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Corso Ercole I D'Este n.44, 44100 Ferrara

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Luca Crudeli

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by Luca Crudeli[*]

Abstract

This paper speculates on the nature of *Social Capital* and the relation that occurs between its formation and the distribution of rents characteristic in a given economy, SC defined as a general willingness to contribute to the wealth of others and of the community, or, in other words, as Toquevillian civil engagement. Following Kahn's work [2000, pg. 21], an economic rent is intended as the difference between an individual's first best opportunity and his next preferred one.

The need to analyse Social Capital vs. the distribution of rents within a given society is the produce of a very sceptical position about the validity of Social Capital as an ontological analytical category. First of all, in the literature the concept is confusing and blur. As a matter of fact no precise definition of SC exists and this leads to problems of "circularity" in the analysis [Galassi, 2002]. As a matter of fact, even in the empirical literature no directional causation between SC and economic performance is ever tested, but, most of the times, regressions aim to find simple statistical correlations between the two. Secondly, as it has been remarked notably by Fine [2001], taking SC too seriously has strong, in-built implicit political and research implications. In particular, it involves the acceptance of a dogmatic division between the economic and the social, and, as a consequence, the embracement of a market-centred framework of analysis[1]. Indeed, whilst with SC it appears as if social relations are finally brought in the economic analysis, this happens only at the cost of having them excluded initially.

This latter point and the whole of the interesting job done by Fine [2001] and by Kahn [2000], are at the core of this paper. Their contribution is indeed essential to understand the value of SC and to navigate safely through the lively draughts that characterise this vast literature. As Fine provides a stable wind for the sail of the paper, by questioning in Toto the appropriateness of a concept as Social Capital[2], as a metaphorical compass, Kahn provides us with the direction to follow as his *Rents* are a tool for interpreting the dynamics that develop within the social arena. Similarly to Columbus voyage, the aim of this paper is to lead the reader to rediscover what was actually already known by classical economists. Going beyond the simplistic idea that the social is nothing more than a response to market failures, indeed, we will see that social arrangements and institutions are not simply a side effect of market exchanges, but on the contrary, the society as a whole is the domain where rents are continuously distributed and appropriated by individuals, while the market is just one of the arenas of this domain (although frequently the most important one).

Outside of any metaphor, whilst, Fine's work has to be framed into a wider and deeper critique against the way economic research in the academia and in international institutions is proceeding today, and Kahn aims to give new birth to Political Economy, the (much more limited) scope for this paper is to show how interpersonal relations (Social Capital) <u>are</u> <u>shaped</u> by the economic opportunities (the Rents) which are spread within the economic system, and <u>do not</u> actually constitute a factor of production themselves. This implies that spending too much energy on concepts such as SC is often useless, unless the exercise is completely contextualised within a specific social framework, which takes of historical and geographical traits, power relations, gender issues, class struggles and considering multiple equilibria. But even in this stance, referral to the SC concept cannot go any further than being an analogy, a conceptual tool to focus policy intervention in promoting some sort of shift of the economy (and the society) from one equilibrium to another, which although having new winners and losers, is ethically preferred.

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[*] *luca@crudeli.info* – *www.crudeli.info*
[1] Although it is true that today such position is dominant within economics, it must be emphasized that economists fancying Social Capital usually prise themselves as heterodox.
[2] As Arrow [2000] and Solow [2000] had done before him, but with different tenure.

"[…] social capital is a conceptual artefact of the First World (and wealthy), transposed to other Worlds (and the poor) on the basis of two closely related but distinct aspects. On the one hand, it is self-help and cooperation raised from the individual to the communal level at some tier or other. On the other hand, it is the rich and powerful speculating on how to improve the lot of the poor through prompting their self-help and organisation without questioning the sources of their economic disadvantage."
[Ben Fine, 2001, pg. 199]

1.0 Dr Jekyll and Mr Hyde

The term SC was originally introduced in sociology. The first scholar that probably used the term in its current sense was Jane Jacobs in 1961. As the concept was, however, not at the core of Jacobs' work, scholars generally acknowledge the French sociologist Pierre Bourdieu for being the father of Social Capital. Bourdieu started referring to SC in the 1970s, but it is only with the diffusion of his 1983 contribution *"Forms of Capital"* that the concept becomes popular in the literature.

Once translated from Sociology the concept has than achieved a long prosperity in the domain of other social sciences, including, political science, anthropology, urban studies and economics, but as popularity is often source of confusion, there has rarely ever been an agreement (even within each scientific domain) about the actual definition of SC, so that a plethora of definitions can be traced in the literature, most of which, however, share common features.

Aim of this paragraph is to spot what has made SC popular by bringing to the fore the positive aura that surrounds the concept. To counterbalance the many positive sides, this paragraph also remarks what are the downsides of the concept. Although, I am doing this on a limited number of reviewed works (obviously not exhaustive), I have carefully taken into account at least the contributions of the major scholars whose names is attached to SC.

1.1 Posology of Social Capital

The almost entirety of the literature on the subject depicts SC as a *resource*, as an all-embracing tool that everybody can benefit from (hence the capital-analogy). SC resides and corresponds to social networks, general trust, ethos, civic engagement, norms, solidarity and reciprocity. Authors commonly accept the idea that more SC means more welfare, more per-capita income, as if SC was the engine of a positive-sum game. Putnam [1993] identifies SC with *civic-mindedness*, Fukuyama [1995] speaks of *general trust*, other authors refer to it as *social engagement*. The term *capital* is used to emphasize both that SC is a resource as people intentionally build trust, relations, or norms for the benefits that they would bring later. This is also to stress that SC of any significance can seldom be acquired without the investment of some material resources.

In such an *all-positive*, *all-embracing* view SC is defined, according to the unit of measure, as either a set of instrumental relations, an organizational structure useful to generation and the future appropriation of new benefits and resources by the community, or as a tool to the realisation of personal goals. In all cases, however, due to the ruling emphasis on methodological individualism, the more SC is present in the economic system the better the economy is meant to work as, by (improper) analogy with the Smithsonian *invisible hand*, the pursuit of personal interest would spill

over the welfare of masses. The goods of the SC element then resides in the term "*capital*", while "*social*" aims to characterise the peculiarities of this new, hidden resource.

Given its collective benefits, unlike many other forms of capital, SC is then often claimed to be an impure "collective good" [Mancinelli, Mazzanti, 2002; Adler, Kwon, 1999]. This to emphasize that its use is non-rivalrous – it does not diminish with the use – but (unlike public goods) is excludable – others can be excluded from a given network of relations. However, the capital-resource-framework is usually pushed so far that the capital analogy often becomes ontology in the literature, raising complaints [Baron, Hannan, 1994, Lindon, Schmid, Siles, 2000] as well as authoritative critiques [Arrow, 2000; Solow, 2000]. To justify this attitude many words have been spent recently to recognize the numerous capital-like features of SC [Lindon, Schmid, Siles, 2000].

The essential properties of physical capital goods are: transformation capacity durability, flexibility, substitutability, decay, reliability, opportunities for (dis)investment, ability to create one capital form from another.

