

Measuring Social Capital among indigenous agricultural people of the Cordilleras in Northern Philippines

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*Selected paper for presentation at the American Agricultural Economics Association
Annual Meeting, Long Beach California, July 23-26 2006*

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One of the earliest studies of Philippine social capital was by Buenavista (1998) who observed fishing practices and hierarchical patron-client relationships of dynamite fishermen. Buenavista indicated that illegal dynamite fishing is widely practiced because patrons (fishermen) and clients evolved a gift-giving culture that encouraged the environmentally unsustainable practice. Benigno (2002) discussed a study conducted by the Nomura Research Institute (NRI), a Japanese firm involved in corporate strategy. He stated that foreign investors shy away from the Philippines not only because of the country's socio-economic or infrastructure problems but also because of certain "undesirable" Filipino traits.

The study alluded that Filipinos associate many aspects of their lives with self-interests. The prevailing attitude of "family first" shows that the Filipinos are more family- than nation-oriented unlike Japan or Korea. Because of its archipelagic-structure and geographical-language barriers, technology and knowledge transfer is difficult. These factors largely contribute for the slow development of a national-trust culture. Considering that the Philippines is predominantly agricultural, the issue now is whether the Nomura research findings can sustain itself in agricultural settings.

The neglect of policy makers, together with several agro-ecologic and socio-economic constraints has made the province of Benguet in northern Philippines a less favored area. However, the article wants to investigate if indigenous agricultural communities of the province who cultivate vegetables in a long standing tradition are also less endowed in terms of social capital. This article attempts to answer, the following research questions:

Does social capital exist in indigenous agricultural communities of Benguet and in what form? What factors influence social capital? How does social capital affect vegetable marketing in the province?

In order to answer the research questions, the article's specific objectives are: determine which factors motivate social capital formation among farmers and traders and in the farming communities as a whole, analyze social capital levels for farmers and traders and per municipality, evaluate whether respondent attributes such as education, gender, religion, age and ethnicity influence community social capital, and examine how social capital levels affects the present and shapes the future of the vegetable industry

The people and economy of Benguet

The economy of Benguet

Benguet is one of the six provinces comprising the Cordillera Administrative Region (CAR), a landlocked cluster of 76 towns dominated by mountain ranges. A plateau 1500 meters above sea level, Benguet's climate is useful for temperate vegetable production. Benguet provides for at least 75% of the carrots, potatoes and cabbage demands of the country (Pekas, et al., 1998). The importance of agriculture to the economy was strongly felt in 2000 when share of agriculture to the region's Gross Regional Domestic Product (GRDP) plunged from 16% to 2% when crops failed due to pests (Cabreza and Caluza, 2002).

Since vegetable production and marketing provides income and employment for majority of the people, good infrastructures supporting it are expected to be in place. Unfortunately, the bulk of costs and losses for vegetable market participants stems from poor or limited market access due to missing or low-quality farm-to-market roads. The

Halsema highway is the only highway linking vegetable producing communities to La Trinidad and Baguio, the two major trading posts that serve the whole province. The remoteness of communities is emphasized when they are always under threat to be cut off from markets due to landslides affecting many roads in the rainy season. Cold storage warehouses, docking bays for delivery trucks and technology that support timely market information transfer province-wide, are lacking (Dalmo, et al., 1994).

Agro-ecologic constraints in the form of steep slopes and poor soils have challenged provincial vegetable growers for years. Terracing, hillside planting and intensive agriculture defined vegetable production in the region. Benguet is also located along the typhoon belt, the common course taken by storms when they pass through the Philippines. This makes it prone to unusually heavy rains during the rainy season that result in leaching, erosion and environmental damage. Agricultural potential is limited in most municipalities, not only because of depleted soils but because of dependence on rain-fed agriculture due to lack of irrigation facilities.

Despite its contributions to the economy, vegetable production is becoming less profitable. Agricultural wage rates in Benguet farm households was only at 137 PhP/day in 1999 (1.96 EUR) compared to 184 PhP/day (2.63 EUR) for non-agriculture rates¹. Declining land fertility, high costs of inputs, low vegetable prices and the removal of import quotas has slowly made the centuries-old vegetable farming tradition financially disadvantageous (Aquino, 2003).

The people of Benguet

Benguet is the most populous province in the CAR with 330,129 residents in 2000 (NSO, 2002). In terms of culture, Benguet is a melting pot of inhabitants from various ethnic backgrounds. A total of 13.4% of the population are Ilocano, 29.2% are Ibaloi and 43% are Kankanaey. Tribal affiliation represent major dialects spoken, thus, most of the population speaks Kankanaey, followed by Ibaloi and Ilocano. Kankanaeys from the northern part of the province originate from South China. Ibalois from the southern part of the province are of north Malaysian origin. More recently however, interaction between the two tribes resulted in a mixing of traditions and beliefs such that the difference at present is mostly linguistic and not cultural. Fierce tribal wars that separated groups before have given way to free trade and harmonious inter-ethnic relations. Within agricultural communities, farmers and traders interact freely with each other. They are parts of the same informal social networks within the municipalities. Farmers and traders may be involved in different lines of work but there is no delineation between them in terms of intra-community social participation. Since farmers and traders inclination is primarily agricultural; they interact repeatedly within communities with similar backgrounds.

