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Let Social Capital (Finally) Be (Economic) Capital – Conceptualising, Formalising and Operationalising Social Capital

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info@mav-verlag.de

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Preface

During the last decades, the theory of social capital has had a profound impact on many areas of social sciences. The theory, made popular by outstanding social scientists like Putnam and Bourdieu, offers an interdisciplinary approach, contributing to an integrated understanding of societal states and processes from the perspective of economics, sociology and psychology.

Unfortunately, a uniformed conceptualisation of social capital does not exist yet. Furthermore, the formalisation and operationalisation of social capital is not fully satisfactory. A contribution to close this research gap is made by this paper.

The author succeeds in defining social capital by bringing the three main theories in this field together. A formalisation of social capital is developed by integrating the rational choice theory and therewith expected net utilities. Furthermore, this paper shows an approach to measure social capital, understood as being equivalent to its (potential) transformation in economic capital, through the money and time people gain or have to invest in their social relationships.

The author of this paper provides more than a groundwork to advance the theory of social capital and its (empirical) application in practice. It can be expected that, based on this work, not only the academic discussion of social capital but also multi-dimensional approaches, integrating economic, sociological and psychological perspectives of finding solutions for our societies will improve.

Bonn, April 2021

Prof Dr Luca Rebeggiani

Professor of Economics and Statistics
FOM University of Applied Sciences

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Abstract

This paper contributes to the enhancement of the theory of social capital, making it applicable to many different areas of social sciences. It gives a definition of social capital, which links the concept with utility and combines the individual and collective levels. On this basis, social capital is formalised through subjective expected utilities. To apply the developed theory on an empirical level, social capital is operationalised through the assumption of its transformation into economic capital. In this context, a quantitative value of social capital can be measured through the money and time that individuals, or groups, gain from social capital or must invest to build it. Therefore, this paper provides both a theoretical and methodological framework for formalising and measuring social capital and outlines a research direction, which will potentially lead to a deeper understanding of the notion of social capital.

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1 Introduction

The concept of social capital is widespread in social sciences. It is used to explain a variety of societal phenomena and to give advice on how to improve societies and communities (Portes, 1998). To date, three main approaches to social capital have been established: the theories of Putnam (2001), Coleman (1988) and Bourdieu (1983). Unfortunately, the significant differences between these three theories have meant that a commonly agreed definition of social capital does not yet exist.

Against this background, this paper aims to both present a comprehensive definition of the term social capital and conceptualise a theoretical framework that can be applied in different fields of social sciences. The theory, developed in this paper, does not fundamentally contradict the afore-mentioned main approaches regarding the concept of social capital but builds on their foundations, even though it will not be fully in line with every aspect of these theories. To achieve this objective, this paper will demonstrate how social capital can provide individuals and groups with benefits or utility. Social capital will then be formalised using subjective expected utilities. On this basis, it will be shown how the value of social capital can be measured by transforming social capital into economic capital and this measurement of social capital will be exemplified using a hypothetical illustration. The paper will close with a summary and an outlook on further research, added by a short evaluation of how the developed theory may interact with the existing theories of social capital.

2 Conceptualisation of Social Capital

The review of background theory is divided into two sections. Firstly, social capital will be defined as a basis for the development of the formalisation and operationalisation of this concept. The starting point will be a brief characterisation of capital in general and then the main approaches to social capital proposed by Putnam (2001), Coleman (1988) and Bourdieu (1983) will be described. Secondly, the concept of social capital will be further developed by dividing it into an individual component and a collective component, which are linked to both the benefits a member of a group and the entire group can gain. Based on this, the section closes with an explanation of the kind of benefits that can be gained by holding social capital and how these benefits can be accessed.

2.1 Definition of Social Capital

The fundamental term of capital is defined as a resource that is controlled and can be invested by an actor with the prospect of gaining benefits (Braun, 2016; Hodgson, 2014). Traditionally, the most commonly found example of capital is economic capital, which refers to financial accruals or tangible and durable means of production. The concept of human capital, which incorporates the knowledge, traits and habits of a person to produce economic value, is also widespread since its popularisation by Gary Becker (1964). In the recent decades, the concept of social capital has also gained popularity within the scientific community and with policy makers (Portes, 1998). Three main approaches to social capital can be found in the works of Putnam (2001), Coleman (1988) und Bourdieu (1983).

For Putnam (2001), who significantly contributed to the popularisation of social capital in the recent decades, the foundation of social capital is the principle of reciprocity, gaining benefits in return for investments. He understands regular face-to-face interactions and an active participation in institutionalised, rather than informal, networks as constituent elements of social capital. Thus, for Putnam “social capital refers to networks of social connection – doing with. Doing for other people, however laudable, is not part of the definition of social capital” (p. 117). Against this background, Putnam distinguishes between bonding and bridging social capital, which he does not understand as mutually exclusive categories, but rather as extremes on a gradually increasing or decreasing scale. Bonding social capital occurs in rather inward-looking groups, in which the members expect more explicit and immediate rewards for their investments. Bridging social capital, on the other hand, is predominantly found in outward looking groups, with more likely access to outside information and resources and a reward expectation that is rather more implicit and long-term. In this context, Putnam also distinguishes between thick and thin trust. Thick trust is based on personal experiences and describes the expectations of members of a group that other members of the group will return particular favours. Thin trust is based on a group's general characteristics, which lead to expectations that the group will foster the principle of reciprocity. In Putnam's construction, societies or communities that have a higher amount of social capital normally, but not automatically, offer higher benefits to their members.

