

Local Level Institutions
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**THE LOCAL LEVEL
INSTITUTIONS STUDY:**

**SOCIAL CAPITAL AND
DEVELOPMENT OUTCOMES IN
BURKINA FASO**

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and Anand Swamy*

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SOCIAL CAPITAL AND DEVELOPMENT OUTCOMES IN BURKINA FASO

TABLE OF CONTENTS

	ACKNOWLEDGMENT.....	ii
1.	INTRODUCTION: LOCAL INSTITUTIONS AND SOCIAL CAPITAL	1
2.	EXISTING WORK ON SOCIAL CAPITAL IN BURKINA FASO.....	3
3.	THE DATA SET.....	5
4.	THE DIMENSIONS OF SOCIAL CAPITAL	10
5.	HOUSEHOLD WELFARE AND SOCIAL CAPITAL	16
6.	ASSET ACCUMULATION AND ACCESS TO CREDIT	28
7.	SOCIAL CAPITAL AND COLLECTIVE ACTION	32
8.	SOCIAL CAPITAL AND EDUCATIONAL OUTCOMES.....	34
9.	SOCIAL CAPITAL AND DISTRESS SALES.....	40
10.	CONCLUSION	46
	ANNEX: TABLE A1: MEANS AND STANDARD DEVIATIONS OF REGRESSION VARIABLES	49
	REFERENCES.....	50

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I. INTRODUCTION: LOCAL INSTITUTIONS AND SOCIAL CAPITAL

There is currently considerable interest among academics and policy-makers in the potential role of “social capital” in promoting economic development. Though there is no consensus on a precise definition of social capital, many now find the central idea plausible: given the available resources, technology, and formal institutional structures, economic outcomes can vary, depending on the nature of social norms and relationships¹. For example, all else being equal, a credit market in which lenders and borrowers trust each other will function more smoothly, a well-equipped school in which teachers feel no obligation to instruct will be of little value, and so on. Testing of these ideas, however, poses a challenge: the typical household survey does not have information on the types of variables that might reflect social capital. An important step toward addressing this problem has been taken at the World Bank, by sponsoring surveys which collect detailed information on social relationships and structures, in addition to traditional economic variables. As part of this effort, the Local Level Institutions² (LLI) Study has conducted large-scale household surveys in Bolivia, Indonesia, and Burkina Faso. This paper is based on the study’s Burkina Faso data.

Social capital can affect economic welfare through many channels. Two such channels, the functioning of credit markets, and the performance of educational institutions, have been mentioned above, but there are a host of others, ranging from maintenance of irrigation projects (Wade, 1988) to diffusion of technical knowledge or information (Isham, 1999). The potential impact of social capital, therefore, can be evaluated in two ways. One approach aims to assess, in principle, the contribution of all types of social capital to economic welfare. Using the log of per capita consumption expenditure as their measure of economic welfare, Narayan and Pritchett (1997) and Grootaert (1999) show that, controlling for a large set of individual and community characteristics, social capital leads to higher welfare. An alternative approach to empirical testing is to look more narrowly at the specific channels through which particular types of social capital operate. For example, Fafchamps (1997) demonstrates the role of networks in increasing access to credit. In this paper we follow both approaches. We begin by showing that higher levels of a broad measure of social capital are associated with higher per capita consumption expenditures. We then analyze the role of social capital in affecting narrower outcomes, including school

¹ For an overview of these issues, see Grootaert (1997), Portes (1998) and Woolcock (1998).

² We use the term “local institution” interchangeably with “local association” or “local organization.” This follows the practice of most social science literature (Uphoff, 1993), but there is a subtle distinction between the two concepts. Uphoff defines institutions as “complexes of norms and behaviors that persist over time by serving collectively valued purposes” (p. 614), while organizations are “structures of recognized and accepted roles” (p. 614). Examples of institutions are money, the law, and marriage. Organizations are PTAs, workers’ unions, rotating credit associations. In some cases, the two terms overlap: the army is an institution as well as a group of soldiers, the parliament is a law-making institution as well as an association of law makers. Uphoff argues that the distinction is a matter of degree, and organizations can become more or less “institutional” over time.

attendance by children, the incidence of “distress sales,” access to credit, and participation in collective action.

How should social capital be measured? The approach pioneered by Putnam (1993) focuses on membership of associations. Association membership can affect economic outcomes in two ways. First, the association may be formed to further a specific economic objective, such as (say) a credit-cooperative. However, there can also be indirect benefits of association membership; for example, two members of a recreational group may develop mutual trust which then enables them to (say) share valuable information, or credit. A second approach to measuring social capital focuses on membership of ethnic groups, neighborhoods, or communities. Here the idea is that a household’s outcomes are affected by the characteristics of the community to which it belongs. For example, Borjas (1995) shows the importance of “ethnic capital” among immigrant groups in the United States. Even after controlling for individual, parental, and neighborhood characteristics, the average skill level of the ethnic group to which the individual belongs has a large impact on his/her skill acquisition. Unlike membership in associations, individuals cannot choose to have this type of social capital, except via migration decisions. We mainly use the association-membership approach, though we do comment on some findings based on the community-characteristics approach to assessing the impact of social capital.

Our main results are:

- (i) Social capital is positively correlated with higher per capita household expenditures as well as with higher asset accumulation;
- (ii) Households with active ties in local associations have better access to credit, even if financial matters are not the prime objective of these associations;
- (iii) Social capital facilitates collective action;
- (iv) Parental involvement in parent-teacher associations leads to substantially higher rates of school attendance; and
- (v) The incidence of distress sales is substantially lower in villages in which community lending institutions are active.

The remainder of this paper is organized as follows. The next section provides an overview of the existing literature on Burkina Faso as it pertains to social capital. The third section describes the data set in general terms. The fourth section provides detailed information on the extent of social capital in Burkina Faso and its variation across socioeconomic categories. The fifth section shows that a broad measure of social capital, based on participation in associations, is positively correlated with higher economic welfare, measured by the log of per capita consumption expenditures. The sixth section focuses on asset accumulation and access to credit, the seventh on collective action, the eighth on education, and the ninth on distress sales. The final section summarizes and concludes.

2. EXISTING WORK ON SOCIAL CAPITAL IN BURKINA FASO

There is, so far as we know, no existing literature (prior to the LLI Study) that specifically addresses the issue of social capital in Burkina Faso. Several authors, however, have commented on aspects of social relations that are relevant to social capital. In this literature, the following facts or claims stand out: relatively high quality of bureaucracy, highly developed traditions of cooperation within ethnic groups, and harmonious relations among ethnic groups. We briefly discuss each theme below.

The quality of the bureaucracy has been commented on favorably by international observers: Englebert (1996, p.109) quotes a World Bank economic memorandum on Burkina: “Wherever they may come from, foreign missions visiting Burkina invariably report being favorably impressed by the quality of public sector management...” Burkina Faso also ranks fairly high in terms of measures of quality of governance developed by the Inter-Country Risk Guide, which have been shown to be positively correlated with economic growth (Keefer and Knack, 1995).

The most numerous and best documented ethnic group in Burkina Faso, the Mossi, are said to place a very high value on sharing and mutual support. In his book *Structures of Social Life*, anthropologist Alan Fiske (1991) describes extensive co-operation among the Mossi with regard to allocation of land, water, mutual insurance, and pooling of labor. He emphasizes that common good, rather than individual benefit, is affirmed in such activities [p. 268]:

The Moose [Mossi³] preference for Communal Sharing does not seem to be driven by technological and utility-maximization constraints...That the Moose pool their labor collectively, and share their food, often in the face of incentives to do otherwise, demonstrates that their primary motivational orientation is toward corporate participation and belonging, and that their paramount goals concern mutual solidarity, a sense of common identity and belonging, unity and kindness.

Some anthropologists have argued that co-operation, especially in the domain of mutual crisis-support, takes place mostly within ethnic groups. In addition to Fiske, evidence that crisis-support comes from within the ethnic group, in particular from within the extended family in the village, comes from Vierech (1986, p. 156). Vierech describes how villages are divided into compounds, consisting of a cluster of families belonging to the same lineage⁴. The compound leader has many privileges in terms of access to land and other resources, but also has many social obligations. Vierech writes: “The compound head was under greater pressure than the ordinary household to have abundant grain on

³ The most commonly used spelling is Mossi. Fiske (n. 6, p. 409) prefers to use “Moose” following the orthography adopted by the National Language Commission of Burkina Faso in 1976.

⁴ Each ethnic group consists of a number of lineages.

hand to meet his extra social obligations. These included the obligations to share, to provide hospitality, to provide for the less fortunate.... It was the compound head who usually took responsibility for the handicapped, infirm and aged family members.” (p. 162).

Harmonious relations *between* ethnic groups in Burkina Faso have also been attributed, at least in part, to Mossi norms. Englebert (1996, 125) argues that Burkina Faso’s “relative uniqueness” in the African context (in that there is little conflict among ethnic groups) is in part due to the “assimilationist nature” of the Mossi, and their tendency to de-emphasize ethnic differences. He also suggests that the state has distanced itself from ethnic authority and thereby reduced ethnic competition for “ownership” of the state. Finally, the paucity of economic resources at the disposal of the state itself means there is less to compete over. The relative lack of ethnic conflict and other factors favorable to development are also discussed by Kevane and Englebert (1997).

Our survey data are consistent with the idea that co-operation is at a high level. When asked whether they felt that other households in the village made a fair contribution to collective action at the village level, 89% of households answered in the affirmative. We now turn to a detailed description of these data.

3. THE DATA SET

The data set for this paper comes from the Local Level Institutions (LLI) Study, a comparative study of three countries (Bolivia, Burkina Faso and Indonesia), which aims to investigate the role of local institutions in providing service delivery and in affecting welfare and poverty outcomes.⁵ Data were collected at the level of the community, the district, and the household.

At the level of the *community*, interviews with focus groups of households and with community leaders were held to establish a map of functioning institutions in the community. Three instruments were used:

- Information on community services was obtained through interviews with key informants such as the village chief, teacher, health provider, etc. This was supplemented with information on the local economy (infrastructure and distance to markets), local society (ethnic/religious composition) and local institutions.
- The community services were also discussed with groups of households, with the objective of learning the community's perspective on the quality of service, its experience with collective action, and its views on local institutions and development projects.
- For the most important local institutions, interviews were held with leaders and members, as well as non-members, in order to get a balanced view of the role of the institutions in the village, their development over time, their main activities, relations with other institutions and government, and their main strengths and weaknesses.

At the *district* level (defined as the administrative level above the village or community), data were collected about the extent of service coverage and the institutional arrangements for the provision of services. Information was also obtained about the general functioning of the district administration and its relation with civic organizations, through interviews with general and sectoral managers at the district level.

The third and critical part of the data collection was a *household survey* which aimed to capture households' actual participation in local institutions, their use of services, and information that identifies the welfare level of households and their coping strategies. The questionnaire consisted of six sections:

⁵ The objectives of the Local Level Institutions study and the questionnaires are further discussed in World Bank (1998).

- demographic information on household members
- participation in local institutions
- characteristics of the most important groups
- service provision profiles
- perceptions of community trust and collaboration
- household economy and coping strategies.

The limited resources available did not make possible a sampling framework such that the studies would be representative of the countries at the national level. Instead, three or four areas were selected in each country (municipios in Bolivia, provinces in Burkina Faso and Indonesia), which represent different economic, social and institutional environments.

In the case of Burkina Faso, the data collection covered the rural areas of four provinces: Yatenga, Sanmatenga, Houet and Sissili. These four provinces were selected to represent different regions of the country and different social, economic and institutional settings (CND, 1998). The next three paragraphs provide brief descriptions of each province. (These are based on CND (1998) and Donnelly-Roark et al. (1999), which contain extensive descriptions of each province.)

Yatenga and Sanmatenga provinces are situated in the North of Burkina Faso, and are predominantly populated by the Mossi, and are largely Muslim. Yatenga is the traditional seat of the Mossi Kingdom. Both provinces have relatively high population density. Both provinces suffer from low rainfall, which makes for low productivity agriculture. Livestock raising however is prominent. Mossi social organization is quite hierarchical in a formal sense, but relatively flexible in terms of daily practice.

Houet, which lies to the West, is culturally and ethnically diverse. The dominant ethnic groups have non-hierarchical and flexible elders councils. Houet is a high rainfall area and is often called the granary of Burkina Faso. Human development is at a relatively high level. Houet draws immigrants, both farmers and herdsman, from the North. Farmer-herder relations can involve conflict, with disputes arising over land and water.

Sissili, which lies to the south-east, is the home of the Gourounsi. Like in Houet, non-hierarchical and flexible elders' councils are active; in Sissili these councils have promoted various development initiatives. Due to high levels of rainfall, Sissili is able to grow a variety of agricultural products, and attracts Mossi from Yatenga and Sanmatenga who are in search of arable land.

Within each province, one administrative department was selected for the data collection (in Houet, two departments were selected). In each province, twelve villages were chosen purposively based on four criteria: organizational level, economic situation, cultural diversity, and proximity of services. Within each village, 20 households were selected randomly to participate in the survey, leading to a total sample of 960 households (CND, 1998).