Farming has been the way of life for most of the people in the province, with the Kankanaeys having relatively more involvement in agriculture and agricultural trade (Russel, 1989). According to the National Economic Development Authority (NEDA) in 2002, the agricultural sector of CAR employs 60% of the economically active population. However, the region is one of the country's poorest with 31.1% of the regional population living below the poverty threshold (NSCB, 2001).

Applying social capital theory to Benguet vegetable markets

Davis (1973) conceived the term “economic personalism” to describe the kinship and *suki* system (favoured buyer) of social organization in Baguio markets. The *suki* system is defined by “*highly personal relationships where individuals interrelate in ...more than purely economic dimensions*”. Farmers and traders try to include reciprocity and relationship-building into vegetable trade in order to increase benefits from transaction agreements. (Beugelsdijk and Schaik, 2001) stated that social capital works by increasing communication, inter-action, information transfer and co-operation between transacting partners without the influence of power and market. Trust can make people go beyond the requirements of the contract through early delivery, higher quality or some other means to support their good intentions and sustain trust. Increasing the level of connectedness by participating in informal networks leads to collective action in the pursuit of common goals. Temptations to achieve short run personal wealth through the transaction are superseded (Beugelsdijk and Schaik, 2001).

Repeated interactions lead to increased trust levels. According to Beugelsdijk and Schaik (2001), trust is present when you expect your partner not to exploit your vulnerability based on the expectation that your partner will perform the duties that are expected of them. In Benguet however, despite highly personal relations, information asymmetry and opportunistic behavior is not only entrenched but also used as a strategy by farmers and traders for profit gains (Milagrosa, 2001). A study by Batt (1999) on Benguet potato farmers and their seed suppliers showed that despite repeated interactions, no connection between trust and the length of farmer-trader relationship could be established. As farmers buy potato seed supplies from preferred sellers, they simultaneously consider

offers from others. Farmers' commitment to a relationship is related to their satisfaction of trader performance rather than trust.

Data and method

Data

Seven of the 13 municipalities of Benguet were selected as survey areas. These municipalities were selected because they are representative of the province in terms of demographics, vegetable production capabilities and range of geographic variations. The municipalities of Buguias, Atok and Kibungan are the top vegetable producers by volume, while Bakun, Itogon and Bokod are the least producers. La Trinidad is was chosen because it has the La Trinidad Trading Post where most of the vegetables harvested in the region are traded².

Within municipalities, barangays were chosen randomly. Within barangays, farmers were chosen using purposive sampling. Farmer and trader sampling was a problematic issue because of the expectation of the availability of complete list of farmers and traders at the provincial level during the research design stage. The planned random sampling could not be implemented³. Thus it was decided that the research would follow the "snowballing" procedure used by previous researches in the province (for example, CHARM and VLIR⁴). The interviewed farmers totaled 450. They were selected primarily because they are representative of farmers who grow vegetables with the intention of selling them in La Trinidad and Baguio City markets for profit. Sampling for traders was also conducted purposely. The interviewed traders totaled 195. Overall, there were less traders than farmers per municipality and for this reason, less traders were interviewed. Although

selected purposively, the farmers and traders who were interviewed represent a wide diversity of conditions in terms of crops planted, preferred distribution channels, production costs, access to markets and profits. The results of the studies are therefore representative of a broad range of circumstances the farmers and traders face within the municipalities of Benguet province.

Methodology

The World Bank (WB) asserts that no standard measure of social capital can be achieved, since social capital measurements are dependent on the definition rendered by researchers. However, the WB suggested three approaches to social capital measurement. *Quantitative studies* by Knack and Keefer (1997) or Narayan and Pritchett (1999), *comparative analysis* by Putnam (1993) or Light and Karageorgis (1994) and *qualitative approach* by Portes and Sensenbrenner (1993), Gold (1995) and Heller (1996). No approach is superior to others in measuring social capital. Grootaert and Bastelaer (2002) argued that empirical social capital data analyses could utilize either approach since no standard calculation procedures exist.

Because of a lack of previous work on social capital in the province, the study preferred to test the simpler quantitative-additive approach (assuming equal weights). Grootaert and Bastelaer (2002) point out that what is important is to attempt to capture social capital in its cognitive and structural dimensions. For this reason, first, a Likert scale measured farmer and trader perceptions on social capital statements. Second, an equation was used to model cognitive and structural social capital. Cognitive social capital is the intangible aspect of social capital in the form of trust, local ethics, traditions and morals. Cognitive social capital was measured by 22 statements on optimism and satisfaction,

⁴ VLIR is the Vlaamse Interuniversitaire Raad with cooperation projects with two Philippine Universities

common goals and perceptions, trust and civic associations. Structural social capital is tangible and deals with membership in formal networks, government organizations, church and clubs. Structural social capital was measured by active membership in religious, political, cooperatives and recreational groups.

