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Impact of Social Capital on Poverty: A Case of Rural Households in Eastern Bhutan

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Abstract

This study examines the impact of social capital on the poverty of rural households in eastern Bhutan by employing a simultaneous equation model of two-stage probit least squares (2SPLS). This study reveals that social capital positively contributes to poverty reduction and the impact is much higher than that of education. Rural people appear to be compensating for their lack of education by banking on social capital.

Keywords

Bhutan, Social Capital, Poverty Reduction

1. Introduction

Can social capital reduce poverty? Does poverty influence households' decision to join groups and social organizations? Are the poor excluded from such memberships? This paper attempts to answer these questions by examining the impact of social capital on rural households in eastern Bhutan.

Poverty reduction has been one of the primary development goals of Bhutan, a nation that has been pursuing such development goals along the ideal of 'Gross National Happiness (GNH)'. It seeks to broaden the conventional notions of economic growth to include social and environmental factors (GNHC, 2009, p. 18). Over the last two decades, the Bhutanese economy grew at over 7% on an average per annum. However, almost a quarter (23.2%) of Bhutanese people still live in poverty (NSB, 2007). In particular, it is most noticeably characterized as a rural phenomenon, being more widespread in the eastern region as opposed to others in the country (Osmani *et al.*, 2007). Although the Tenth Five Year Plan (2008-2013) in Bhutan has highlighted five principal strategies[1] focusing on physical and human capital development, social capital has not been included in the plan. However, most recently, the Prime Minister of Bhutan, Jigmi Y. Thinley

[1] The strategies include National Spatial Planning, Synergizing Integrated Rural-Urban Development for Poverty Alleviation, Expanding Strategic Infrastructure, Investing in Human Capital and Fostering an Enabling Environment through Good Governance. Refer to *Tenth Five Year Plan (2008-2013) volume 1: Main document* by GNHC (2009, pp.27-50) for a detailed description of the strategies.

(cited in Vidal 2012) called for a new alternative development paradigm encompassing social capital as well in the country.

A simple conceptual framework of analyzing the social capital effect on household expenditure can be done by considering social capital like any other capital available to households for income generation and thereby consumption. Together with the natural and human capital, it is employed for production and other entrepreneurial activities, both in the household and labor markets, which ultimately generates income and helps fight poverty (Grootaert *et al.*, 2003). However, the causal relationship between income and social capital can work both ways (Grootaert & Narayan, 2004). The two-way linkage between social capital and poverty has not been studied thus far in Bhutan. Considering the substantial difference in levels of poverty in rural and urban areas, an examination of social capital and other critical factors affecting poverty with a rural focus is necessary. This is also essential for developing suitable public policies and developmental interventions to fight poverty (Hakim *et al*., 2010).

This study examines the impact of social capital on poverty and its determinants on people's decision to join groups or social organizations by employing data from the 'Bhutan Living Standards Survey (BLSS) 2012', and questions whether social capital investment could be one of the potential strategies to reduce poverty in Bhutan. The study focuses on the eastern part of Bhutan where the rate of poverty is the highest. This paper is organized as follows. Our next section sets out the theoretical concept of social capital,

as it will be used in this paper. The third section provides an overview of poverty and social capital in Bhutan. The fourth section presents the methodology of the study by introducing the two-stage probit least squares (2SPLS) model. The fifth section analyzes the findings. The sixth section concludes.

2. The Concept of Social Capital

The concept of social capital has expanded greatly over the last two decades. The fundamental notion of social capital can be traced to Hanifan in the early 20th century, who noted that social capital refers to "goodwill, fellowship, mutual sympathy and social intercourse" that make "tangible substances count for most in daily lives" (Hanifan, 1916, p.130). He documented how a district school supervisor developed recreational, scholarly, ethical and economic condition of a community.

It was just more than two decades ago when James Coleman first conceptualized the notion of social capital systematically. According to Coleman (1988), human capital, being less tangible than physical capital, is personified by one's skills and capabilities. Social capital, however, derives from relations between individuals. He argued that a conjunction of rational action and social contexts determine the actions of individuals, and hence the development of social organizations. However, there is a tendency within literature to identify the concept more with Robert Putnam. Putnam and Leonardi's book, *Making Democracy Work* heralded a new impetus in the development of research on social capital (Putnam & Leonardi, 1993). They analyzed civic participation and

attributed the greater progress in north Italy than the south to its richer social capital. Furthermore, international organizations such as the OECD and World Bank also defined social capital from their own perspectives. The World Bank[2] defined social capital as, “the institutions, relationships, and norms that shape the quality and quantity of a society's social interactions” while the OECD (2001) defined it as, "networks, together with shared norms, values and understandings which facilitate cooperation within or among groups".

