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## BEYOND GROWTH: PROBLEMATIC RELATIONSHIPS BETWEEN THE FINANCIAL CRISIS, CARE AND PUBLIC ECONOMIES, AND ALTERNATIVE CURRENCIES

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### ABSTRACT

Financing non-capitalist (public, solidarity and care) economies with current monetary resources raises many economic and environmental problems. This research focuses on the opportunities offered by alternative currencies as a possible solution and discusses their limits. We demonstrate how time-based systems of measure, exchange and credit can foster sustainable financing of non-capitalist economies in a more economically efficient, localised and ecological way. The key is to link them to an average value of labour time, which can significantly widen the power, functions and economic role of alternative currencies. Above all it can foster a new type of universal ecological protection against speculative finance and exploitation of resources, promoting a return to taking care: of ourselves, of others, of our community currencies and the world we live in.

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## INTRODUCTION

The current financial crisis is linked to an assumption of economic growth and monetary institutions to sustain it, and these require a widespread revision. The regulatory functions of monetary policies, their instruments, and their ability to account for the socio-environmental costs of economic growth are particularly problematic. This paper will focus on the structural problems of financing Public Economies and Care Activities (PE&CA) in the tertiary or post-industrial age. Care activities encompass all services and productive activities geared to taking care of "commons", namely people and their work, natural resources and cultural heritage. I will refer mainly to some significant problems derived from financing PE&CA with resources obtained by prevailing methods of wealth production, subordinate to the payment of various kinds of interest, rents and profits.

PE&CA cannot systematically grow in productivity as required by capitalist principles and this creates difficulties for economic growth as well as for a balanced development of PE&CA. In turn, PE&CA decision-makers are exposed to the trade-offs involved in growing indebtedness, reducing the volume of activities, or pursuing increased productivity by exploiting every available resource, especially labour, and such issues call for new sources of funding and new credit systems, appropriate for sustainable socio-economic development. I will particularly consider the possibilities of financing PE&CA through developing mutual credit systems without interest, based on time units of average social value, managed electronically by communities and governments deeply rooted in their territories. Hypotheses on new interest free credit systems will be mainly based on the experiences resulting from the various attempts to build Alternative Currencies (AC), spreading all over the world in recent decades. I endeavour to go beyond the limits and incongruences revealed by the prevalent experiences of AC, while drawing on any useful tools related to their development.

I use the term alternative currencies in a broad and generic sense to indicate systems of exchange, payment and credit which are different from official monetary systems, and also different from each other. Their diversity or otherness may concern their characters, functions and origins. In Latin, "alter - natus" means different in origin, so in relation to this otherness, all alternative currencies can be used alternatively, meaning at different moments or in different fields and for different projects according to the approach taken. In this rather generic sense, the term alternative currencies may include the notions of local and community currencies, or even complementary currencies, according to the scheme outlined in Blanc (2011) and Gomez (2009). Being alternative or different from official, national and macro regional currencies do not necessarily imply competition with or antagonism towards them; although it makes competition or antagonism possible, mainly because official currencies claim a monopoly or exclusiveness, so they tend to exclude any alternatives in the functions traditionally fulfilled by money.

There have been no major experiences yet at the local or national level of interest-free credit systems to finance public economies but the depth of the current crisis demands the construction of socioeconomic forms and relations that do not yet exist. This need is evident from an analysis of the structural problems afflicting tertiary societies, and it is clearly necessary to go beyond the main approaches of social research which have been hegemonic for several decades. Prevalent social theories tend to limit research to collecting pure empirical data or analysis of individual and "single group" experiences. More precisely, there is a preference for practices and solutions that play out in the interpersonal dimension, according to the methodological individualism that has become dominant among many academics and activists with the advent of neoliberal culture and politics (for different interpretations and responses, see North, 1990; Bhaskar, 1998; Toboso, 2001).

The approach used in this paper diverges from the above for at least two reasons. First, I give precedence to analysis of the dynamics and problems in larger, long-standing public institutional dimensions. Second, I tackle options for imagining the rebuilding of new socioeconomic forms, and I try to do that on the basis of analysis of structural problems emerging in tertiary societies rather than on the basis of prevalent experiences and schemes of AC. For example, the increasing importance of the local-regional currency is derived from the current separation between economy and territory, due to neoliberal and financial globalisation. It also derives from the fact that in post-industrial societies most services, particularly care-related, are only available and enjoyed locally, which explains the low rates of foreign trade of services in OECD countries (OECD, 2005: 14). In the same way, the importance of labour time in a model of interest-free credit does not spring from some kind of "socialist nostalgia" but from the importance of individual work, especially in care-related activities in advanced tertiary societies.

I deal with the main issues of the tertiary or post-growth age in the first part (sections 2-3). In the second part I focus on problems of financing PE&CA by alternative currencies, mainly from a sustainability -ecological and economic-perspective (sections 4-5). In the third part I consider some problems and potential related to financing PE&CA by means of time based credit systems (sections 6-7). Briefly, I consider the need to expand the main functions usually attributed to AC. I question the prevailing reduction of AC to mere medium of exchange and tool of economic growth (for small and often "closed", self-referential communities). Finally I consider their role in developing alternative social security systems and more adequate socio-economic programming, both necessary for sustainable development of post-industrial societies.

## 2. BASIC LIMITS OF THE CURRENT SYSTEMS TO FINANCE PE&CA

A major problem arising from the current financial system with regard to PE&CA is the interaction of two facts, which together have serious consequences:

- The current financial system requires continuous growth of monetary resources in order to pay interest on loans, rents on factors of production, and profits for business activities.
- Public economies and care activities generally cannot produce such growth, especially in the current tertiary phase of socioeconomic development (Bell, 1973; Gadrey, 1992; Atkinson, 2005).

