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9 August 2009

Social Capital and Economic Performance: some lessons from Farm Partnerships in Sweden[1]

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Paper prepared for the International Conference "Civil society, social capital and economic development" (Royal Institute of Technology, Jönköping International Business School), 3-4 September 2009, Stockholm, Sweden

Abstract

The social capital literature usually perceives social capital as *dues ex machine* for economic performance. In this paper we use existing social capital theory to develop a conceptual framework to explain; (i) the importance of organizational capital as the 'missing link' between social capital and economic performance, and (ii) the phenomenon of '*complementarity*' of different forms of capital (i.e. Physical, Financial, Human, Social, Organizational and Economic Capital) as a prerequisite for economic performance. The conceptual framework is applied to Swedish farm partnerships involving machinery- and labour sharing. Our study suggest that (i) social capital combined with other forms of capital, such as financial, human, physical and organizational leads to greater economic outcomes and (ii) the creation of organizational capital can explain higher economic performance.

Keywords: Social Capital, Organizational Capital, Farm Partnerships, Economic Performance.

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1. *Introduction*

Within the last 20 years, the concept of social capital has become increasingly popular inside and outside of the academic circles. The concept has been hailed for curing all the social 'bads' ranging from; families and youth behavioural problems, schooling and education, community life, work and organization, democracy and governance, collective action problems, and economic development (Woolcock, 2001:194). Some scholars have characterized the concept as 'panacea', 'cure-all', 'antidote' 'magic bullet' and others as 'fad' 'surge' 'fuzzy' and the alike.

In economics, social capital is hateful or loveable. Orthodox economists are dodging it and development economists blessing it as the '*missing link'* for higher economic performance.

In this study, we argue that social capital is not the *dues ex machine* for economic performance.

We believe that social capital is not the only missing link for economic performance. In other words, social capital contributes to economic performance only when it is accompanied with other forms of capital. We call this phenomenon 'complementarity'. We also introduce the notion of organizational capital to explain the function of several organizational routines as capital during the production process.

We apply the aforementioned issues in the empirical part of the paper. This part focuses on farm partnerships in Sweden involving machinery and labour sharing arrangements. These types of partnerships are becoming more and more common among Swedish farmers. In 2006, among 60% of the farmers were involved in some form of partnership arrangement with a neighbouring farm (Larsen, 2008). Data collected through a questionnaire sent to approximately 1000 farmers was utilized to statistically test the formulized hypothesis.

The outline of the paper is as follows. First, the concept of social capital will be reviewed (intellectual history, definitions and accommodation) followed by a discussion of the issue of capital in social capital. Then, the issue of issue of complementarity in conjunction with organizational capital are explained. Thereafter, the theoretical framework will be applied to partnerships among Swedish farmers and the ideas will be tested statistically. The paper ends with a discussion.

2. *Social Capital: Intellectual History, Definition(s), and Accommodation*

2.1 A Brief and Critical Intellectual History of the Concept

We begin the *Homeric* quest for identifying the intellectual origins of the concept by introducing the *Trio.* The word *Trio* is used here to denote the three main figures of the Social Capital literature namely Pierre Bourideu, James Coleman and Robert Putman. Obviously, our inquiry, at this stage of the study, does not aim to reveal the reasons of success of the concept. It is rather a brief backward looking evaluation with a critical disposition. As Portes (1998:2) remarks '*tracing the intellectual background of the concept into classical times would be tantamount to revisiting sociology's major nineteenth century sources'*. He also warns researchers that such exercise will not reveal the reasons why social capital has been so successful. Of course, our disposition does not aim to at this direction. It is rather a critical narration under the sake of brevity.

Despite the popularity of the *Trio* as the so called progenitors of the concept, the derivative, the offspring, does not seem as fresh as is regularly thought in the voluminous literature. In particular, a considerable number of scholars presumes a constellation of humanity's key thinkers such as Aristotle, Adam Smith, David Hume, Alexis de Tocqueville, Karl Marx, Marx Webber, Alfred Marshall, Ferdinand Tonnies, John Dewey and Emile Durkheim etc. to be theoretical precursors of the concept (Field, 2003: 5; Halpern, 2005:3-9; Newton, 2001; 202;Putman et al, 1995: 89, Putman 2000; 24; Paterson, 2000; 52; Portes and Landolt, 1996:28; Portes 1998: 18; Smith and Kulynych, 2002: 150; Robison et al., 2002a:5; Trigilia,2001 Woolcock, 1998: 159). Paterson, (2000: 52) claims that the concept is not new at all, and something akin used to be a commonplace in the Scottish Enlightenment. In a political tone, Putman (2000:24) states that the concept is to some extent merely new language for a very old debate in American intellectual cycles.

The *Trio* itself does not *in toto* inquiry the intellectual origins of the concept. This might have been futile for Bourdieu since the concept was systematically developed by him to capture social phenomena that had been gone unnoticed (Bourdieu, 2003:2). Coleman did not at first instance mention Loury's employment of the concept (1977; 1987). He subsequently corrects this omission in the *Foundations of Social Theory* (Comelan, 1990: 300). Another intriguing omission, for Coleman's academic gravitas, is pointed by Alejandro Portes. He comments that Coleman, in his initial analysis of the concept, does not mention Bourdieu as key figure in the development of the concept (Portes, 1998:5). However, Coleman subsequently refers to Bourdiue's contribution in the field of human capital (or embodied cultural capital, in Bourdieu's words). A possible explanation for such omission lies in the realm of the two opposite intellectual legacies in sociology. Coleman (1988: S96) openly states his adherence to rational choice theory[4]. In contrast, Bourdieu (1986:46-47) wittily discards rational choice theory and orthodox economic theory as appropriate tools for understanding and explaining socio-economic phenomena. Field (2003: 18) asserts that Bourdieu's Marxian logic derives from his attachment to the French social theory. In a similar vein, Jenkins (2002) throughout his book confirms Bourdieu's adherence to Marxian logic and his meaningful contribution to the so called French sociology. Apparently, Bourdieu's adherence to Marxian logic has been probably a good occasion to justify his moderate acceptance by the English-speaking academic *communes*[5].

Bourdieu, in turn, does not attach any progenitor to the concept. This is merely because he is the only one who systematically developed the concept for more than 20 years in his oeuvre. Bourdieu's analysis is considered by a number of scholars as the most theoretical refined (De Filppis, 2001: 783; Portes, 1998: 3). Smith and Kulynych (2002: 158) point out that Bourdieu's version of social capital antedates by many years Coleman's concept. They also question the popularization of Coleman's conception by scholars such as Robert Putman.

Likewise with Bourdieu and Coleman, Robert Putman does not go far in regard to the intellectual origins of the concept. This does not seem to be a drawback in both Bourdieu's and Coleman's applications of the concept since both placed interest at micro or meso level. On the other hand, this is a crucial omission for Putman since his central interest is at political institutions. In his seminal study on Italian regions, Putman elects Coleman's conception to

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[4] In his earlier works (1986a, 1986b), Coleman calls for an engagement of both traditions. Coleman(1988: S96) although points that both intellectual streams have serious defects.

[5]Bourdieu (2003:2) makes a reference to that phenomenon as '*the highly protected market of American Sociology*'.

legitimizing his *Perception* [6](Putman, 1993: 167). In contrast with Bourdieu and Coleman, Putman in his book *Bowling Alone* ferrets out the literature for a progenitor(s). He finally awards the paternity of the concept to *Lyda Jason Hanifan* a state supervisor of rural schools in West Virginia. According to Putman (2000:19), Hanifan's version of social capital anticipated virtually all the crucial elements in later interpretations. Putman (2000:19) remarks that Hanifan's conceptual invention apparently attracted no notice from other social commentators and disappeared without a trace[7]. Farr (2004:19) doubts the paternity of Lyda Jason Hanifan by asking '*Did Hanifan get social capital form Dewey*?' As he answers the question is tantalising and the answer, at present, inconclusive. However, we believe that there are several theoretical associations between Hanifan's idea on social capital and Dewey's philosophical thought. Finally, Putman makes reference to other potential progenitors i.e. Jane Jacobs, Glen Loury and Ekkehart Schlicht. He also makes a quick passage to Bourdieu's contribution and finally a great praise is given to Coleman's contribution. In spite of several truism(ic) and tautological arguments that are present in Putman's seminal studies (1993, 2000), there is a couple more defects which deserve at least few words[8].

