Social Capital: One or Many?

Definition and measurement

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Abstract: Three families of social capital concepts are discussed: (fa1) trust, (fa2) ease of cooperation, and (fa3) network. In the language of game theory, social capital is the excess propensity to play cooperative solutions in prisoners' dilemma games. The three families lead to different definitions, and thus to different measurement methods. Some measures are theory-near, while others are easy-to-use proxies. It is shown that all definitions and measures are related. The »social capital dream« is that all definitions try to catch aspects of the same phenomenon, so that all measures tap the same latent variable. It is discussed if this dream is likely to come true.

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I   Introduction

Political economy deals with collective action – how people organize themselves into groups and work together. It has often been observed that people tend to cooperate more than they »should« according to standard assumptions of individual rationality (see eg Schram, 1998). This *excess cooperation* result has been confirmed in experiments even for players, who do not know each other and play only once.

Most people build *trust* in and *networks* to others and come to *cooperate* with them. This, of course, is to the advantage of everybody. Many theoretical models explain why this is so. It is important that theories explaining *cooperating behavior* exist in all social sciences: anthropology, economics, politology, psychology, sociology, etc.

Recently it has become increasingly common to describe the »glue« generating excess cooperation as *social capital (Ω)*. This glue makes people work together either for reasons of their *own* or due to pressure *within* the group (see II.3 on the distinction). Third party enforcement is the *alternative* to social capital. *The policy-problem* of social capital is thus: if social capital is contrary to third party enforcement how can outsiders help building it?

Unfortunately, at least five seemingly different definitions of social capital exist. They belong to three families. Below it is argued that the definitions have a common »central area«, and that the »deepest« definition of social capital deals with »trust«. This argument leads to the *»social capital dream«* that most of the other definitions may be derived as consequences. Much theoretical and empirical work remains before the dream can be proved true or false. Figure 1 is a preview of the definitions and families of concepts to be discussed.

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Figure 1

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This article deals with two issues: (1) What are the relations between the definitions of social capital - ie how likely is it that the social capital dream is true? (2) What kinds of measurement do they suggest? The article concentrates on social capital at the grass root level. The relation between social capital, the government, institutions and the legal system will be given a few remarks in II.4 only. No attempt will be made to cover the roots of the theory and to list everybody who has contributed.[1] This would be impossible anyhow as social-capital-like concepts have been proposed by many authors over the years.[2]

Many - mostly new - empirical studies deal with social capital so that a whole set of attempts has been made to measure social capital, with rather mixed success. Several of the new empirical studies (see World Bank, 1999a) show that social capital in some LDCs is as important for peoples income as human capital. It is still disputed how far these results may be generalized.[3]

The survey will proceed as follows: Section II looks at some general problems for all social capital discussions. Section III considers the two closest related families of definitions (fa1) and (fa2), while Section IV discusses if the third family (fa3) can be integrated as well. Section V discusses measurement. Section VI looks at the attempt to find macro proxies for social capital, while Section VII gives a few concluding remarks.

II   Some general points

The following subsections will present a few general points used throughout the rest of the paper. Several subjects will be bypassed since they are more carefully discussed elsewhere. One such subject is if social capital is a capital, ie a stock accumulated from a flow. [4]

II.1   *Robustness, communication, aggregation and proxies*

The social capital dream is that social capital is a **robust** concept. If social capital is as important as suggested, it is likely that all or most of the different definitions stand on some »underlying rock«, so that everything deals with aspects of the same story. If this is true, the choice of definition is a question of convenience only. If on the other hand the concept is fragile and soft, the choice of definition is crucial, but then, social capital is unlikely to be something useful.

Concepts of social capital are used by all social sciences though often under different names. It is likely that the sciences can teach each other important lessons and save each other a good deal of work if they **communicate**. To do so an interface must be established, with a well-defined protocol. One of the main virtues of social capital is that it is close to becoming a joint concept for all social sciences. Even if the operational version becomes a bit naive seen from the perspective of each social science it is important to keep communication open.[5]

It is sometimes discussed if social capital is a micro or a macro concept. The logical sequence is to define social capital at the micro level, and then reach the macro level by **aggregation**.

Finding proxies is often possible both at the macro and at the micro level. Proxies are »easy variables« either by being already measured or by being easy to measure. Further, they »pertain« to social capital in some sense. The main reason to define social capital carefully is to have something against which it is (potentially) possible to assess the quality of different proxies. Measurement may hence be more or less *theory-near*. The presumption is that proxies have a distance from the definition. Especially at the macro level many proxies have been proposed and shown to work as social capital is expected to do. These proxies are discussed in Section VI.

II.2   *Some terminology*

Social capital is defined relative to a certain *population:* A, of i = 1, ..., n people. It can be thought of as the people in a location (say a village), an ethnic group, a trade group, etc. Each member of the population has a social capital, termed ω_i, and A has the social capital, Ω_A, which is an average of the social capitals of the population.[6] The population is thus characterized by a *level* of social capital and a *structure* of individual social capitals.

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Table 1

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Social capital deals with cooperation in groups and networks within groups of people. Therefore, the word »group« is reserved to small entities of »people«. The word »population« is then used for the larger entity from which the groups and networks are formed.

Social capital is thus a micro concept, but it may be aggregated to the national (macro) level, simply

by increasing A to cover the national population. This is an unusually simple aggregation rule. However, society may consist of (many) sub-populations with high social capital within sub-population and no social capital between sub-populations. Under such circumstances aggregation becomes almost meaningless. The important matter to understand is the structure of sub-populations.

Social capital implies *two learning processes* within the population. One deals with the individual adjusting to the common level, while the second deals with the adjustment of the level over time.

