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# Social Capital, Ethnicity and Decision-Making in the Philippine Vegetable Market

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# Social Capital, Ethnicity and Decision-Making in the Philippine Vegetable Market

## Abstract

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The paper tackles the issue of social capital as observed in several ethnically bonded groups of agricultural rural communities in the mountainous regions of northern Philippines. In the first part of the paper, the social capital of indigenous farmers and traders are measured. Findings show that there are six components underlying social capital in the region: informal networks, core trust, institutional trust, poverty perception, common goals and life satisfaction. In addition, tests provide evidence that social capital in Benguet is influenced in varying degrees, by gender, education, religion, age and ethnicity. Comparing municipal social capital indices with the aggregate mean, overall social capital among agricultural communities in northern Philippines were found to be low.

In the second part of the paper, the determinants influencing farmers' decision to do business with certain trader types was tested. Results show that farmers' decision-making was influenced by their inherent social capital; meaning, farmers with high social capital approach decision-making differently than farmers with low social capital. Empirical tests showed that farmers in the high social capital group were better-off than farmers in the low social capital group. Further analysis showed that the respondents' ethnic affiliation and level of institutional trust have the same influence among farmers in terms of selecting transacting partners.

## Kurzfassung

---

Der Aufsatz befasst sich mit dem Thema Sozialkapital, wie es in einigen ethnisch verbundenen Gruppen landwirtschaftlich betreibender ländlicher Gemeinden in den Gebirgsregionen der nördlichen Philippinen beobachtet werden kann. Im ersten Teil erfolgt eine Messung des Sozialkapitals der einheimischen Landwirte und Händler. Ergebnisse zeigen, dass dem Sozialkapital in der Region sechs Komponenten zugrunde liegen: informelle Netzwerke, Vertrauen in das eigene soziale Umfeld, Vertrauen in Institutionen, Armutsverständnis, gemeinsame Ziele und Zufriedenheit im Leben. Zudem belegen Untersuchungen, dass Sozialkapital in Benguet in unterschiedlichem Ausmaß durch die Faktoren Geschlecht, Ausbildung, Religion, Alter und Ethnizität beeinflusst wird. Ein Vergleich der Kennzahlen des kommunalen Sozialkapitals mit dem Gesamtdurchschnitt zeigt, dass das Sozialkapital bei landwirtschaftlichen Gemeinden in den nördlichen Philippinen im Allgemeinen niedrig ist.

Im zweiten Teil des Aufsatzes werden die Faktoren untersucht, die ausschlaggebend sind für die Entscheidung der Landwirte, Handel mit bestimmten Typen von Händlern zu betreiben. Ergebnisse zeigen, dass die Entscheidungen der Landwirte durch ihr Sozialkapital beeinflusst werden. Das bedeutet, dass Landwirte mit hohem Sozialkapital anders entscheiden als solche mit geringem Sozialkapital. Empirische Erhebungen belegen, dass Landwirte, die mit hohem Sozialkapital ausgestattet sind, wohlhabender sind als Landwirte mit niedrigem Sozialkapital. Weitere Analysen ergaben, dass die ethnische Zugehörigkeit der Befragten und deren Grad des Vertrauens in Institutionen den gleichen Einfluss haben bei der Wahl von Handelspartnern.

## 1 Introduction

---

The concept of social capital has become increasingly popular in recent years. From sociologists, economists to political scientists, social capital theories have been invoked to clarify a wide range of issues that remain unexplained. Social capital has been used to capture the phenomena underlying behavioural problems, organisation, community life, democracy and governance, community resource management, economic development and more recently, inter-ethnic relations and decision-making.

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. Moreover, because of its archipelagic-structure, nation-wide technology and knowledge transfer is difficult. The Philippines is also composed of several ethnic groups who speak different dialects. Two of the biggest ethnic groups in the country are the predominantly agricultural Ibalois and Kankaneys in Cordillera, northern Philippines.

Many sociologists agree that norms localised within ethnic groups are stronger than formal rules. For instance, laws followed by one culturally distinct tribe may hold better than national regulations. This is because the closely-knit nature of the ethnic group creates possibilities for peer monitoring while the threat of community sanctions in case of breaking the law is genuine. These sanctions have worked their way through the group's culture through time and have probably been developed through extensive debates and negotiations. Members of the tribe share high social capital among themselves. Through peer monitoring and sanctioning, ethnic groups attempt to sustain and re-create social capital levels for generations to come.

According to the World Bank, trust, networks, and ethnic ties are beneficial and necessary for economic development, and general social welfare improvement. There are however, some negative aspects to social capital. These are: the possibility of exclusion of others to enter the network making the network sparse and exclusive, the build-up of community pressure on some individuals, and creation of conflicts among people of different networks with

strong distinct social capital in the case of rival ethnic groups. In addition, negative social capital could have damaging affects to crucial networks which are needed by the local tribes for livelihoods, such as the important vegetable trade in northern Philippines.

The Cordillera region, through sustained efforts of its ethnic population, is known for being the leading source of temperate vegetables in the Philippines. Pekas et al (2003: 15) showed in their study that the region provides for at least 75% of the carrots, potatoes and cabbage needs of the country. Moreover, they estimated that in 1994 almost 70% of the mostly ethnic population of the Cordillera are employed one way or another in agriculture.

Despite being the region's biggest employer, local markets and its system of prices are the most commonly used mechanism to achieve co-ordination among players of the vegetable industry. Normally, a lengthy price negotiation occurs between indigenous farmers and traders when the vegetables are brought to the trading areas, especially when there have been no a priori price agreements. Information asymmetry is widespread and so is opportunistic behaviour by price manipulation. However, although majority of the participants of the system use spot market exchange for marketing their products, some other hybrid form of contracting was apparent since payment for the produce was not immediately given as the commodity changed hands, but could take hours and even up to three days afterwards (Milagrosa, 2001: 76). This implies that marketing arrangements in the province involve a great amount of trust.

The issue of trust, networks, and associatedness, are critical components of social capital that will be tackled in the first part of this discussion paper. It is the first time in Benguet province that empirical substantiation will be provided for the well-accepted notion that Filipinos' trust reaches only as far as the family circle. It is also the first attempt at measuring the level of connectedness within and between tribes of northern Philippines. On-field observations by Batt (1999) and Milagrosa (2001) that the transacting parties' credibility and reputation evolve through repeated negotiations conform to Benguet reality. However, in the province, the transacting partners could also change rapidly. For this reason, the second topic that will be dealt with in the discussion paper is the decision-making of ethnic farmers. Specifically, the determinants of the choice of trading partner - for example ethnicity and social capital - will be analysed in their ability to influence a farmer's decision to transact with a specific trader type.

The discussion paper is structured as follows: In Section 2, we examine social capital as a form of capital. An explanation of the benefits and risks derived from social capital is presented together with the methodological problems common in social capital measurement. Section 3 and 4 gives insight into the indigenous population of Benguet and applies the relevance of social capital to vegetable trade and farmer decision-making in the region. After an explanation of the sampling procedure in Section 5, Section 6 presents the results of social capital measurement in the seven study areas. Section 7 uses information from social capital measurements to test the determinants affecting the farmer's choice of trading partner. In Section 8, a summary of the whole discussion paper is presented, with detailed conclusions on the major points raised by the paper's findings.

## **2 What Exactly Is Social Capital?**

---

Social capital encompasses a broad range of observable facts and perception. Concepts such as formal and informal organization, trust, culture, social support, social exchange, embeddedness, relational contracts, and social and inter-firm networks can be lumped together under the widely elastic social science notion (Adler and Kwon, 1999:3). It was Hanifan (1920, in Ostrom and Ahn 2001: 6) who first figuratively referred to “this aspect of life that makes tangible things matter for daily lives of people”. He acknowledges those aspects of life as good will, fellowship, sympathy and social intercourse among people and within a community.

The reason social capital is being heralded as the newly discovered driving force behind societal achievements is because it is now acknowledged as an important factor that explains economic success (Beugelsdijk and van Schaik, 2001:4). Arrow (1999:3) and Solow (1999:6) observed that there is a common agreement among sociologists and economists that social networks can positively or negatively influence economic performance and aggregate productivity. This was in fact an extension of Robert Putnam’s early work with Italian society that specified this relation. Putnam (1993, in Ostrom and Ahn 2001:23) cited the decisive role of horizontal networks in northern Italy’s economic growth and compared it with the hierarchical networks of the relatively poorer south. Putnam emphasises the role of horizontal networks while Fukuyama (1995, in Beugelsdijk and Schaik, 2001: 4) stresses the importance of trust.

Over the years, numerous definitions of social capital have been forwarded. The definitions can be roughly grouped into three types: external, internal or both. External definitions consist of explanations regarding horizontal relationships drawing on social capital as a resource that facilitates actions among actors. Social capital is viewed as inherent in the social network providing direct and indirect links to other actors thereby facilitating their actions. This explains the divergence in success of competitive rivalry among individuals and firms.

Internal definitions deal with the structure of relations between actors within an organisation. This views social capital as the outcome of the structure of linkages between individuals or groups within organisations. Highlights of this perception are those characteristic features of linkages that lead to the pursuit of collective goals. This lends cohesiveness and its benefits to the members of the unit (ibid: 4).