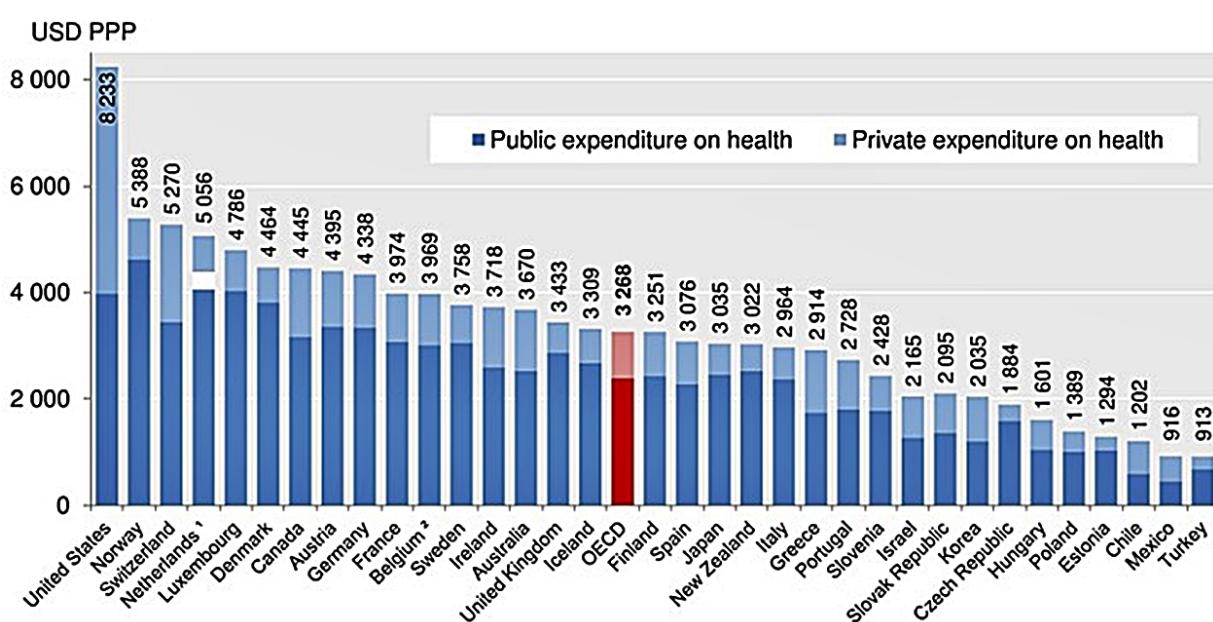
The main consequences of these facts are pretty obvious but are hardly considered by current political and theoretical approaches. If care activities as health services are financed under conditions requiring payment of interest, rents and profits, then the costs of services on offer increase without improving productivity and quality, indeed often making them worse (Ruzzene, 2005:127-129; Ruzzene, 2008: 253-254; Kane, 2012). At the present time, the USA spends 2.5 times the OECD average for health services (total health expenditure per capita, public and private), as shown in Figure 1 (OECD Health Data, 2012). OECD Health Data 2012 also shows that in countries like Italy and France, where most health services are public, the costs are lower and the volume of services provided is generally higher,(OECD, 2012: 8-10). However, high interests

paid on money increase public debt, and public economies financed by the current financial system become heavily indebted unless they increase either the amount of financial resources obtained outside current financial circuits or their total income from consumers' purchasing power (Fittoussi, 1997). The interests generated by speculative global financialisation forces PE&CA to reduce activity and assets, at least in the medium and long term, and the current tertiary stage of economic development shows both protracted stagnation of production and decreasing income (Gallino, 2009; Picketty, 2013).

These problems are aggravated rather than caused by the prevalently speculative nature of current financial systems. Speculation increases the risk and uncertainty of economic activity and this means increasing interest rates irrespective of any possibility of real productive growth (Aglietta, 2008: 54-57). Further increases in prices of many services follow, together with impoverishment, but such phenomena were already evident in the 1970s, before speculative financialisation became dominant, and their persistence needs to be explained because it is present in different economic systems such as welfare states and neoliberal economies.