Table 1 shows selected characteristics of the sample, for each province and for the total sample. Burkina Faso is a linguistically and religiously diverse nation, and each province displays a distinct pattern. Consistent with our description above, Yatenga and Sanmatenga in the north are almost entirely populated by the Mossi ethnic group, who speak Moore⁶. In Yatenga this ethnic group is predominantly of the Muslim religion, while in Sanmatenga it is more diverse across Muslim and Christian religions and the Animist life view. Houet is the linguistically most diverse province. Sissili in the south has been settled more recently than the other three provinces, and the average time of residence is only 32 years against more than 50 years in the north of the country. The two predominant languages are Moore and Gourounsi and the religious pattern is diverse.

Burkina Faso is one of the poorest countries in Sub-Saharan Africa and one critical dimension is the low level of education. In the sample population, more than 80% of adults have received no education, barely more than 10% received primary education and less than 2% have secondary education. Among the provinces, Houet and Sissili have slightly higher education levels than the two provinces in the north. About 6% of the population has attended religious schools, primarily in the north.

⁶ Also spelt “More”.

Table 1: Selected Characteristics of the Sample (in %)

	Yatenga	Sanmatenga	Houet	Sissili	Total
Language					
Moore	93.6	97.5	1.7	45.8	59.8
Dioula	0.9	0.0	28.0	0.4	7.3
Fulfunde	5.6	2.1	9.6	0.8	4.5
Gourounsi	0.0	0.4	0.0	52.5	13.3
Bobo	0.0	0.0	5.0	0.0	1.3
Other	0.0	0.0	55.7	0.4	14.0
Religion					
Muslim	96.2	48.2	51.1	58.8	63.4
Catholic	3.4	13.2	11.7	10.8	9.8
Protestant	0.0	2.1	1.3	2.1	1.4
Animist	0.4	36.6	36.0	28.3	25.4
Average years lived in community	53.9	49.3	44.3	31.9	44.8
Education of Adults					
None	83.2	83.2	76.4	80.7	80.7
Primary Education	7.5	7.9	16.2	13.9	11.6
Secondary Education	0.8	1.2	3.2	0.6	1.4
Other	8.5	7.7	4.2	4.8	6.3
Household Expenditure per Capita (CFAF/year)	58,712	60,886	69,768	71,686	65,265
Gini-coefficient	0.40	0.26	0.33	0.27	0.32
Poverty Incidence ¹	40.0	23.4	26.7	13.9	26.0
Expenditure Gap ²	42.2	22.4	31.2	22.7	32.7
Number of Assets Owned	1.6	1.4	2.8	2.3	2.0
Number of Large Animals Owned	12.8	10.8	19.1	21.8	16.1
Land Ownership (ha)	5.3	3.7	4.4	5.2	4.6
Number of Farm Equipment	0.5	0.4	0.4	0.6	0.5
Notes:	1. Percentage of population which is poor. This is based on a relative poverty line of two-thirds of the country-wide median of household expenditure per capita. 2. Average shortfall from the poverty line of the poor's per capita expenditure, expressed as a percentage of the poverty line.				

The extent of poverty is clear from the data on household expenditure per capita, the average of which is 65,265 CFAF per year (approximately \$130 at the exchange rate of \$1=500 CFAF). Expenditure levels do not differ much across the four provinces. The two northern provinces are slightly below average at approximately 60,000 CFAF per year each, while Houet and Sissili are slightly above average at about 70,000 CFAF. However, the provinces do differ in terms of degree of inequality and poverty. Using a poverty line defined nationally as two-thirds of the median of household expenditure per capita, Sissili displays a high degree of equality of income distribution and a correspondingly low level of poverty of 13.9%, while Yatenga has a fairly unequal income distribution and a high rate of

poverty incidence at 40%. Ownership of land and farm equipment is quite even across the four provinces. Ownership of animals is higher in Houet and Sissili, as is ownership of consumer durable assets such as cars, bicycles, radios, etc.

4. THE DIMENSIONS OF SOCIAL CAPITAL

Burkina Faso shows a dense map of local associations. In each village, 1 to 8 local associations were recorded in the course of the study (CND, 1998). In total, the households in the study reported 6,048 memberships in these associations, or slightly more than six memberships per household. However, the vast majority of these were not considered active memberships by the respondents. Only 1,446 or 23.9% of the total were considered active. Not surprisingly, the vast majority (83%) of active memberships were in associations directly or indirectly related to farming (Table 2).⁷

Table 2: Distribution (%) of Active Memberships in Local Associations, By Province and Type of Association

	Yatenga	Sanmatenga	Houet	Sissili	Total
Religious	5.6	0.0	7.5	9.9	6.4
Traditional / Customary	0.0	0.0	0.3	0.9	0.3
Social	9.5	5.5	3.8	10.4	7.5
Soil Rehabilitation	2.2	0.0	0.0	0.0	0.6
Farmers — Production	13.1	1.5	15.8	5.2	9.2
Farmers — Service	0.6	28.0	4.3	19.6	12.5
Farmers — General	65.5	65.0	67.8	51.0	61.6
Youth	3.6	0.0	0.5	2.9	1.9
Number of Active Memberships	359	271	373	443	1,446

In each province general farmers' associations account for two-thirds of all active memberships (except in Sissili where they account for only 51%). This category encompasses various types of village groups which were put in place under government sponsorship, mostly in the period 1974-1980, and deal with a wide variety of issues, such as credit, reforestation, erosion control, adult literacy, and training. This category also includes the traditional Naam groups in Yatenga whose original objective was to introduce young people to the social life of the village, but who have evolved to a general organization for village development. Farmers' groups with a production orientation have also for the most part been put in place by the government and focus either on cattle raising or cotton production. Farmers' associations with a service orientation are of more recent origin and serve a wide array of social service and infrastructure functions. For example, they include associations of hunters, artisans, and midwives, as well as rotating saving and credit associations and groups for the management of water resources (CND, 1998). The service-oriented farmers' organizations have a stronger representation in Sanmatenga and Sissili, while the production-oriented groups are more concentrated in Yatenga and Houet.

⁷ For a further discussion of these types of associations, see CND (1998), Donnelly-Roark, et al. (1999). Swamy, Grootaert and Oh (1999) describe in detail the pattern of memberships in local associations and associations' role in the provision of services.

Among the other categories of local associations, religious and traditional groups account for roughly 7% of all memberships, although they are remarkably absent in the province of Sanmatenga. Social associations, which also account for about 7% of memberships, focus primarily on education and health services. The two smallest categories of local associations are those dealing with environmental matters and youth groups. The former are primarily interested in erosion control and reforestation and function exclusively in Yatenga. Youth groups account for about 2% of memberships and are mostly concentrated in Yatenga and Sissili.

The density of organizations is, of course, only one aspect of local associations, and their effectiveness is a function of many features of the association reflecting its structure, its membership, and its functioning. For this study we focus on eight aspects of local associations. These dimensions and the variables that capture them are described in Box 1.

Box 1: Dimensions of Social Capital

1. *Density of Associations.* This is measured by the number of active memberships per household. The average for the study sample is 1.8 memberships per household.

2. *Heterogeneity Index.* The LLI questionnaire identified up to three most important associations for each household. For these associations a number of supplementary questions were asked, including some about the internal homogeneity of the group. This was rated according to nine criteria: neighborhood, kin group, occupation, economic status, religious, gender, age, level of education, and political orientation. On that basis, we constructed a score ranging from 0 to 9 for each of the three groups whereby a value of 1 on each criterion indicated that members of the association were “mostly from different” kin groups, economic status, etc. The score of the three groups was averaged and the resulting index was re-scaled from 0 to 100, whereby 100 corresponds to the highest possible value of the index. The average score of the heterogeneity index was 77.

3. *Meeting Attendance.* A priori it would appear that membership in an association is of little value if one does not attend the meetings with other group members. We therefore constructed a meeting attendance index which measures the average number times (over a three-month period) someone from the household attended groups meetings, normalized for the number of memberships of each household. The sample average is 3.2, indicating that on average a household attends one group meeting per month.

4. *Active Participation Index.* It has been argued that associations which follow a democratic pattern of decision making are more effective than others. The LLI questionnaire asked association members to evaluate subjectively whether they were “very active”, “somewhat active” or “not very active” in the group’s decision making. This response was scaled, respectively, from 2 to 0 and averaged across the most important groups listed by the households. The resulting index was re-scaled from 0 to 100. The sample’s average score was 79.7, indicating a high degree of active participation in decision making.

5. *Membership Dues.* All other things being equal it is presumably a sign of greater interest in an association if one is willing to pay membership dues. Only about one-third of memberships in Burkina Faso require the payment of such fees. Those that do charge very low fees. The vast majority pays less than 100 CFAF per month. However, slightly more than half of memberships require a contribution in the form of work in order to remain an active member. The majority of cases require work during 1 to 4 days per month. This is hence not a negligible contribution. For the analysis in this paper we constructed an index of the cash contribution and an index of the work contribution whereby the highest value observed in the data was re-scaled as 100.

7. *Community Initiation.* Many case studies on the functioning of local associations have argued that voluntary organizations that find their roots in the community are more effective than externally imposed and/or mandated groups (Uphoff, 1992; Narayan, 1995; Ostrom, 1995). Households in the LLI study sample were asked whether they perceived the associations of which they are members to have been initiated by the community. It was interesting that 83.7% of memberships were perceived to be community-initiated, even though the vast majority of farmers’ associations, village groups and social associations were originally set up at the initiative of the government. This is, of course, a potentially positive sign indicating a high degree of acceptance and internalization of such associations.

8. *Mode of Organization.* The effectiveness of a local organization can be influenced by whether it is organized formally or informally. Formal organizations may have a higher threshold of participation, but a more rigid adherence to rules and procedures may also make them more effective. This is, for example, the experience with irrigation associations (Meinzen-Dick, et al. 1995; Narayan 1995; Ostrom 1995). In Burkina Faso, about two-thirds of local associations are formally organized.

Table 3 shows the pattern of the eight social capital dimensions across provinces, language/ethnic groups, religious groups, and quintiles of household expenditure per capita. The density of associations is higher in the west and south of the country than in the north. The Gourounsi (who mostly live in the south) are members of more associations than other linguistic groups. Membership of associations rises with income.

Internal heterogeneity of associations is universally high, but especially so in Sanmatenga. In contrast, it is below average among the Fulfunde. It is interesting that both the poorest and the richest households are members of more homogeneous groups than middle-income households. Participation in meetings is fairly constant across the different categories except that in Sissili and among the Gourounsi meeting attendance is highest. We noted earlier that this is also the group that has the highest number of active memberships. Likewise, the active participation score is the highest in Sissili and for the Gourounsi. There is thus clearly a pattern whereby the density and the activity of local associational life is higher in Sissili and among the Gourounsi (who make up the majority in that province) and this is reflected in the different dimensions of social capital in Table 3.

There are significant differences in the extent to which association members are required to contribute in cash and in kind to the associations. It is again residents of Sissili and the Gourounsi who make the highest contribution both in cash and in work. Households in the poorest quintile make the smallest contribution both in cash and in kind, but otherwise there is no systematic relation between the level of the contribution and the level of income.

Table 3: Social Capital Dimensions

	Number of Active Memberships	Heterogeneity Score	Number of Meetings per Active Membership	Active Participation Score	Cash Contribution Score	Work Contribution Score	% Community Initiated Memberships	% Informal Memberships
Province								
Yatenga	1.6	73.9	3.0	72.3	1.8	7.2	85.1	3.2
Sanmatenga	1.7	86.7	2.4	82.8	3.7	6.0	77.2	44.4
Houet	1.9	72.8	3.0	81.0	2.3	9.5	76.6	43.7
Sissili	2.2	77.0	4.1	84.2	6.9	20.3	94.0	47.5
Language/ Ethnic Group								
Moore	1.7	79.1	2.8	77.6	3.1	8.3	84.2	25.5
Dioula	1.9	74.3	3.2	77.2	0.9	6.7	83.5	35.6
Fulfunde	1.5	64.3	2.8	80.3	3.8	6.8	79.1	25.2
Gourounsi	2.3	78.3	5.1	86.0	8.2	23.9	92.1	48.3
Bobo	1.5	70.4	4.2	83.3	0.6	14.1	83.3	66.7
Other	1.9	73.2	2.8	82.3	2.6	11.3	75.1	47.6
Religion								
Muslim	1.8	76.3	3.1	78.9	3.2	11.0	81.7	26.5
Catholic	1.9	78.7	3.3	83.2	5.5	10.3	94.4	50.1
Protestant	2.3	81.5	4.2	86.1	5.3	19.0	87.5	52.1
Animist	1.8	78.1	3.0	80.2	4.1	10.4	85.1	45.2
Quintile								
Poorest	1.5	72.3	3.0	79.1	1.7	4.8	84.1	24.8
2	1.8	79.9	3.0	75.8	3.0	10.3	83.2	34.8
3	1.9	78.3	3.2	80.6	5.5	13.5	80.3	36.9
4	1.9	78.4	3.1	81.1	3.9	14.5	88.2	38.3
Richest	2.0	75.7	3.5	81.8	4.0	11.4	82.6	30.7
All	1.8	77.0	3.2	79.7	3.6	10.9	83.7	33.2

Four out of five active memberships are in associations which the households perceived to be initiated by the community (although as indicated earlier, many of the farmers and social groups were originally set up by the government). Once again, it is residents of Sissili and the Gourounsi who perceive the strongest degree of community initiation in their memberships. The Fulfunde in the province of Houet on the other hand, have the lowest level of memberships in community-initiated organizations. The degree of formality or informality in the organization of the group follows a remarkable pattern. In Yatenga, 97% of all organizations are viewed as formal. In contrast in the three other provinces, this is less than 60%. The Gourounsi and Bobo are mostly active in informally organized associations. Formal memberships are much more predominant among Muslim groups than among others, but it is not clear whether this is a location or a religious factor, since the majority of Muslim households live in Yatenga. The degree of formality rises with income level, except for the richest quintile.