The social capital index

Except for membership in local organizations, all items were obtained using a 5-pont scale. To normalize the 5-point scale, the individual value for cognitive social capital

indicators $\frac{SCIndicator_{ij} - 1}{4}$ was used where ij refers to the cognitive social capital

dimension of farmer i in municipality j . The product was multiplied by a factor representing the within group weight (wgw) of the variables being analyzed. The *within group weight* depends on the number of items measuring the indicator. Thus for the cognitive social capital CSC_{ij} :

$$CSC_{ij} = \left(\frac{(\sum_{j=1}^J associatedness_{ij}) - 1}{4} * wgw \right) + \left(\frac{(\sum_{j=1}^J trust_{ij}) - 1}{4} * wgw \right) + \left(\frac{(\sum_{j=1}^J goalsperceptions_{ij}) - 1}{4} * wgw \right) + \left(\frac{(\sum_{j=1}^J optimismsat_{ij}) - 1}{4} * wgw \right) \quad (1)$$

$i=1, \dots, I$ and $j=1, \dots, J$

where CSC_{ij} is the cognitive social capital of farmer i in municipality j ; $associatedness_{ij}$ is the associatedness levels of farmer i in municipality j ; $trust_{ij}$ is the trust levels of farmer i in municipality j ; and so on. The values for structural social capital were obtained as actual memberships of respondents in formal organisations. Thus, structural social capital equals:

$$SSC_{ij} = \sum_{j=1}^7 membership_{ij} \quad (2)$$

$i=1\dots,I$ and $j=1\dots,J$

where SSC_{ij} is the structural social capital of respondent i in municipality j and $membership_{ij}$ is the membership of farmer i in municipality j to the various formal organizations presented in the questionnaire.

The resulting indicator cognitive values were weighted equally and standardized to 50. Thus, 0 means no cognitive social capital and 50 means full cognitive social capital. Since active membership in local organizations were provided using forthright answers, structural social capital values were calculated by obtaining the percentage equivalent and then standardizing responses to 50. The outcomes reflect actual memberships into specific formal institutions. This would mean for each farmer (and therefore, each municipality) a value of 0 for no membership at all and a value of 50 for membership in all formal organisations enumerated. To achieve a social capital index, structural and cognitive values were simply added. Following Grootaert and Bastelaer (2002) a preference for separate presentation of structural and cognitive social capital *first*, before aggregating a single social capital index *second*, is conducted. This is because the two indicators capture different dimensions of social capital that are significant in their own right.

Deconstructing social capital of indigenous agricultural communities in Benguet

Overall social capital: the big picture

Principal component analysis

As shown in table 1, six components were loaded from the initial factor analysis. These components explain 66% of the variance before and after Varimax rotation. To determine

which factors are relevant, the Kaiser criterion where initial Eigenvalues < 1 are excluded was used. Coefficients in the final rotated component matrix results were sorted by size. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) is equal to 0.834 while the Bartlett's test for Sphericity significance is at 0.000 both indicating that Factor Analysis would be useful for the data since it contains significant inter-variable relationships.

The statements that load highly on Factor 1 all seem to relate to the quality of casual peer-to-peer associations. This factor is labeled as *Informal Networks*. This component shows the strong positive correlation of getting along with people in the community (Eigenvalue of 0.876) to Factor 1. Farmers who value informal networks find it highly important to get along with community members. The second set of variables relates highly towards trust within the immediate environment, particularly trust of his family, neighbors, farmers, the church and respondents' own feelings of trustworthiness. This factor is named as '*Core Trust*'. This shows that respondents assign highest importance to familiars and to religion. Putnam (1993) refers to this as the bonding element of social capital.

Factor three shows attitudes related to trust in the formal institutional environment with emphasis on the legal system, police and municipal government. It is named '*Institutional Trust*'. Positive significant relationship between trusting the municipal police and institutional trust shows that respondents who have high scores in trusting institutions also tend to trust the municipal police highly. This is referred to as the bridging element of social capital (Putnam, 1993). The fourth factor is labeled as '*Poverty perceptions*'.

Two factors loaded heavily for this component: poverty because of laziness and poverty because of lack of life opportunities.

The fifth factor is a measure of community aspirations and is termed '*Common goals*'. It relates to objectives shared by farmers and traders in terms of community goals and what the local government should focus on. Fighting rising input prices loaded heavily for this Factor (Eigenvalue 0.817). It means that farmers and traders who loaded highly on the "common goals" attribute find the issue of rising input prices important. Factor 6 loads heavily on statements related to "*Life satisfaction*". Equal treatment, life satisfaction and optimism largely contribute to this component. Respondents who find equal treatment from the government important would load highly on the life satisfaction component.

Structural and cognitive social capital

A social capital index shown in table 2 for each municipality was computed by adding cognitive and structural social capital values. Social capital index is therefore:

$$SCI_j = CSC_{ij} + SSC_{ij} \quad (3)$$

where SCI_j =social capital index for municipality j .