A third group allows for both viewpoints to co-exist in the definition, thus, their use of carefully unbiased wording. Internal and external delineation are actually a question of viewpoint and unit of analysis. This neutral definition is not mutually exclusive and thus can

embrace a wide range of applicability. For instance, the relationship of people in a hierarchy within a community is external to the people living in the community but internal to the community itself. Another dimension supporting this definition is the fact that the overall behaviour of a collective group is a function of its internal connections and external links. Additional definitions are found in Table 1.

**Table 1: Social Capital Definitions**

| <b>Proponent</b>  | <b>Definition</b>  |
|---|--|
| Serageldin and Grootaert (1999:44)                                  | “A glue that holds societies together”   |
| Putnam (1993, in Serageldin and Grootaert, 1999:45)                 | “A set of horizontal associations including networks of civic engagement and social norms that have an effect on the productivity of the community”                  |
| Coleman (1988, in Serageldin and Grootaert 1999:46)                 | “A variety of different entities with two common elements: some aspect of social structure, and the capability to facilitate actions of actors within the structure” |
| North (1990) and Olson (1982) (in Serageldin and Grootaert 1999:46) | “social structures plus the socio-political environment including formalised institutional relationships that enables norms to develop”                              |

Spagnolo (1999: 3) interprets social capital as the “slack of enforcing power present in the social relation”. Mostly the definition deals with enforcement, the social power present on top of what is needed to maintain social interaction that can be used to threaten punishment if non-co-operation occurs. Ostrom and Ahn go to far lengths to discuss the concept and its various dimensions. They have adopted a method to further simplify social capital definitions by categorizing views as either minimalist or expansionist.

The minimalist notion treats social capital as function of network correlations within a unit. This view looks at social capital as an individual’s way to get into favourable networks with few problems. Here, social capital is to be found among people within the network where one can exploit the contacts to maximise assets he already has. Transitionalist notion looks at social capital as a public good and the function it performs. Coleman (1990, in Ostrom and Ahn, 2001: 7) states that social capital is composed of a range of elements that “consist some aspect of the social structure and facilitate the action of people within that structure”. Social capital is embedded in the structure of relations that people have and not in the individuals themselves. The expansionist notion goes a step further by relating social capital to collective action and public policy. As the role of social capital in solving collective action problems becomes apparent, its implications on public policies and theories of collective action are being recognized.

One of the leading researchers of social capital is Robert Putnam, who in his 1993 work on Italy lent a narrow definition of social capital as “features of social organization (for example,

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trust, norms and networks) that can improve societal efficiency by facilitating coordinated action". A major contribution of Putnam is his restricted definition of social capital that helps in attributing the way a society performs based on the social relations of its members. However, aside from the specification, Putnam advanced by developing a theory that trust, norms and networks can boost economic and institutional machinery. He postulated that voluntary co-operation is necessary in order to facilitate contracting and monitoring among participants. Voluntary co-operation can be drawn from trust - while trust on the other hand - develops from reciprocity and networks of civic engagement.

### 2.1 Social Capital *is* Capital

The topic of recent debates among social scientists revolves around defining social capital as a form of capital. One of the leading socio-economists, Arrow (1999:3-4) proposed the abandonment of the term "social capital" since the term does not fit into any pre-existing definition of the term "capital". Specifically, the purpose of building social networks is not for the pursuit of economic value to the participants since it is the interaction itself that serves as the reward. Solow (1999:7), doubts the appropriateness of the term "social capital" since its dimensions does not fit into any type of capital category and is not clearly measurable. Solow advises the use of the term "behaviour patterns" as the nearest word to capture the definition since a large number of economically relevant behaviour is nonetheless determined socially.

On a superficial level, social capital can be likened to other forms of capital in the sense that it is a resource into which other resources can be invested with the anticipation of a future benefit. Increasing social capital by investing in worthy relationships with other people in the community can lead individual and collective actors to gain access to important knowledge, power, encourage collective behaviour and strengthen collective identity.

Similar to public goods, social capital is a collective good in the sense that it is not the restricted property of those who benefit from it (Coleman, 1988, from Adler and Kwon, 1999:5). The use of this capital is non rival but excludable. Non rival use means a person's use of the good does not diminish the availability for others while the excludability implies that people who are not in the network might not be able to access the same privileges as those within. These characteristics make social capital prone to free rider problems.

Like other forms of capital, social capital is "appropriable" and "convertible" (Coleman 1988, Bourdieu, 1985, in Adler and Kwon, 1999: 5). Appropriability means that a person's networks can be used not only for one purpose but also for other purposes (for instance, gathering information and advice). Convertibility means that social capital can be converted into other kinds of capital. For example, having a high position in an organisation can be converted into economic or social advantages.

Akin to physical and human capital, social capital needs maintenance. Simply put, social capital will not diminish as long as participants maintain their relationships and trust with regards to each other (Ostrom and Ahn, 2001:14). Social relationships need to be continually renewed otherwise they lose value. Like human capital, the depreciation rate of social capital can never be really resolved because first, social capital may depreciate with non-use (and exploitation), but it will not depreciate with use: and second, even if social capital changes contextually, the rate at which this happens is variable.

Burt (1997, in Ostrom and Ahn, 2001:7) differentiates between social and human capital by insisting that social capital is a kind of capital that can be located among the people. Human capital on the other hand is regarded as an element that individual persons possess. The two kinds of capital are however, complementary in the sense that the kind of human capital a person possesses (education, skill etc) can be harnessed or downgraded based on the circumstances (circle of friends, society level etc) the individual is located.

Social capital can be a complement or substitute for other resources. For instance, good network connections can compensate for lack of financial or human capital. Social capital can also complement the efficiency of economic capital through transaction costs reduction. It can not be constructed through external interventions unlike physical capital (Ostrom and Ahn 2001:15). For instance a local infrastructure project can be initiated at the behest of a donor or a patron. However, the proper operation and smooth implementation of the project, which would naturally draw upon local manpower, would depend on the social capital that the labourers, engineers and officials share. Many a project has been delayed or abandoned altogether due to conflicts that arise in the work area.

Sociologists have contended that social capital is distinct from all other forms of capital because it is to be found not among the players but with their association with other players. It is very difficult to see, find and measure social capital as compared to physical capital (Ostrom and Ahn 2001:14). No one has exclusive rights to social capital, in fact, when the relationship among people ends, the social capital disappears along with it. Social capital is unlike other forms of capital in the sense that investing in its development can not be quantified (Solow, 1997, in Adler and Kwon 1999:6). Even though the pay-off of social capital can be calculated, the term “capital” should not be generalised since the investment in generating it was never measured.

Results of long-term development efforts hinge strongly on the levels of national regional or local social capital in a country (Ostrom and Ahn 2001:16). The government can help create social capital (for instance, through voluntary associations) to facilitate collective problem solving in many communities. On the extreme, if the government tries to solve community problems by assuming local roles and responsibilities, the opportunity of developing area-wide social capital is diminished. A possible effect of this could be the creation of government-dependent citizens with reduced capacities to generate their own social capital.



## **Social Capital, Ethnicity and Decision-Making in the Philippine Vegetable Market**

The World Bank<sup>1</sup> identified some major sources of social capital in the framework of economic growth and development. These are families, communities, firms, civil society, public sector, ethnicity, and gender. Admittedly general and non-exhaustive, the list however, is able to identify important sources of social capital that researchers should focus on. In the public sector, too strong social capital can breed corruption. Strong social capital at the upper levels of the political system makes it difficult for lower level officials to access state power and makes it easy for top officials to facilitate corruption and hide each other's actions.

### **2.2 Sources and Forms of Social Capital**

Studies of Ostrom (1990, in Ostrom and Ahn, 2001:9) dealt with social capital in the form of shared norms, common knowledge and rules in use. She concluded that collective action problems are solved by people involved in a common-pool resource (for example, fish ponds, irrigation systems, forest management systems etc) by means of internal organisation for a common cause. Repeated interaction will lead them to discover who to trust and how their actions affect each other and the resource. Their shared norms and patterns of behaviour due to their localised setting form social capital that build up over time. This can be drawn from later to resolve conflicts at community level.

Social capital can take on many forms. Ostrom and Ahn (2001:13) consider social capital to include elements of trust, reciprocity, networks, rules and laws. They agree that human and physical capital are harnessed better and are more productive for a given project when the parties involved in the operation have trust and co-operation among themselves. Project implementation encounters fewer problems and co-ordination among participants becomes smoother. In a repeated game model, humans must strive to reach equilibrium, trying to decide between short-term gains versus long term benefits. With the build up of trust as a result of repeated interaction, expectations are mutually renewed and temptations for short run gains are overpowered (Ostrom 1998, in Ostrom and Ahn, 2001: 13). Shown in Table 2 are the various components and dimensions of social capital. For analytical purposes, social capital is best viewed as the structure of social relations (networks) and the underlying quality within (trust and reciprocity).