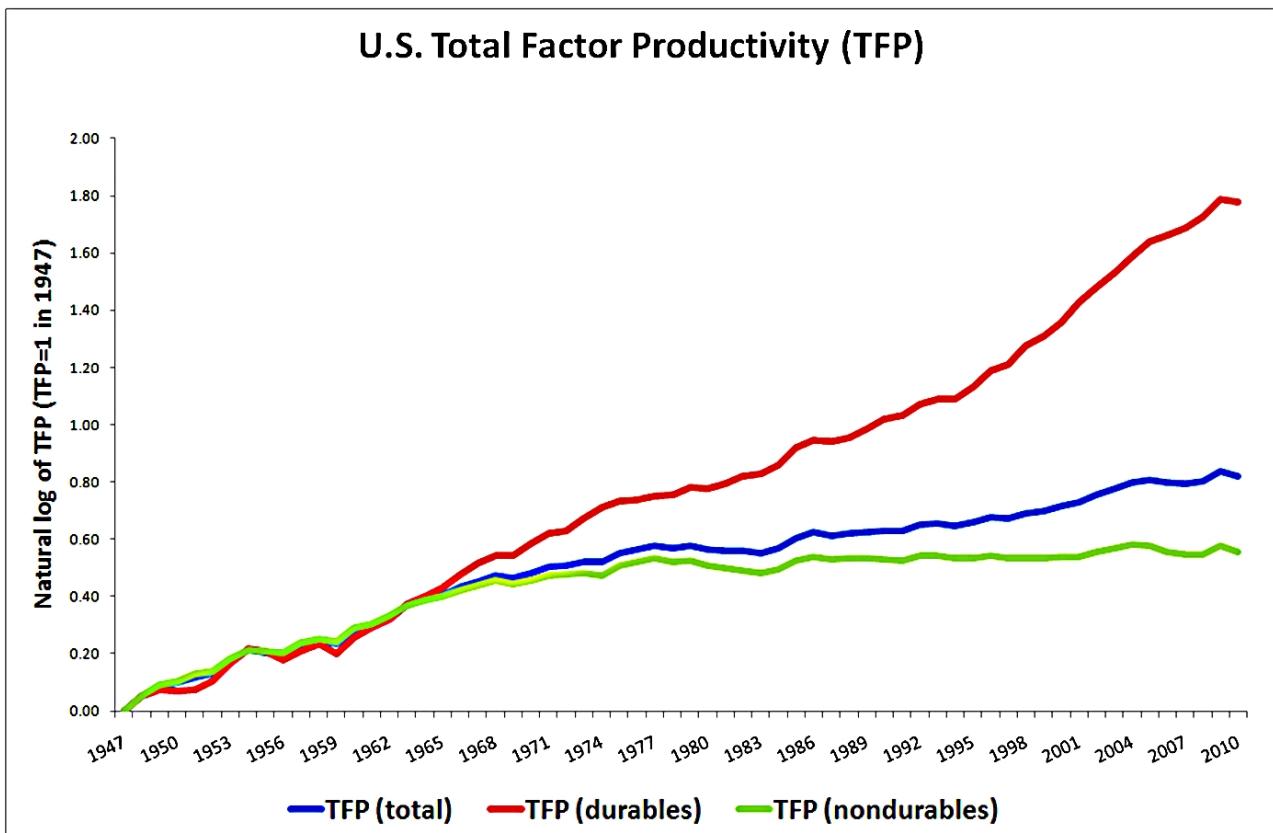
The service economy cannot achieve continuing systematic increases in productivity, as already noted by some scholars (Bell, 1973; Lorenzi et al., 1980). The main reason for the fall of overall productivity is that most services (particularly in the PE&CA) are performed individually and their productivity cannot grow up according to the prin-

Figure 1. US spends 2.5 times the OECD average (total health expenditure per capita, public and private, 2010 or nearest year) Source: OECD Health Data 2012



1. In the Netherlands, it is not possible to clearly distinguish the public and private share related to investments.
2. Total expenditure excluding investments.

Information on data for Israel: <http://dx.doi.org/10.1787/888932315602>.



uples of scale economies and intensification of production time. A calculation of the total factor productivity in the US is depicted in Figure 2 and shows this problem. Most of individual service activities, especially those concerned with "care", cannot be divided and recombined by mechanised industrial systems to obtain systematic productive growth (Ruzzene, 2005:121-123), and individual service activities not only concern PE&CA. They concern also most marketing services, economic and legal mediation activities as well as other professions for profit that prevail over industrial activity in advanced economies, reducing growth perspectives and increasing cost of social reproduction.

The high cost of social reproduction in post-industrial systems evidently depends on several factors. It firstly depends on environmental degradation and the growth of assets to cope with this, and secondly on the development of financial assets, especially speculative ones, which pose an enormous weight in developed countries. Nowadays the increasing cost of financing public economies is largely due to interest on debt, especially high in countries with high public debt like Italy (Baranes, 2012; Gesualdi, 2013), but all this happens mainly because high interest rates are applied to services activities and commons without any possibility of systematic economic growth according to mass production principles (Ruzzene, 2005: 127-133). Increases in the costs of health services, private schools and insurance services are particularly evident when these services are subject to "marketisation" and capital valorisation, as in

the USA, where they have become the largest expenditures in family budgets (OECD, 2007).

Finally, capitalist economic growth, which for centuries reduced the real costs of goods produced on an industrial scale along with the growth of low-middle class real incomes, has gradually lost its economic functions and social appeal. This is evident in the case of PE&CA, but problems have become serious since individual service activities have become a major sector of all post-industrial societies.

### 3. RELATIONS BETWEEN CAPITALIST ECONOMIES, PE&CA IN THE TERTIARY AGE AND NEOLIBERAL POLICIES

The relationships between the capitalist economy, financial systems and PE&CA are controversial and ambiguous, even paradoxical, in many respects. On the one hand, current economic systems depend on PE&CA almost inevitably, while PE&CA needs financial systems and in some ways also seems to need unceasing economic growth to develop, which only capitalist systems seem able to provide. On the other hand the development of PE&CA causes severe economic problems for the capitalist economies and these problems hinder, rather than sustain, further expansion of PE&CA.

These controversial or even contradictory relations respond to the constitutive principles of capitalist economies, and also the more specific aspects typical of the tertiary

phase and of current neoliberal policies. The insatiable drive for monetary growth is a most important constitutive principle of capitalist economies. As stated by Karl Marx, it generates degradation of the natural and social environments and almost all the economic crises, whether short-term or systemic, that have manifested with the development of modern capitalism. To maximise the effects of monetary growth, it is necessary to ignore environmental impacts and other externalities and give free rein to competition for scarce resources. Furthermore, together with other constitutive principles of capitalism, the pursuit of monetary growth generates many structural short-term economic crises: production surplus, accumulation surplus, speculative bubbles and demand shortages (for a reconstruction of the dynamics of economic crises, see Rosier, 2003).