Municipalities were well below the 50 midpoint on which all calculations were benchmarked. Four municipalities had cognitive scores higher than the mean. Only three out of seven municipalities have structural scores higher than the average. A one-sample t-test comparing cognitive, structural and total social capital indices proved that municipal means differ significantly from the assigned median of 50. Initially, high cognitive and structural social capital scores for municipalities were expected in accordance with social capital theory and existing local anthropological literature. In

particular, ethnicity, the remoteness of the research area and common agriculture-related goals were predicted to bind the societies together. During the interviews a surprising trend of low trust and low membership in formal organisations began to emerge, irrespective of tribal affiliation and municipal location. Only statements regarding common goals were the ones that held out.

Social capital between groups: farmer-trader comparisons

Principal component analysis

To find out whether social capital formation is distinct among farmers and traders, factor analysis were conducted separately. Table 3 shows the ranked components extracted from farmers. Rotated component matrices show that different factors drive social capital formation among farmers and among traders. Among farmers, the Eigenvalue of the first factor extracted –informal networks - explains 28.7% of the total variance. Other components explaining social capital were core trust, institutional trust, common goals, poverty perception and life satisfaction. It appears that farmers are defined more by bonding social capital in the form of informal associations. Social capital is high for those that are in his immediate environment.

For traders, the Eigenvalue of the first factor extracted – outer core trust – explains 21.6% of the total variance. Compared to farmers, traders seem to distinguish between different levels of trust. Whereas farmers assign highest importance to informal networks, traders consider trust towards neighbors, the church and farmers most valuable. It appears that traders are defined more by bridging social capital in the form of outer core trust. Social capital is relatively higher for those that are in his external environment. This is perhaps

an allusion to the skills needed because of the nature of their job. The rotated component matrix for traders is shown in table 4.

What is interesting to note in the separate factor analyses is that “core trust” loaded heavier among farmers but loaded less important and farther for traders. It could be that because they stay more in remote municipalities compared to traders; they are less exposed to opportunism in business relations. Therefore, their core trusts rank heavier than for traders. For traders, “core trust” loaded negatively. The negative sign (-0.540) on Factor 6 indicates that there is a significant negative relationship between traders’ own trustworthiness and “core trust” perceptions. For farmers who have a positive attitude towards core trust, the issue of self trustworthiness is irrelevant.

Structural and cognitive social capital

Shown in table 5 are social capital scores comparing farmers and traders. From mean values, farmers shared fewer common goals and perceptions and had lower optimism and satisfaction than traders in general. However, farmers have better community relations than traders. This however, is not statistically different. Total social capital of traders is higher than of farmers at 33.3 versus 37.1. The difference is statistically significant.

A closer look however, reveals that although in both social capital types traders scored higher than farmers, the real difference lies in their respective memberships in formal associations. Paired samples t-test proves that cognitive scores for farmers and traders are not statistically different from one another but structural social capital scores are. Traders are more active in formal organisations than farmers leading to higher structural social capital values. Overall, traders have higher social capital scores because they are more active in formal organizations than farmers.

Although farmers and traders are part of the same social networks and organizations, it appears that the real cause of their social capital originates from different elements. Farmer social capital is affected by bonding aspect of social capital: he trusts persons within the family circle and those within his immediate environment. Trader social capital is more the bridging type, the type of capital that comes from knowing people outside the immediate social network (Grootaert and Bastelaer, 2002, Woolcock, 1999).

Socio-cultural highlights

Social capital and gender

Does gender influence social capital? Table 6 shows significant gender correlation with some social capital indicators. To confirm if there is a difference between males and females in terms of the gender-correlated social capital indicators, the Kruskal-Wallis test was conducted. We applied the non-parametric ANOVA test of Kruskal and Wallis because one of the variables is nominal (e.g. gender) and the other is ordinal (5 point scale). The hypothesis and results are in table 7. The test confirms that women are more satisfied and happy with their lives. However, there is no difference between men and women in terms of optimism, community participation in terms of voluntary work and strength of informal community networks.

Social capital and educational attainment

Does education influence social capital? Table 8 shows that education is significantly correlated with some social capital indicators. To test if there is a difference between high educated (those with University degree) and low educated people (those with primary school and secondary education), the Kruskal-Wallis test was conducted. The hypotheses and their corresponding results are presented in table 9. Except for trust

towards the church, the tests confirm the alternative hypothesis that respondents with higher education generally exhibit more trust than lower-educated people.

Social capital and religion

Does religion influence social capital? Table 10 shows that religion is significantly correlated with some social capital indicators. To test if there is a difference between actively religious people and non-religious people, the Kruskal-Wallis test was conducted. The hypotheses and their corresponding test results are in table 11. Test results lead to the conclusion that the religious and non-religious are not similar in terms of life satisfaction and happiness, volunteerism, trust towards the government and quality of relations with other community members.

Social capital and age

Does age influence social capital? Table 12 shows that age is significantly correlated with some social capital indicators. To test if there is a difference between young and old respondents the binomial test was conducted (because age is scalar). The hypotheses and their corresponding test results are in table 13. Test results lead to the conclusion that older people tend to be more active in organizations such as religious groups, cooperatives and local neighborhood gatherings. Young and old are similar in commitment to politically inclined groups. In general, older respondents have better quality relations with other farmers than the younger respondents.

