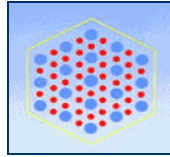


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SHEDDING LIGHT ON SOCIAL CAPITAL DISPARITIES IN EU-25

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Abstract:

The main objective of the paper is to shed light on the disparities of “self-reported” measures of social capital in Europe. Relying on data from the European Social Survey, we aim at identifying the determinants of trust, one of the primitives of social capital. Departing from Coleman (1990), but also from the recent works of Alesina and La Ferrara (2000,2002), we provide an alternative explanation of cross-country disparities and temporal trends in self-reported measures of trust. We carry out a microeconomic analysis of the trust game and, starting from our results, we test the hypothesis that the general level of trust might be affected by income inequality. We find that the results obtained at a micro level also hold at a macroeconomic level and in particular, that countries that have a more equal socio-economic structure also rank high in the average level of self-reported trust.

Keywords: Social Capital, Trust, Civic Co-operation

JEL Classification: C91; C92; D0; R0; Z13. **Conference Sections:** D2-D3;
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SHEDDING LIGHT ON EU-25 SOCIAL CAPITAL DISPARITIES

INTRODUCTION

In the last three decades an increasing attention has been devoted to social capital. This appealing but still controversial concept was first mentioned by Loury (1977) to describe non-economic resources that are useful for the cognitive and social development of a child or a young person. Other social scientists, such as Bourdieu (1980) and Coleman (1990), have enriched the definition of social capital and have described its potential impact beyond the private sphere of the individual. In the domain of political science, Putnam (1993) has carried out the first empirical analysis on social capital, drawing on Italian cross-regional data and showing that disparities in the stock of social capital may explain the relative effectiveness of regional administrations. After the seminal works of Coleman (1990), Putnam (1993, 2000) and Fukuyama (1995), other scholars have carried out in-depth empirical analysis on the primitives of Social capital.

La Porta *et al.* (1997) and Knack and Keefer (1997), relying on survey measures of social capital, have treated it on a par with more tangible factors, namely physical and human capital, to explain disparities in GDP growth across countries. Their contributions have claimed to prove the thesis earlier put forward by Fukuyama (1995), and questioned by Solow (1996), namely that trust, one of the primitives of Social capital, may be a predictor of economic success. These applications represent the first ambitious attempts to account for the economic impact of social capital. This bulk of contributions have come to be known as the “regressionist approach” (Schuller T., Baron S. and Field, J., 2000) and have spurred an interesting debate on the adopted methodology (Durlauf, 2002, Glaeser *et al.*, 2002) as well as on the reliability of the indicators used to measure the various elements of social capital (Woolcock and Narayan, 2000).

From a review of the literature, both the theoretical work and the empirical studies, it appears evident that elements of social capital such as trust and social networks, to the extent to which they help resolve dilemmas of collective action, constitute additional factors of economic growth. This is a position agreed upon even by the most authoritative and severe detractors of this strand of research, as Durlauf and Fafchamps (2004). However, one of the main critiques of the recent boomlet of research in social capital is that its advocates did not manage to spell out the causal mechanisms leading to greater efficiency (see, among others, the works of Portes and Landolt, (1996), Woolcock and Narayan, (2000), Durlauf (2002)). Still, once we agree that social participation has a beneficial role in overcoming information barriers, limiting free-riding through the building up of positive reciprocity, it should be acknowledged that research on social capital has provided insightful results, as a number of papers have indeed tried to shed light on the determinants of participation. Alesina and La Ferrara (2000), for example, have shown that participation is higher in income, racial and ethnic homogeneous communities.

In this paper we follow an analogous approach but we focus on another aspect of social capital, trust. We begin from a microeconomic analysis of the trust game and we show that reciprocity and trust seem to be inversely related to the inequality of initial endowments. This

finding, projected at a macro level, might suggest that an increase in economic inequality might have a negative impact on the generalised level of trust. If this is true, then we might have identified the starting point of a complementary theory to the “past-dependency” idea. In other words, the view that “history matters” in social capital formation can apparently explain cross-country differences in the level of generalised trust, associational life and civism. However, the same theory does not bear any explicative power in the recent profound decline in social capital witnessed in the US. On the contrary, it might be that the growing income inequality brought about by the progressive adoption of liberal fiscal policies, the unequal access to resources and the polarisation of society might have had a detrimental effect on the general level of trust. We test this hypothesis using a newly released socio-demographic survey, the European Social Survey.

In section I we define social capital and its components. In section II we develop, from the analysis of the extensive form of the trust game, our idea that “inequality matters”. Section III tests this idea for a sample of European countries. Section IV concludes.

I. SOCIAL CAPITAL AND ITS PRIMITIVES

1.1 Social Capital: just pure hype?

It would not be an exaggeration to say that the interest on Social Capital would not have bubbled so rapidly had economics not persistently overlooked the impact of society and norms on the individual rational behaviour. In recent years it seems as though economics were trying to atone for Adam (Smith)’s sin, and to correct for the excessive importance attributed to *moral* [individual] *sentiments* in the determination of the *natural order*. In the last few decades, economics has gradually freed itself from the lure of elegant simplified models of the world and has taken advantage of sharper analytical tools to aim at a holistic representation of the society. It is a wonderful news that the words once pronounced by Margaret Thatcher, “There is not such a thing as society”, though they have never mirrored the reality, now no longer represent even the simplified world described by the economic science.

Is this rapidly growing interest in social capital all good news or it is rather true that “all that glitters is not gold”? Notwithstanding the noteworthy attempts to adopt a more representative model of the society, the strand of research focussing on social capital has been severely criticised. Its detractors argue, in fact, that there is no agreed definition of social capital and that “[social capital] has come to mean all things to everyone”, that there are concerns for rigorous measurement and, last but not the least, that there serious problems of circularity.