---

<sup>1</sup> See <http://www.worldbank.org/poverty/scapital/>

**Table 2: Components and Dimensions of Social Capital**

|  |   |
|--|---|
| Structure of social relations: networks                      | Quality of social relations: norms  |
| Type: formal-informal  | Norm of trust: social<br>(familiar/personal, generalised)<br>civic/institutional  |
| Size capacity: limited-extensive                             | Norm of reciprocity:<br>direct-indirect<br>Immediate-delayed,<br>In kind- in lieu |
| Spatial: household-municipal-regional national-international |   |
| Structural: open-closed                                      |   |
| Dense-sparse   |   |
| Homogeneous-heterogeneous                                    |   |
| Relational: vertical-horizontal                              |   |

Source: simplified from Stone, 2001

A number of themes have been emerging from the social capital field. For instance, networks of relationships among individuals and groups generate social capital. The lateral associations are voluntary but could be hierarchical or equal. Reciprocity is important in many business contracts and reflects the community's levels of altruism and self-interest. Trust in networks reduces transaction costs since it promotes co-operative action among individuals, eliminating the need for lengthy contracts, negotiations, enforcement and monitoring costs (Fukuyama, 1995).

According to Putnam (1990, in Ostrom and Ahn, 2001: 11), norms of reciprocity and networks of engagement build up trust. When people repeatedly reciprocate good actions to one another, opportunistic behaviour is restricted and trust is built. The same result is achieved in social networks that enhance repeated exchange and reciprocity. Such is the belief of Putnam in the power of networks that he stressed the importance of neighbourhood associations, choral societies, co-operatives, sports clubs and mass-based parties where horizontal relationships are strong and dense (ibid.: 10). Through intense relationships within these organisations, reciprocity is fostered, communication and information flow is facilitated, defecting is a disadvantage and overall trust develops.

### *2.2.1 Trust, Reciprocity and Networks*

Of all the elements of social capital, trust is the most far-reaching and most important since almost all societal transactions involves some level of trust (Dasgupta, 2000, in Slangen et al 2004:13). Trust, according to Gambetta (2000, in Ostrom and Ahn, 2001: 19) occurs when "an

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agent assesses another agent or group of agents to perform a particular action". It means to have an expectation of the actions others will do. It reflects on both parties' dependability to perform a function that was expected of them.

As with social capital, trust has to be recurrently renewed so that it can be sustained between trustee and trustor. Ostrom and Ahn argue (2001:20) that even selfish individuals have incentives to rely their trust on one another. Take for example the Prisoner's Dilemma in a non-co-operative game. Each prisoner has certain expectations of what the other's actions will be. If the game is played repeatedly, each will be inclined to trust the other and reciprocate trust in favour of future gains that he would obtain from their game. On the one hand, trusting participants make themselves vulnerable to risk and loss in the event that the trustee does not perform the action while on the other hand, both creates opportunities for them to enhance their welfare if they reciprocate good actions of one another.

Another important form of social capital is reciprocity. Trust is an integral part of this norm because a person who reciprocates one good action for another becomes trustworthy. This is important because on a basic level, the decision to co-operate or not depends on whether the other agent is reliable and truthful. On a higher level, if people within a community reciprocate good deeds for each other, it is a general indication that a considerable percentage of the citizens are trustworthy.

According to Putnam (in Ostrom and Ahn 2001:23), networks are a necessary precondition for reciprocity. A dense network of social relations creates many opportunities for repeated interaction. Repeated interactions are needed in order for trust to build. When only a fraction of the population is trustworthy, they tend to create a network among themselves. This fraction has the potential to persuade habitual defectors and encourage them to behave co-operatively. Trusting relations are easier developed when the instigator of the relationship is also trustworthy.

There are in general, two kinds of networks, the horizontal and vertical. Putnam is a strong advocate of horizontal types of networks since it brings agents of equal power together. It is with dense horizontal relations that society largely benefits from. He discourages vertical networking where agents of unequal power and asymmetric relations are downgraded to a hierarchical relationship of dependence (in Ostrom and Ahn, 2001:23). Institutions establish incentives for people to act trustworthily by their means of reward and punishment. Institutions can also supply information, advise and alternative conflict resolution mechanisms (Ostrom and Ahn, 2001: 20) encouraging parties to co-operate and behave in a trustworthy manner. When participants know that punishment will be meted out on people who don't follow the prescriptions of a contract, their expectations of future follow-through activities will increase. Participants are now sure that the other party can be trusted and thus reciprocate by acting trustworthy on their own.

Social trust can be increased with formal rules. For instance legal institutions can facilitate conflict resolution due to cultural differences and equalise the status of individuals in the community (Knight 2001, in Ostrom and Ahn, 2001: 25). These help people develop positive beliefs in the effectiveness of horizontal networks.

## 2.3 The Benefits and Risks of Social Capital

Many empirical studies show that countries that enjoy high economic success and good democratic governance also share high amounts of trust among the citizens and towards their institutions in the local and national level. From the World Values Survey, Knack and Keefer (1997:22) found that country growth rates, investments, secure property rights and contract enforceability are positively directly correlated with levels of trust. Fukuyama (1995) went further by saying that countries that experienced prolonged periods of authoritarian type of governments such as China, France and South Italy have more pronounced family-owned and -managed businesses in the economy. Germany, the US and Japan, countries that did not experience centralised state power have large corporations and businesses. The difference in management could be traced to the fact that the former authoritarian-ruled countries have evolved a closed type of trust that extend only to family members and close friends. Knack and Keefer (1997:13), discovered that countries with high levels of trust among the population exhibited higher levels of economic growth. This further emphasises the fact that there is an area between economics and culture than can be further researched.

Within Europe, Mackie (2001, in Ostrom and Ahn 2001: 23) reviewed the results of survey data on trust levels in 12 countries. He discovered that personal perceptions on people trustworthiness within a country and from other countries affect propensity to trust others. The Benelux countries including Denmark were ranked as high trusting countries while low trusting countries are located more to the South (Spain, Portugal, Greece and Italy). Germany, France, Great Britain and Ireland are found to be in between. Previous surveys showed Turkish and eastern Europeans scored the lowest in terms of interpersonal trust.

In Bangladesh, a group-lending program inspired by the Grameen Bank requires that the borrowers come from the same village. This is under the strong assumption that members of the same community can sustain co-operation within the group and sustain free riders because of their solid relations. The scheme that worked its way by anchoring itself to the social capital of the villages proved to be successful (Spagnolo, 1999: 2).

In India, community mobilisation on forest management issues solved economic stagnation from conflicts between the national government and local officials. When collective community action was instituted, clashes decreased and land productivity and village incomes rose. The government and communities worked together to increase social capital in the area and improve their situation (Serageldin and Grootaert 1999: 45). Likewise, by creating policies that

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increase social capital in the area, East Asian miracle economies employed efficient governance structures that facilitated information exchange, co-operation among the participants and resulted to growth (World Bank, 1993; Serageldin and Grootaert 1999: 44).

In explaining the public good nature of social capital, Coleman (1990, in Ostrom and Ahn, 2001: 8) cited several examples of circumstances where social capital was called upon to address community issues. Using an example of South Korean activists, physician-patient relations and Jerusalem mothers, Coleman showed that all employed social capital to help work out collective action problems. He explains that the benefits of investing in social capital go to the person doing the “investing” and that all individuals within the structure can also benefit. Thus, actors achieve both their individual and collective goals by employing the various forms of social capital.

Gardner and Walker (1994, in Ostrom and Ahn, 2001:9) elaborated on factors that help individuals solve collective action problems. They called these factors social capital and distinguished elements such as communication and continued interaction, expectation of mutual trust, power to create own rules, monitoring laws and sanctions as facilitating factors of collective problem solving. These however, were studies done in a minute scale and results can not be duplicated for larger populations with a different setting. This was achieved in part by Putnam in his landmark study on modern Italy where he expanded the concept of social capital to apply it on a larger nation-wide scale.

The research of Putnam compared regional government performance between North and South Italy as a function of traditional public engagements and interpersonal trust. Putnam said that in the north, horizontal relationships among people are manifested in various sectors of society and have positively benefited economic and institutional operations. Societal structure in the south is more hierarchical thus far reaching economic and institutional performance was constricted.

The famous Italian Mafia for years perversely exploited social capital as the underlying structure within their organisation. In other countries, cartels among suppliers use social capital to seize profits in an industry and gain higher profit. Finally, nations with authoritarian and dictatorial types of government use social capital at the upper strata of leadership while effectively destroying other forms of social capital on mass level.

### **2.4 Linking Social Capital and Economic Growth**

The institutional environment consists of formal rules and informal constraints. Formal rules could consist of private and public orders, policies, regulations, and property rights issues. Informal constraints comprise of conventions, customs, traditions, common values and norms

(Slangen, 2005: 9). It is important to develop good institutions because well-organised institutions translate into good governance structures. By good institutions we mean those that facilitate rather than retard economic growth (La Porta et al 1999). By good governance structures we mean those agreements and transactions that involve the least costs and is the most efficient given the existing institutional environment (Slangen, 2005: 29-32). Good institutions and good governance structures contain efficient information transfer mechanisms that result in appropriate decisions among parties involved. The foundations of these are informal associations since in the absence of appropriate control measures, policing is internalised. The following paragraphs attempt to specifically distinguish how social capital is linked to economic growth by way of its influence on the institutional environment.

Social capital entails trust based on the expectation that your partner will perform the duties that are expected of them. According to Gambetta (1988, in Beugelsdijk and Schaik, 2001:6), trust is present when you expect your partner not to exploit your vulnerability. In any transaction, trust with the partner is always involved. Several studies have proven this fact, often as an augmentation of Williamson's transaction cost theory.