First, SC is recognized to be an investment with expectation for future returns. Secondly, like other forms of capital, SC is claimed to be *appropriable*, in the sense that an actor's network of, say, friendship ties, can be used for other purposes, such as information or advice. By the same token some features of *convertibility* are also traced in SC, as the advantages conferred to one's position in a social network can be converted to economic or other advantages. Third, SC possesses different degrees of *durability*. Durable forms of SC are often associated with family connections that remain unchanged even when repeated service extractions are made. It is also recognised almost in all contributions how SC is subject to *depreciation*, as social bonds have to be periodically renewed and reconfirmed, or else they lose efficacy.

The research for similarities with economic capital in the literature is stressed by the quantity of energy that is spent to identify what are the sources of SC[3]. In order to approximate SC to physical capital researchers have often voided one of its most important resources, the structure of social interactions, of any content. As Fine reports, this approach has evolved mostly from the early network research in sociology, which working towards Simmel's version of a "formalistic sociology", insisted on the idea that the structure generates its own content [Wellman, 1988; pg. 23; Fine, 2001]. The importance of the content of networks ties is then downplayed to celebrate ties themselves. Although the process has been justified as a way to "objectify" SC, the de-contextualisation of network ties involves the abandonment of any analysis about the actual distribution of power within the society, and about the meaning of ties themselves. In this approach, networks are then taken as simply as a privileged channel of communication. They are never seen as an appropriate instrument for political pressure and the control of resources, with an evident loss in the explanatory power of the analysis. In disagreement with this idea, this has been remarked by some researchers [Gabby and Leenders, 1999; as others] who have instead argued that if SC is the resource provided by the network of ties to which an individual belongs, it also depends on the resources made available to the network itself, and not only to the effective and cognitive resources that are shared by the network, such as norms, trust, or beliefs. As we will see further on (when we will discuss rents) a contextualised analysis which takes into account the resources available and the networks channels in which these are employed is essential in order to understand and measure SC, hence the social arena for the distribution of rents.

1.2 The Side-Effects of Social Capital

Even if **Bourdieu** is often pointed as the father of SC why his work doesn't seem to have lasted the passing of years and "fashions" in sociological research? This is an interesting question which

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[3] This is particularly the job of Adler and Kwon [1999], who trace a common theoretical background within which any work on SC should be framed.

can help us to understand what role SC actually plays within the academia and the world of research. The answer, however, requires a walk on the dark side of the SC theory. In this paragraph I will try to point out what are the conceptual weaknesses of SC starting by a quick review of Bourdieu's approach. Following the idea of Fine [2001], I will bring to the fore how the association of *Social* with *Capital* is in reality an oxymoron, and hides a misunderstanding of what *Capital* is first.

One of the theoretical cornerstones of **Bourdieu**'s sociology is the idea of society as a plurality of social fields, each of which can be thought as a social competition arena. Within this framework, Bourdieu identifies different forms of capital, namely economic, cultural and social, which are the core factors defining positions and possibilities of the various actors in any of the fields of social competition. Each social field identified has a profile of its own, depending on the proportionate importance within it of each of the forms of capital. At the same time, the forms of capital controlled by various agents are the different tools used by agents to achieve their goals, and therefore they define what are the chances of winning the stakes in the game. As a consequence, the different forms of capital are embedded into the social arena in which they are found and employed.

As it emerges clearly, the theoretical roots of Bourdieu's conception can be traced in the sociology of conflict and structuralism. First, the idea of economic capital embraced by Bourdieu consists of capital in Marx's sense of the word, an economic possessions that, generally speaking, increase one actor's capacities within the society. By the same token, are cultural capital and SC. The first one as instrument of social distinction and division incorporated in habits, symbols, and cultural institutions, as exams, certificates and diplomas, the second as a resource, connected with *group membership and social networks* [Bourdieu, 1986, pg. 249 as reported by Fine, 2001], that can be mobilized in efforts to improve the social position of the actors in a variety of different ways. In a way that has survived in the later literature, then, [Mancinelli, Mazzanti, 2002; Galassi, 2002] SC is perceived as a resource which is *common, or underline collective*, and that belongs to the group that can activate it to reach specific goals. Voluntary associations, trade unions, political parties, are all modern examples of embodiments of SC as the formation of associations creates a sense of solidarity among masses of persons, providing a "name" and an "identity" to common feelings. These institutions are so important that in Bourdieu, the embodied forms of SC acquire a *symbolic character* and are transformed into "Symbolic Capital", a concept at the acme of the French thinker's approach. The accent on Symbolic Capital emphasizes how the distribution of economic, cultural and Social Capital defines the existence of the diverse social classes, or groups of conflict, and shapes the dynamics of competition. This position is even closer to Marx, as finally, Bourdieu recognizes that all types of capital can be derived from economic capital through varying efforts of transformation [Bourdieu, 1985].

In summary, SC in Bourdieu is a contextualised concept (although he doesn't give too much importance to historical development) that deals with groups and class struggle. Bourdieu's idea is that economic, cultural and SC become meaningful and socially effective only through the process of symbolic translation. Indeed, even if Bourdieu refers sometimes to individuals, the focus of his attention is the class and the group and the dynamics of class and group conflicts within the social arena. Each increase in the endowment of economic, cultural and especially Social Capital by one of the societal groups is indeed done at the expenses of the others. Each dynamic change in the distribution of symbolic capital generates new winners and losers in what is known as a zero-sum game.

As I have pointed out above, despite the richness of his approach, the importance of Bourdieu has diminished with the further development of the literature. Fine recognizes how this might be due to two main reasons which actually share common roots. First, Bourdieu uses the notion of capital only as a metaphor for power, but the result is often the creation of a chaotic concept of capital itself. Even his notion of economic capital lacks depth, precision and rigour [Fine, 2001, pg. 59] as the author seems to understand it exclusively in terms of exchange value (monetary value), but the other forms of (non-economic) capital in terms of use. Secondly, the strong embeddedness

of Bourdieu's theory into the capital analogy lead his approach to a metaphorical slippage into reductionism to the economic. It is in this field that the French sociologist's approach has been more challenged, as it is not based on methodological individualism, neither on rational agents, but on the structural division in classes and groups of the social arena, and therefore far away from the predicaments of mainstream economics.

Once that Bourdieu's contribution and attention to the social embeddedness of capital, has been forgotten the concept of SC that has emerged has more in common with the approach proposed by the American sociologist James **Coleman.** Differently from Bourdieu, Coleman is indeed credited with having secured a place for SC within sociology from late 1980s.

The reason why Coleman has been acknowledged so much relevance is because of his commitments to methodological individualism, approach that has lately become largely popular within social sciences. As, once again is remarked by Fine [2001] this however entails several side effects, the major of which is the institutionalisation of a concept of SC that, in opposition to Bourdieu, is otherwise profoundly asocial and a-historical.

Two are the major reasons why Coleman's work remains acknowledged as the source of the SC literature to follow. First, he was one of the most important contributors in the field of Social Exchange Theory, whose aim is in short, to understand society on the basis of the aggregated behaviour of individuals. Second, being probably influenced by Backer, with whom he had a close working relationship at the University of Chicago [Fine, 2001, pg. 51], Coleman major academic contribution is in establishing a way to derive the social from the individual. In doing this, he shifts the emphasis in social exchange theory entirely towards economics and methodological individualism, despite his understanding of economics is limited to the view of Backer.