As to the first critique, it is true that social capital is a relatively unshaped concept but this is typical of any term at an early stage of conceptual development. Moreover, although social capital has been defined in many different ways, a number of observers notice a gradual convergence towards a commonly agreed definition. This relative definitional diversity is one of the sources of the heterogeneity characterising social capital measurements. Also, an important issue is to gauge to what extent the variables used to measure social capital indeed do so. As to this point, we can notice that increasing care is being paid in choosing the variables used to describe social capital and that more and more often the tools of experimental economics are used to check self-reported measures of “otherregardiness”. Finally, what seems by far to be the most important criticism is the one related to circularity. A number of scholars have in fact cast doubts on the extent to which social capital can be coherently operationalised, as social capital is being used to represent both the characteristic of a successful society and the instrumental factor for the attainment of such a success. This is

no doubt a pertinent criticism but it relates more to the approach used than to the peculiarities of social capital. In particular, this criticism is primarily addressed to the work of R. Putnam (1993, 2000) who, say his detractors, is unable to spell out the causal mechanisms leading from the social norms constituting social capital to the observed behavioural patterns.

In our work, we will endeavour to bear in mind this critique and, only after rigorous microeconomic analysis, we will carry out a statistical study of the determinants of trust, one of the primitives of social capital. Before getting that far, however, we will first define social capital and provide a brief account of its components.

1.2 Networks

As a starting point of our analysis, we prefer adopting a simple definition of social capital. We will refer to it as “the networks and social values that facilitate collective action”. Furthermore, among the social values facilitating collective action, we will pay special attention to trust. In this way, we can focus on the key components of social capital, networks and trust, which represent the elements that are less awkwardly quantifiable and that have already been the object of a number of studies.

The concept of *network* is at the core of social capital as it incorporates the idea that the equilibrium is not reached as a sum of independent actions made by isolated individuals. Rather, the centrality of networks in the concept of social capital subsumes the fact that actions are taken in a system of interdependent relations. If we adopt this standpoint, we need to complement the traditional rational choice theory, based on individual data, with a more complex socio-economic analysis grounded on relational data. The importance of networks and associational life has already been debated in a number of theoretical and empirical works. These studies have both tried to shed light on the determinants of participation and have contributed to spell out the way in which associational life leads to economic growth. However interesting these studies are, their review goes beyond the aim of this work. Instead, we will proceed providing a concise description of trust and its relevance for social capital.

1.3 Trust

More than 30 years ago Arrow (1972) wrote that “virtually every commercial transaction has within itself an element of trust”. These words probably represent the most concise and clear claim in favour of the need to introduce *trust* in economic analysis. Ever since there have been number of contributions explicitly considering trust as one of the explanatory variables of economic growth.

The work of Francis Fukuyama (1995) corroborated the idea that trust, having such a pervasive importance for the formation of the socio-economic order, can no longer be overlooked by the economic science. Lately, several scholars tried to test this thesis, as some theorists disputed the validity of Fukuyama’s claims (Solow, 1996). Knack and Keefer (1997) showed that, controlling for the main socio-economic factors, trust has a significant statistical effect on economic growth. Nonetheless, the debate is still open as doubts are cast on the representativeness of the measures used to describe trust and on the relation of causality linking trust to economic growth.

As a matter of fact, most of the empirical applications concerning trust rely on survey questions, from the General Social Survey (GSS) or the World Value Survey (WVS). The question used to obtain self-reported measures of trust is: “Generally speaking, would you say that *most people* can be trusted or that you can’t be too careful in dealing with people?”. Many scholars underline the need to validate survey measures with economic experiments. In fact, as it is clearly explained by Carpenter (2000), self-reported responses to survey questions are often biased. In particular, attitudinal measures may be affected by the “hypothetical bias”, by the “idealised persona bias” and by a “lack of incentive compatibility”. These three different types of biases are indeed linked to the very same feature characterising surveys, namely the fact that respondents may be inclined to misperceive the abstract situation described by the interviewer and answer accordingly. Hence, the focus has switched from *self-reported* measures of trust and co-operative behaviour to *behavioural* measures. This is done via the design of games, reminiscent of real-life situations, which are not affected by the above sources of bias and therefore allow validating survey results and singling out possible determinants of the behaviour at stake.

In the next section, we will consider one of the games used to measure trust and trustworthiness, as well as their determinants. Then, we will provide a microeconomic analysis of such a game. We find that reciprocity and trust are inversely related to inequality of initial endowments. In section III we will finally test whether this finding also holds at a macro level.

II. THE TRUST GAME AND THE IMPACT OF INEQUALITY

2.1 Micro and macro determinants of trust

Putnam (2000, 2001) has noted that, in the United States, the average percentage of people replying positively to the General Social Survey “trust question” has halved between 1960 and 1995. Of course, the “past-dependency” theory¹ put forward by Putnam, and shared by other scholars (among others, see the work of J-P. Platteau, 2000), cannot explain this decline.

Hence, we can envisage analysing the impact of other factors, both individual and group-based, on the general level of trust. For example, we might test the hypothesis that an increase in income inequality, race and/or ethnic heterogeneity – which Alesina and La Ferrara (2000) already proved to have a detrimental effect on participation - could also account for the decrease in the general level of self-reported trust.

Widening our viewpoint, globalisation forces could also be thought to bring about changes capable of affecting the general level of trust. In principle, globalisation occurs alongside greater specialisation and this, in turn, is associated with a growth in the number of transactions between strangers or, which is the same, with a lower frequency of interaction with the same transactor. Mainstream economics and rational choice theory would predict that, in an infinitely long horizon, this would diminish the incentive to co-operate.

¹ According to this view, which constitutes the pessimistic conclusion of Putnam’s “Making Democracy Work” (1993), the amount of Social Capital “owned” by each region would only be determined by the local cultural and policy traditions. As a result of this position, just because “history matters” so much, regions that lag behind in Social Capital formation have little hope to catch up.

Besides empirical studies, there is a growing literature interpreting behavioural responses elicited in economic experiments and shedding light on some of the primitives of social capital (Berg *et al.*, 1995, Glaeser *et al.*, 2000, Fershtman and Gneezy, 2001, Bouckaert and Dhane, 2002, Buchan *et al.*, 2004, etc). The great majority of these studies, however, implicitly adopt Granovetter's idea, according to which "[individual transactors] are less interested in *general* reputations than in whether a particular other may be expected to deal honestly with *them* – mainly a function of whether they or their own contacts have had satisfactory past dealings with the other" (Granovetter, 1985).