Using the trust definition, it is easy to discuss how the individual adjusts to the population level: Some members of A might have unrealistically high ω_i's. Such persons will either participate in too many failed cooperations. They are the »suckers« other people take advantage of. Other members of A may have unrealistically low ω_i's. They are the »misanthropes« who lose from not participating in cooperation. Also, some may free ride on the trust of others. They are the (potential) »parasites«, who are submitted to sanctions after some time. Maybe all types of unrealistic people learn to adjust their ω's to the level of the population over time.

The adjustment of the level is another matter. It is likely to be slower. Putnam's famous claim is that it takes centuries to change social capital.[7] Another possibility giving stable outcomes is suggested in III.3. The formation of social capital may be a dynamic game with a few equilibria only. If the equilibria are distant, they have considerable stability as each of them is difficult to leave. If either of the two explanations is true, social capital becomes easy to measure.

II.3   Self monitoring or group monitoring?

The ability of people in the population to form groups cooperating for joint projects is at the heart of social capital. Groups cooperate for the three reasons listed in Table 2.

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Table 2

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The definitions of social capital include cases (i) and (ii) only. Distinguishing between (i) and (ii) is difficult and often unnecessary. The key point is that group members under both (i) and (ii) are *voluntary* participants in the group. In case (ii) they have *chosen* to submit to group pressure, at least while the concrete project lasts. In case (iii) a third party - outside the group - enforces the cooperation. The key distinction is thus between »within« group cooperation and »outside« enforcement. Sometimes it is hard to distinguish:

Third party enforcement might be done by the State precisely to help building social capital. The State can »interfere« in two ways: *Active* interference is discussed (in III.4) as the *policy problem* of social capital. *Passive* interference (see II.4) is made by providing a more or less *enabling environment* for social capital formation.

Some groups (such as a platoon of soldiers) are formed due to (iii), but then they develop a strong *»esprit de corps«*, if the group members learn to trust each other. The excess spirit beyond the third party enforcement is social capital (see III.5).

The words »moral and religious beliefs« hide another problem. It implies that social capital may be

changed by moral and religious movements. Political movements sometimes change people's morals. This especially happens in revolutionary situations, where political regime shifts produce heroic deeds and a wave of cooperation among the participants. However, after the system change things gradually turn back to normal. Sometimes prophets have managed to convince people that they go to hell, or are reborn as maggots, if they do not help and trust their fellow man. In the prosaic terminology of economists social capital is occasionally subjected to exogenous shocks.

Finally, it should be mentioned that dictatorship normally destroys social capital. The dictatorship theory of social capital destruction is discussed in Paldam & Svendsen (2000b).

II.4   The government and institutions: the passive aspects

Social capital, Ω, is defined at the *grass root level*. However, the ease of building and upholding social capital depends upon the environment provided by the state and its institutions. Two main aspects will be mentioned: (a) The relation between Ω and trust in the government and institutions in general. (b) The relation between Ω and the legal system.

Regarding (a), it would appear that it is easier to build trust and cooperation between people in general - ie to build *generalized* trust (see III.5) - if they trust the government and the institutions. Note also that some institutions operate on trust. The best example is money and the monetary institutions.[8]

It is easy to list examples of untrustworthy and corrupt governments and institutions, where it appears that they have spread distrust throughout society. In other cases social capital was built as a reaction of a group needing »defense« against a hostile state.[9] One of the reasons why it is important to obtain Ω-data, is precisely to sort out these complex connections.

Even more relevant is (b) as the big problems for trust building and cooperative behavior is the risk of free riding. Certain types of free riding are »costly« for the other group members, and it is an advantage for everybody if they can issue legally binding guarantees to each other. That is, if the legal system is so efficient and enabling for cooperation that groups can use it against costly defections.

Thus it appears likely that passive support to and the establishing of a »social capital friendly« legal and political environment may help those who try to cooperate.

II.5   The politics of social capital: why is social capital treated as a benign concept?

This subsection deals with three related points: (i) The symbolic politics of social capital, which creates plenty of emotional connotations in debates. (ii) Is social capital dynamic or conservative? (iii) How do we handle malign social capital?

Social capital is a concept that is spreading outside the narrow confines of science. It is already used in policy discussions and journalism. From this borderland - and from the sub-conscience of the social scientists themselves - connotations are coming up to create confusion. It appears that many use social capital as a loosely defined plus-word. Whatever it is, it is certainly benign! One may see the connotational games as part of a pattern by applying the theory of Inglehart (1977) dealing with values. Social capital may be a concept reflecting soft *post material* values contrary to the hard old capitals reflecting *material* values. Let me play a little with words and connotations:

Economists use several capital concepts such as physical and financial capital. These concepts are akin to capitalism, efficiency and growth - concepts that are not really benign. Social capital might be seen as the »revenge« of the »soft« social sciences against the »hardness« of economics, especially as economics

has »conquered« the otherwise nice-sounding capital termed *human capital*, and turned it into something »hard« full of Greek letters. The implied softness of social capital allows it to be sometimes used as a »weapon« by feminists. Also, I have heard it used as a tool for turning the hard institution of the World Bank into something softer and nicer.[10] Most readers of this text will probably agree that the field of connotational politics does play a role in scientific discussions, even if it is against the spirit of science. The connotational politics of social capital hides two »real« problems:

Is social capital a dynamic or an inertial concept? The text below argues that social capital may be *productive*. But several theories exist, where something like social capital acts as *conservative* agents (see especially Olson, 1982).[11] Above social capital was seen as the »glue« keeping cooperation together, but glue is surely the reverse of a lubricant, when it comes to social change. The reader may think of guilds, trade organizations and unions, and of regional and tribal organizations. They often try to hinder change. Such organizations are termed social capital by some definitions. While they have benign functions, they are also *brakes*.