Fine [2001, pg. 74] reports:

> "*It is as if his colleague, Gary Backer, in adopting at least initially, an analytical stance of the economy (and society) as it a perfect market is the only economics available*"

Being Backer the economist who extends the scope of the economic approach to the other social sciences, Coleman somehow represents his *Trojan Horse* for the conquest of sociology. Although paradoxically, both authors promote a colonization of the other disciplines by the methodology that economics has adopted in later times, this takes place at the cost of a more limited understanding of the *Social* itself. The widespread use of methodological individualism, indeed, that has diffused in economics, particularly after the field of the debate has been occupied by neo-classical economists, had deprived the science of the understanding of any socially embedded phenomenon. The unit of analysis, indeed, remains a purely abstract rational agent, who is also the constituent element for any form of social group, none of whom is actually characterised specifically. History, traditions, beliefs, gender issues, all remain outside the set of analysis within this approach, if not they are viewed as simply as a source of path dependence.

As a consequence, one inherited from Bourdieu, SC is changed by Coleman in meaning and scope and is reintroduced in the literature, with much wider success as ever before. But what does it mean to re-found SC on top of methodological individualism? Fine [2001] remarks how this approach represents nothing more than a final attempt to bring back in the analysis what was previously taken away, thus the social aspects of *Capital*.

The idea of SC proposed by Coleman and the almost entirety of researchers who work on the subject, is indeed to be framed under what can be identified as the *Post-Washington Consensus*, or the academic position endorsed by Stiglitz, or "*the information-theoretic approach*". SC is seen as a response to market coordination failures, which take place when information is not freely acquirable by agents, or, in other words it is a spontaneous response to market failures. This happens after economics has proceeded by abstracting its models from all social elements, hence daring to the

status of natural science[4] if not almost reneging its nature of Social Science. After economists have confused *Economics* for *Neoclassical Economics*, and with the help of the *Washington Consensus* have identified markets, the arenas for self-interested, anonymous competition, as the benchmark of efficiency.

After having spotted the common feature of all definitions of SC that can be found in the literature, it is now not difficult to understand why SC is always seen as a resource in the literature, as a positive sum win-win game with no side-effects. This because, in the last instance, SC is simply a resource to overcome market-information failures. In other words, with SC, economists are trying to explain what previously they haven't been able to explain through highly formalised models. Social Capital represents a way to bring the social back in, without challenging the mainstream at the cost of underplaying even evident uncomfortable downsides. This happens, for example, when no importance is attached to the unit of measure of SC, to the actual goals and the interests that certain networks, norms, and forms of trust endorse. For instance, many highly organized criminal networks presents all the features that authors like Putnam, Coleman, or Fukuyama identify as SC, but certainly they do not promote economic development neither a common generalised welfare.

2.0 Social Capital, Economic Opportunities and Rents

We have seen how the literature on SC has forgotten its earlier contributions to embrace methodological individualism, following the fashions of the time. I have explained how this has inevitably reduced the explanatory power of SC bringing it back to a market centric paradigm characterised by information failures. Yet, societies are strongly typified by structural divisions and conflicts between different genders, ethnic communities, classes and pressure groups, all of which have strong influence on the overall economic performance and the welfare of every citizen. The analysis of the way the cohesiveness or conflicts of a community can influence the process of development is therefore not without meaning, should this be called *Social Capital* or not. What I have questioned in the first part of this essay is simply the approach that has been followed in studying SC and the change of meaning that this has involved.

A very interesting contribution to the analysis and the explanation of the social mechanisms that might promote or obstacle development has recently been proposed by a small group of researchers that could be defined as *New Political Economists* [Chang, 1994; Kahn, Jomo, 2000]. These are conducing a well refined study on the relationship between the distribution of economic opportunities within the social arena, in the form of *rents*, and the level of development achieved.

For these authors, the *rents* are the "prize" that is behind any economic opportunity, hence they represent the economic incentive for any of the agents' decisions. In this view the word "*rent*" is purified from any negative connotation, as traditionally a rent is perceived as "excess income" which, in simplistic models, should not exist in efficient markets. On the contrary, as pointed out in Khan [2000, pg. 21], we have a rent any time that:

> "*a person […] earns an income higher than the minimum that person would have accepted, the minimum being usually defined as the income in his or her next-best opportunity*".

According to such definition, although rents are still a form of excess income, they are however not necessarily wasteful or inefficient. Despite being "*compatible*" with the most traditional

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[4] See, for instance, the latest works by Professor Hodgson [2002], and the newest strands that aim to apply the fundaments of Universal Darwinism to Economics.

textbook definition of rent, as "the portion of earnings in excess of the minimum amount needed to attract a worker to accept a particular job or a firm to enter a particular industry" [Milgrom, Roberts 1992, pg. 269], this type of rents are indeed nothing more than the extra income that would derive from any economic decision. To support this idea note that "the minimum amount needed to *attract*" suppliers of inputs (such as workers and capitalists) to particular industries should not be confused with the payments which may actually be necessary to induce them to *produce* the good or service. In other words, the existence of a rent has little to do with efficiency in production, but much more to do with social conflicts and social structural division.

Rents as defined above, can be found anywhere in the economy, at any level of economic activity. At the macroeconomic level, for instance, rents are set in place when a government distributes import licenses or when it creates monopolies; at the microeconomic level, they can be found in almost any economic activity, from consumption, (as consumers buy to capture a *quasi-rent* that is known as *consumer surplus*), to production (*producer surplus*), through management practices, (see for instance Crudeli [2001] on *gain-sharing* and *variable wages*), or *efficiency wages* (Lazear, 1998).

2.1 Rents and the agents' behaviour

What exactly is the connection between rents and the behaviour of agents? Khan [2000] has offered a powerful illustration of it by focusing on *rent seeking* as a *process* and by revising the meaning that the literature has traditionally attached to it.

Since the publication of the seminal articles by Krueger [1974] and Posner [1975] the activity of rent-seeking has traditionally been perceived as the source of corruption and one of the major causes for the waste of resources. These articles, in particular, were showing how the cost involved in *seeking* monopoly rents were much larger than the relatively small deadweight welfare losses associated with the monopoly rents themselves. The purpose was obviously to alert policy makers that the social cost of monopolies artificially maintained by the state was much larger than conventional theory had established, since there was an additional rent-seeking cost associated with monopolies. The assumptions at the base of this theories were however very limited, and were living some important issues out of consideration.

First of all, as it is true that the recipients of rents are likely to spend resources to create, maintain, or transfer rents in their favour, but it is also true that the resources they use are not necessarily destroyed when spent, but most likely transferred to some other agents. In other words, the acquisition of rents, and the transfer of property rights and economic opportunities requires the expenditure of resources, as well as the acquisition or creation of any other good or product within the economic system. Secondly, while conventional rent-seeking theory assumes that rent-seeking only results in the creation or protection of *monopoly* rents[5], in the real world rents are not only attached to monopolies, but rather distributed all over the economy. The original conceptual framework proposed by Krueger and Posner therefore doesn't seem to be enough sophisticated to be meaningful.