As the third progenitor, Putman has been widely characterised among the social capital intelligentsia as a 'either hateful or lovable'. The conceptual twist of social capital from a sociological to a neo-De Tocquevellian concept can be primarily attributed to Putman. This conceptual twist has put the concept into an *Odyssey* which seems to have several implications for the concept and the society as well. Smyth and Kulynych (2002: 167-176) analyse the hidden terminologies that derive from the Putmanian version of the concept and several self-conflicting implications for the society as well. For example, they state:

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[6] David Hume identified two types of perception: *impressions* and *ideas*. (a) Impressions have great force and vividness. (b) Ideas are faint echoes of those impressions in thinking and reasoning. We believe that Putman's seminal study on Italian regions derives from *impressio*n. In contrast with his subsequent study *Bowling Alone* is mainly a product of *idea*.

[7] A plausible question might be why did not Putman develop a similar statement for Bourdieu's systematic work?

(ii) Farr (2004:19) asks 'did Hanifan get social capital form Dewey?' The question is tantalising and the answer, at present, inconclusive. However, we believe that several theoretical associations exist between Hanifan's thesis and Dewey's philosophical thought.

[8] Additional information on Putman's tautological arguments can be found in Portes and Landlodt (1996), Portes (1998),Portes (2000); Sobel (2002), and Tunner (1996)

'...the terminology of social capital allows the language of economic transaction to describe public interaction of economic transaction to describe public interaction...political activity of economic transaction...'(p.168)

'...unfortunately, the contradictory juxtaposition of social (collaboration and interdependence) with capital (independence and self-reliance) allows us to continue to view the poor as not only in need of traditional individualist values, but also as largely to blame for their lack of a 'stock' of social power. Thus, this language smoothes over contradictions in just the way Marcuse warned...' (p.172)

Moreover, Putman has been criticised for switching the public interest from the socio-economic struggle to the leisure behaviour of masses (Portes, 1998:19; Skocpol, 1996: 25). Tarrow (1996:25) also criticizes Putman for reconstructing Italian history in order to fit in his model of social capital. There is also another issue of associating social capital with particular political ideologies and government actions. In Bowling Alone (2000), the conclusion is clear- the state must intervene to rescue society from degradation. Stiglitz (2000: 68) notes '*there is an important public role in the enhancement of social capital, but who should undertake that public role, and how it should be done, are questions that will need a great deal more thought*'. Social capital in the hands of malevolent politicians can become a 'public bad'-in other words-a tool for social control which can restrict individual freedom-an issue which has inspired many popular revolutions including the French and American Revolution. Finally, a stark reality for the concept and the social sciences *in toto*, is the introduction of books which claim to 'rescue' the concept from political ideologies. For example, Meadowcroft and Pennington (2007:19) aim, as they say, to '*rescue social capital from the current monopoly over its use exercised by contemporary social democratic theory' (2007:19)*.

Despite all the above defects, we owe to mention that the popularization of the concept beyond the limits of sociology can be plausibly credited to Putman. This popular appeal to social capital has made some of the orthodox economists to pay attention to the *social fabric* where the real economic activity takes place (Carroll and Stanfiled; 2003:398; Castle 1998: 625; Dasguspta, 1999: 398; Durlaff, 1999:1; Field, 2003:9; Halpern, 2005:2). More importantly, policy makers have shown interest to the concept *vis-a-vis* economic development and reduction of poverty. This, although, does not impose that social scientists should welcome and perpetuate 'old wine in new bottle' concepts and reward methodological inaccuracies for the sake of policy makers' attention. As Portes (1998:22) trenchantly puts it '*communitarian advocacy is a legitimate political stance; it is not good social science'.* Needless to say, the utter aim of a social scientist is the search of the truth.

As *précis*, we recognise that social capital has 'noble' origins in the literature of sociology (and not only). We believe, without fully discarding Putman's efforts, that his thesis can make a meagre contribution in the heuristic development of the concept[9]. There has been few noteworthy theoretical efforts to incorporate Putman's thesis in Bourdieu's and Coleman's (e.g. Adler and Known, 2000; Inkpen and Tsang, 2005; Nahapiet and Ghoshal, 1998; Woolcock, 1998). We although believe that that the *Trio* must be reduced to a Duet.

Who is the progenitor or the alchemist of the concept is not at the central interest of this study. Therefore, we turn the discussion to the definitions of social capital.

2.1 Definition(s) of Social Capital

In this part, we will not explicate the debate over definitions of social capital since the nature of the study confines ourselves to avoiding such entertaining activity. However, a quick and critical passage of the basic definitions of the concept is always imperative.

As mentioned above, the *Trio* has been reduced to a *Duet,* and with this Duet, we will primarily engage ourselves in this section. First in *the Duet* is Pierre Bourdieu-a French sociologist who developed the concept of social capital during 1970s and 1980s. As Field (2003:20) points that Bourdieu was an important figure of transforming social capital from metaphor to concept.[10] Bourdieu's main idea of social capital was initially influenced by his studies in Algerian tribe people during the 1960s. It was that period where he evaluated for first time the term *habitus* (Bourdieu, 2005:2). In his writings on social capital, one can easily understand that social

[9] Schuller (2001:18) states that '*it is the heuristic quality that is the primary, and very powerful, advantage of the concept of social capital*'.

[10] We add that Bourdieu dearly develop social to a concept which is now again a metaphor in Putman's hands.

capital, in conjunction with other forms of capital (i.e. Cultural, and Economic), promotes the unequal access to resources and the maintenance of power. His initial definition of social capital was not as theoretically refined as the subsequent ones.

...c*apital of social relationships which will provide, if necessary, useful 'supports': a capital of honourability and respectability which is often indispensable if one desires to attract clients in socially important positions, and which may serve as currency, for instance in a political career (Bourdie, 1977: 503).*

He subsequently refined and redefined the concept to a more comprehensive one in which's the theoretical depth requires a warm applause.

...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 relationships 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 collectively-owned capital, a 'credential' which entitles them to credit, in the various senses of the word...

He goes on to state that:

'...the profits which accrue from membership in a group are the basis of the solidarity which makes them possible...' (Bourdieu, 1986 :51).

In a recent publication entitled *The Social Structure of the Economy*, Bourdieu (2005:2) refers to social capital with a couple more definitions. Of course, in a similar spirit with the previous ones. The first reference is a definition in which he defines social capital as broadly as possible.

'...*resources which can be brought together* ***per procurationem*** *through networks of 'relations' of various sizes and differing density(p.2-empahsis added)*'

The second is an extensive conception of the aforementioned.

'the totality of resources (financial capital and also information etc) activated through a more or less extended, more or less mobilizable network of relations which procures a competitive

advantage by providing higher return on investment. This does not mean that they are consciously pursued as such…' (Bourdieu, 2005:2, 193-194).

A tendency to measurement can be noticed in the last definition. The word 'totality' denotes a volume a number. Similar words have been used in past definitions (i.e. a*ggregate* and *profits*). Perhaps, this reveals the importance of possessing capital in its all forms (i.e. cultural, economic and social) which in turn results in higher economic capital. The world 'competitive advantage' is probably employed to denote the importance of solidarity and the benefits that accrue from it.