Because of its negative effects on the environment, capitalist economic growth also generates the need for a whole host of recovery activities, social reintegration, preservation of human and natural resources, and their social relationships. In traditional societies the guidelines for care were "symbolic values" embedded in most work and productive activities (Sahlins, 1985), while in capitalist society the development of PE&CA as a separate or specialized system becomes necessary because it obeys principles that are largely different to those applied in most economic (capitalistic) sectors.

Individual service activities in the PE&CA oppose capitalist economic growth for at least two reasons. PE&CA cannot meet the need for continuous productivity growth and its development responds to needs, rhythms and rationale of care that are substantially different from those of economic growth (Gadrey, 1992: 76-79) and which are determined by competition in the exploitation of resources and money accumulation. PE&CA cannot achieve the goals of a dissipative growth economy, based on intensification of time and linked to the inflationary devaluation of money, because it takes place slowly, gently, and rooted in the environment (Ruzzene 2008: 253). Thus the growth of PE&CA helps capitalist socioeconomic systems to reproduce in a more balanced manner, reducing some of their negative effects, although it also generates new contradictions, especially in the economic sphere.

In contrast to the prediction of Marx and the sociologists of the automated society, the post industrial age is not characterised by progressive displacement of human labour in favour of machines. Instead we observe an economic prevalence of individual working activities, especially "repair and care-related services" for the environment, people, marketing and the legal systems (Gadrey, 1997; Albrecht and Zemke, 2002; OEC, 2005). The current tertiary phase is also characterised by the dominance of speculative financial activities affecting public institutions and the national and international laws, and this means an evident dominance of the financial (monetary) capital over the productive (fixed) capital. Most costs are now for individual service activities rather than for big industrial plants. More precisely the fall of overall productivity and fewer invest-

ment possibilities in traditional mass production sectors favour the development of speculative finance because it offers a better chance to increase money for the financial system and for the cultural, administrative and political elite (Gallino, 2012; Piketty, 2013; Aglietta and Rebérioux, 2004).

The most obvious result is unsustainable growth of debt, public and private, supported by the global financial system through high interest rates consistent with the high risk of speculative ventures of financial systems. It is a vicious circle based on the granting of free debt-money creation for purely speculative purposes that can only be broken by the withdrawal of this concession, giving back to communities the full control of their own monetary institutions.

#### 4. PROBLEMS IN ACHIEVING ECONOMIC AUTONOMY OF PUBLIC ECONOMIES AND CARE ACTIVITIES

The problems outlined above indicate that it is necessary to finance PE&CA in a new way, not dependent on interest payments and exploitation of labour and natural resources. For several reasons, the finance of public economies depends on tax revenue and money-based methods of exchange and calculation of social wealth (Bosi, 2006; Bresso, 1990), but the current fiscal crisis and the market failure of commons and PE&CA indicate that the current tax, exchange and monetary systems must be radically modified. Two changes are particularly important:

- broad fiscal reform that modifies the relationships between the tax office, contributors and available resources, and shifts taxes from labour to appropriation and exploitation of environmental, human and natural resources belonging to communities;
- the development of substantially different credit systems, not bound to continuous growth of money and interest or rent payment, but to reproducible resources like labour.

Before considering the options to finance PE&CA by alternative systems of exchange and credit, like alternative currencies, we first have to look into the more general difficulties of funding PE&CA in a socio-economic sustainable way and which are related to the construction of a Sustainable Care Economy. I discussed elsewhere the main problems of funding PE&CA through environmental, carbon and green tax (Ruzzene, 2008: 254-255).

The most appropriate sources for financing a sustainable care economy depend on the principles on which they are based. Like any ecological approach, a Sustainable Care Economy should favour autonomy, equality, cooperation, solidarity, responsibility and economic balance. Only a sufficient level of responsible autonomy can promote the widely accepted development of equality, cooperation and economic balance, while sufficient levels of responsible autonomy should be felt not only in the individual capacity for judgement and choice but also in the economic self-

sufficiency of social systems. Adequate economic self-sufficiency of the Sustainable Care Economy is necessary because dependence on wealth produced by the growth economy means depending on its underlying exploitation of resources and environmental devastation, but economic self-sufficiency is not easy for PE&CA and requires certain economic and socio-cultural conditions.

The main economic difficulties hindering the economic self-sufficiency of PE&CA depend on the fact that not everyone can pay for the services it provides. It is often a question of meeting primary needs that have become "civil rights" (such as healthcare and education). In turn, it is a matter of caring commons, access to which cannot be denied to anyone and care of which is in the general, local and universal interest. However, care activities cost and their costs increase with increasing degradation of the environment, which is largely due to capital-growth-oriented activities. These have to pay for care and repair activities through taxation, but care economies cannot totally depend on wealth produced by the capitalist logic.

The mentioned difficulties of PE&CA can be reduced if we widen the fields and activities included in Care Economies, rather than reducing them as occurs today. If we want extension of Care Economies to have a positive value, we have to extend the concept of care to taking care, which is taking care of (or responsibility for) the environmental and existential implications of any kind of productive and economic actions. From this point of view, the taking care principles need to be reintroduced into all the activities producing goods and services, in particular those that are outside the logic of continuous monetary growth and exploitation of available resources.

We should go beyond the narrow traditional view of "care activities" as informal activities outside economic relations, such as unpaid domestic work which remains substantially non-autonomous (for different approaches to "taking care", see Tronto, 1994; Bubeck, 1995; Held, 2006; Eisler, 2009). If private services take responsibility for environmental, physical and social implications, they can also be part of Care or Ecological Economies. The concept of Care or Ecological Economies includes public economies but also social and solidarity economies. These have grown significantly in recent decades but have not yet found adequate forms of funding to defend their principles (Arnsperger, 2013; Utting, van Dijk and Mathei, 2014). We also have to go beyond the concept of "care" related to health alone, such as medical and healthcare in general. Care services in their specialist form will of course continue to exist in a complex society, but the economic conditions under which they can develop should change, growing as Care Economies that respect the needs of people and labour, social environments and all the forms of life on the planet.

