

Social Capital of Social Capital Researchers

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Abstract: This paper investigates the co-authorship network of star researchers from different disciplines who work on social capital. There has been a recent surge of interest in social capital. Articles on social capital that are published in the last five years constitute more than 60 percent of all articles on social capital. Research on social capital now spans sociology, economics, management, political science and health sciences. Despite this interest there is still not a consensus on the definition and the measurement of social capital. This is partially due to lack of interaction between disciplines. By employing a simple social network analysis this paper shows that the social capital of social capital researchers is low between disciplines. Different from other theories of capital, social capital theory has concurrently been developed by various disciplines and as such, research across disciplines will improve our understanding of social capital.

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1 Introduction

The literature on social capital has grown at an exponential pace in the last 20 years. After Glenn Loury's introduction of the term in 1977, several papers using different definitions of social capital appeared (e.g., DiMaggio and Mohr, 1985; Bourdieu, 1986; Flap and De Graaf, 1986; Coleman, 1988; Fratoe, 1988). Since then more than 2,500 papers have been published in the Social Sciences Citation Index (SSCI) on the topic. Social capital is now associated with higher economic growth (e.g., Knack and Keefer, 1997); higher education (e.g., Coleman, 1988); higher financial development (e.g., Guiso et al., 2004); better innovative outcomes (e.g., Akcomak and ter Weel, 2009); lower homicide rates (e.g., Rosenfeld et al., 2001); lower suicide rates (e.g., Helliwell, 2007); lower property crime (e.g., Buonanno et al., 2009); better public health (e.g., Kawachi et al., 1997); and higher value creation by firms (e.g., Nahapiet and Ghoshal, 1997). The literature spans sociology, economics, organization, management, political science, planning and development, and health sciences.

Figure 1 shows the number of articles on social capital in the SSCI and the citation records of these papers in the period 1988 to 2007¹. Panels (a) and (b) depict the absolute number of articles in "title" and "topic" categories respectively. As visible from the graphs, prior to 1993, when Putnam promoted the concept in his book "Making Democracy Work: Civic traditions in Modern Italy", there were only 10 articles on social capital. In the last 15 years an average of 160 articles have appeared per year with, on average, about 1,500 citations to them.² However the absolute numbers could be misleading because other research topics may display a similar trend as well. Therefore we also collected information on the articles on "human capital". Figure 1 panels (c) and (d) replicate the graphs in panels (a) and (b) in terms of number of social capital articles per human capital article.³ This adjustment do not change the results. 20 years ago there were about 0.1 social capital articles per human capital article but now there are 1.2 social capital articles per human capital article. This is a striking statistic on the extent of social capital research.

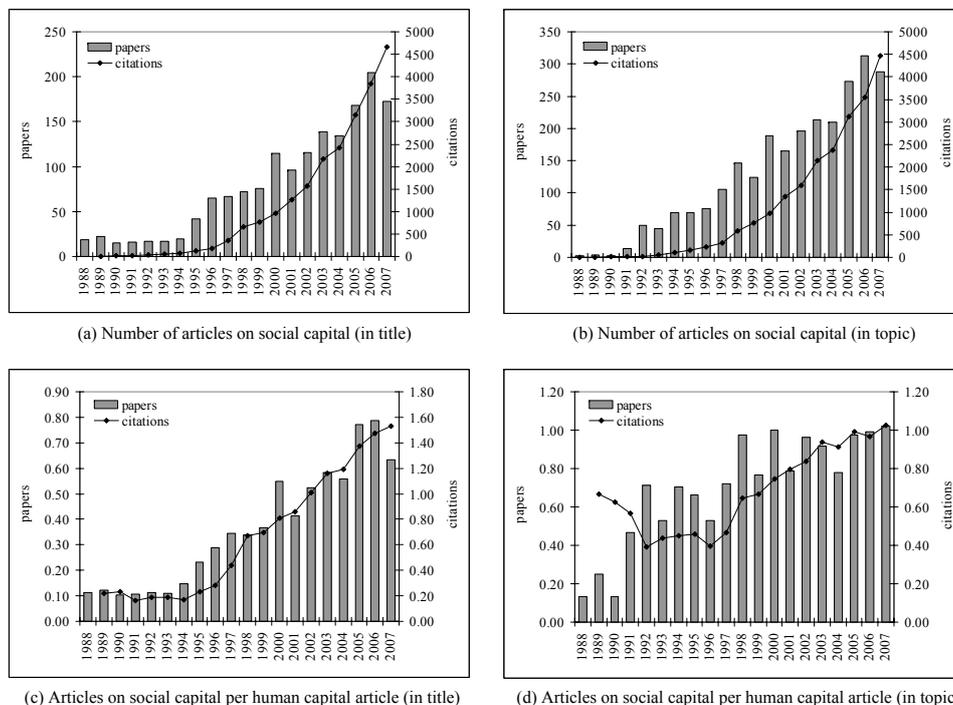
¹ See Beugelsdijk (2003) for an earlier analysis.

² The search parameter 'social capital' in "topic" resulted in 2,556 articles from 1988 to the end of 2007. The search parameter 'human capital' returned 3,020 articles over the same period. The search for 'social capital' or 'trust' in "title" resulted in 1,594 hits and the search for 'human capital' or 'education' in "title" returned 3,995 articles. The search is limited to 10 areas: economics, sociology, management, business, political science, interdisciplinary social sciences, planning and development, business and finance, environmental studies and urban studies. Extending the search to other areas such as geography and public health improves the results and the increasing trend becomes much more visible. <http://portal.isiknowledge.com/portal.cgi>. Accessed 08.11.2008.

³ The numbers in panels (c) and (d) are calculated by dividing the absolute number of articles (or citations) on social capital by the absolute number of articles (or citations) on human capital.

Despite this interest, there has not been an agreement on what social capital actually is. The concept is widely used both at the macro and micro level without really specifying the sources of it which makes the concept rather vague. It has been used as a catch-all term encompassing all social explanations to various socio-economic phenomena. Yet another major debate is how to measure social capital (Paxton, 1999; Narayan and Cassidy, 2001; Grootaert et al., 2003). Paldam (2000) argues that social capital is a speculative concept emanating from the fact that there is far more theory than measurement. A number of scholars have already commented on the major contradictions and weaknesses regarding social capital and its measurement that have to be resolved, clarified and developed, respectively (e.g., Portes, 1998; Fine, 2001; Durlauf and Fafchamps, 2005).