Although the concept of social capital can be understood differently, there has been a visible convergence towards a definition that focuses on networks, shared norms and values that facilitate cooperation within and among groups (Healy & Hampshire, 2002). Thus, the definition of social capital revolves around the idea of *network*, *norms* and *trust*. *Network* is the people that we know as family, friends and neighbors in the community (Putnam, 1995). *Norms* are unwritten rules and values that describe a community (Coleman, 1988). How we communicate and interact with each other as neighbors, friends and acquaintances is strongly influenced by certain rules and social norms. The reliability of the people that one interacts with shows one's *trust* (Grootaert & Narayan, 2004). *Trust* can be created and developed through education and exchanges with diverse people (Uslaner, 2003).

[2] See World Bank website on Social capital:
http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTSOCIALDEVELOPME

Social capital has been categorized into *structural* and *cognitive* social capital (Grootaert & Bastelaer, 2002; Krishna & Uphoff, 2002). *Structural social capital* is external and more visible, whereas *cognitive* is internal and concerns people's thinking (Krishna & Uphoff, 2002). This study focuses on the structural social capital in the form of group membership.

Generally, it is understood that social capital has a positive effect on communities. However, the same ties that facilitate better relationships could also exclude certain people from participation (Narayan, 1999). An individual may be selected for a task, not because of his knowledge or professional capacity, but merely through rich social capital of acquaintances. Solidarity networks can also be a cause of downward spiraling mechanisms (Portes & Landolt, 1996), and several studies have raised the issue that social capital could exclude outsiders while strongly connecting group members (Narayan, 1999; Portes, 1998; Woolcock & Narayan, 2000).

Many studies have also recognized the significance of social capital on the poor. For instance, Woolcock and Narayan (2000) believed that the conventional aphorism of "it's not what you know, it's who you know" adds up the wisdom and significance of social capital. An availability of a varied supply of social capital helps communities more effectively fight poverty and susceptibility (Woolcock & Narayan, 2000). The same equivalent consequence was observed when there is an absence of network ties and non-

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membership – or crueler still of social exclusion – as an outlining characteristic of being poor. Narayan and Pritchett (1999) found social capital to be an important influencing factor on household incomes in Tanzania. Grootaert (1998, 2001) found that social capital influences household wellbeing by reducing the probability of being poor. Grootaert *et al*. (2003, p. 25) also reported a much higher benefit from social capital investments for the poor than others in general. It was argued that social capital enhances economic development by making possible dealings among individuals, households and groups through increasing information availability and reducing costs, facilitating collective decisions, and minimizing opportunism.

3. Overview of Social Capital and Poverty in Bhutan

Bhutan is a non-coastal agrarian economy in the east Himalayas with 69% of its population engaged in farming (RGoB, 2013). Sandwiched between the two larger countries of China and India, it has a total land size of 39,394 square kilometers and a population of 634,982 (OCC, 2005). Since the nation's planned development took off in 1961, Bhutan has witnessed impressive socio-economic development. Table 1 provides a summary of its socio-economic progress in the country.

956~piPK:216618~theSitePK:401015,00.html [Accessed on December 12, 2012]

Table 1: Socio-economic indicators of Bhutanese economy

Indicator Name	1980	1985	1990	1995	2000	2005	2010	2011
Literacy rate, adult total (% of people ages 15 and above)	NA	NA	NA	NA	NA	52.81	NA	NA
Arable land (% of land area)	2.77	3.09	2.87	3.64	2.64	4.35	2.49	2.48
GDP growth (annual %)	NA	4.21	10.88	7.07	6.93	7.12	11.77	5.57
GDP per capita, PPP (current international $)	416.90	674.07	1,248.37	1,808.21	2,435.03	3,480.18	5,508.27	5,845.61
Life expectancy at birth, total (years)	46.36	49.34	52.59	56.72	61.37	64.88	66.91	67.28
Unemployment, total (% of total labor force)	NA	NA	NA	NA	NA	3.10	3.30	3.10

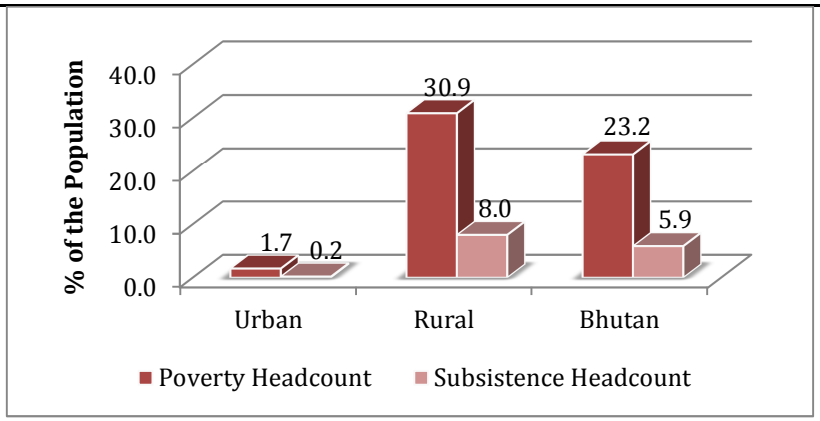
Source: (WDI, various years) * NA indicates data not available

