



Poster presentation

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Theme:

Social Capital Effects on Rural Households' Food Security in Burkina Faso

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Presentation Overview

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Introduction

- ❑ Food insecurity remains a serious threat to the survival of millions of households in SSA where starvations are recurrent due to climate change and population growth (Hall et al., 2017)
- ❑ According to the FAO (2019) report, of the 704.3 million people who were severely food insecure in 2018, about 258 million reside in SSA.
- ❑ Especially in Burkina Faso, FAO estimates that nearly 3.3 million people were acutely food insecure during the lean season of August 2020 with a prevalence of malnutrition affecting more than 20% of the population
- ❑ Low incomes and market failure, which limit households' adaptation abilities to economic shocks, would explain this situation and make it necessary to resort to social capital to the consumption smoothing.

Introduction

- ❑ Indeed, It's the failure of the traditional mechanisms of markets that pushes rural households to rely on their social networks to reduce the risks of food insecurity.
- ❑ Viewed as a resource embedded in the structure of social relations, Social capital increases the chances of accessing various forms of resources that can help overcome lean seasons;
- ❑ Many studies show that social capital can directly strengthen food security, by facilitating access to food, or indirectly through agricultural productivity increase (Martin et al., 2004; Dzanja et al., 2015)
- ❑ However, there is a large body of work which shows that social capital and food security are negatively linked (Martins et al., 2017; Abafita et Kim, 2014); while others find no connection between the two (Chhabra et al., 2014; Godoy et al., 2005).

Introduction

- ❑ Analysis of the literature then leads to controversial and fragmentary results that make further researches necessary to better understand the mechanisms by which SC affects households food security, especially in Burkina Faso.
- ❑ This paper aims to fill this literature gap, with particular interest to the provinces of Bam and Sanmatenga in the north-central region: a choice linked to the persistence of cereal deficits in this region which exposes more than 40% of children under five to stunted growth.
- ❑ Situation made worse by the terrorist attacks which left hundreds of thousands of internally displaced persons in this region of the country;
- ❑ Despite the persistence of these food problems and the weakness of markets and State, note that the track of SC is little explored in empirical works focusing on the determinants of food security in Burkina Faso.

Research question/ Hypothesis

The main research question of this article is what are the potential effects of SC on households' food security in Burkina Faso ?



With the advantage of combining food security and nutrition through the concept of food and nutrition security (FNS) which is dietary diversity measure (WFP, 2009), the article aims to estimate the effects of SC on households' FNS in rural Burkina Faso



Using MCA method to get the cognitive et structural components of SC, we formulate the hypothesis that households with high levels of these forms of SC are more likely to be food secure than others.

3. Materials and Methods

1. Measurement of Household FNS

- ❑ Food security refers to the availability of a balanced diet and essential nutrition to maintain a healthy and active life as well as the ability to access it at all times.
- ❑ We use then dietary diversity and frequency to measure household FNS, especially Food Consumption Score (FCS) which reflects the household's diet for the last 7 days prior to the survey (Kennedy et al., 2010; WFP, 2009).
- ❑ The FCS is a composite indicator whose calculation is based on assigning weights to the frequency of consumption of each foods' group during the last seven days (IFPRI, 2006).
- ❑ In practice, the foods consumed by the household in the last 7 days are grouped into nine foods' groups and then weights are applied to each of these groups as shown in Table 1.

3. Materials and Methods

1. Measurement of Household FNS

Table 1: Foods' groups and their weights

Foods	Foods' groups	Weight (α_j)
Cereals (Rice, millet, sorghum, maize, etc.)		
Tubers (Sweet potato, yam, cassava, etc.)	Cereals and tubers	2
Protein crops (beans, ground's peas, etc.)	Legumes	3
Oilseeds (groundnut paste, cake, etc.)		
Leaves and Vegetables (green leaves, rich in vitamin A)	Vegetables and leaves	1
Fruits (orange, banana, guava, etc.)	Fruits	1
Meat, poultry, abas (gizzard, liver, etc.) and eggs	Animal proteins	4
Fish and prawns		
Fresh milk, in powder, etc.	Dairy products	4
Oil and fats, red palm oil, etc.	Oils	0,5
Simple sugar (in powder, tiles, etc.)	Sugar	0,5
Condiments, spices, drinks	Condiments	0