Also, it is easy to list networks and organizations, which are malign for society. Some networks are criminal, racist, violent, etc. This is nicely illustrated by the »underlying story« of the prisoners' dilemma game used to extol the virtues of cooperation. It is a story about two criminals cooperating in lying to escape a well-deserved punishment. It is easy to tell a story of the transition of the former Communist countries of Eastern and Central Europe, where social capita rebuilding after the dictatorship took a wrong turn into the development of malign instead of benign social capital (see Paldam & Svendsen, 2000b).

The obvious outcome of this discussion is that when social capital has been successfully measured, and its effect is analyzed, we might reach disappointing results. Social capital may turn up to be conservative or even harmful in some cases, even if it is productive and benign in other cases.

III   The trust-cooperation complex

Two families of social capital concepts - (fa1) and (fa2) in Figure 1 - are closely related. They are placed in the large dotted frame to the left on the figure. First the two boxes at the top of the frame will be opened. Trust comes in two versions »generalized« trust, which is trust to unknown members of society, and »special« trust, that is trust in friends and trust in institutions. We return to the distinction in III.6. Till then we do not distinguish.

III.1   The »trust« and »ease of cooperation« definitions

Coleman (1988) defined social capital as people's ability to work voluntarily together. Many writers as Fukuyama (1995a & b) and Dasgupta (1999) ascribe this ability to cooperate to trust.

The terminology of Table 1 considers person p_i belonging to population A. Further definitions are:

Ease of cooperation definition: Social capital, ω_i, is the ability of p_i to work voluntarily together with others in A, for a common purpose in groups and organizations

Trust definition: Social capital, ω_i, is the *quantity of trust* p_i has in other members of A.

Trust is likely to be reciprocal, so that the trust p_i has to everybody else, corresponds to the trust they have to p_i. The later concept is sometimes known as p_i's *goodwill*.

Trust payoff definition: Social capital is the amount of benefits the individual can draw on his goodwill.

We further define **the social capital in A**, Ω_A, as the average ω_i of all members of A.

Note the difference between trust and trust payoff. People, who trust each other, work together more easily. Without trust, cooperation is limited to activities that are easy simultaneously to monitor.[12] It would appear that trust is primary to most cooperation. However, by working together people further build trust (goodwill), so the two concepts have some interactive simultaneity. »Trust« and the »ease of voluntary cooperation« are thus two interlinked concepts:

(1)   **Key assumption**:[13] »trust« ⇔ »ease of voluntary cooperation« $\pm e_1$, where e_1 is a small fault

To the extent that the key assumption (1) holds - ie e_1 is negligible - one can use either side of the »iff«-sign (⇔) as the definition. The two definitions form the *trust-cooperation complex*. The implications of the word »voluntarily« were discussed in II.3 and again in III.4, as the policy problem of social capital.

To see if (1) is true, one may ask if the negation either way is true: (a) Do people who distrust each other work easily together? And (b) do people who trust each other work badly together? It is possible to think of examples of both (a) and (b).[14] However, as a rule (a) and (b) must both be false. It can hence be concluded that (1) is likely to hold rather well, but not 100%.

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Table 3

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Given that (1) holds, the trust-cooperation-complex becomes a solid basis for social capital, which points to something important for the way society works. In economics it may be an important underlying »social basis« for production. Table 3 gives the main reasons why social capital can be productive. At present these reasons will not be elaborated (see however Paldam & Svendsen, 2000a). Instead the two lower boxes in the left-hand dotted box in Figure 1 will be opened.

III.2   Putnam's Instrument - some theory
The most celebrated measure of social capital is Putnam's Instrument (from Putnam, 1993):[15]

Putnam's Instrument Π is the density of voluntary organizations (VO's) in A.

My reading of Putnam's text is that Π should be seen as a *proxy* for social capital. As will be discussed in Section V, it is an easy proxy to apply. It appears to be precisely because Putnam proposed such a simple and operational proxy that social capital moved from being a speciality for network sociologists into a major research topic for many professions.

Putnam's Instrument was developed in connection with his study of Italy and it draws upon a lot of historical material. He argued that even five hundred years ago the towns of Northern and Central Italy were teeming with all kinds of VO's: Choral societies, tower organizations, guilds, etc. Obviously choral societies do not further economic development per se, but the existence of such societies shows that trust exists and that people can organize voluntary cooperation. Other organizations (as Guilds and Rotary Clubs) are associations that help business people building networks.

An alternative piece of evidence deals with the emergence of banks in Italy, notably with the rise of the Medici Bank (see Roover, 1963). It prospered as the first Medicis managed to organize a (small) network of trustworthy agents in the major cities of late Medieval Europe.[16] As few such networks existed, the Medcis made a fortune transferring tax (tithe) from the Christian world to Rome. Much of the fortune was invested in real estate and art, of which much is intact. A tourist, visiting Florence can hence marvel at the incomes such a small organization could produce, even before it acquired political power and »nobility«.

A main difference between organizations is the intensity of the contacts the individual has to the organization. Some organizations matter little to its members, while others are important in their lives. An additional version of Putnam's Instrument should therefore be considered:

The **intensity weighted Π^i** is the same as Π, except that each VO is weighted by the number of contacts p_i has with the organization.

A relation must exist between the density of VO's and trust among people, but local traditions and the income level in A must also influence the nature of the VO's. Some populations may prefer loose and informal cooperation, while others stress the formal structures more.

Putnam's Instrument is thus a proxy only. It is hence important systematically to compare results reached by Π with results reached by more theory-near measures. What such studies will show is well into the future, even when it has been demonstrated that Putnam's Instrument can be applied to yield interesting numbers (see World Bank, 1999a).

Below IV.2 discusses the relation between Π and various network measures, while V.3 discusses practical problems using Putnam's Instrument.