The profile of the poor in Bhutan

Despite the country's impressive economic growth, poverty is still prevalent in modern Bhutan. The current official poverty line for Bhutan is Ngultrum[3] (Nu.) 1096.94 per capita income per month (NSB, 2007). According to this criterion, 23.2% of the total population lives in poverty in Bhutan, however, a marked difference can be seen in rural areas, which have a rate of 30.9% of the total population living in poverty as opposed to urban areas where the figure is only 1.7% (see Figure 1). In regards to the regional distribution of poverty in Bhutan, poverty is more widespread in the eastern districts of the country, even after making adjustments for the cost of living between the districts (Osmani *et al.*, 2007).

[3] Equivalent to around US$ 20.50 at the rate of 1 US $ = Nu. 53.5, as of April 28, 2013.

Figure1: Poverty Headcount by Residence



Data Source: (NSB, 2007).

Social capital in Bhutan

Although many Bhutanese may not be aware of what social capital conceptually entails, the presence and practice of its dimensions is not new or alien to them. People have long been involved in cooperative action like mutual support and benefit schemes for resolving social and community problems. Bhutanese values for friendship, reciprocity, responsibility, tolerance, helpfulness and care for other living beings is highly evident in their daily lifestyles. For instance, Leaming (2011, p.117) wrote about the noticeable levels of social capital in Bhutan. Similarly, Thinley (2004) reported that there is rich bonding among individuals as family or community members. According to Leaming (2004, p.662), the concept of family is much broader in Bhutan, in the sense that it is not just limited to one's own immediate family, but is extended to include the community, neighborhood, village and even the entire country. This forms the bedrock of social capital in Bhutan.

4. Data & Methodology

This study focuses on the six eastern districts of Lhuentse, Mongar, Pemagatshel, Samdrupjongkhar, Trashigang and Trashiyangtse in Bhutan, where poverty prevalence is the highest in the country. Relevant data for the eastern region from the Bhutan Living Standards Survey (BLSS) 2012 is used to include only the rural households.

Figure 2: Magnitude of the Poor in Bhutan and study area[4]

Source: (www.foodsecurityatlas.org/btn/country/access/poverty. Accessed on June 12, 2013)

Study population & data gathering

The Population and Housing Census of Bhutan (PHCB 2005) recorded a total of 126,115 regular households with 69.6% situated in the rural areas. Based on these figures, a total of 30,531 households reside in rural areas of the six eastern districts of Bhutan (see Table 2).

[4] Study areas are highlighted

Table 2: Households by Residence and Districts

District	Urban	Rural	Total	% of Rural Households
Lhuentse	236	**2,765**	3,001	92.14
Mongar	1,234	**6,114**	7,348	83.21
Pema Gatshel	362	**2,575**	2,937	87.67
Samdrup Jongkhar	2,196	**6,167**	8,363	73.74
Trashigang	1,126	**9,687**	10,813	89.59
Trashi Yangtse	541	**3,223**	3,764	85.63
All Eastern Districts	**5,695**	**30,531**	**36,226**	84.28

Author's Own Calculation Data Source: (OCC, 2005)

Relevant rural households covered under the BLSS 2012 survey are included for the purpose of our analysis. The BLSS 2012 covered 1,591 rural households of these six eastern districts. However, for this study, we have considered 1,590 households, with the data of one household omitted for its unreliability.

The BLSS 2012 survey collected information from households selected through 'two mutually exclusive sampling frames for rural and urban areas' (ADB & NSB, 2013, p.1). The total sample size was determined at 10,000, the previous BLSS in 2007 sample size, for reliable comparative analysis. The sample sizes were then determined across all districts for the urban and rural areas in proportion to the estimated household numbers, and the final selection of households chosen at random (ADB & NSB, 2013).