Figure 1 - Articles and Citations of the Articles on Social Capital, 1988-2007



Given the size of the literature, it is a tremendous task to review all the literature. This paper makes an attempt to build an inventory of various definitions of the concept to find elements that are common to most definitions and compare and contrast different forms of capital. Social capital is a multidisciplinary concept developed by different disciplines. However we do not know the extent of the interaction among these disciplines. By means of a social network analysis we show that social capital of social capital researchers is low contrary to what one might expect. This paper sug-

gests that interaction and joint-works across disciplines will enhance the advancements in social capital theory and increase our understanding regarding what social capital is.

The outline of the paper is as follows. Next section highlights four streams of research prior to introduction of the concept of social capital, which are very much in line with contemporary use of the concept. Section 3 discusses the concept and the definitions providing a detailed comparison with other forms of capital. Then we present a social network analysis to assess the social capital of social capital researchers. Section 5 concludes.

2 Origins of Social Capital

Before defining the concept of social capital, it is important to understand the origins of the concept. Below we briefly summarize the findings of four different streams of research prior to the “social capital” literature. In the next section we argue that whatever the source of social capital, it is based on social networks (see also Sabatini, 2009). It is for this reason that we focus on these four streams because each of these streams emphasize the social network that forms social capital and share common characteristics with the contemporary social capital concept.

First, there is a well-developed literature on whether interpersonal ties are conducive to better opportunities in the labour market (e.g., Granovetter, 1973; Lin et al., 1981; De Graaf and Flap, 1988; Marsden and Hurlbert, 1988). This line of research argues that an individual’s family, friends and acquaintances (i.e., the strength of weak ties Granovetter, 1973) form a social network that serves as a social resource, which can be utilized to gather information on job opportunities and find a new or better job. In these early studies, the resources provided by the social network are labelled as “social resources” (e.g., Lin et al., 1981; Marsden and Hurlbert, 1988) or as “social capital” (e.g., DiMaggio and Mohr, 1985; Flap and De Graaf, 1986), and the two terms are used almost as a perfect substitute to each other.⁴

Second, the role of rotating savings and credit associations (ROSCAS)⁵ in pooling risk for achievement of certain economic means was common knowledge in anthropology and sociology in the 1960s (e.g., Geertz, 1962; Ardener, 1964). Members of this informal institution contribute fixed amounts regularly. The resulting sum is then allocated to a member on a random basis (lottery) or on the basis of a bidding system. This process repeats itself until all contributors receive the sum once. The system depends on the existence of strong ties between members to enforce social sanctions and to

⁴ At that time social capital was not conceptualized and was far from what we understand nowadays. Social capital was mostly associated with resources deriving from social networks and there was no differentiation between social capital and social resource.

⁵ As noted by Geertz (1962) many terms are used to denote rotating savings and credit associations such as, contribution clubs, mutual lending societies, pooling clubs, etc.

punish deviant behaviour. Hence, trustworthiness of the members is important because it constitutes a guarantee that commitments will be kept.⁶ ROSCAS strengthen solidarity in a community as well.

Third, there is a large body of work on how social relationships affect health and well-being, both at the individual and community level (e.g., Cassel, 1976). Several terms such as, social support, social networks, social ties, social activity and social integration (House et al., 1988) are used to explain this phenomena in the 1970s and 1980s. Social support influences human health via two channels (*i*) by reducing stress levels (or exposure to stress) in the presence of stress due to mental or physical illness (e.g., Kaplan et al., 1977), and (*ii*) by enhancing health in general as the degree of embeddedness in a social network (e.g., church membership, formal and informal group affiliations) is associated with public health (e.g., Blazer, 1982). These early works on social support can also be viewed as the ancestor of the current literature on social capital and (public) health and well-being. Scholars have shown that social capital is associated with higher levels of public health (e.g., Veenstra, 2002), lower death rates from cardiovascular problems and cancer (e.g., Kawachi et al., 1997) and lower depression (e.g., Lin et al., 1999).

Fourth, there is substantial research in economic sociology on immigrant entrepreneurs (e.g., Light, 1972; Borjas, 1992). For instance, Baker and Faulkner (1991) argue that an ethnic community could be viewed as a social network that generates resources, such as cheap labour and start-up capital (via ROSCAS, for example). Standard physical and human capital theories cannot explain how immigrant entrepreneurs utilize these resources to achieve their economic goals (Wilson and Portes, 1980). Most resources available in these ethnic communities are based on (*i*) *group solidarity* (for instance, see Portes (1995) on how the Cuban community prefers exiles from Cuba for start-up funds); and (*ii*) *enforceable trust* arising from the monitoring capacity and the effectiveness of internal communication within the ethnic group (e.g., Light, 1972). As explained in detail in Portes and Sensenbrenner (1993), both enforceable trust and group solidarity, together with moral values and reciprocity constitute sources of social capital.

At least four sources of social capital can be identified from these works prior to social capital research: (*i*) individual's *social relations* could play significant role in status attainment; (*ii*) *identification* with a group could generate positive outcomes by producing a sense of belonging; (*iii*) *solidarity* may render individuals to seek for community well-being rather than individual self-interest; and (*iv*) *enforceable trust* arise from enhanced information ex-

⁶ Geertz (1962) reviews how such traditionalistic forms of social relationships are mobilized to achieve certain economic functions in various countries, ranging from small-scale capital formation (Ardener, 1964) to the purchase of commodities like bicycles. As noted by Granovetter (1995) micro-lending institutions are almost a copy of ROSCAS. As such they could be viewed as the formalized version of these informal institutions.

change, social norms and monitoring capacity in social networks. These four components are important elements of the concept of “social capital” that builds on these early literatures.

3 Social Capital

When Glenn Loury first used the term ‘social capital’ perhaps he had not imagined how popular the term would become. As an attempt to criticize neoclassical treatment based on individual investment in human capital and skills in explaining racial income inequalities, he wrote “An individual’s social origin has an obvious and important effect on the amount of resources that is ultimately invested in his or her development. It may thus be useful to employ a concept of “social capital” to represent the consequences of social position in facilitating acquisition of the standard human capital characteristics” (Loury, 1977, p.176). Although he was well aware of the inherent measurement problems, he argued that such an attempt would at the very least force scholars to seek other explanations for income differentials than those usually provided in neoclassical economics. Loury did not go further to conceptualize the term “social capital”, but there were signs in his approach that he actually meant social resources that are useful in acquisition of skills with economic value.⁷

3.1 *Defining Social Capital*

Given the treatment above, it is best to start approaching the concept first from the micro level. Scholars define social capital as:

“An individual’s personal social network, and all the resources he or she is in a position to mobilize through this network...” (Flap and De Graaf, 1986, p.145)

“...someone’s network and all the resources a person gets access to through this network can be interpreted more specifically as his “social capital” ...someone’s social capital is a function of the number of people from whom one can expect support, and the resources those people have at their disposal.” (Sprengers et al., 1988, p.98)

“...social capital refers to friends, colleagues, and more general contacts through whom you receive opportunities to use your financial and human capital...” (Burt, 1992, p.9)

⁷ This became clearer when at a later stage he asserted “...social capital refers to naturally occurring social relationships among persons which promote or assist the acquisition of skills and traits valued at the market place...it is an asset which maybe as significant as financial bequests in accounting for the maintenance of inequality in our society” (Loury, 1992, p. 100, cited in Woolcock (1998), footnote 2, p. 189). See also Portes (1998).