Whilst Putnam focuses on the interactions and the social context with regards to social capital, Coleman (1988) incorporates individual aspects of social capital. Coleman combines the economic principles of the rational choice theory with the contextual approach of sociology. He understands social capital as the most intangible form of capital, in comparison with economic and human capital. Like Putnam, Coleman understands social capital as manifesting itself in the relations between actors and can, therefore, be characterised as a public good. However, he argues that social capital should be defined by its function and sees its purpose in achieving individual goals through the principle of reciprocity. Coleman uses the analogy of debts to explain how to build social capital. If an actor did favours for another member of his social network, he can expect favourable actions from him in return, when needed. Against this background, Coleman identifies three forms of social capital, obligations and expectations based on trustworthiness, information and norms, and sanctions that exist in social groups. These forms of social capital foster the efficiency of social entities. Furthermore, he points out that the possession of a high amount of social capital can lead to higher amounts of other forms of capital, such as human capital, i.e. the skills and knowledge of a person. Consequently, for Coleman, social capital is not built because of altruistic motives, but because of egoistic ones and so, as other forms of capital often appear more attractive to actors, investment in building social capital is neglected or abandoned in favour of building economic capital. Thus, social capital is rarely built intentionally, but usually occurs as a by-product of the processes of achieving other forms of capital.

In direct contrast to Coleman, Bourdieu (1983) views social capital, not as a by-product of other processes, but as the result of intended effort. For Bourdieu, social capital requires individuals to invest in social relations and implies that individuals are seeking egoistic benefits. Furthermore, the precondition for investing in social capital is economic capital, as all investments require time and financial means. This is consistent with Bourdieu's overall theory in which economic capital is central and understood as the root of all of the other forms of capital; social capital and cultural capital. In this conception, cultural capital can have different 'states': an objectified state, in pictures, books etc.; an embodied state, in the form of long-term dispositions of the body and mind; and an institutionalised state in educational certificates. He argues that capital is the aggregated result of work and that everything has its price or value. In this context, he understands capital as an instrument or a resource to establish and ensure structures or power within a social field. Even though a social field is seen as a relatively independent area of social life, i.e. the artistic field or the economic field, in which the referring actors normally emphasise on a specific form of capital, all of the other forms of capital are active or activated at the same time (Bourdieu & Wacquant, 1992). According to Bourdieu (2005), the decisions, the actors make to build capital in a field, are based on habitus, which can be understood as a set of embodied and relatively durable dispositions of covert and overt behaviour. Habitus results from the experiences an actor makes in the context of his social class and fields and is a feeling rather than a rational process. Against this backdrop and consistent with the general definition of capital at the start of this paper, Bourdieu (1983) defines social capital as "the aggregate of the actual or potential resources which are linked to the possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition; or in other words, it is a resource that is based on the membership in a group" (p. 191).

These three main approaches have in common the assertions that social capital will, or can, lead to benefits for the individual members of their respective groups and that social capital is the result of investment, either as the outcome of an intended process or in the form of a by-product deriving from efforts to build other forms of capital. Thus, to reflect these theoretical positions, the following definition shall be the basis for the remainder of this paper: Social capital manifests itself in social relations that require more or less conscious and intended investments by individuals and which hold the prospect of benefits for the individual members of a group and the respective group as a whole.

2.2 Differentiation of Social Capital into Individual and Collective Benefits

Whilst all three of the main approaches to social capital comprise both an individual and a collective component, Putnam (2001) emphasises the societal character of social capital. He almost entirely focuses on the resources of a larger community that can hardly be controlled by an individual in the short-term, whilst Coleman (1988) states that social capital can exist in the relations of two or more actors. This, however, does not mean that the individual dimension of social capital should be disregarded. Aulinger (2005) points out that individuals also have individual access to social capital and Bourdieu (1983) identifies that building social capital needs individual investments, i.e. spending of time and money to form social relations. It is also obvious that the divestment or elimination of social capital, perhaps by giving up friendships or cutting family ties, is an individual decision. Furthermore, according to Bourdieu's (1983) theory, it is possible for individuals to transform social capital into both economic and cultural capital. In this context, therefore, it should be pointed out that other forms of capital, which are usually understood as rather individual resources, cannot exist without a social context. For example, economic capital, such as shares, depends on the development of markets and the same notion applies to human capital or cultural capital in Bourdieu's theory; institutionalised states of cultural capital, like formalised educational degrees, cannot be achieved and benefited from without social relations.

Against this background, social capital can be differentiated into an individual and a collective component which, rather than being fully independent, require each other. Aulinger (2005) proposes that individual social capital is directed towards the benefits that an individual member of a group will potentially gain, whilst collective social capital is focused on the potential benefits for all members of a group. Furthermore, these benefits can be clarified by evaluating the three fundamental approaches to social capital already identified.

Putnam's main work in this field, Bowling Alone (2001), aims to explain the decline of American civil society and to offer a solution through the building of social capital. He focuses on the collective benefits resulting from high levels of social capital and says that the performance of a society and the well-being of its members are raised if social capital is raised. He proposes that these benefits occur due to better transparency, an improved information potential and lower transaction costs because of trust and respected norms. Coleman (1988) also describes benefits of social capital on an individual or collective level, based on the afore-mentioned principle of reciprocity. Because this principle is fostered by trust, norms and sanctions, therefore increased levels of social capital improve social interactions, which can also lead to a goal-oriented group organisation with higher levels of effectiveness and efficiency. Ultimately, then, the power and influence of a group, or a group member, can increase, making it easier to pursue collective or individual interests. Bourdieu (1983) similarly locates the benefits of social capital on both dimensions, the individual and the collective, whereby a group and its members can incrementally increase levels of social capital. According to Bourdieu, social capital can also be transformed into economic and cultural capital, meaning that members of a group can gain financial or material benefits from social relations or cultural capital, in the form of knowledge or habitus, which is defined as the "internalization of the division into social classes" (Gieseking, 2014, p. 139). Aulinger (2005) confirms Bourdieu's approach, but replaces the concept of cultural capital with the term human capital.

