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Can social capital help explain enrolment (or lack thereof) in community-based health insurance? Results of an exploratory mixed methods study from Senegal

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Abstract

CBHI has achieved low population coverage in West Africa and elsewhere. Studies seeking to explain this point to inequitable enrolment, adverse selection, lack of trust in scheme management and information and low quality of health care. Interventions to address these problems have been proposed yet enrolment rates remain low. This exploratory study proposes that an under-researched determinant of CBHI enrolment is social capital. Fieldwork comprising a household survey and qualitative interviews was conducted in Senegal in 2009. Levels of bonding and bridging social capital among 720 members and non-members of CBHI across three case study schemes are compared. The results of the logistic regression suggest that, controlling for age and gender, in all three case studies members were significantly more likely than non-members to be enrolled in another community association, to have borrowed money from sources other than friends and relatives and to report having control over all community decisions affecting daily life. In two case studies, having privileged social relationships was also positively correlated with enrolment. After controlling for additional socioeconomic and health variables, the results for borrowing money remained significant. Additionally, in two case studies, reporting having control over community decisions and believing that the community would cooperate in an emergency were significantly positively correlated with enrolment. The results suggest that CBHI members had greater bridging social capital which provided them with solidarity, risk pooling, financial protection and financial credit. Qualitative interviews with 109 individuals selected from the household survey confirm this interpretation. The results ostensibly suggest that CBHI schemes should build on bridging social capital to increase coverage, for example by enrolling households through community associations. However, this may be unadvisable from an equity perspective. It is concluded that since enrolment in CBHI was less common not only among the poor, but also among those with less social capital and less power, strategies should focus on removing social as well as financial barriers to obtaining financial protection from the cost of ill health.

Keywords:

Senegal, community-based health insurance, social capital, insurance coverage, cross-sectional survey, mixed methods

Introduction

Community-based health insurance (CBHI) is typically not-for-profit and aims to provide financial protection from the cost of seeking health care through voluntary prepayment to community owned and controlled schemes (Hsiao, 2001). Senegal has witnessed a rapid increase in the number of CBHI schemes, reaching 129 in 2007 (CAFSP, 2010). The government elected in 2012 views CBHI as a mechanism for achieving universal coverage (Ministère de la Santé, 2012), a continuation of the previous government's policy (Ministère de la Santé, 2004). However, as in most low- and middle-income countries (LMIC), overall coverage in Senegal remains low, with 4% or less of the population enrolled in CBHI (Soors, Devadasan, Durairaj, & Criel, 2010), echoing wider limitations of CBHI (Ekman, 2004).

There have been numerous studies on the determinants of enrolment in CBHI in sub-Saharan Africa (SSA) (Defourny & Faillon, 2011). Demand-side determinants identified by quantitative studies from West Africa are: higher levels of wealth and education, poorer health status and being prone to the risk of illness (Chankova, Sulzbach, & Diop, 2008; De Allegri, Kouyate, Becher, Gbangou, Pokhrel, Sanon et al., 2006a; Jütting, 2003, 2004). Determinants on the supply-side include a perception of the inadequacy of traditional care and long distance from the health facility (De Allegri et al., 2006a). Qualitative studies suggest that perceptions of quality of health care, trust in CBHI scheme management (Criel & Waelkens, 2003), availability of information on CBHI (Ridde, Haddad, Yacoubou, & Yacoubou, 2010) and scheme design (De Allegri, Sanon, Bridges, & Sauerborn, 2006b) also determine enrolment. A third set of determinants points to social and cultural issues, including low levels of socioeconomic inequality within the community , membership of other community organisations (Jütting, 2003) and ethnicity and religion (De Allegri et al., 2006a; Jütting, 2003).

The literature proposes the following strategies to address inequity, adverse selection and inadequate supply of health services and insurance: public funding to subsidise premiums, strategies to promote increased revenue collection from the "healthy and wealthy", and improved CBHI management and quality of care (Mills, Ataguba, Akazili, Borghi, Garshong, Makawia et al., 2012; Ndiaye, Soors, & Criel, 2007; Soors et al., 2010). Yet continued low rates of enrolment suggest these strategies have not been successfully implemented. Meanwhile to date there has been no attempt to systematically explain how and why social and cultural determinants affect CBHI enrolment and understand the policy implications. This gap is addressed by the present study which proposes that the decision to enrol in CBHI is determined, in part, by levels of social capital. The hypothesis to be tested is that people who decide to enrol in CBHI have bonding and bridging social capital, while

those who do not enrol have less bridging social capital or bonding social capital only. This is explored by comparing levels of social capital among members and non-members of three CBHI schemes in Senegal.

Background: defining social capital

The study builds on the argument that social capital can promote or constrain CBHI, proposed in a literature review of CBHI by Mladovsky and Mossialos (2008). They adopt the following definition of social capital: "the information, trust and norms of reciprocity inhering in one's social network" (Woolcock, 1998):153). Tracing interconnected theories of social capital they further adopt the principle that social capital constitutes: "those expectations for action within a collectivity that affect the economic goals and goal-seeking behavior of its members, even if these expectations are not oriented toward the economic sphere" (Portes & Sensenbrenner, 1993):1323).