Care economies must also take care of economic resources, which are indeed limited and scarce. They must rediscover the principles of saving and reasonable employment of existing resources (natural and labour) for a better balance with respect to their environments and inter-community

relations. On this basis, public and private economies can sustain and help each other, mutually widening their supply and demand of services and goods in a sustainable way. On the same basis, the growth of care economies can provide better conditions for economic autonomy of public economies and a private sector inspired by care principles.

It is generally thought that attributing economic value to care activities and many public services implies commoditisation, which denies the principles of "disinterest" and "giving" that should be hallmarks of care activities as traditionally organised (Bosi, 2006; Ribault, 2007). However, attaining economic independence for PE&CA does not necessarily mean their commoditisation or the reproduction of impersonal egoistic economic relations. Where possible, it is a question of counting the economic costs sustained in implementing PE&CA, which are and should mainly be costs of labour (if we exclude rents, profits and interest on money) and of care for commons.

The reintroduction of care principles in many production sectors may slow down the possibilities of productive growth, both for single agents and overall (Ruzzene, 2008; Arnsperger 2013). However, it is also easy to understand that the recovery of taking care principles can greatly increase the quality of products, services, relations and environmental contexts, and this must somehow be assessed and compensated, especially in the existing highly competitive societies where commitment to protecting and caring for common life conditions can mean losses, bankruptcy and an end to all activity for many firms.

Sectors such as the social and solidarity economy, organic agriculture, traditional trades and industry organised around taking care cannot compete unless sustained and protected by national and local governments and communities. Public economies also need to be sustained and all of this could be done by setting up alternative funding systems and providing new, more stable, balanced and locally-based conditions of demand. Some forms of Alternative Currencies seem to meet such conditions quite well but they cannot be bound to dissipative monetary growth and they also need to overcome the problems and limits they encountered in the past.

## 5. POTENTIAL, LIMITS AND PROBLEMS OF THE USUAL APPROACHES TO ALTERNATIVE CURRENCIES

The theory and practice of alternative currencies (AC) have an important role in drawing attention to social and democratic re-appropriation of the functions of creation and management of money, as envisaged by T. Greco already in 1994. In turn, certain approaches and instruments related to AC can be useful for sustainable funding of PE&CA for a number of reasons.

Certain models of AC can provide favourable credit conditions without requiring payment of interest or rent and possibly without causing inflation (Kennedy, 1995). Thus their use can enable PE&CA to escape the pressure of con-

tinuous monetary growth and debt, especially public debt, as we shall see in the next sections. AC can also promote more territorially based economic exchange and credit relations, as shown by certain types of local or regional currencies, such as WIR in Switzerland and RES in Belgium (Kennedy, Lietaer and Rogers, 2012; Bendell and Greco, 2013). AC can favour fair relations based on cooperation and solidarity as in most community currency systems (Seyfang and Smith, 2002; Collom et al., 2012). Finally, certain alternative credit and accounting systems, such as time-based currencies, may provide more solid criteria and evaluation tools for economic development, helping to restore a sense of measure or limit in the creation of social wealth (Ruzzene, 2005, 2008; Serra, 2006).

However, the design of sustainable finance for PE&CA requires adequate forms of economic computation, especially for costs sustained by individuals and the communities. The problems that have so far hindered a solid development of AC for sustaining Care Economies must also be tackled appropriately. These two aspects are linked and their solution requires giving AC a wider basis in order to affect the institutional contexts of PE&CA, especially the determination of local and national policies. Here lies the major limit of past attempts to build AC systems.

AC show rather disappointing economic results, and poor economic sustainability was particularly evident in the disproportion between the resources required to start and maintain AC and the limited economic benefits accruing to users (Aldridge and Patterson, 2003; Krohn and Snyder, 2008). This is one reason why in most cases AC have been relatively short-lived, and why a crucial problem in their reproduction was the difficulty of financing their running costs (Schroeder, 2013). Difficulties related to social context, such as unfavourable laws, add to limits based on the theoretical models on which most AC have been built.

Some of the problems linked to the constitutive principles of the major theoretical models of alternative currency are related to demurrage or programmed depreciation, and energy and time-based credit systems (Ruzzene 2008 and 2009). The mechanisms of demurrage reproduce the "dissipative" principles of capitalist economies because they encourage a view of economic growth as a process without limits, or limited only by the availability of money and its speed of circulation, to which demurrage contributes (Goldschalk, 2012). The main energy-based currency models, such as the one developed by F. Soddy, generally do not consider the main costs of post-industrial capitalist systems, which are mainly the costs of care, conservation, repair and maintenance of socioeconomic systems themselves (as well as energy and human systems). These costs are largely labour-related but they should also be assessed in qualitative terms, e.g. in terms of gratification, alienation or loss of meaning, which is loss of "sense" or care principles. We look at the main limits of time-based currencies in the next section.

