) the geographical location of the enterprise (Cagliari and metropolitan area versus small rural centres); 2) company size as measured by the number of employees (very few of the companies chosen had a large number of employees, in line with the type of members and with companies operating in Sardinia); 3) age of the company (recently started companies, companies with more than five years of activity and those with over 20 years of activity); 4) activity sector (the sectors considered were those most prevalent in Sardinia: construction, catering, industrial production, business services, trade, personal services, and tourism); and 5) length of time in Sardex (less than three years, over three years) (Table A.1).

Table A.1 List of Interviewed Members

N°	Activity Sector	Number of Employees	Year Business Was Founded	Year of Joining Sardex
1	Restaurant	19	1988	2013
2	Restaurant	20	2006	2011
3	Pharmacy	9	1912	2014
4	Carpenter	0	2006	2015
5	Hotelier	3	1985	2014
6	Clothing	2	1988	2014
7	Jeweller	1	1948	2015
8	Jeweller	1	1948	2015
9	Tourist agency	1	2002	2010
10	Perfumery	3	1987	2015
11	Hotelier	7	2009	2015
12	Catering	4	2014	2017
13	Merchandising	20	1994	2013
14	Clothing trade, catering, construction	64	1994	2014
15	Optical retail trade	3	1913	2013
16	Catering	8	1981	2014
17	Agriculture	30	1981	2010
18	Hairdresser	1	1990	2013
19	Bookshop	3	1929	2013
20	Catering, building construction	11	1970	2010
21	Dentist	3	2004	2014
22	Food shop	7	1997	2015
23	Paper production	2	1976	2015
24	Industrial laundry	250	1967	2010
25	Plant engineering	8	1991	2010
26	Furniture shop	5	1946	2013
27	Optical retail trade	0	2011	2011

28	Catering	7	2015	2015
29	Clothing trade	0	1996	2014
30	Business services	0	2015	2012
31	Packaging production	21	1976	2014
32	Supermarket	9	1952	2016
33	Catering	10	2011	2014
34	Business Consultant	12	1996	2013
35	Clothing trade	7	1926	2015
36	Restaurant	6	2000	2015
37	Typography	49	1981	2012

The first list of members is provided by the Sardex Ltd. broker team. The broker team has access to the updated list of members with information such as geographic location, company size, and business sector. This data made it possible to construct a purposive sample in which the different characteristics of the member companies were included. After this first list was assembled, the remaining members were then obtained from a snowball selection compiled using the direct knowledge and contacts of members who had been interviewed. In fact, after the interview ended, the majority of respondents were satisfied that they had been able to express their opinion on Sardex and they were willing to provide contact details of other Sardex users. Contacts with members increased over the period in which the interviews were conducted. The entrepreneur sample, therefore, was based partially on stratified purposive sampling, supplemented by snowball and convenience sampling. While the analysis could suffer a bias due to the fact that the first list of members was selected by the Sardex team, the following snowball and convenience selection avoids this risk. Results did not show differences in the experience with Sardex and the attitudes of the interviewees towards this money between the first list of respondents and the following selection. The sample size followed the principle of saturation.

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