III.3   The game theoretical approach: The prisoners' dilemma

It is often said that game theory is a language, into which most social science theory can be translated. In this language *social capital is the propensity to play the cooperative solution even if it is not the (Nash) equilibrium.* An obvious game to have in mind is the prisoners' dilemma game as given in Table 4.

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Table 4

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The usual analysis is that player A gains from not keeping trust, ie if she is in cell (a) it pays to change from »yes« to »no«, and likewise if she is in cell (b). The optimal outcome - eg the cooperative solution - is (a), but it is no equilibrium. Player B gains in the same way and thus moves from (a) to (b) or from (d) to (c). Hence the Nash equilibrium is (c), when both players are rational. The finding in experiments is that (a) is played more often than theory predicts - this is the excess cooperation result. Even if the players play only once, against a fully anonymous opponent, (a) is still reached quite frequently.

The »game« changes in the realistic case, where we are dealing with a population that keep playing different cooperation »games« with the same groups and with other groups over a long time. Here the mathematics quickly becomes very complex, but it is easy to imagine that processes can take place where mutual trust accumulates or decumulates, that is it converges to discrete equilibria. Games of roughly this

type are developed both in industrial economics and evolutionary game theory mainly as simulation systems, see eg Weibull (1995).

The game representation of social capital suggests a method of measurement. By choosing the right game and a particular set of experiments, one can measure social capital as the frequency by which the cooperative solution is played. Consider again the game of Table 4. If the two players trust each other - ie have enough social capital - they can stay in (a), but without trust the game ends in (c), at least if it played only a few times.

III.4   The policy problem of social capital

As discussed in II.3 people work together either due to social capital or third party enforcement, hence the word »voluntarily« in Eq (1). Imagine an area A with little trust compared to another area B, where consequently everything goes better. When people play games of the type described in Table 4 they reach the Nash-equilibrium far more often in A than they do in B. Imagine that a benevolent outsider wants to help building social capital in A. The two classical types of help are the stick and the carrot:

A *benevolent dictator* uses the stick,[17] ie he changes the game by sending his »police« to punish players, who fail to cooperate. This is done in Table 5, where the payoffs received by players who fail to cooperate are decreased by a punishment of 5. Now the Nash-equilibrium and the cooperative solution are the same. All plays will end in (a).

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Table 5

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The second possibility is that of a benevolent *external donor* as the World Bank. It has no stick, but plenty of carrots, to help making people cooperate. It gives a donation of +7 to players cooperating as is shown in Table 6. Now the game has the same happy outcome as in Table 5. The cooperative solution is the Nash-equilibrium as well, and again all games end in (a).

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Table 6

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The key observation is surely that in the games of Tables 5 & 6 **no** trust is necessary. The big question is: Will either of the two benevolent third parties help people to build trust, or will they destroy trust? It is most likely that trust is destroyed when it is not needed. People learn that perfectly selfish behavior is best for them. In the donor case they may even learn that they get a nice subsidy if they do not cooperate without one.

The reader may consider how a learning process could be set up. It is possible to think of systems where proper-sized inducements are introduced and gradually reduced, as people learn. To apply third-party inducement so cunningly, much knowledge about the players is necessary. When supplying that knowledge, both players have strong incentives to lie. Without true and detailed knowledge third-party interference into the process of social capital formation may easily do more harm than good.

III.5   The building of esprit de corps in hierarchies

One of the most difficult aspects of social capital is that it often exists as excess spirit in hierarchies. It is well known that some hierarchies operate on enforcement alone, while others have something extra: An esprit de corps that greatly improves performance. It is hard to separate from third party enforcement and rarely included in any measure of social capital.[18]

Even in strict hierarchies as the military, great efforts are often made to develop trust between members of units and officers, as third party enforcement may not be enough for optimal performance in stressed situations such as combat.[19]

Exactly the same applies to groups cooperating in business hierarchies. While it is fine for the firm that groups compete between each other, it is crucial that they cooperate internally. A new volume dealing with social capital in the firm is Leenders & Gabbay (1999). Groups in a hierarchy develop social capital in several ways. Maybe management succeeds in inspiring the groups, and helping them to get rid of untrustworthy members, or maybe the group members themselves imbue each other with the right spirit.

However, even in hierarchies social capital cannot be enforced, but must be developed, as we all know from having worked with others.

III.6   Generalized and special trust

It is highly problematic if trust can be measured in one dimension or many dimensions are needed. The headline gives a simple division. Generalized trust is defined as trust to people in general, while special trust is the trust to known people or trust in particular institutions. Trust in institutions was briefly discussed in II.4. The complex relation between trusting those you know and trust in general needs some comments:

If the area A is small so that people know each other or are quickly able to check each others' trustworthiness from friends, all trust takes the character of special trust. Here it becomes very close to networks, which will be discussed in the next Section. However, the larger A is, the closer trust is to the generalized concept. If A is sufficiently large, and Putnams' Instrument shows a high score, we expect to find high values of generalized trust. This is also the A's where we expect that it is most easy for people to cooperate.

However, some studies have found areas with low generalized trust, but with high special trust in some fields. For example it is consistently found that the Latin DC's score much lower on the generalized trust measure than the Germanic/British DC's, even when some special trusts are high in the Latin World. So it is important to recognize that »trust« is difficult to measure in one dimension.[20] This point is further discussed in V.1.

IV   Networks and the trust-cooperation-complex

Networks are the most notable alternative to the trust-cooperation-complex. It is analyzed by the sociological discipline of network analysis. Sociology deals with social relations, so it is an old and central issue to study the links individuals form to each other. This literature is largely unknown by economists. Good introductions are found in the original article on social capital by Coleman (1988), in Snijders (1999), Taylor (1999) and Dijk (1999).

Different types of links exist: Links can be very weak - to passing acquaintances - and strong - to old friends. Some links are even family links. To build and maintain a link to another person is costly in time

and perhaps even money. However, there are great benefits of friendship, and it is important to have somebody to rely on in case of problems.[21] Especially in DCs people do not have enough time. Congestion problems may occur if one builds too many links. There is probably an optimal amount of friends.