In this article, therefore, social capital is understood as a concept that can lead to benefits on two dimensions; the individual and the collective. Because Bourdieu's approach can be seen as a conclusive and comprehensive theory that also incorporates the afore-mentioned dimensions of economic and cultural capital, this paper will define the benefits of social capital as increases in one of the three forms of capital, with the emphasis placed on economic capital. This means that the results, rather than the process, of building social capital will be understood as the benefits for an individual or a group. Any benefits resulting from the behaviour itself, as described in Csíkszentmihályi's (1975 & 1990) flow theory (e.g. playing tennis because of the joy of the game), will not be considered in the theory developed here. This is consistent with most fundamental conceptions of capital, in which benefits are gained by the *use of capital*, rather than the *capital itself*; in economic terms, £20,000 in itself provides no benefits, but the car that is bought with it provides the owner with significant advantages.

3 Formalising Social Capital Through Individual Net Utilities

In this section, subjected expected utilities are integrated into the theory of social capital, based on the definition of social capital in the previous section as well as the homo economicus model and the rational choice theory. Then, social capital is mathematically formalised focussing on expected net utilities on an individual and collective level.

3.1 Utilities and Decision-Making

The previous section demonstrated that social capital has associated and resultant benefits. This suggests that utilities from (neo-)classic economic theory can be used to further explain and formalise social capital, where the underlying model of actors is the homo economicus, whose academic origins can be traced back to Ingram (1888), Mill (1874) and Pareto (1971) amongst others. In this theory the homo economicus, on the demand side, is an actor who maximises his utility through consumption in a rational manner (Ng & Tseng, 2008); to this end, he has a stable order of preferences and completeness of information so that he can clearly distinguish between alternatives (Ng & Tseng, 2008).

The more modern rational choice theory follows the basic assumptions of the homo economicus model, but claims to be more widely applicable than just economics, for example to sociology or philosophy, or to explain any human behaviour (Becker, 1976). As with the (neo-)classic model of the homo economicus, an actor, according to rational choice theory, selects alternatives that match his preferences best, by rationally evaluating all of the outcomes of his decisions.

Whilst rational choice theory was broadly credited, it also faced criticism from several academic directions, mainly around the claims to applicability in areas other than economics and the limitations of the principle of rationality. Amongst others, McKinnon (2013) criticised the application of economic terms and principles to other areas of life and society and the implication that everything has the character of some sort of market. Similarly, Green and Shapiro (1994) analysed several empirical studies based on rational choice theory, and concluded that it has little impact on explaining political interactions and decision-making; however, it should be noted that the statistical means used by the evaluated studies were mostly weak. But, however valid these criticisms are, they cannot deny the underlying principle of the rational choice theory; the maximisation of individual utilities. It is intuitively comprehensible that one's own well-being, seen as the maximisation, or at least optimisation, of individual utilities, is at the heart of human motivation and, therefore, behaviour and decision-making. This argument can also be underpinned by the application of evolutionary psychology; humans had to choose the actions that benefited them most, in order to survive and thrive in the evolutionary process. In the modern world, even though most people rarely face life or death situations, the principle of maximising utility can still be seen as inherent in decision-making processes (Rubin & Capra, 2012).

Other researchers also criticised the principle of rationality for being removed from reality (Kahneman, 2003; Simon, 1955); accordingly, Bourdieu (2005) identified that he could not see human actors being engaged in a constant process of rationally calculating the outcomes of decisions. From his perspective, decisions are mainly based on feelings determined by the habitus of the actor, deriving from his social class and/or social context. Amongst others, Simon (1955) points out that rationality, in the sense of the rational choice theory, is limited because of the tractability of decision problems, the cognitive limitations of humans and the limited availability of time. Faced with this critique, however, the principles of rational choice theory were not abandoned, but modified by taking the limitation of rationality into account, introducing the principle of bounded rationality (Rubinstein, 1997). The most prominent approach in this area is arguably the concept of the subjective expected utility, which was axiomatised by Savage (1954) and in the von-Neuman-Morgenstern utility theorem (1953). This concept states that an actor will make a decision that provides him with the highest utility from his subjective expectations; this means that not only a subjective perspective, but also risk and uncertainty, are integrated in the model. Thus, the expected utility can be calculated by multiplying the subjectively perceived utilities of an alternative, with the subjectively assumed probability of its occurrence. Furthermore, the prospect theory of Tversky and Kahnemann (1979 & 1992) can be seen as a more realistic advancement of the subjective expected utility theory, by integrating reference points of the decision-maker, the different perspectives of decision-makers on potential gains and losses caused by their decision, the overestimation of small probabilities and underestimation of large probabilities, and the different evaluation processes of people depending on the cumulative prospects. Kahnemann and Tversky (1979) showed through experiments that the starting point of a decision-making process, i.e. the existing wealth or utility, has an influence on how potential outcomes of the decision are evaluated. Such reference points could be integrated in the present theory of social capital by taking the current state of social relations of an actor, meaning his current social capital, into account. This would also consider another aspect of prospect theory, which states that people tend to think in gains and losses rather than in final states of wealth or welfare. Furthermore, Kahnemann and Tversky (1979) showed that people tend to have a rather risk-avoiding approach when it comes to gains and a rather risk-seeking attitude when it comes to losses. This means that utilities and investments or costs, in connection with social capital, could be treated differently. In this context, Tversky and Kahnemann (1992) point out that probabilities are processed differently if they are of cumulative nature. For the development of the present social capital theory, these aspects mean that the decision of building social capital, in other words joining or leaving a group, does not entirely depend on the rationally perceived probability. An integration of prospect theory would require different dynamic weighing factors for utilities deriving from social capital, cost for building social capital and the referring probabilities. Most likely, these weighing factors have to be determined individually for each research domain or, potentially, even for each person. In line with this assessment, Tversky and Kahnemann (1992) state "Theories of choice are at best approximate and incomplete… When faced with a complex problem, people employ a variety of heuristic procedures…" (p 317). Against this background, the theory of social capital, developed here, will be based on subjective expected utility theory with the outlook that prospect theory might be integrated into future advancements or this theory, potentially through empirical research.