The type of governance structure used to organise transactions in a community is influenced by informal and personal connections between transacting parties (Ring and van de Ven 1992). Having repeated interactions among transacting parties increase trust levels and this is translated in the types of contracts drawn up. With trust, enforcement and monitoring costs are considerably less thus transaction costs decline. People within a network can serve as third party enforcers to other transactions and to a certain extent, take the place of the legal system. These further decrease monitoring and enforcement costs and transaction costs in general.

Costs involved in information search become lower as the network facilitates information transfer among its people. Social capital works by increasing communication, inter-action, information transfer and co-operation between transacting partners without the influence of power and market (Gulati, 1998). Trust therefore 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. Noteboom (1999), Fukuyama (1995) and Williamson (1985) agree that trust and contracts are to some extent, substitutes. Overly specific and detailed contract means that there is little trust between business partners and vice versa. Social capital contributes to economic success as much as other kinds of capital through the substitution of trust in drawing up most societal contracts (thus decreasing transaction costs). Trust is especially crucial when it comes to highly uncertain and complex transactions and is needed to reduce the uncertainty. When the system already functions efficiently, social capital works as a mediating entity in more complex transactions.

Solow (1999:8) adds that since contracts are almost always incomplete, trust plays a crucial role in lowering transaction costs. This will reduce defensive behaviour among the

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participants and lead to better economic performance since parties expect non-opportunistic behaviour from each other.

Compared with theory on the relationship of trust and economic growth, finding direct links on the role of networks in economic growth is slightly ambiguous. Perhaps the best example is Putnam's work (1993) comparing the economic disparity of north and south Italy. Putnam attributed north Italy's economic success to the existence of dense horizontal networks. Participation in informal type of associations such as sports clubs, religious and community organisations, educational and cause-oriented groups increase the level of connectedness and networks within that part of the country. A network among peers is said to help propel the economy since people do not look at society as an arena for pursuing personal interests (Beugelsdijk and Schaik, 2001: 8). Due to familiarity and a sense of looking after people within the network, voluntarism is high. Therefore, there are less transaction costs since fewer resources are used.

Through the creation of networks, collective action in the pursuit of common goals overrides temptations to achieve goals for personal wealth and limits free riding. Knowledge and information transfer is easily disseminated, decreasing the occurrence of information asymmetry, opportunistic behaviour, and lowering transaction costs.

No singular approach is the "right one" in measuring social capital. Researchers have a wide array of instruments and measurement tools to employ to capture the role social capital plays in society and its development. What is important to note is that a mix of social capital, together with other types of capital that proved to be successful for one country does not enable it to be applicable to all countries (Serageldin and Grootaert, 1999: 54). There exists an appropriate level of social capital (plus other types of capital) that can maximise returns to a country's factors of production. The specific mix that will work for a country's economic success shall be unique to that country, taking into consideration the complementarity and substitution of each of the endowments.

### **2.5 Methodological Problems with Social Capital Measurement**

One pervasive problem of the concept social capital is the difficulty in measuring it. Arrow (1999:4) stated that measuring social capital has proven to be a "delusion" and a "snare". He suggested that instead of measuring existing social capital, researchers should concentrate on seeking pre-existing network relations and then build up from that baseline. Solow (1999: 7) mentions some measurement problems, particularly on the boundaries of the dimensions social capital. According to him, this problem stems from the fact that there is no proper and suitable definition that would fit the concept of social capital. Serageldin and Grootaert (1999: 53), posed their view by factoring the effect of social capital in the neo-classical production function

equation. This proves to be extremely difficult because it is never known whether the effect of social capital is multiplicative or additive. They suggested however, that this problem could be solved if we treat social capital the way technology is incorporated into the equation.

Several studies have suggested various methodologies on dealing with this downside. Researches from Australia<sup>2</sup>, the US<sup>3</sup> and even those funded by the World Bank<sup>4</sup> extensively treat the methodological aspect of social capital. Each has developed its own approach in measurement and quantification although sharing similar objectives. The World Bank has posited that no standard measure of social capital can ever be achieved, since social capital measurements are dependent on the definition rendered by the researchers. These definitions however, are distinctive of the context and environment of which it has evolved.

Why is social capital difficult to measure? For one, social capital perceptions are highly subjective. It is highly difficult to narrow down the subtleties of the population and to reduce the value of connectedness of a community to a number. Likewise, people have varying insights on whether the community and its institutions are trustworthy or not based on their previous experiences and from information received from people around them. Thus, it is very hard to capture the exact sentiments of the whole population for a specified period of time.

Secondly, social capital is extremely dynamic and volatile. It was discussed earlier that social capital in the form of trust, reciprocity and networks needs to be renewed and used otherwise, its level will decrease. With respect to networks, it was discussed that social capital immediately dissolves when the people involved in it have broken their ties with each other. Measuring the accumulation and the depreciation of social capital in this situation is a methodological challenge.

Thirdly, trust, shared norms, beliefs and social networks can never be entered into any formal written agreement. The non-contractability and intangible nature of social capital makes it extremely difficult to measure (Ostrom, 2000; Dasgupta 1988).

Serageldin and Grootaert (1999: 52) suggested that to measure social capital, we need to aggregate indicators such as those developed and employed by the Human Development and Physical Quality of Life Indexes (HDI and PQLI). For micro indicators, an analysis resembling the methodology used by Putnam could be used while for macro indicators, the approach of Knack and Keefer could be appropriate.

The World Bank has suggested three distinctive and different ways to approach social capital measurement. Quantitative studies such as those conducted by Knack and Keefer (1997) using the World values survey belong to the first approach. The second method involves

<sup>2</sup> See for example, <http://www.mapl.com.au/>

<sup>3</sup> see for example, <http://www.cfsv.org/communitysurvey/>

<sup>4</sup> see for example, <http://www.worldbank.org/poverty/scapital/>



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comparative analysis, such as the approach used by Putnam (1993) in the study of north and south Italy. The last approach is the qualitative approach as espoused by Portes and Sensenbrenner (1993), Gold (1995) and Heller (1996) among others. However, no singular approach is superior to another.

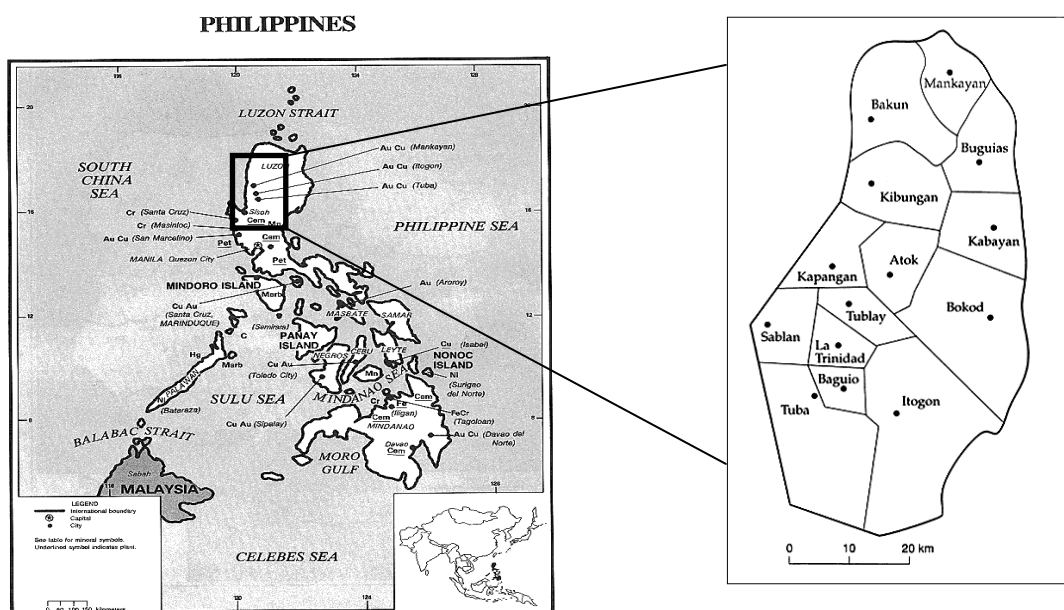
### 3 Benguet Province in Northern Philippines

Located in the northern part of the Philippines is the largely agriculture-based ethnic-dominated Benguet province. Benguet is one of the six provinces comprising the Cordillera Administrative Region (CAR), a landlocked plateau dominated by mountain ranges<sup>5</sup>. The region where Benguet lies is known as the Cordillera mountain ranges creating land slope ranges from 0-8% (gently sloping) to >50% (very steep). Almost 80% of Benguet land area belongs to slopes of >50% and above (Tagarino, 1996: 104). The Department of Environment and Natural Resources (DENR, 1995) reported that the province's total land area is 261, 648 hectares of which 77% (or 201469 hectares) are considered forest areas. A total of 23% of the total land area (or 60179 hectares) is considered alienable and disposable. Within the total alienable and disposable land area, 79% (or approximately 47, 750 hectares) is officially classified by the Provincial Capitol as agricultural land.

According to the National Statistics Coordination Board (2001), Benguet's 13 municipalities are grouped into two districts. The more northern District 1 is composed of high lying areas (Bakun, Mankayan, Buguias, Kibungan, Kapangan, Atok, Tublay and La Trinidad) while the more southern District 2 consists of low lying areas (Sablan, Tuba, Itogon, Bokod and Kabayan). Shown in Figure 1 is the map of the Philippines, with an insert showing the map of the Cordillera Administrative Region (CAR) and a map of Benguet.