Variable used in the econometric analysis

Poverty variable

We capture the basic definition of income poverty and not the broader definition of multi-dimensional poverty (World Bank, 2004). Data related to food and non-food expenditures from BLSS 2012, whether purchased, home produced, received as a gift or payment in kind, was used to compute the household expenditure variable. As done in BLSS 2012 and to maintain consistency, taxes were not included in household expenditure. We also believe that taxes are a deduction from household income rather than being a part of consumption. In this study, the household expenditure is a proxy for income to measure poverty levels and modeled on an interchangeably put forward by Narayan and Pritchett. They argued for its use as a more appropriate measure of permanent income than current income, particularly when there are savings and dissavings, and also because it is almost impossible to measure the incomes of agrarian households (Narayan & Pritchett, 1999, pp. 877-878).

Social capital variable

Following Putnam and Leonardi (1993), Alesina and Ferarra (2000), and Hassan and Birungi (2011), social capital is measured by the participation in community groups. Putnam and Leonardi (1993) argued that the use of participation in groups could be an appropriate proxy for social capital, as participation improves market operation through transfer of knowledge, human capital enhancement and the development of trust. This study also believes that networking through community groups helps individuals to develop shared norms and common interests, which in turn leads to better trust among individuals. In this study, participation (membership) in local community is used as the

proxy variable for social capital. Consequently, our social capital variable is binary, if a household belongs to a community group, then the value of the social capital variable is 1, and 0 otherwise. A similar approach has been taken in previous studies, including Hassan and Birungi (2011).

Additional independent variables

We also use other independent variables from BLSS data directly, whenever relevant, or derive variables from the available data. Table 3 provides the variables used as regressors, along with their anticipated signs.

Table 3:Additional independent variables used in the model

			Expected Signs	
Variable	Explanation	Measurement Unit	Determinants of Poverty	Determinants of Group Participation
NonFarmIncM	Non-farm income	Ngultrum (Nu.)[5]	+	
Education	Education level of Household head	Number of years	+	+
DistFarmRoad_c	Distance from the Nearest Farm Road	1- Up to 30 minutes 2-30-60 minutes 3-1-2 hours 4-2 hours or more 5- Not applicable	-	+
farmsize	Total landholdings of household	Acres	+	+/-
age	Household head's age	Number of completed years	+	
sex	Household head's sex	1 - Male 2 - Female	+	+ / -
hsize	Household size	Number of members	-	+
maritalSt	Marital Status of Household head	1- Married 0-Not Married		+
DistRNR_c	Distance from Renewable Natural Resource (RNR) Extension Center	1- Up to 30 minutes 2-30-60 minutes 3-1-2 hours 4-2 hours or more 5- Not applicable		+/-

TotLivStkTLU	Livestock ownership in Tropical Livestock Units (TLUs)	TLU for Bhutan as per FAO standard[6]: Pigs=0.20; horses=0.65; Cattle=0.5;Sheeps= 0.1; Yaks=0.5;Goats=0. 1; Poultry=0.01	+
DistFmkt_c	Distance from farmers market	1- Up to 30 minutes 2-30-60 minutes 3-1-2 hours 4-2 hours or more 5- Not applicable	+

Properties of data

Table 4 shows the mean values of our variables by income quintiles. Our data shows that rich households (fifth quintile) spend over 6.5 times more than the poor. While farm income is a more important source for the poor, non-farm sources are more important for the rich. Interestingly and unexpectedly, the younger household heads are richer than their older counterparts. This may be because younger households are more literate (OCC, 2005) and thus more enterprising. The education level is also lower for the poor than the rich. As expected, the household size is also smaller for the rich while the poor has more mouths to feed. A comparison of income quintiles based on gender reveals a surprising result of more female-headed households in the higher income quintile (Table 5). The reason may lie in the property inheritance practices in the east, where daughters usually inherit ancestral properties (Pain & Pema, 2004).

[6] FAO standard for South Asia (Chilonda & Otte, 2006). TLU for Yaks assumed at par with cattle. TLU is standardizing different kinds of livestock into a common unit.

Table 4: Descriptive statistics by income quartile (Mean scores)

Variables	Income Quintile					
	1	2	3	4	5	All
Per-capita Consumption Expenditure	1,477.31	2,279.51	3,060.33	4,373.03	9,659.71	4,166.47
Livestock Ownership (TLUs)	2.62	2.52	2.78	2.11	1.12	2.23
Monthly NonFarm Income	2,697.30	3,231.50	5,074.12	5,637.97	9,079.23	5,141.54
Monthly HH Farm Income	1,119.34	1,508.89	1,335.82	1,208.37	846.96	1,203.53
Farm Size	2.50	2.68	2.76	2.70	2.05	2.54
Education	0.31	0.66	1.46	2.67	4.99	2.01
Age	51.00	50.00	49.00	48.00	44.00	48.00
Distance from Farm Road	24.84	21.20	28.46	29.94	0.29	25.95
Distance from Farmers Market	18.21	9.49	9.48	6.93	11.09	11.05
Household Size	5.85	5.26	4.65	4.03	3.11	4.58
Distance from RNR Extension Services	21.25	12.54	12.44	12.55	10.82	13.93