Bonding versus bridging social capital

Drawing on Portes & Sensenbrenner (1993), Mladovsky and Mossialos (2008) argue that distinguishing between "bonding" and "bridging" social capital is essential to understanding whether features of social capital (e.g. expectations between individuals, the trustworthiness of structures, information channels, norms and effective sanctions) have a productive outcome in CBHI. "Bonding social capital" inheres in dense networks within communities. Research suggests that while bonding social capital makes the accumulation of human and economic capital possible in some contexts, it can be unproductive in others. For example in some immigrant groups in the USA high levels of bonding social capital lowered transaction costs in enterprise (Portes, 1998; Portes & Sensenbrenner, 1993). However, bonding social capital was unproductive in other groups, promoting free-riding on communal resources, derision of efforts to work hard and cutting off important external sources of information (Portes & Sensenbrenner, 1993); this is hereafter termed the "negative effect of bonding social capital". The differing impact of bonding social capital on economic action is explained by varying levels of "bridging social capital", which inheres in micro level extra-community networks. Productive immigrant groups were characterized by individuals who were able to draw on bridging relations outside the network *as well as* bonding relations. This is thought to be because extra-community relations were free from the potentially overwhelming demands family and friends place on successful members of the group for support, permitting exchange to take place on the basis of formal rules or fair market competition (Portes & Sensenbrenner, 1993). Studies of bonding and bridging social capital from the development literature on SSA (Campbell, 2003; Njuki, Mapila, Zingore, & Delve, 2008; Titeca & Vervisch, 2008)

broadly support the findings from North America. However, mixed methods studies differentiating between the impact of bonding and bridging social capital in SSA are rare, and none have focused on CBHI.

The unequal distribution of social capital

Another characteristic of social capital which may hinder positive developmental outcomes is identified by Bourdieu (1986) who argues that individuals who already hold forms of capital (economic, social, cultural and/or symbolic) are strategically more adept at accumulating and transforming it (he argued that these types of capital are fungible). Through the continual process of accumulating and transforming the different forms of capital, unequal power relations and social hierarchies are formed and strengthened. The aforementioned literature on social capital in Africa also broadly supports this theory. As such it is important to study the *distribution* of social capital within communities and consider how this might cause unequal access to benefits offered by development projects. Previous studies of CBHI do not take such issues into account.

Methods

The study used a mixed methods multiple case study design which included a household survey and semi-structured interviews. Ethical approval for the research was obtained from the Senegalese Ministry of Health.

Case study selection

The fieldwork was conducted in March – August 2009. To enhance generalizability of the results of the study (Yin, 1994), multiple (three) cases constituting CBHI schemes were selected: Soppante, Ndondol and Wer Ak Werle (WAW) (Table 1). Three regions (out of 12) were first selected for inclusion in the study. These were among the regions with the highest number of CBHI schemes in Senegal (Table 1), meaning the study focuses on contexts where CBHI development is relatively advanced. In each region, the federation which coordinates CBHI schemes provided information used to identify the three cases. The cases all fulfilled two basic criteria of success in order to control for the possibility that a lack of enrolment was mainly due to supply-side problems: the number of members[1] ever enrolled in the CBHI scheme (including those whose policy had expired) was greater

[1] A "member" (termed "adherent" in French) is permitted to register 10-12 people from their household on the insurance policy meaning that the total number of enrollees in the insurance schemes was far higher than the number of "members". The premium for each individual in the household is paid monthly.

than the national average of 329 (Hygea, 2004); and the schemes had been established for a minimum of eight years. At the same time, the schemes varied according to the following criteria, in order to study a wide range of contexts (Table 1): geographic zone; type of economic sector of the target population; and tier of services contracted by the scheme.

INSERT TABLE 1 HERE

Quantitative methods

Sampling

Since overall population enrolment rates were low, disproportionate stratified sampling was used. In each case study, a list of households which had ever purchased a CBHI policy was used as a sampling frame for the random selection of members (Table 2). All three schemes had a high rate of non-renewal of policies (Table 2). This is typical for CBHI schemes in Senegal (Hygea, 2004) and SSA more generally (De Allegri, Sauerborn, Kouyate, & Flessa, 2009). Because this study is concerned with the decision to ever enrol in CBHI, and since expired policies (i.e. the most recent monthly premium had not been paid) could be renewed by paying the outstanding premium payments and a penalty charge, both households with active and expired policies are referred to as "members" and are included in the analysis. Each group was sampled separately (Table 2). The household questionnaire was administered to the named member. The control sample was selected using the "random route" method to select non-member households living in close proximity to the members interviewed[2]. In the control households, the household head and/or spouse were asked who in the household would in theory be responsible for CBHI membership and this person was interviewed.

INSERT TABLE 2 HERE

Questionnaire design

A questionnaire was developed with six core components: socioeconomic and demographic characteristics; household roster; economic characteristics; social capital; membership of CBHI; and health and utilisation of health services. For the social capital component, most questions were adapted from the SOCAT questionnaire (World Bank).

Variables

The dependent variable is membership of CBHI. Among the independent variables, eight measure different facets of social capital. These were the main variables on which information related to

[2] This is similar to the methodology used in a UNDP study of at risk populations (UNDP, 2006)

social capital was collected. Individual/household rather than community level variables were used. Two social capital variables measure the structure of social networks: number of memberships of associations and privileged relations. The remaining variables measure tangible and perceived assets that may be transmitted by social networks: information; belief that everybody in the community would cooperate (a proxy for solidarity); trust; financial credit; perceptions of control over local decision-making (a proxy for social power); and voting (a proxy for political participation).