There are also some limits from practical attempts to develop AC, of which there have been thousands in recent

decades but which have not succeeded in playing a sufficiently incisive role for the many issues they sought to tackle (Lee, 2003; Amato and Fantacci, 2006; Ruzzene, 2009; Gomez, 2012; Dittmer, 2013; Cooper, 2013). We can identify four types of problems in attempts to build AC systems:

- a) there is a tendency to pursue incoherent, contradictory objectives, such as declaring ecological aims while the real major aim is to increase production and consumption of goods, albeit locally, or pretending to be immune from the inflationary growth of money while remaining linked to the official currency, often for lack of a solid value base, as in the demurrage currency conceived by Silvio Gesell (Ruzzene, 2008: 256);
- b) except for time-based currencies, the lack of any valid reference of value makes it necessary to maintain convertibility with official money, which also implies legal problems for the "parallel currency" (Blanc, 1998);
- c) a widespread preference for individual and interpersonal action has limited the experience of AC to small groups, or to the restricted area of barter of services and goods of minor importance, as for time banks (Offe and Heinz, 1997);
- d) emphasis on the immediate experience of "here and now" leads to neglect of the systemic and long-term problems of monetary and financial systems (Ruzzene 2009:212).

Davina Cooper describes the main problems of English LETS as "problems of an organisational structure whose plural temporalities did not combine", and she identifies "three reasons for this: the lack of an overarching temporal design; the inability of new normative practices, combining different temporalities, to develop; and the power of wider, prevailing temporal pressures" (Cooper 2013: 49). With regards to more specific economic issues, prevailing AC models strictly exclude the store-of-value function. They are not conducive to a resource-saving function (natural resources and labour), especially in the long term, and would rather exclude any form of economic saving even for old age or future necessities (except for a few care-service credit systems such as the Fureai Kippu).

The function as store of value is fundamental for today's official monetary systems, especially because it is a function that the official monetary systems are fulfilling in an unsatisfactory and dissipative way. Speculative commoditisation of pension and security savings is a strong point of capitalist monetary and financial systems but also most problematic. Neglect of these issues also significantly limits the emancipatory potential of AC. Finally, most AC experiences still tend to be relegated to a complementary role with respect to official money and finance, and this also greatly reduces the influence of AC in challenging speculative finance, even after revelation of its self-serving and economically irrational nature.

The current financial crisis, which is especially visible in the funding of PE&CA, however, obliges us to find new solutions that are ecologically and socially acceptable as well as economically efficient.

## 6. SYSTEMS OF CREDIT IN TIME UNITS (BASED ON AVERAGE VALUE LABOUR) TO TACKLE DEBT AND ENVIRONMENTAL CRISES

The link between financial crisis and private and public debt demonstrates the failure of the economic policies of recent decades, both neo-Keynesian and neo-liberal, namely the fallacy of stimulating economic growth by simply increasing financial flows (Ruzzene, 2012: 202-205). Above all, it demonstrates the unsustainability of financing public economies by cash flows obtained by growth-orientated and inflationary, dissipative principles. The problem of public debt is now explosive for most European economies and it is necessary but not sufficient to renegotiate this debt, especially in the case of Italy (Baranes, 2012; Gesualdi, 2014). Paradoxically, one of the most appropriate ways to restore the autonomy of public and care economies is to exploit paths already opened by welfare politics and speculative finance, reversing the perspectives.

Following development of Keynesian policies, the end of the gold standard and the empowering of agents to create enormous amounts of factitious money, we are experiencing a gradual liquidation of the store-of-value function of official money and full development of its pure accounting function, in a debt money system (Guttmann, 1998; Bell, 2001; Baches, 2004). We "simply" have to transform the store-of-value function into a social security savings function and the existing impersonal monetary credit system into a mutual credit system. This can be done by developing already existing systems of account, exchange and credit based on time units (or labour time), and such systems can also tackle and solve some of the problems in prevailing AC, for three reasons.

Time-based credits have their own independent value basis that does not require convertibility with the official currency, while not excluding it. Time-based units do not lose their value over time and this makes them suitable for developing functions of long term credit without inflation and thus without requiring payment of interest. Exchange and credit systems based on labour time units can finally sustain greater equity in the exchange of goods and services, even between distant communities with different levels of productive development (Ruzzene, 2008:256).

However, as already pointed out, even exchange and credit systems based on time units raise problems, especially in the form in which they are commonly developed, i.e. time banks. Time banks seem to hinder exchange of services having different hourly economic value and which are different in terms of fatigue, gratification or training, because they generally imply agreement on strict equality of the hourly value of labour exchanged. Secondly, they do not seem to allow the value of goods and resources already

expressed in official currencies to be calculated.

These problems can be overcome by reference to a labour activity of "average social value", that can be applied either remaining in a pure system of labour-time accounting, as in the Fureai Kippu credit system, or if conversion of accounting in official currencies into accounting in time units is sought, as in Ithaca Hours currency (Lietaer, 2001; Jacob and al., 2004; Hayashy, 2012). In the latter case reference is made to an hourly wage of average value (i.e. the average value of an hour of labour accounted in official currency) to convert all prices in official currencies into time units.

In the Fureai Kippu system, exchanges of care services are all accounted in standard time units, whereas the exchange value of the different services can significantly vary. For example hours for body care can be valued double with respect to hours spent for shopping. Exchange values and all claims are however still recorded in standard time units, which remain stable and unchanging in time, but the original Fureai Kippu scheme did not consider costs sustained in official money, nor allow exchange of credits for care services with other kinds of services (Hayashy, 2012).

Ithaca Hours, a paper currency not backed by national currency, can consider costs and values expressed in official money and enable exchange of any good or service with any other, still referring to time units as elective means of exchange and accountability. It does this by linking the value of the Ithaca hour currency to 10 USD, which was an approximate "average" (somewhat more than the minimum) hourly wage in Thompkins County (US), the socio-economic context in which Ithaca Hours was first implemented, in the 1990s. If the time units refer to an average hourly wage, all costs incurred in the production of a good (or delivery of a service) can be considered, including those in official currencies, making it possible to exchange all kinds of goods and services in time units, but the Ithaca Hours system mainly faces the problem of the cost of printing high quality paper currency, and a relatively low volume of exchanges (Jacob and al. 2004).