“...resources embedded in a social structure which are accessed and/or mobilized in purposive actions” (Lin, 2001b, p.29)

“...investment in social relations by individuals through which they gain access to embedded resources to enhance expected returns of instrumental and expressive actions” (Lin, 2001a, p.17)

“...I take social capital to mean interpersonal networks... a network remain inactive or be put to use in socially destructive ways. There is nothing good or bad about interpersonal networks; other things being equal, it is the use to which a network is put by members, that determines its quality.” (Dasgupta, 2005, p.S10)

Tracing the commonalities in the definitions above results in the following list: *(i)* social capital arises from social networks; *(ii)* the social network itself is not social capital but utilizing it makes social capital visible; *(iii)* individuals can purposefully invest in social relations with an expected return; and *(iv)* social capital may have a negative as well as a positive impact on outcomes. Regarding the first and second elements, for social capital to arise the existence of a social network is a necessary but not a sufficient condition. To utilize the resources inherent in the network, individuals have to engage in actions. For social capital to exist, three components -the social structure, resources and the action- must be present (Lin, 2001b) and social capital depends on the amount and quality of these resources (Portes, 1998). The third element highlights that one can actually invest in social relations which means that the agent's decision to act is calculative as further discussed in Table 1 *(h)*. In such a setting social capital works as it enhances information exchange and as it influences individual decision making. Although social capital is mostly associated with positive outcomes, for instance job search and status attainment (e.g., Lin et al., 2001), social control (e.g., Coleman, 1988), and resources arising from immigrant networks (e.g, Portes and Sensenbrenner, 1993); it could also result in negative outcomes by restricting others (outside the network) to access opportunities (e.g, Waldinger, 1995) or by restricting an individual's attempt to connect to other social networks (i.e., restricting bridging social capital) (e.g, Fukuyama, 1995; Beyerlein and Hipp, 2005). At this stage we may consider two intermediary definitions. Definitions below by Pierre Bourdieu and Alejandro Portes could be placed somewhere in between the micro and macro level interpretations of social capital as they shelter characteristics that could be associated with both levels. These early definitions are important because they came very close to the economist point of view (e.g., Zak and Knack, 2001; Glaeser et al., 2002).

Table 1 - A Comparison between Physical, Human and Social Capital

	Physical capital	Human capital	Social capital
(a) Embodiment	Embodied in tools, machinery etc.	Embodied in human actors (i.e., entrepreneurs, skilled workers etc.)	Is not embodied in the actors but rather in the relation (link) between the actors.
(b) Origins / How it is created	Created by changes in materials to other forms of tools that facilitate production. Added value (profit) from production.	Created by changes in people (by education, training and work experience etc.). A set of skills that enables individuals to act in new ways and to benefit from them. Added value embedded in labourers with knowledge and skills that have economic value and that enables labourer to earn more than what is socially optimum or subsistence.	Created by (social) relations between agents such as individuals, firms and other corporate bodies (micro foundation). It could also originate from community behaviour that governs the actions of the individuals within the community by norms and values (macro foundation). It could arise as a by product, could be inherited or result from deliberate investment.
(c) Tangible?	Tangible. Observable in material form.	Less tangible. Embodied in skills and knowledge.	Even less tangible. It resides in the relations.
(d) Productive?	Yes.	Yes.	Yes. By making possible the achievement of certain ends that would not be possible (or possible at a higher cost) in its absence. For instance, a community with extensive trust is able to accomplish more than a community with low levels of trust or an individual could find a better job due to social connections.
(e) Defined by its function?	Yes. For instance, the function of machinery is to create (new) products. Functionality depends on use and application. For example, machinery for glass production may not be usable for weapon production.	Yes. For instance, the function of a university education is creating better job opportunities. Functionality depends on use and application. For example, education in engineering would not help to be an accountant.	Yes. Certain aspects of social structure viewed as a resource to actors that can be used to achieve certain goals. Functionality depends on use and application. A type of social capital useful for X may not be useful for Y. However, contrary to other forms of capital, certain forms of social capital might be harmful for other activities. For instance, strong within group social capital may prevent individuals from establishing connections outside the group.
(f) Endurance / Durability	Durable. But, depreciates if used, if left idle and through time.	Durable. But, depreciates if left idle (for instance, people tend to forget knowledge if not used) and through time (as one grows old loss of certain capabilities). When used the value may appreciate (get accustomed to use of certain skill).	Fragile. Since it resides in the connection between agents, becomes obsolete if one party terminates the relationship so it could be lost without will which also makes it less reliable when compared to physical and human capital. It appreciates with use but depreciates with disuse.
(g) Transferable?	Easily transferable to others ownership.	A simple way of transferring the acquired knowledge and skills is to supply as labour. Another way is teaching other people.	Transferability is possible only in limited extent. For instance, a shop owner may change but the new owner could benefit from the reputation (brand) established by the previous owner (Sobel, 2002).
(h) Estimated worth	Could be estimated with a certain definiteness. Could be converted to economic capital (money) easily and immediately. Characterized by deliberate sacrifice for future benefits and investment with calculation.	Could be estimated but not so definite. Could be converted to economic capital (money) rather easily. Investment is done by calculating future benefits.	Not possible to put exact value on it. Not easy to convert to money form although Bourdieu insisted that it is reducible to economic capital. One could invest in social capital, for instance by investing in social relations, however different from other forms of capital reaping the benefits depends also other actor(s) and on the strength of the link. No material sacrifice to invest in it especially at the macro level, as it is mostly given or arise as a by-product. Therefore investment is not calculative. However, at the individual level investment in social capital maybe viewed as a calculative action.
(i) Economic good character	Private good. People who invest in it could reap the benefits (property rights). Investment or production of individual actors (capitalists).	Private good. People who invest in time and resources could reap the benefit in the form of better status, high wages etc. Investment or production of individual actors (labourers).	Public good character. Assume that social capital is non-rivalrous. If the actors could confine the benefits from an established relation it may be viewed as a club good, but if not as a public good (Dasgupta, 2005). For instance, at the macro level, people who bring values and enforce social norms (or help to establish them) in a community may not be the main beneficiaries of resources arising from these values (e.g. parent-teachers associations in the United States, Coleman, 1988). Viewed as a social asset as well as an individual asset.