A closely related literature deals with social networks in firms and the relationship between these networks and the efficiency of the firm, as already mentioned.

IV.1   *The network definition of social capital*
It is a key observation that people form links with others. These links can be characterized by their strength and measured by different techniques. People typically participate in several networks - maybe one at work and another for their hobby, etc.

Network definition: Social capital, ω_i, is a measure of the *amount* of networks person i has built.

Hence it is a measure of network density. This is easy to develop into an operational definition, as will be shown in V.2. In addition, Snijders (1999) gives a basic network payoff definition that in our reformulation (to fit the other definitions) becomes:

Network payoff definition: The social capital of person p_i, ω_i, is the total amount of benefits p_i can draw (without collateral or high interest rates[22]) on his network(s) if necessary.

The first point to note when considering these definitions is that there is a close connection between the network payoff definition and the trust payoff definitions. Those you trust are likely to be your friends, and you are likely to trust your friends:

(2)   *The trust-network connection*: »trust + available funds« ⇔ »amount of money you can draw« $\pm\, e_2$

Once more it is possible to think of possible exceptions. (2) is likely to hold only with a small error $\pm\, e_2$. If (1) and (2) both hold, this causes:

(3)   The »amount of money you can draw« ⇔ »ability to work voluntarily together« $\pm\, e_3$

Also (3) appears rather reasonable, but once more a small error of $\pm\, e_3$ should be included. The three errors e_1, e_2 and e_3 are related by a tie.

The key outcome of the discussion so far is that the network definition fits rather well into the trust-cooperation definitions. Everything might be shades of and approaches to the very same basic phenomenon. This can also be seen by looking at the relation between network and the two most special definitions.

IV.2   *Putnam's Instrument: VO's and networks*
Putnam's Instrument is the density of voluntary organizations (VO's). This is clearly one type of network, but (nearly) everybody has networks that are independent of organizations. So VO's constitute one particular type of network to join. They are not »personal« networks one has to build, but when joining a VO one automatically obtains many (very) weak links, making it easier to develop stronger links.

Normally one may think that all types of networks are correlated, but as already suggested they may not be. Lonely people or newcomers to an area may join organizations because they have no other network. And some organizations are so demanding that they squeeze out most other networks. So there may be some tradeoffs between other networks and the ones of VO's. These considerations suggest:

Putnam's Instrument is likely to be a proxy for social capital also as defined by the network

definition, but maybe it is not a good proxy. In particular one can think of situations where the network definition and Putnam's Instrument diverge.

The main possibility for divergence is the situation under a totalitarian dictatorship. Such regimes want to control all VO's, as they constitute alternative units of organization which can become centers of opposition (cf the Catholic Church in Poland 1945-88). So one can imagine that people nonetheless form personal networks. In Communist countries (of the past) it was difficult to obtain goods and services without connections or time-consuming queuing, so people did form private networks to help each other. At the same time the regimes did control (and suppress) VO's, and few such organizations survived.

IV.3   Nan Lin's definition: good connections

The last definition to be discussed is the one of Nan Lin,[23] who studies networks in China. His main point is that links are more useful the higher the rank of the person, with whom it is formed.

Lin's definition thus starts from any measure of p_i's network »size«, and then each link is weighted with the importance of the person with whom the link is formed. China is a rather hierarchical society - where it is relatively easy to place everybody on a scale. So a link to a general is better than a link of the same strength to a captain, which in turn is better than a link to a mere GI. This can be converted to positions in the nomenclature.

This definition may be implied in the operational network definition above. One can surely draw on more resources - if need arises - if one has rich and influential friends than if one has poor friends far from the seats of power. And this is particularly important in countries under a (totalitarian) dictatorship.

V   Measurement: The polling methods

To turn social capital into a standard tool of economics a simple basic measurement technique is needed. We shall here consider the methods that can be used by standard polling methods only. Till now methods analyzing generalized trust, networks, and voluntary organizations have been developed - we shall concentrate on these methods. Questions in polls are difficult to formulate so that the answers given by a suitable sample of the population make sense. The economist, who are not familiar with the art/science of formulating questionnaires may consult Table 7 for a quick overview of some of the problems.

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Table 7

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Measures of social capital are needed to compare groups within the same countries and to compare countries as well. Hence questions should be used which are connotation-free and so concrete and salient to people that patterns found are reliable. A compendium of social capital questionnaires actually tried is found in Krishna & Schrader (1999).

V.1   Trust questions: generalized trust and trust payoff

The World Value Survey (Inglehart et al, 1998) gives results of several questions trying to measure generalized and special trust.

The size of generalized trust is measured by the following question: »Generally speaking, do you believe that most people can be trusted or can't you be too careful in dealing with people?« Figure 2 shows the relation between »trust« and »perceived political participation«[24] (see VII.1) for the 32 countries where comparative data are available for both series. The correlation is highly significant, but far from perfect, as discussed by Keefer & Knack (1997), Shleifer & Treisman (2000; p 100) and (Paldam & Svendsen, 2000b).

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Figure 2

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The two series are clearly correlated, but four countries fit badly into the pattern: China has much trust, Uslaner (2000) argues that the observation is wrong. Brazil has no trust. Furthermore, two countries have very high perceived participation: Switzerland and the Netherlands.

Clearly trust is difficult to measure directly. Perhaps it is easier to measure trust payoff using some variants of the following questions:

(1a) How many of your friends do you think will trust you with a loan?
(1b) How many of your friends will you trust with a loan?

The question could be supplemented with other questions involving mutual aid between friends. It is easy to come up with possible services friends do to each other, which involve trust, but it is harder if these questions have to be applicable in different countries and to different income groups.