5. HOUSEHOLD WELFARE AND SOCIAL CAPITAL

In this section we address the basic question whether households with a high level of social capital, as measured by the eight dimensions discussed in the previous section, are better off. We address this question in the context of a simple conceptual framework whereby social capital is seen as one class of assets available to the household to generate income and make consumption possible. Specifically, the household is seen to have at its disposal physical assets (land, farm equipment, cattle), human capital (years of schooling) and social capital. The household combines its various asset endowments to make decisions regarding labor supply for each of its members, taking wage rates and the demand situation in the labor market as given. The household also demands a number of inputs (agricultural inputs, credit) and services (education, health) which may need to be combined with labor supply in order to generate income. Access to these inputs and services is influenced by the extent of social capital (i.e. the extent of participation in local associations), in conjunction with the social and demographic characteristics of the households.

This model can be formalized in a set of structural equations making up a conventional model of household economic behavior under constrained utility maximization. By recognizing that the households' consumption behavior is a function of the level and composition of its income, the set of structural equations can be summarized by a reduced-form equation which expresses household consumption directly as a function of the asset endowments and other exogenous characteristics of the households, and of the economic environment in which it makes decisions. This leads to the following estimation equation:⁸

$$\ln E_i = \mathbf{a} + \mathbf{b}SC_i + \mathbf{g}HC_i + \mathbf{d}OC_i + \mathbf{e}X_i + \mathbf{h}Z_i + u_i \quad (1)$$

Where

- E_i = household expenditure per capita of household i
- SC_i = household endowment of social capital
- HC_i = household endowment of human capital
- OC_i = household endowment of other assets
- X_i = a vector of household characteristics
- Z_i = a vector of village/region characteristics
- u_i = error term

⁸ This reduced-form model was also the basis for the study by Narayan and Pritchett (1997) on social capital in Tanzania.

The key feature of this model is the assumption that social capital is truly “capital” and hence has a measurable return to the household. Social capital has many “capital” features: it requires resources (especially time) to be produced and it is subject to accumulation and decumulation.⁹ Social capital can be acquired in formal or informal settings, just like human capital (e.g., schools versus learning-by-doing). Much social capital is built during interactions that occur for social, religious, or cultural reasons. The key assumption is that the networks built through these interactions have measurable benefits to the participating individuals, and lead, directly or indirectly, to a higher level of well-being (Putnam, 1993). This is the proposition which we test empirically in this section by means of equation (1). Structurally, the returns to social capital could be measured in the earnings functions if, e.g., one’s network helps in getting better-paying jobs or promotions. It could also show up in the various functions which determine access to credit, agricultural inputs or other factors which enhance the productivity of a household enterprise.

The dependent variable of equation (1) is the natural logarithm of household expenditure per capita.¹⁰ The explanatory variables consist of the asset endowments of the households, demographic control variables, and locational dummy variables. Household assets are assumed to consist of human capital, social capital, land, and physical assets. We have already discussed in the previous section the variables used to measure the household’s endowment of social capital. Human capital is measured conventionally by the years of education of the adult members of the household.¹¹ We also included in the regressions the number of hectares of land owned and operated by the household. In addition, we included variables capturing the household’s ownership of cattle and agricultural equipment.¹²

In addition to the asset variables, the regressions include household size to capture the routinely observed negative association between household welfare and household size. A dummy variable was included to indicate that the head of household was female, under the assumption that such households may face special constraints to income

⁹ Events in transition economies such as Russia and former Yugoslavia are powerful evidence of the effects of the decumulation of social capital (Rose, 1995).

¹⁰ This variable was constructed in nominal form. It is recognized that there might be a significant amount of regional price variation in Burkina Faso. As of writing we do not have access to a regional price index to deflate household expenditure per capita. We assume that the regional dummy variables included in the regression will capture price differences.

¹¹ The LLI questionnaire recorded only the level of educational achievement of each adult in the household and the number of years of education was imputed from that information.

¹² The inclusion of these physical asset variables could be viewed as problematic, due to possible endogeneity. Some households may sell assets to pay for current consumption. Unfortunately, the data do not contain the stock of assets at the beginning of the consumption reference period. On the other hand, in a poor rural economy, agricultural assets, such as land, cattle and equipment are such major determinants of income and consumption that excluding them from the equation would clearly lead to major misspecification bias. For that reason, we kept the asset variables in the equation. To assess the impact of this decision, we re-estimated equation (1) without the asset variables. The substantive findings on the role of social capital were not affected.

generation. The age of the head of household and its squared term were included to capture the life cycle of household welfare.

Lastly, dummy variables were included to indicate province (Sanmatenga was used as omitted category) and to capture the general economic and social conditions of the provinces along dimensions other than those which we were able to include in the model. Lastly, a set of dummy variables was included for language/ethnic group (the “other” category was omitted), attempting to capture the general cultural and social characteristics of each group.¹³

The first column of Table 4 shows the conventional reduced-form of a household welfare model, i.e. including physical and human capital variables but excluding social capital indicators. This model, which explains 25% of the variation in household expenditure per capita, indicates that both human and physical capital make a significant contribution to the generation of welfare and that the latter is also greatly affected by the demographic characteristics of the households, such as female headship and age of the head of household. The estimation results also suggest that there are significant provincial dimensions which are not captured in the model. On the other hand, there do not appear to be important characteristics of language/ethnic groups that are not already controlled for in the model, since none of the coefficients of the language/ethnic group dummy variables are significant.

Social capital can be introduced in this model in two ways. One way is to consider each of the eight dimensions separately in an additive model. An alternative, which has been used by Narayan and Pritchett (1997), is to take some of these dimensions and introduce them in a multiplicative index. The justification for the latter procedure is that the effect of, for example, the number of associations to which one belongs is not independent of the internal degree of heterogeneity or the type of functioning of the association. Unfortunately, the conceptual and theoretical literature on social capital has not yet provided us with a sufficiently refined model to justify one or the other approach. In part it remains, therefore, an empirical matter. Experience with the LLI data (also for the two other countries in the study, Indonesia and Bolivia) has indicated that additive as well as interactive variables are valid approaches to introducing social capital in a model of household behavior. Table 4 therefore shows the results of both specifications.

¹³ Means and standard deviations of all regression variables are shown in Annex Table A1.

Table 4: Household Welfare and Social Capital

	(1) Basic Model		(2) With Multiplicative Social Capital Index		(3) With Additive Social Capital Variables	
Intercept	11.5662	(42.69)	11.5512	(42.95)	11.2962	(35.19)
Social Capital Index	-		0.0045	(3.09)	-	
Number of Memberships	-		-		0.0712	(3.57)
Heterogeneity Index	-		-		0.0036	(2.42)
Meeting Attendance	-		-		0.0024	(0.35)
Index of Participation	-		-		-0.0003	(0.45)
Informal Organization	-		-		-0.0004	(0.80)
Community Initiation	-		-		-0.0007	(1.06)
Cash Contribution Score	-		-		0.0043	(2.37)
Work Contribution Score	-		-		0.0039	(3.29)
Household Size	- 0.0393	(7.29)	-0.0395	(7.49)	-0.0409	(7.94)
Years of Education	0.0994	(6.13)	0.0933	(5.81)	0.0854	(5.27)
Female Head of Household	0.2009	(2.43)	0.2097	(2.55)	0.2029	(2.38)
Age of Head of Household	- 0.0194	(2.48)	- 0.0209	(2.69)	-0.0190	(2.44)
Age of Head of Household Squared	0.0002	(2.55)	0.0002	(2.74)	0.0002	(2.48)
Land Owned & Rented (Ha)	0.0230	(1.66)	0.0213	(1.61)	0.0189	(1.52)
Number of Cattle Owned	0.0044	(2.47)	0.0043	(2.49)	0.0044	(2.57)
Number of Farming Equipment Owned	0.0720	(1.55)	0.0631	(1.39)	0.0790	(1.81)
Moore	- 0.1423	(0.87)	- 0.1680	(1.02)	-0.2292	(1.38)
Dioula	0.0533	(0.61)	0.0544	(0.62)	0.0719	(0.83)
Fulfunde	- 0.0728	(0.39)	- 0.0576	(0.32)	-0.0533	(0.30)
Gourounsi/Nuni	0.0115	(0.07)	-0.0621	(0.36)	-0.1710	(0.97)
Bobo	- 0.2204	(0.72)	- 0.2112	(0.70)	-0.1905	(0.61)
Yatenga	- 0.1870	(3.17)	- 0.1508	(2.55)	-0.1380	(2.10)
Houet	0.0081	(0.05)	0.0049	(0.03)	-0.0464	(0.29)
Sissilli	0.1285	(2.01)	0.1379	(2.17)	0.1212	(1.72)
Number of Observations	788		788		788	
R-squared	0.25		0.26		0.29	
F-statistics	11.69		12.18		10.09	
Notes:	1. Dependent variable = ln (household expenditure per capita).					
	2. t-statistics are in parentheses and are based on robust standard errors (Hubert-White estimator for non-identically distributed residuals).					

Column 2 of Table 4 introduces a multiplicative index of the number of active memberships, the heterogeneity index, and the active participation index, re-normalized to a maximum value of 100. This index is similar to the index that Narayan and Pritchett used for Tanzania and it is of interest to compare our results because Tanzania is, to our knowledge, the only other African country for which a similar social capital analysis has been undertaken. Our results indicate that the multiplicative social capital index is a significant variable in the model although its inclusion only slightly adds to the model's explanatory power. Given that the mean of the social capital index is 19, the coefficient indicates that a one-unit increase in social capital (i.e. a 5% increase), would increase household expenditure per capita by 0.45%. In contrast, an increase of human capital by one additional year of education would increase household expenditure by 9.3%. However, given that the mean number of years of education is 0.7 this would mean more than doubling the level of human capital. If one postulates a similar 5% increase in the amount of human capital, the result indicates an associated increase of household expenditure per capita of 0.33%. In other words, the effects of increases in social capital assets and human capital assets on household welfare are similar. This finding corresponds closely to the results that were obtained in the LLI study for Indonesia (Grootaert, 1999).

The third column of Table 4 introduces an additive model of the eight social capital dimensions which we have distinguished earlier. This model increases R-squared from 0.25 to 0.29. The results suggest that the major effects come from the density of associations and the internal heterogeneity. Specifically, an additional membership is associated with a 7% increase in household expenditure per capita. Given that the average number of active memberships in the sample is 1.8, this would correspond to a 55% increase in active memberships.

The coefficient of the heterogeneity index suggests that an increase of the heterogeneity index of 10 points is associated with 3.6% higher per capita expenditure. In other words, the benefits from participating in internally heterogeneous associations are higher than from associations whose members are more alike. The reasons for this may have to do with the exchanges of knowledge and information that occur among members. Members from different backgrounds may learn more from each other because they have different knowledge to start with. A further analysis of heterogeneity (by including each dimension as a separate regressor in the model) supported this conclusion: the economic dimensions of heterogeneity (economic status and education) matter the most. This is an especially important finding in the context of a poor rural economy where the vast majority of the population depends on agriculture, and where hence economic heterogeneity is low to begin with.

The results indicate that demographic heterogeneity also matters: age and gender segregated groups yield lower welfare gains to member than age and gender mixed groups. This is also an important result because the main farmer-oriented institutions in Burkina Faso, the Village Groups, exists both in gender segregated and mixed form. This is partly a cultural issue. Age and gender mixed groups function mainly in Yatenga and Sanmatenga, where the dominant ethnic group is the Mossi, while age and gender

segregated associations are found mostly in Houet and Sissili, which are more ethnically diverse. Nevertheless, this finding suggests that the relative effectiveness of age and gender segregated versus mixed groups may not be the same and this deserves further investigation.

Four of the social capital dimensions capture an aspect of active participation in the association, namely meeting attendance, participation in decision making, and contribution in cash and in kind. In the context of Burkina Faso, the latter two appear to be the most important, and are positively associated with household welfare levels.¹⁴ In contrast, the origin of the association or its mode of organization (formal or informal) do not seem to be systematically related with levels of expenditure per capita. It is important to note that the change of specification from a multiplicative to an additive social capital index does not change very much the coefficients of the physical and human capital variables, which indicates that the correlation between social capital and these other types of asset classes is low and that the fundamental specification of the model is robust to modifications in the definition of the social capital variable.

