

The Relationship Between Social Capital and Farm Household Consumption Expenditure in Conflict-Vulnerable Areas of Mindanao

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Abstract

The improvement of farm income generating capacity via social capital enhancement is a common goal in many community-based rural development projects. Yet, there are extremely limited studies empirically linking economic benefits and social capital, especially at the level of individual farm households. This paper aims to estimate empirically this relationship using farm household consumption expenditure as a proxy for farm income in the case of conflict-vulnerable areas in Mindanao, Philippines. Social capital enhancement is thought to be especially relevant in such areas, and the results in this paper engender more confidence in such an approach.

A reduced-form model was estimated using ordinary least squares method and household survey data of 185 respondents. The model results indicate positive correlation between household social capital and farm household consumption expenditure. Specifically at the current level of consumption expenditure in the study households, social capital was found to have an economic value of PhP 481 per household per month, or 14% of current household consumption expenditure. This finding supports the idea of promoting social capital as a component of livelihood improvement strategies for conflict areas in Mindanao, especially strategies with knowledge transfer orientation like agricultural extension.

Keywords: *social capital, consumption expenditure, agriculture*

Introduction

There are various theoretical and logical reasons why increasing social capital can be expected to yield economic benefits (Narayan and Pritchett 1997). These reasons include reducing transaction costs and facilitating the diffusion of innovations by increasing inter-linkages among individuals. Yet, there are limited studies empirically linking social capital and income generation at the level of the individual households. The positive linkages between the two that have been observed (Puerto 2015) have usually been based upon national or regional level data, rather than individual household level data, and rarely within the agriculture sector.

This paper makes an explicit attempt to statistically link farm household consumption expenditure as an indicator of farm level incomes and social capital for individual farm households in conflict-vulnerable areas in Mindanao, Philippines. Social capital is thought to be especially important in such conflict-vulnerable areas (Robertson 2012).

The conflict in Mindanao derives from Christian migration sectarian clashes, war against Muslim separatist insurgents, clan feuds, and hopes of economic prosperity. A peace agreement between the Government of the Philippines and the Philippines' largest rebel group, the Moro Islamic Liberation Front, was signed in 2014 paving the way for the establishment of a new Bangsamoro Autonomous Region.

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However, progress on the implementation of the peace agreement has been slow. The Bangsamoro Basic Law, has not yet been passed. A significant factor in the Mindanao conflict is income deprivation, along with other factors such as social dislocation and isolation from services. The provinces within the Autonomous Region of Muslim Mindanao (ARMM) and neighboring areas remain at the bottom of the income scale within the Philippines.

Literature Review

A literature review linking social capital and economic growth at a country and regional level is available elsewhere (Puerto 2015). Here, reference is made to two studies that were conducted specifically at the household level and also related to agriculture in developing countries. The ultimate objective of the work reported here is to design improved agricultural extension programs built around social capital enhancement. Such an approach is currently under consideration by the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD) to complement their existing extension methodologies such as those described and evaluated in Peña and Bathan (2015). But as a prelude to that, further evidence is sought to clarify the relationship between social capital and income (consumption).

Social capital at the household level in villages in Tanzania was found to increase personal income (Narayan and Pritchett 1997). The authors revealed that a one standard deviation rise in their social capital measure would increase a household proxy for income by at least 20 - 30%. Grootaert (1999) empirically estimated how social capital affected individual household's well-being and poverty in Indonesia. His focus was on household membership in local associations, which he regarded as an aspect of social capital especially relevant to daily household decisions that affect welfare. His data indicated that households with higher social capital spend more per capita; and have more assets, more savings, and better access to credit. Additionally, while Greece could not be considered as a developing country in the same light as Tanzania and Indonesia, social capital at the household level in agriculture was found to also have positive impact on consumption (Koutsou et al. 2014).

There are inherent difficulties in trying to make an empirical linkage between social capital and economic well-being. These difficulties primarily relate to the elusiveness of the concept of social capital which is viewed as being multidimensional (Productivity Commission 2003). To quote Coleman (2000) "If physical capital is wholly tangible, being embodied in observable material form, and human capital is less tangible, being embodied in the skills and knowledge acquired by an individual, social capital is less tangible yet, for it exists in the relations among persons. Just as physical capital and human capital facilitate productive activity, social capital does as well". The three primary dimensions of social capital are generally agreed to be networks, trust, and adherence to social norms (Productivity Commission 2003). Of the three dimensions, 'networks' is the most practical from an empirical measurement perspective (Putnam 2000). The networking dimension is also the most relevant from an (agricultural) knowledge transfer perspective, which is the broader aim of the research reported here.

Methodology

Consumption Expenditure vs Income Measures of Well-being

For developing countries, a strong case can be made for preferring consumption expenditure to income as an economic measure of economic well-being, based on both conceptual and practical considerations (Deaton and Grosh 2000). Specifically, income is received intermittently, whereas consumption is more consistent over time. As a consequence, consumption is more able to be related to well-being than is income, at least for short reference periods, as is the case here. Furthermore, in developing countries, households frequently have multiple and changeable sources of income, making measures of income very difficult. In this paper, consumption expenditure is used.