Figure 1: Maps of the Philippines and Benguet Showing Research Areas

(Source: NSCB, 2001)



<sup>5</sup> Cordillera Administrative Region is composed of Abra, Apayao, Benguet, Ifugao, Kalinga, Mountain Province and Baguio City

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Benguet's total land area is about 14% of the total land area of the Cordillera Administrative Region. At approximately 1500 meters above sea level, Benguet's uniquely cool climate is useful for vegetable production. The Population Census of 2002 reported a population of 353752 for the province of Benguet, of which 230000 are in the labour force<sup>6</sup>. Of the total number of people in the labour force, 54% or 124200 were engaged in agricultural related activities (NEDA, 2004). A special Agriculture Statistical Bulletin released by the National Statistics Office in 2002 however, reported a total of 218,000 household members engaged in agriculture. This includes children below 15 years of age and persons above 65 years old. This value reflects the total population of the province involved one way or another in agriculture, which is higher than the 124000 officially recorded by the province. The special bulletin shows the two faces of agriculture in the province: it provides employment and livelihood opportunities for more than half of the population but also shows evidence of how majority of the population is dependent on agriculture. In 2000, the agriculture sector of CAR accounted for 16% of the Gross Regional Domestic Product for that year, dropping to 2% in 2001 when crops failed to due to pests. Nevertheless, current studies show that Benguet vegetable sector was able to recover, currently providing for at least 75% of the carrots, potatoes and cabbage demands of the country (Pekas et. al., 2003: 15). By 2004, the agricultural sector of CAR accounted for 13% of the 25.69 Billion Peso Gross Regional Domestic Product of the region, following industry (66%) and services (21%) (NEDA, 2004: 6-8)<sup>7</sup>.

Despite its dynamic vegetable industry, Benguet is no stranger to poverty. In 2000, the National Statistics Coordination Board (NSCB, 2001: 142) reported that a little over 30% of provincial population live in poverty<sup>8</sup>. Land degradation, marginal productivity and sub-standard or missing infrastructure-support are some of the problems being faced by the province. According to Pender (2004: 340), these severe-interrelated problems are common to many highland areas. It is because of adverse natural conditions and lacking resources that these areas are termed "Less Favoured". It is similarly because of these reasons that Benguet can be classified as a less favoured area. Several man-made and natural resource constraints hinder the province's economic growth.

In terms of socio-economic constraints, poor or limited market access due to missing or low-quality farm-to-market roads comprise the bulk of marketing costs and losses for market participants. The Halsema highway (locally known as the Mountain trail) that snakes through borders of most municipalities is the only artery linking vegetable producing communities to two major trading markets serving the whole province. The remoteness of communities is emphasized when they are always under threat to be cut off from the markets due to landslides

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<sup>6</sup> The Provincial Capitol of Benguet considers persons between 15 and 65, of sound health and mind to belong to the labour force, the economically active part of the population.

<sup>7</sup> GRDP experienced a 3.86% growth in 2002

affecting many roads in the rainy season. The few vegetable trading posts are clustered mainly in certain municipalities, incapable of handling harvest overflows. Moreover, cold storage warehouses, docking bays for delivery trucks and technology that support timely market information transfer province-wide, are lacking (Dalmo et. al., 1994: 16). Aside from poor infrastructure and service support, Ruben and Pender (2004: 305) refer to the neglect of the less favoured areas by policy makers as well as neglect by agriculture and research extension activities.

In terms of agro-ecologic constraints, the steep slopes and poor soils typical of Cordillera topography have challenged vegetable growers for centuries. 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. Many farmers are dependent on the rain-fed agriculture due to lack of irrigation facilities. These natural and man made resource constraints not only act together to thrust a third of regional population into poverty but actually hinder them from escaping it.

Benguet has the characteristics of a Less Favoured Area (LFA) with a high potential to build its unique development pathway. The province's cool climate and its high altitude are two physical features that give it an comparative advantage in temperate vegetable production over the rest of the country. This unique climatological feature is an asset that the province draws upon to take the lead among other regions in supplying vegetables for Filipinos.

### 3.1 Applying Social Capital Theory to Benguet Vegetable Markets

More recently, interaction between the Kankanaey and Ibaloi 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).

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<sup>8</sup> Poverty incidence refers to the proportion of families (or population) with per capita income less than the per capita poverty threshold to the total number of families (population).

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Davis (1973: 211-230, 239) 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. 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. In exchange systems where personal relationships are present, knowledge and information is easily disseminated leading to decreased information asymmetry and opportunistic behavior (Beugelsdijk and Schaik, 2001: 4, 6, 8, 16, 18).

In social capital theory, repeated interactions lead to increased trust levels. According Beugelsdijk and Schaik (2001: 4, 6, 8, 16, 18), 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: 2, 16) 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. This chapter will attempt to establish baseline social capital information from the province in order to shed light on the seemingly contradictory findings of earlier researches.

## 4 Farm-Level Decision-Making

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Every after production season, Benguet farmers have an opportunity to decide to change the manner by which they want to sell their crops. The farmer needs to choose who among the numerous intermediaries in the vegetable trading post he prefers to trade with. Since most middlemen have overlapping functions, eventually, the choice centers to three trading partners that offer different modes of governance: commissioners, contractors and wholesalers (Dagupen and Ramos, 1997; Sim, 1997; Rola, 1999; Pulami and Dagupen, 2002).

For the grower, decision-making is not always easy. In the choice process, several factors which vary in relative importance -depending on the farmer's objectives - are weighed. For the researcher, farm-level decision-making is not always easy to understand. When studying decision-making, Ali (2005: 57) argues that among other things, household strategies, embeddedness in opportunity structures and the individual's moral motivations need to be considered in order to comprehend the decision-making process. The three dimensions that the authors mentioned overlap, in one way or another, with the social capital of the decision-maker.

Social capital and its influence on decision-making are interpreted by many studies in terms of collective action (Magno, 2001; Grootaert, 2002; Grootaert and Bastelaer, 2002b). Grootaert and Bastelaer (2002b: 8) maintain that when attitudes of mutual trust within local networks exist, collective action is easier to implement. Now, farmer decision-making is not a communal activity. Nevertheless, several studies allude to the effect of social capital (or the lack of it) on the way individual decisions are made. A study by Batt (1999: 16) on Benguet potato farmers and their seed suppliers showed that despite repeated interactions, no connection between trust and the duration of farmer-trader relationship could be established. As farmers buy potato seed supplies from preferred sellers, they simultaneously consider offers from other suppliers. Farmers' commitment to a relationship is related to their satisfaction with trader performance rather than trust. On the basis of the farmer's perception of trust and the strength of his informal networks, the farmer can have a preference for a certain trading partner and therefore is predisposed to transact with him. Gladwin and Murtaugh (1980) proposed that the "unconscious" decision can later be re-assessed or revised by the farmer's conscious mode. They argue that not only the decision-maker's characteristics but also his subconscious has an influence on the choice made.

For this reason, aside from measuring social capital, the discussion paper will go beyond by testing empirically whether varying levels of social capital make a difference to the way farmers select governance structures. On the basis of social capital, we examine which farm and farmer characteristics, among others, are considered by the farmer in his selection of governance structures. At the end of the discussion paper, we shall determine and analyze factors explaining farmers' decisions to use a specific governance structure over an alternative and examine whether social capital plays a role in farmers' choices of governance structures.

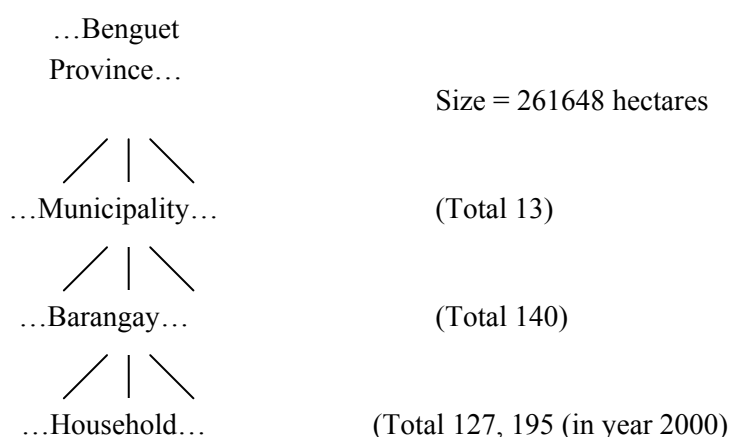
## 5 The Sampling Procedure

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Within each of Benguet’s 13 municipalities are several barangays, the smallest local government unit in the country. Each barangay contains a few hundred to a few thousand households. Households are the basic social units.

**Figure 2: Local government structure of Benguet province**

(Source: NSCB, 2001)



Seven of the 13 municipalities were selected as survey areas. These municipalities were selected because they are representative of the province in terms of demographics and vegetable production capabilities. They also represent the range of possible geographic possibilities in Benguet. The Provincial Capitol of Benguet, confirmed by the study of Pekas et al (2003) listed the municipalities of Buguias, Atok and Kibungan as the top vegetable producers in the province. This means that these three provinces were able to supply the highest amount of vegetables by volume among all municipalities in the province. The municipalities of Bakun, Itogon and Bokod were classified as least producers meaning, they were able to produce and market the lowest volume of vegetables among all municipalities. La Trinidad was chosen because it has the La Trinidad Trading Post where most of the vegetables harvested in the region are traded<sup>9</sup>.