While this evidence of robustness is reassuring, one major issue remains to be addressed. The formation of groups and associations of different kinds can be costly, in terms of time and other resources. Therefore, it is conceivable that income growth itself can contribute to the formation of social capital. In this scenario, the Ordinary Least Squares estimates discussed above would be subject to simultaneity bias. The appropriate technique then is instrumental variable estimation in which we identify the impact of social capital by isolating components of it that are not affected by income growth. As we will now demonstrate, instrumental variable estimates broadly confirm the findings obtained using ordinary least squares estimation.

Instrumental Variable Estimation

The real challenge in applying instrumental variable estimation is to find a suitable instrument set for social capital: instruments must determine social capital but not household welfare (nor be determined by household welfare). In order to make this task more feasible, we limit the exercise to the second model in Table 4, which uses a single social capital index.

At the household level, we use three instruments:

- A measure of trust: This is an index derived from questions whether people perceive others to make fair contributions to village collective activities and whether they think they could get emergency help from villagers other than relatives and close friends. Such “generalized trust” (i.e. trust not tied to specific known individuals, such as friends) is build over time and is a function of village cohesion and norms. It is independent of the income level

¹⁴ It is to be noted that the contribution variables are indexes, not absolute amounts. Hence, they capture relative differences in contributions among households, which should reduce possible endogeneity problems with these variables.

of a specific household. Measures of generalized trust have been used in other studies also as instruments for social capital (Narayan and Pritchett, 1997).

- Length of residency in the village: It takes time to build a social network and hence the longer a household resides in a village, the greater the potential for building social capital through associational activities.
- Trend in membership in associations: Households were asked whether they are now members of more, the same or fewer associations than five years ago. The retroactive nature of this information makes it an ideal instrument since it clearly cannot be influenced by current income.

At the village level, we used the same three instruments averaged at the village level. In addition, we added three variables which were collected at the village level (from key informants, such as village leaders, teachers, health professionals, etc.) and which are independent of the household level data:

- Traditional authority: This is a binary variable that indicates whether a traditional authority (e.g. council of village elders) is still operating in the village.
- Organizational strength: This is an index derived from assessments by the key informants of the extent to which village organizations operate effectively. When associations are perceived to be effective, the likelihood that households join and are active in associations can be expected to increase.
- Associations created by the community: This is a count of the number of local associations that were set up by the community. It is the village-level equivalent of the “community initiation” variable which we used in the OLS regression, but the information was collected independently.

We first used only the household level instruments and applied the standard test for over-identifying restrictions proposed by Davidson and MacKinnon (1993). This tests the joint null-hypothesis that the underlying model in equation (1) is correctly specified and that the applied instruments are valid. (The latter hypothesis cannot be tested separately.) Table 5 reports the test-statistic’s p-value, as well as the coefficient and t-statistic of the social capital index in the 2SLS equation. Although the incremental R-squared is small, the set of instruments do pass the test. They lead to a large increase in the coefficient of the social capital index from 0.0045 in the OLS model to 0.0271 in the IV results. This six-fold jump in the magnitude of the coefficient is similar to the results of Narayan and Pritchett (1997) for Tanzania, who also used trust as an instrument. The result supports the claim that equation (1) is correctly specified and that social capital is an exogenous determinant of household welfare. If there were significant reverse causality, the coefficient of the social capital index in the 2SLS regression would have been lower than the OLS coefficient. The result, however, drastically alters the earlier OLS-based assessment of the relative importance of social and human capital. A 5%

increase in social capital endowment now corresponds to a 2.7% increase in household expenditure per capita, whilst a 5% increase in human capital endowment only increases household expenditure per capita by 0.22% (the coefficient of years of education was smaller in the 2SLS equation than in the OLS equation). This corresponds closely to the results of Narayan and Pritchett for Tanzania, who found that, dependent upon specification, the social capital effect was 4 to 10 times larger than the effect of human capital.

Table 5: Social Capital and Household Welfare: Instrumental Variables Results

Instrument Set	SC Index		Incremental R-squared	OIR Test p-value
	Coefficient	t-statistic		
Household Level Trust, length of residency, trend in membership	0.0271	1.92	0.01	0.30
Village Level				
1. Trust, length of residency, trend in association density	0.0107	1.49	0.04	0.50
2. Set 1 + traditional authority, organizational strength	0.0173	2.88	0.06	0.26
3. Set 2 + associations created by community	0.0179	2.98	0.06	0.29
4. Traditional authority, organizational strength, associations created by community	0.0278	2.51	0.02	0.22

Of course, IV results are only as good as the instruments are believable and it pays to test the results for sensitivity of instrument selection. We first repeated the test using village averages of the three instruments. While this set did pass the OIR test, the resulting coefficient of the social capital index was much lower and not significantly different from zero (Table 5). We then added the independent village-level instruments, which led to coefficients in the narrow range of 0.0173 to 0.0179, still implying social capital effects 5-6 times larger than the human capital effects. In a last test, we used only the independent village-level instruments, which yielded a coefficient of 0.0278 – almost identical to the result obtained with the household level instruments.

Several conclusions emerge. First, the results suggest that the causality runs primarily from social capital to household welfare, and this is robust to the selection of instruments. Second, the estimated magnitude of the social capital effect is highly dependent upon the selection of instruments, but in all cases it was found to be much larger than the human capital effect. Our results and those of Narayan and Pritchett (1997) for Tanzania are consistent in this regard.

These conclusions, however, are not the same as those obtained for the other two countries in the LLI Study. For Indonesia, Grootaert (1999) found that the social capital effect was in the same range as the human capital effect, and for Bolivia, Grootaert and Narayan (1999) found that the social capital effect was 2 to 2.5 times larger than the human capital effect. The explanation, although fairly speculative at this stage, may have to do with the absolute level of education in the different countries. The average years of education per adult household member is 0.7 in Burkina Faso, 3.9 in Bolivia and 4.8 in Indonesia. At such low levels of education as in Burkina Faso, social capital may act as a substitute for human capital and most of the knowledge needed to generate income may need to be acquired from social networks and associations. This may explain why the coefficient of social capital is so much larger than that of education. As the level of education increases, social and human capital may become more complementary, with a better balance between social networks and schooling as a source of learning. Clearly, this is a fascinating issue for further investigation.

Social Capital and Poverty

So far, we have provided evidence that social capital has positive effects on household welfare. However, since equation (1) imposes constant parameters over the entire distribution, the results do not say whether social capital helps the poor to the same degree as the rich, and whether investment in social capital can help escaping from poverty. In other words, is it rational for the poor to invest time in social relations and memberships in associations, as opposed to alternative uses of time?

We address this question in several ways. First, we estimate a probit model of the likelihood to be poor.¹⁵ The results indicate that social capital can significantly reduce the probability to be poor (Table 6). The average household with 1.8 memberships has a 7.36 percentage points lower probability to be poor than a household with no memberships. In contrast, a household with an average education level (0.7 years per adult) reduces its probability to be poor by only 4.0% relative to a household with no education. This suggests that investing in social capital is a sensible strategy for poor households in Burkina Faso. Heterogeneous associations help the most in reducing the probability to be poor. Also, the significance of the cash and work contribution scores suggest that the money and time investments made as membership contributions do pay off in lowering the probability to be poor, and that households indeed know which associations are worth the time and money.

¹⁵ The probit model collapses the distribution of expenditure into a binary variable which takes a value of one if the household falls below the poverty line (set here at two-thirds of mean household expenditure per capita). This approach is potentially useful when the underlying expenditure data may contain non-random measurement error, which is eliminated when the distribution is collapsed (except for some possible misclassification around the poverty line). See Grootaert and Braithwaite, 1998, for a further discussion.

Table 6: Social Capital and Poverty Outcomes

	Impact on Probability of being Poor (Probit) ¹	
Intercept	—	
Number of Memberships	-0.0460	(3.16)
Heterogeneity Index	-0.0014	(1.75)
Meeting Attendance	0.0071	(1.55)
Index of Participation	0.0001	(0.16)
Informal Organization	0.0002	(0.63)
Community Initiation	0.0004	(1.05)
Cash Contribution Score	-0.0029	(1.77)
Work Contribution Score	-0.0056	(4.09)
Household Size	0.0192	(6.40)
Years of Education	-0.0570	(3.82)
Female Head of Household	-0.0452	(0.77)
Age of Head of Household	0.0155	(3.02)
Age of Head of Household Squared	-0.0001	(2.92)
Land Owned & Rented (Ha)	-0.0009	(0.15)
Number of Cattle Owned	-0.0058	(5.11)
Number of Farming Equipment Owned	-0.0135	(0.48)
Moore	0.1188	(1.07)
Dioula	-0.0374	(0.70)
Fulfunde	0.3820	(2.67)
Gourounsi/Nuni	0.0329	(0.25)
Bobo	-0.0516	(0.46)
Yatenga	0.1282	(2.63)
Houet	0.1614	(1.20)
Sissilli	0.0175	(0.31)
Number of Observations	788	
Log Likelihood	-321.3	
Chi-squared	146.49	
Probability > Chi-squared	0.00	
Note: 1. Probability derivatives at mean of each explanatory variable (or for 0 to 1 change in the case of dummy variables) and z-scores based on robust standard errors.		

Quantile regressions are a further way to explore differences between the poor and the rich in the role of social capital. Quantile regressions estimate the regression line through given points on the distribution of the dependent variable (whilst an OLS regression line goes through the mean) and can assess whether certain explanatory factors are weaker or stronger in different parts of the distribution. However, the estimation is conditional upon the values of the independent variables and hence coefficients from quantile regressions are not comparable with those of OLS regressions.¹⁶

¹⁶ Specifically, the coefficients show the effect of a marginal change in an explanatory variable on the xth conditional quantile of the dependent variable (Buchinsky, 1998).

Quantile estimation of equation (1) indicates that the returns to social capital, as measured by the interactive social capital index, are highest at the bottom of the distribution and decline with rising welfare levels (Table 7). For the richest 25% of households, social capital does not contribute to their welfare level, but in contrast, the returns to education are very high. The importance of social capital for the poor is primarily a function of the number of memberships, the heterogeneity of this membership, and the contributions (especially through work) which the poor make. These results are consistent with those from the poverty probit model in Table 6.

Table 7: Poverty and Social Capital: Quantile Regression Results

	10 th Percentile	25 th Percentile	Median	75 th Percentile	90 th Percentile
Social Capital Index	.0062*	.0047*	.0027*	.0014	-.0003
Number of Memberships	.0628	.0715*	.0490*	.0227	-.0132
Heterogeneity Index	.0058*	.0060*	.0032*	-.0003	-.0009
Meeting Attendance	-.0207*	.0008	-.0007	.0148*	.0024
Index of Participation	.0004	-.0001	-.0003	.0001	.0010
Informal Organization	-.0012	-.0015*	-.0007	-.0011	-.0003
Community Initiation	.0010	.0010	.0002	-.0014	-.0004
Cash Contribution Score	.0055	.0045	.0025	.0026	.0011
Work Contribution Score	.0074*	.0047*	.0025	.0010	.0021
Years of Education	.0943*	.0612*	.0436*	.0689*	.1114*

Note: Asterisk (*) indicates that the coefficient is significant at the 90% confidence level.

The third and final method we use to investigate differential returns to social capital between the poor and the non-poor is the split-sample approach. However, we cannot simply split the sample at the poverty line, or use a conventional interaction variable between the regressors and the poverty status variable—which is equivalent econometrically—because the poverty status variable is endogenous. Indeed, the poverty line is defined in terms of household expenditure per capita – the dependent variable of the model. Hence we need to split the sample on the basis of exogenous assets. In the context of a poor rural area, land holdings is an obvious choice. We split the sample into households below and above the median land holding, and estimated equation (1) each half sample (Table 8). The returns to the aggregate social capital index are found to be slightly higher for households with below-median land holdings. The disaggregated model makes it clear that this is the result of two partly off-setting effects: benefits from memberships are higher for households with above median land holdings, while heterogeneity of memberships and the making of contributions through work benefit smallholders the most.¹⁷ These results support the speculation we made earlier to the

¹⁷ The first of these findings appears to be at odds with the results from the quantile regressions. However, there is no close correlation between the distribution of expenditure per capita and the distribution of land.

effect that for the poorest households, social networks are an important source of knowledge. Indeed, the opportunity for exchanges of knowledge are greatest in associations with members from different economic and social backgrounds. It is interesting that the coefficient of the cash contribution score is higher for well-landed households than for smallholders, while the pattern is the opposite for the coefficient of the work contribution score. Perhaps this suggests that large landholders can “buy” their way into social capital, while the smallholders have to work their way into social capital.

Table 8: Poverty and Social Capital: Split-Sample Results

	Below Median Landholdings	Above Median Landholdings
Social Capital Index	.0031*	.0026
Number of Memberships	.0220	.0667*
Heterogeneity Index	.0039*	.0015
Meeting Attendance	-.0099	.0074
Index of Participation	-.0003	-.0017
Informal Organization	-.0004	-.0004
Community Initiation	.0007	-.0024*
Cash Contribution Score	.0028	.0050*
Work Contribution Score	.0052*	.0041*

Note: Asterisk (*) indicates that the coefficient is significant at the 90% confidence level.