We argue, on the contrary, that it would still seem plausible to investigate on the impact of general reputation.² Of course, this claim should be rigorously proved but it is undeniably true that the results of the trust game do not markedly differ according to whether the experiment is carried out in a double blind or with no insurance of anonymity. In addition, the work of Alesina *et al.* (1999), though related to an empirical study conducted at a local level, shows that the share of public spending on productive public goods (education, roads, sewers, etc.) is inversely related to the region's degree of ethnic fragmentation, even controlling for other socio-economic and demographic determinants. Hence, we can conclude that there is a rationale for the study of the impact of **non-individual factors**, such as income inequality, racial or ethnic heterogeneity, on trust and social capital. In the analysis that follows, we will develop the theoretical basis for the study of the impact of income inequality on trust.

2.2 The trust game

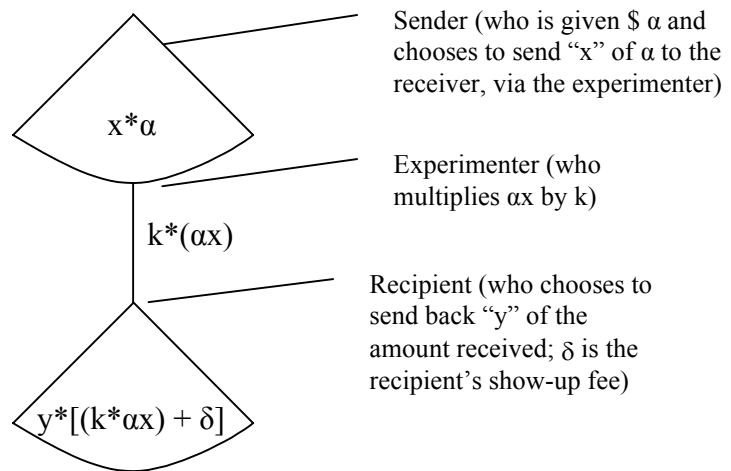
In this paper, we deal with a particular type of experimental game, the trust game. Berg *et al.* (1995) designed this game with the aim of studying trust and reciprocity in an investment setting. In the last ten years there have been a number of applications of the trust game, each aimed at testing specific hypotheses such as gender differences, ethnic differences, the impact of the national or the regional culture, the impact of cheap talk, communication and so on. Although this growing literature provides interesting insights on the determinants of trust and co-operative behaviour, we claim that insufficient importance has been devoted to the effect of large differences in **individual endowments**.

In Figure 1 we draw the general extensive form of the experiment designed by Berg *et al.* (1995). We will refer to it as the "Trust Game". This game, in its original form, consisted of four steps:

- (1) Both the trustor and the trustee are given a 10\$ show-up fee. For practical reasons, we indicate these as α and δ , respectively for the trustor and the trustee;
- (2) The trustor is then given the chance to send an *integer* portion, $S_f \equiv \alpha x$, of his/her 10\$ to the trustee. Sending money to the recipient is obviously risky but, if the trustee does not break the trust, the potential gain for the trustor is greater than \$10;
- (3) The experimenter multiplies by k (integer larger than 1) whatever amount the trustor decides to send to the trustee. This step is intended to create a social dilemma, that is a situation where individual and group incentives differ.
- (4) Finally, the trustee can choose to send back to the trustor an *integer* portion, $S_b \equiv y^*(k\alpha x + \delta)$, of the amount received by the experimenter. In making this choice, as we will see later on, the trustee may or may not take into account his/her own show-up fee.

² Fershtman and Gneezy, 2001, find that general reputation is significantly correlated with trust. In particular, they observed that, in the Israeli Jewish Society, there is a systematic mistrust toward men of Eastern origin.

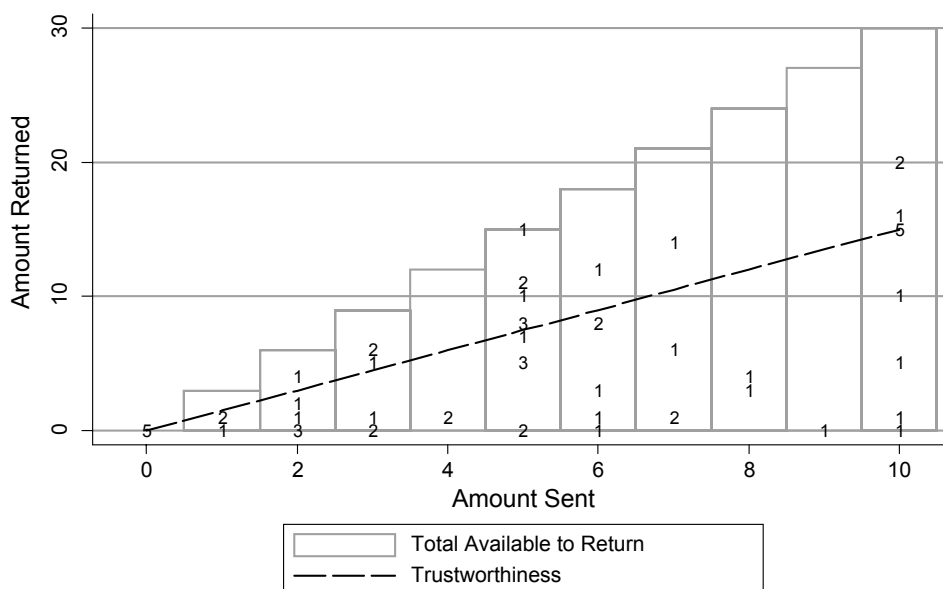
Figure n° 1: Trust Game, extensive form



$$[\alpha*(1-x)+y*\{(k*\alpha x)+\delta\}; (1-y)*\{(k*\alpha x)+\delta\}]$$

It is important to bear in mind that the unique Nash Equilibrium prediction for the Trust Game is that the trustor should send nothing. Indeed, by backward induction, he knows that the recipient, acting rationally, has no incentive to keep the trust and will not reciprocate. Notwithstanding, the results of the two experiments above markedly differ from the theoretical prediction of the game. Figure 2 shows that this prediction is confirmed only 5 out of 60 times in Berg *et al.* (1995).