Author's Own Calculation Data Source: BLSS, 2012

Table 5: Additional Descriptive Statistics by income quartile

Variable	Description	Quintile 1		Quintile 2		Quintile 3		Quintile 4		Quintile 5		All Quintiles	
		Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Sex	Male	213	13.40	224	14.09	220	13.84	211	13.27	208	13.08	1075	67.61
	Female	107	6.73	92	5.79	97	6.10	109	6.86	507	31.89	514	32.33
Marital Status	Married	263	16.54	250	15.72	255	16.04	255	16.04	236	14.84	1259	79.18
	Not Married	57	3.58	66	4.15	62	3.90	65	4.09	329	20.69	331	20.82

Author's Own Calculation Data Source: BLSS, 2012

As seen in Table 6, just 19% of the low-income respondents (first and second quintiles) have membership in groups and associations whereas more than 30% of the upper

income respondents (fourth and fifth quintiles) are members. This may be because the poor are being left out owing to their inability to produce marketable surplus or pay membership fees and contributions to groups and associations.

Table 6: Membership in groups and associations according to income quintiles

Membership in Groups/Associations				
Income Quintiles	**Members**	**Non-Members**	**Total**	**Membership %**
1	23	297	320	7.74
2	32	284	316	11.27
3	38	279	317	13.62
4	49	271	320	18.08
5	41	276	317	14.86
All	183	1,407	1,590	13.01

Author's Own Calculation Data Source: BLSS, 2012

Table 7 summarizes the means and standard deviations of our data series by group membership. Looking at the household and other demographic characteristics from group membership, we see that group members have higher per-capita consumption, indeed both farm and non-farm incomes are higher than those of non-members. More livestock ownership for the members than non-members also confirms this. Households with more people join groups and associations, while group members tend to be located farther away from the nearest farm road. The average distance from extension services and farmers market is shorter for the members than the non-members.

Table 7: Descriptive Statistics according to group membership

Variable	Members		Non-Members		All Respondents	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Per-capita Expenditure	4,611.01	5,043.11	4,108.65	4,061.41	4,166.47	4,187.37
Farm Income	1,871.56	2,856.60	1,116.65	2,952.49	1,203.53	2,950.59
Non-farm Income	7,598.41	14,833.23	4,821.99	8,992.34	5,141.54	9,876.04
Age	45.87	13.62	48.79	15.06	48.45	14.92
Household Size	5.14	2.06	4.51	2.12	4.58	2.12
Farm Size	2.54	2.72	2.54	3.59	2.54	3.50
Livestock Ownership (TLU)	3.37	6.77	2.08	3.03	2.23	3.68
Distance from Farm Road	28.23	43.58	25.66	42.75	25.95	42.84
Distance from RNR Extension Service	11.48	28.67	14.25	33.04	13.93	32.57

Author's Own Calculation Data Source: BLSS, 2012

The BLSS-2012 survey identified eighteen different groups and associations (ADB & NSB, 2013). These were re-categorized into two major categories of production and credit services, and social and other services groups for our purpose of analysis (see Table 7). While the participation is higher in production related groups for the poorer, richer households dominate social groups. The poor must be motivated to join those production and financial services groups as it is economically motivated, and, therefore, has a direct impact on their income. The social and other services groups have more rich members who seek more social intercourse and charity activities. It must be noted that most of these groups are not fully compartmentalized or specialized, as in the case with many developing countries (Hassan & Birungi, 2011). Social and other services groups may also engage in extending credit services, and a household is not restricted to just one membership.

We have seen earlier that the poor have lower participation rate. However, they spent much more time in such group activities. Table 8 clearly shows that the members falling in the lowest income quintiles contribute an average of about 16 man-days of time,

whereas those falling in the highest income quintile with a contribution of about 9 days only. It is also interesting to note that while the cash contribution of the upper segment of the income quintiles is much higher than the lower quintile members, the contribution in kind is much higher from the latter. This indicates that the poor contribute more through in-kind contribution and time spent in the groups while the rich choose to contribute in cash.

Table 8: Membership type and contribution

	Type of Membership		**Membership Contribution**		
Income Quintiles	Membership in Production & Credit Services (%)	Membership in Social and other Services (%)	Time Contribution (No.of Days)	Contribution in Kind (in Nu. Equivalents)	Contribution in Cash (in Ngultrum)
1	56.52	43.48	15.65	1,226.09	748.70
2	53.13	46.88	20.13	58.13	251.25
3	50.00	50.00	15.50	999.21	2,343.68
4	59.18	40.82	13.71	696.94	1,245.96
5	48.78	51.22	8.78	322.07	1,215.49
All	53.55	46.45	14.34	630.52	1,230.64

Author's Own Calculation Data Source: BLSS, 2012

Estimation method

Grootaert *et al*. (2003) pointed out the two-way relationship between social capital and poverty and, therefore, the presence of 'endogeneity'. Without rectifying endogeneity, the application of 'ordinary least squares' is not suitable, as the results will be incorrect and the estimators biased (Green, 2000; Hassan & Birungi, 2011).