Membership of associations was used as a proxy for bridging social capital, since it implied having social links beyond kin, friendship, or intra-community groups. Furthermore, associations typically had a productive function, even if this was not their primary goal (Niang, 2000). Examples of associations included Muslim prayer groups ("*dahiras*"), rotating credit and savings associations (ROSCAs) ("*tontines*"), microcredit groups, sports clubs and CBHI itself. The variable is based on the question *"How many associations do you and members of your household belong to in total (not including the CBHI scheme)?*". In the case of Soppante, a dummy variable was created to categorise households according to whether they belonged to no associations or to one or more associations. For Ndondol and WAW, the questionnaire asked for the specific number of associations to which a household belonged and dummies measure membership of no, one, two, three, or more than three associations. This was because in these case studies, another association had partnered with CBHI, meaning that some CBHI members were de facto members of two associations. It was hypothesised that, as in previous studies (Jütting, 2003), enrolment in CBHI would be positively correlated with membership of other associations, since people with existing social capital are likely to be more adept at further accumulating it.

In order to measure bonding social capital a dummy variable based on the question "*Do you have privileged relationships?*" was used. In Senegal "privileged relationships" are a form of "fictive kinship"(Carsten, 2000). Common examples are "*ndeye dike*" ("the mother of my choosing or twin"), "*homonyme*" (a namesake - a child that is named after a person) or "*parrain / marrain"* ("godfather / godmother"). These relationships constitute emotional and affective ties but can also be a medium for instrumental financial support (Buggenhagen, 2011). It was hypothesised that enrolment in CBHI may be either negatively or positively correlated with having privileged social relations, depending on levels of bridging social capital.

The issue of information channels was explored by a question asking where respondents obtained information on community matters or politics, with a set of 14 possible responses (multiple responses were permitted). A dummy variable distinguishes between receiving information from relatives, friends and neighbours only (a proxy for bonding social capital only), or receiving

information from relatives, friends and neighbours and / or another source (e.g. the local market, traditional forums, or associations) (a proxy for bonding plus bridging, or only bridging, social capital). Assuming the information on CBHI was positive (i.e. it promoted enrolment), it was hypothesised that people who received information from relatives, friends and neighbours only were less likely to enrol in CBHI due to the "negative" effect of bonding social capital.

A set of variables was included on perceptions of solidarity within the community and was derived from the question "*Do you think it is likely that everybody in the community would cooperate to solve a common problem such as a lack of water*?". It was hypothesised that enrolment would be positively correlated with high levels of solidarity if, as per the discourse around CBHI in Senegal (Ministère de la Santé, 2004), solidarity was seen as characteristic of CBHI.

Another variable measures generalised trust. Bonding social capital was measured by trusting in one's friends, family and most people in one's community, while bridging social capital was measured by trusting: people from other ethnic or linguistic groups; foreigners; people of other religions / brotherhoods / confessions; local government; imams and priests; traditional leaders; teachers; medical staff; security forces; justice; and persons of other castes. Responses were given on a Likert scale. Indices were constructed by performing a principal component analysis. It was hypothesised that a lack of trust at any level could prevent enrolment due to fears of moral hazard and / or corruption in CBHI (Pauly, Zweifel, Scheffler, Preker, & Bassett, 2006). This hypothesis is supported by a study which found that higher degrees of generalised trust were correlated with Chinese farmers' willingness to join community financing (Zhang, Wang, Wang, & Hsiao, 2006).

A further set of variables focused on sources of financial credit, following Bourdieu's theory that the various forms of capital are fungible. A set of dummies was created from the following questions: "*Did you borrow money in the last 12 months?*" and "*From whom did you borrow the money*?". The latter question was followed by a set of eight options (multiple responses were permitted). The dummies divide respondents into three groups: those who had not borrowed money; those who had borrowed money from family, relatives or friends only (a proxy for bonding social capital); and those who had borrowed money from family, relatives, friends and / or another source, such as an association (a proxy for having bonding plus bridging, or only bridging, social capital). It was hypothesised that people who had not borrowed money or borrowed money from immediate family, relatives or friends only were less likely to enrol in CBHI due to the "negative" effects of bonding social capital. This is supported by a study on voluntary health insurance in Vietnam (Jowett, 2003) which showed that borrowing money from informal financial networks (family and friends) was correlated with lower rates of enrolment.

Another variable focused on control over local decision-making, following Bourdieu's theory that social capital increases social power. One set of dummies was based on the question "*How many of the decisions made in the community or by neighbours which affect your daily life do you have control over?*". Five possible responses were offered, ranging from "control over no decisions" to "control over all decisions".

Finally, a dummy variable was based on a question asking respondents whether they voted in the most recent local elections. This was used as a proxy for bridging social capital since voting in Africa has been found to be positively associated with increased membership of civil society groups and political mobilization (Kuenzi & Lambright, 2005). It was hypothesised that voting would be positively correlated with CBHI enrolment.

The main potential confounders that are commonly included in quantitative studies on CBHI enrolment and on social capital and health (Harpham, Grant, & Thomas, 2002) are included in this study. In addition to age and gender of the respondent, the socio-economic characteristics considered were level of education, household expenditure and wealth. The expenditure variable is based on reported monthly household expenditure on 14 different categories. Expenditure was adjusted using the OECD scale (weighting 1 for the first adult, 0.7 for other adults and 0.5 for each child) (Forster, 1994; OECD). To proxy household wealth, an asset index was constructed by performing a principal component analysis using variables of household possession of goods (Howe, Hargreaves, Gabrysch, & Huttly, 2009). The health variables used are: disability, chronic illness, recent illness or accident in last 15 days and self-assessed health. For the latter variable three dummies were created, the first combining "very good" and "good", and the third combining "poor" and "very poor". Given that Senegal is ethnically and religiously diverse (Smith, 2013), ethnicity (whether or not the respondent is Wolof (the majority ethnicity)) and religion, (whether or not the respondent is Muslim (the predominant religion)) were included. In the third case study, WAW, the religion variable was dropped since almost 100% of respondents reported being Muslim.