Therefore, following the principles of subjective expected utility theory, certain assumptions will be made. Firstly, that actors strive to maximise their utilities and make decisions based on a more or less conscious process, which combines the subjectively perceived utilities with the referring subjective probabilities attributed to certain outcomes of that decision. Secondly, that there will be costs to actors in achieving the desired utilities in order to build capital, as outlined above.

Eventually, therefore, the net utility, operationalised as the difference between overall gross utility and cost, is the relevant goal for actors and the basis for their decisions.

3.2 Formalising Social Capital

As has already been identified, social capital has both an individual and a collective dimension, therefore, in this model, social capital will be formalised on these two dimensions.

3.2.1 Formalising Social Capital on the Individual Dimension

Firstly, social capital will be formalised on the individual dimension, where utility is the result and goal of social capital. In this conceptualisation, the social capital (SC) that a person (i) has due to being a member of a group (j) is equivalent to his net utility (nU) gained from this membership. As building social capital requires personal investment, net utility can be seen as the difference between gross utility (gU) and the costs (C) incurred by a person (i) because of his membership of a group (j).

(1)

$$SC_{ij} \approx nU_{ij} = gU_{ij} - C_{ij}$$

The utility of group membership can derive from direct contacts with other group members, or from the membership in general. Using the example of a sports club, a job recommendation from a teammate would constitute utility because of direct contacts, whilst a club members' discount in a sports shop would represent indirect utility because of the general and rather unspecific association to the club. Thus, the gross utility (gU) of a person (i) who is a member of a group (j) can be conceptualised as the sum of the direct utilities (dU) that the person (i) gains from contacts with other group members, in different utility categories (k) plus the sum of the indirect utilities that the person (i) gains from membership in the group (j) in general, in different utility categories (k).

(2)

$$gU_{ij} = \sum_{k=1}^{n} dU_{ijk} + \sum_{k=1}^{n} iU_{ijk}$$

Similarly, the costs (c) for a person (i) because of his membership of a group (j), can be seen as the sum of direct costs (dC) and indirect costs (iC), in the different cost categories (l). In the example of the sports club, direct costs could be the time a member has to invest in order to foster relationships with teammates, whilst indirect costs could be the membership fee.

(3)

$$C_{ij} = \sum_{l=1}^{n} dC_{ijl} + \sum_{l=1}^{n} iC_{ijl}$$

The direct and indirect utilities and the direct and indirect costs are integrated in equation (4). This equation can also be understood as an ex-post perspective on social capital because the utilities have to be certain and, therefore, already occurred.

(4)

$$SC_{ij} \approx nU_{ij} = \sum_{k=1}^{n} dU_{ijk} + \sum_{k=1}^{n} iU_{ijk} - \sum_{l=1}^{n} dC_{ijl} - \sum_{l=1}^{n} iC_{ijl}$$

However, as the value of social capital, formalised through the net utility of group membership, may lie in the future and all future outcomes are uncertain, equation (4) must be enhanced by also integrating subjective expectations. Equation (5) represents such an ex-ante perspective on social capital, where $P(SC_{ij})$ is the expected value of the social capital that an individual (i) attributes to his membership of a group (j) and $P(nU_{ij})$ is the respective subjectively expected net utility. In accordance with the subjective expected utility theory, the utilities and costs are also multiplied with the subjective probability of their occurrence. Therefore, the model includes the expected probability (dp_{ijk}) for a person (i) who is a member of a group (j) that direct utility (k) will occur; the expected probability (ip_{ijk}) for a person (i) who is a member of a group (j) that indirect utility (k) will occur; the expected probability (dp_{ijl}) for a person (i) who is a member of group (j) that a direct cost (l) will occur and; the expected probability (ip_{ijl}) for a person (i) who is a member of group (j) that an indirect cost (l) will occur. The integration of subjectively expected probabilities can also be understood as the foundation of the decision-making of an individual about whether he should join a group to build social capital.

(5)

$$P\left(SC_{ij}\right) \approx P\left(nU_{ij}\right) = \sum_{k=1}^{n} dU_{ijk} * dp_{ijk} + \sum_{k=1}^{n} iU_{ijk} * ip_{ijk} - \sum_{l=1}^{n} dC_{ijl} * dp_{ijl} - \sum_{l=1}^{n} iC_{ijl} * ip_{ijl}$$

3.2.2 Formalising Social Capital on the Collective Dimension

Having formalised social capital on an individual level, the overall social capital for a group can similarly be determined. Consistent with the conceptualising of individual level social capital, the value of overall social capital should be determined through the utility or welfare of the referring group.