To understand Bourdieu's conceptualization, one needs to consider that his cardinal interest was the explanation of social hierarchy. In a nutshell, the production of classes and class divisions. His adherence to Marxian sociology has been evident in all of his writings. This is also evident in the application of social capital for identifying and explaining the *Homo Academicus* phenomenon (Defilipis, 2001:783; Field, 2003: 12Bourdieu, 1990; Svedsen and Svedsen, 2003:607; Schuller et al., 2000:2). There is also a growing recognition in the literature of social capital in terms of his contribution. Portes (1998: 3) comments that Bourdieu has developed one of the most theoretically refined versions of the concept. In a similar spirit, a number of scholars confirms this point (Edwards and Foley: 1999; Defilippis: 2001; Gaggio, 2004; Portes and Landolt, 2000: 531; Smith and Kulunych, 2002; Smart, 1993[11]; Svedsen and Svedsen, 2003).

As mentioned, Bourdieu's systematic work has not been widely acknowledged in the literature of social capital. This can be explained by the popularity that Putman has given to Coleman's conception. Coleman's version of the concept has not been extensively discussed for some of its flaws. The identification of these flaws can be considered as an imperative need for the Heuristic development of the concept. However, it is more imperative for the purpose of the study to introduce Coleman's version of the concept and, in particular, the well cited definition in page number '*S98'*.

[11] In Svedsen and Svedsen, 2003

...Social capital is defined by its function. It is not a single entity but a variety of different entities, with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors-whether persons or corporate actors-within the structure. Like other forms of capital, social capital is productive, making possible the achievement of certain ends in its absence would not be possible...(Coleman 1988: S98; Coleman, 1990:302).

To understand, Coleman's conception of social capital, one should bear in mind that his utter aim is to introduce a *diaulos* of combining two divergent intellectual streams namely the *homo economicus* and *homo sociologicus*. In other words, a rational actor embedded in social structures of reality where the membership/position in this structure provides him/her the required resources to facilitate a rational action i.e. a *Homo Computans* action. Field (2003: 21) notes that Coleman was seeking to develop an inter-disciplinary social science that could draw both on economics and sociology.

Coleman kept himself busy for many years with the investigation of educational attainment in American Ghettos. According to Field (2003:20), Coleman, by this engagement, was able to show that social capital was not limited to the powerful but it can also convey real benefits to poor and marginalized communities. This comment lends true credence if one considers that poor and marginalised communities meet the conditions necessary for the classical Welfare Theorem.

A crucial argument hidden in the bulk of the words is the issue of '*fungible forms of capital*' (Coleman, 1998), '*conversion of Capital*' (Bourdieu, 1986) and in ours words expressed by the neologism- *Complementarity*[12]*.* Coleman deals in particular with the interplay of human and social capital in family settings and Bourdieu (19986:53) identifies the conversion of the three main species of capital (i.e. Cultural, Economic, and Social). Our position is slightly different, namely, different species of capital are not only fungible and convertible but complementary. We return to this issue later.

[12] We explicate this issue latter.

Despite the fundamental antitheses between *the Duet*, there is also a number of similarities. The first and foremost is the old aphorism ' *it's not what you know, it's who you know*'[13]. In other words, they both expressed an interest for social networks and the benefits that accrue to individuals or families from membership in those networks (Portes and Landlolt, 2000:531). Within this field, both express an interest in regard to social inequality and academic achievement (Schuller et al: 2000; 7; Field, 2003:22). The issue of solidarity (or closure) is present in both of them. Coleman exemplifies the issue of '*closure*' with abstract examples while Bourdieu uses his dialectic. Coleman has been also accused for having naively optimistic view on the closure phenomenon. Closure may result to phenomena such as *Amoral Familism*, *Nepotism, Ostracism* and *Anti-meritocracy*. Portes (1998:5) points out that Coleman tended to overstate the role of close or dense ties, and negativities that accrue from such ties. Coleman's naiveties seem to have inspired Putman to come up with a hasty idea i.e. the introduction of *Bonding* and *Bridging* social capital (Putman, 2000: 22-23)[14]. Bonding (*or exclusive*) social capital is good for undergirding specific reciprocity and mobilizing solidarity. Bridging social capital (ab)uses Granovetter's idea of '*the strength of weak ties*' (Granovetter, 1985).

A more controversial similarity is the debate over the property rights of the 'capital' i.e. individual versus common owned good. For example, Harper (2001:9) states that *the Duet* considers social capital as an attribute of the individual. Field (2003:23), contrariwise, claims that Coleman portrays social capital as a public good. To cast some light, we provide two excerpts from *the Duet* respectively. First, Bourdieu (1986: 51) states that '*social capital is...collectively-owned capital*'. One the other hand, Coleman (1988:302) states that is '*a* capital asset for the individual which inheres in the structure of relations'. The verdict is clear for Bourdieu but less clear for Coleman. The later recognizes that social capital is a capital owned by an individual which inheres in the structure of the social relations i.e. a dual ownership[15].

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[13] In terms of social capital the aphorism must be rephrased as '*it is not who you know, it's how you know him/her and who exchanges what with whom*'.

[14] (i) Narayan (1999) makes a similar distinction 'Bonds and Bridges'.
(ii) Woolcock (2001:71) makes reference to a third form of social capital-*linking social capital*-a form of social capital which bridges people from dissimilar cultural backgrounds.

[15] We believe that such confusion derives from Coleman's cardinal attempt to produce a *homo socioeconomicus* explanation for social phenomena. Needless to say that social capital as a collective good might be vulnerable to continuous change and therefore can be considered as 'fragile collective good'.

Finally, they both neglect the role of basic trust. Sztompka (1999:66) remarks that rational choice theory ignores 'basic trust'. Field (2003: 28) adds that the same applies for Marxist social theory and Siisiainen (2000:22) confirms that trust is easy-in fact too easy for Bourdieu. Last but not least is the stark omission of 'gender-blindness' which is even present in the communitarian version of social capital (Blaxter and Hughes, 2001 in Filed p. 41; Davies 2001 in Halpern, 2001:8; Lowndes, 2000 in Field, p.41).

2.2 *Accommodation of the Concept*

By now, one might have been engaged with a very basic question 'W*hat is then social capital?* To answer such a simple question, the literature suggests that a researcher has to outmarch *the Duet* and ferret out for the best possible or suitable definition(s) of social capital. Our approach is somewhat semi-different. We will first provide a selective set of definitions that meet a couple of criteria such as: (i) a combination or extension of *the Duet* and (ii) their applicability to empirical testing. Then, we will give some reasons why Bourdieu's perception and conception of social capital, in conjunction with certain elements identified in the literature, is the most applicable for the current study.

As all 'social capitalists' know, Robert Putman is responsible for expatriating the concept from Sociology to Political science to circulation magazines. His theoretical contribution, although, is not that bright. Instead, we may say that is meagre. However, his initial definition of social capital as '...*futures of social organization, such as trust, norms and networks that can improve the efficiency of society by facilitating coordinated actions*...' deserves a good word (Putman, 1993:168). Despite several theoretical and empirical inaccuracies, Putman has employed and used three words which are now considered as the main elements of the concept (i.e. *Trust*, *Norms* and *Network*). Perhaps, this might be his most important theoretical contribution to the concept. Of course, these elements echoes Coleman's definition but Putman paved the way to 'operationalisation'. For example, the World Bank, which is well known for adopting Putman's theorising, used to 'advertise' in its website that social capital '*can be measured according to how one defines it'*. This enunciation, which is apparently extremely functionalistic, established a 'doctrine' among economists and other social scientists respectively i.e. the doctrine of '*do it* *youself*'. In other words, define it as you wish and measure it accordingly. In a similar vein, we believe that the empirical oriented approach of identifying social capital is highly tautological and leads to an *autistic* concept (not heuristic).