Figure n° 2: Trust Game results, Berg *et al.* (1995)



How should these results be interpreted? Let us briefly review, first of all, the analytical framework and the definitions that have been adopted in the past. The definition of trust and trustworthiness adopted by Berg *et al.* (1995), as well as by Glaeser *et al.* (2000), are similar

to Coleman's. In his view, "if the trustee is trustworthy, the person who places trust is better off than if trust were not placed, whereas if the trustee is not trustworthy, the trustor is worse off than if trust were not placed" (Coleman, 1990, page 98). Formally, the sender is said to be "trusting" or "to place a trust on the recipient" if and only if $S_f > 0$. On the other hand, the recipient is said to be "trustworthy" or "to keep the trust" if and only if $S_b \geq S_f$. In Figure 2 we can graphically interpret these two concepts. Points to the right of (0,0) denote "trusting" senders. On the other side, observations on the "trustworthiness" line denote "trustworthy" trustees, while points above this line denote more than "trustworthy" trustees, and *vice versa* below the line.

However, we should ask ourselves whether, by adopting Coleman's definition of trustworthiness, we obtain a reliable measure of reciprocity or, rather, whether the "trustworthiness condition" is so strong that we are indeed underestimating trustees' tendency to reciprocate. All too often, in the context of the trust game (e.g. Bouckaert, J. and Dhaene G., 2002), reciprocity is assimilated to trustworthiness and vice versa, ignoring the possibility that a reciprocal pattern may arise conditionally to a fairness rule. This is the question that we will try to answer in the next section.

2.3 Introducing fairness in the trust game

In recent years there have been several attempts to incorporate fairness into game theory and to take into account the equity concern (Rabin, 1993; Fehr and Schmidt, 1999). Brosnan and de Waal (2003) conduct an experiment with a nonhuman primate, the brown capuchin monkey, and show that, in exchanges with a human experimenter, their subjects respond negatively to unequal reward distribution. They justify their findings, and attempt to generalise their validity, by claiming that "during the evolution of cooperation it may have become critical for individuals to compare their own efforts and payoffs with those of others". We share this view and we try to introduce this "sense of fairness" in the interpretation of the results of the trust game. In practice, we suggest that "equality of final payoffs", and not "trustworthiness", should be considered as a minimal requirement for reciprocity.

In order to find a weaker condition for reciprocity, we impose the equality of payoffs in the trust game,

$$(1) \quad \alpha^*(1-x) + y^*(k\alpha x + \delta) = (1-y)^*(k\alpha x + \delta) \quad \text{s.t. } x, y \in [0,1].$$

Solving for y , we obtain

$$(2) \quad y^f = \frac{\alpha^*(x-1)}{2^*(k\alpha x + \delta)} + \frac{1}{2} \quad \text{s.t. } x, y^f \in [0,1].$$

In the above equation, y^f represents the share of the amount received by the trustee that he/she has to send back to the trustor such that their final payoffs are equalised. In other words, y^f is the maximum share of the received amount that an "inequity averter" trustee would send back to the sender. We can see that, given that $(x-1)$ is non-positive, y^f is increasing in x ,

$$(3) \quad \frac{\partial y^f}{\partial x} = \frac{2^*(k\alpha x + \delta) - \alpha^*(x-1)2k\alpha}{4^*(k\alpha x + \delta)^2} \quad \text{s.t. } x, y^f \in [0,1].$$

Equation (2) above also implies that y^f takes a maximum value of $\frac{1}{2}$ when x is equal to 1, that is when the sender fully trusts the recipient. The "fair" return ratio, y^f , clearly depends on the

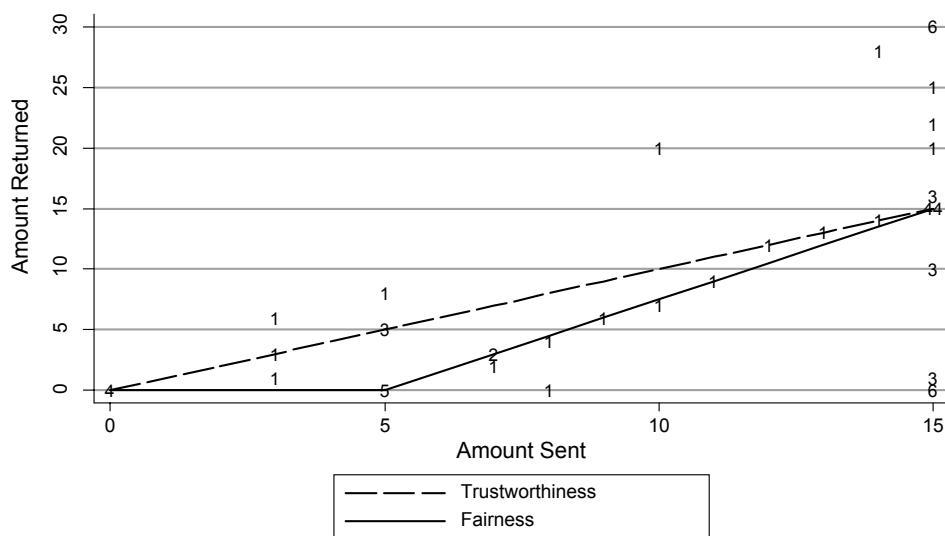
amount sent. The “fair” return ratio is equal to 0 for values of the amount sent equal or below \$5. Indeed, when a sender sends \$5, he/she keeps \$10. Hence an “inequality averter” recipient receiving twice the amount sent (two times \$5, in this case) would send \$0 to generate payoffs equality (\$10, \$10). For values above \$5, the larger the amount sent the larger is the “fair” return ratio, although the latter increases at a decreasing rate. Finally, when the sender fully trusts the recipient (i.e., when the amount sent is equal to \$15), the “fairness” condition coincides with the “trustworthiness” condition.