In the tradition of Utilitarianism, the overall welfare of a group or society equals the sum of the utilities of its members. In contrast, Rawls (1999) states that the welfare of a (just and fair) society depends on the utility of its least advantaged member; meaning that the increase of the utilities of better-off members of a society must also lead to an increase of the utilities of worse-off members. In addition, there are other approaches to collective social capital that can be located between these two extremes (i.a. Sen, 1973). However, the strength of the utilitarian approach, in comparison with the other theoretical models, is that both the individual and the collective levels can be fully considered within this theory, therefore, it is this conceptualisation that will be adopted within this paper. However, the weakness in this decision must be acknowledged, which is the neglect of the law of diminishing marginal utility (Gossen, 1854). Thus, it is suggested that future enhancements of the model developed here should integrate the concept of marginal utility. In addition, models may be criticised for disregarding the notion that the whole can be greater than the sum of the parts; this means that synergy effects, in context of economics, and emergences, in the context of sociology, are neglected (i.a. Luhmann, 1997; Sawyer, 2005). However, this criticism has to be rejected here as, with utility, the outcome, rather than the process of its creation, is formalised.

Against this background, the social capital (SC) of a group (j) equates the sum of the individual net utilities.

(6)

$$SC_j \approx \sum_{i=1}^{n} nU_{ij}$$

Equation (7) shows the calculation of collective social capital from the ex-post perspective and equation (8) from the ex-ante perspective.

(7)

$$SC_j \approx nU_j = \sum_{i=1}^{n} \left(\sum_{k=1}^{n} dU_{ijk} + \sum_{k=1}^{n} iU_{ijk} - \sum_{l=1}^{n} dC_{ijl} - \sum_{l=1}^{n} iC_{ijl} \right)$$

(8)

$$P(SC_j) \approx P(nU_j) = \sum_{i=1}^{n} \left(\sum_{k=1}^{n} dU_{ijk} * dp_{ijk} + \sum_{k=1}^{n} iU_{ijk} * ip_{ijk} - \sum_{l=1}^{n} dC_{ijl} * dp_{ijl} - \sum_{l=1}^{n} iC_{ijl} * ip_{ijl} \right)$$

4 Operationalising Social Capital Through Economic Capital

Following on from the mathematical formalisation of social capital in the previous section, this section will examine the question of how to measure social capital. It will be shown that existing methods for measuring social capital are not adequate to determine its value on an individual level and do not sufficiently consider the benefits of social capital which, as previously shown, should be integral to the concept. Because of this, and because of the problems inherent in measuring social capital on a metric scale, the assumption of fully transforming social capital into economic capital, according to Bourdieu's theory (1983), will also be introduced and it will be demonstrated how the value of social capital can be determined by measuring the referring economic capital.

4.1 Fundamental Approach of Measuring Social Capital

The concept of social capital has been applied to empirical studies in different academic and societal fields, with operationalisations as diverse as the definitions of social capital. Some studies measure social capital through the number, duration and quality of interactions between group members (i.a. Coleman, 1988; Hagan, McMillian & Wheaton, 1996; Parcel & Menaghan, 1994), whilst others see voluntary membership and activities in organisations, churches and clubs as indicators for social capital (i.a. Cusack, 1996; Helliwell, 1996; Putnam, 1995). Participation in elections has been used to measure social capital (i.a. Putnam, Leonardi & Nanetti, 1993) and social capital has also been measured through the general trust in groups, institutions, families or even entire nations (i.a. Cusack, 1996; Helliwell, 1996; Putnam, 1995). However, the over-riding weakness of existing methods used to measure social capital in the context of this work is that all disregard the individual component of social capital. Furthermore, the outcome or utility of social capital is not comprehensively determined.

Therefore, the method for conceptualising social capital developed here considers the individual level and establishes links with the utility provided by social capital. Furthermore, this paper aspires to determine the value of social capital on a metric scale, which would allow comparisons between the social capital of different individuals or groups and evaluation of any increase or decrease in the social capital of a group or person over time. Measuring social capital on a metric scale would also mean that this procedure is consistent with the overall theory, in which social capital can be transformed into metrically scaled economic capital.

In the previous section, social capital was formalised through the resulting utilities. One approach to operationalising social capital could be to measure the subjectively experienced utility or related concepts, such as well-being, happiness or satisfaction, as discussed by Kahneman and Krueger (2006), amongst others. The main methods in this field of research currently measure utility or related concepts, either through direct questions, or through the allocation of time to activities and their subjective evaluation. For example, in the World Values Survey, participants are directly asked to rate their happiness on a scale from 1 (dissatisfied) to 10 (satisfied) (Inglehart et al., 2014). Veenhoven (1999) used this instrument to determine the quality of life in different countries, whilst Helliwell (2006) and Knack and Keefer (1997) used the World Values Survey in connection with social capital.

Whilst this method would address the requirement for a metric scale, it is not suitable for determining the value of social capital in the theoretical context of this paper, for two reasons. Firstly, the maximum point of the scale, indeed of any rating scale, contradicts the nature of capital as, virtually, capital can be indefinitely accumulated. Secondly, a direct question about utility, satisfaction or a similar concept refers to the present situation; a utility, however, only indirectly derives from social capital and is not inherent in the direct experience of membership of a group, as shown in section 3. Furthermore, research by Kahneman et al. (2004) demonstrates that asking for ratings of overall satisfaction, or similar concepts, leads to inaccurate results. Therefore, measuring utility, deriving from social capital, has to refer to more particular categories of utility.

Alternatively, utility is predominantly measured on an ordinal scale. In the context of the aims of this paper, this would mean that the superiority or inferiority of alternatives based on a higher or lower social capital can be determined, but the amount and value of social capital cannot be determined by measuring utilities on an ordinal scale.