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. Thus, the planned random sampling could not be implemented<sup>10</sup>. Generating a complete list for the research would cost time and would force the study to go over schedule and budget. It was decided that the research would follow the “snowballing” procedure used by previous researches in the province (for example, CHARM and VLIR funded researches through Benguet State University<sup>11</sup>). The snowballing method identifies cases of interest from people who know people that are information-rich, that is, good examples for study and good interview subjects (Patton, 1990).

Similar studies conducted by Della Vedeva and Brieva (1995) on seed potatoes in Argentina, Batt on potato farmers in Benguet (2001) Tagarino (2003) on production and marketing of selected biologically produced vegetables in the Benguet employed purposive sampling. In developing countries where reliable lists of potential respondents are absent, such methods of data collection are the only means of contacting respondents. In the absence of reliable mail or telephone system to gather addresses, the purposive “snowballing” method is most appropriate given the circumstances.

In order to be able to use the data statistically with an analysis at 95% significance level, a minimum of 150 respondents is required (Luck and Rubin, 1987; Zhang, 1999: 56). Thus with the lack of population list, the plan that was developed just shortly before the interviews were to be conducted was to set a minimum number of farmer and trader respondents per municipality. The minimum number of farmers and traders targeted for interviews in a single municipality was set at 60 and 30 respondents respectively. Most of the time, the enumerators met and even exceeded the minimum required number of respondents for farmers and traders. For the municipality of Itogon, there were not enough farmers available or willing to be interviewed. The same situation was experienced in Bokod, where there were not enough traders that could be located to participate in the survey. As we mentioned earlier, the two municipalities are among the least producers of vegetables by volume in the province, therefore it was no surprise that they had fewer farmers and traders. Bokod is also a mining town and we suspect that people who do not have land to cultivate are probably employed in the gold mines. The intended and actual samples are shown in Table 3.

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9 The total population for the seven municipalities eligible for the survey is 26329 farmers.

10 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.

11 CHARM is the \$41M Cordillera Highland Agriculture Resource Management Project funded by the Asian Development Bank. VLIR is the Vlaamse Interuniversitaire Raad.



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**Table 3: Survey Sample Size per Municipality, Benguet 2003**

| Municipality | Farmers    |            | Traders    |            | Total of Actual Interviewed |
|--------------|------------|------------|------------|------------|-----------------------------|
|              | Planned    | Actual     | Planned    | Actual     |                             |
| Atok         | 60         | 60         | 30         | 30         | 90                          |
| Bakun        | 60         | 60         | 30         | 30         | 90                          |
| Bokod        | 60         | 60         | 30         | 15         | 75                          |
| Buguias      | 60         | 76         | 30         | 30         | 106                         |
| Itogon       | 60         | 59         | 30         | 30         | 89                          |
| Kibungan     | 60         | 74         | 30         | 30         | 104                         |
| La Trinidad  | 60         | 61         | 30         | 30         | 91                          |
| <b>Total</b> | <b>420</b> | <b>450</b> | <b>210</b> | <b>195</b> | <b>645</b>                  |

Source: Own survey

The interviewed farmers totalled 450. To increase sample representativity, only farmers who grow vegetables with the intention of selling them in La Trinidad and Baguio City markets for income were selected. Farmers who did not participate in commercial vegetable production for over a year prior to the survey season were rejected. Sampling for traders was also conducted purposely. The interviewed traders totalled 195. To increase sample representativity, only traders who work in their respective municipalities, and those that work in La Trinidad and Baguio City markets were selected. Traders who have not worked in vegetable trade for a year prior to the interview were rejected. Overall there were obviously less traders than farmers per municipality and for this reason, less traders were interviewed.

Using this sampling procedure has its own advantages and disadvantages. The sampling technique is non-random; therefore, generalizations regarding sample results must be handled carefully. However, 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 income. 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.

The sampling method employed was successful in targeting local farmers who plant crops for the purpose of income and market them in La Trinidad and Baguio. It was also able to target traders who work for income in the two major vegetable trading posts. Respondents who are willing to speak out and share their experiences were selected. Increasing the likelihood of locating desired characteristics in the population is the major advantage of the sampling method employed. This helps reduce sampling variance and costs (Malhotra, 1996: 369).

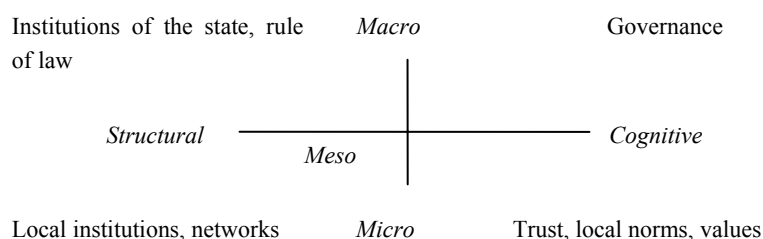
## 6 Measuring Social Capital

### 6.1 Theoretical Framework

Sociologists and economists assert that results of long-term economic development efforts hinge strongly on the levels of national, regional or local social capital (Ostrom and Ahn, 2001: 9). The role of trust, networks and ethnic ties are beneficial and necessary for government success and improvement of society's welfare (World Bank). In terms of how social capital can positively influence market transactions, (Beugelsdijk and Schaik, 2001: 4, 6) stated that social capital works by increasing communication, inter-action, information transfer and thus 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.

Grootaert and Bastelaer (2002: 4-5, 8) suggest developing methodologies that match the specific social capital element being evaluated. Krishna and Shrader (2000: 11, 33) suggest aggregating and analyzing indicators of structural and cognitive social capital and collective action after being independently assessed. Their framework in Figure 3 was adopted.

Figure 3: Forms and Scope of Social Capital



Source: (Grootaert and Bastelaer, 2002: 4-5, 8)

The first concept observed is structural social capital. Structural social capital is tangible and deals with formal institutions. It includes membership in formal networks, particularly in local organizations like the church and local government. The second concept observed is cognitive social capital. Cognitive social capital is perceived as embedded within the people and thus, intangible. This is in the form of trust, local ethics, traditions and morals. Social capital measurement occurs along a continuum from the micro to the macro dimension. Micro social capital captures horizontal networks and norms that motivate these associations. Meso social

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capital describes vertical and horizontal interaction. Macro level social capital examines the wider institutional and political sphere.

### 6.2 The Social Capital Index

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: 4-5, 8) argued that empirical social capital data analyses could utilize either approach since no standard calculation procedures exist.

Except for membership in local organizations, all items were obtained using a 5-point 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  $CSC_{ij}$ :

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

$$i=1, \dots, I \text{ and } j=1, \dots, J$$

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;  $goalsandperceptions_{ij}$  is the goals and perceptions of farmer i in municipality j and  $optimismsat_{ij}$  is the optimism and satisfaction of farmer i in municipality j.

Later, 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 are calculated by obtaining the percentage equivalent and then similarly 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.

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: 4-5, 8) 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 (1= highly disagree and 5= highly agree) measured farmer and trader perceptions on social capital statements. These statements were taken from previous international researches on social capital. Statements and questions in those researches that were found to be relevant to the study were included in the Benguet questionnaire. To measure optimism and satisfaction, three questions were used (Cronbach  $\alpha=0.439$ ). Five questions were used to measure common goals and perceptions (Cronbach  $\alpha= 0.661$ ) while nine statements were used to measure trust levels (Cronbach  $\alpha=0.846$ ). Five statements were used to gauge informal civic associatedness (Cronbach  $\alpha= 0.794$ ). The Cronbach alpha value of social capital statements altogether is 0.844. Lastly, using forthright yes/no questions, six items were used to measure formal networks through active membership in local organizations.

Second, an equation was used to model cognitive and structural social capital. Caution is given in the presentation and aggregation of social capital results. Following Grootaert (2002: 56, 63) 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.

## 6.3 Deconstructing Social Capital

### 6.3.1 *Principal Component Analysis of Social Capital Indicators*

To resolve which of the cognitive and structural indicators drives social capital, principal component analysis was performed on aggregated statements from farmers and traders. As shown in Table 4, 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 less than 1 are excluded was used<sup>12</sup>. 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 the thrusts the community and local government should focus on. Fighting rising input prices loaded heavily for this Factor

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<sup>12</sup> Factor loading significance depends on sample size (Field, 2000: 440). On larger samples, smaller factor loadings could be statistically important. The study follows Stevens (1992:382 in Field, 2000:440) where, based on an alpha level of 0.01, loadings greater than 0.298 could be considered significant for sample sizes greater than 300.

(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.

**Table 4: Rotated Component Matrix Results for Aggregated Farmer and Trader Statements**

| Statements  | Component         |            |                     |                    |              |                   |
|---|-------------------|------------|---------------------|--------------------|--------------|-------------------|
|   | 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 not given the same chances as others | ,002              | ,205       | ,078                | ,880               | ,105         | -,036             |
| 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              |

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

Rotation converged in 6 iterations.