Model

A logit model was used to analyse the probability of enrolling in CBHI; the dependent variable was equal to 1 if the household was enrolled in CBHI and 0 if not. Each of the eight social capital variables were analysed separately. Two regressions were run for each social capital variable. The first regression was a restricted model which includes only age and sex as control variables (Model 1, Table 4). The second regression was an unrestricted model where an additional range of socioeconomic and cultural control variables was included (Model 2, Table 5). Since, according to

Bourdieu, the different forms of capital are fungible, one might expect any correlation between social capital and CBHI enrolment observed in Model 1 to disappear in Model 2.

We estimated a model of the form:

$$\text{Logit}\,[p\,(y=1)] = \log\left(\frac{p}{1-p}\right) = \alpha + \beta_1 X_{1,i} + \ldots + \beta_{12} X_{12,i}$$

where Y is being a member of CBHI or not, $X_{1\text{-}12}$ are dummies indicating whether the individual has or does not have a specific characteristic, p is the probability of enrolment in CBHI, α is the constant and βs are the model parameters. For each regression, c statistics were used to measure the goodness of fit of the model. The likelihood-ratio test was used to compare the fit of Model 1 and Model 2. All models are case study specific and were estimated using STATA 10.0.

Qualitative methods

A total of 109 individuals from member and non-member households of the three CBHI schemes (Table 3) were purposively selected to include a variety of characteristics (age, gender, position in the household) from the household survey and interviewed again by the same interviewer, using semi-structured topic guides. The guides covered: decision-making on CBHI enrolment, comparison of CBHI to other associations, impact of CBHI on social capital, perceptions about management of the scheme and health care utilisation. Sample size was determined by the data obtained and data collection continued until saturation. All interviews were recorded and transcribed using verbatim transcription. All transcripts were analysed in Nvivo8 by a team of coders using deductive coding with an *a priori* coding frame (Miles & Huberman, 1994). The interview guides, background literature and hypotheses were used to develop the coding frame. All members of the coding team were trained to ensure a common understanding of the codes. The coding frame was piloted and revised with extra codes before application to the full dataset. Throughout the coding process, the coders periodically cross-checked each other's coding to maintain consistency. Results of the qualitative analysis were used for triangulation and to expand the interpretation of the quantitative results (Collins, Onwuegbuzie, & Sutton, 2006). As such, codes pertaining to the variables included in the quantitative analysis were selected for further analysis in this paper. The broader results of the qualitative analysis will be published elsewhere.

Results

The sample consists of 720 individuals across the three case studies. Descriptive statistics are presented in the supplementary material.

INSERT LINK TO SUPPLEMENTARY MATERIAL HERE

In terms of bridging social capital, across the three case studies over 85 per cent of households contained at least one individual who was a member of at least one association other than CBHI (see supplementary material). Households enrolled in CBHI were significantly more likely to be members of other associations compared to non-CBHI households, controlling for age and gender only (Model 1, Table 4). In Ndondol and WAW, CBHI households were more likely to be members of several other associations, suggesting these were not only associations that were de facto linked to CBHI. The results are strongest and most consistent in WAW where membership of other associations rather than the socio-economic variables was statistically significant (Model 2, Table 5).

INSERT TABLES 4 AND 5 HERE

Views on what CBHI and other associations have in common may help understand these results. In all three case studies members said that both types of organisation aim to improve community development through solidarity and democracy:

"what I see as similarities is primarily... social mobilization with the same objectives… solidarity among members… in addition to democracy…. All (CBHI) members are treated in the same way, they are on an equal footing... In the other associations... there is also democracy". (WAW member household)

In terms of bonding social capital, across the three case studies, over 80 per cent of respondents had privileged relationships. In Soppante and Ndondol, members were three or more times as likely to have privileged relationships as compared to non-members in Model 1 and for Ndondol the relationship remained significant in Model 2. The qualitative results suggest that kinship and privileged relations were a medium for instrumental financial support, both in general and specifically in the context of CBHI, as illustrated by the practice of members enrolling their extended kin:

"*We have a second CBHI policy which is held by my younger brother and on that policy we enrolled my other brothers, their children and my homonyms (namesakes)*" (Soppante member household)

Similarly, several non-members said they had not enrolled in CBHI because they could not afford to pay the premium for their extended kin.

A minority of respondents (around 8 to 12 per cent) reported receiving information on community matters or politics from relatives, friends and neighbours only. Members were less likely to report this than the non-members, although this was (weakly) statistically significant only in one case study. The qualitative interviews help to explain why diversified access to information was a determinant of enrolment, as all types of interviewees complained that information about the CBHI schemes was scarce.

In Soppante and WAW, members were more than two times as likely to perceive their community to have solidarity (measured by the belief that everyone would cooperate to solve a common problem) than non-members and this was statistically significant in Model 2. Solidarity in CBHI was seen by members to derive from contributing to CBHI even when healthy, thereby allowing risk pooling to take place:

"*If you enrol and pay premiums (into the CBHI scheme), you benefit, but you also help others*." (Soppante member household)

Between 50 and 60 per cent of respondents had borrowed money in the last 12 months. CBHI members were at least twice as likely to have borrowed money from a source other than, or in addition to, family, relatives, or friends, as compared to non-members. This result was strongly significant in Model 2 for all three cases. The qualitative interviews reveal that associations were an important source of financial credit.