On balance, the results of this section indicate that memberships in local associations contribute to higher household welfare levels and to reducing the probability to be poor. The key dimensions are internal heterogeneity and active contribution (through work) to the association. Returns to social capital are generally higher for households in the lower half of the distribution, whether by expenditure per capita or land ownership. This is perhaps the sense in which social capital is the capital of the poor: it is not that they have more of it (in fact, poor households in Burkina Faso belong to fewer associations than the rich), but it provides them with greater returns and hence social capital occupies a more prominent place in the portfolio of assets of the poor. Promoting the participation of poor households in local associations is hence a potentially valuable ingredient of poverty alleviation policy in the context of Burkina Faso.

6. ASSET ACCUMULATION AND ACCESS TO CREDIT

An alternative way of measuring household welfare is to focus on the ownership of consumer durables. In addition to their direct value, these can be sold in order to smooth consumption during crises. The data contain information on the ownership by the household of a set of 15 household durables, such as, trucks, motor cycles, bicycles, radios, etc. We aggregated this information into an asset ownership score for the household using weights derived from a principal component analysis of the 15 asset variables (Filmer and Pritchett, 1998). Table 9 looks at the relationship between social capital and asset accumulation. An alternative way of smoothing consumption is to borrow; Table 10 looks at the determinants of access to credit.

Table 9 shows that the number of active memberships, the heterogeneity index and the work contribution score are positively associated with the accumulation of consumer durables. These are the same variables which we found to be important correlates of current consumption expenditure in the previous section. It is interesting to note that the coefficients of active memberships and that of education are almost identical, suggesting that the value of an additional year of education for asset accumulation is essentially the same as the value of an additional membership in an association. In line with previous findings, we observe that there are no specific language-group effects but that there are strong provincial effects. Asset accumulation is significantly higher in Houet and Sissili than it is in the two northern provinces.

Table 9: Social Capital and Asset Accumulation

	Asset Ownership ¹	
Intercept	0.6415	(2.92)
Number of Memberships	0.0357	(2.24)
Heterogeneity Index	0.0019	(2.28)
Meeting Attendance	0.0033	(0.57)
Index of Participation	-0.0005	(0.84)
Informal Organization	-0.0005	(1.12)
Community Initiation	0.0003	(0.64)
Cash Contribution Score	-0.0000	(0.03)
Work Contribution Score	0.0035	(3.07)
Household Size	0.0304	(8.49)
Years of Education	0.0366	(2.81)
Female Head of Household	-0.3007	(4.98)
Age of Head of Household	-0.0144	(2.46)
Age of Head of Household Squared	0.0001	(1.88)
Moore	0.0197	(0.18)
Dioula	-0.0423	(0.53)
Fulfunde	-0.0023	(0.02)
Gourounsi/Nuni	-0.1734	(1.41)
Bobo	-0.2002	(1.04)
Yatenga	-0.1111	(2.36)
Houet	0.3586	(3.39)
Sissilli	0.2156	(3.72)
Number of Observations	788	
R-squared	0.36	
F-statistics	26.21	
Note:	1. OLS model with asset score (principal component weights) as dependent variable. Reported are coefficients and t-values based on robust standard errors.	

Social capital can also facilitate access to credit. Poor households are usually not able to provide collateral to obtain credit from formal lenders and often have to rely on local money lenders or group credit. The data make it possible to evaluate whether households with an active involvement in local associations are more likely to have received loans.

Before presenting our results, a word of caution is in order. In an ideal situation, we would like to model the demand for credit by households and the supply of credit by lenders and explicitly identify the contributions of various factors to demand and supply. However, we only have data on whether the household received credit or not. Regarding those that did not receive credit, we do not know whether they did not demand credit, or whether they wanted to borrow, but were turned down by the lenders. Despite this limitation, some plausible conclusions can be drawn from the model estimated below.

In the sample, 32% of households obtained credit either for personal purposes or for purposes of household businesses which they operate. Table 10 indicates that households which are active members of more associations are more likely to have borrowed and they receive larger amounts of credit. Like before, the key variables are the number of memberships, the internal heterogeneity of the association, and active involvement as expressed through work contributions. Households with much social capital, as measured by these variables, are thus better able to smoothen consumption over time by borrowing, and thus are likely to be better able to manage risk.

It is to be highlighted that the majority of these memberships are in local associations whose prime objective is not financial. Yet, this contributes to improved access to credit, suggesting that there is a spillover effect from networks or trust built in one context to another context. This type of spillover effect was observed by Putnam (1993) in his seminal study of social capital in Italy. The Indonesia LLI study found similar effects (Grootaert, 1999). Spillovers have also been documented in other sectors. Kähkönen (1999) reports that community action to set up water delivery systems is aided by the existence of other non-water related networks and associations in the community.

However, in the regressions in Table 10, two additional factors come into play which were not significant in earlier regressions. Receiving credit is more likely for members of associations that are sponsored from outside the community and/or formally organized. This promotes both access to credit and access to larger amounts of credit. The explanation may be that groups with outside sponsorship have more resources than, for example, rotating credit and savings associations which are limited by what members can contribute. Such outside organizations tend to be more frequently formally organized. These findings point at a limitation of social capital embodied in local associations. While helpful, and very often essential, to create access to credit for poor households, local associations may not always be as efficient or effective as outside sponsored groups, especially when resources other than time are needed for their activities.

Ownership of land and productive equipment also facilitate access to credit and are particularly significant in the amount-of-credit regression. This suggests that these assets can be used as collateral.¹⁸ Interestingly, the amount of cattle in both equations shows up with a negative sign, suggesting that cattle are a substitute for credit. Indeed, in a number of African societies the accumulation of cattle is not just for productive purposes, but also and often primarily for insurance purposes, to be sold in cases of harvest failures or other form of calamity (Kinsey, et al., 1998).

¹⁸ Of course here we again need to be cautious about interpretation, because credit can be used to purchase equipment.

Table 10: Social Capital and Access to Credit

	Access to Credit (probit) ¹		Ln (Amount of Credit Received) (tobit) ²	
Intercept	—		-18.5490	(2.37)
Number of Memberships	0.0784	(4.64)	1.9187	(4.32)
Heterogeneity Index	0.0034	(2.78)	0.0957	(2.77)
Meeting Attendance	0.0011	(0.19)	0.0049	(0.03)
Index of Participation	-0.0003	(0.38)	-0.0087	(0.47)
Informal Organization	-0.0009	(1.83)	-0.0262	(1.95)
Community Initiation	-0.0012	(2.17)	-0.0311	(2.19)
Cash Contribution Score	-0.0036	(1.58)	-0.1004	(1.74)
Work Contribution Score	0.0030	(2.47)	0.0729	(2.54)
Household Size	0.0067	(1.69)	0.2118	(2.00)
Years of Education	0.0045	(0.32)	0.0952	(0.25)
Age of Head of Household	0.0133	(1.60)	0.3719	(1.70)
Age of Head of Household Squared	-0.0002	(2.19)	-0.0048	(2.35)
Land Owned & Rented (Ha)	0.0075	(1.63)	0.2160	(2.19)
Number of Cattle Owned	-0.0014	(1.95)	-0.0443	(2.04)
Number of Farming Equipment Owned	0.1915	(5.13)	5.4160	(5.22)
Moore	0.0041	(0.04)	0.3237	(0.09)
Dioula	0.1047	(1.34)	2.6866	(1.38)
Gourounsi/Nuni	-0.1031	(0.83)	-3.2210	(0.80)
Yatenga	-0.2487	(4.70)	-8.1868	(5.04)
Houet	-0.0400	(0.33)	-0.7763	(0.21)
Sissilli	0.0298	(0.46)	1.1111	(0.65)
Number of Observations	788		788	
Log likelihood	-406.55		-1190.0	
Chi-squared	147.09		184.31	
probability > Chi-squared	0.00		0.00	
Notes:	1. Probability derivatives at the mean of each explanatory variable (or for 0 to 1 change in the case of dummy variables) and z-scores based on robust standard errors. 2. Tobit coefficients and t-statistics.			

7. SOCIAL CAPITAL AND COLLECTIVE ACTION

Social capital is also said to facilitate collective action. Two-thirds of the households in the sample indicated that in the past year they participated in some form of collective action at the neighborhood level, and 80% of households indicated that they did so at the village level. Nevertheless, the frequency of participation is low. The vast majority of households participated four times or less per year. We test below whether households with significant amounts of social capital (on any of the eight dimensions) participate more in collective action.

Table 11 indicates that the density of memberships does not seem to be related to the amount of collective action, while heterogeneity is a positive factor in the organization of collective action. This is a surprising finding because it is generally believed that homogeneous villages can more readily get together for the purposes of maintaining common infrastructure, and this was confirmed by the LLI analysis for Indonesia (Grootaert, 1999). Collective action is promoted by frequent interaction through meeting attendance. The negative sign of the informality score is noteworthy, suggesting that formal associations are better able to put together collective action.

The strong relation between social capital and collective action is further underscored by the fact that none of the household asset indicators, such as education, ownership of land, ownership of productive assets, and ownership of consumer durable assets is significant. However there are some clear language and provincial aspects, in that the Fulfunde and Bobo are less likely to participate in collective action than other ethnic groups. Likewise, residents of Houet are less likely to participate in collective action than residents of other provinces.

Thus far this paper has looked at broad measures of social capital, based on memberships of associations, without distinguishing the specific purposes for which they came into being. This is based on the notion that social relations developed in one context (say, a recreational group) may facilitate transactions in another very different context (say, a credit market). However, it is also important for us to study the impact of communities' abilities to organize around specific objectives. In the next two sections, we look at effect of community organization to promote education and to provide emergency assistance.

Table 11: Social Capital and Collective Action

	Collective Action ¹	
Intercept	10.3231	(2.24)
Number of Memberships	-0.0863	(0.31)
Heterogeneity Index	0.0660	(4.01)
Meeting Attendance	0.3182	(2.43)
Index of Participation	-0.0182	(1.50)
Informal Organization	-0.0161	(2.51)
Community Initiation	0.0068	(0.76)
Cash Contribution Score	0.0211	(0.83)
Work Contribution Score	0.0778	(3.14)
Household Size	-0.0028	(0.05)
Years of Education	0.0874	(0.39)
Female Head of Household	-1.5340	(1.15)
Age of Head of Household	-0.2921	(2.04)
Age of Head of Household Squared	0.0025	(1.87)
Land Owned & Rented (Ha)	0.0224	(0.31)
Number of Cattle	-0.0072	(1.30)
Number of Farming Equipment Owned	0.2932	(0.49)
Asset Score	0.4561	(0.67)
Moore	1.0487	(0.73)
Dioula	1.4397	(1.27)
Fulfunde	-2.1972	(2.13)
Gourounsi/Nuni	0.5507	(0.33)
Bobo	-3.2894	(2.23)
Yatenga	-0.0493	(0.05)
Houet	-3.6301	(2.31)
Sissilli	-1.0708	(1.02)
Number of Observations	788	
R-squared	0.18	
F-statistic	9.03	
<p>Note: 1. The dependent variable is the number of times the household participated in collective action in the neighborhood and in the village during the last year. Reported are OLS coefficients and t-statistics based on robust standard errors.</p>		

8. SOCIAL CAPITAL AND EDUCATIONAL OUTCOMES

As seen above, education is at a very low level in Burkina Faso, and its expansion is a key policy objective. Kevane and Englebert argue (1997, p. 17) that the prospects for growth are being undermined by a shortage of entrepreneurs which in turn is partly due to shortages of human capital. This argument is consistent with the cross-country evidence (Levine and Renelt, 1992) which suggests that the initial level of human capital has a large effect on subsequent growth.¹⁹

A glance at the data reveals that adult literacy rates in Burkina Faso are much lower than the average for low income countries, with adult male and female literacy rates of 29% and 9% respectively in 1995 (World Bank, 1997).²⁰ Equally disquieting is the fact that current enrollment rates remain low. In 1993, it is estimated that the gross primary and secondary enrollment ratios were 47% and 11% respectively for men, and 30% and 6% respectively for women (World Bank, 1997). The LLI Study sample includes 815 households which have children. These households were asked whether all the children aged 5-14 “regularly attended school.” Only 10% answered in the affirmative.

Why is school attendance so low? The expansion of education has been a priority for the government of Burkina Faso as well as supporting international organizations such as the World Bank for some time now; typically between 10 and 15% of government expenditure in Burkina Faso is allocated to education (Englebert, 1996, p. 134). Still, according to the World Bank’s *Burkina Faso: Fourth Education Project* (1991, p. 2-9) numerous problems remain, including poor quality of teaching, inadequate supplies of textbooks, high pupil-teacher ratios, and so on. Interestingly, the report identified “limited community participation in education” as a significant problem, and proposed that communities be involved to a greater extent in construction and management of schools: “Improving the capacity of communities to decide on and organize construction of their schools would not only help increase communities’ commitment to managing and maintaining their schools, but would also reduce capital costs, as well as represent a seedbed of skills and potential entrepreneurs.” (p. 16).