The famous wallet-test is an attempt to measure trust in a more general way: Here N wallets are »forgotten« in public places and the test is how many that are handed back.[25]

V.2   Network density measures

When one reads the proposals made by network sociologists (in SCALE, 1999), two methods appear as already discussed: network density and network payoff measures. The network density method is to map people's networks, and weight it with strength and perhaps (following Lin) importance of the link. This is a labor-intensive technique, which needs specially educated interviewers and long interviews. In principle, such interviews are open, but they can be controlled by asking other persons in the net. The results look like other types of »network«, such as maps of subway lines and electrical connections in an electronic device, etc. An example is probably the easiest way to explain what has to be done.

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Figure 3

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Figure 3 shows a hypothetical example of the relations between 10 people living on the island A. The example shows two groups with only one weak link. One person is relatively isolated, but maintains a weak link with a member of the other group, and one couple may be breaking up. From looking at the drawing the reader can tell a story of the people on this island.

Social capital here becomes a measure giving the *network density*. For each person the (weighted)

amount of links to other people can be calculated as a measure for ω_i, and then the average ω_i for all persons in the location A can be calculated as Ω_A. In the example of Figure 3 the network is not particularly dense, so social capital is fairly low. The structure depicted makes it difficult for the islanders to solve a problem demanding collective action. It is easy to imagine a more productive network (in one of the senses of Table 3) for the island.

V.3   Using Putnam's Instrument, Π

I have heard several independent development »observers« say that the main reason why social capital has moved from being a speculative subject for sociologists (and other specialists) into center stage is Putnam's proposal of a simple Instrument allowing measurement. Even the most hard headed economist, can see that Π is much easer to compile than the consumer price index.

The first point to note is that Putnam's Instrument has *one true value* for the area A. It is just a question of finding the true number. Secondly, it comes with two ways to find the value, ie it has a double-entry bookkeeping quality per definition, making control relatively easy.

Table 8 gives the simple double-entry bookkeeping of Putnam's Instrument. Π can be calculated in two ways: By asking people how many organizations they belong to, and by asking the organizations how many members they have. The two ways to calculate Π should give the same result. If a difference results it will point to the direction of missing observations and other interesting problems.

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Table 8

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When people know an area, they should be able to tell which organizations exist in the area. That is, if the pollsters start by asking 10 people about the organizations in the area, it should be easy to make a list and start the poll. And if the pollsters have already made other polls in similar areas, they will start by a list of likely organizations. Let us imagine an area A with 25'000 people, and a team of 5 trained pollsters, who are so close to the population that they are taken to be (almost) native. How much work will it be to find Π? My guess is that it will take less than a week to get a rather precise measure.

In a homogeneous country one may find that Π does not vary much throughout the country, so a good estimate of the national value of Π may not need more than a study of 20 areas covering a small fraction of the population only. So if Putnam's Instrument can be shown to work well, it is not more difficult to use than many other statistical data that are routinely collected by statistical agencies.

The Π-measure has three main problems, (Pr1) - (Pr3):

(Pr1) The definition of a voluntary organization (VO).[26] A VO is one part of a continuum containing also normal business (B) and government organizations (GO). Somewhere lines have to be drawn, dividing VO's from B's and GO's. However, all 3 types of organizations are alive and changing. Examples exist of movements in all 6 directions possible. The analysis is only interested in 4: from a VO to a B, and vice versa, from a GO into a VO and back.

It is well known that Bs sometimes hide behind fronts making them look like a benign VO. And some VO's are captured by B's. Or perhaps a benign organization grows into a major nonprofit B, and then

perhaps even into a normal B. This has actually happened with cooperative movements in many countries.[27]

VO's are often close to GO's. Ministries having an expenditure program in a certain field often cooperate with the VO's in their field and sometimes subsidize them. It may go so far that the VO becomes an »arm« of the ministry or even its »pressure group«. Ministries may even create VO's to obtain a pressure group. Hence, the line between VO's and GO's is often difficult to draw. There are also examples of GO's becoming VO's.[28]

The only operational solution to the problems is to use what the respondents think. Even if an organization was set up originally by the State, it is a VO now if people think it is. Even if business people are also involved in an organization, it is still a VO, if this is what people consider it to be.

(Pr2) The intensity of the contact. Especially in DC's many VO's exist with membership that costs little and demand little contact. Such VO's may claim a large membership while many people do not remember that they are members. Other VO's are very demanding and come to dominate the lives of their members. It appears that when Π is weighted with the intensity of contacts, the measure becomes more powerful when used as an explanatory variable (see World Bank, 1999a).

(Pr3) The benignness-weight problem. As discussed in II.5 some VO's are clearly non-benign. Criminal, racist and violent organizations exist. It is arguable that these organizations should get a negative weight when aggregated into the social capital of the area. Most of these organizations are also secret. And, thus they will not be covered by polls even when everybody knows that they exist in the location. Secret organizations thus get the weight zero in the aggregate.

VI   The macro level

Many authors have analyzed the relations between existing macro-series pertaining to social capital and outcome variables notably economic growth. The conference volume Borner & Paldam (1997) have brought together some of the main researchers.

VI.1   Indicators and aggregate social-legal-political indices, Φ

Many social, legal and political indicators - which pertain to social capital - are available. Most can be divided into three groups:

  a.   Positive measures of democracy and political rights, freedom of the press, human rights, etc.
  b.   Data on legal protection of the individual and his business: Independence of courts, protection of property rights, and transparency of laws and legal institutions, etc.
  c.   Negative measures for lack of the above: crime rates, perceptions of corruption, frequencies of civil and political violence, political instability measures, frequencies of labor market strife, etc.