The results of the principle component analysis of the trust variables were in general not statistically significant. Similarly, in the qualitative research, a lack of trust in CBHI managers was not cited as a reason for non-enrolment.

Around a fifth of all respondents reported having control over no decisions made in the community or by their neighbours which affected their daily life. CBHI members were more than two times as likely to report having control over such decisions compared to non-members. The correlation was statistically significant for all three cases in Model 1 and remained significant for Ndondol and WAW in Model 2. The types of people who were thought to have influence over community decisions were those with cultural, human and social capital:

"*Traditional leaders, retired teachers and leaders of women's associations are among the people who influence important decisions in our community*" (WAW, member household)

More than 60 per cent of respondents reported voting in the last local elections. There was a weakly statistically significant difference between members (more likely to vote) and non-members in

Ndondol in Model 1. As mentioned, the qualitative results suggest that members believed CBHI schemes were managed in a democratic manner, perhaps helping to explain why voting was correlated with enrolment.

The other independent variables generally support the findings of previous studies on CBHI. In all three cases, members were likely to be better educated, but the results were not statistically significant. In Soppante and WAW, CBHI households had significantly higher levels of expenditure than non-member households. In Ndondol, CBHI member households were wealthier. In Soppante, members reported worse health for every indicator, possibly indicating adverse selection, although this was not statistically significant. In terms of the other independent variables, in some cases there were significant differences in age (Soppante) and gender and religion (Ndondol) across members and non-members. The differences in gender, religion and ethnicity can mostly be explained by specific characteristics of the three schemes (Table 1).

The likelihood-ratio tests (Table 5) suggest that Model 2 had a better fit than Model 1 in Soppante and Ndondol. However, this was not the case for WAW. For Soppante and Ndondol, the c-statistics were all between 0.6 and 0.7 in Model 1 and between 0.75 and 0.8 in Model 2. For WAW, the c statistics were between 0.55 and 0.7 in Model 1 and between 0.65 and 0.8 in Model 2. This suggests all the regressions (except for four in Model 1 in WAW) pass the goodness of fit test (Hosmer & Lemeshow, 2000).

Discussion

The social capital variables provide an insight into previously unexplored determinants of CBHI enrolment by explicitly distinguishing between bonding and bridging social capital and exploring social power differentials. The result that ceteris paribus members of CBHI were more likely to also be members of other associations supports the hypothesis that members of CBHI have higher bridging social capital. This echoes previous studies on CBHI (Jütting, 2003) and the wider development literature which finds that an existing social network is a precondition of participation in community organizations (Weinberger & Jutting, 2001). The c-statistics and likelihood-ratio test results, which suggest that Model 1 is the stronger model in the case of WAW, underline the primacy of bridging social capital as a determinant of urban CBHI. The data suggest that in rural contexts (Soppante and Ndondol) members of CBHI are also more likely than non-members to have bonding social capital, as measured by having privileged social relationships.

The "negative" effect of having *only* bonding social capital is indicated by the consistent finding that members were more likely than non-members to have borrowed money from sources other than friends and relatives. Caution is needed in interpreting these results for Ndondol and WAW, since these schemes were connected to a microcredit mechanism. However, the result is strongest for Soppante which was not connected to any source of financial credit. The result is also supported by the aforementioned Vietnamese study (Jowett, 2003). The negative effect of having only bonding social capital is also indicated by the result that members were more likely to receive information from sources other than friends, relatives and neighbours (though statistically significant only for Soppante in Model 1).

Taken with the strong finding that CBHI members had higher levels of perceived community-wide solidarity and the results on voting and perceived democratic nature of CBHI, it seems that CBHI members had greater bridging social capital which they had developed by broadening their social networks via democratic social structures which provided them with information, solidarity, risk pooling, financial protection and financial credit. Non-members, on the other hand, seem to be characterised by bonding social capital only, receiving financial credit and information from a narrow social network characterised by affective relationships. Enrolment in CBHI could therefore be interpreted as indicative of a transition from what has been described by Durkheim (1984) as "mechanical solidarity" (characteristic of traditional societies and typically organized around kinship affiliations) to "organic solidarity" (characteristic of complex industrialised societies and based on integration of specialized economic and political organizations). The result that the associational dynamic and role of generalised trust were the strongest and the effect of privileged relationships weakest in the urban context of WAW supports this interpretation.

The finding that bridging social capital is positively correlated with enrolment in CBHI, while bonding social capital alone is not, ostensibly suggests that CBHI schemes should build on existing bridging social capital to increase population coverage, for example by enrolling households through associations. However, given Bourdieu's theory that interlinked forms of capital are a source of social power, it is likely that the current exclusion of less powerful individuals from CBHI (indicated by the result that CBHI members are more likely to have influence over community decisions) would be exacerbated by such enrolment strategies. A complementary, or alternative, strategy could be subsidies for CBHI premiums which target not only poorer households but also those with low bridging social capital and low social power. However, research from West Africa (Porter & Lyon, 2006) finds that channelling external development funds through groups and associations (such as CBHI) often fails to include the poorest and most vulnerable and incurs social costs such as peer

pressure and loss of trust, suggesting that overturning established social hierarchies through CBHI subsidies could be difficult to achieve in practice. Therefore, echoing previous analyses of market-oriented health sector reforms (Bennett S, McPake B, & A., 1997) and consumer-led financing (Ensor, 2004), it is likely that alternative or complementary public sector and/or supply-side financing policies are needed. These may include direct and indirect tax-based funding (Mills et al., 2012) and broader social protection policies integrated into government systems of social welfare (Devereux & White, 2010).