Moving away from the this pessimistic view, Institutional economics and Political Economy both suggest directions in which the rent-seeking framework could be extended. First, as rents, economic opportunities and property rights are closely related, the rent-seeking process is related to the process of institutional change. Secondly, as attempts to change the structure of rents easily unleash distributive conflicts, Political Economists explain us how political variables and, in particular, the distribution of political power can determine which individuals or groups are likely to win distributive contests. From the two points follows that:

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[5] Making restrictive assumptions about how the rent-seeking cost is determined [see, for instance, Krueger, 1974].

1) <u>It is only in the framework of the analysis of distributive conflicts that the study of SC can be retained significant.</u>

2) <u>To focus the analysis purely on SC is an useless exercise, as the understanding of the general level of trust or the identification of the network of relations that characterise a specific society is meaningless if they presume from the study of the institutional assets and the distribution of political power.</u>

The abandonment of the restrictive assumptions which were originally imposed in the literature, allows us to have a different understanding of the process of *rent-seeking* which is not a cost anymore, but rather the engine of any economic dynamism.

Far away from the market-centric paradigm underlined when treating Coleman, the *New Political Economists* have then much more in common with Bourdieu and Marx, and a lot more to say about SC than the mainstream approach. Their aim is indeed to depict the dialectics of economics not merely as the swinging of a pendulum between market efficiency and information failures, but rather as a nexus of interpersonal and group relations and distributive conflicts with a more general process that could be called *rent-seeking*.

2.2 Rents, social capital and growth

Once I have clarified the connection between the distribution of rents and the behaviour of agents, what remains to be explained is how rents relate to growth and economic development. Kahn's contribution a little more is of great help to this task.

With critical attitude against traditional rent-seeking literature, in his book Kahn [2000] shows that what matters is the *net outcome* of the institutional change generated by the rent-seeking activity and not the rent seeking costs themselves. This outcome, however, is not determined a priori, but it rather calls for detailed and contextualised analysis.

As explained in *figure 1*, in a rent-seeking framework, the effort of agents will, broadly speaking, be devoted to two main activities: The modification of the institutional assets of the economy (*pure rent-seeking*), and *production activities* as generally intended by economists, since, as it is obvious, selling and buying goods is also a way to capture rents[6]. Along this path, part of the rent seeking process will have a strong impact on the institutional assets, as new institutions will be created, either for the advantage of new (emerging) classes or groups, or the defence of old interests, some old ones will be modified, some other completely dismantled. The net outcome of this process, will finally consist of what is produced by the economic system, plus a new, *Asset of Institutions*, which will represents the point of departure for the following round of social confront. It has to be noticed how, on the one hand, total production in the short term strictly depends on the amount of inputs that are not destined to rent-seeking, in accordance with traditional literature. On the other side, however, in the long term, the growth of the economy is determined on the level of political conflicts, and the efficiency of institutional change and arrangements. This because, the higher political conflicts are[7], the higher will be the resources used in the effort of changing the Institutional Asset by those groups who are more disadvantaged. While, the more the Institutional Asset and the distribution of rents advantages unproductive and non-innovative groups or classes, the less technological change and growth will take place.

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[6] The reader can think, for instance, of the producer's surplus and the consumer surplus that the encounter of the curves of demand and offer determine.
[7] Generally, political conflicts are higher, when the economic opportunities of the economic system are scarce and agents need to compete for them fiercely.
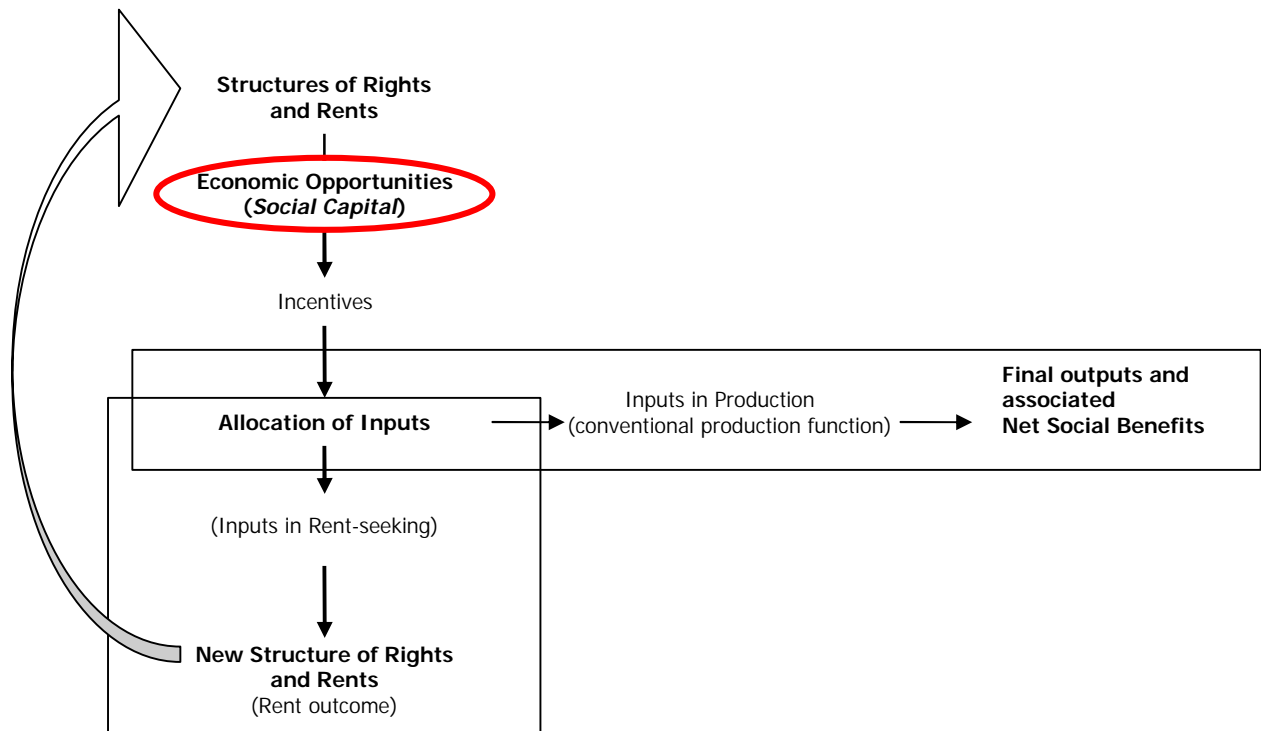
fig. 1 – the distribution of resources in the process of rent-seeking. Source: adaptation from Khan (2000, pg.79)

3.0 Social Capital and Rents: Proposing a Model

In the previous paragraphs I have underlined how the epistemic value that has been given to SC is in reality ambiguous, particularly when framed within the latest tendencies that have manifested in the economic and sociological literature, characterised by the proliferation of methodological individualism. Although the charm that SC exercises on researchers is mostly due to its philanthropic appearance and its camouflage as a valid alternative to rational "economic egoism", I have showed how, in reality, being funded on methodological individualism, it can be considered as the final endeavour to establish the supremacy of markets, whose obstacles to function efficiently are transaction costs and information deficiencies. I have then considered how, in opposition to this approach, some scholars have instead tried to explain the agents' behaviours, the changing of institutions and the meaning of social relations[8] by analysing what are the actual available economic opportunities (or rents) that are distributed in the economic system. In this paragraph, I will try to draw a synthesis of these two different approaches, constructing a microeconomic model which will depart from game theory and will put in relation rents and SC (understood as Fukuyama's *generalised trust*, fundamental element for the development of any social relation). The aim is to show how the latter depends on the former.