In order to circumvent the problem of the ordinal measurement of utility and building on the principal of the relation of utility to monetary value, it will be assumed that social capital can be fully transformed into other forms of capital; in this case, economic capital. This approach is consistent with Bourdieu's overall theory as previously shown, particularly if it is emphasised that Bourdieu (1983) sees economic capital as underlying all of the other forms of capital. Schmid and Robinson (1995) also empirically confirm the possibility of transforming social capital into economic capital. Thus, the monetary value of economic capital can be measured on a metric scale and an equivalent value to the amount of social capital can be determined, but different and particular categories of economic capital must be included in this measurement in order to ensure a high level of accuracy in the results.

4.2 Operationalisation of Social Capital

This section will, therefore, show how the value of social capital can be determined through measuring the underlying economic capital and how economic capital, related to a membership in a group, can be calculated through the referring earning and spending. As in section 3, social capital will be operationalised firstly on the individual dimension and secondly on the collective dimension of the overall group, then it will be clarified how the value of particular events of earning and spending can be determined.

4.2.1 Operationalising Social Capital on the Individual Dimension

If the basic assumption is accepted that social capital can be fully transformed into economic capital, it can be operationalised as follows: the social capital (SC) of an individual (i) who is a member of a group (j) is equivalent to his economic capital (EC), which equates the difference of his financial earning (E) and spending (S).

(9)

$$SC_{ij} \approx EC_{ij} = E_{ij} - S_{ij}$$

Analogous to the formalisation of social capital, the economic capital of an individual (i) depends on the sum of direct earnings (dE), which derive from direct contacts to other members of a group (j), and the sum of indirect earnings (iE) from the general membership in a group (j) in different earning categories (r). Furthermore, the sum of direct spending (dS) and indirect spending (iS) in different spending categories (s) has to be subtracted from the calculated value of economic capital.

(10)

$$SC_{ij} \approx EC_{ij} = \sum_{r=1}^{n} dE_{ijr} + \sum_{r=1}^{n} iE_{ijr} - \sum_{s=1}^{n} dS_{ijs} - \sum_{s=1}^{n} iS_{ijs}$$

Equation (10) can be seen as the ex post perspective on operationalising social capital. As with the formalisation of social capital in equation (8), an ex-ante perspective has to be formulated to determine the future value of social capital. Therefore, the subjective probabilities for the occurrence of earning and spending are integrated in equation (11): the expected probability (dp_{ijr}) that the direct earning of earning category (r) occurs for an individual (i), who is a member of group (j); the expected probability (ip_{ijr}) that the indirect earning of earning category (r) occurs for an individual (i), who is a member of group (j); the expected probability (dp_{ijs}) that the direct spending of spending category (s) occurs for an individual (i), who is a member of group (j), and the expected probability (ip_{ijs}) that the indirect spending of spending category (s) occurs for individual (i), who is a member of group (j).

(11)

$$P\left(SC_{ij}\right) \approx P\left(EC_{ij}\right) = \sum_{r=1}^{n} dE_{ijr} * dp_{ijr} + \sum_{r=1}^{n} iE_{ijr} * ip_{ijr} - \sum_{s=1}^{n} dS_{ijs} * dp_{ijs} - \sum_{s=1}^{n} iS_{ijs} * ip_{ijs}$$

Building and benefitting from social capital also needs time, which is integrated into the operationalisation in equation (12). Variable t marks the period when earning and spending happen and y represents the interest rate and $1/(1+y)^t$, the usual factor for discounting future cash flows, is then also added to the equation.

(12)

$$P(SC_{ij}) \approx P(EC_{ij}) = \sum_{t=1}^{n} \sum_{r=1}^{n} \frac{dE_{ijrt}}{(1+y)^t} * dp_{ijrt} + \sum_{t=1}^{n} \sum_{r=1}^{n} \frac{iE_{ijrt}}{(1+y)^t} * ip_{ijrt} - \sum_{t=1}^{n} \sum_{s=1}^{n} \frac{dS_{ijst}}{(1+y)^t} * dp_{ijst} - \sum_{t=1}^{n} \sum_{s=1}^{n} \frac{iS_{ijst}}{(1+y)^t} * ip_{ijst}$$

4.2.2 Operationalising Social Capital on the Collective Dimension

Equation (13) shows the operationalisation of the value of social capital (SC) for a group (j) equivalent to the economic capital (EC) of this group on an aggregated level from an ex-post perspective. Analogous to the aggregation of the net utilities for the entire group, the sum of the earnings, minus the sum of spending of all of the group's members, equals the entire economic capital of this group.

(13)

$$SC_j \approx EC_j = \sum_{i=1}^{n} \left(\sum_{r=1}^{n} dE_{ijr} + \sum_{r=1}^{n} iE_{ijr} - \sum_{s=1}^{n} dS_{ijs} - \sum_{s=1}^{n} iS_{ijs} \right)$$

Equation (14) similarly represents the ex-ante perspective on expected social capital and expected economic capital, therefore, subjective probabilities are integrated as in previous equations.

(14)

$$P(SK_j) \approx P(G_j) = \sum_{i=1}^{n} \left(\sum_{r=1}^{n} dE_{ijr} * dp_{ijr} + \sum_{r=1}^{n} iE_{ijr} * ip_{ijr} - \sum_{s=1}^{n} dS_{ijs} * dp_{ijs} - \sum_{s=1}^{n} iS_{ijs} * ip_{ijs} \right)$$

Finally, the discount factor, with the interest rate (y), is added to the equation (15), in order to consider any inflation or deflation and opportunity costs over a period of time (t).