Limitations

The study has several limitations. Firstly, as an exploratory study, the sample size is small. Secondly, the "random route" methodology may mean that differences between members and non-members are either over- or under-estimated. Thirdly, because different forms of capital may be fungible (Bourdieu, 1986), it is possible that some of the variables included in the study measure factors other than social capital. It is also possible that the social capital variables are picking up the effect of other omitted variables. Another limitation is that due to the cross-sectional and non-experimental study design, it is difficult to attribute the direction of causality. However, it is likely that the social capital variables are a determinant of membership and not vice versa, since social structures such as associations and privileged relations are antecedent to CBHI schemes which were established relatively recently (Niang, 2000). Furthermore, the policy implications do not depend on the direction of the relationship between social capital and CBHI enrolment. Finally, more case studies would be needed to increase generalizability.

Conclusions

Several indicators relating to social capital seem to be strongly, consistently and positively associated with CBHI enrolment. The quantitative results are strengthened by the qualitative interviews. These results have policy relevance, given that CBHI is at the heart of Senegal's strategy for universal coverage. One implication is that CBHI should build on bridging social capital, for example by increasing enrolment through existing associations. However, this strategy may be unadvisable from an equity perspective. A second implication is that subsidies for premiums should target not only indigent households but also those with low bridging social capital and low social power, in order to overcome social barriers to enrolment. However, such reforms are likely to require overturning established social hierarchies and may be difficult to implement through CBHI. Alternative or

complementary public sector financing policies are needed. The study also demonstrates that despite controversy about the concept (Fine, 2001), by drawing on Bourdieu, social capital can be defined, measured and used to identify strategies for improved developmental outcomes.

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Table 1. Case studies selected

Name of case study	Year of scheme commencement	Tier of services contracted by the scheme	Region (total number of CBHI schemes in the region*)	Geographic zone	Predominant economic sector	Other characteristics of the scheme
Soppante	1997	Health post Hospital	Thies (39)	Mostly rural, some peri-urban and urban	Informal	Scheme covers a very large and diverse geographic zone
Ndondol	2001	Health post Health hut Maternal and child health centre	Diourbel (10)	Rural	Informal agricultural	• District predominantly inhabited by one ethnic group, the Serer • Local Catholic missionaries helped establish the scheme • Scheme offers microcredit exclusively to its member
WAW	2000	Health post Health centre	Dakar (44)	Peri-urban	Informal traders	Partnered with an association promoting income generation for women

*Source: (CAFSP, 2010)

Table 2. Household survey sample

Scheme	Total number of members ever enrolled (active and expired policies)	Total number of member households selected (active and expired policies)	Target number of non-members
Soppante	985 (166 + 819)	161 (70 + 91)	100
Ndondol	463 (136 + 327)	156 (58 + 98)	120
WAW	678 (281 + 397)	170 (85 + 85)	100

Table 3. Semi-structured interviews sample

Scheme	Member households	Non-member households
Soppante	27	10
Ndondol	18	13
WAW	28	12

Table 4. Determinants of enrolment in CBHI (logistic regression results), Model 1

Independent variables	Odds ratios											
	S	N	W	S	N	W	S	N	W	S	N	W
Age years (base: <36)												
36 - 45	0.48*	1.04	0.92	0.42*	0.96	0.77	0.45*	1.09	1.03	0.46*	1.06	0.92
46 - 55	0.42*	1.34	1.11	0.41*	1.18	1.2	0.40**	1.37	1.07	0.39**	1.39	1.1
56 - 65	0.20***	0.9	0.85	0.17***	0.82	0.52	0.19***	0.99	0.8	0.16***	1.03	0.84
>65	0.22***	1.37	0.69	0.20***	1.54	0.74	0.21***	1.43	1.08	0.19***	1.4	0.85
Gender (base: female)												
Male	1.47	0.50**	1.14	1.58	0.40***	1.04	1.36	0.43***	1.12	1.45	0.43***	1.04
Member of associations other than CBHI (base: none)												
1 or more	3.66**											
1		1.22	2.84**									
2		1.15	6.89***									
3		3.36*	3.79**									
>3		1.46	6.13***									
Privileged relationships (base: none)												
Privileged relationships				3.22*	4.16**	1.17						
Sources of information (base: from friends/relatives/neighbours and/or other sources)												
From friends/relatives/neighbours only							0.35*	0.92	0.83			
Likelihood of community cooperation (base: not at all likely or very unlikely)												
Likely										3.17*	1.42	1.65
Highly likely										2.64*	1.87	1.85
c-statistic	0.66	0.66	0.66	0.67	0.66	0.57	0.67	0.61	0.56	0.67	0.63	0.57

Table 4. (cont)