In monetary terms, as the recipient receives $(k\alpha x + \delta)$, the “fair” amount returned would be equal to $AR^f = y^f * (k\alpha x + \delta)$, that is, plugging condition (2) into the former:

$$(4) \quad AR^f = \frac{1}{2}[(k+1)*\alpha x - \alpha + \delta], \quad AR^f \geq 0, \quad \text{s.t. } x, y \in [0,1].$$

For values of AR^f larger than 0, AR^f has a slope equal to 3/2 in the game of Glaeser *et al.* (2000) and equal to 2 in the game of Berg *et al.* (1995), because of k being equal to 2 and 3, respectively. Moreover, as recipients cannot send back negative values (i.e., cannot punish untrusting senders), we will assume that the amount returned is equal to zero whenever $AR^f < 0$. A simple graphical representation of our hypothesis is done in Figure 5 where, aiming at a more precise classification of trustees’ responses, we add the “fairness line” derived above (i.e., AR^f) alongside the “trustworthiness line”.

Figure n° 3: Trust Game results, Glaeser *et al.* (2000)



It seems that the “fairness line” strikingly fits a number of observations in the region below the “trustworthiness line”. In particular, ignoring the four observations falling on the point (\$0, \$0), and bearing in mind the considerations made above regarding the constraint to send integer amounts of money, we find 12 observations in the region on and above the “fairness line” and below the “trustworthiness line”.³ This corresponds to 12.9% (12 out of 93) of the whole sample. Furthermore, and given that the two conditions are equivalent at the point (\$15, \$15), if we admit that half of the trustees’ replies falling on this point (hence 22 out of 44) are motivated by fairness, the percentage of trustees’ responses justified by a “fairness concern” rises to 36.6% (34 out of 93). Finally, when we only look at the region of the graph below the “trustworthiness line”, we find that 46% of the “untrustworthy” trustees’ responses are “fair”.

³ When the trustor sends \$0 to the trustee, the latter cannot make any decision at all.

These findings have significant implications. In effect, if we accept the idea that individuals do care about equity and might take it into account in their decision to reciprocate, ignoring the “fairness concern” in the analysis of the trust game results would constitute a serious flaw. In fact, if rather than adopting the “fairness line” as lower bound for trustees’ “reciprocity”, we exclude this possibility limiting it to trustworthy responses (on and above the trustworthiness line), we would overestimate *non-reciprocity* by 86%.⁴ This very fact may substantially compromise, as it appears to be the case in Glaeser *et al.* (2000), the identification of the socio-demographic determinants of trustworthiness.⁵

2.4 The impact of inequality of endowments

The implications of incorporating “fairness” into the trust game are twofold. First of all, as we have just seen, fairness seems to explain more than 40% of trustees’ decisions and, by result, expands the room for reciprocity behind the stronger trustworthiness constraint. Secondly, if we accept that “fairness” plays such a relevant role in determining trustees’ choices, than it is clear that the relative size of show-up fees plays an equally important one. To see it more clearly, we express equation (2) in terms of (α/δ) , that is in terms of the ratio between the sender’s and the recipient’s show-up fees:

$$(5) \quad y^f \left(\frac{\alpha}{\delta} \right) = \frac{(x-1)}{2 * (kx + (\delta/\alpha))} + \frac{1}{2} \quad \text{s.t. } x, y \in [0,1].$$

Given that $(x-1)$ is non-positive, the larger is (α/δ) - or, which is the same, the smaller (δ/α) - the larger would be the negative effect on y^f (and, hence on “fair reciprocity”) of an unequal initial allocation. Vice versa, an increase in (δ/α) will have a non-negative effect on y^f :

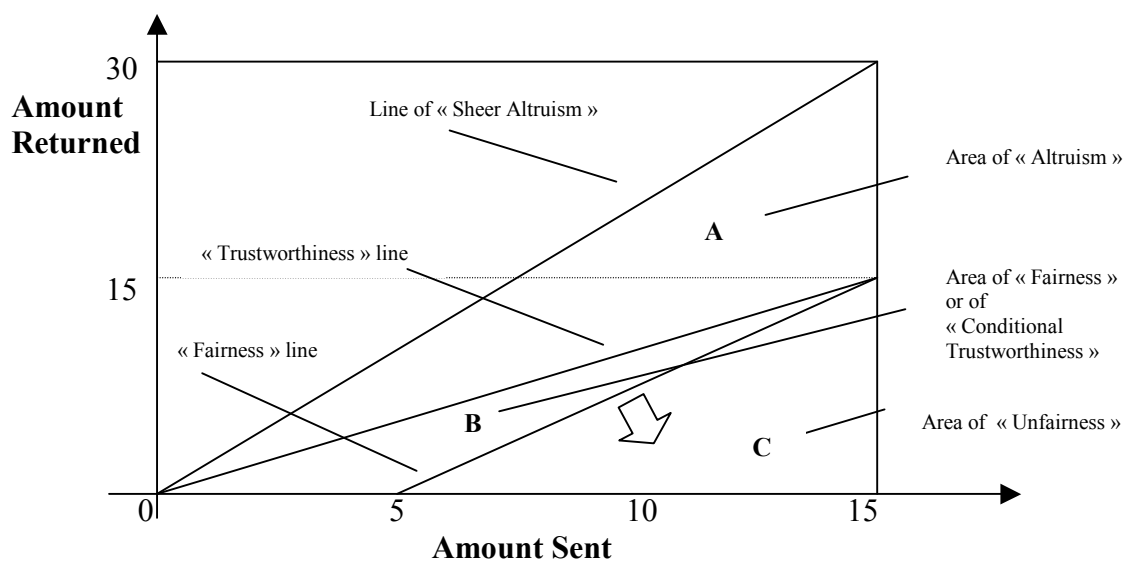
$$(6) \quad \frac{\partial y^f}{\partial (\delta/\alpha)} = \frac{-2 * (x-1)}{4 * (kx + (\delta/\alpha))} \geq 0 \quad \text{s.t. } x, y \in [0,1].$$

This implies that the larger α compared to δ , the lower is the share of the amount received that an “equity concerned” trustee would be willing to send back. With reference to equation (4), it is evident that the slope of the “fairness” condition (above $AR^f=0$) is determined by k , for every value of αx . On the other hand, the intercept, $(-\alpha+\delta)/2$, negatively depends on α and positively on δ . In figure 4 we made a graphical representation of trustees’ replies and, with reference to the experiment of Glaeser *et al.* (2000), we subdivided the feasibility space of the trust game into three areas: the “area of altruism”, the “area of fairness” and the “area of unfairness”, depending on the minimum constraint satisfied by the recipient’s choice.