Social capital and ethnicity

Ethnicity impacts how we behave and act. Dialect spoken is a major attribute that bonds members of an ethnic group. Does ethnicity, measured through mother tongue influence social capital? Five dialects were most spoken by growers and traders. These are Ilocano (4% of respondents), Ibaloi (31% of respondents), Kankanaey (58% of respondents),

Tagalog (1%) and Ikarao (6%). Table 14 shows that ethnicity through mother tongue is correlated with several social capital indicators. There is a significant negative correlation between ethnicity and trust in the municipal government, volunteerism and active membership in the local government. There is significant positive correlation between ethnicity and relationship with other traders and membership in a trader co-operative. The next step is to test if there is a significant association between ethnicity and social capital elements. Test hypothesis and test results using Kruskal-Wallis are shown on table 15. Kruskal-Wallis test results show that ethnicity is independent of participation in local government politics but plays a large role in terms of trust towards the government, informal community participation/volunteerism and relationship/membership with traders and their organisations.

Does social capital matter? Consequences to local vegetable trade

Low social capital exists among indigenous agricultural communities in Benguet northern Philippines. Our tests have shown that consistent low scores on memberships in formal associations and trust overrides high scores on common goals and informal networks. Considering that vegetable exchange in the province is characterized by interpersonal trade between farmers and traders, low social capital could be one important limiting ingredient towards efficient market transactions.

Perhaps one of the reasons why favored buyer system sustained itself is because of low social capital. On the one hand, the system ensures those who are favored can easily dispose of their harvests in the market. On the other hand, those who are not within this system are left out. This means that key players on both sides are not able to fully exploit market possibilities. Favored farmers are compromised to sell their crops to selected

traders who may not have the highest price offers. Favored sellers are compromised to buy crops from selected farmers who may not have the best vegetable grades. Aside from low membership rates, perhaps one of the reasons of the failure of farmer cooperatives in the province to evolve as a bargaining force to reckon with is because of low solidarity among farmer-members. Low solidarity can come from low social capital when farmers look into cooperatives for pursuing personal interests. This results in low collective bargaining powers among farmers.

The importance of formal networks must not be overlooked because active membership in organizations could serve as conduit between farmers and traders to other market institutions. Stone and Hughes (2001) showed that personal ties could emerge from involvement in formal associations because they foster repeated interaction among people with common interests. Formal institutions can also provide access to resources that would have not been possible in an informal relationship.

Low trust within Benguet markets spells higher transaction costs for parties. In the province, contracts are normally unwritten and incomplete because of unstable vegetable prices. Trust should be called upon in order to maintain the contract and oversee transaction completion. When trust is low, negotiation and enforcement costs increase because both parties are not convinced that the other is honest in their transaction. When both parties can rely on each other to meet their ends of the deal, risk and uncertainty is reduced. Explicit cooperation can be expected, even without explicit contracting.

High social capital facilitates information exchange about prices and markets (Chloupkova and Bjornskov, 2002). In Benguet where market information is scarce and unreliable, social capital is needed in order to disseminate critical market news in the

quickest manner. Farmers and traders can rely on dense informal networks at the micro level as cheap but effective means to spread information.

Conclusions

A total of 450 farmers and 195 traders from seven municipalities of Benguet were asked for opinions on 22 social capital statements and membership on seven community associations. Quantitative-additive method was used to calculate cognitive and structural social capital scores and create social capital index. Six components were underlying social capital was threshed out from pooled Principal Component analysis. These were informal networks, core trust, institutional trust, poverty perception, common goals and life satisfaction. Independent factor analyses for farmers and traders showed that informal networks and outer core trust, respectively, loaded heavily in terms of social capital motivations in the province. Social capital scores for farmers showed that they had significantly better community relations than traders. Traders scored higher memberships in formal organisations and for this reason; their overall social capital index was higher. Collectively, social capital is in its strongest in the form of common goals and informal networks. Membership in formal associations and low trust pulled social capital down. In sum, all municipalities scored below the assigned 50 median point for social capital.

Social capital in Benguet is influenced, in varying degrees, by gender, education, religion, age and ethnicity. In particular, women are more prolific resources that can be tapped to increase social capital levels through better community relations. Investing in education for the population will lead to increases in trust, not only within the community but especially towards the government, where it is much needed. The influence of religion to move people towards volunteerism, cooperation and government trust should not be

underestimated. Religious groups can be called upon for their manpower and support in times of need and therefore should receive proper recognition from local government and society. In terms of age, it appears that the youth are overlooking the positive effects of formal associations. Providing them with activities that promote collective action, venues for exchange as well as recognizing and rewarding their efforts will encourage more interaction in informal and formal settings. In this manner, community participation and a sense of responsibility is instilled on them during their formative years. Ethnicity seems to affect community relations in a more profound manner than was initially assumed. However, the exclusionary nature of ethnicity-based social capital works against the foundation of community participation and development of government trust. Measures to override the negative effects of ethnicity not only in intra-community relations but also in livelihood-related decisions should be explored.