Data Used in the Analysis

The selection of case study project sites is explained in Vock et al. (2014), while the details of the baseline survey results are presented in Johnson et al. (2014a, b, and c). The survey data were collected at the individual household level as one-on-one and group interviews using a set of pre-tested survey questions. Cebuano, Tagalog or local dialect responses were translated into English.

The farmer baseline surveys were undertaken at each of the three sites (Barangay Magdaup, Municipality of Ipil, Zamboanga Sibugay; Barangay Assumption, Municipality of Koronadal City, Province of South Cotabato; and Barangay Kauran, Municipality of Ampatuan Province of Maguindanao) over the months of March and April 2014.

A total of 185 individual interviews were conducted. The distribution of respondents per area (location) is shown in Table 1. The sample size of 185 households selected through simple random sampling was calculated using a confidence interval of 1.96 and confidence level of 95%.

Table 1. Distribution of baseline survey respondents, 2014

Barangay	Number	Percent
Kauran	65	35.1
Assumption	76	41.1
Magdaup	44	23.8
Total	185	100.0

Model Specification

The reduced-form model used in the paper is built upon the structural equations from Grootaert (1999) and Narayan and Pritchett (1997) relating household consumption expenditure directly to the exogenous asset endowment of the household. The estimating equation is specified as follows:

$$E_i = \alpha + \beta SC_i + \gamma HC_i + \delta NC_i + \lambda X_i + \omega Z_i + \mu_i \quad (1)$$

where,

E	=	consumption expenditure of household i
SC	=	household endowment of social capital
HC	=	household endowment of human capital
NC	=	household endowment of natural capital
X	=	a vector of household characteristics
Z	=	a vector of site characteristics (site dummy)
u	=	error term
$\alpha, \beta, \gamma, \delta, \lambda, \omega$	=	parameters to be estimated in the model
α	=	constant or intercept
β	=	parameter for social capital variable
γ	=	parameter for human capital variable
δ	=	parameter for natural capital endowment variable
λ	=	parameter for a vector of household characteristics
ω	=	parameter for a vector of site characteristics or site dummy variables

The dependent variable of equation (1) is household consumption expenditure (PhP/household/month). The explanatory variables consist of the asset endowment of the household, demographic variables, and locational dummy variables. Household assets are assumed to consist of human capital, social capital, and natural/physical capital (land).

Social capital is measured using three components, namely, membership in farmer organizations, years of membership, and the number of membership in organizations. An average social capital index (SCINDEXAVG) was developed using the standardized values of these individual social capital variables based on the following formula:

$$y = \frac{X_i - \min(X_i)}{\max(X_i) - \min(X_i)} \quad (2)$$

where,

y	=	normalised or standardized value
X_i	=	value of the observation
$\min(X_i)$	=	minimum value for all observations
$\max(X_i)$	=	maximum value for all observations

Human capital is measured conventionally by the years of education of household head (EDUCLEVEL). The size of farm (TOTAREA) is used to represent natural capital or assets (although there are other household assets in the data set, direct inclusion of these variables might cause severe endogeneity problem).³ In addition, the regression model includes demographic variables as explanatory variables such as household size (HHSIZE), gender (FEMALE), and marital status (MARRIED) of the head of household. Age (AGE) of the head of household and its squared term (AGE2) were included to capture the life cycle of household welfare. The age squared variable reflects a non-linear relationship between age and consumption. Lastly, dummy variables for study site (KAURAN and ASSUMPTION)) were included to represent differences in consumption expenditures among farmers at different locations. These variables capture the general economic and social conditions of families within these provinces along dimensions other than those included in the model.

Results and Discussion

Household Consumption Expenditure and Social Capital

A regression model with social capital only as explanatory variable was significant at 1% level (Prob>F = 0.009) (Table 2). Social capital (SCINDEXAVG) was found significant ($P > t = 0.009$) and positively related to household's consumption expenditure.

Table 2. Regression results showing the relationship between farm household income (as measured by consumption expenditure) and social capital in selected conflict-vulnerable areas in Mindanao

Dependent variable: Household consumption expenditure

Independent Variable	Partial Model (Social Capital Only)		
	Coefficient	Robust Std. Error	P>t
SCINDEXAVG	1380.367***	523.5927	0.009
Constant	3006.952***	167.5353	0.000
F statistic	6.950		
Prob > F	0.009		
R ²	0.030		
Obs	185		

*** Significant at 1% probability level

The inclusion of additional household characteristics and household capital assets in the consumption expenditure regression the model (see equation 1 above) also gave a statistically significant result at the 5% probability level (Prob>F = 0.021) as shown in Table 3.

³ Endogeneity refers to the fact that an independent variable included in the model is potentially a choice variable or dependent variable in simultaneous equation system. This problem occurs when an explanatory variable is correlated with unobservables relegated to the error term.