⁴ In fact, we would erroneously include in the objectively “non-reciprocating” trustees’ responses (14), 12 additional replies that do indeed meet a weaker constraint of reciprocity. Therefore, we would overestimate 14 by 12/14 (i.e., by 86%).

⁵ Incidentally, in the experiment conducted by Glaeser *et al.*, biased results may also be the effect of the inclusion of 6 influential observations (\$15, \$30) in which the sender is fully trusting and the recipient is fully altruistic. It appears to us that this is the result of a *non-random pairing procedure*. Our opinion is that those 6 recipients are indeed people that, because of the special relationship tying them up (e.g., they might be partners, brothers, cousins, very close friends, etc.), might have decided to send everything (forward, for the *sender*, and back for the *recipient*). This choice, in turn, may allow the recipient to show up his or her spirit of abnegation (readiness to forgo everything for friendship or love, for example) though it does not necessarily have any actual financial consequences. Indeed, just because of the assumed relationship linking each of these pairs, *sender* and *recipient* might decide to spend the total payoff to go for diner or bowling together. In this way, sender and recipient would evenly share the total payoff, though this would occur after the game. Therefore, we think that Glaeser’s analysis should be conducted excluding these influential observations that clearly bias the results.

Figure n° 4: Trust Game, effect of unequal show-up fees



This representation is also useful to understand the result obtained in equation (6). An increase in (α/δ) , that is a distribution of show-up fees more in favour of the sender, corresponds to a downward shift of the “fairness line”, AR^f . This, in turn, will increase the probability of a lower response by the trustee, for each amount sent. Therefore, there seems to be two factors running in opposite directions, one spurring co-operation and the other discouraging it, while it is not clear which one prevails. In fact, when α increases with respect to δ , it implies that:

1. The sender has a higher amount to send forward to the recipient;
2. The recipient, however, has a lower show-up fee, hence (s)he might be more concerned about equality of final payoffs;
3. The sender, by backward induction, might anticipate the higher fairness concern and might decide to trust the recipient even less;
4. Finally, the recipient, receiving a lower amount of trust, would probably be even less prone to reciprocate with respect to a situation characterised by equal show-up fees.

Summarising, the main conclusion that we can draw from our analysis is that, all other things being equal, trust is likely to be higher the smaller the degree of economic inequality between subjects. In the next section we will try to validate this thesis using newly released data for European countries.

III. INEQUALITY AND TRUST IN EUROPE

The conclusion reached in the previous section, namely that trust is likely to be inversely related to inequality, may contribute to renew the debate on the link between social capital and egalitarian policies. The path-dependency theories put forward by Putnam (1993) could certainly help explain the relative backwardness of certain regions or countries with respect to others. However, the same theory could not account for the recent decline in Social Capital (and, more specifically, in the general level of trust) that arguably occurred in the United States and other developed countries during the last 40 years.

Our result, along with the observation that some of the countries with the highest average level of self-reported trust – Norway, Sweden, Finland, Canada - are characterised by progressive policies and a relatively even distribution of wealth, may shed light on the temporal dynamics of social capital. As a matter of fact, in the “Why” section of his most recent work, Putnam (2000) devotes only 2 pages out of one hundred to “pressure of money” and he does so only referring to the financial vulnerability of each individual family. Putnam accounts for the social changes taking place in the US by mentioning a number of factors (pressures of time and money, mobility and sprawl, technology and mass media) but no room is given to wealth inequality and the progressive abandon of egalitarian policies. The same critique applies to Alesina and La Ferrara (2002), whose analysis attributes much more weight to individual financial misfortune than to the inequality of fiscal and political measures.

We disagree with this line of research as, by overlooking macroeconomic and relational determinants of trust, consequently overrates the importance of individual determinants. In particular, Putnam’s approach, in giving account of the sharp decline in the general level of trust in US, underestimates the impact of the progressive economic polarisation taking place in the society.

In this section we will focus on the impact of the country-level inequality on general trust. Of course, other measures of socio-economic inequality – for example, the degree of free access to primary services such as education and health, and the widening range of their quality - will be likely to have a tangible impact on trust. However, the early stage of this research somewhat limits the spectrum of our analysis.

3.1 The Datasets used

As we have seen above, it is very difficult to obtain reliable indicators of trust. In most of the cases, research on trust relies upon self-reported measures of general trust. Although there is a general agreement on the possibility that these measured be biased, it is still debatable whether the lack of significance correlation between self-reported and behavioural measures of trust (Glaeser *et al.*, 2000) is a consistent feature of such concepts or, rather, an artefact of the special setting of the experiment conducted by Glaeser *et al.*.

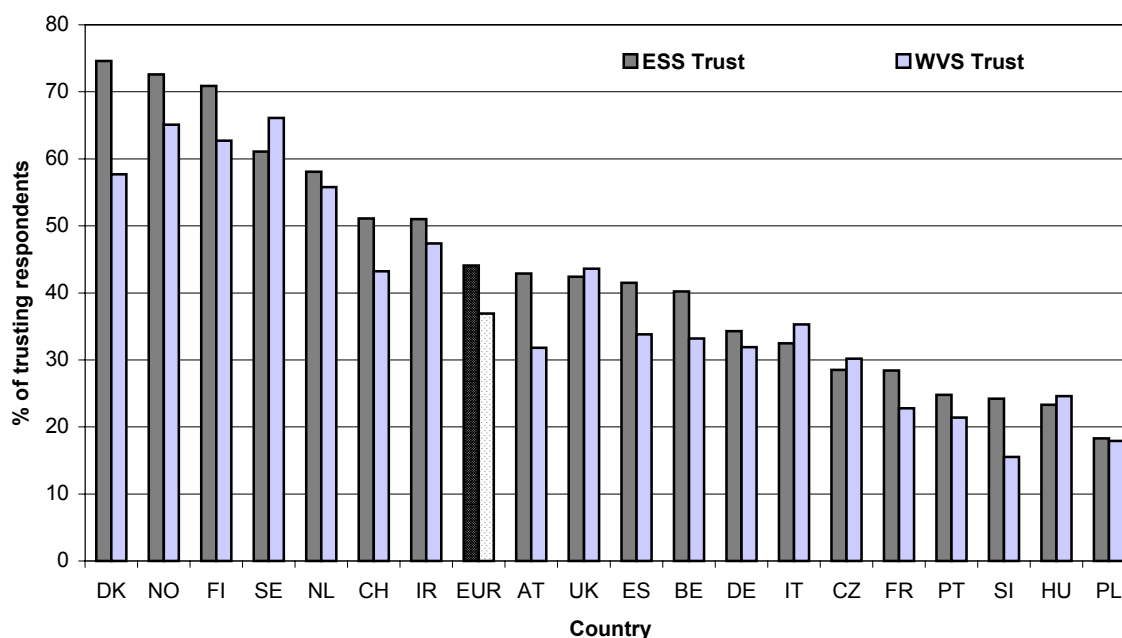
The main studies carried out on this subject rely upon General Social Survey (GSS) or World Valued Survey (WVS) measures of trust. In particular, the GSS, though it is geographically restricted to US, is a yearly survey and allows for interesting temporal analysis. In Europe, starting from 2002/03, the European Social Survey (ESS) is being conducted, at a biennial interval, covering over 20 nations and adopting extremely high standards.