Now, we turn the discussion back to the definitions of social capital. One of the concept's definitions that has, to a certain extent, justly monopolised the interest of organizational studies is given Nahapiet and Ghoshal (1998). They define social capital as '...*the sum of the actual or potential resources that can be embedded within, available through, and derived from the network of relationships possessed by an individual or social unit (p.243)*'. It is apparent that they aim to reconcile and eliminate basic antitheses and flaws which appeared in the *Trio*. The reconciliation comes with the introduction of three dimensions of social capital; *the structural*, *the relational*, and *the cognitive*. The structural dimension of social capital draws heavily from the idea of '*structural holes'* (Burt, 1992). This dimension reconciles the issue (or flaw) of power in a network. The relational dimension draws heavenly from the term 'relational embeddedness' as identified by Granovetter (1992). This eliminates the issue of 'basic trust'. As noted above, the theoretical origins of *the Duet* ignores the fundamental element of trust. Nahapient and Ghosal (1998) went a step further to ask where this *trust comes from*? The cognitive dimension refers to those resources which provide shared representations, interpretations and systems of meaning. The theoretical origins of the cognitive dimension derive from the branch of sociology called cognitive sociology and in particular from the American Sociologist *Aoran Cicourel*. This dimension eliminates the issue of specific norms. In other words, which norms are the most appropriate to facilitate lasting collective action. This is an important element for economic performance since cognitive elements such as decision making and problem solving take place in the production process. It is noteworthy to mention that Bourdieu (1986) engaged himself with cognitive issues during the development of both *habitus* and *cultural capital*.

Another well cited definition of social is given by Elinor Ostrom. In a book chapter, Ostrom(2000: 176) offers a constructive argument on the issue of social capital as a new form of capital. She also offers a definition of the concept as '...*the shared knowledge, understanding, norms, rules, and expectations about patterns of interactions that groups of* *individuals bring to a recurrent activity*'. Her definition draws parallels with earlier works of Coleman (1988, 1990 and Putman et al., 1993, 2000). The cognitive dimension is indicated by the words 'shared knowledge, understanding and norms'. The structural dimension is not clearly indicated. Perhaps, Ostrom assumes that there is already a formulated social structure i.e. 'recurrent activities' which defines the action. Therefore, we can say that her definition contradicts her adherence to rational choice theory.

In terms of measurement, Putman is well known for his quantitative addiction. An exception can be considered his initial study in Italian regions where he combined quantitative and qualitative data[16]. Likewise, Ostrom (2000) puts her definition vaguely intro practice by applying game theoretic assumptions to Farmers irrigation systems. Nahapiet and Ghoshal (1998) have theoretically explained how social capital facilitates the creation of intellectual capital and organizational advantage of firms. A number of studies have both theoretically and empirically incorporated Nahapiet and Ghoshal's (1998) venture with considerable success (Yli-Renko et al, 2001; Inkpen and Tsang, 2005; Oh et al., 2006). Perhaps, we can say that organizational studies is the only branch of social sciences in which social capital has been associated with clarity to economic performance in regard to definition and methodology.

In terms of accommodating the concept to the current study, we believe that Bourdieu's conception is the most theoretically refined among the *Trio* and the most applicable to our context. The issue of '*Conversion'* is at the core of his thesis-an issue which is also at importance for the current study.

We adopt and share Coleman's interest for applying the concept to poor and marginalized communities. We also admit that Nahapient and Ghosal's conception is the most theoretically explained after *the Duet*. In terms of measurement, we agree with Edwards and Foley (1999:143) that Bourdieu's account may appear elusive to some but his understanding, although, of how to measure and weigh social capital has a clarity and coherence which cannot be found in Coleman and Putman.

[16] For some critique, see Tunner (1996)

In one of his article, Emery Castle's remarks that '*unless the social capital concept is used with some degree of precision and in a comparable manner, it will come to have little values as an analytical construct'* (1998: 623). For the purpose of the study, we countersign Caslte's remark on the concept and employ Bourdieu's thesis on social capital with as much as possible precision *vis-a-vis* comparability.

3. Social Capital as 'Capital' and the issue of 'complementarity'

3.1 Is Social Capital 'Capital'?

While there has been a 'plethora of capitals' in the literature ranging from natural, physical, Human, Cultural, Social, Symbolic, etc. Social capital has recently received extensive critiques over the element 'capital'. Two leading Economists paved the way for such critique. Kennenth Arrow (2000) opens the vignette and Robert Solow (2000) completes it. The first demands the abandonment of the concept 'social capital' since the word 'capital' does not strictly meets three basic capital like-credentials i.e. *extension in time*, *deliberate sacrifice in the present for future benefits*, and *alienability*[17]. The latter likewise states that social capital '*is an attempt to get conviction from bad analogy*'.

Before introducing the other intellectual stream which opposes the aforementioned claims, we believe that a brief history of the world/concept capital with a particular intention to identify some of its core characteristics can shed light on the issue at stake.

The history of the word capital can be traced back to ancient Greece and Roman Empire. Capital in Ancient Greek language is pronounced as *kefáleo* and in Latin as *Caput*. Ancient Greeks used the word '*kefáleo'* in a non economic sense. As Bourdieu (1986: 49) argues that ancient Greek jurists used the words '*ta patroa'* to denote the inherent properties of an object and '*ta epikteta'* to denote the acquired properties. Roman jurists used the world '*Capitalis*' to denote the principle of a loan. In the age of feudalism, the possession of land was considered as the dominant form of capital. Money was also considered as capital with the main purpose to satisfy personal needs and not production. The advent of the so-called merchant capitalism

[17] He also points that alienability does not fully apply to either Physical or Human Capital.

challenged the tangible nature of capital (Dean and Kretschmer, 2007: 575). Phenomena, such as the *English East India Company*, brought in the forefront new characteristics of economizing (i.e. financing, credit and organised production)(Fulcher, 2004:2). In parallel with the mercantilist version of capital, the Phsysiocrats developed their own version of capital. They identified as capital the stock of food and tools which accumulates as a result of past production. The emergence of the market value exchange system (or capitalistic) did not certainly change the 'given' characteristics of capital. Dean and Kretschmer (2007:576) argue that despite the apparent differences among mercantilists and Psysiocrats, both streams have made a significant contribution to what was subsequently perceived as capital in modern economics[18]. Important contributions were also made by Alfred Mashall, Karl Marx and Theorein Veblen. Marshall in his book *Principles of Economics* makes explicit that capital must be identified from the social point of view (1920, 1997:71-72)[19]. In page 71 and 72, Marshall refers to social elements as trading factors of capital. Trading factors such as '*Payments in kind'* and the '*good-will'* can be considered as '*trading capital*'. He goes on to state that:

'...to *the things in his possession must be added those to which has a right and from which he is drawing income: including loans...under the complex forms of the modern 'money market*''.

Karl Marx with his Hegelian dialectic developed an influential analysis on Capital and in particular, the consequences that they derive from its *accumulation* i.e. inequality and class struggle. For Marx, capital becomes capital under specific circumstances i.e. *exploitation* and *subjection* of the labourer. Smith and Kulynych (2002:153) trenchantly comment that, for Marx, capital was an '*absent exploitation*'. Theorein Veblen(1908:105), in his article '*On the Nature of Capital*', distinguishes capital in two '*coordinated categories'*; tangible and intangible. Veblen (1908: 111-2) remarks that '*Capital goods, which typically make up the category of tangible assets, are capital goods by virtue of their technological serviceability, but they are capital in the measure, not of their technological serviceability, but in the measure of the income which they may yield to their own owner. The like is, of course, true of intangible assets, which are likewise*

[18]Of course, Quesnay, Turgot, and Adam Smith enlarged the concept capital.