A usual remedy for the endogeneity problem is the use of an instrument variable (IV) estimation or a two-stage least squares (2SLS) estimation. However, in our case, one of the endogenous variables (social capital) is dichotomous, while another endogenous variable (per-capita expenditure) is continuous. Therefore, we follow 'two-stage probit least squares (2SPLS)' regressions for such a simultaneous equation model (Amemiya, 1978; Hassan & Birungi, 2011). Before actual application of the model, the explanatory variables were first tested for possible correlations and multi-colinearity (White, 1980).

Following Amemiya (1978), Alesina and La Ferrara (2000) and Hassan and Birungi (2011), our hypothesis is that group membership increases household expenditure and, therefore, lowers poverty. The first equation of per-capita household spending (Y) as a function (f) of social capital (S) as follows:

$$Y = f(S, T) \qquad (1)$$

Where T represents other independent variables such as sex, literacy level, age, accessibility, farm and family sizes and assets endowment.

Whereas, to study the opposite relationship of social capital being determined by income, the second equation is where social capital (S) is the function (g) of expenditure (Y):

$$S = g(Y, W) \qquad (2)$$

Where W represents other independent variables.

The social capital variable, defined by the membership to a group or association, is a discrete choice taking a value one (1) for a member and zero (0) for a non-member. Therefore, the non-recursive two-stage model is specified below:

$$S' = \gamma 1Y + \beta iTi + \mu 1 \qquad (3)$$

$$Y = \gamma 2S' + \beta iWi + \mu 2 \qquad (4)$$

Where a continuous variable of household per-capita expenditure is defined by Y, independent variables by T and W, error terms by μ1 and μ2, and finally, the coefficients to be calculated by γ and β. S' value is not directly seen but, instead:

$$S = 1 \; if \; S' > \; 0 \; and \; 0 \; if \; S' \leq 0$$

From these, the equivalents of the 'reduced-form equations' are:

$$S = \lambda iTi + \pi iWi + \nu 1 \qquad (5)$$

$$Y = \lambda iTi + \pi iWi + \nu 2 \qquad (6)$$

If the standard suppositions for the probit model are held for Eq. (3) and the ordinary least squares for Eq. (4), Alvarez & Glasgow (1999) suggested that this model would produce consistent estimates. They further suggested the use of reduced-form equation parameters to produce the endogenous variable 'predicted' values. Then, each endogenous variable is substituted by the predicted values as they show on the rightward part of the corresponding equation (i.e., Eqs. (3) and (4)). The equations are then estimated "with the predicted values from the reduced-forms serving as instruments on

the right-hand sides of the equations" (Alvarez & Glasgow, 1999, p.150). However, the standard errors are biased (Alvarez & Glasgow, 1999; Green, 2000).

In this study, we employ the stata command for the 2SPLS approach developed by Keshk (2003), which also corrects the standard error, to see the effect of social capital on poverty and also see the determinants of group participation.

5. Main Findings and Discussions

Following the model described earlier, and using the stata command to conduct 2SPLS with corrected standard errors (Keshk, 2003), we conduct the econometric analysis to study the causal relationship between social capital and poverty using STATA 12 software. The Wald test confirms that the social capital variable and the per-capita household spending variable are endogenous, and therefore, the use of 2SPLS method is appropriate. The Wald test rejects the null hypothesis that social capital and per-capita household spending are exogenous at a 5% significance level.[7]

Does social capital reduce poverty?

The coefficients of the second stage regression with the corrected standard errors to examine the determinants of poverty are presented in Table 9. The Wald test confirms our use of 2SPLS method since it rejects our hypothesis at 5% significance level that social capital is exogenous.