We will base the remaining of our analysis on the recently released 2002 ESS dataset. Whereas the survey employs the most rigorous methodologies and covers a very wide range of social variables, the absence of past editions of the survey prevents us from carrying out any kind of temporal analysis.

Selecting a group of European countries both covered by the ESS and the WVS, we can immediately see (Figure 5) that there is a strong correlation (0.95, see Appendix n° 1)

between the two series of self-reported measure of general trust.⁶ This implies that, notwithstanding the methodological peculiarities of each of these two surveys, the question about “general trust” produces robust results with high-trust countries positioned at the top of both surveys and low-trust countries bottoming the list.⁷

Figure n° 5: Generalised Trust, European Social Survey and World Value Survey



Sources: ESS (2002), WVS (1990-95).

In particular, in the four Scandinavian countries (Denmark, Norway, Finland and Sweden) and in the Netherlands, more than 50% of respondents say that they are trusting. On the other side of the spectrum, far below the European average (44.1%), the average level of general trust in the only four new EU members covered by the ESS (Czech Republic, Slovenia, Hungary and Poland), alongside France and Portugal, is below 30%. Moreover, WVS data (not shown) also provide similar figures for the remaining new EU member countries. The average level of general trust, measured by the WVS, in Estonia, Latvia, Lithuania, Slovakia is below 25 per cent. Finally, Bulgaria, Romania and Turkey display even lower levels.

Incidentally, the fact that countries which are not EU members (Norway and Switzerland), or that are relatively new members (the other Scandinavian countries), rank very high in general trust, whereas even newer EU members rank very low would dismiss the hypothesis that the length of the EU membership is the best single predictor for the variable at stake. Of course, there will be a multitude of factors, both at a micro and at a macro level, which may have a potential impact on the general level of trust. Our attention will be especially focused on the effect of inequality.

In the next section, we try and underline the close relation between measures of economic and fiscal inequality and the level of self-reported general trust.

⁶ The Spearman Rank Correlation is 0.932. ESS data have been recoded as the respondents can express their general trust on a range between 0 (no trust) and 10 (complete trust).

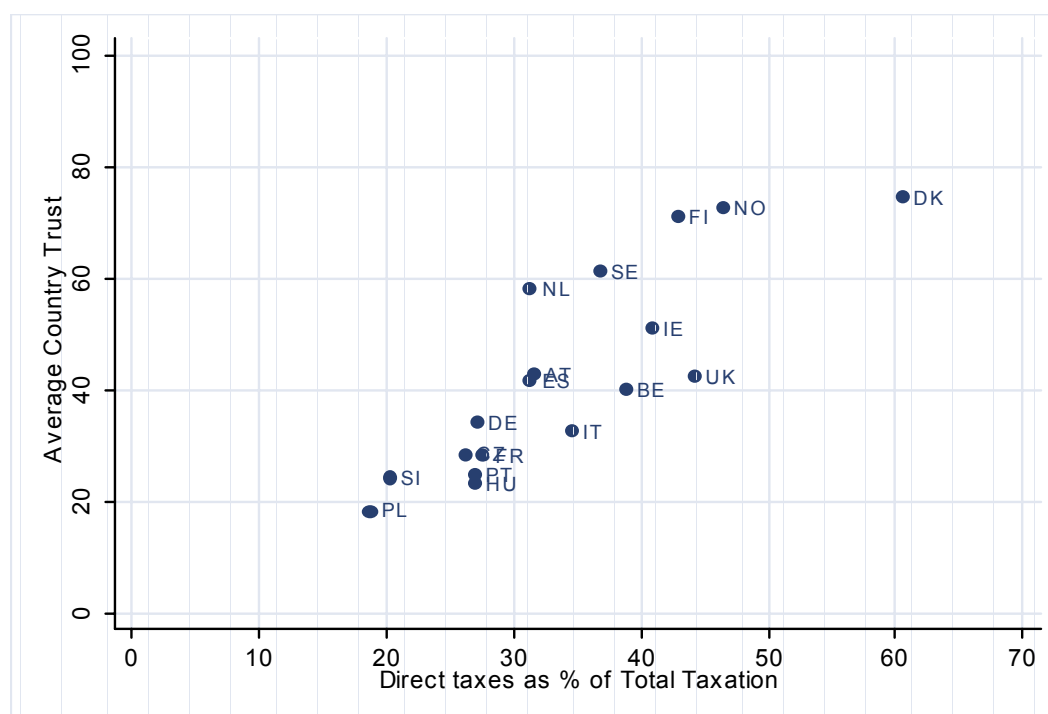
⁷ The question used to obtain self-reported measures of trust is: “Generally speaking, would you say that *most people* can be trusted or that you can’t be too careful in dealing with people?”.