[19] In page 71, Marshall refers to 'Payments in kind', 'Trade Capital'. In page 72, he refers to the 'good-will' of business as a trading factor. He goes on to state that 'to the things in his possession must be added those to which ha has a right and from which he is drawing income...'

capital, or assets, in the measure of their income-yielding capacity. Their intangibility is a matter of the immateriality of the items of wealth-objects of ownership-of which they are made up, but their character and magnitude as assets is a matter of the gainfulness to their owner of the processes which their ownership enables him to engross.'. In a subsequent publication, Veblen (1915, 200) argues clearly that '*the substantial core of capital is immaterial wealth, and that the material objects which are formally the subject of the capitalist's ownership are, by comparison, a transient and adventitious matter*'.

After this brief historical parenthesis, we turn the discussion back to the 'defenders'. The first to defend vigorously the capital-like properties of the concept are Robsison et al., (2002a; 2002b). In an article published in the *Review of Social Economy* and in a subsequent Economic Report, they argue that '*if the capital goods metaphor is to be used useful to analyze social relationships, it must take seriously the transformative ability of capital to turn one thing into another*' (Robison et al., 2002:5). Schmid (2000:3; 2002:750) refers to two capital like-properties of social capital i.e. *productive* and *transformative*. Robison et al. (2002a:5) extend Schmid's argument by refereeing to a number of more capital like-properties such as *transformation capacity*, *durability*, *flexibility*, *substitutability*, *opportunities to decay (maintenance)*, *reliability*, *ability* to create other capital forms, and *investment* (opportunities). However, they note that social capital meets all the aforementioned capital like-properties under one criterion i.e. it is *emotive (or sympathy).* They define sympathy '*as the affinity, association, or relationship between persons or things wherein whatever affects similarly affects the other*'. A sympathy based definition of social capital was also given to support their argument.

'...a group's or group's sympathy toward another person or group that may produce a potential definition benefit, advantage, and preferential treatment for another person or roup of persons beyond that expected in an exchange relationship (p.6)' .

They also provide a few examples to verify their argument. For example, a mother is sympathetic and gives preferential treatment to her child; graduates of a certain school are sympathetic toward all other grads of the same school and give them preferential treatment;

and, a number of people feel sympathy for starving children and contribute to a scholarship fund administered by a foundation for the benefit of qualified applicants etc. At the first sight, sympathy seems the driving force behind any social capital action, but at the second sight, phenomena such as amoral familism and nepotism seem to contradict the altruistic connotations of the word sympathy. Another issue is *where this sympathy comes from*? Attempting to answer such simple question one may end up dealing with issues of culture, power and hierarchy. For example, having an accent peculiar to islanders makes one an easy receiver of sympathy or antipathy in a given context. One sympathizes another because of his socio-economic status and another one, sympathizes the same person because of his management position etc.[20]

Our stance is apparently towards the second stream –'defenders'. Before unfolding our thoughts on the issue at stake, we owe to mention for the sake of clarity that the 'offensives' take a negative stance towards the element capital. Simply, the concept cannot be measured in a double entry accounting system. Solow (2000:6) states that it is clear how a firm or a nation adds to its stock of capital, while with social capital is not. It is obvious that his antithesis and worries are directed towards the 'Putmanian' version/application of the concept. However, none of the 'offenders', states explicitly that social capital functions as capital in the hands of *the Duet*. A tantalising question is *if social capital functions as capital at both micro and macro levels, why then the same does not apply at national levels?* Jacobs (2004: 137) provides a technical answer. She argues while human, social and cultural capital are real and powerful assets for the wealth of modern societies, the problem lies in the traditional accounting terms. In Harry Braverman's book *Labor and Monopoly Capital,* we detect an issue which is paradoxically neglected by economists and social capitalists respectively. Braverman (1974:227) points that physical capital is '*nothing but developed instruments of production'*. In other words, physical capital involves simultaneously with human knowledge. To put in a historical frame, we can claim that the political economists of the nineteenth century such as Marx and Marshall

[20] In Bourdieu's (1986) analysis on cultural capital, we find several elements of what Robison et al.(2002:a) define as sympathy.

took capital from the social point of view, modern economists and social capitalists respectively take 'the social' from the capital point of view. As Maskell (2000:111) argues the use of the world 'capital' implies that we are dealing with an asset and the world 'social' denotes that the asset is gained through membership in a community.

Our belief is that in the knowledge based economy society, it is premature to perceive and measure tangible and intangible forms of capital in traditional accounting terms. In the history of the word capital, we can grasp the true nature of the word capital which is purely social and adaptive. Human and social capital should not be compared and measured in a similar way as physical capital-simply, because they are intangible and dynamic. The challenge for Economics is to identify how new forms of intangible capital contribute to economic performance. This requires unlocking ourselves from the 'but verify' doctrine. The true economy is 'thin air' and that cannot be quantified.

Finally, we firmly believe that social capital functions as capital. Our view on social 'capital' coincides with Aristotle's view on money.

'... serves as a guarantee of exchange for the future: supposing we need nothing at the moment, it ensures that exchange shall be possible when a need arises, for it meets the requirement of something we can produce in payment so as to obtain the thing we need' (NE 5, 1133b 10 ff, in Meikle, 1995:200: 161)

3.2 *'Complementarity'*[21] *and Organizational Capital*

As mentioned above, the Duet identifies that different form of capital are interchanging themselves. This interchange phenomenon has an influence on economic performance. Bourdieu (1986:53) identifies this phenomenon as '*conversions*' of different forms of capital. He argues that '*the convertibility of the different types of capital is the basis of strategies aimed at ensuring the reproduction of capital'*. On the other hand, Coleman (1988; 1990) does not clearly identify the phenomenon of interchange. However, he uses the word '*fungible*' to identify the

[21] The issue of 'complentarity' have been sporadically identified in the literature (Olson, 2000; Robison et al., 2002; and Stiglitz, 2000). However, there is nothing more than a mere introduction.

importance of social capital in the creation of human. One of his well known examples is the Asian immigrant families in USA.

Our impression is somewhat different. We believe that social capital in simultaneous conjunction with different forms of capital results in higher or lower economic performance. This imposes that all forms of capital are simultaneously present during the 'production process'. In others words, different forms of capital are simultaneously complementing each other during the production process. This is the '*complementarity*' phenomenon. The result of this *complentarity* is the criterion for future reproduction (solidarity). The novelty is in the 'complementarity' which is the simultaneous presence of difference forms of capital during the production process. To illustrate better the issue at stake, we provide the following example.