(15)

$$P(SC_j) \approx P(EC_j) = \sum_{i=1}^{n} \left(\sum_{t=1}^{n} \sum_{r=1}^{n} \frac{dE_{ijrt}}{(1+y)^t} * dp_{ijrt} + \sum_{t=1}^{n} \sum_{r=1}^{n} \frac{iE_{ijrt}}{(1+y)^t} * ip_{ijrt} - \sum_{t=1}^{n} \sum_{s=1}^{n} \frac{dS_{ijst}}{(1+y)^t} * dp_{ijst} - \sum_{t=1}^{n} \sum_{s=1}^{n} \frac{iS_{ijst}}{(1+y)^t} * ip_{ijst} \right)$$

4.2.3 Determining Earning and Spending in the Context of Social Capital

Previously, social capital was operationalised through its transformation into economic capital on a rather general level. Now, with the proposed model, the variables of economic capital, earning and spending, are conceptualised more explicitly in the context of social capital as building social capital requires economic capital, or a monetary investment and time, as shown in section 2. For example, building social capital through membership of a football club requires both a membership fee (economic capital or monetary investment) and the investment of time, to build relationships with other members. Accordingly, the outcome or utility of social capital can also lie in economic capital or monetary outcomes and/or enjoyable time. If Bourdieu's theory of three forms of capital is assumed, then social capital may firstly be transformed into cultural capital and later into economic capital or enjoyable time. For example, membership of a prestigious school or club, may lead to more likelihood of acceptance into an elite university, where formalised cultural capital is built in form of a prestigious university degree, which subsequently leads to economic capital in the form of a highly paid job.

The monetary value of economic capital, in its narrowest sense, can be relatively easily measured by simply taking the market value of the referring good or service into account. However, determining the monetary value of time is more complex and methods to assign a value to time (or, more precisely, to a lifetime) are predominantly found in the health sector and in the context of national economics (Sund, 2010). Here, two main methodological approaches exist: the willingness to pay method and the human capital method. The willingness to pay method is principally based on asking participants how much they are willing to pay for a longer life, or how much money they consider appropriate for shortening their lives (i.a. Landefeld & Seskin, 1982). However, this method is not applicable in the theory developed in this paper because it only holds a perspective on the future outcome or benefits and, therefore, cannot be used to value the investment of time necessary to build social capital. Furthermore, this conception of the value of time is not comparable, or only barely comparable, to the monetary value of goods and services (economic capital). Alternatively, the human capital method for valuing time determines the monetary value of a life by summing up all the future income of a person (Zweifel, Breyer & Kifmann, 2009), predominantly in terms of the salary a person receives for their work. The advantage of this approach for the current conceptualisation of social capital, is that a monetary counter-value to the duration of the time that is required to build social capital can clearly be determined. From another perspective, income can be understood as an opportunity cost; if a person did not invest time into building social capital, they could (theoretically) gain monetary income or economic capital, by undertaking more work.

Therefore, for the current theory, the work income of a person will serve as an indicator for the monetary value of time. This indicator will thus be applied to both the spending required for building social capital and the earnings related to the gross utility of social capital.

5 Hypothetical Example of Measuring Social Capital

A hypothetical case of a self-employed lawyer who joins a golf club can exemplify how the value of social capital can be determined through measuring the equivalent economic capital. For current purposes, it is assumed that all earning and spending are certain events, which means that all probabilities have a value of 1.0, the interest rate is set at 1.0%, discounting will be realised from year one at the end of each year and the calculations, using equation (12), are made for only ten years. This example will also comprise all of the categories of earning and spending, each divided into a monetary component and a time-related component. It should be noted that the aim of the hypothetical case is to exemplify the calculation of social capital using the proposed model, rather than to comprehensively cover all of the possible determinants in a specific case.

It is assumed that the lawyer who joins the golf club works for £500.00 per day and has an initial income of £100,000.00. He will acquire legal cases through direct contact with other members of the golf club, which will lead to an income increase of 5.0% per year (direct earning – money related). The lawyer will also be invited to receptions, drinks etc. by other club members, for the equivalent of 20 working days per year, which gives him personal pleasure (direct earning – time related). Because of his club membership, the lawyer is entitled to discounts in certain shops, restaurants etc. and these discounts are valued at £1,000.00 (indirect earning – money related). Furthermore, the lawyer will have 5 fewer sick days per year because of the time spent outside in healthy pursuit on the golf course (indirect earning – time related).

Following the principle of reciprocity, the lawyer must invite other club members for receptions, drinks etc. at a cost of £5,000.00 per year (direct spending – money related). Building social capital also requires the lawyer to spend time talking to other members of the club, which equates to 50 working days per year (direct spending – time related). For equipment and the membership fee the lawyer invests £5,000.00 per year (indirect spending – money related) and he is required by the club to do some administrative work and ground keeping, which takes up 2 working days per year.

Using the formulae devised in this theoretical model, the 10-year calculation of the total value of the social capita, for this hypothetical case, is presented in table 1 and equates to £85,634.97. The first four years of this model can be seen as the investment phase for the lawyer, during which the value of his social capital is negative. However, from year five onwards, he receives a positive “cash flow” and, analogous with business administration, this can be seen as the break-even point.

Table 1: Calculations for the monetary value of social capital in the hypothetical example (source: own representation).