Note: Adapted from Coleman (1988, 1990); Portes and Sensenbrenner (1993); Dasgupta and Serageldin (1999); Lin (2001b); Robison et al. (2002).

“Social capital is the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationship of mutual acquaintance and recognition -or in other words, to membership in a group- which provides each of its members with the backing of the collectivity-owned capital, a “credential” which entitles them to credit, in the various senses of the word.” (Bourdieu, 1986, p.210)

“...those expectations of action within a collectivity that affect the economic goals and goal-seeking behavior of its members, even if these expectations are not oriented toward the economic sphere.” (Portes and Sensenbrenner, 1993, p.1323)

Both definitions above reflect at least the first three elements discussed above: an individual’s action within a social network could change the incentive structure and affect the behaviour of other agents in the social structure. For instance, enforceable trust and reciprocity may arise from individual actions within a social structure.⁸ However what differentiates these definitions from the first set of six is that they refer to terms like ‘collectivity’ and ‘credential’. This macro connotation is apparent especially in the last part of Bourdieu’s definition as he bluntly writes “...a ‘credential’ which entitles them to credit, in the various senses of the word.” Given this, a cautious reader could argue that accessing this collectivity owned capital does not require a deliberate action or investment. Once you are born to a social structure you may automatically possess social capital. Portes (1995) presents various cases where ethnic business enclaves provide resources such as start-up capital and easy access to markets as long as one is a member of that particular ethnic community.⁹ For example, if a Norwegian firm is deciding between employing a Swedish candidate or one from an African country, the probability of the Swedish to be employed is higher not because of his/her merits but perhaps because of the proximity of the Swedish norms and values to the Norwegian norms and values. Here belonging to a community is an asset and requires no particular sacrifice or investment from the individual. In this sense, all the positive aspects deriving from norms, values and solidarity could be viewed as a leasing from the social community to the individual who belongs to that community. In the long run, the individual is expected to behave in a certain manner to repay the leasing.

⁸ Portes and Sensenbrenner (1993) argue that their definition (above) differs from Coleman’s definition (below) “where the emphasis is on social structures facilitating individual rational pursuits”(p.1323).

⁹ Portes and Sensenbrenner (1993) and Portes (1998) identify four sources of social capital: value introjection (i.e., values and norms that govern a community), bounded solidarity, reciprocity of exchange and enforceable trust. Portes argues that first two govern individual behaviour by setting up the rules of the game or collective expectation, but last two need instrumental action to form.

Turning to the macro level social capital, one could trace back the very origins of it to the writings of Tocqueville (1981)[1835]] who stresses the role of civic associations and civil society in the United States in bonding the public for common purposes and Marx on how workers identify themselves with the working class to support each other (cited in Portes, 1998, original in 1894). Amongst these, early writings of Durkheim on the positive effects of group involvement and participation in associations (cited in Portes, 1998, original in 1893) and of Weber (1958)[1905] on the Protestant ethic could perhaps be considered as the foundations of social capital research. However the use of the term 'social capital' is more contemporary. To explain the important role of neighbourhood networks in enabling self-governance Jane Jacobs writes "...networks are a city's irreplaceable social capital. Whenever the capital is lost...the income from it disappears never to return, until and unless new capital is... accumulated" (Jacobs, 1961, p.138). In various places in her book Jacobs mentions the importance of acquittance, knowledge of neighbour behaviour, public respect and public trust which all arise from social relations in a community but all at the same time have macro rather than micro association. Keeping this in mind the following definitions at the macro level arise:

"Social capital is defined by its function. It is not a single entity, but a variety of different entities having two characteristics in common: They all consist of some aspect of a social structure, and they facilitate certain actions of individuals who are within the structure. (p.302)...social organization constitutes social capital facilitating the achievement of goals that could not be achieved in its absence or could be achieved only at a higher cost" (Coleman, 1990, p.304)

"...features of social organisation, such as trust, norms and networks that can improve the efficiency of society by facilitating coordinated actions" (Putnam et al., 1993, p.167)

"Social capital generally refers to trust, concern for ones associates, a willingness to live by the norms of ones community and to punish those who do not" (Bowles and Gintis, 2002, p.F419)

From the above definitions we can identify three additional common elements (*v*) norms, values and solidarity are sources of social capital, (*vi*) trust is a source of social capital. It either originates from repeated interactions (personalized trust) or from enforceable community sanctions or knowledge common to all actors in a community (generalized trust), (*vii*) whatever the source of social capital, it is based on social networks and/or associations. Despite the ongoing debate, there is a consensus that norms, values, solidarity and trust are sources of social capital (Coleman, 1990; Portes and

Sensenbrenner, 1993; Putnam et al., 1993; Durlauf and Fafchamps, 2005). The main difference is that scholars who approach the concept from a micro perspective put stress on the individual action (and investment) to mobilize resources inherent in the social networks (De Graaf and Flap, 1988; Fratoe, 1988; Portes, 1998; Lin, 2001b; Zak and Knack, 2001; Glaeser et al., 2002; Dasgupta, 2005), whereas scholars who view social capital as a communal asset highlight the role of community and social structure in facilitating (or constraining) certain individual behavior for individual and/or communal well-being (Coleman, 1990; Putnam et al., 1993; Knack and Keefer, 1997; Bowles and Gintis, 2002; Tabellini, 2005). Bourdieu's and Portes' attempts are a bridge between the two strands.

3.2 *Is Social Capital a Form of "Capital"?*

Another inexhaustible debate on social capital is whether social capital is "capital", in the sense that Marx refers to it (Arrow, 1999; Fine, 2001; Lin, 2001b). Some researchers even suggested other names such as "social capacity" (e.g., Smith and Kulynych, 2002) to denote what social capital is referring to. Kenneth Arrow, in his short introduction to the edited volume of Dasgupta and Stiglitz (1999), argues why it may not be correct to refer to social capital as "capital" by listing its various differences from physical capital (see also Sobel, 2002). In a book length discussion on social capital, Fine (2001) questions the validity of labelling a form of capital as "social" arguing that all forms of capital are social in a sense. On the other hand, Lin (2001b) neutralizes these contentions simply by defining capital as "an investment with expected returns in the marketplace"(p.6) and social capital as "investment in social relations with expected return in the marketplace"(p.19).¹⁰ In a recent assessment on whether social capital is a form of capital, Robison et al. (2002) list the capital like properties of social capital and argue that social capital could be treated as capital. From an evolutionary psychology view human's biggest concern is survival and anything is capital to the extent that it helps survival. As such social capital is any social relationship that assists individual's survival aim (Savage and Kanazawa, 2002).