Source: Own survey

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### 6.3.2 Structural and Cognitive Social Capital

#### 6.3.2.1 Cognitive Social Capital (CSC)

Cognitive social capital indicator values range from 0 (no cognitive social capital) to 50 (full cognitive social capital). As a reference level, the mean value for all municipalities in cognitive social capital is taken. This is equal to 29.8 in the lower right cell of Table 5. Cognitive social capital scores did not vary greatly among municipalities. Compared to the reference level of 29.8, Atok, Bakun, Buguias and Itogon have higher total cognitive social capital scores than the municipal means. Buguias municipality had the highest associatedness scores (8) which is higher than the 7.8 aggregate mean for associatedness for all municipalities. La Trinidad constituents were most trusting with a score of 6.9, higher than aggregate trust average of 6.6. Itogon residents shared the most common goals and perceptions at 9.6, higher than reference aggregate average of 9.3. The most optimistic and satisfied with their lives were Itogon residents who scored 6.9, higher than reference aggregate mean of 6.1. Table 5 shows the full CSC scores.

Table 5: Cognitive Social Capital per Municipality and Mean Values, Benguet 2003

| Social Capital Indicators    | Atok | Bakun | Bokod | Buguias | Itogon | Kibungan | La Trinidad | MEAN |
|------------------------------|------|-------|-------|---------|--------|----------|-------------|------|
| Associatedness               | 7,9  | 7,9   | 7,6   | 8,0     | 7,6    | 7,8      | 7,5         | 7,8  |
| Trust                        | 6,8  | 6,4   | 6,3   | 6,7     | 6,5    | 6,4      | 6,9         | 6,6  |
| Common Goals and Perceptions | 9,4  | 9,5   | 8,9   | 9,5     | 9,6    | 9,3      | 9,1         | 9,3  |
| Optimism and Satisfaction    | 6,2  | 6,4   | 5,7   | 6,3     | 6,9    | 5,8      | 5,7         | 6,1  |
| Cognitive Social Capital     | 30,3 | 30,3  | 28,6  | 30,6    | 30,7   | 29,3     | 29,2        | 29,8 |

Source: Own survey

Overall, the highest average scores for cognitive social capital comes from common perceptions and goals while the lowest mean scores are from optimism and satisfaction indicators. When individual municipal cognitive social capital values were compared against the municipal mean using a t-test, no significant differences from the mean were found.

#### 6.3.2.2 Structural Social Capital (SSC)

The values for structural social capital were obtained as actual memberships of respondents in formal organisations. Thus, structural social capital equals:

$$SSC_{ij} = \sum_{j=1}^7 membership_{ij} \tag{2}$$

$$i=1 \dots, I \text{ and } j=1 \dots, J$$

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.

As shown in Table 6, the highest total membership in any formal organization enumerated by the study is for neighborhood organisations with a mean of 7.7. This is followed by membership in religious groups with a mean of 3.8. The respondents were least involved in political groups. Using the aggregated means for municipalities as a reference level (7.1 at the lower right cell of Table 6), La Trinidad residents scored the highest total structural social capital with a score of 8.6. Bokod residents were the least involved with the formal organizations with a score of 4.7.

**Table 6: Structural Social Capital, per Municipality and Mean Values, Benguet 2003**

|  | Atok       | Bakun      | Bokod      | Buguias    | Itogon     | Kibungan   | La Trinidad | MEAN       |
|--|------------|------------|------------|------------|------------|------------|-------------|------------|
| Religious group                        | 5,4        | 3,0        | 3,3        | 4,2        | 3,6        | 2,6        | 4,2         | 3,8        |
| Political group                        | 0,9        | 0,3        | 0,1        | 0          | 0,3        | 0          | 0,1         | 0,2        |
| Farmer cooperative                     | 4,9        | 3,3        | 1,9        | 4,4        | 3,1        | 2          | 3,7         | 3,3        |
| Trader cooperative                     | 4,2        | 4,8        | 2,7        | 4,1        | 3,9        | 0,8        | 2,6         | 3,3        |
| Middlemen cooperative                  | 0,9        | 1,1        | 0,4        | 0,3        | 0,3        | 4,4        | 2,6         | 1,4        |
| Local government                       | 2,3        | 1,5        | 2,7        | 2          | 1,3        | 0,3        | 1,5         | 1,6        |
| Neighborhood group                     | 11,3       | 6,9        | 8,5        | 8,1        | 6,9        | 4,6        | 7,7         | 7,7        |
| <b>TOTAL Structural Social Capital</b> | <b>8,3</b> | <b>7,1</b> | <b>4,7</b> | <b>7,8</b> | <b>6,5</b> | <b>7,0</b> | <b>8,6</b>  | <b>7,1</b> |

Source: Own survey

When individual municipal structural social capital values were compared against the mean using a t-test, no significant difference from the mean was found. Note that the values used for the previous calculations indicate actual memberships and does not differentiate between active and inactive memberships. We assumed that membership to a formal organization implies being active in it<sup>13</sup>.

13 When we looked at active membership, we discovered that the respondents are most active in farmer cooperatives (26%) followed by religious associations (24%). However, similar to the results above, the respondents are least active in political groups (2%). Following Grootaert (2002), we attempt to capture purely structural social capital by showing it in formal membership values. Therefore, we keep the results from Table 5.3 for social capital index calculation later on.



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### 6.3.2.3 Municipal Social Capital Index (SCI)

A social capital index shown in Table 7 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.

**Table 7: Social Capital Among 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 | 30,3  | 28,6  | 30,6    | 30,7   | 29,3     | 29,2        | 29,8 |
| Structural     | 8,3  | 7,1   | 4,7   | 7,8     | 6,5    | 7,0      | 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

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. Atok had the highest social capital at 38.6 while Bokod had the lowest social capital 33.2. A paired sample t-test comparing each municipality's mean cognitive, structural and total social capital scores with the aggregated cognitive, structural and total social capital mean showed that the social capital means of the municipalities of Atok, Bokod and Buguias differed significantly from the aggregated mean. This means that Atok and Buguias have significantly higher social capital scores than the mean scores for all of the municipalities covered in the research. Bokod scored significantly lower social capital scores than the means of all municipalities summed up together. The rest of the municipalities did not differ significantly from the mean.

Initially, high cognitive and structural social capital scores for municipalities were expected on the basis of social capital theory. In particular, ethnicity, the remoteness of the research area and common agriculture-related goals were predicted to bind the societies together. During the course of the interviews however, a surprising trend of low trust and low membership in formal organisations began to emerge, irrespective of tribal affiliation and municipal location.

### 6.3.2.4 Social Capital Between Groups: Farmer-Trader Comparisons

To find out whether social capital formation is distinct among farmers and traders, factor analysis were conducted on separate groups. Table 8 shows the ranked components extracted from each respondent type. Rotated component matrices show that different factors drive social capital formation among farmers and among traders. Among farmers, the Eigen value of the first factor extracted –informal networks - explains 28.7% of the total variance. For traders, the Eigen value of the first factor extracted – outer core trust – explains 21.6% of the total variance. Outer core trust includes trust towards neighborhood, church and towards farmers. 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. This is perhaps an allusion to the skills needed because of the peer-to-peer nature of their job.

**Table 8: Ranking of Component Results for Factors Driving Social Capital Formation of Farmers and Traders, Benguet 2003**

(components arranged according to decreasing importance)

| FARMERS             | TRADERS             |
|---------------------|---------------------|
| Informal networks   | Outer core trust    |
| Core trust          | Informal networks   |
| Institutional trust | Institutional trust |
| Common goals        | Common goals        |
| Poverty perception  | Poverty perception  |
| Life satisfaction   | Core trust          |
|                     | Life satisfaction   |

Note: Details of the test are shown in the appendix.

Source: Own survey

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 is assumed that because farmers live in more remote areas and are less exposed to opportunism in business relations compared to traders; their core trust ranks heavier than for traders, in the formation of social capital. For traders, “core trust” loaded negatively. Quite simply, for farmers who have a positive attitude towards core trust, the issue of self trustworthiness is irrelevant.

Shown in Table 9 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. Farmers have better community relations than traders. This however, is not statistically different. From the overall trust scores (composed of core and external trust) it appears that farmers and traders have equal levels although a deeper look at

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survey results showed that of those farmers who use commissioners as distribution channels, 60% accompany the agents when they search for buyers for farmers' produce. Moreover, 73% of growers agree that traders tend to withhold price and volume information from them. On the other hand, only 46% of the traders suspect that farmers withhold volume and quality information from them. Total social capital of traders is higher than of farmers at 33.3 versus 37.1. The difference is statistically significant. Are farmers having less social capital than traders or is it because of the nature of their jobs?

**Table 9: Social Capital Comparison Between Farmers and Traders, Benguet 2003**

| INDICATOR                    | FARMERS | TRADERS |
|------------------------------|---------|---------|
| Associatedness               | 7,8     | 7,7     |
| Trust                        | 6,6     | 6,6     |
| Common goals and perceptions | 9,2     | 9,5     |
| Optimism and satisfaction    | 6,1     | 6,4     |
| Total Cognitive              | 29,7    | 29,9    |
| Total Structural             | 3,6     | 7,1     |
| Social Capital               | 33,3    | 37,1    |

Source: Own Survey

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. Traders have higher tendency to join groups because of the intensity of their transaction schedules. Joining formal organisations facilitates trader transactions because it opens up networking possibilities. Traders know early on that well-placed connections are highly important in local vegetable trade because these can ultimately determine profits or losses.

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 (Woolcock, 1999; Grootaert and Bastelaer, 2002: 4-5, 8).