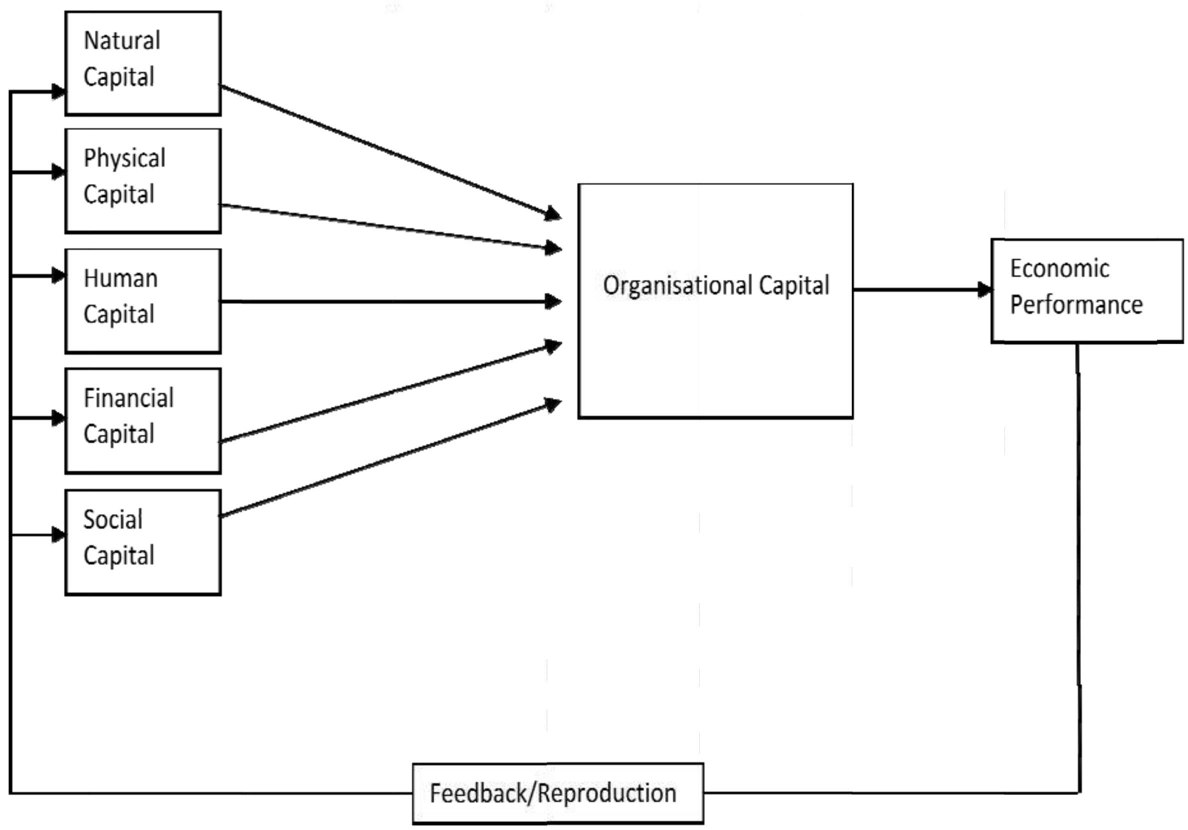
'...a farmer was baling hay, and he had broken a needle in his baler. The weather looked unpromising, with rain likely. He did not know what to do. He had just bought the farm, thus was his first crop of hay, necessary to winter his cattle, and now it appeared that his field of hay would be ruined. A neighbour who was helping him proposed a solution. 'I'll go down and ask-----, who has a baler and could bale the field for you'. The farmer wondered at this, assumed it would cost him something in hay or money, but anxious to save his hay, readily assented. The neighbour did as he had proposed, and a little while later the second farmer arrived with tractor and baler. He proceeded to bale the hay, and all the hay was in the barn when the rain finally came. The first farmer, who had not even known the farmer who baled his hay, was still puzzled, and asked of his neighbour what was due to the second farmer for bailing the hay in this emergency. The neighbour replied, 'oh, all he wants is the gasoline it took to bale the hay' (in Coleman, 1990: 93).

In the above example, we can identify five different forms of capital. The first is natural capital in the forms of land. The second is physical capital in the form of baler, hay and tractors. The third is the size of the farm which can be identified as financial capital. The fourth is human capital in the form of labour and skills. The fifth is social capital in the form of trust, norms and networks. Therefore, social capital alone was not enough to solve the problem. Instead, it was social capital in conjunction with others forms of capital which resulted in the solution of the problem. In other words, the simultaneous presence of different forms of capital was the prerequisite to higher economic performance, not the ‘convertibility’ or ‘fungibility’.

Now, if we consider again the above example, we will identify some hidden cognitive and organizational routines which took place during the production process. First, the problem of the broken baler had to be collectively discussed among the first two famers. The second farmer (neighbour) had an idea which was collectively accepted. Then, the same farmer used his Rolodex to find a possible solution. The third farmer verbally agreed and preceded the work without any fee. Therefore, labour allocation, sharing and specialization. Those hidden organization properties which were not apparent at first instance, are the main components of what we term *organizational capital*. It is important to mention that those properties are highly dependent on human and social capital respectively. However, the catalyst to higher economic performance was the complementarity in conjunction with organizational capital. To put it differently, it was the collective properties of organizational capital which solved the problem. Social capital facilitated the socialization process but the solution was entirely taken under the given social organization. Without collective decision making and collective problem solving, a solution would have been impossible.

In figure 1, we provide a schematic representation of our conceptual framework.

Figure 1- Complentarity



Source: *Authors*

4. Methodology

In this section, we test the conceptual framework identified above using survey data from Swedish Farm Partnerships. We have picked Swedish farm partnerships for a number of reasons. First and foremost is the importance of testing Bourdieu's thesis on relatively marginalised communities. Farmers generally lack socio-economic status. Marginalized communities were at the core interest of Coleman's oeuvre. Therefore, we would like to investigate Bourdieu's theses on Coleman's research groups. However, the role of social capital in agriculture has mainly focused on poor farmers in developing countries. This is not surprising as social capital is one of the few forms of capital available to the poor (e.g. Fox and Gersham, 2000). Nevertheless, as will discuss below, social capital also seems to play an important role for farmers in developed countries such as Sweden. As noted by Choupková and Bjornskov (2002) in their analysis of the role of social capital in the Czech agriculture, trust and norms among farmers may not only facilitate sharing of knowledge and information, but also sharing of physical assets. Several authors have observed that contracts in agriculture often are quite simple. For example, Allen and Lueck (2002) found that agricultural contracts in North America in many cases consist of only oral agreements. Likewise, Lyon (2000) found that credits from traders to farmers were not based on written contracts but relied on trust between the contract partners. Allen and Lueck(2002) discuss, for example, the lack of relation-specific assets in agriculture (as one explanation), an appreciable degree of trust and good social relations among contract partners in agriculture is likely to be an important reason. Trust and norms among contract partners may not only make contracting easier and less costly, it may also reduce incentives to act opportunistically. Second, rural places in developed countries are characterised by several attributes such as relatively sparse population, ageing population, high interdependence with urban and global systems, economic diversity-heterogeneity, shortage of labour and 'brain drill'(Castle, 1998; Eurofound, 2007; Jovanovic, 2005). These attributes may inhibit or force farmers to form collaborations. Third, farm partnerships are becoming more and more popular in Sweden. Larsen (2008) has identified a number of reasons including economic and social benefits. Last but not least, social relationships in rural places are less dynamic than in urban places. This provides additional benefits to researchers of repeating the study in the future.

4.1 Data[22]

The sample farms were taken from the Swedish Farm Accountancy Network (FADN). The FADN is likely to be the most comprehensive data base on Farm Partnerships in Sweden. It contains demographic data such as farmers' age and geographical location of the farm, as well as accountancy data. The FADN farms are supposed to be representative in terms of region, economic size and types of farming[23]. Questionnaires were developed in 'simple language' and initially tested to a small number of farmers. The purpose was to investigate any potential problems and issues that have been unnoticed[24]. The final questionnaire was sent out to 1000 farms (aprox.) in the early spring of 2006. Spring is a preparatory period for farmers. The collaborating farms were asked about the form of collaboration, the organisation of the partnership and tasks that the partnership involves (see above reference for details). The response rate can be considered as exceptionally high reaching the percentage of 74. A percentage of 62 indicate that they are involved in collaboration with other farms. The most common form of organisation is borrowing/renting machinery from other farms and/or owning parts of the machinery together (25% of the farms indicated this alternative). A large share of the farms, 18%, shares all machinery with other farms (by renting, borrowing and/or owning together). Of these, 3% also purchase production factors and/or sell products together with their partnership farm(s). The tasks that were most frequently involved in the collaborations were: harvest of silage (33%), planting (26%), cultivation (24%), harvest of grain (24%) and pesticide application (21%). Interesting to note is that 84% of the partnership farms stated that they only have a verbal agreement with their partner(s). In most cases (81%), the contract is not specified for a given period of time. In general, the contracts are not very detailed.

[22] Data was collected as part of the PhD dissertation by Karin Larsen (see Larsen, 2008). We gratefully acknowledge the important contribution of Hans Andersson and Carl Johan Lagerkvist as principal supervisors of the PhD project. Questionnaires were developed under their guidance. Finally, financial support from by MAT21 and Stiftelsen Lantbruksforskning was provided.

[23] It should however be noted that the FADN farms are on average larger (in terms of land) than the average Swedish farm.