Table 9: Second stage results of poverty determinants with corrected standard errors

Variable	Coeff.	t	P-level
Social Capital	.3755782	3.38	0.001***
Non Farm Income	5.64e-06	2.66	0.008***
Education	.0286259	5.28	0.000***
Distance from Farm Road	-.0332032	-2.80	0.005***
Farm size	.0048734	0.82	0.414
Age	.0011559	0.67	0.506
Sex	.0331781	0.71	0.480
Marital Status	-.0278923	-0.52	0.605
Household size	-.1538904	-11.70	0.000***
Constant	9.179385		0.000
No. of observations	1590		
Adj. R-square	0.3167		
Prob > F	0.0000		
Wald test of exogeneity			
Chi2 (1) =	4.63		
Prob > Chi2 =	0.0314		

* Significance at 90 %; ** significance at 95 % and *** significance at 99 %

Social capital positively impacts poverty with high significance of 1%. A higher household expenditure means lower poverty (Narayan & Pritchett, 1999). Our result shows that being a member of groups and associations increases household expenditure by 38% over that of non-members. The social capital effect on poverty is found to be

[7] We have also conducted Durbin-Wu-Hausman exogeneity test. The test also rejected the null-hypothesis of exogeneity at 5% significance level.

much higher than that of education, as reported in Burkina Faso (Grootaert *et al*., 2002) and Tanzania (Narayan & Pritchett, 1999).

Education, as expected, is found to be positive and highly significant. Human capital in the form of education certainly increases information access and processing abilities, as well as providing avenues to better and wider employment opportunities.

Despite 69% of the population living in rural areas and dependent on natural resource based economic activities (RGoB, 2013), non-farm income remains an important source of income for the rural populace. Household members might be working off-farm, particularly during the non-farming seasons, to supplement their usual farm income and increase their disposable income.

In contrast to our expectation, farm size not found to have a significant impact on household expenditure, although it does have a positive relationship. We believed that land, as an important asset, would have a significant impact on the welfare of rural households who largely depend on agriculture for their livelihood. This has serious implications on agricultural land use and growing rural-urban migration.

In consonance with our assumption, distance from the farm road has a negative relationship with household expenditure. The further they are located, the poorer are the households; since infrastructure opens one's accessibility to input and output markets, it

also opens access to social services and connections to different institutions and organizations. Household size, as expected, has a significant negative relationship. An increase in household size by one member would reduce per-capita consumption by 15.38%. This means the higher number of household members share the income, reducing individual share. Our finding is consistent with that in Grootaert (1999) and Datt & Jolliffe (1999), which demonstrates that the level of poverty increases with household size. Thus, we understand that social capital, besides other important variables; have a huge impact in poverty reduction.

How the poor access or manage social capital?

Here, we look at what factors influence households to participate in social groups and associations. Table 10 shows the result of the determinants of group participation.

The analysis shows a positive relationship between household expenditure and social capital at a 5% significance level. This suggests that households with lower levels of poverty join groups and associations. As argued by many researchers (Narayan, 1999; Portes, 1998; Woolcock & Narayan, 2000), the result of this study also indicates that the poorest are excluded. One reason for this is the burden of paying membership fees and other contributions. The result also suggests that doubling the household per-capita expenditure increases the probability of joining groups and associations by 18.39%.

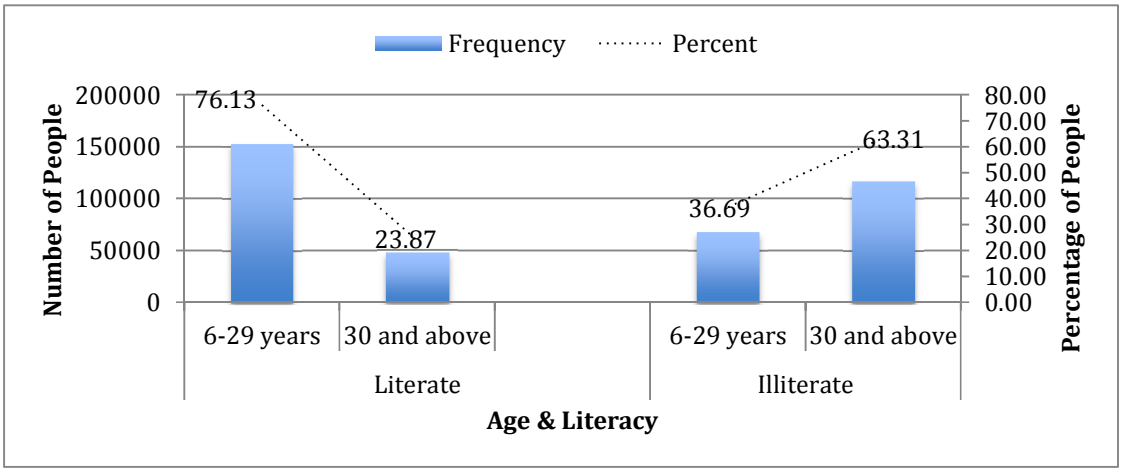
Table 10: Second stage results of group participation determinants with corrected standard errors