The main problems with Fureai Kippu and Ithaca Hours centre on the ways to determine an average hourly wage or maximum and minimum wages to calculate the hourly wage rate. An average hourly wage (and maximum and minimum wages) can be established by an empirical and statistical method or by an ethical and political method, and both raise some difficulties. In an empirical approach, existing maximum and minimum hourly wages can be used to statistically determine an intermediate or average value of labour time, but existing exchange or contractual rates may reflect large inequalities in the distribution of income and social wealth. In an ethical approach, communities using time-based credit systems can determine the socially acceptable maximum and minimum wages (i.e. the resulting average hourly wage), but such decisions require mediation and arbitration, which is why the ethical approach can also be defined as political. The exchange value of different activities can be fixed between the maximum and

minimum wages established by the agents themselves or by the managers of the credit system. But then both the empirical and ethical methods raise problems, especially with regard to wider sharing of the choice made, and if the goal is to get a widely accepted average value of labour time it seems reasonable to find a compromise between the empirical and the political approaches.

Although reference to an average value of labour time raises difficulties it may significantly extend the use of time-unit credits for exchanging goods and services of different value and also for accounting costs in time units as well as official currencies. None of the advantages of time-based credit systems are lost. The necessary condition is that all credits always be recorded solely in standard time units (as in the Fureai Kippu system), never in official currency. Once recorded, an hour credit unit will be always "one hour". While official currencies depreciate at a high rate, credits recorded in time units have significant advantages over credits recorded in official currencies, even if they do not accrue interest, mainly because the interest paid to depositors for their money is always less than the real rate of inflation (Ruzzene, 2012: 202-204).

These characteristics could facilitate the large-scale development of credit systems in time units without interest, especially to finance public economies and households, reducing their debts. Credit systems in time units may also finance interest-free loans for the purchase of public and private housing (Serra, 2006:62-65), today subject to heavy interest rates that keep people in servitude to financial capital. Moreover, the possibility of converting all the costs sustained by PE&CA into time units can improve socioeconomic development planning (Ruzzene, 2012:209-212). Identification of a solid and stable value in labour time can sustain individual and community responsibility towards the social and environmental costs of production; i.e. it makes economic activity observe limits on the basic resources (mainly labour) available to a community for commodity production and consumption, as well as for care and restoration of the environment.

The growth of Sustainable Care Economies, based on time-credit units, has limits as well, like any natural growth process, and can continue only as long as there are hours of labour available for work and care activities in a community. This also implies that any growth of a Care Economy and of time-based credits cannot lead to unlimited growth of debt, but necessarily limits the dissipative capitalist economy and possibly also the use of debt money. However, account and credit systems in time units have major benefits especially for security and retirement saving, by enabling a new pension system inaccessible to speculative finance. This could significantly extend the functions and goals of AC, and it can reduce the gap between the resources required to start and maintain AC and the economic benefits accruing to users.

## 7. SOME ADVANTAGES AND POLITICAL PROBLEMS OF FINANCING CARE ECONOMIES WITH TIME-BASED CREDITS

The advantages of recording retirement savings in time units (hours of work) instead of official currency are important in countries plagued by enduring high inflation and high public debt. These conditions persisted in Italy for 40 years and productive stagnation has now reigned since the 1990s, mainly due to entry into the tertiary stage of development. Italy is therefore an ideal case in which to demonstrate the advantages of a time-based credit system over official currency and finance.

In Italy 100,000 lira saved in 1970 was equivalent to a month of work (180 hours) of average value. In 2010, 40 years or a working life later, the same amount saved (100,000 lira or €50) is the mean wage for only one day of work. If this saving had been recorded in time-based credits in 1970, it would still have been the equivalent of a month of work or 180 hours in 2010, which is now worth about €2000 (4,000,000 lira). This means that by keeping their value, time-based credits would have multiplied in value by about 40 compared to savings in official money, or the latter would have depreciated to one fortieth the value of time-based credits (Ruzzene 2012:101-103). The next big financial crisis will probably largely destroy the private pension fund system. Public finance will again have to come to the rescue, and this will inevitably increase the level of Italian public debt, also undermining the public pension system.

All this could be avoided by recording pension credits and other savings in time-based credits (after converting current official currency values into hourly wages of average value, i.e. standard time units). The benefits of time-based credits are not limited to individual savers and investors: they can reconcile the needs of individuals, public economies and the community. Individuals can benefit from a time-based credit system because it protects their savings from the intrinsic inflation of official money in tertiary societies. They can prevent destruction of their savings by the increasingly frequent and dramatic financial crises, and public economies can avoid paying interest and accruing public debt. Time-based credits are also positive for communities, which can finance public economies and care-related activities free of interest, profits and rents on money.

A new system of welfare and investment in Care Economies would be based on a mutual credit network between individuals and their communities, accounted in time units and based on the total assets of the community: mainly commons and hours of work available for public economies and care activities. With these features, the time-credit system for welfare and investment in Care Economies could promote a large autonomous economic sector, partly competing with capitalist principles and growth. It could run without inflation, without private credit concentration, and

without the usual fraudulent or dissipative abuse inherent to capitalist modes of money creation.

A first practical implementation of this perspective could be to write off public debt: a) recover all monetary resources (mainly pension funds) delivered to the global financial system; b) pay the public debt with the sum recovered; and c) convert individual sums used to offset public debt into personal security claims, issued to individual members of communities by their public organizations, social security and health systems, etc. In other words, pay in official currency savings now and convert into time unit credits to create reliable pensions and quality care services when needed (Ruzzene, 2013).