3.1 General model framework

In a very stylized fashion, in this model economic activities are considered nothing more than exercises of coordination between agents. What these activities actually are, is irrelevant to our

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[8] Social Capital can certainly be included in these categories.

goals, and the only element we need to consider is what are the actual benefits that they yield. Selling labour is then considered exactly in the same way than buying any product in a supermarket, or as joining a big corporation by buying some of its shares; in the same way, buying is not different than selling as long as it increases one agent's welfare. All possible economic activities are then called *projects* (whose net benefit is indicated by the Greek letter *f*). In order to be realised, each project is postulated to require the cooperation of two and not more than two economic agents. Finally, each economic activity is simplified into a coordination game between two agents who move simultaneously and who are trying to capture the highest payoff out of the game they are playing.

The number of projects that can be found in the economy is assumed to be limited to maximum half the number of agents that operate in the economy, or else, the quantity of economic opportunities could unrealistically exceed the number of agents. As projects yield different net benefits (f_i), they can be ranked from the one that yields the highest (and is therefore the mostly desired), to the one that yields the lowest. In order to produce its best result, a project requires however the *full commitment* of both agents involved, who, as a consequence, should bear the attached opportunity cost of not getting involved in any other project. Similarly to what happens in the real world, however, *agents* (identified by the letter *c*) can be divided into *trustworthy individuals* (which will be a certain quantity *ßc*), who fully commit to one project, and give their best to achieve its maximum potential outcome, and a percentage (1-*ß*) of *opportunists* (*c- ßc*), that, on the contrary, do not commit to a specific project, but try to get involved in as many as they can, to benefit from any outcome that is eventually reached. In order to simplify computations, however, the number of projects that an agent can join in this model is limited to two[9].

Summarizing the hypothesis of the model that have been presented up to now and adding those I have imposed implicitly, we can write:

a) All **agents are** *rational* and *homo economicus*, thus their decisions are purely motivated by the desire to persecute personal interest and fulfil personal needs;

b) All economic activities ("***projects***") require the cooperation of two and not more than two agents;

c) **Agents are** *symmetrical* in their bargaining power and in the contribution they are called to give to the project they chose to undergo. Similarly, the profit that two agents make out of a common project is the same. The agents also move simultaneously;

d) The **number of projects, *p*, is never more than the half of the number of agents** in the economy:

e) To be realised **projects require the involvement of two and not more than two agents**.

f) Projects **can be ordered according to their net <u>potential</u> benefits**, starting from the one that yields the highest benefit, ending with the one that produces the lowest. The index *i* (which, by definition, goes from *0* to *p*), distinguishes one project from the other and indicates the corresponding rank of each project as showed in *figure 2*. Projects with smaller *i*s, will obviously always be preferred to projects with higher *i*s since they will yield higher net benefits;

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[9] The relaxation of this last hypothesis would not, in any case, affect the results, but eventually only strengthen them.

ϕ_h ϕ_k ϕ_y ϕ_j ϕ_x ϕ_s ϕ_t ϕ_d ϕ_z ... ...

ϕ_i = net benefit of project i
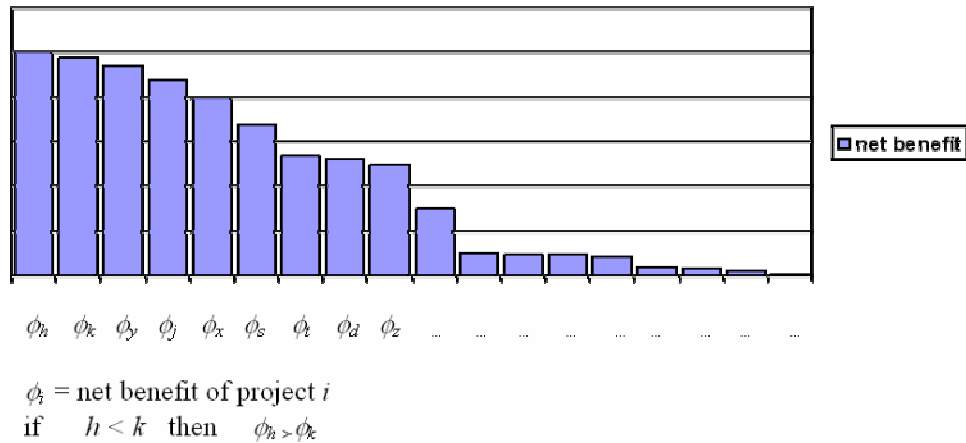
if $h < k$ then $\phi_h > \phi_k$

fig. 2 – the distribution of projects according to their net benefits

g) The agents in the economy can be divided into **trustworthy** and **opportunists**. While the formers commit to only one project, aiming to achieve best results, the letter try to get into as many projects as they can, not committing to anyone;

h) In order for a project to produce its net potential benefits, however, it requires that **both agents involved to be committed.** That is, they have to take part to that project exclusively, or, in other words, they have to be **trustworthy**;

i) **No risk** is attached to the project themselves as the **potential benefit** of each project is known and always obtainable. However, there certainly is **uncertainty** about the **actual benefit** that each project will yield, as agents do not know weather they will be cooperating with a trustworthy or an opportunist partner;

What are the problems and the choices that each agent faces in a similar environment? First he needs to get his hands on the best of the possible projects. Secondly, he must decide to behave as trustworthy or opportunist, knowing that in case he decides to be trustworthy he will only get his hands on one project, while in the second case he can get into two different ones. At the same time each project will yield its potential benefit only if it is undertaken by two trustworthy agents.

3.2 The private and social costs of *opportunism*

But what happens if one or even both of the agent are not trustworthy? And what are the costs of being an opportunist? If one enters into a partnership but is not fully committed, the project will not yield the maximum *potential benefit*, but rather just some of it, or af_i, where a is a technical parameter that goes from 0 to 1, and that aims to represent the importance of cooperation. The more a is close to 1 the less the project's payoff depends on the agents' effective cooperation, the more it is close to 0 the more cooperation is on the contrary a relevant factor.