3.2 Empirical relation between inequality and trust

The analysis of the trust game carried out in section II suggests that reciprocity and trust are likely to be inversely related to the inequality of initial endowments. In what follows, we will try to test whether this result holds at a macroeconomic level. For this purpose, we rely upon ESS country average measures of trust and we draw upon EUROSTAT data for macroeconomic indicators of economic inequality and fiscal pressure. The sample of our analysis is constituted by 18 countries. These include all EU-15 countries (with the exception of Greece and Luxembourg), Norway and four new EU members. In addition, it has to be borne in mind that the ESS samples of respondents are only representative at a national level. This implies that no robust statistical analysis can be carried out at a regional level.

Before getting to the description of our results, a few words have to be spent on the choice of our inequality measures. We decided to focus on two measures of inequality: the *income quintile share ratio*⁸ and the *direct taxation as percentage of total taxes*. The first indicator is a measure of inequality comparable to the widely used Gini coefficient. The second indicator is here adopted with the aim of capturing the extent to which income inequality is being tackled by redistributive fiscal policies. The idea behind this choice stems from the observation that indirect taxes, contrarily to direct taxation, are independent of personal income. Therefore, a taxation system primarily based on indirect taxes tends to be largely regressive and, as a result, not to be perceived as lessening income inequality.

Figure n° 6: Direct Taxes as % of Total Taxation and General Trust



⁸ The *income quintile share ratio* is the ratio of total income received by the 20 % of the population with the highest income (top quintile) to that received by the 20 % of the population with the lowest income (lowest quintile).

Looking at the data, see Appendix n°1, it is particularly striking that, in Europe, the correlation between income inequality and trust (0.84) is much higher than the same measure based on US data (Alesina and La Ferrara, 2002). This may be due to the different datasets used, to errors and approximations in the construction of the Gini coefficient, at the MSA/PMSA level, in Alesina and La Ferrara (2002). Also, when trust is regressed on a number of heterogeneity indicators in US, there is the possibility that the impact of income inequality on trust may be overshadowed by other sources of heterogeneity (race, ethnicity). These sources of inequality are explicitly ignored in our analysis both because of lack of available data and because race and ethnic heterogeneity are much less of an issue in European countries than in US.

Figure 6, above, is a graphical representation of the high correlation between country averages of self-reported trust and direct taxation as percentage of total taxation. A cross-country comparison shows that direct taxation can represent hugely different percentages of total taxation. There are Scandinavian countries, such as Denmark, where 60.5% of total taxation is constituted by direct taxes and, at the opposite side of the spectrum, Poland where the direct fiscal imposition remains below 20%. Not so surprisingly, countries trust averages follow suit with Denmark and Poland topping and bottoming the list, respectively.

Table n° 1: ESS General Trust as a function of measures of inequality

ESS Trust	Coefficient	Standard Error	P> t
Direct taxes as % of total taxation, 2002	1.005	0.288	0.004
Level of Inequality (IQSR)	-6.717	2.688	0.026
New Member	-13.974	7.006	0.066
Constant	38.788	18.832	0.059
F (3, 14)	19.24		
Prof > F	0.000		
Adj R²	0.763		

When we linearly regress the country averages of self-reported trust on both measures of inequality, and on a dummy for the new member countries, we obtain the results displayed in table 1. As we can see, this specification explains more than three quarters of the cross-country variability in trust. In addition, all coefficients are at least marginally significant at the 10-percent level, with the coefficients for the *income quintile share ratio* and for *direct taxation as percentage of total taxes* being statistically significant, respectively at the 5-percent and at the 1-percent levels. The coefficient of the dummy for new member countries is largely negative meaning that, on average and with *all other things being equal*, a new member country as a 14% lower average trust level than a central European country. Future studies may help further investigate on this result.

What is interesting, for our purposes, is that we found, as we expected, that an increase in the percentage of direct taxation is likely to bring about an equivalent increase in the average level of trust. In addition, lowering income inequality would also have a positive effect on self-reported trust.

IV. CONCLUSIONS AND POLICY IMPLICATIONS

As a matter of fact, mainstream economic models have, for a long time, been inhabited by under-socialised agents. The literature on social capital is contributing to correct the extent of this “individualist bias”. We agree that the greatest care should be taken not to fall into the temptation to consider social capital as the panacea for all kinds of social and economic problems, thereby creating an exaggerated and unjustified interest around this concept. However, it seems to us that economics is moving in the right direction, finally adding the missing tessera to the neoclassical theoretical framework.

In this perspective, our contribution mainly lies in shedding light on the relationship between trust, one of the primitives of social capital, and measures of income inequality. In particular, the empirical analysis carried out using ESS data along with EUROSTAT indicators confirm our theoretical result, namely that trust is inversely proportional to income inequality. In other words, it appears that the increasing economic polarisation of society would lessen the willingness to offer trust. Although we recognise the need to refine and complete this analysis, we believe that our result introduces a new element in the research on trust and social capital. It seems that we are before the umpteenth source of trade-off in economics: liberal policies are supposed to be good for the market but they may also be proved to be bad for trust which, in turn, is good for the market. What to do then? Is there an optimum level of income inequality that does not hinder trust and that, at the same time, keeps encouraging economic activity? We hope that future research might contribute to investigate on these issues.

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ANNEXES

Appendix n° 1: Correlations between measures of trust and inequality

	WVS trust	ESS trust	Total tax. as % of GDP, 2002	Direct tax. as % of GDP, 2002	Indirect tax. as % of tot tax., 2002
ESS trust	0.9505** (0.0000)	1.000			
Total tax. as % of GDP, 2002	0.3886 (0.1110)	0.4493 (0.0614)	1.000		
Direct tax. as % of tot tax., 2002	0.7727** (0.0002)	0.8401** (0.0000)	0.3546 (0.1488)		
Direct tax. as % of GDP, 2002	0.7474** (0.0004)	0.8333** (0.0000)	0.6673** (0.0025)	1.000	
Inequality	-0.3387 (0.1692)	-0.3832 (0.1165)	-0.5138* (0.0292)	-0.3714 (0.1291)	0.3936 (0.1060)

First entries are correlation coefficients. P-values are in Parentheses.

** Statistically significant at the 5-percent level.*

*** Statistically significant at the 1-percent level.*