Year	Earning					Spending					Difference of Earning & Spending	Discounted value
	Direct Earning		Indirect Earning		Sum	Direct Spending		Indirect Spending		Sum		
	Money related	Time related	Money related	Time related		Money related	Time related	Money related	Time related			
1	£5,000.00	£10,000.00	£1,000.00	£2,500.00	£18,500.00	£5,000.00	£25,000.00	£5,000.00	£1,000.00	£36,000.00	-£17,500.00	-£17,326.73
2	£10,250.00	£10,000.00	£1,000.00	£2,500.00	£23,750.00	£5,000.00	£25,000.00	£5,000.00	£1,000.00	£36,000.00	-£12,250.00	-£12,008.63
3	£15,762.50	£10,000.00	£1,000.00	£2,500.00	£29,262.50	£5,000.00	£25,000.00	£5,000.00	£1,000.00	£36,000.00	-£6,737.50	-£6,539.35
4	£21,550.63	£10,000.00	£1,000.00	£2,500.00	£35,050.63	£5,000.00	£25,000.00	£5,000.00	£1,000.00	£36,000.00	-£949.38	-£912.33
5	£27,628.16	£10,000.00	£1,000.00	£2,500.00	£41,128.16	£5,000.00	£25,000.00	£5,000.00	£1,000.00	£36,000.00	£5,128.16	£4,879.26
6	£34,009.56	£10,000.00	£1,000.00	£2,500.00	£47,509.56	£5,000.00	£25,000.00	£5,000.00	£1,000.00	£36,000.00	£11,509.56	£10,842.53
7	£40,710.04	£10,000.00	£1,000.00	£2,500.00	£54,210.04	£5,000.00	£25,000.00	£5,000.00	£1,000.00	£36,000.00	£18,210.04	£16,984.84
8	£47,745.54	£10,000.00	£1,000.00	£2,500.00	£61,245.54	£5,000.00	£25,000.00	£5,000.00	£1,000.00	£36,000.00	£25,245.54	£23,313.84
9	£55,132.82	£10,000.00	£1,000.00	£2,500.00	£68,632.82	£5,000.00	£25,000.00	£5,000.00	£1,000.00	£36,000.00	£32,632.82	£29,837.49
10	£62,889.46	£10,000.00	£1,000.00	£2,500.00	£76,389.46	£5,000.00	£25,000.00	£5,000.00	£1,000.00	£36,000.00	£40,389.46	£36,564.05
Present Value of Social Capital Equivalent to the Fully Transformed Economic Capital:												**£85,634.97**

6 Summary and Outlook

Following the concept of general capital, social capital was first defined as both an individual and collective resource that can provide its owner(s) with utility. The basis, on which social capital was formalised, was rational choice theory and expected subjective utilities in particular. It was assumed that the net utility of group membership is equivalent to the value of social capital, seen as the difference between the sum of subjectively expected gross utilities, which result from direct contact with other group members, and the expected utilities, deriving from general group membership, on one hand, and the subjectively expected costs on the other hand (as represented in equation 5). The value of the collective social capital of a group equates to the sum of the net utilities of the individual members (as shown in equation 8). Against the background of the problems inherent in metrically measuring utility, it was shown that the transformation of social capital into economic capital can be the basis for operationalising social capital and determining its value in monetary terms. Equations (12) and (15) represent the calculation of the monetary value of social capital for an individual and a group, by subtracting the cost of building social capital from the earnings deriving from increasing social capital, both weighted according to their probabilities of occurrence and discounted over time. The earnings from social capital and the costs of building social capital can thus be measured through direct monetary output and the monetary value of time, depending on the financial worth of time according to the income of the respective group member(s).

The theory of social capital, which is developed in this paper, is closely related to Bourdieu's theory, as it incorporates the transformation of social capital into economic capital. Therefore, the present theory might offer a methodological approach to examine the (re-)creation of social classes and entities, in line with Bourdieu's (1983) theory. One could argue that Bourdieu's concept of habitus, a feeling rather than a rational decision-making process, is too far away from the subjective expected utilities that are integrated in the concept of social capital in this theory. However, this should not be seen as a major problem as evaluation processes are understood as more or less conscious or rational processes in the theory, developed in this paper. This integration of rational choice theory is in line with Coleman's theory of social capital. Furthermore, the theory, developed here, also points out the benefits people can gain from social capital on an individual and collective level. A disagreement to Coleman's (1988) theory could be seen on the aspect that building social capital is not merely a by-product of building other forms of capital. Furthermore, social capital is conceptualised on an individual and a collective level and not only seen as a public good. This, however, does not contradict the fundamentals of Coleman's theory, which focuses on the individual and collective benefits of social capital. In relation to Putnam's (2001) theory of social capital, the theory, developed in this paper, does not show fundamental contradictions. The perspectives of both theories, however, differ from each other; whilst Putnam focuses on the societal results, the present theory is rather descriptive on how to conceptualise, formalise and operationalise social capital. Therefore, one might understand this theory as an approach to measure and describe social capital in the fundamental framework of Putnam.

Further advancements of the theory should include the development of a reliable empirical method for determining the earning and spending connected to social capital and their connected monetary value. In addition, the integration of marginal utilities might lead to greater accuracy and address any potential weakness caused by the current neglect of diminishing marginal utilities. Furthermore, the theory itself could be refined and optimised. So far, social capital has been formalised under the assumption of a rational actor that can evaluate the probabilities of utility and cost, or earning and spending, in a rational and unbiased way. In future, however, more complex, but more pragmatic and realistic approaches to decision-making, such as the prospect theory, can also be integrated into this model of social capital. Subject to these conceptual enhancements, the developed theory should also be empirically validated in different areas of social sciences and society. Notwithstanding, the theory developed here, together with the contingent empirical model, not only provides a formalised framework that brings different perspectives on social capital together but also provides a method for operationalising social capital and measuring its value.

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