Social capital affects vegetable production and marketing in the province in more profound ways than expected. Low social capital resulted in the encouragement of the favored buyer system that limits marketing possibilities for farmers and traders. Low solidarity resulted in the failure of farmer cooperatives to provide bargaining leverage to farmers in marketing crops. Because contracts are incomplete, market participants incur higher negotiation and monitoring costs as they can not rely on trust alone to oversee transaction completion. Social networks are not sufficient to facilitate valuable information exchange about prices and markets.

The study highlights the important role of carefully directed policies from the local governments of the agricultural communities in fostering social capital. Because infrastructure and resource are at their control, the local governments can initiate efforts

to increase intra and inter-community social interaction. Tests showed that farmers' and traders' social capital stem from different sources. Therefore, the focus should be on increasing the bridging element of social capital; to begin with, increasing positive interaction between farmers and traders. Later, steps to build links across different networks and organizations in the external environment can be taken. By providing opportunities for local cohesion, local citizens can be mobilized to think and act collectively.

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Table 1 Rotated Component Matrix results for aggregated farmer and trader statements

Statements	Factors					
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
	Informal networks	Core trust	Institutional trust	Poverty perception	Common goals	Life satisfaction
I get along well with people in my community	,876	,084	,127	-,034	,139	,077
I get along well with other farmers	,850	,075	,108	,012	,114	,018
I get along well with family and friends	,823	,101	,050	-,029	,157	,056
I get along well with other traders	,708	,133	,178	,068	,070	,045
I participate actively in community and volunteer for community work	,310	,097	,187	-,192	,211	,131
I trust family and friends	,158	,779	,080	,131	,037	,061
I trust the church and its people	,158	,740	,280	,073	,052	,176
I trust other farmers	,130	,737	,231	,089	,057	,096
I feel safe in my neighborhood	,111	,734	,262	,027	,131	,070
I can safely say I am trustworthy	-,070	,702	-,049	,328	,136	-,062
I trust municipal police	,164	,212	,844	,103	,011	,126
I trust the legal system	,177	,219	,840	,098	,030	,149
I trust municipal govt and their policies towards agriculture	,224	,256	,689	-,240	,169	,155
People are poor because they are lazy and have no will power	,004	,230	,004	,881	,056	-,006
People are poor because they are	,002	,205	,078	,880	,105	-,036

not given the same chances as others						
Local government should concentrate on fighting rising input prices	,134	,070	,088	,086	,817	,074
Country must create more job opportunities	,252	,010	,096	,003	,760	,058
Community members should get more involved in policy making	,075	,189	-,047	,077	,732	,004
The local government treats everyone equally	,074	,012	,269	-,148	,135	,691
I am satisfied and happy with my life	,388	-,088	,045	-,296	,027	,649
my life will get even better in the future	-,096	,298	-,154	,338	,077	,564
Do you agree that most people could be trusted?	,017	,171	,271	,103	-,032	,481

Note: Extraction Method Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 6 iterations.

Source: Own survey

Table 2 Aggregated social capital of farmers and traders in Benguet vegetable markets, by municipality and mean values Benguet 2003

Social Capital	Atok	Bakun	Bokod	Buguias	Itogon	Kibungan	La Trinidad	MEAN
Cognitive	30,3	30,2	28,5	30,6	30,6	29,3	29,2	29.8
Structural	8,3	7	4,7	7,8	6,5	7	8,6	7.1
Total SC	38,6	37,2	33,2	38,4	37,1	36,3	37,8	36.9

Source: Own survey

Table 3 Rotated Component Matrix results for farmer statements on social capital formation, Benguet 2003

	Factors					
	Factor 1 Informal networks	Factor 2 Core trust	Factor 3 Institutional trust	Factor 4 Common goals	Factor 5 Poverty perception	Factor 6 Life satisfaction
my life will get even better in the future	-,163	,416	-,146	,061	,236	,459
the local government treats everyone equally	,089	,008	,321	,104	-,156	,676
i am satisfied and happy with my life	,376	-,048	,035	,036	-,303	,648
do you agree that most people could be trusted?	,048	,165	,171	-,029	,131	,565
i can safely say i am trustworthy	-,002	,749	-,075	,090	,313	-,068
i trust family and friends	,173	,807	,097	,048	,119	,063
i feel safe in my neighborhood	,192	,691	,295	,187	,040	,145
i trust the church and its people	,183	,711	,294	,062	,081	,187
i trust other farmers	,110	,745	,254	,074	,077	,055
i trust municipal govt and their policies towards agriculture	,241	,225	,716	,163	-,243	,176
i trust municipal police	,176	,195	,861	,062	,120	,108
i trust the legal system	,216	,210	,827	,023	,127	,222
i participate actively in community and volunteer for community work	,377	,096	,129	,242	-,061	,269
i get along well with family and friends	,829	,099	,095	,196	-,027	,086

i get along well with people in my community	,881	,068	,161	,163	-,046	,082
i get along well with other farmers	,860	,110	,114	,139	-,012	,003
i get along well with other traders	,719	,190	,196	-,010	,132	,080
country must create more job opportunities	,222	,050	,082	,753	-,003	,073
community members should get more involved in policy making	,076	,108	-,014	,744	,135	,039
local government should concentrate on fighting rising input prices	,135	,118	,104	,805	,013	-,009
people are poor because they are lazy and have no will power	,018	,256	-,004	,032	,885	-,036
people are poor because they are not given the same chances as others	,003	,211	,079	,122	,891	-,029

Note: Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 7 iterations.