Table 3. Regression results showing the relationship between farm household income (as measured by consumption expenditure), social capital, and other household capital assets and characteristics in selected conflict-vulnerable areas in Mindanao

Dependent Variable: Household consumption expenditure

Independent Variable	Full Model			
	Coefficient	Robust Std. Error	P>t	Standardized Coefficient
SCINDEXAVG	1163.612 **	536.736	0.032	0.142
HHSIZE	182.418 *	121.482	0.135	0.168
TOTAREA	40.482	44.355	0.363	0.098
FEMALE	119.598	363.638	0.743	0.024
MARRIED	274.038	486.134	0.574	0.048
AGE	135.071	167.727	0.892	0.059
AGE2	9.911	72.686	0.914	0.063
EDUCLEVEL	-0.086	0.788	0.422	-0.048
KAURAN	1284.730 ***	425.305	0.003	0.289
ASSUMPTION	866.842 **	431.878	0.046	0.208
CONSTANT	600.665	1733.366	0.729	-
F statistic	2.190 **			
Prob > F	0.021			
R ²	0.146			
Obs	165			

***, **, * significant at 1%, 5% and 15% probability levels, respectively

As expected the coefficient of determination (R^2) was increased to 15%, which is considered satisfactory for cross-section data.⁴ Regression results containing the full available range of explanatory variables (Table 3) show that social capital, household size, and location (or site) dummy variables were significant at 5%, 15%, and 1% probability levels, respectively. The rest of the variables were not statistically significant in affecting household consumption expenditure. The social capital variable maintained its high explanatory power (as was the case in Table 2). The standardized coefficient for all independent variables was computed and the results are shown in the last column of Table 3. It was found that social capital contributes about 14% of the household consumption expenditure. At the current level of consumption in the study households, social capital was found to have an economic value of PHP 481 per household per month.

Social capital affects incomes mainly by lowering transaction costs among individuals, households, and groups (Grootaert and van Bastelaer 2002). Transaction costs are known to be critical in the technology adaption process (Cuevas 2016). Furthermore, social capital, as indicated by participation in local networks makes it easier for a group to reach collective decisions and to implement collective action such as labour sharing (Grootaert and van Bastelaer 2002). In a more general sense, social capital can be seen as an input into the production process.⁵

⁴ The study is interested primarily in the direction of the relationship. Since the results are not intended for prediction purposes, the value of R^2 is not of great importance.

⁵ However, social capital has characteristics that distinguish it from other forms of capital. Unlike physical capital, but like human capital, social capital can accumulate as a result of its use. Furthermore, social capital requires at least two people and so has public good characteristics (that means it will tend to be underproduced).

In relation to variables other than social capital, the influence of household size on farm level consumption expenditure is positive – as household size increases, consumption expenditure increases. The coefficient of the location dummy variables illustrates the effect of different site-specific factors. Specifically, holding all other variables at their mean levels or constant, the consumption expenditure for Kauran and Assumption is significantly higher than for Magdaup. It is perhaps due to the inherent income status of the farmers from these two sites. The quintile of household consumption expenditure by site shows that Kauran and Assumption respondents have higher consumption expenditure from 2nd up to 5th quintiles of the sample households.

The full model was examined for the presence of any multicollinearity problem by looking at the variance inflation factors. These measure how much the variances of the estimated regression coefficients are inflated compared to the situation where the predictor variables are not linearly related. Results from this test show that all independent variables are orthogonal and therefore not correlated with each other. Another regression diagnostic test was conducted to come up with robust and unbiased estimates. Specifically, a Breusch-Pagan/Cook-Weisberg test for heteroscedasticity was undertaken and it was found that the model variance is not constant [$\chi^2(1) = 10.82$; Prob > $\chi^2 = 0.0010$]. The final model was adjusted for heteroscedasticity correction by using robust standard errors of the estimates of the variance-covariance matrix.

It was stated earlier that social capital is commonly viewed as having the three dimensions of networking, trust, and adherence to social norm. However, Woolcock (2001) calls for a narrower interpretation focusing on the *source* of social capital (i.e., networkings) rather than the other dimensions of trust and adherence to social norm which he sees as primarily *consequences* of networks. This more pragmatic (cleaner and more quantifiable) view is adopted by focusing on the network dimension of social capital in the analysis. Furthermore, the networking dimension is the most relevant to potential agricultural development interventions, especially those relating to extension and information access,⁶ which is the ultimate concern of this research.

Conclusion

In this paper, the relationship between social capital and farm household consumption expenditure was estimated for the case of conflict-vulnerable areas in Mindanao. A social capital index was derived from households' membership in local farmer associations, the duration in terms of years of their membership, and number of membership in local organizations.

The data indicated a positive correlation between social capital and farm household consumption expenditure. Enhanced social capital is expected on theoretical grounds to be related to farm income but due to difficulties in measuring farm income, farm level consumption expenditure was used as a proxy. Households with high social capital have higher consumption expenditure (income). This finding supports development approaches with a strong social capital element, in general, and specifically, the concept of a strong social capital component in agricultural extension programs for conflict areas in Mindanao.

⁶ Within the networking variable, there are three components (membership in farmer organizations, years of membership, and the number of membership in organisations). The networking variable was disaggregated into its separate components as part of the analysis but no significant advantage over the composite variable was found.

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