Given the plenary thorough discussions of these scholars we avoid repetition and a monotonous discussion. Table 1 lists commonalities and differences between physical, human and social capital. Social capital could be treated as a form of capital similar to the treatment towards human capital (e.g., Becker, 1964). Knowing how social capital forms creates a basis for discussing the capital features of social capital. Social capital could form in

¹⁰ The sources cited above provide thorough discussion on this issue. For instance, Lin (2001b) starts with reviewing Marxian view of capital and continues with human, cultural and social capital, all of which he refers to as *neo-capital theory*. Fine (2001) has much wider concerns as he argues that the term "social capital" is just another expression (or evidence) to validate the attempt of economics to colonize other social sciences.

several different ways. It could (i) form as a by-product. For example, due to higher status and education one's social network resources extend; (ii) arise as an endowment or inheritance. For instance, when an individual is born with status; and (iii) form as a result of deliberate investment. The argument is based briefly on four characteristics of capital.

Capital is transformative. It converts an input to an output. Social capital is productive in the sense that once utilized it is possible to achieve certain outcomes with lower cost (Coleman, 1990). Previous sections have listed many examples where social connections or community characteristics provide material benefits. The productive power of social capital comes from combining sympathetic relationships with other inputs, such as human capital to provide benefits and in some cases preferential treatment (e.g., Robison et al., 2002).

Capital also represents a forgone consumption or could be labelled as savings for future use which makes it investable. In cases of physical and human capital, current activities are delayed for future use. Both cases involve calculative investment and deliberate sacrifice for future benefits. Social capital could be viewed as capital when one considers an important element in decision making: time. Agents invest their time for setting up and strengthening relations for future benefits. Utilizing the time element also neutralizes criticism by Arrow (1999) that there is no material sacrifice in investing in social capital because time could be converted to material resources. It should be noted, however, that only in the case of a deliberate sacrifice is the investment calculative as modelled in several studies (Zak and Knack, 2001; Glaeser et al., 2002).

Another feature of capital is that it involves opportunity cost. The opportunity cost of investing in technology *A* could be technology *B*; amount that could be earned if invested otherwise; current production, etc. In a similar manner investing in human capital has opportunity costs such as wages forgone and leisure activities. It has been argued that social capital lacks this feature (e.g., Baron and Hannon, 1994). Referring once again to the time element social capital has an opportunity cost. Setting up and strengthening relations takes time and the forgone time could be used in other useful ways, such as investing in human capital instead.

Finally, capital is durable. Physical and human capital are durable and their value depreciates through time and if left idle. This can be extended to social capital as well. A relation with a friend loses its strength in time if there is no particular attempt from either parties to continue face to face interaction. Human and social capital do have another feature which is not exactly shared by physical capital. Their values could also increase with use. For instance, due to repetition people usually master certain skills (i.e., learning by doing). Similarly, social capital appreciates with use and depreciates with disuse (or misuse) (Hirschman, 1984; Ostrom, 1999). However what makes social capital different from the other two is that social capital

resides in the relation not on the nodes. This means that it is rather fragile when compared to physical and human capital as it becomes obsolete if one party terminates the relationship.

To summarize the discussion, Table 1 shows that social capital: is a productive stock that arises from social interactions and community values and norms; resides in the relation (or an asset of the community) rather than in the actor which makes it intangible and fragile; has public good character; it is not easy to convert to economic capital, nor is it easy to transfer ownership and it is therefore characterized also by underinvestment.

3.3 “Adverse” Social Capital

Social capital could also have a negative impact on socioeconomic outcomes. Portes and Sensenbrenner (1993) and Portes (1998) list several cases ranging from strong norms, constraints on individual freedom to levelling pressures. For instance, the community may put pressure on individuals to keep potentially mobile individuals at the same level as their peers, in a way constraining them to reach a better opportunity set. In a related way, Fukuyama (1995) argue that although solidarity and levels of trust are high within communities in China, the same cannot be suggested in relations with people outside the kinship group, which may effect economic outcomes. Kinship groups have beneficial effects on bonding social capital but they might also become a threat to the economy as they might foster corruption (Whitley, 1991; Collier and Garg, 1999). To differentiate between bonding and bridging social capital Beyerlein and Hipp (2005) follow a similar line of argument and show that Protestant groups such as the Calvinists have very high levels of within group solidarity but have weak intercourse with the community (for example, almost no voluntary work for the good of community). So what may be good for a small group may not be good for the overall. Regularly cited examples, such as the Klu Klux Klan and the Italian mafia have similar negative impacts on the society. In the mafia case, for instance, within and between group competition may destroy other forms of social capital (e.g., Gambetta, 1996).

4 Social Capital of Social Capital Researchers

Given the ambiguity in the definition(s) and the measurement of social capital, how should we approach social capital? Many researchers accept that social capital is a multidimensional and interdisciplinary concept. However, to our knowledge, there is no work that depicts the actual interaction among researchers who work on social capital in different disciplines. What is the extent of current multi-disciplinary collaborations? What can we say about the current degree of social capital of social capital researchers? Simple social network analysis provides preliminary answers

Table 2 - Citation Record of Selected Articles on Social Capital (% in total citations)

	Total citations	Sociology (%)	Economics (%)	Management (%)
Portes (1998)	794	30	6	10
Coleman (1988)	692	24	8	13
Nahapiet and Ghoshal (1997)	669	2	2	75
Knack and Keefer (1997)	430	10	51	7
Woolcock (1998)	426	18	19	8
Portes and Sensenbrenner (1993)	424	31	4	18
Putnam (1995)	321	13	6	3
Burt (1997)	311	11	2	66

Source: data taken from Web of Science on 03/03/2009. Total citations are based on articles, reviews and proceedings papers. Management includes "Business" category.

to such questions.