Being an opportunist therefore implies some private costs, and more specifically the reduction of the actual benefit of a project from f_i to af_i. Generally speaking, we could think that in an economy where people are basically trustworthy, if only one agent is defecting the consequences of this on the whole economy will not be as relevant as if everyone was defecting. In other words, in an economy where most of the people are doing their job, it is easier to *free ride*, and to benefit from a generalized good level of welfare. As economic activities are not independent from one another, however, it makes sense to also think of a **social cost of opportunism**. This can be done by relating the value of a to the number of *opportunists* that operate in the economy. That is, the bigger is the number of opportunists, the higher will be the social cost of opportunism, or the

smaller the value of **a**. In order to express this in our model, we can think of **a** as a function of *ß* in the following way.

$$\boldsymbol{a} = \beta^x \qquad (1)$$

What is left undetermined in equation (1) is simply the *elasticity* that the consequences of opportunism have on the general performance of the economy, *x*. As this parameter will in most cases be endogenous and determined by technological factors we can distinguish the following cases:

- When $x = 0$ **a** is always equal to 1. This implies that cooperation is not at all a relevant factor and opportunism has no consequences at the private level, nor at the social level;
- When $0 < x < 1$ the consequences of opportunism on overall performances are less than directly proportional to the number of opportunist agents in the economy;
- When $x = 1$ the consequences of opportunism on overall performances are directly proportional to the number of opportunists in the economy;
- When $x > 1$ the consequences of opportunism on overall performances are more than directly proportional to the number of opportunists in the economy;

The technological parameter *x* therefore endorses the stringency of cooperation due to the technology developed in the economy, while the quantity of trustworthy (or non-opportunist) agents *ß* determines how relevant the private costs of opportunism are. But, as defined above, the alpha parameter also acquires another relevant meaning, that is, it connects Social Capital and cooperation to economic growth, as defection and opportunism have consequences on the whole economic performance.

3.3 The game structure

The problem of getting a place in a project and of choosing between being opportunist or trustworthy throws the basis for a coordination game, which needs to be examined. Following from the definitions above, each project can yield one of these possible benefits:

Combination of Agents		Benefit of Project
Trustworthy	Trustworthy	f_i
Opportunist	Trustworthy	$a f_i$
Opportunist	Opportunist	$a^2 f_i$

tab. 1 – combinations of agents and possible benefits

Where $\boldsymbol{a} = \beta^x$ and *x* is a technologically determined parameter.

We know that exactly in the moment in which an agent enters a project, he is called to decide if he is *trustworthy* or *opportunist*. We know also that, as postulated at point c), agents have the same bargaining power and move simultaneously, although they do not know if their partner is going to be trustworthy or opportunist. All the possible solutions to this problem can than be traced down in a game-type diagram as the one that follows.

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		Trustworthy (cooperate)	Opportunist (defect)
Agent 1	**Trustworthy (cooperate)**	f_i ; f_i	af_i ; af_i + *the opportunity to enter another project*
	Opportunist (defect)	af_i + *the opportunity to enter another project;* af_i ;	a^2f_i + *the opportunity to enter another project;* a^2f_i + *the opportunity to enter another project*

tab. 2 – the game

As announced, the role played by **a** in this game is extremely relevant. If we take a value of **a** equal to 1 (*x=0*), for instance, the payoff of defecting will in any case be higher than that of cooperating, and the Nash equilibrium given by defect-defect will also represent the Pareto efficient solution of the game. If the value of *x* is more than 0, however, the pay-offs of the game are not explicit enough to allow us to identify any Pareto optima and Nash equilibria. In order to do this we now need to narrow down our attention to the analysis of benefits yielded by the projects.

3.4 Potential benefits and expected benefits

First thing we now need to distinguish better between actual benefits and potential benefits as they obviously do not coincide, and agents are more interested with what they expect to earn rather than with what they could potentially earn. Since bigger projects will be the first ones to be taken, we have no fear of being mistaken if we say that the probability to get bigger projects is smaller than the probability of getting smaller ones. However, being the number of agents in the economy at least the double than the number of projects available (as hypnotized in point d), even to get into the very last of the projects involves a certain competition.

But the number of projects and the number of agents aren't enough to determine the probability of getting a project, as the quantity of opportunists is also relevant. This because opportunists do not commit to one project, but they enter in as many as they can (in our case two), in the hope to get a bit of profit from each of them. Hence, the bigger the number of opportunists is, the more the competition for each project, but particularly for the best ones, will be tough according to the following rule:

$$\text{Probability to get into project } i = P_i = \frac{2}{(2 - \boldsymbol{b})c - 2(i-1)} \qquad (2)$$

P_i = probability of getting project i
β = percentage of trustworthy agents
c = total number of agents (competitors)

In the same way, the probability of not getting into the project i will be 1-P_i, hence

$$\text{Probability not to get into project } i = (1 - P_i) = \frac{(2 - \boldsymbol{b})c - 2i}{(2 - \boldsymbol{b})c - 2(i-1)} \qquad (3)$$

Once these two key probabilities are determined, it is not difficult to compute the expected benefits of being an opportunist, which will be given by the sum of the probability to get into the first best project and the expected benefit of the opportunity to enter *another project*. In other words, when competing for project number *x*, the structure of probabilities will more or less be like the following.

$$P_{x+1}[\beta\alpha\phi_{x+1}+(1-\beta)\alpha^2\phi_{x+1}]+(1-P_{x+1})\,P_{x+2}[\beta\alpha\phi_{x+2}+(1-\beta)\alpha^2\phi_{x+2}]+(1-P_{x+1})(1-P_{x+2})P_{x+3}[\beta\alpha\phi_{x+3}+(1-\beta)\alpha^2\phi_{x+3}]\cdots\cdots \quad (4)$$

Which, can be written in a more compact form as follows.

$$P_{i+1}[\boldsymbol{ab f}_{i+1}+(1-\boldsymbol{b})\boldsymbol{a}^2\boldsymbol{f}_{i+1}]+\sum_{y=i+2}^{I}[P_y(\boldsymbol{ab f}_y+(1-\boldsymbol{b})\boldsymbol{a}^2\boldsymbol{f}_y)]\prod_{k=i+1}^{y}(1-P_k) \quad (5)$$

with

P_i = probability of getting project *i*
ß = percentage of trustworthy agents
c = total number of agents (competitors)
a = technological discount factor (importance of cooperation)

The value of expression (5) will finally depend on the *potential values* of the projects $\boldsymbol{f}_i$, $\boldsymbol{f}_{i+1}$, $\boldsymbol{f}_{i+2}$, $\boldsymbol{f}_{i+3}$, so on and so forth. Hence, still little can be said yet about the game in *table 2*. In order to make those equations more readable, in fact, we need to impose some further assumptions, which, although quite restrictive, will take us closer to considering rents as we have defined them in *paragraph 2.0*.

3.5 When Rents brake-in

I have defined a rent following Khan's [2000, pg. 21] as:

> "*a person […] earns an income higher than the minimum that person would have accepted, the minimum being usually defined as the income in his or her next-best opportunity*".

I have then stated that rents are the main focus of the paper, as what needs to be explored is the relationship between the actual existence of SC and the distribution of rents within a given economy, but there is yet no trace of rents in the model proposed here. It is then time to be more serious and introduce rents.

According to the definition above, a rent is nothing more than the difference between the net benefit of a project, say $\boldsymbol{f}_x$, and the net benefit of the next best one, say $\boldsymbol{f}_{x+1}$.

$$\boldsymbol{f}_x - \boldsymbol{f}_{x+1} = d_x \quad (6)$$

If we then suppose that
    j) **The rents in the economy are all the same**;

thus that

$$f_{x+2} - f_{x+1} = f_{x+1} - f_x = d \qquad (7)$$

We can then <u>take the best project as reference</u> and write all other as a function of it in the following way:

$$f_2 = f_1 + df_1; f_3 = f_2 + df_2; f_4 = f_3 + df_3..... = f_i = (1-d)^{i-1} f_1 \quad (8)$$

Which would allow us to obtain a better grasp of the game proposed in *table 2*, by substituting each project value with its correspondent value as expressed in equation (8).