[24] A detailed description of the questionnaire can be found in Larsen (2008)

4.2 Variables

Most variables used here were measured by statements for on a scale from 1 is completely disagree to 5 is completely agree. All variables are described in Table 1.

4.2.1 Economic performance

There are many ways to measure economic performance ranging from revenues to profits. We chose to measure economic performance by two measures. First, we measured profitability by asking farmers to rank the profitability of their farm as a result of the collaboration. This, however, may be a result of economies of scale since collaboration may increase the bargaining power. It may also enclose the negative side of social capital since high profitability may be a result of 'conspiracy'. For example, farmers may increase the price of their products at the expense of society. Therefore, we introduce the dimension of high quality products since it implies a win-win situation for both farmers and society.

4.2.2 Organizational capital

In the example mentioned above, we identified several properties of organizational capital such as *collective decision making*, *collective problem solving* and *labor sharing*. We used those properties but we also identified several others during preliminary interviews. For example, we asked farmers whether *labour quality* in the form of specialization takes a bigger price during the collaboration. Finally, we asked them to indicate whether during the collaboration it was possible to use better and advanced resources such as modern technology.

4.2.3 Social capital

We measured social capital by its properties. For example, we ask farmers if they trust they partners. This is called *particularised trust*. We investigate also if they knew each before coming to form the partnership. This is alike to *sympathy* as identified by Robison et al. (2002:6). Age of partnership is a proxy of *norms*. We believe the older the partnership is the more institutionalised and established are norms. The issue of power is measured by the proxy-*relationship quality*. We ask farmers to identify the quality of their relationship. This proxy, however, does not entirely measure the exercise of power. A relationship might be excellent even in high hierarchical structures. Therefore, the dimension of *access to new networks* (bridging social capital) is used to identify the '*structural holes*' which are usually attributed to powerful agents (Burt, 1992).

4.2.4 Human capital

Human capital can be measured in a number of different ways ranging from educational achievement to tacit skills. Here, we use two proxies to catch the tacit nature of human capital i.e. *Experience of farm management* and *age of the farmer*. The later can be also used as a proxy for social capital since older people tend to have bigger Rolodexes which in turn may facilitate actions faster (Burt, 1992; Sobel, 2002). However, age might have the opposite effect since motivation for socializing may weaken as physical health and cognitive abilities decline (Mather and Cartesen, 2005).

4.2.5 Financial Capital

Financial capital is an important element for the duration of the collaboration. Bigger farms turn to be more independent (autonomous) than smaller farms (embeddedness). We measure financial capital by numbers of hectares.

4.2.6 Physical capital

The physical distance between the partnership farms is likely to affect the organisation of the partnership and thereby also the economic benefits of partnership arrangements. Distance, or proximity, is therefore included as a control variable.

4.2.7 Control Variables

Dummy variables for regional location and type of production were included as control variables in the performance regressions.

Table 1: Description of variables.

Type of capital/control variable		Measured by	Average*	St. dev.
1. Physical capital	Proximity	Kilometres	5.27	7.53
2. Human capital	2a Experience of farm management**	Years	25.81	10.91
	2b Age of farm manager	Years	51.83	10.23
3. Financial Capital	Farm size	Hectares	105.91	136.93
4. Social capital	4a Particularised Trust	I trust my partner to perform his/her obligations in the collaboration in the best possible way	4.56	0.72
	4b Sympathy	I knew my partner(s) when the collaboration was initiated.	4.46	0.93
	4c Norms	Age of partnership in years	15.3	9.56
	4d Relationship quality	I think that the social relation among me and my partner(s) is very good	4.42	0.70
	4e Access to New Networks	I believe that the collaboration helps me to give more contacts with other farmers.	3.88	1.02
5. Organizational capital	5a Technology sharing	I view that the collaboration makes it possible for me to use better and more modern technology.	4.27	0.97
	5b Collective conflict resolution	I think that potential conflicts that arise in the partnership can be resolved in easily.	4.43	0.74
	5c Collective problem solving	I perceive that the work is organized better as a result of collaboration.	3.58	1.15
	5d Collective decision making††	(1) I think that the daily decision making process is longer as a result of the collaboration.	2.42	1.15
		(2) I think that the decision making process concerning for example investments is longer as a result of the collaboration.	2.57	1.17
	5e High labour quality	I believe that the quality of the performed labour is significantly higher as a result of specialization.	3.59	1.06
	5f Risk sharing	I perceive that it is easier for me to cope with work intensive periods.	3.84	1.21
6. Economic Performance	6a Profitability	I believe that the profitability of my firm has improved as a result of collaboration with other farmers.	4.14	0.99
	6b High quality products	I believe that the collaboration increases my possibilities to produce products of higher quality.	3.34	1.15

*A scale ranging from 1 to 5 was used for the statements where 1 = completely disagree and 5=completely agree

** Number of years since the respondent took over the farm. †† For the correlations and the regressions, 5 minus the value of these variables is used.

Table 2: Correlations between variables.

	Physical capital	Human capital		Financial capital	Social capital					Organisational capital							Economic performance	
	1	2a	2b	3	4a	4b	4c	4d	4e	5a	5b	5c	5d (1)	5d (2)	5e	5f	6a	6b
1	1.00																	
2a	-0.02	1.00																
2b	0.04	0.74	1.00															
3	0.19	-0.04	-0.04	1.00														
4a	-0.03	0.04	0.09	-0.06	1.00													
4b	-0.21	0.01	0.02	-0.08	0.41	1.00												
4c	-0.17	0.34	0.36	-0.10	0.07	0.05	1.00											
4d	-0.01	0.05	0.13	-0.04	0.71	0.26	0.06	1.00										
4e	-0.01	-0.05	-0.04	-0.07	0.38	0.14	0.05	0.34	1.00									
5a	-0.01	-0.07	-0.02	-0.03	0.25	0.13	0.00	0.13	0.48	1.00								
5b	-0.14	0.07	0.16	0.00	0.62	0.30	0.11	0.50	0.31	0.21	1.00							
5c	-0.04	-0.02	0.02	0.01	0.30	0.19	-0.03	0.21	0.42	0.34	0.17	1.00						
5d(1)	0.00	0.13	0.06	-0.01	0.09	0.02	0.00	0.13	0.01	-0.04	0.25	0.11	1.00					
5d(2)	0.01	0.09	0.07	0.03	0.13	-0.04	0.05	0.18	-0.05	-0.04	0.14	-0.02	0.54	1.00				
5e	-0.04	-0.03	-0.01	-0.02	0.23	0.12	0.05	0.18	0.50	0.46	0.18	0.47	0.10	0.01	1.00			
5f	0.01	-0.06	-0.07	0.09	0.13	0.07	-0.05	0.12	0.51	0.45	0.15	0.47	0.09	0.01	0.55	1.00		
6a	-0.03	-0.09	-0.03	0.0rfd4	0.30	0.16	0.00	0.17	0.43	0.51	0.27	0.32	0.04	-0.02	0.33	0.38	1.00	
6b	-0.05	-0.16	-0.17	0.03	0.15	0.10	-0.02	0.11	0.43	0.46	0.10	0.32	0.00	-0.10	0.51	0.59	0.39	1.00

4.3 Regression results

Empirical (statistical) analysis with the objective to test hypothesis derived from social capital theories are often faced to large challenges such as endogeneity of explanatory variables and the measurement of variables. A discussion of some of theses issues can be found in for example Durlauf and Fafchamps (2004). One issue they discuss is that when trust is used as a measure of social capital, one can expect that this variable is endogenous as the level of trust is likely to be influenced by trustworthiness in actual behaviour (Durlauf and Fafchamps, 2004). Even if there exist methods to consider this issue theoretically (such as the use of instrumental variables), the choice of instrumental variables is often more or less arbitrarily. Nevertheless, we will present the results from a number of (OLS) regressions that was conducted in order to test the hypothesis developed in the theoretical section.