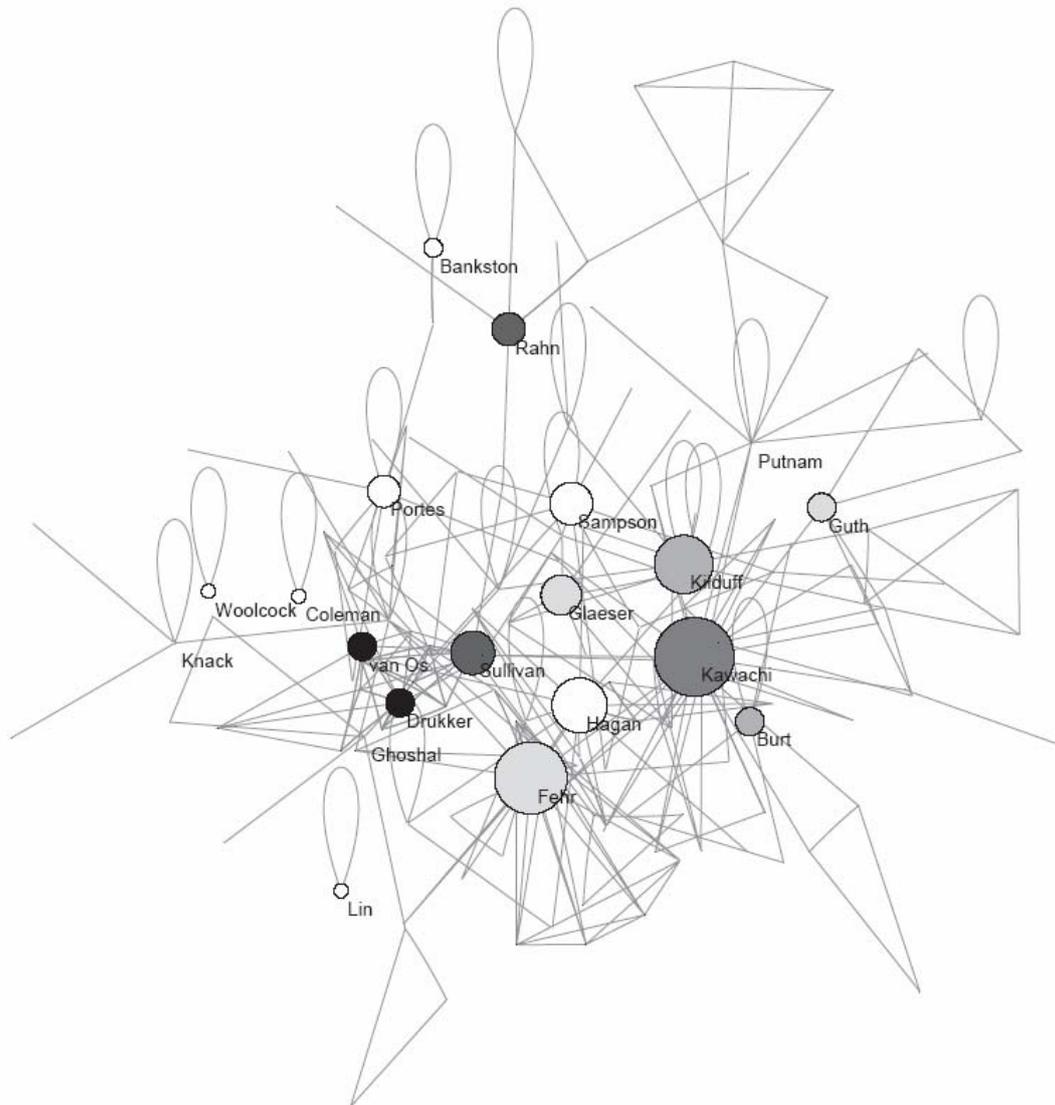
But first, how is social capital perceived in different disciplines? As we have already stressed, social capital builds on different concepts, most important of which is social networks. In sociology social capital is generally perceived to be a social resource deriving from social networks (e.g., Lin et al., 1981). Other elements such as trust, solidarity, values and norms were included in the definition at a later stage (e.g., Coleman, 1990; Putnam, 1995; Portes, 1998). This expansion created a certain degree of ambiguity. There is a tendency for different disciplines to specialize on certain aspects of social capital. For instance, sociology literature builds on social resources, solidarity and values, while economists focus on trust and other elements of social capital are much less pronounced. On the other hand, research on public health almost solely expands on the concepts such as sympathy, caring and solidarity. Economists approach social capital in a calculative manner (i.e., benefits accruing from a relation is calculable), whereas for sociologists, psychologists and political scientists social capital is not calculative but rather learned in socialization (Robison et al., 2002). Some management scholars argue that social capital has distinct forms. For example, Nahapiet and Ghoshal (1997) differentiates between three forms: (i) *structural social capital* that arises from social relations and networks; (ii) *relational social capital* which can be defined as elements that are rooted in the relations such as trust; and (iii) *cognitive social capital* that is shared codes and values. Moreover, in a recent assessment Robison et al. (2002) argue that the concept is vague because the definitions often include what social capital can be used to achieve and where social capital resides as well as what social capital is. Since each discipline focuses on a different element and since communication between disciplines is limited (as shown below) the issues of *what social capital is* and *what it includes* become blurry even for researchers who work on social capital.

Table 2 presents the citation record of a list of selected most cited articles on social capital. The first 10 years in social capital literature led to a number of influential articles. A detailed look at the citation figures to these early works reveals interesting patterns. For instance, research by

James Coleman is a seminal work for sociologists but it is also influential for economists and management scholars. In contrast, early works of Nan Lin are highly cited by economists but not by management scholars. In a similar vein the management literature on social capital mainly refers to Alejandro Portes, but economists seldom do.¹¹ About 25 percent of citations to Portes comes from management scholars, as opposed to only 5 percent coming from economists. One of the first reviews on social capital by Michael Woolcock is equally cited by economists and sociologists but hardly cited by the management literature. This is also true for Robert Putnam. His research is more valued by economists and sociologists. Finally, outside the sociology literature only Ronald Burt (1997) seems to attract the attention of sociologists. It is interesting to observe from Table 2 that management scholars tend to cite articles on social capital that are published in management journals. For instance, 75 percent of total cites to Nahapiet and Ghoshal (1997) come from management scholars. This number is exceptionally high compared to within-discipline cites of other articles on social capital published in sociology and economics journals.