Independent variables	Odds ratios											
	S	N	W	S	N	W	S	N	W	S	N	W
Age years (base: <36)												
36 - 45	0.40**	1.14	0.98	0.47*	1.19	1.08	0.44*	0.98	1.12	0.38**	1	1
46 - 55	0.37**	1.44	1.02	0.44*	1.54	1.08	0.37**	1.23	1.14	0.33**	1.26	1.13
56 - 65	0.17***	0.98	0.72	0.19***	1.07	0.65	0.16***	0.91	0.87	0.13***	0.86	0.78
>65	0.22***	1.73	0.75	0.21***	1.61	0.71	0.17***	1.43	1.01	0.18***	1.21	0.86
Gender (base: female)												
Male	1.57	0.36***	1.24	1.35	0.42***	1.11	1.38	0.40***	0.99	1.54	0.41***	1.15
Borrowed money in last 12 months (base: none)												
From friends/relatives only	1.53	1.3	2.33*									
From friends/relatives and/or other sources	3.90***	3.66***	2.41***									
Trust												
Principle component 1				0.98	1.07	1.11						
Principle component 2				1.15	1.06	1.02						
Principle component 3				1.17	0.98	0.74**						
Control over community decisions affecting daily life (base: none)												
Very few decisions							1.68	2.17*	1.46			
Some decisions							1.44	3.01**	2.39**			
Most decisions							1.59	2.29**	2.62**			
All decisions							2.44*	3.71**	3.29**			
Voted in last local elections (base: no)												
Voted										0.76	1.71*	1.34
c-statistic	0.69	0.70	0.63	0.66	0.63	0.60	0.67	0.65	0.62	0.66	0.65	0.56

Notes: *P<0.10; **P<0.05; ***P<0.01.
Dependent variable: individual enrolment in CBHI (yes = 1; no = 0).
S = Soppante, N = Ndondol, W = WAW

Table 5. Determinants of enrolment in CBHI (logistic regression results), Model 2

Independent variables	Odds ratios											
	S	N	W	S	N	W	S	N	W	S	N	W
Age years (base: <36)												
36 - 45	0.53	1.59	0.85	0.42	1.55	0.64	0.46	1.81	0.99	0.58	1.76	0.9
46 - 55	0.21***	1.6	1.24	0.19***	1.53	1.28	0.19***	1.95	1.17	0.18***	1.93	1.17
56 - 65	0.17***	0.84	1.02	0.14***	0.96	0.55	0.14***	1.05	0.99	0.15***	1.12	1.02
>65	0.21**	1.96	0.59	0.15***	2.53	0.55	0.18***	2.53	1.03	0.19**	2.36	0.68
Gender (base: female)												
Male	1.43	0.26***	1.33	1.71	0.23***	1.22	1.47	0.25***	1.26	1.39	0.24***	1.23
Education (base: none)												
Literate	1.53	0.68	0.55	1.24	0.74	0.54	1.26	0.81	0.6	1.34	0.81	0.58
Primary	0.47	0.84	0.91	0.41	0.9	0.74	0.42*	1.13	0.95	0.47	1.13	0.86
Secondary or higher	1.09	2.26	1.29	0.47	4.11	1.31	1.02	6.07	1.15	1.25	5.27	1.09
Expenditure quintile (base: lowest)												
q2	1.9	1.83	1.14	1.69	1.36	0.88	1.9	1.58	1.03	2.06	1.62	1.17
q3	1.77	0.36*	1.04	2.01	0.31**	0.88	1.6	0.33**	1.15	1.5	0.34**	1.17
q4	3.86**	0.88	0.98	3.77**	0.7	1.41	4.06**	0.78	1.19	3.73**	0.75	1.28
q5 (highest)	4.17**	0.83	1.91	5.32**	0.9	1.87	4.08**	0.87	2.61**	4.04**	0.86	2.75**
Asset quintile (base: lowest)												
q2	2.43	0.73	0.91	2.47	0.77	0.85	2.24	0.93	1.02	1.92	0.9	0.99
q3	3.56***	3.68***	0.40*	5.22***	3.54***	0.41*	3.28**	3.91***	0.49*	3.87***	3.47***	0.45*
q4	1.88	1.27	1.09	2.49*	1.7	1.57	1.95	1.27	1.15	2.2	1.17	1.21
q5 (highest)	2.61*	3.42**	0.57	3.34**	2.74**	1.36	2.62*	3.37**	0.93	3.30**	2.91**	0.92
Ill health												
Handicapped (base: no)	1.64	2.2	0.39	1.81	2.33	0.45	2.13	2.62	0.71	2.14	2.41	0.64
Chronic illness (base: no)	0.55	0.72	0.59	0.54	0.73	0.73	0.64	0.73	0.71	0.72	0.77	0.63
Recent illness (base: no)	1.68	1.3	2.6	2.75*	1.05	2.57	1.77	1.33	2.01	1.71	1.23	2.24
SAH (base: very good or good)												

Fair	0.67	0.9	1.07	0.54	0.7	1.09	0.6	0.78	0.97	0.64	0.84	1.07
Bad or very bad	2.08	2.64	1.3	1.27	2.52	0.98	1.89	2.63	1.02	2.15	2.78	1.5
Ethnicity and religion												
Muslim (base: yes)	0.34	0.11***		0.32	0.15***		0.29	0.15***		0.35	0.14***	
Wolof (base: yes)	0.72	1.01	1.31	0.63	1.06	1.6	0.84	0.96	1.46	0.6	1	1.47
Member of associations other than CBHI (base: none)												
1 or more	3.04											
1		0.78	3.33**									
2		0.87	9.05***									
3		2.78	3.56**									
>3		1.07	6.37***									
Privileged relationships (base: none)												
Privileged relationships				1.41	5.68**	0.96						
Sources of information (base: from friends/relatives/neighbours and/or other sources)												
From friends/relatives/neighbours only							0.51	1.7	0.8			
Likelihood of community cooperation (base: not at all likely or very unlikely)												
Likely										1.49	1.57	2.23*
Highly likely										3.66*	1.81	2.09*
Likelihood-ratio test statistic	33.3	40.66	16.61	35.37	32.35	19.85	34.54	40.7	16.17	33.6	25.94	25.14
P value	0.02	0.00	0.48	0.01	0.02	0.28	0.01	0.00	0.51	0.01	0.26	0.28
c-statistic	0.76	0.78	0.73	0.79	0.77	0.70	0.76	0.76	0.66	0.77	0.70	0.70