The main association in Burkina Faso through which the community is involved in schooling is the “Association des parents d’élèves et des mères éducatives” (APE/AME). This association exists at the local and national level and coordinates various educational activities. It also funds building repair and the purchase of school furniture (CND, 1998).

¹⁹ Of course, the case for spread of education lies not merely in its instrumental value in promoting economic growth, but as an intrinsically important aspect of human development.

²⁰ For low income countries as a whole (excluding India and China) male and female literacy rates were 63% and 45%, respectively.

Some critics, while acknowledging the traditions of reciprocity and interdependence in Burkina Faso discussed earlier in this paper, argue that it is unrealistic to expect active community participation in school management. Citing Olson (1982) and Axelrod (1984), Maclure (1994) argues that collective action can be sustained only if the temptation to free-ride is overcome by a system of incentives and sanctions. He argues that it is difficult to ensure accountability in environments in which resources are limited and literacy levels are low. He also suggests that in Burkina Faso governmental institutions and resources tend to be dominated by elites and that “the majority of the rural populace in Burkina Faso is restricted from participating actively in decision-making.” (p. 249). Eventually, this is an empirical question: do parents in Burkina Faso participate actively in school management? We explore this question first, and then turn to the question whether community involvement in schools increases school attendance.

We have data on 2534 children aged 5-14. Twenty-two percent of girls and 36% of boys attend school. In the villages which do have a primary school (29 out of 48), 38% of children attend school and in villages which do not have a primary school 16% attend. This suggests that living in close proximity to a school increases the likelihood that a child will attend school, but this is by no means sufficient.

Tables 12a, 12b, 12c, and 12d provide summary statistics for school attendance. In Table 12a we break down school attendance by household wealth, measured by per capita land-ownership.²¹ No clear correlation seems to exist between wealth and school attendance.

Table 12a: Percentage School Attendance, by Province and Land Ownership Quartile
(Number of Children in Parentheses)

	1st Quartile	2nd Quartile	3rd Quartile	4th Quartile	All
Yatenga	14.67 (150)	29.61 (152)	21.94 (196)	21.05 (133)	21.87 (631)
Houet	33.74 (246)	46.72 (122)	35.79 (95)	31.58 (57)	36.92 (520)
Sissili	41.06 (151)	37.32 (142)	39.67 (120)	39.76 (83)	38.71 (496)
Sanmatenga	23.16 (177)	17.65 (136)	21.97 (132)	18.67 (75)	20.77 (520)
Total	28.73 (724)	32.43 (552)	27.62 (543)	26.72 (348)	29.07 (2167)

²¹ Because rented land is typically secure in the possession of the renters in Burkina Faso, we count it as part of the “owned” land.

Table 12b: Percentage School Attendance, by Province and Ethnicity
(Number of Observations in Parentheses)

	Moore	Dioula	Fulfunde	Gourounsi	Other	All
Yatenga	23.49 (630)		0 (24)			22.42 (660)
Houet		49.15 (177)	14.10 (78)		39.59 (394)	38.33 (681)
Sissili	26.10 (318)			45.35 (333)		35.58 (669)
Sanmatenga	21.22 (509)		0 (15)			20.61 (524)
All ²²	23.47 (1466)	48.15 (189)	8.73 (126)	45.35 (333)	37.62 (420)	29.50 (2534)

Table 12c: Percentage of School Attendance, by Province and Religion
(Number of Observations in Parentheses)

	Muslim	Catholic	Animist
Yatenga	22.48 (645)		
Houet	35.16 (384)	61.84 (76)	31.73 (208)
Sissili	34.86 (393)	46.15 (65)	32.65 (196)
Sanmatenga	23.10 (290)	19.05 (63)	16.67 (156)
All	28.27 (1,712)	42.2 (218)	27.81 (561)

Table 12d: Percentage School Attendance, by Gender and Religion
(Number of Observations in Parentheses)

	Muslim	Catholic	Animist	All ²³
Male	36.93 (880)	43.55 (124)	31.05 (306)	36.40 (1338)
Female	19.11 (832)	40.43 (94)	23.92 (255)	22.41 (1,196)

In Table 12b we break down school attendance by province and language group. Percentages are reported only in the cells where the number of observations is less than 15. Large differences exist between provinces, with relatively high rates of attendance in Sissili and Houet. The most striking element here is the relatively low school attendance rates among the Fulfunde, 0% and 14% respectively, in Yatenga and Houet, and relatively high rates of attendance among the Gourounsi, compared to Moore-speakers, in Sissili. Table 12c breaks down school attendance by province, along religious lines. There is some indication that attendance rates are higher among Catholics, especially in Houet, though this pattern is not observed in Sanmatenga. As mentioned above, attendance rates

²² The number of observations in the All row exceeds the sum in the other rows because of the empty boxes (cells with too few observations).

²³ Number of observations in All column exceeds the sum of numbers of observations in the rows because of omission of “other” category.

of girls are substantially lower than for boys. Table 12d suggests that gender differentials are lower among Catholics than among members of other religions.²⁴

Our main purpose in this section, however, is to evaluate whether social capital affects school attendance. As mentioned earlier there has been an effort in Burkina Faso to increase parental participation in order to improve school performance. Our measure of parental participation is based on the number of times a household which sends at least one child to school attends a PTA meeting during the year. Table 13 provides the average for this variable and the percentage of children who attend school, by province.

Table 13: PTA Visits and School Attendance, by Province

Province	Avg # PTA attendances in previous year among hhs which send at least one child to school (# obs in parentheses)	Percentage of children aged 5-14 who attend school (# obs in parentheses)
Yatenga	2.85 (92)	22.42 (660)
Houet	2.14 (105)	38.33 (681)
Sissili	4.64 (133)	35.58 (669)
Sanmatenga	3.58 (67)	20.61 (524)
Total	3.39 (397)	29.80 (2534)

At this level of aggregation we do not see a correlation between parental involvement and school attendance. However, in comparing school attendance and parental involvement across provinces, we are not controlling for other factors. We now turn to a more detailed regression analysis of school attendance.

In Table 14, the dependent variable takes the value 1 if the child attends school, and zero otherwise. The coefficient of greatest interest is on the village average of the number of PTA meetings attended during the year, by households which send at least one child to school.²⁵ We see that one extra PTA attendance per household is associated with an increase of 3.5 percentage points in the probability that the child attends school. With a t-statistic of 3.69, the coefficient is significant at any reasonable level. We get a very similar result if we exclude the household to which the child belongs in the computation of our PTA attendance variable. Given that attendance rates in Burkina Faso are so low, this is a substantial effect.

²⁴ We do not present figures for Protestants because there are too few Protestant households (13).

²⁵ If there are five households in the village which send at least one child to school, and, taken together, they attend PTA meetings a total of 20 times, this variable takes the value $20/5 = 4$.

These findings were arrived at after controlling for a large number of characteristics of the child, the household, and the village, and dummies for provinces. We discuss these below.

Older children are more likely to be sent to school; an extra year increases the probability of school attendance by 0.026. We interact the gender dummy with religion dummies, with the excluded religion being animist. Among animists the probability of attending school is 0.089 higher for a male child than a female child. Among Muslims the additional probability of school attendance for a male is 0.214 (0.089 + 0.125). Christians, especially Protestants, seem more prone to send their children to school and there are no significant differences according to the gender of the child. Among the ethnic groups, consistent with the summary statistics we saw earlier, the Gourounsi, Dioula, and Mossi are more likely to send their children to school than the excluded category (“other”), whilst the Fulfunde are less likely to send their children to school than the excluded category. Farmers are more prone to send their children to school than non-farmers.

One interesting result, showing the inter-generational transmission of human capital characteristics, is that the child is less likely to go to school if the head of the household has no education. We also tested whether there were spillovers from the education of other household heads in the village, along the lines of Borjas (1995), by including the proportion of other household heads in the village who have no education. This variable did not enter significantly, and was dropped. The age and gender of the household head do not have a statistically significant impact. Household wealth as embodied in ownership of livestock and the number of farming assets owned by the household also have no statistically significant effect. Per capita land ownership of the household enters negatively, which may reflect a higher need for children to work on the land in households who own more land, which in turn may negatively affect the probability to go to school. The number of children, which we include to reflect any “crowding-out” possibilities, does not enter significantly.

We included a dummy which took the value 1 if there was no primary school in the village. This has a large negative coefficient of -0.18. This finding has the straightforward implication that opening a school in each village is one way to increase school attendance. We also controlled for village wealth by including the log of the average per capita consumption expenditure of other households in the village, which does not have a statistically significant impact.

The coefficients on the province dummies show some interesting patterns. The excluded province is Sanmatenga. We had seen earlier, in the summary statistics, that Sissili has much higher attendance rates than Sanmatenga. Once we control for other variables (especially the presence of a school in the village) this effect disappears. However, the fact that the dummies for Yatenga and Houet are positive and significant suggest that the other explanatory variables in our model cannot entirely explain why attendance rates in these provinces are higher than in Sanmatenga.

Table 14: Determinants of School Attendance

Variable	Marginal effect ¹	
Village avg. # PTA meetings attended per year by hhs sending at least one child to school	0.035	(3.69)
Land per Capita	-0.063	(1.71)
Number of Livestock Owned	0.001	(1.23)
Number of Farming Equipment Owned	0.025	(1.25)
Log Average Per Capita Income of Other Village HHs	-0.053	(1.33)
No Primary School in Village	-0.180	(6.50)
Head Has No Education	-0.056	(1.75)
Male Household Head	0.022	(0.36)
Age of Household Head	0.000	(0.15)
Farmer Household Head	0.081	(1.76)
Catholic	0.105	(1.61)
Protestant	0.277	(1.83)
Muslim	-0.021	(0.48)
Male Child	0.089	(1.93)
Muslim*Male	0.125	(2.36)
Catholic*Male	0.025	(0.30)
Protestant*Male	-0.274	(1.52)
Number of Children in Household	0.003	(0.57)
Age of child	0.026	(6.31)
Moore	0.302	(1.88)
Bobo	-0.258	(1.51)
Gourounsi	0.494	(2.98)
Fulfunde	-0.333	(3.13)
Dioula	0.11	(2.08)
Yatenga	0.086	(2.57)
Sissili	0.010	(0.25)
Houet	0.572	(3.55)
Number of Observations	2032	
Log Likelihood	-1076.52	
Chi-squared	355.05	
Probability > Chi-squared	0.00	
Note: 1. Probability derivatives at mean of each explanatory variable and z-scores based on robust standard errors.		

The evidence presented above suggests that social capital as reflected in parents' participation in PTA meetings has a positive impact on school attendance by children. Thus the findings regarding the importance of social capital which were reported in previous sections of the paper, based on a broad index of social capital, are consistent with the evidence presented in this section, which highlights a specific channel through which social capital can operate.

9. SOCIAL CAPITAL AND “DISTRESS SALES”

In many poor agrarian economies, including that of Burkina Faso, earnings are not only low, but also highly variable. Crop yields can vary due to “shocks” over a large area such as (say) drought, or due to localized production shocks. Other personal factors, such as illness, can also reduce incomes by reducing earning capacity. There are several possible responses to this uncertainty. The first is to take steps to reduce the variability of income, by diversifying in various dimensions: choosing a risk-reducing crop mix, cultivating multiple non-adjacent plots with different soil qualities, or having family members enter different occupations (say, having one family member migrate to the city). The effectiveness of income diversification as a means for smoothing consumption in Burkina Faso has been demonstrated by Reardon, Delgado, and Matlon (1992). A second widely-used approach to smoothing consumption in the face of income variability is personal savings. Given very low mean incomes and large variability, however, a household can face substantial risk despite taking such measures. An additional method for reducing consumption variability is also widely used: risk-pooling with neighbors, relatives, or friends. A household which receives an income shock may receive loans, gifts or labor, etc. to help it tide over the emergency, with the expectation of reciprocity.

The potential role of risk-pooling in smoothing consumption fluctuations in Burkina Faso has been convincingly outlined by Carter (1997), using a detailed household-level data set put together by the International Crop Research Institute for the Semi-Arid Tropics. Risk-pooling is beneficial only if a significant proportion of income shocks are idiosyncratic, i.e., not common across households. Carter points out that though agriculture in Burkina Faso is vulnerable to large aggregate shocks,²⁶ households are also subject to many idiosyncratic shocks. Rainfall can vary not only across agro-climatic regions, but also between villages in a region, or even between fields in a village. Household-specific shocks can also occur due to damage by animals, sickness, etc. Based on his estimates of the relative importance of aggregate and idiosyncratic risk, Carter’s simulation exercise suggests that a typical household in the Sahel, if it is entirely dependent on self-insurance, will in a given year face a subsistence crisis²⁷ with probability 0.21. However, if 10 households form a network and agree to donate (if necessary) all of their above subsistence income to a household which is falling below subsistence, this probability falls to 0.16.

The fact that mutual insurance is advantageous is no guarantee that it will emerge. In many parts of the developing world, especially in the rural areas, legal institutions for enforcing financial contracts are, at best, in the process of being developed. Third-party enforcement is often not available even for relatively simple debt contracts, leave alone

²⁶ For example in the Sahel region, mean annual millet yield per hectare was 504 kilograms in 1981 and 205 kilograms in 1980. (Carter 1997, p. 562).