We took Coleman's 1988 article as a starting point because it was the first attempt to conceptualize social capital. A search was conducted in ISI Web of Science for articles (in English) including the term "social capital" in the keywords and then the articles were sorted according to the citations they receive. As a double check a similar search was performed within disciplines (economics, sociology, management and political science) to identify the most cited researches within each discipline. Nine researchers were identified to be influential on the development of the concept in different fields: Ronald Burt, James Coleman, Sumantra Ghoshal, Edward Glaeser, Stephen Knack, Nan Lin, Alejandro Portes, Robert Putnam and Michael Woolcock. Then a snowball technique is employed to locate the co-authors of these influential researchers and the co-authors of co-authors' as well. Only the articles that include "social capital" and/or "trust" in the title, abstract and keywords are included in the analysis. This produces a network consisting of 147 researchers with 171 distinct articles covering the most cited 25 articles on social capital. These articles have received more than 10,000 citations and constitute roughly around 40 percent of the total citations to the social capital literature. Figure 2 is a depiction of the network where the width of the nodes reflects the central position of the researcher in the network. We used betweenness centrality measure to reflect the intermediary position of a researcher. Betweenness centrality measures the influence a node has over the diffusion of information in a network and is calculated as the fraction of shortest distance between any two nodes that

¹¹ Nan Lin engaged in research on social networks -for instance, on labour market outcomes due to utilization of one's social network- which may explain why economists tend to cite him. Alejandro Portes is well-known for his research on immigrant networks and entrepreneurship which might partially explain the interest from management scholars.

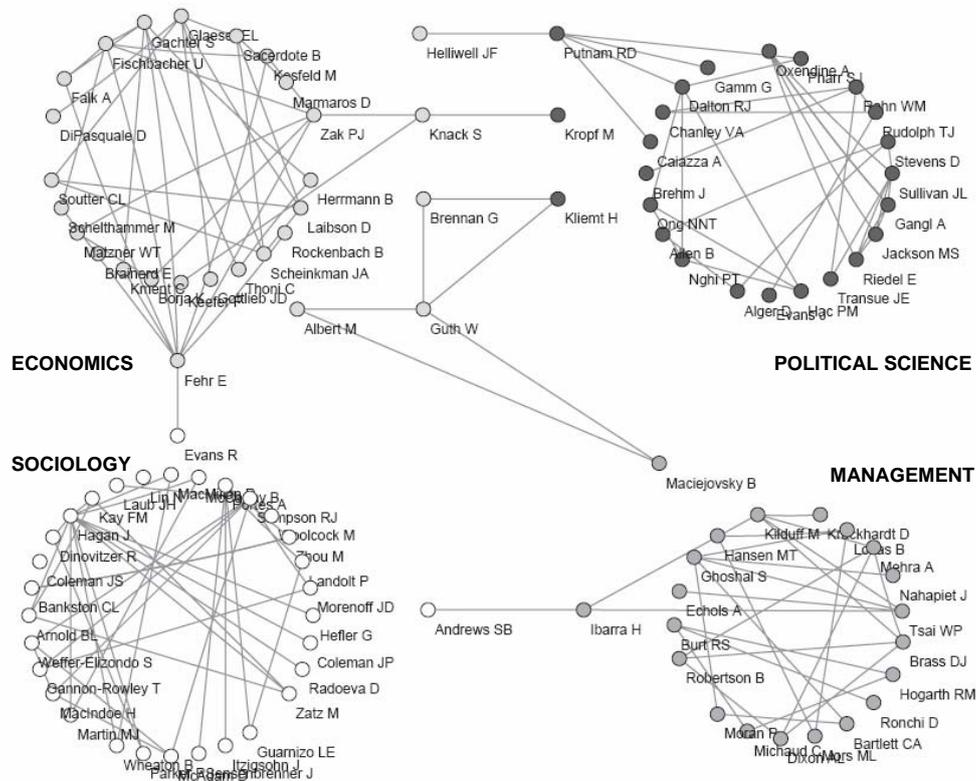
Figure 2 - Co-authorship Network of Influential Social Capital Researchers

pass through the node of interest.¹²

The most interesting observation in the network is the presence of isolates. Nan Lin, Robert Putnam and Michael Woolcock authored influential papers on social capital but do not have co-authors.¹³ Another interest-

¹² This measure is more appropriate than other centrality measures that focus on reachability of a node in a network because we are interested in bridges. It is also related to Bonacich power index where the centrality is affected not only by the central position of the node itself but also by the centrality of its neighbours. The figure is obtained by energizing the network several times using Kamada-Kawai option in Pajek. Loops are allowed which means that the papers that have one author are also included in the analysis and could easily be seen from the figure as a line from a node to itself. For Pajek see <http://vlado.fmf.uni-lj.si/pub/networks/pajek/>

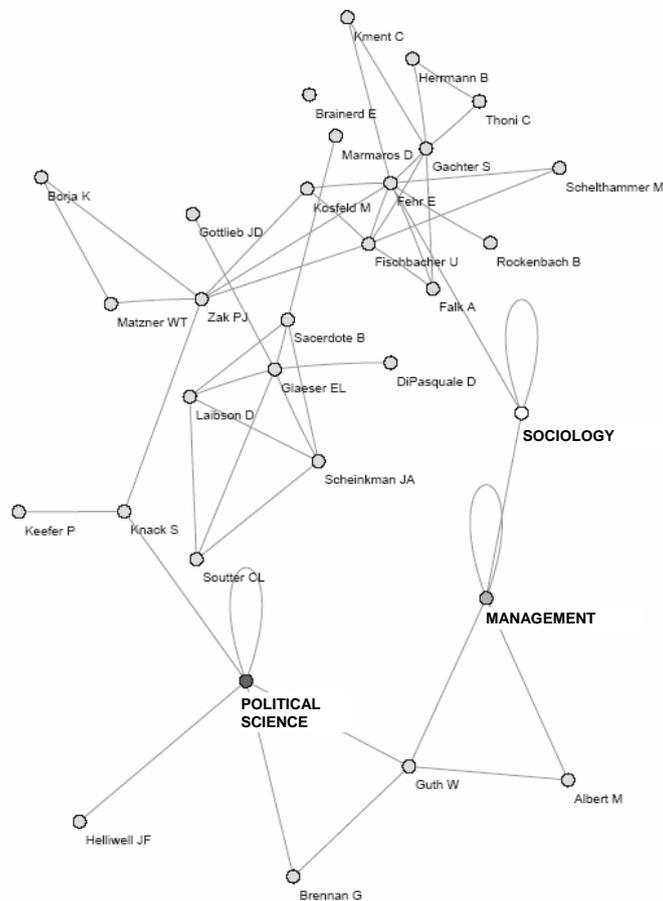
¹³ It should be noted that the results are for 1988-2007 and only regarding articles on

Figure 3 - Co-authorship Network: Bridges among Disciplines

ing finding is that, despite the initial start with nine researchers within the disciplines of economics, sociology and management/business the analysis identifies other disciplines and star researchers. Among them two are worth mentioning. First, the analysis identified Ichiro Kawachi (through a link with Putnam) and his network who extensively published on social capital and public health. Second, the analysis identifies Ernst Fehr (through a link via Paul Zak with Stephen Knack) and his network who initiated a new line of research on human social behaviour, trust and reciprocity using experimental designs and collaborating not only with other economists but also with sociologists and psychologists. The most influential researchers could easily be recognized in Figure 2 because the width of the node reflects how central these authors are within the network.