To engender confidence in long-term credit securities issued without interest, their value must at least be maintained in time. Today the only basis of value that does not depreciate with inflation is a time unit based on an hour of average value work. This means that after decades of working life, any amount paid by an individual towards social security in time units (hours/months of contribution) is returned exactly by the community organizations in care services or in mutual credit time units, instead of being skimmed like the pension funds currently managed by the dissipative financial system. Only the "exchange value" of a specific type of work can change in the medium and long term, not the "measure" in time units, and this means that the value of all credits counted and recorded in time units remains unchanged even in the medium and long term.

However, as we shall see especially with regard to public debt, there are other problems which are more cultural and political than technical, economic or legal. Development of a system of interest-free time credits should not encounter legal problems since no laws prohibit developing credit in time units between individuals and their local communities, but the credits must be attributed to a bearer and not circulate formally as currency. While circulating, they must maintain their "nominative credit" character, acceptance of which depends on a voluntary agreement between individuals and organizations of the community (Ruzzene, 2009; 2012:208-210).

Time credits can work as a quasi-currency (because they can act as means of exchange and unit of account) but they are not exactly currency. They are not imposed automatically and impersonally like legal tender but rely on a real contractual agreement. They have no impersonal embodied (or commodified) value but are simply records of mutual credits in working time. All this obviously implies that anyone can end the "contract" at any time, obtaining conversion of their time-based credits into official currency (after paying their time debts), but this could be done according to the conditions established by members when the network of community credits was built, as already occurs in many models of AC.

It is possible to maintain the "nominative" character of time credits and make them function on a large scale, as a quasi-currency, only if credits are recorded electronically and the

system is managed by the community (i.e. by some of their organisations). This enables a large volume of exchanges to be recorded. Using electronic credit cards, there is no longer any need for manual records, and running costs are significantly reduced. To control the recording system and manage relations between members, ethical banks and other associations could play a major role, widening and significantly qualifying their field of activity. Finally, there are also various ways of solving problems of falsification and inflation or uncontrolled issuance of credit titles (Ruzzene, 2013).

The main challenge is the lack of trust and weak community bonds, that is, the problematic relations of individuals with their political communities. This is particularly severe between individuals and national political communities, i.e. centralised government, and these relations are much more difficult to control than those with local government. National community relations have weakened in recent decades for many reasons, including nation states' loss of capacity to govern the economy, corruption and endemic structural separation between national government, macro politics and the people (with regard to the crisis of the Italian State, see De Felice, 1996).

It seems difficult to use interest-free credit systems to finance public debt without restoring democratic decision-making and resource management of the political system, and we can think that political participation is more easily initiated at local level, where it is easier for people to control political agents and local administrations, and where relationships between individuals, organizations, political communities and environmental heritage can be more solid (Castoriadis, 1995; Fotopoulos, 1999; D. Held 2004).

Obviously the proposed system of credits can exacerbate tensions about competences, resource management and the right to levy taxes between local and national government, but this possibility is already implicit in the current systemic crisis and in the incapacity of nation states to govern their economies.

## 8. CONCLUSION: BACK TO "TAKING CARE"

We can say that the need for alternative systems of financing PE&CA is not only based on ecological and ethical assumptions. It also comes from the three types of economic problem illustrated in the opening paragraphs: problems about which prevailing political and theoretical practices are not yet fully aware. The first problem is that when current financial methods are applied to PE&CA, they not only increase the costs of care services and total costs, but also dissipate natural resources and social wealth in a way that is incompatible with balanced, sustainable development of PE&CA and of developed societies in general. This problem reveals the need to use currency tools that must be independent of interest payments, rents and profits, and of inflationary and dissipative economic growth.

The second problem regards expropriation and abuse of credit and debt creation by speculative finance to the detriment of national communities. It causes an exponential rise in systemic risk, growing of interest rates and debts, swelling the mass of money in circulation and reinforcing collective servitude of individuals to private economic powers (banks, corporations, insurance companies). These problems call for the re-appropriation of currency creation and management by political (local and national) communities in order to enable solid, responsible, participatory planning of socioeconomic development, respectful of individual needs and bonds between economic activity and environmental and regional contexts.

The third problem regards the plunder of environmental heritage by current economic, financial and industrial systems to the detriment of local and regional communities. It is based on increasing separation between territory and economy, between production of wealth and community relations. New networks of protection need to be developed for people and environmental, natural and social heritage, and especially for jobs in the care sector, through alternative credit systems and finance. Ecological protection, open to global cooperation between movements and communities, would be inspired by principles of care and against increasing inequality and the exploitation of all forms of life. It does not imply egoistic or particularistic protectionism, as seen in the past, but going beyond the particularism that dominates the global neoliberal scene (Lipietz, 2012).

Protecting and sustaining all individuals and activities concerned with taking care of environmental heritage and of persons, on a local basis, can be a new form of universal ecological protectionism, because care of the commons at local level structurally improves care of commons on a planetary scale, unlike what is happening with monetary enrichment where the wealth of a few damages the interests of others, leading to deteriorating of living conditions. In short, we need a new community and territorial agreement for a sustainable post-industrial development, a return to taking care of ourselves, of others and the world we live in, after centuries of delegating "care" to specialists, to women, and to a few volunteers.

With the crisis of the welfare state there are fewer and fewer economic resources even for care specialists and volunteers. "Taking care" (also of our community currency systems) must return to being a continuous common commitment not only for economic reasons but to tackle the environmental and existential problems of advanced capitalist and developing countries alike.

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