On a rough count about 25 such variables exist on a regular basis for many countries, while thousands of polls from individual countries can be found. As usual, it is easier to count the occurrence of the negative events, so the best time series and cross-country data tend to be found under (c). Most of these series are of a relatively low quality. Two examples may suffice:[29]

Corruption is measured by polls of *corruption perceptions*, and many polls have been made. Since 1995 *Transparency International*[30] has made an annual compilation of the available cross-country

evidence. The data are first calibrated and then averages are taken. The corruption score is given at a 10-point scale from 0 (highly corrupt) to 10 (highly clean). The latest posting gives data for 99 countries. Only countries covered by three polls are included. This allows the organization to give a standard deviation as well as a corruption score. The average standard deviation is almost 1 point. While the difference between the USA (7.5) and Sweden (9.4) is significant, the difference between either country and the UK (8.6) is dubious.

Since the 1930s ILO has reported strike-data from an increasing number of countries. The data are reported in three dimensions: (a) the number of strikes, (b) the number of workers involved, and (c) the number of days lost to strikes. This looks like a fine set of data to measure people's ability to cooperate. However, the agencies collecting the data differ widely between the countries. What they collect differs as well for all the usual reasons. In most countries a large degree of under reporting - such as 2-3 times - is known to exist for small strikes. While the data series are closely connected to the inflation rate, they have no robust connection to production and growth.

However, from sets of these variables one can construct aggregate social-legal-political indices, Φ, with considerable explanatory power in economic models.

VI.2   Two links: from Φ-indices to investment and growth and to social capital

It is well known that it is difficult to predict investments *over time* at the macro level. Therefore, it is interesting that several social-legal-political macro-indices of type Φ as just sketched have been found to be rather good predictors of the *cross-country pattern* of investments and growth. This was already demonstrated by Borner, Brunetti & Weder (1995), Mauro (1995) and later in an even larger setting by World Bank (1997). See also the tests by Brunetti (1998) and Keefer & Knack (1998).

The main result is »conservative« in the sense that investment and growth are increased by stable, transparent and predictable social-legal-political surroundings, and harmed by lack of clear property rights, unstable political systems,[31] violence and corruption, etc.

These are new and important findings, but it is not clear how such measures relate to social capital. Keefer & Knack (1997) actually prefer to speak about »the degree of civicness« instead of social capital. It is possible that Φ-indices work for reasons and through mechanisms entirely unrelated to social capital, Ω. However, Figure 2 (and other evidence as well) strongly suggests that a relation $\Omega = \Omega(\Phi, ...)$ can be found. Whether this relation is a simple linear one or depends upon some other variable(s), remains to be seen. Also, it should be mentioned that political scientists (as Putnam (1993), Deth et al (1999)), discuss the relation between social capital and democracy and »good governance«. Hence, they try to relate trust and cooperative ability to measures of civic participation and onto the quality of the government and the administration. Economists are, as mentioned, interested in the relation between social capital and the economy through the investment channel or directly as listed in Table 3.

Essentially it makes little sense to discuss the relation between any macro indicator and social capital before theory-near, micro based measurement exists to compare with. However, when it exists, it is possible that simple macro proxies can be found allowing us to extend the measures back in time and to more countries.

VII Conclusion

It has often been discussed if theory causes measurement or measurement causes theory. Most case studies show that empirical measurement and theoretical analysis have proceeded simultaneously though in leaps and bounds.[32)] In social capital a distinct imbalance exists: There is far more theory and speculation than measurement: Social capital is a new field, suffering from a great lack of good, reliable data. Both time series and cross-country evidence are missing. In the meantime much speculation is going on.

From the above it appears that the two most promising avenues to measurement are *Putnam's Instrument and generalized trust* on the one side and *network/trust payoffs* on the other side.

The easiest indicator to use is Putnam's Instrument: the density of voluntary organizations (VP's). They should be weighted by the frequency/intensity of the contacts. The most problematic features of the measure are: Should the VO's be weighted according to their degree of benignness? While many organizations are well defined and their character as voluntary is clear, others have loose criteria of membership. Also, the lines between VO's, state organizations, and business, should be drawn.

It would appear that Putnam's Instrument yields much the same measures of social capital as the standard polling question regarding generalized trust in most - but not in all - counties.

Trust payoffs are virtually the same as network payoffs. What should be measured, is the resources people can draw upon in their »network«, ie from the ones they trust, in case of an emergency. Here the analysis does not appear to be so well developed, and much remains to be done before a general question-naire has been developed.

From the above it is hopefully clear that social capital is a *promising* concept, which can be operationalized by relatively simple measurement. However, it will take some time and a lot of work has to be done before it is known if social capital can deliver what it promises.

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Notes:

1.   Three recent books discuss many aspects of social capital: Dasgupta & Serageldin (1999) contains new work and reprints of classical articles. Leenders & Gabbay (1999) covers the relations between social capital and management. Finally, Deth et al (1999) gives surveys on existing social capital measures from various OECD countries. Recent World Bank research is pt available as conference papers: World Bank (1999a and b). Both conferences will lead to conference volumes.

2.   At least a dozen *inventors* of social-capital-like concepts have already been pointed out. They have used a bewildering variety of names for their concepts. To bring order in this »mess« will be a large job for the historians of ideas. Our analysis starts with Coleman (1988) and Putnam (1993). They both point to predecessors.

3.   Several of the leading empirical researchers of economic growth (as Dale Jorgensen) have expressed grave doubt that there is »unknown space« left in the residuals of the growth equation for social capital to play a major role.

4.   It is also discussed by several of the authors in Dasgupta & Serageldin (1999) notably by K.J. Arrow and R.M. Solow.

5.   I have (already) participated in half a dozen conferences with participants from most tribes of the social sciences. I can testify that by far the largest communication problem is the many try to use social capital to »sell« their whole tribal language and theories as well: We in the xx-social science tribe has this great and wonderfully complex theory, where social capital is one little corner, and to understand it right you need to know everything else.