The results suggest that the *particularized trust* has a positive and statistically significant impact on the organisational capital measures *technology sharing, collective conflict resolution* and *collective decision making*. The estimated parameter of *access new networks* has in most cases a positive sign and is highly statistically significant. The statistical significance is in general low for the other measures of social capital. The low levels of statistical significance among some of the social capital variables are likely to be explained by multicollinearity among them.[25] There are a couple of unexpected results including the negative impact of *Relationship quality* on *Technology sharing* and *Sympathy* on *Collective decision making (2)*[26] .

Human capital measured by age had a positive and statistically significant impact on *Collective problem solving*. The other measure of human capital, years of farming experience, had a positive and statistically on *Collective decision making (1)*.

Physical capital, measured by proximity, had only a statistically significant impact in one case; the distance to the partnership farms was found to have a negative influence on collective conflict resolution (i.e. a shorter distance leads to a higher value of the dependent variable).

[25] Additional regressions were conducted in which only one of the social capital variables were included in the same regression. In those regressions, the parameter estimate of the social capital variable had a positive and statistically significant sign in almost all cases.

[26] they are both significant on a 10% level but not on a 5% level

In order to measure the impact of organizational capital on economic performance, the organizational capital measures were used as explanatory variables in two regressions with each performance measure as the dependent variable. The results suggest a positive and significant impact of *technology sharing*, *collective conflict resolution*, and *risk sharing* on profitability, and a positive and significant impact of *technology sharing*, *collective problem solving, improved labor quality* and *risk sharing on high quality products*. A second model was estimated in order to analyze the direct effects of the explanatory variables in table 3 on performance. In this case, *trust, new networks* and *size* were found to have a positive and significant effect on *profitability* and *new networks* were found to have a significant impact on *high quality output*.

Table 3: Determinants of organizational capital: parameter estimates

	Dependent variable / measure of organizational capital						
	Technology sharing	Collective conflict resolution	Collective problem solving	Collective decision making (1)	Collective decision making (2)	High labour quality	Risk sharing
Constant	1.62***	0.63**	0.26	2.33***	2.27***	1.14**	1.73***
Proximity	0.0018	-0.011**	-0.0037	-0.0036	-0.00363	-0.00090	0.0022
Farming experience	-0.010	0.00063	-0.0091	0.025**	0.013	0.000042	0.0015
Age	-0.013	0.0088	0.020*	-0.015	-0.015	0.00245	0.0031
Trust	0.30***	0.39***	0.24**	0.091	0.19	0.084	0.10
Sympathy	0.038	0.043	0.13*	-0.050	-0.15*	-0.0077	-0.049
Relationship quality	-0.17*	0.21***	-0.13	0.072	0.17	0.012	-0.16
New networks	0.35***	0.095***	0.38***	0.0018	-0.11	0.46***	0.59***
Farm size	0.00015	0.00040*	0.00025	0.000022	0.00027	0.00013	0.00076*
Age of partnership	0.0033	0.0041	-0.0031	-0.0026	0.0070	0.00454	-0.00689
R^2	0.18	0.41	0.17	0.031	0.045	0.193	0.23

*, ** and *** indicates statistical significance on 10, 5, and 1% levels.

Table 4: Performance determinants: parameter estimates[†]

	Dependent variable			
	Profitability		High quality products	
	Model 1	Model 2 (direct effects)	Model 1	Model 2 (direct effects)
Constant	0.89***	0.94*	0.21	2.16***
Technology sharing	0.33***	-	0.20***	
Collective conflict resolution	0.25***	-	-0.028	
Collective problem solving	0.084	-	0.28***	
Collective decision making (1)	-0.029	-	0.0035	
Collective decision making (2)	-0.033	-	-0.062	
High labour quality	0.0088	-	0.16***	
Risk sharing	0.12**	-	0.34***	
Proximity	-	-0.0085	-	-0.0057
Farming experience	-	-0.012	-	-0.0061
Age	-	0.0082	-	-0.014
Trust	-	0.30***	-	0.070
Sympathy	-	0.040	-	0.017
Relationship quality	-	-0.12	-	-0.14
New networks	-	0.38***	-	0.51***
Farm size		0.00063*		0.00042
Age of partnership		0.0037		0.0055
R^2	0.30	0.28	0.43	0.23

*, ** and *** indicates statistical significance on 10, 5, and 1% levels.

[†] Parameter estimates of the control variables production regions and production specialization are not displayed here.

There are several reasons to be cautious when interpreting the results reported above. As already discussed, the regressions in table 3 are likely to suffer from multicolinearity problems which may result in large standard errors and thereby low significance levels. Moreover, since most variables are statement style and measured on a scale, they are ordinal and not cardinal. This will, for example, affect the interpretation of the magnitude of the parameters. A further issue is the simultaneity among the regressions in tables 3 and 4. A more appropriate statistical approach might be factor analysis in combination with structural equation modeling. Nevertheless, the correlation analysis and the regressions provide some useful information about correlations among the variables collected in the questionnaire.

5. Discussion and Future Research

As mentioned above, we attempted the *Homeric* quest of tracing the theoretical origins of the concept. Despite, the limited time and space that the nature of the study has given to us, we believe some contribution has been made towards the *Ithaca*. One may identify many progenitors for the concept ranging from ancient Greece to *neo* deTocquevillian America. However, the crux per *se* is to identify *Ithaca*. Therefore, *the first theoretical lesson is to identify Ithaca*.

We argued in section 2 that *the Trio* must be reduced to *Duet*. This is a great start to identify the way back to *Ithaca*. We have argued that Bourdie's work is the most theoretically refined among *the Trio*. Coleman's contribution is equally important for the heuristic value of the concept. However, scholars that frequently bless the heuristic value of the concept must be warned that this is the *eulogy* of the concept. The concept seems nowadays to be *autistic*. As Sir Karl Popper(1999:10-11) states '*at any event, the critical approach is the crucial novelty that makes science what it is...there is nothing that can guarantee scientific progress*'. Therefore, *the second lesson is to be as critical as possible because there is nothing to guarantee the concept's progress*.

We have followed a critical stance throughout the text. This is because of our identity as social scientist to searching for the truth. The truth may come true only when social scientists are less attached to political ideologies and movements. Therefore, *the third lesson is 'communitarian advocacy...it is not good social science' and the utter aim of the social scientist is the search for the truth.*

In section 2, we have examined the element 'capital' in social capital. Our belief is that the answer lies in the history of the word capital. From Ancient Greece to Physiocrats, capital seems follows the evolution of society. In the 'thin air' economy, capital is perceived by scholars as purely tangible and 'unsocial'. Therefore, *the fourth lesson is capital form the social point of view*.

In section 3 and 4, we unfolded our ideas *vis-a-vis* complementarity and organizational capital. We believe that social capital is not the only missing link for economic performance. To summarize, the theoretical discussion of this paper, we suggest that social capital contributes to economic performance only when it is accompanied together with other forms of capital such as human, physical and organizational capital. In the case of machinery sharing arrangements between farmers in Sweden, it was shown that social capital facilitates organizational capital which in turn facilitates sharing of physical assets (and thereby improved economic performance). However, the issue of complementarity needs further empirical investigation. Therefore, the fifth lesson is *policies aiming at stimulating economic performance at poor and marginalized communities should take into account the complementary nature of different forms of capital in producing greater economic results*.

While existing literature on social capital in relation to agriculture has mainly focused on developing countries, the empirical example of this study also contributes to the existing literature on social capital and agriculture by showing that social capital plays also an important role for agriculture in a developed country such as Sweden.

In the future we would like the issue of complementarity and organizational to be examined with a combination of different methods i.e. qualitative and quantitative. We believe that methodological such as the Critical Realism stance can uncover certain mechanisms which qualify the complementarity issue and the role of organizational capital as be important elements for higher economic performance.

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