Table 5. (cont)

Independent variables	Odds ratios											
	S	N	W	S	N	W	S	N	W	S	N	W
Age years (base: <36)												
36 - 45	0.36*	1.65	0.95	0.52	1.92	1.12	0.43	1.82	1.13	0.42	1.76	0.97
46 - 55	0.16***	1.72	1.09	0.19***	2.22	1.22	0.14***	1.69	1.15	0.16***	1.95	1.23
56 - 65	0.11***	0.99	0.79	0.14***	1.26	0.86	0.12***	0.95	1.02	0.10***	1.09	0.92
>65	0.17**	2.53	0.63	0.18**	2.69	0.72	0.12***	2.29	0.81	0.18**	2.32	0.74
Gender (base: female)												
Male	1.89	0.22***	1.43	1.41	0.24***	1.49	1.74	0.23***	1.1	1.54	0.21***	1.35
Education (base: none)												
Literate	1.18	0.71	0.53	1.35	1	0.42	1.13	0.7	0.56	1.22	0.86	0.6
Primary	0.34*	0.96	0.86	0.44	1.13	0.95	0.42	1.03	0.83	0.43	1.14	0.92
Secondary or higher	0.82	4.11	1.14	1.34	6.49	1.07	0.88	7.82*	0.82	0.73	5.66	1.1
Expenditure quintile (base: lowest)												
q2	1.47	1.46	1.06	2	1.61	0.85	2.2	1.3	0.89	1.6	1.43	0.98
q3	1.66	0.29**	1.08	1.7	0.32**	1.14	1.63	0.28**	1.24	1.51	0.31**	1.13
q4	4.00**	0.64	1.1	4.48***	0.81	1.18	4.22**	0.71	0.97	4.48**	0.74	1.15
q5 (highest)	3.67**	0.67	2.05	5.64***	0.89	2.26	4.18**	0.79	2.40*	3.46**	0.81	2.34*
Asset quintile (base: lowest)												
q2	1.64	0.85	0.89	2.07	1.18	0.82	2.64	0.86	0.82	2.11	1.12	0.91
q3	2.95**	2.91**	0.49	2.98**	3.81***	0.49	3.75***	3.90***	0.40**	3.61***	3.76***	0.46*
q4	1.75	0.95	1.18	2.01	1.21	1.33	1.94	1.58	1.14	2.25	1.11	1.07
q5 (highest)	2.81*	2.83**	0.95	2.08	2.93**	0.95	2.69*	3.99***	0.91	3.01**	3.12**	0.92
Ill health												

Independent variables	Odds ratios											
	S	N	W	S	N	W	S	N	W	S	N	W
Handicapped (base: no)	2.2	2.59	0.88	1.77	2.4	0.68	2.35	4.44	0.71	2.21	2.32	0.7
Chronic illness (base: no)	0.51	0.83	0.73	0.78	0.81	0.64	0.73	0.67	0.65	0.68	0.79	0.67
Recent illness (base: no)	1.95	0.99	1.8	2.3	1.18	2.13	1.71	1.44	1.62	1.98	1.25	2.06
SAH (base: very good or good)												
Fair	0.53	0.8	0.98	0.46	0.81	0.83	0.52	0.77	0.97	0.53	0.83	0.99
Bad or very bad	2.31	2.34	1.26	1.35	2.66	1.01	1.75	4.11	1.15	1.68	1.75	1.2
Ethnicity and religion												
Muslim (base: yes)	0.26	0.19***		0.3	0.17***		0.25	0.13***		0.28	0.15***	
Wolof (base: yes)	0.86	1.24	1.57	0.78	0.94	1.56	0.63	1.16	1.4	0.78	1	1.48
Borrowed money in last 12 months (base: none)												
From friends/relatives only	1.17	1.5	2.02									
From friends/relatives and/or other sources	4.27***	2.82**	2.33***									
Trust												
Principle component 1				1.01	1.09	1.13*						
Principle component 2				1	1.05	0.91						
Principle component 3				1.21	1.03	0.78						
Control over community decisions affecting daily life (base: none)												
Very few decisions							0.78	3.55**	1.27			
Some decisions							0.67	5.24***	2.22*			
Most decisions							1.03	2.21	3.27**			
All decisions							2.02	3.26*	3.82**			
Voted in last local elections (base: no)												
Voted										1.17	1.51	1.32
Likelihood-ratio test statistic	34.69	33.39	14.01	33.87	37	16.77	35.39	41.19	15.14	32.69	38.09	16.05
P value	0.01	0.02	0.67	0.01	0.01	0.47	0.01	0.00	0.59	0.02	0.00	0.52

Independent variables	Odds ratios											
	S	N	W	S	N	W	S	N	W	S	N	W
c-statistic	0.78	0.77	0.69	0.77	0.76	0.69	0.78	0.78	0.69	0.76	0.77	0.67

Notes: *P<0.10; **P<0.05; ***P<0.01.

Dependent variable: individual enrolment in CBHI (yes = 1; no = 0).

S = Soppante, N = Ndondol, W = WAW