Agent 2

		Trustworthy (cooperate)	Opportunist (defect)
Agent 1	**Trustworthy (cooperate)**	*North-West cell*	*North-East cell*
	Opportunist (defect)	*South-West cell*	*South-East cell*

tab. 3 – the game re-proposed

Pay-offs in North-West cell
Agent 1 $= P_i(1-d)^{i-1} f_1$
Agent 2 $= P_i(1-d)^{i-1} f_1$

Pay-offs in North-East cell
Agent 1 $= P_i a(1-d)^{i-1} f_1$
Agent 2 $= P_i a(1-d)^{i-1} f_1 + P_{i+1}[ab(1-d)^i + (1-b)a^2(1-d)^i f_1] + \sum_{y=i+2}^{I} P_y (ab(1-d)^{y-i} + (1-b)a^2(1-d)^{y-i}] \prod_{k=i+1}^{y}(1-P_k)$

Pay-offs in South-West cell

Agent 1 $= P_i a(1-d)^{i-1} f_1 + P_{i+1}[ab(1-d)^i + (1-b)a^2(1-d)^i f_1] + \sum_{y=i+2}^{I} P_y (ab(1-d)^{y-i} + (1-b)a^2(1-d)^{y-i}] \prod_{k=i+1}^{y}(1-P_k)$
Agent 2 $= P_i a(1-d)^{i-1} f_1$

Pay-offs in South-East cell

Agent 1 $= P_i a^2(1-d)^{i-1} f_1 + P_{i+1}[ab(1-d)^i + (1-b)a^2(1-d)^i f_1] + \sum_{y=i+2}^{I} P_y (ab(1-d)^{y-i} + (1-b)a^2(1-d)^{y-i}] \prod_{k=i+1}^{y}(1-P_k)$

Agent 2 $= P_i a^2(1-d)^{i-1} f_1 + P_{i+1}[ab(1-d)^i + (1-b)a^2(1-d)^i f_1] + \sum_{y=i+2}^{I} P_y (ab(1-d)^{y-i} + (1-b)a^2(1-d)^{y-i}] \prod_{k=i+1}^{y}(1-P_k)$

3.6 A Prisoner's dilemma?

The game in *table 3* is the key to understand what relationship occurs between rents and the number of trustworthy individuals, thus the level of Social Capital of the economy. The chart must finally be analysed in order to understand what are the Pareto optima, if there is any Nash equilibrium, and if the two coincide somehow. What we can take for granted by now is that:

a) NW1 > NE1	same as	1) NW2 > SW2
b) SW1 > SE1	same as	2) NE2 > SE2

What we need to understand yet is each of the following conditions:

c) SW1 $\lesseqgtr$ NW1	as	3) NE2 $\lesseqgtr$ NW2 ?
d) SE1 $\lesseqgtr$ NE1	as	4) SE2 $\lesseqgtr$ SW2 ?
e) SE1 $\lesseqgtr$ NW1	as	5) SE2 $\lesseqgtr$ NW2 ?

The study of the three symmetrical conditions c), 3); d), 4); e), 5); will allow us to understand the dynamics of the game in table 3 and will show when there is a real need to foster the development of generalised trust and Social Capital within the economic system. In other words, the game will show us with what distribution of Rents Social Capital (intended as Generalised Level of trust upon which institutions can be built) is a necessary input, or a meaningful concept.

The definition of Social Capital as the quantity of *trust*, or the easiness of cooperation that is typical of any given society is in line with most of the economics literature on SC. However, while normally the assumption is that the *minimal probability of cooperation* between agents (or the *propensity to cooperate*), is an independent factor of production, in this model I explore how it could theoretically be related to the payoffs of each "single game" (each single economic transaction) which is played within the economy. In this view the level of SC therefore depends on the number and the size of the economic opportunities that each agent can dispose of. While from the point of view of each single agent the minimal probability of cooperation is exogenously given, from the point of view of economy as a whole, it is determined endogenously by the sum of each single behaviour into a collective variable that in our model is *ß*, the proportion of trustworthy agents. We can then have a good understanding of Rents and SC by analysing the relation between *d* and *ß*.

3.7 Social Capital and Rents

If we fill in the three conditions expressed at points c), d), e) and their respective speculars, with the pay-offs of *table 3* and the new value for the alpha parameter, we can finally establish a relation between *d* and *ß*, hence between rents and Social Capital. Saving the reader from the effort of going through heavy notation, once simplified and added with the exponential ? to eventually capture risk-aversion, the three conditions become:

Condition c) ; 3)

$$\frac{1-\beta^x}{2(\beta^{x+1}+\beta^{2x}-\beta^{2x+1})} = \frac{1-\delta}{((2-\beta)c-2i)^\gamma} + \sum_{y=i+2}^{p} \frac{(1-\delta)^{(y-i)}}{((2-\beta)c-2(y-1))^\gamma} \prod_{k=i+1}^{y-1} \left(\frac{(2-\beta)c-2k}{(2-\beta)c-2(k-1)}\right)^\gamma \tag{9}$$

Condition d) ; 4)

$$\frac{\beta^x - \beta^{2x}}{2\,(\beta^{x+1} + \beta^{2x} + \beta^{x+2})} = \frac{1-\delta}{((2-\beta)\,c - 2\,i)^\gamma} + \sum_{y=i+2}^{p} \frac{(1-\delta)^{(y-i)}}{((2-\beta)\,c - 2\,(y-1))^\gamma} \prod_{k=i+1}^{y-1} \left(\frac{(2-\beta)\,c - 2\,k}{(2-\beta)\,c - 2\,(k-1)} \right)^\gamma$$

(10)

Condition d) ; 4)

$$\frac{1 - \beta^{2x}}{2\,(\beta^{x+1} + \beta^{2x} - \beta^{2x+1})} = \frac{1-\delta}{((2-\beta)\,c - 2\,i)^\gamma} + \sum_{y=i+2}^{p} \frac{(1-\delta)^{(y-i)}}{((2-\beta)\,c - 2\,(y-1))^\gamma} \prod_{k=i+1}^{y-1} \left(\frac{(2-\beta)\,c - 2\,k}{(2-\beta)\,c - 2\,(k-1)} \right)^\gamma$$

(11)

Where the parameters are:

β = percentage of trustworthy agents
c = total number of agents (competitors in the economy)
p = total number of projects
x = impact of opportunism on the economy
$?$ = risk aversion
i = project on which agents compete

Let's now take a simplified case, in which a simple configuration of the parameters is chosen. Let's suppose, for instance, that the number of agents (or competitors) is 10 ($c = 10$), the number of projects is the maximum possible ($p = 5$), and no project as been assigned yet, so that agents are still competing on project 1 ($x = 1$), they are neutral to risk ($i = 1$) and the technology is such that the price of opportunism has directly proportional consequences on the whole economy ($? = 1$). With these parameters, equation (9), (10) and (11) will determine four areas graph as in *Graph 1*.