After depicting the simple network the partitions within the network are analyzed further. Using the available information in ISI Web of Science (and also by web-searches) information was gathered on the affiliations of researchers. The network is partitioned into four disciplines: economics, so-

cial capital and/or trust. For instance, Nan Lin has published extensively on social networks which are not included in the analysis.

Figure 4 - Co-authorship Network: Contextual View of Economics

ciology, management/business and political science.¹⁴ When the links between economics, sociology, management and political science are analyzed one can argue that the extent of collaboration between disciplines is not as rich as it is expected to be. The collaborations between economics, sociology and political science are rare and mainly initiated by scholars such as Ernst Fehr, John Helliwell, Stephen Knack and Robert Putnam. Collaboration between management science, sociology and economics is an exception. To get a better picture of the extent of co-authorship in economics the network is reduced to one discipline and focused only on economics taking in to account the aggregated ties to other disciplines. Figure 4 clearly shows the bridges between disciplines strengthening the findings in Figure 3.

¹⁴ We initially partitioned the network in to six disciplines in figure 3: four above plus health sciences (public health) and psychology. This partition displays strong links between economics, psychology (and clinical psychology) and health sciences largely initiated by Ernst Fehr. To save space we do not include this partition however the figure is available upon request. Economics include planning and development and urban studies.

Table 3 - Summary Statistics of Co-authorship Network on Social Capital

	no of nodes	density loops allowed	density loops not allowed	researchers with max no of co-authors	% of isolates	average degree of nodes
All 1988-2000	224	0.00530	0.00532	6	29.02	2.37
All 2001-2007	758	0.00241	0.00241	11	20.18	3.64
Economics	231	0.00603	0.00606	7	24.4	2.78
Sociology	319	0.00590	0.00591	11	22.8	3.76
Management	525	0.00349	0.00350	12	10.8	3.66
Political science	131	0.00921	0.00928	5	32.8	2.41

Table 3 presents summary statistics on the overall co-authorship network in economics, sociology, management and political science between 1988-2007.¹⁵ The second column lists the number of researchers in each discipline who work on social capital. The next two columns present two widely used statistics to assess the density of a network. Density of a network is defined as the number of ties in a network as a proportion of all possible ties. The higher the number the denser the network. Density measures when loops (articles with one author) are removed are also presented in the table for robustness reasons. At first sight it seems that political science and economics are much denser than sociology and management. However density measures are not appropriate in this case as they are negatively correlated with the size of the network. Since the size of each group differs substantially an alternative measure is presented in the last column based on the degree of nodes. The degree of a node is the number of ties associated with it (i.e., the number of co-authors that a researcher works with). Since a higher degree of nodes represents denser networks the average degree of all nodes is a reliable measure to compare disciplines. As can be seen from the table the social capital of social capital researchers in sociology and management is higher than in economics and political science. When the network is divided in two, as before and after 2000, we see that co-authorship is increasing through time. A researcher currently working on social capital has 3 co-authors on average. Finally, the percentage of isolates within each discipline reveals that political scientist tend to work on their own, whereas most of the management scholars collaborate.

¹⁵ The data for this is gathered from ISI Web of Science by using the program made available by Loet Leydesdorff. For the first two rows the search parameter used is "social capital" in the "title" category. The network also include articles having "trust" in "title" and "social capital" in "topic". For the program see <http://users.fmg.uva.nl/lleydesdorff/software/coauth/index.htm>.

5 Conclusion

In this paper we discuss the concept of social capital by analyzing various definitions in the literature to identify common elements. Starting from the very early use and definitions of the concept in different disciplines seven common elements are identified. To summarize the current understanding that incorporates both micro and macro elements, social capital is a social resource arising from social networks (or social organizations) that leads to beneficial outcomes either by reducing costs or by creating new forms of information exchange. Most papers in economics more or less stick to this definition.

Rather than defining the concept over and over again, identifying common elements among different definitions helps to clarify what is meant by "social capital". In other words, social capital researchers should favour deepening rather than widening at least for some time until a consensus is reached on certain issues that are unclear and highly debated. For instance, besides the definition, there is still a debate on how to measure social capital. More than 2500 papers on social capital is published over the past 20 years and we still discuss its measurement. This is an irony. Yet another issue is what forms social capital. Hundreds of articles appeared in economics journals, however rarely you find a debate on how social capital forms. Since we do not have clear knowledge of how social capital forms (e.g., Berggren and Jordahl, 2006), and how it should be measured (e.g., Akcomak and ter Weel, 2008; Sabatini, 2009; Owen and Videras, 2009) definition and measurement of social capital became a playground for researchers in different disciplines. This makes policy conclusions resulting from social capital research premature. Yet we may look on the bright side and argue that there is extreme experimentation in defining, measuring and approaching the concept which may deepen our knowledge and help the concept to become standardized.

As a complementary resource we summarize the main similarities and differences between physical, human and social capital. Human capital was successfully introduced to the literature in economics in the 1960s. The term is now accepted and widely used by researchers without much discussion on what it is. It took half a century for human capital to become standardized in economics. Can this record be a role model for the term social capital? It could be. However there is one particular element that differentiates social capital from other forms of capital. Physical, financial and human capital theories are by and large developed within the economic tradition. There is little influence from other disciplines. On the contrary, social capital theory is concurrently developed by researchers spread across various disciplines such as economics, sociology, management, political science and health sciences. Therefore, social capital theory will improve if interactions between disciplines are enhanced.

By conducting a simple social network analysis it is shown that collaboration between disciplines (in terms of co-authorship) is a rare phenomenon. As such, more cross-disciplinary collaboration is welcome for a better and lucid understanding. This conclusion supports earlier discussion by Adler and Kwon (2002) who recommend an increase in dialogue across varying social capital perspectives. A recent attempt in this direction is the handbook of social capital that aims to bring different perspectives in sociology, economics and political science together (Svendsen and Svendsen, 2009). Between-discipline collaborations can go hand in hand with within-discipline deepening to develop the concept further. After all, differences between disciplines may be so pronounced that refining the concept for the own needs of each discipline might improve our understanding as well. However we argue that this refinement should not be done in isolation.

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