Source : *WFP (2009) adapted by the author*

3. Materials and Methods

1. Measurement of Household FNS

□ The FCS of household i is obtained from the following formula:

$$FCS_i = \alpha_{céréaltub}x_{céréaltub} + \alpha_{légumin}x_{légumin} + \alpha_{légumfeuil}x_{légumfeuil} + \alpha_{fruit}x_{fruit} + \alpha_{protéinanim}x_{protéinanim} + \alpha_{lait}x_{lait} + \alpha_{huile}x_{huile} + \alpha_{sucre}x_{sucre} \quad (1)$$

□ The value of the FCS is always between 0 and 112, with 2 standard thresholds, 28 and 42, which are defined to determine the different levels of household FCS.

□ These 2 standard thresholds make it possible to get three levels of household consumption corresponding to their food security status: households are either food secure or food insecure which can be severe or moderate.

□ The food security indicator can then be considered as a dichotomous variable taking the value 1 if the household is food secure and 0 otherwise.

3. Materials and Methods

2. Empirical Model

□ Given the dichotomous nature of the dependent variable, we specify a logit model which allows to establish a parametric relation between a binary variable $Y_i \in \{0, 1\}$ and a set of explanatory variables $x = (x_1, x_2, x_3, \dots, x_p)'$ including social capital indicators and covariables,

□ Let Y_i^* be an unobservable continuous random variable called the latent variable underlying the probability that Y_i takes the value 1 (Household is food secure):

$$Y_i^* = x_i' \beta + \mu_i \quad (2)$$

□ The relationship between the Y_i and Y_i^* is given by : $Y_i = \begin{cases} 1 & \text{si } x_i' \beta + \mu_i > 0 \\ 0 & \text{si } x_i' \beta + \mu_i \leq 0 \end{cases} \quad (3)$

□ The estimation of this model is made using the maximum likelihood method.