²⁷ Carter defines a subsistence crisis as consuming less than 200 kilograms of grain per capita during a year.

complicated arrangements involving state-contingent payments. Mutual insurance then depends either on altruism, or enlightened long-term self-interest, or social norms which favor co-operation.²⁸ The importance of social capital in such contexts hardly needs to be emphasized. Based on some of the existing literature which we discussed in section 2 we would expect effective mutual insurance to exist in Burkina Faso. Below we measure social capital as it pertains to mutual insurance by looking at the role of community lending institutions. We will evaluate the extent to which the presence of community lending institutions reduces the incidence of distress sales.

Even if financial markets work very smoothly, in any economy some households will be selling assets. A household is said to engage in a distress sale if, when faced with an income shock, it is forced to sell an asset because it cannot borrow to tide it over the emergency. We conclude that a household has engaged in a distress sale if it answers the following question in the affirmative: In the past year did your household have to sell any land, livestock or equipment in order to have money to buy enough food, clothing, or to pay for health care?

A word of clarification regarding the notion of a distress sale may be helpful. The sale of livestock in order to smooth consumption is fairly common in Africa, and it can be questioned whether this is necessarily a sign of “distress.” Even fairly wealthy households may engage in this practice when they receive an income shock, though they are not facing a crisis, in the form of (say) the threat of starvation.²⁹ However, so long as there are transactions costs (deadweight losses) associated with sale and transfer of livestock, it is clearly economically more efficient for the household to borrow or receive a gift of cash in response to an income shock. Below we show that social capital reduces the probability that the household will sell a productive asset and likely generate deadweight losses, in order to smooth consumption.

Our measure of social capital, as it pertains to distress sales, is based on the answer to the following question: which type of organization is most likely to help either when your household is short of money or suffering illness? The seven possible answers were: community organization, district government, central government, religious organization, NGO, businessman-trader, other. We constructed an index (COMMEAN), which is the proportion of households in the village which said “community organization.” One way for a household to gain from the presence of such an organization is via its own membership. However, to the extent that the household has links with others who belong to such a group, there can be spillovers as well.

²⁸ For a convincing account of credit as a means of risk-sharing, and of the role of social norms in enforcing such arrangements, see Udry (1994). For an excellent survey of risk-sharing institutions across the developing world, see Platteau (1991).

²⁹ Reardon and Taylor (1996) present evidence for the Sahelian zone of Burkina Faso that poor households make fewer livestock sales in a drought year than rich households because the latter have better alternative means of self-insurance against harvest shortfalls. Nevertheless, the percentage share of livestock sales in total income rises more for poor households in a drought year. Fafchamps et al. (1998) calculates that livestock sales compensate up to 30% of the income shortfalls resulting from drought.

Table 15: Distress Sales and Community Lending, by Province

Province	Proportion of households engaging in distress sales	Proportion of households relying on community lending institutions
Yatenga	0.39	0.50
Houet	0.44	0.32
Sissili	0.54	0.46
Sanmatenga	0.82	0.16
All	0.55	0.36

Column 1 of Table 15 shows the proportion of households reporting distress sales by province; we see an exceptionally high figure for Sanmatenga, 0.82. Column 2 shows the proportion of households in the province which rely primarily on community lending institutions. Again the outlier is Sanmatenga, with the lowest figure, 0.16. We also computed these proportions separately for each village (48 villages) and found a strong correlation of -0.55, with p-value 0.0001. Prima facie, we have case for thinking that the presence of community lending institutions lowers the incidence of distress sales.

Table 16 explores this hypothesis more systematically. The dependent variable takes the value 1 if the household has engaged in a distress sale in the last year, and zero otherwise. The explanatory variable of greatest interest is COMMEAN, the proportion of households in the village that depend on community lending institutions. Our central finding is that a household which lives in a village where all the households are most likely to receive emergency assistance from a community lending institution is 42% less likely to have a distress sale than if it lived in a village where none of the households are most likely to receive emergency help from a community lending institution. This result is not sensitive to whether the household itself is included when defining COMMEAN.

Table 16: Determinants of Distress Sales

Variable	Marginal effect ¹	abs. t-stat
COMMEAN = proportion of village households dependent on community lending organizations	-0.424	(3.53)
Household Head is Male	0.129	(1.38)
Age of Household Head	-0.004	(2.50)
Number of Children	0.019	(1.74)
Farming Household	-0.057	(0.70)
Household Has No Toilet	0.126	(2.50)
Household Depends on River Water	-0.110	(1.11)
Household Head Has No Education	0.005	(0.08)
Log Average Per Capita Income of Other Village Households	0.234	(2.49)
Proportion of Other Households Which Dissaved in Year	-0.173	(0.92)
Proportion of Irrigated Area in Village	-0.534	(2.04)
Land Owned per Capita by Other Households in Village (hectares)	-0.536	(1.98)
Average Number of Farming Equipment Owned by Other Village Households	-0.428	(2.77)
Average Number of Cattle Owned by Other Village Households	0.007	(2.63)
Catholic	-0.069	(0.76)
Protestant	0.380	(1.43)
Muslim	0.041	(0.66)
Moore	0.077	(0.45)
Bobo	-0.394	(1.52)
Dioula	-0.007	(0.07)
Fulfunde	0.058	(0.32)
Gourounsi	0.101	(0.54)
Yatenga	-0.386	(4.04)
Sissili	-0.340	(3.35)
Houet	-0.452	(2.54)
Number of Observations	662	
Log likelihood	-360.74	
Chi-squared	190.44	
Probability > Chi-squared	0.000	
Note: 1. Probability derivatives at mean of each explanatory variable and z-scores based on robust standard errors.		

We have controlled for a large number of other potential determinants of the incidence of distress sales. Controlling for household wealth poses a challenge. Since a distress sale is a consumption crisis in which assets are sold, putting measures of household consumption expenditure, or household ownership of land, livestock, or equipment, as explanatory variables would create the possibility of simultaneity bias. Therefore we have included a set of variables that should be correlated with household wealth, but should not change in response to a distress sale: a dummy for whether the household is dependent on river water, a dummy for whether it has a toilet, a dummy for

whether the household head is a farmer, and his/her age. The dummy for no toilet comes in positive and significant, which is not surprising, since these are poorer households. If we do include per capita land owned by the household, number of livestock owned, and number of types of farming assets owned (results not reported) we obtain qualitatively similar results. Thus our main result is not sensitive to how household wealth is measured.

We also included dummies for the household's language group and religion and for whether the head of household is male, since, in principle, these can affect the households' access to networks. These do not enter significantly.

We include province dummies to reflect climatic or other unobserved factors common to villages in a province. The excluded province is Sanmatenga. The dummies for Yatenga, Sissili, and Houet are negative, large, and statistically significant. This suggests that factors other than those in our model account for some of the higher probability of distress sales in Sanmatenga.

A special concern in an exercise such as ours is that some omitted village-level variable may bias the coefficient on COMMEAN. For example, it is possible that if the household lives in a wealthy village it can borrow money from its neighbors and avoid a distress sale. If such villages tend to set up community lending institutions, we will overestimate the impact of COMMEAN, if we do not control for village wealth. To minimize this possibility we constructed a set of measures meant to reflect the wealth of other households in the village: the average land-ownership per capita, average number of livestock owned, average number of farm equipment owned, and log of average per capita consumption expenditure. The land and equipment ownership variables come in negative and significant. If the other households in the village own one more hectare per person, the probability that the household has a distress sale falls by 0.54. Note that average land ownership per person is only 0.56 hectares, so a one hectare increase is very large. If the other households in the village on average own one extra item of farming equipment it reduces the probability of a distress sale by 0.43. It should be noted that the average number of items of farming equipment owned is 0.52, so a 1 unit change is large. Two findings are puzzling: If others in the village own one extra farm animal, this increases the probability of a distress sale by 0.007. One explanation could be that if maintaining and selling livestock is an important means of livelihood in the village, large stocks may be kept, and sold in response to an income shock. The per capita consumption expenditure of the other households in the village enters with the "wrong", i.e., positive sign, which is hard to explain.

It could also be the case that villages which have more community lending institutions happen, by sheer chance, to be less vulnerable to income shocks. If this were the case we might again overestimate the impact of community lending institutions, if we fail to control for the village's vulnerability to aggregate shocks. To avoid this problem we constructed two measures of the vulnerability of the village as a whole to income shocks: the proportion of irrigated area, and the proportion of other households in the village who said they reduced their savings during the year. While the latter variable is

not significant, the fraction of irrigated land has a large impact: all else being equal, a household in a completely unirrigated village would be 53% more likely to suffer a distress sale than a household in a village in which all the land was irrigated. The reader might be concerned that the fraction of irrigated area in the village might just be picking up the effect of the fraction of irrigated area of the household, which we have not included. We checked that this is not the case, by adding, in another regression model (not reported) the household's fraction of irrigated area. It does not enter significantly, and we obtain similar results.

Finally, in another regression model (not reported) we tested whether the presence of members of one's own ethnic group reduces the incidence of distress sales. This exercise requires the construction of a variable which is the fraction of the village which belongs to the household's ethnic group. Given the small sample size per village (around 20 households) this can be done reasonably only for the largest ethnic group, Mossi. We estimated the distress sales equation over the sample of Mossi households, and included the fraction of Mossi in the village as an explanatory variable. The fraction of Mossi entered with a negative sign, consistent with the hypothesis that members of one's ethnic group are more likely to provide crisis support, but failed to be statistically significant.

10. CONCLUSION

This paper has a two-fold purpose. First, it has examined (a) the impact of a broad index of social capital, based on membership in local associations, on economic welfare as reflected by the per capita consumption expenditure of the household and its ownership of assets, and (b) the role of social capital in facilitating access to credit and collective action. Second, the paper looks at social capital as reflected in community organization around two specific outcomes that are of paramount importance in Burkina Faso: school attendance and distress sales.

For the first objective, we used a reduced-form model of household welfare, which controls for relevant household and location characteristics, to estimate the contribution of social capital to household welfare. The underlying structural equations treat social capital as an input, together with human and physical capital, in the household's production function. The effects of social capital operate through (at least) three mechanisms: sharing of information among association members, reduction of opportunistic behavior, and improved collective decision making.

After using instrumental variable estimation to control for possible endogeneity of the social capital variable, we found that a 5% increase in the social capital endowment of a household increases household expenditure per capita by 2.7%. This makes the effect of social capital on household welfare 5 to 11 times larger than that of human capital. This finding is in line with results from a similar study in Tanzania, but differ from results found for the other countries in the LLI Study – Indonesia and Bolivia – where the effects of social capital were closer to those of human capital. We speculate that this may be of the result of the very low level of education in Burkina Faso and Tanzania.

We measured social capital along eight dimensions: density of memberships, internal heterogeneity of associations (by gender, age, education, religion, etc.), meeting attendance, active participation in decision making, payment of dues in cash and through work, type of organization (formal or informal), and community initiation. Among these, the strongest effects on household welfare came from the number of memberships, the internal heterogeneity of the association and the extent to which households contribute in cash and especially through work.

In heterogeneous associations the potential pool of knowledge to be shared is larger and hence the potential benefit to members is higher. We found indeed that heterogeneity along dimensions such as education and economic status (which are likely to correspond to differing knowledge) confers the greatest benefits. However, we also found that households who are members of age and gender mixed associations obtain more benefits than those in age and gender segregated groups. Age and gender segregation in associations has strong cultural and ethnic dimensions in Burkina Faso, and the possible trade-off between this factor and economic effects needs to be investigated further.

Social capital reduces the probability of being poor and the returns to household investment in social capital are higher for the poor than for the population at large. This is especially the case for the number of memberships and households' active participation through providing work inputs. Since poor households in Burkina Faso tend to be members of fewer associations than better-off households, this underscores the potential pay-off to poor households from investing more time in creating social capital by participating actively in local associations.

Social capital is hypothesized to have several long-term benefits, such as better access to credit and a resulting better ability to smoothen income fluctuations by borrowing and/or accumulating assets. Our empirical results confirmed the validity of these propositions and showed that the internal heterogeneity of an association and its members' active participation through work are key factors. It is to be highlighted that those benefits are obtained from participating in a wide array of associations – not just those that are set up with specific credit or savings objectives. This is one of the ways in which social capital is truly “social”, in that the building of networks and trust among members in the context of a given social setting spills over into other areas, for example, by easier access to credit. Such spillovers have been documented in other countries as well.

One of the most urgent tasks faced by the government of Burkina Faso, and many others in Africa, is the expansion of education. Despite decades of effort by governments, with the support of international donors, school attendance and literacy rates remain very low. Part of the problem is on the “supply” side; indeed of the 48 villages in our data set only 29 have a primary school. However, attendance in existing schools is also very low. Many observers have suggested that this is in part because rural communities are remote from the management and functioning of these institutions. A potential solution to this problem is the development of parent-teacher associations. We found that a child is more likely to go to school if it lives in a village in which parents are more active in PTAs; one extra PTA attendance per household (among households which send at least one child to school) increases the probability of school attendance by 3.5%. Given that only 24% of girls and 36% of boys attend school, this is a substantial effect.