Source: Own survey

Table 4 Rotated Component Matrix results for trader statements on social capital formation, Benguet 2003

	Factors						
	Factor 1 Outer core trust	Factor 2 Informal networks	Factor 3 Institutional trust	Factor 4 Common goals	Factor 5 Poverty perceptions	Factor 6 Core trust	Factor 7 Life satisfaction
my life will get even better in the future	-,033	,041	,104	,119	,385	-,403	,594
the local government treats everyone equally	,148	-,036	,066	,171	-,102	,134	,759
i am satisfied and happy with my life	-,068	,366	,077	,008	-,226	,269	,614
do you agree that most people could be trusted?	,216	-,047	,352	-,073	,320	,380	,305
i can safely say i am trustworthy	,353	-,240	,246	,312	,229	-,540	-,116
i trust family and friends	,458	,126	,336	,070	,061	-,514	,002
i feel safe in my neighborhood	,812	-,090	,087	,018	,145	-,057	-,022
i trust the church and its people	,827	,101	,241	,032	,163	-,001	,098
i trust other farmers	,786	,190	,239	,030	,109	-,052	,065
I trust municipal govt and their policies towards agriculture	,404	,146	,573	,187	-,120	,304	,040
i trust municipal police	,217	,101	,847	-,089	,003	-,036	,153

i trust the legal system	,168	,025	,854	,107	,001	-,024	,014
i participate actively in community and volunteer for community work	-,004	,059	,128	,117	-,090	,570	,081
i get along well with family and friends	,052	,825	-,004	,064	-,061	-,115	,036
i get along well with people in my community	,073	,853	,097	,134	-,020	-,057	,099
i get along well with other farmers	,040	,792	,065	,079	,084	,157	,037
i get along well with other traders	,057	,573	,045	,364	-,135	,251	-,044
country must create more job opportunities	-,081	,300	,129	,785	,020	,096	,024
community members should get more involved in policy making	,377	,066	-,247	,667	,049	-,060	,104
local government should concentrate on fighting rising input prices	-,024	,120	,119	,817	,178	-,032	,164
people are poor because they are lazy and have no will power	,193	-,060	-,060	,129	,894	-,049	-,023

people are poor because they are not given the same chances as others	,168	-,012	,011	,066	,869	-,157	-,093
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Note: Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 7 iterations.

Source: Own survey

Table 5 Social capital comparison between farmers and traders, Benguet 2003

INDICATOR	FARMERS	TRADERS
Associatedness	7,81	7,69
Trust	6,57	6,57
Common goals and perceptions	9,21	9,46
Optimism and satisfaction	6,06	6,36
Total Cognitive	29,70	29,96
Total Structural	3,57	7,13
Social Capital	33,26	37,10

Source: own survey

Table 6 Correlation coefficients between social capital indicators and gender

Social capital Indicator	Correlation Coefficients (2 –tailed test of significance)
Optimism about life getting better	0.079*
Satisfaction and happiness about life	0.121**
Volunteering for community work	0.084*
Good relationship with people in community	0.085*

Notes: *, ** and *** indicate significance at the 0.10, 0.05 and 0.01 level (2-tailed) respectively

Source: Own survey

Table 7 Kruskal-Wallis tests for gender and social capital variables

Hypotheses	Asymptotic Sig. (1-tailed)	Decision Rule
H0: There is no difference in men and women in terms of optimism H1: Women are more optimistic	0.362	Accept HO
H0: There is no difference in men and women in terms of satisfaction and happiness H1: Women are more satisfied and happier with their lives	0.030	Reject HO
H0: There is no difference in men and women in terms of voluntary work H1: Men do more voluntary work.	0.389	Accept HO
H0: There is no difference in men and women in terms of informal community networks H1: Women have better relationships in the community	0.245	Accept HO

Source: Own survey

Table 8 Correlation coefficients between social capital indicators and educational attainment

Social capital Indicator	Correlation Coefficients (2 –tailed test of significance)
Satisfaction and happiness about life	0.135**
General trust	0.105**
Trust of family and friends	0.093*
Trust of church	0.081*
Trust of municipal government	0.085*

Notes: *, ** and *** indicate significance at the 0.10, 0.05 and 0.01 level (2-tailed) respectively