Variable	Coeff.	dy/dx	z	P-level
Household Expenditure (log)	.9988741	.1838802	2.15	0.031**
Sex	-.0520309	-.0095782	-0.54	0.588
Distance from RNR Extension	-.0246429	-.0045364	-0.56	0.579
Distance from Farm Road	.0318698	.0058668	1.15	0.251
Education	-.0112182	-.0020651	-0.53	0.599
Livestock Ownership	.0279276	.0051411	2.44	0.015**
Distance from Farmers Market	.037717	.0069432	1.41	0.157
Household size	.1907244	.03511	3.16	0.002***
Constant	-10.32588		-2.55	0.011
Number of observations	1590			
Log Likelihood	-541.99383			
LR chi2 (11)	51.39			
Prob > chi2	0.0000			

* Significance at 90 %; ** significance at 95 % and *** significance at 99 %

Although not significant, contrary to the findings in many similar studies (Alesina & La Ferrara, 2000; Hassan & Birungi, 2011), we find that education has a negative relationship with group participation. An analysis of the literacy rate among the rural population (Figure 3) shows that young people are more literate than the old. The proportion of illiteracy among the young (below 29 years of age) is much lower at 36.69%, compared to that of older people (above 30 years) at 63.31 %.

Figure 3: Literacy rate among rural population by age group



Authors' Calculation Data Source: (OCC, 2005)

The findings suggest that less educated rural people tend to join groups and networks. By banking on their social capital, rural people, who are mostly illiterate, might be compensating their lack of education.

The bigger the household size, the greater the chances of joining a group. An increase in household size by one member increases the probability of group participation 3.51%. Large households tend to join groups and associations since these organizations also demand contribution in the form of labor and time.

Livestock ownership also has a positive influence on group participation. A one-unit increase in TLU would increase the probability of joining groups by 0.51%. This is expected since most of the groups and associations are agriculture, livestock and forestry based.

6. Conclusion and Policy Implications

Using a national survey data (BLSS 2012) covering the 6 eastern districts of Bhutan, this study has empirically analyzed how social capital affects poverty among rural households and its impact on their livelihood. This study also examined how social capital is determined or affected by poverty by employing a simultaneous equation model of 2SPLS to assess two-way causality.

This study concludes that social capital, defined as group membership, has a significant positive impact on household expenditure and hence reduces poverty. Households that have memberships in groups and associations have higher per-capita expenditure than non-members. The impact of social capital is found to be much higher than that of education. It is also interesting to note that while the cash contribution of the upper segment of the income quintiles is much higher than the lower quintile members, the contribution in kind is much higher from the latter. Thus, the poor contribute more through in-kind contribution and time spent in the groups while the rich make cash contributions.

The per-capita household expenditure also has a positive influence on household's membership in groups and associations. This shows that membership is increased as expenditure increases. Alternately, memberships increase as poverty decreases. However, this positive relationship also indicates that it is the richer households who tend to join groups and associations. Thus, the poor may be excluded from such network participation.

Rural people seem to be compensating their lack of education by banking on social capital generated through their network memberships. Policy makers should consider these observations so that the plights of the poor are mainstreamed into development policies.

We also found that education is an important determinant in poverty and group participation, and is fundamental to determining household poverty. Fostering social capital and fighting poverty without investments in human capital would be an uphill task. Improving the literacy rate and providing vocational skills and productivity enhancing training opportunities would go a long way in the fight against poverty. However, although insignificant, a negative relationship has been identified between group participation and education that suggests such memberships might act as a form of social insurance for people with a low education level, especially for our respondents, who are mostly illiterate farmers and rural residents. As such, policies need to be framed to impart social skills in schools and inculcate a greater sense of moral and ethical values towards solidarity and cooperative spirit.

Other important variables, such as farm road infrastructure, household size, and non-farm income, have a significant impact on poverty, whereas livestock ownership and household size has a significant impact on social capital. Investments in infrastructural development need to be continued as a method of improving livelihoods, as it lowers poverty by increasing access to input and output markets, social services and connections

to different institutions and organizations. Non-farm income remains an important source of income for rural populace. This calls for policy makers to seriously consider making rural lives more attractive and prosperous. Making farming more attractive and rural lives more prosperous would not only help curb the growing rural-urban migration, but also help bring a more balanced development.

This study revealed undeniable empirical evidence that supports theoretical evidence that social capital has a significant influence on poverty reduction. Our findings support the importance of investing in social capital and policies that promote groups, associations and institutions that foster social capital formation and enhancement. On the other hand, the findings on social capital determinants provide us rich lessons and a reminder that policies need to facilitate the poor to connect better with people and organizations and bring resources closer to them. It must take into account the 'dark side' of social capital and create opportunities for the excluded members of the communities and work towards developing a more inclusive participation, focusing on the promotion and development of pro-poor groups and associations and development initiatives.

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