6.   To simplify I will only consider simple averages, ie social capitals of individuals are assumed to be additive.

7.   Other evidence (quoted in Paldam & Svendsen, 2000b) suggest that a couple of decades is normally enough for a large adjustment in the level of social capital.

8.   The example of money as social capital is interesting, but somewhat isolated from the rest of social capital - see III.6 on special trust. It is for example well known that many Mexicans distrust »gringos«, but greatly trust and love »greenbacks«.

9.   The agricultural cooperative movement in Denmark was built as part of a self-help movement of the farmers in the period from 1870 to 1900, where they were engaged in a strong constitutional fight with the »state«, which was in the hands of their enemies, the last of the big landowners. A similar (but more complex) story can be told of the development of the kibbutz movement in the British colony Palestine.

10.   The two major social capital research efforts in the World Bank (see World Bank, 1999a & b) were actually financed by large grants from Danida and Norad (the development aid agencies of Denmark and Norway), who are known for their strong post-material ideology, being critical of cost benefit analysis, economic growth, efficiency, and »economic thinking« as such, etc.

11.   I was so lucky as to sit in a social capital committee in the World Bank with Mancur Olson during his last two years, and I therefore know that he was aware of the contradiction between his 1982 book and the article from 1996. How he would have resolved the contradictions was unfortunately left unanswered.

12.   Paldam (1997, p 299-304) describes the fate of some drinking water projects in Kenya. They were constructed by a foreign donor and handed over to village committees. To keep a project running, villagers have to cooperate. This works for activities everybody could monitor directly, such as working together to desilt water tanks. However, it proved impossible to organize cooperation involving trust, such as collecting modest sums in cash for spares.

13.   Formally (1) is an assumption of behaviour, ie an equation that has to be estimated. It is *not* an identity.

14.   (a) Think of a beautiful, but untrustworthy, member of the other gender, who does increase the working climate, and thus productivity, by being member of a working group. And (b) of somebody who is a bad worker, or a chain smoker, who is trusted, but whom nobody wants to work with.

15.   When Robert D. Putnam has to be dogmatically brief he says: »My definition is: Social capital is networks«. Quoted from a talk given in the World Bank in June 1999, see also the introduction to Putnam (2000).

16. The size of the bank staff is not fully clear from the records, but it appears that one should think of such numbers as 30-50 bankers distributed in 5-6 branch offices. Of these less than 10 were the fully trusted members of the bank.

17. The concept of a »benevolent dictator« is a theoretical construction like »perfect foresight«. It is useful in theoretical arguments as long as nobody believes in its physical existence. Real dictators fear and suppress uncontrolled cooperation among their subjects for good reasons. Hence dictators normally *destroy* social capital as mentioned.

18. This type of social capital is close to firm specific, learning by doing, human capital. Note that these types of human capital is rarely included in human capital measures.

19. It appears that all (?) great generals have recognized this, but few have developed it into a management philosophy. However, the main organizer and thinker of the Prussian-German army, General Moltke (the elder), was explicit on this point (see Goerlitz, 1953, notably Chapter IV.II). Apart from his famous battle plans Motke's main contribution was the organization and training of the »General staff«. He placed great emphasis on the creation of trust among the top officers to generate the crucial flexibility and initiative in combat. Orders were thus orders only up to a point. Then everybody had to take their own decisions imbued by joint schooling, much esprit de corps and a thorough understanding of the battle plan.

20. Uslaner (2000) analyses the relation between generalized trust and special trust in different fields and finds them unconnected. A soldier may trust a member of his platoon with his life, but not with his wallet, etc. See also the Mexican example of note 8.

21. For the individual his/her friendships have as well an altruistic/emotional value as an economic value, as friendships provide some of mutual insurance against the small and larger hazards of everyday life.

22. People can often borrow money from professional moneylenders at very high rates or by giving adequate collateral. This is not what anyone has in mind when speaking about social capital.

23. He is in the process of publishing a major part of his work - in the meantime see Lin (1999).

24. Respondents were asked whether they participate in different civic activities, i.e. voluntary, activities, including: (a) social welfare services for the elderly and deprived; (b) education, art and cultural activities; (c) local community affairs; (d) activities related to conservation, environment and ecology; and (e) work with youth. The density of civic participation is measured as the percentage of these civic activities in which an average respondent in a country is involved.

25. This is approaching the family of corruption indices discussed in Section VII.1 below.

26. Some VO's call themselves NGO's to stress that they are Non Government Organizations.

27. Micro-credit schemes as being established in many LDCs. They obviously represent social capital. Most DCs have saving banks, which started in the same way. But now many have grown into something looking like normal private banks. Maybe they have even merged with private banks.

28. In a study of social capital in Bolivia (World Banb, 1999a) the polls had to deal with »Agricultural Syndicates«, which were set up by a former government (50 years before). They were set up for the government party to organize the farmers in its support. However, half of the syndicates had collapsed since then and the farmers had taken over the other half themselves. These GO's had thus been captured and turned into VO's.

29. The author uses the examples he knows, see Paldam (1983; 2000).

30. A organization based in Germany with the net address: <http://www.transparency.de/welcome.html>.

31. It appears to matter little if the political regime is left or right, democratic or dictatorial, or if governments change. The key point is that it is predictable and stable.

32. National accounting started from the development of neoclassical theories of production and income formation in the 1920s and 30s. Then came the development of Keynesian macro theory, needing new national accounting tools. Furthermore, the World War spurred the development of input-output analysis. And gradually detailed measures

began to appear on a regular basis. The new data were then used to develop the stylized facts leading to the formal theory of growth, and monetary theory, etc. The process was complex and much was arbitrary. In the end it is almost impossible to say if theory caused measurement, or measurement caused theory.