Source: Own survey

Table 9 Kruskal-Wallis tests for education and social capital variables

Hypotheses	Asymptotic Sig. (1-tailed)	Decision Rule
H0: There is no difference in high educated and low educated in terms of life satisfaction and happiness H1: Higher educated people are more satisfied and happier with their lives	0.000	Reject HO
H0: There is no difference in high educated and low educated in terms of general trust H1: Higher educated people have higher levels of general trust	0.003	Reject HO
H0: There is no difference in high educated and low educated in terms of trust of family and friends H1: Higher educated people have more trust towards family and friends	0.015	Reject HO
H0: There is no difference in high educated and low educated in terms of trust of church H1: Higher educated people have more trust towards the church.	0.700	Accept HO
H0: There is no difference in high educated and low educated in terms of trust of municipal government H1: Higher educated people have more trust towards the municipal government.	0.060	Reject HO

Source: Own survey

Table 10 Correlation coefficients between social capital indicators and religion

Social capital Indicator	Correlation Coefficients (2 –tailed test of significance)
Satisfaction and happiness about life	0.436**
Volunteering for community work	0.325**
Trust in municipal government	0.305**
Good relationship with people in community	0.313**

Notes: *, ** and *** indicate significance at the 0.10, 0.05 and 0.01 level (2-tailed) respectively

Source: Own survey

Table 11 Kruskal-Wallis tests for religion and social capital variables

Hypotheses	Asymptotic Sig. (1-tailed)	Decision Rule
H0: There is no difference in religious and non-religious in terms of satisfaction and happiness H1: Religious people are more satisfied and happier with their lives	0.000	Reject HO
H0: There is no difference in religious and non-religious in terms of volunteering for community work H1: Religious people volunteer more for work	0.000	Reject HO
H0: There is no difference in religious and non-religious people in terms of trust of municipal government H1: Religious people trust the municipal government more	0.000	Reject HO
H0: There is no difference in religious and non-religious in terms of good relationships with people in the community H1: Religious people have better relationships with people in the community.	0.000	Reject HO

Source: Own survey

Table 12 Correlation coefficients between social capital indicators and Age

Social capital Indicator	Correlation Coefficients (2 –tailed test of significance)
Getting along with other farmers	.081*
Membership in religious group	.132**
Membership in farmer co-operative	.133**
Membership in local government	.90*
Membership in neighbourhood group	.144**

Notes: *, ** and *** indicate significance at the 0.10, 0.05 and 0.01 level (2-tailed) respectively

Source: Own survey

Table 13 Binomial tests for age and social capital variables

Hypotheses	Asymptotic Sig. (1-tailed)	Decision Rule
H0: There is no difference between old and young people in terms of getting along with other farmers H1: Older respondents are better at getting along with other farmers	.000	Reject H0
H0: There is no difference between old and young people in terms of membership in religious groups H1: Older respondents are more active members in religious groups	.000	Reject H0
H0: There is no difference between old and young people in terms of membership in farmer co-operatives H1: Older respondents are more active members in farmer co-operatives	.002	Reject H0
H0: There is no difference between old and young people in terms of membership in the local government H1: Older respondents have more active memberships in the local government	.411	Accept H0
H0: There is no difference between old and young people in terms of membership in the local neighborhood groups H1: Older respondents have more active memberships in local neighborhood groups	.011	Reject H0

Source: Own survey

Table 14 Correlation coefficients between social capital indicators and Ethnicity

Social capital Indicator	Correlation Coefficients (2 –tailed test of significance)
Trust municipal government	-.074*
Participate actively in community and volunteer	-.100**
Get along well with other traders	.074*
Active membership in a Trader co-operative	.095**
Active membership in the local government	-.080*

Note: Kendall's tau_b was used; *, ** and *** indicate significance at the 0.10, 0.05 and 0.01 level (2-tailed) respectively

Source: Own survey

Table 15 Kruskal-Wallis tests for ethnicity and social capital variables

Hypotheses	Asymptotic Sig. (1-tailed)	Decision Rule
H0: Trust in the municipal government is independent of ethnicity H1: Trust in the municipal government is dependent on ethnicity	0.023	Reject HO
H0: Active participation in the community and volunteerism is independent of ethnicity H1 Active participation in the community and volunteerism is dependent on ethnicity	0.010	Reject HO
H0: Getting along well with traders is independent of ethnicity H1: Getting along well with traders is dependent on ethnicity	0.054	Reject HO
H0: Active membership in traders co-operative is independent of ethnicity H1: Active membership in traders co-operative is dependent on ethnicity	0.005	Reject HO
H0: Active membership in local government is independent of ethnicity H1: Active membership in local government is dependent on ethnicity	0.197	Accept HO

Source: Own survey

Footnotes:

1. Philippine Peso to EURO exchange rate is at 70:1 as of January 2004
2. The total population for the seven municipalities eligible for the survey is 26,329 farmers
3. There was actually an incomplete list of registered farmers' and traders' cooperative available. However, the author decided not to use them because first, the list themselves were incomplete; second they were showing only registered cooperatives (as opposed to the non-registered ones) and third; a bias towards cooperative members would arise.
4. CHARM is the \$41M Cordillera Highland Agriculture Resource Management Project funded by the Asian Development Bank. VLIR is the Vlaamse Interuniversitaire Raad with cooperation projects with two Philippine universities.