Graph 1 β
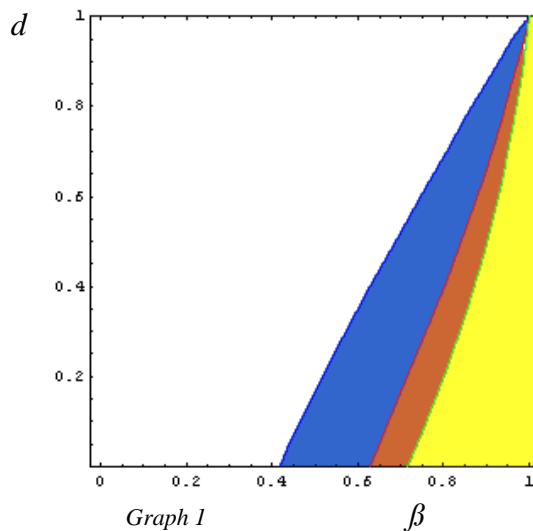
The three areas define three different environments in which an agent could compete for a project.

Case 1)

In the white area the following conditions are verified:

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c) SW1 < NW1	and	3) NE2 < NW2
d) SE1 < NE1	and	4) SE2 < SW2
e) SE1 < NW1	and	5) SE2 < NW2

These imply that, when rents are high and trustworthy agents are few, the cooperate-cooperate solution is both Nash equilibrium and Pareto optimal. No other Nash equilibria exist in this case. This result is in part surprising, as it seems to state that, when the probability of meeting a trustworthy agent is low (β is low), the agents have a certain convenience in cooperating more. The reasons for this are, however, not so obscure, when we bear in mind that only up a certain number of opportunists are sustainable in our model economy, due to the way the parameter α has been specified and constructed. Having assumes $x = 1$, indeed, when the number of opportunists grows, the costs paid at the social level become unbearable.

Case 2)

In the blue area, the following conditions are realised:

c) SW1 < NW1	and	3) NE2 < NW2
d) SE1 > NE1	and	4) SE2 > SW2
e) SE1 < NW1	and	5) SE2 < NW2

In this case the Nash equilibria are two, the *cooperate – cooperate* and *defect – defect* cells, although the only Pareto optimum is the NW cell. As the economy could find itself in the SE cell, it is advisable to promote trust to achieve cooperation. **In these conditions it make sense to talk about Social Capital**, since initially, one of the agents must give up some potential extra income, under the promise and the expectation to get higher incomes in the future.

Case 3)

In the red area, the following conditions are verified:

c) SW1 > NW1	and	3) NE2 > NW2
d) SE1 > NE1	and	4) SE2 > SW2
e) SE1 < NW1	and	5) SE2 < NW2

This distribution of pay-offs characterises the typical *prisoner's dilemma game*, where both a Nash equilibrium and a Pareto optimum exist, but they do not coincide. As it is self-understandable this case **requires a certain level of Social Capital** too in order to guarantee cooperation, even if the problem is not as stringent as it is in case 2).

Case 4)

Finally, the yellow area, realises these conditions:

c) SW1 > NW1	and	3) NE2 > NW2
d) SE1 > NE1	and	4) SE2 > SW2
e) SE1 > NW1	and	5) SE2 > NW2

In this case cooperation is not longer profitable as it brings lower pay-offs. It is in cases like this that to force the creation of Social Capital and generalised trust, is irrational and not economically relevant. This last consideration together with the first three leads us to some preliminary conclusions.

4.0 Preliminary conclusions

In the first part of the paper, I have analysed how the term Social Capital has been used widely in the literature, particularly in studying developing economies. Following Fine (2001) I have showed how the concept in reality has been misunderstood, since any form of capital is social by definition. I have then showed how, from this perspective, SC is often been used has a sort of Trojan Horse to spread *methodological individualism* among social sciences, and to sustain the political agenda of the Post-Washington Consensus. Later on, I have approached SC from an individualist point of view myself, and I have showed how, whenever we take rents into consideration the idea of SC as commonly understood and proposed by Institutions as the World Bank shows is limits.

First of all, Social Capital has no meaning if it is not considered in relation to a specific economic transition. Each economic transition, however, occurs in a specific context, characterised by interpersonal relations, and a nexus of incentives and economic opportunities. Once we have analysed and understood the economic environment, the SC definition which emerges is intuitively linked to that of a core equilibrium (eventually) sustained by a structure of incentives. The issue at stake when treating SC is therefore always to analyse such structure of incentives, examining the role of benefit and cost variables, in order to be able to have a clear understanding on the failures and success of voluntary cooperation and the eventual accumulation of SC. No SC however exists if it is not referred to some rents that agents can capture through cooperation.

Secondly, from *Graph 1* it appears that the promotion of SC in developing countries is a less meaningful exercise than in developed countries, if not completely useless. This because, since developing countries have a more unequal distribution or income, they certainly fall in the top part of the graph, where SC is not an issue at stake. According to our model, in these countries cooperation should indeed be more stringent and need less incentives to develop. This is easily understandable if we think that in most cases the difference between a first and a second best opportunity for someone living in a poor country is the same as the difference between eating and starving. If people in poor countries would eat more when cooperating and trusting each other, they would certainly do so. The reason why they still remain poorer, instead seems to be due more to a lack of rents and economic opportunities rather than generalised trust. Obviously, such a strong result is partly the produce of the stringent assumptions we have made throughout the paper, nevertheless, it certainly offers interesting insights on the importance of incentives and the little meaning that has the development of trust and SC per se. These would also call for a revision of the policy agenda by the Bretton Woods Institutions.

A third, relevant result also emerges from the model, that is how the promotion of SC is a meaningful strategy only in very limited instances, and in any case it cannot go beyond a certain point. The yellow area of the graph, indeed, brings to the fore the problem of "sustainability of SC", also felt by authors like Galassi [2002]. As the understanding of SC cannot presume from the context in which it is studied, it is right from this context that some measure of the sustainability of SC can be drawn, given the distribution of rents. Once again, the importance of contextualised analysis is stressed out.

A final point that emerges clearly from the analysis is that the more SC is developed within the economy, the more the costs of its maintenance will be high, since more profitable chances for free

riding will be created. This means that if and whenever investments on SC are justified and requested these are characterised by increasing marginal costs, and decreasing marginal returns, as the more trustworthy persons will be operating in the society the more profitable it will be to behave opportunistically.

5.0 One step further

The richness in parameters and possibilities to fine tune the model presented here, is an irresistible invitation to get deeper in the analysis of SC. The most interesting points that need to be explored are the following;

a)   how is SC influenced by changes in technology that effect the importance of cooperation (changes in x)?
b)   how is SC influenced by higher levels of competition (scarcity of projects and abundance of agents)?
c)   how is SC influenced by higher/lower levels of risk-aversion ($?$)?
d)   what are the different levels of SC needed when competing for the first available project (f_1) vs. the last project (f_p)?
e)   what would be the actual dynamics of behaviour of individuals, in response to a certain distribution of rents?

This last point in particular would deserve careful attention, and would eventually require the analysis of experimental evidence, which would test for "*replicator*" dynamics of adjustment, for multiple equilibria and how stringent is the dependence of β on d.

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