We believe that this is a potentially important finding, at both conceptual and policy levels. In terms of policy it has the straightforward implication that there is likely to be a large payoff to efforts to increase parental involvement in parent-teacher associations. At the conceptual level it points to the importance of a dimension of social capital that is emphasized less often: social capital embedded in government-community relations. To the extent that in many developing economies crucial inputs are provided by the state, social capital within communities may not be enough, if community-state relations are poor. Our analysis of educational outcomes highlights this fact.

Finally, our analysis of distress sales showed the importance of community organization for assistance in emergencies. We constructed an index, COMMEAN, which is the proportion of households in the village which reported that in an emergency they would most likely receive help from a community lending institution. We found

that, all else equal, a household living in a village in which COMMEAN takes the value 1 (all households would first receive aid from a community lending institution) is 42% less likely to have a distress sale than a household living in a village in which COMMEAN takes the value zero (none of the households would first receive aid from a community-lending institution). This result, and the one on educational outcomes discussed above, highlights the importance of social capital as reflected in organizations designed to promote specific economic or social objectives, and documents two possible channels through which social capital affects positively household welfare.

Annex

Table A1: Means and Standard Deviations of Regression Variables

Variable List	Burkina Faso		Yatenga		Houet		Sissili		Sanmatenga	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
<u>Dependent Variables</u>										
Ln(Household Expenditure Per Capita)	10.9097	0.626	10.6864	0.783	10.9973	0.606	11.0714	0.486	10.9103	0.444
Fraction of Household below Poverty Line	0.2246	0.418	0.3833	0.487	0.2010	0.402	0.1122	0.316	0.1720	0.379
Durable Goods Score (principal component weights)	0.7965	0.507	0.5933	0.462	1.0798	0.527	0.8976	0.421	0.5991	0.434
Fraction of Household Who Increased Savings	0.2754	0.447	0.2115	0.409	0.1859	0.390	0.5512	0.499	0.1210	0.327
Fraction of Household Who Obtained Credit	0.3211	0.467	0.1498	0.358	0.3518	0.479	0.4244	0.495	0.3949	0.490
Ln(Amount of Credit Received +2)	3.9162	4.758	2.1607	3.538	4.4158	5.203	4.8246	4.865	4.6349	4.938
Number of Times of Participated in Collective Action	7.8553	8.0375	9.3084	9.946	4.3216	5.324	9.0244	5.753	8.7070	9.042
<u>Social Capital Variables</u>										
Aggregate Social Capital Index	19.0178	14.312	13.6473	12.105	18.8061	12.819	23.6440	14.983	21.0105	15.647
Number of Active Memberships	1.8325	1.055	1.5771	1.0119	1.8744	0.958	2.1561	1.135	1.7261	1.017
Heterogeneity Index	76.9576	17.116	73.8620	22.700	72.8271	14.389	76.9648	13.931	86.6596	9.185
Number of Meeting Attendance Per Membership	3.1451	3.147	2.9842	3.065	2.9604	3.325	4.1009	3.275	2.3638	2.529
Index of Participation in Decision Making	79.6849	27.464	72.2834	32.483	80.9883	22.939	84.2276	21.034	82.8025	30.189
% of Membership in Community-Informally Organized Assoc.	33.1514	40.923	3.1571	14.660	43.6899	44.826	47.5238	38.384	44.3949	42.554
% of Membership in Community-Initiated Associations	83.6959	33.636	85.0587	31.714	76.6033	38.935	94.0244	18.612	77.2293	40.302
Cash Contribution Score	3.6191	8.591	1.7590	4.906	2.3389	8.0334	6.8961	12.248	3.6524	6.178
Work Contribution Score	10.9398	17.390	7.2035	13.292	9.4910	13.580	20.3044	24.745	5.9507	8.464
<u>Control Variables</u>										
Household Size	9.4365	5.218	9.5551	5.281	10.1759	5.231	9.8146	4.822	7.8344	5.322
Years of Education Per Adult Household Member	0.7134	1.259	0.7823	1.331	0.8841	1.482	0.4745	0.855	0.7092	1.254
Female Head of Household	0.0635	0.244	0.0485	0.215	0.0201	0.141	0.0049	0.070	0.2166	0.413
Age of Head of Household	52.4911	14.896	57.4185	16.181	48.4824	13.969	49.2146	12.746	54.7261	14.317
Age of Head of Household Square	2976.91	1655.48	3557.55	1883.42	2544.68	1487.74	2583.75	1273.60	3198.61	1665.87
Farmer Household	0.8731	0.333	0.9075	0.290	0.7839	0.413	0.8634	0.344	0.9490	0.221
Land Ownership (Ha)	4.7230	4.804	5.1256	3.488	4.1417	4.123	5.6098	7.118	3.7197	2.877
Number of Large Animals Owned	17.3236	31.906	12.7533	14.531	21.7437	38.474	22.7659	45.169	11.2229	12.299
Number of Farming Equipment Owned	0.5343	0.509	0.5507	0.499	0.4171	0.524	0.6537	0.487	0.5032	0.502
Yatenga	0.2881	0.453	1.0000	0	0	0	0	0	0	0
Houet	0.2525	0.434	0	0	1.0000	0	0	0	0	0
Sissili	0.2602	0.439	0	0	0	0	1.0000	0	0	0
Sanmatenga	0.1992	0.400	0	0	0	0	0	0	1.0000	0

REFERENCES

- Axelrod, R. 1984. *The Evolution of Cooperation*. New York: Basic Books.
- Borjas, G. 1995. "Ethnicity, Neighborhoods, and Human Capital Externalities." *American Economic Review*, 85(3): 365-390.
- Buchinsky, M. 1998. "Recent Advances in Quantile Regression Models." *Journal of Human Resources*, 33(1): 88-126.
- Carter, M. 1997. "Environment, Technology, and the Social Articulation of Risk in West African Agriculture." *Economic Development and Cultural Change*, 46: 557-590.
- CND (Commission Nationale de la Décentralisation). 1998. "Décentralisation rurale et institutions locales au Burkina Faso", Ouagadougou.
- Dasgupta, P. 1997. "Economic Development and the Idea of Social Capital." Mimeo. Beijer International Institute of Ecological Economics, Stockholm.
- Davidson, R. and J. MacKinnon. 1993. *Estimation and Inference in Econometrics*. New York: Oxford University Press.
- Donnelly-Roark, P., X. Ye and K. Ouedraogo. 1999. "Burkina Faso Local Level Institutions: Preliminary Research Analysis: Local Level Institutions and Rural Decentralization in Burkina Faso." Mimeo. Institutional and Social Policy Unit, Africa Region. Washington, D.C.: The World Bank.
- Englebert, Pierre. 1996. *Burkina Faso: Unsteady Statehood in West Africa*. Boulder, Colorado: Westview Press.
- Fafchamps, M. 1997. "Trade Credit in Zimbabwean Manufacturing." *World Development*, 25: 795-815.
- Fafchamps, M., C. Udry and K. Czukas. 1998. "Drought and Saving in West Africa: Are Livestock a Buffer Stock?" *Journal of Development Economics*, 55: 273-305.
- Filmer, D. and L. Pritchett. 1998. "Estimating Wealth Effects Without Expenditure Data – or Tears." Policy Research Working Paper No. 1994. Washington, D.C.: The World Bank.
- Fiske, A.P. 1991. *Structures of Social Life: The Four Elementary Forms of Human Relations*. New York: The Free Press.

- Greene, W. 1995. *Limdep, Version 7.0*. Plainview, NY: Econometric Software Inc.
- Grootaert, C. 1999. "Social Capital, Household Welfare and Poverty in Indonesia." Local Level Institutions Study, Working Paper No. 6, Social Development Department. Washington, D.C.: The World Bank.
- Grootaert, C. 1997. "Social Capital: The Missing Link?" Chapter 6 in *Expanding the Measure of Wealth -- Indicators of Environmentally Sustainable Development*. Washington, D.C.: The World Bank.
- Grootaert, C. and J. Braithwaite. 1998. "Poverty Correlates and Indicator-Based Targeting in Eastern Europe and the Former Soviet Union." Policy Research Working Paper No. 1942. Washington, D.C.: The World Bank.
- Grootaert, C. and D. Narayan. 1999. "Local Institutions, Poverty and Household Welfare in Bolivia." Local Level Institutions Study Working Paper, Social Development Department. Washington, D.C.: The World Bank.
- Isham, J. 1999. "The Effect of Social Capital on Technology Adoption: Evidence from Rural Tanzania." Mimeo. University of Maryland at College Park.
- Kähkönen, S. 1999. "Does Social Capital Matter in Water and Sanitation Delivery? A Review of the Literature." Social Capital Initiative Working Paper, Social Development Department. Washington, D.C.: The World Bank.
- Keefer, P. and Knack, S. 1995. "Institutions and Economic Performance: Cross-country Tests Using Alternative Institutional Measures." *Economics and Politics*, 7(3): 207-227.
- Kevane, M. and Englebert, P. 1997. "A Developmental State Without Growth? Explaining the Paradox of Burkina Faso in a Comparative Perspective." Mimeo. Santa Clara University.
- Kinsey, B., K. Burger and J.W. Gunning. 1998. "Coping with Drought in Zimbabwe: Survey Evidence on Responses of Rural Households to Risk." *World Development* 26(1): 89-110.
- Levine, R. and Renelt, D. 1992. "A Sensitivity Analysis of Cross-country Growth Regressions." *American Economic Review* 82: 942-63.
- Maclure, R. 1994. "Misplaced Assumptions of Decentralization and Participation in Rural Communities: Primary School Reform in Burkina Faso." *Comparative Education*, 30(3): 239-254.
- Meinzen-Dick, R., R. Reidinger and A. Manzardo. 1995. "Participation in Irrigation." Environment Department Paper No. 3. Washington, D.C.: The World Bank.

- Narayan, D. 1995. "Designing Community-Based Development." Environment Department Paper No. 7. Washington, D.C.: The World Bank.
- Narayan, D. and Pritchett, L. 1997. "Cents and Sociability: Household Income and Social Capital in Rural Tanzania." Policy Research Working Paper No. 1796. Washington, D.C.: The World Bank.
- Olson, M. 1982. *The Rise and Decline of Nations*. New Haven: Yale University Press.
- Ostrom, E. 1995. "Incentives, Rules of the Game, and Development." In M. Bruno and B. Pleskovic, eds., *Annual Bank Conference on Development Economics 1995*. Washington, D.C.: The World Bank.
- Platteau, J. 1991. "Traditional Systems of Social Security and Hunger Insurance: Past Achievements and Modern Challenges," in *Social Security in Developing Countries*, eds. E. Ahmed, J. Dreze, J. Hills, and A. Sen. Oxford: Clarendon Press.
- Portes, A. 1998. "Social Capital: Its Origins and Applications in Modern Sociology." *Annual Review of Sociology*, 24: 1-24.
- Putnam, R.D. 1993. *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, New Jersey: Princeton University Press.
- Reardon, T., Delgado, C. and Matlon, P. 1992. "Determinants of Income Diversification Amongst Farm Households in Burkina Faso." *Journal of Development Studies*, 28(2): 264-296.
- Reardon, T. and J.E. Taylor. 1996. "Agroclimatic Shock, Income Inequality, and Poverty: Evidence from Burkina Faso." *World Development*, 24(5): 901-14.
- Rose, R. 1995. "Russia as an Hour Glass Society: A Constitution without Citizens." *East European Constitutional Review* 4(3):34-42.
- Swamy, A., C. Grootaert and G.T Oh. 1999. "Local Institutions and Service Delivery in Burkina Faso." Local Level Institutions Study Working Paper, Social Development Department. Washington, D.C.: The World Bank.
- Udry, C. 1994. "Risk and Insurance in a Rural Credit Market: An Empirical Investigation in Northern Nigeria." *Review of Economic Studies*, 61: 495-526.
- Uphoff, N. 1993. "Grassroots Organizations and NGOs in Rural Development: Opportunities with Diminishing States and Expanding Markets." *World Development* 21(4): 607-22.

- Uphoff, N. 1992. *Learning from Gal Oya – Possibilities for Participatory Development and Post-Newtonian Social Science*. Ithaca, New York: Cornell University Press.
- Vierech, H. 1986. “Agricultural Production, Social Status, and Intra-Compound Relationships.” In J.W. Mook eds. *Understanding Rural Households and Farming Systems*. Boulder and London: Westview Press.
- Wade, R. 1988. *Village Republics*. New York: Cambridge University Press.
- Woolcock, M. 1998. “Social Capital and Economic Development: Toward a Theoretical Synthesis and Policy Framework.” *Theory and Society* 27(2): 151-208.
- World Bank. 1998. “The Local Level Institutions Study: Program Description and Prototype Questionnaires.” Local Level Institutions Study Working Paper No. 2, Social Development Department. Washington, D.C.: The World Bank.
- World Bank. 1997. *World Development Report: The State in A Changing World*. Oxford: Oxford University Press.
- World Bank. 1991. *Burkina Faso: Fourth Education Project*. Population and Human Resources, Operations Division, Sahelian Department, Africa Region.