3. Materials and Methods

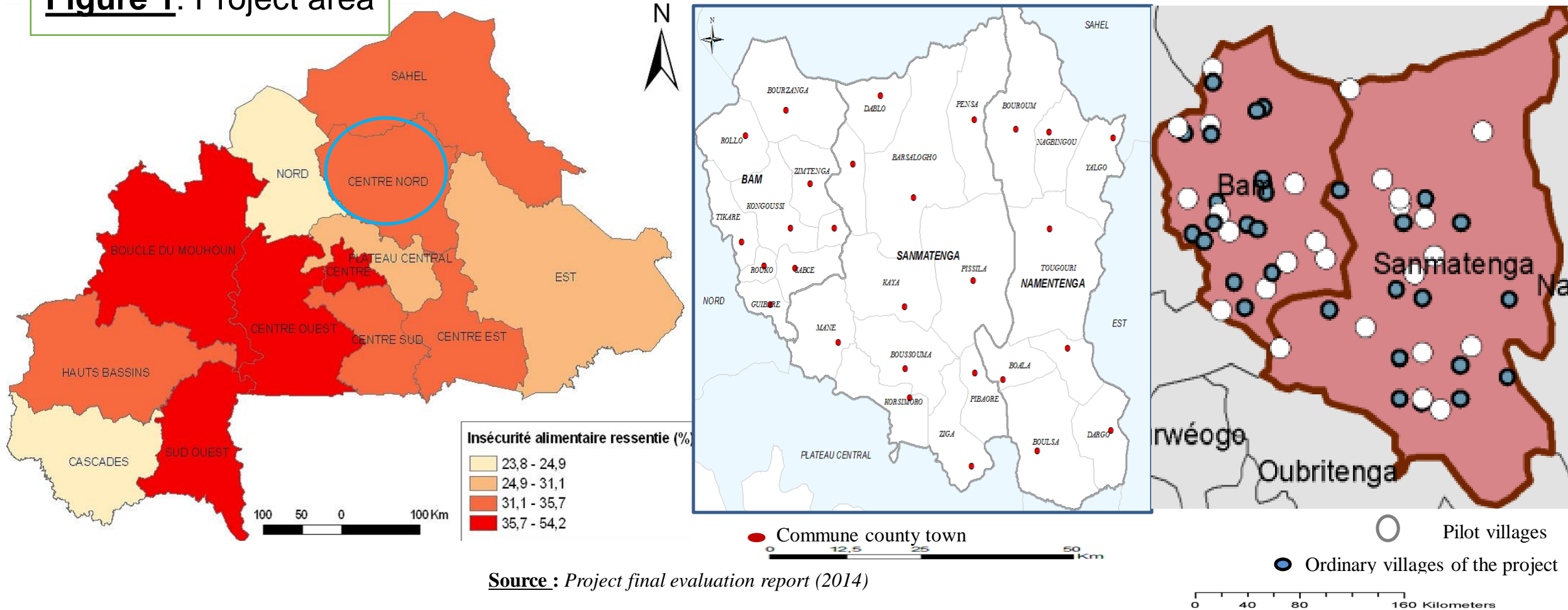
2. Data and exogenous variables

- We use survey data from "Beoog biiga" project of CRS carried out between January and February 2011 in in the provinces of Bam and Sanmatenga in the north-central region.
- Data was collected from households focused in particular on hygiene practices and access to a varied diet.
- The systematic sampling procedure and the revolving bottle method was used for the random choice of villages and households respectively.
- A total of 104 villages and 434 households were selected;

3. Materials and Methods

2. Data and exogenous variables

Figure 1: Project area



Source : Project final evaluation report (2014)

3. Materials and Methods

2. Data and exogenous variables

- Social capital variables were chosen here with reference to the methodology of the Integrated Questionnaire for the measurement of social capital (SC-IQ), developed by Jones and Woolcock (2007) under the aegis of the World Bank,
- Given that social capital indicators are binary qualitative variables, the number of which is quite large, the ACM technique was used to construct composite indicators of cognitive social capital and structural social capital.
- Introduction of control variables into the model to improve the estimates. The choice of these variables is made from a review of the literature on the determinants of food security.
- Following table summarizes all the variables that are used for the estimation of the model as well as their expected signs.

Table 2.: Definition of variables and expected signs of the logit model

Variable	Description of the variable in the survey	Values	Exp. sig.
Dependent variable			
IFoodSecurity	Food and Nutrition Security Status	1 = food security and 0 = food insecurity	
Social capital indicators			
potent_sout	Help that can potentially be mobilized from the entourage in emergency.	if can count on its networks and 0 otherwise	+
transf	Receiving money, food or materials during the year not including income	1 if yes and 0 otherwise	+
Reunion_OP	Participate in meetings of farmers' organizations ?	1 = yes and 0 otherwise	+
Reunion_CMun	Participate in municipal council meetings ?	1 = yes and 0 otherwise	+
Reunion_CVD	Participate in village development committee meetings ?	1 = yes and 0 otherwise	+
Part_reunAPE	participate in APE meetings ?	1 = yes and 0 otherwise	+
Appart_Assoc	Do you belong to a local association or organization in your village ?	1 = yes and 0 otherwise	+
Prise_Decis	Do you participate in decision-making bodies that involve the village ?	1 = yes and 0 otherwise	+
Engagem_Com	Do people carry out activities of general interest in the village ?	1 = yes and 0 otherwise	+
Control variables			
Revenu_HH	Annual income from the sale of agricultural and livestock products	Amount in FCFA	+
Sex_CM	Gender of head of household	1 = man; 0 = woman	+/-
ag_cm	Age of the head of household	Number of years lived	+
Inst_CM	The head of the household can read and write	1 = yes and 0 otherwise	+
AGR_HH	How many IGAs do you have ?	Whole number	+
Nbrenft_14	Number of children under 14 living in the household	Whole number	-
Occup_CM	Is agriculture or breeding practiced by the household as a source of income ?	1 = yes and 0 otherwise	+
Asset_Moto		1 = yes and 0 otherwise	+
Credi_HH		Montant en FCA	+

Sources : Author's construction

4. Results and discussion

- ❑ MCA results and the discrimination measure show that two factor axes can be used to capture most of the information contained in the social capital variables;
- ❑ First dimension called here cognitive social capital includes association membership, participation in decision-making and community involvement;
- ❑ Second dimension refers here to structural social capital and includes participation in meetings of farmers' organizations, potential support from the entourage;
- ❑ The likelihood ratio test and the value of *pseudo-R*² show that at least one of the coefficients of the explanatory variables is significantly different from 0.
- ❑ The Hosmer-Lemeshow test and the value of the area of the ROC curve show that the specified model is adequate ;

Structural aspects of SC contribute significantly to the improvement of FNS: consistent result with Dzanja et al. (2015) in Malawi

Promote transfers, farmers organization and social investment

el estimate
(1)

cognitive SC does not significantly affect FNS: Result non consistent: no time to work in farm, Dark side of SC, Agboola et al. (2016) in Kwara State,,,

Logit_Coeff.

(1)

-0.0571 (0.126)

Logit_Odds Ratio

0.689*** (0.146)

0.944 (0.119)

-0.743* (0.421)

1.993*** (0.292)

0.0105 (0.0102)

0.475* (0.200)

0.0015** (0.00065)

1.011 (0.0103)

-0.034* (0.019)

1.001** (0.00066)

0.712** (0.285)

0.966* (0.018)

0.459*** (0,159)

2.039** (0.583)

1.26e-06** (5.09e-07)

1.582*** (0.252)

0.788** (0.354)

1.000001** (5.09e-07)

0.141 (0.265)

2.199** (0.778)

-1.00e-06 (4.74e-06)

1.151 (0.306)

-0.157 (0.441)

0.9999 (4.74e-06)

424

424

0.000

0.000

-185.95744

-185.95744

0.2466

0.2466

81.48

81.48

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

HH_H gender is negatively linked to the likelihood of achieving FNS, It's the same with number of children under 14 years

Source : Author's construction from CRS data (2011) Robust



4. Results and discussion

- ❑ Social capital effect on FNS depends on the its dimension chosen: results show that cognitive social capital is not relevant in determining the households' FNS.
- ❑ Social capital regains its relevance in achieving FNS when the structural aspects are included: participate in farmers' organizations meetings, receiving transferts and being able to count on the support of the entourage strengthen FNS.
- ❑ It is therefore necessary to revitalize farmers' organizations, by providing the necessary technical and financial supports, to encourage farmers involvement in peasant structures and to promote interpersonal solidarity networks, by strengthening the institutional mechanisms for safely remittances,

4. Results and discussion

- ❑ Alongside with structural social capital, income, education, agropastoral occupation and number of IGA are the factors that strengthen FSN of rural households. Hence the necessity of:
- ❑ Strengthening household purchasing power by subsidizing large consumption products and supporting the creation of IGAs in rural areas;
- ❑ Creating and developing rural schools to promote adult literacy;
- ❑ Moreover, the gender of HH_H and the number of children under 14 years of age hinder the achievement of food security in rural areas. This implies the need to promote the empowerment of women and their access to local production assets;

Conclusion

- ❑ The main objective was to estimate the effect of social capital on rural households' FNS in Burkina Faso.

- ❑ Using logit model and survey data from the "Beoog biiga" project of CRS collected in 2011 among 434 households in the provinces of Bam and Sanmatenga, we find that Structural SC improves FNS while Cognitive SC is irrelevant.

- Unfortunately, it does not allow us to capture the relative effect of each of the components of structural SC on FNS: little is known about the mechanisms by which each components of structural SC affect FNS.

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- Further researchs are needed to deepen knowledge about the channels through which each of the components of structural social capital affects households food security.

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