## 6.4 Research Highlights

### 6.4.1 Social Capital and Gender

Does gender influence social capital? From frequency counts, 34% of the females reported that they are satisfied and happy with their lives compared to only 28% of the males. Likewise, more females were optimistic about life than males (52% versus 48%) and more females reported good relations with people in the community than males (65% versus 61%). Volunteerism occurs slightly more often in males (35%) than in females (32%). Table 10 shows significant gender correlation with some social capital indicators.

**Table 10: Correlation Coefficients Between Social Capital Indicators and Gender**

| Social capital Indicator                   | Correlation Coefficients<br>(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*   |

\*. Correlation is significant at the 0.05 level (2-tailed)

\*\* . Correlation is significant at the 0.01 level (2-tailed)

Source: Own survey

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 11.

**Table 11: Kruskal-Wallis Tests for Gender and Social Capital Variables**

| Hypotheses  | Asymptotic Sig.<br>(1-tailed) | Decision Rule |
|---|-------------------------------|---------------|
| H0: There is no difference in men and women in terms of optimism<br>H1: Women are more optimistic   | 0.362                         | Accept HO     |
| H0: There is no difference in men and women in terms of satisfaction and happiness<br>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<br>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<br>H1: Women have better relationships in the community     | 0.245                         | Accept HO     |

Source: Own survey

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The Kruskal-Wallis test confirms correlation and frequency test results that women are more satisfied and happy with their lives. 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. According to Reid and Salmen (2002: 99), Mali women were shown to play a key role in tapping community social capital because they were disinterested in the power struggle in their communities and maintained good working and social relationships despite community factions.

### 6.4.2 Social Capital and Educational Attainment

Does education influence social capital? From frequency counts, respondents with a university degree (equivalent to 14 years of education) scored the highest in life satisfaction. They also scored highest in general trust, trust in the church and trust in the municipal government. Respondents with secondary education scored lowest in general trust (only 6% think most people could be trusted). Table 12 shows that education is significantly correlated with some social capital indicators.

**Table 12: Correlation Coefficients Between Social Capital Indicators and Educational Attainment**

| Social capital Indicator              | Correlation Coefficients<br>(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*  |

\*. Correlation is significant at the 0.05 level (2-tailed)

\*\* . Correlation is significant at the 0.01 level (2-tailed)

Source: Own survey

The next step is 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). It is expected that high education lead to higher satisfaction/happiness and higher trust. The hypotheses and their corresponding results are presented in Table 13.

Table 13: 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<br>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<br>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<br>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<br>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<br>H1: Higher educated people have more trust towards the municipal government. | 0.060                      | Reject HO     |

Source: Own survey

Except for trust towards the church, the Kruskal-Wallis tests confirm the alternative hypothesis that respondents with higher education generally exhibit more trust than lower-educated people. University-educated people were also more satisfied and happy with their lives than non-educated respondents. Studies show that social capital and education are mutually reinforcing. High levels of social capital have been correlated with higher educational achievement, more confidence in political institutions and higher satisfaction in the government (Brehm and Rahn, 1997; Alesina and Ferrara, 2000). This is because higher educated people take more active interest in their children’s education and are more committed to cultivation of groups, teams and organisations.

### 6.4.3 Social Capital and Religion

Does religion influence social capital? From frequency counts, most of the respondents who were not active members of any church disagreed with most social capital statements presented. Table 14 shows that religion is significantly correlated with some social capital indicators.

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**Table 14: Correlation Coefficients Between Social Capital Indicators and Religion**

| Social capital Indicator                   | Correlation Coefficients<br>(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**  |

\*\* . Correlation is significant at the 0.01 level (2-tailed)

Source: Own survey

The next step is to test if there is a difference between actively religious people and non-religious people. It is expected that religious people have more satisfaction/happiness and volunteerism. They are also predicted to have more trust in the municipal government and have better relationships in the community. The hypotheses and their corresponding test results are in Table 15.

**Table 15: Kruskal-Wallis Tests for Religion and Social Capital Variables**

| Hypotheses  | Asymptotic Sig.<br>(1-tailed) | Decision Rule |
|---|-------------------------------|---------------|
| H0: There is no difference in religious and non-religious in terms of satisfaction and happiness<br>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<br>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<br>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<br>H1: Religious people have better relationships with people in the community. | 0.000                         | Reject HO     |

Source: Own survey

Kruskal-Wallis 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. Regular worship meetings bind the community by encouraging the formation of community networks and by providing a feeling of belongingness and community. Through church activities, interpersonal relationships are nurtured and enriched.

#### 6.4.4 Social Capital and Age

Does age influence social capital? The respondents were categorized into two groups namely; Group 0 (young), from 0-35 years old and Group 1 (old) from 36 to 99 years old. Using frequency counts, it was discovered that 33% of the respondents fall into the first group and 67% into the second group. “Young” and “old” groups were discovered similar in frequency scores for getting along with other farmers, but the older group had higher memberships in religious groups (18% versus 26%). More farmers in the “old” category were members of farmer co-operatives (28% versus 19%), of the local government (4% versus 2%) and of neighborhood groups (17% versus 12%). Table 16 shows that age is significantly correlated with some social capital indicators.

**Table 16: Correlation Coefficients Between Social Capital Indicators and Age**

| Social capital Indicator          | Correlation Coefficients<br>(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**   |

\*. Correlation is significant at the 0.05 level (2-tailed)

\*\* . Correlation is significant at the 0.01 level (2-tailed)

Source: Own survey

The next step is to test if there is a different between young and old respondents. It is expected that older people have better relationships with other farmers, and are more active in all the formal organizations. Because age is scalar, the binomial test was conducted. The hypotheses and their corresponding test results are in Table 17.

**Table 17: Binomial Tests for Age and Social Capital Variables**

| Hypotheses   | Asymptotic Sig.<br>(1-tailed) | Decision Rule |
|--|-------------------------------|---------------|
| H0: There is no difference between old and young people in terms of getting along with other farmers<br>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<br>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<br>H1: Older respondents are more active members in farmer co-        | .002                          | Reject H0     |



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|  |      |           |
|--|------|-----------|
| operatives   |      |           |
| H0: There is no difference between old and young people in terms of membership in the local government<br>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<br>H1: Older respondents have more active memberships in local neighborhood groups | .011 | Reject H0 |

Source: Own survey

Test results lead to the conclusion that older people tend to be more active in organizations such as religious groups, co-operatives 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. In a UK study, more older people reported to be regular participants in organizations than younger people. Only 15% of the surveyed men and 10% of the surveyed women aged 16-24 were active in at least 2 organizations whereas 24% of the men and 24% of the women aged 64 onwards were active in at least 2 associations<sup>14</sup>.

### 6.4.5 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? Respondents were categorized into two groups. The first group is composed of those who are considered native to the province by speaking either Ibaloi (31%) or Kankanaey (58%). Together, the two tribes comprise 89% of the respondents. The second group is composed of the rest of the respondents who spoke other dialects which are not native to the province. Table 18 shows that ethnicity through mother tongue is correlated with several social capital indicators.

**Table 18: Correlation Coefficients Between Social Capital Indicators and Ethnicity**

| Social capital Indicator                        | Correlation Coefficients<br>(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

Source: Own survey

<sup>14</sup> see <http://www.official-documents.co.uk/document/deps/doh/survey00/sch/sch01.htm>

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 19.

**Table 19: 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<br>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<br>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<br>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<br>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<br>H1: Active membership in local government is dependent on ethnicity                                  | 0.197                      | Accept HO     |

Source: Own survey

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. Literature confirms that indigenous households were more participative in community organisations than non indigenous ones. Higher levels of social capital were reported in indigenous rural areas than urban areas (Krishna and Shrader, 2000: 11, 33). However, ethnic divisions can also strongly affect social interaction and can hinder the development of social capital. Trust appears to decrease when people live in a society with strong ethnic divisions (Alesina and Ferrara, 2000). Moreover, social participation is higher where ethnic segmentation is lower (ibid). According to Pantoja (2002: 126), ethnic exclusionary activities can encourage “closed-groups” formation and discourage social capital formation. This is particularly true when a group holds certain beliefs, which are actually false.

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### *6.4.6 Benguet Social Capital and 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.

## 7 Modelling Farmer Decision-Making

### 7.1 The Theoretical Model

Following results from social capital measurements, we now present a choice model based on the random utility model. It reflects a farmer's decision to select among governance structure alternatives<sup>15</sup>. We assume that a farmer's decision is generated based on his utility maximization. Farmer  $i$  ( $i = 1, 2, \dots, N$ ) evaluates each governance alternative  $j$  ( $j = 0, 1, \dots, J$ ). Then, the farmer compares his utility from each governance alternative  $U_j (U_0, U_1 \dots U_J)$  and chooses the one that maximizes his utility (Hensher et. al., 2005: 82). The indirect utility function for the  $i$ -th farmer for the  $j$ -th alternative is thus:

$$U_{ij} = x_i' \beta_j + e_{ij} \quad (i = 1, 2, \dots, N; j = 0, 1, \dots, J) \quad (1)$$

Where  $x_i$  denotes a vector of exogenous socio-economic farmer characteristics and other variables,  $\beta_j$  represents the vector of coefficients associated with the  $j$ th category and  $e_{ij}$  is a stochastic disturbance.

To depict farmers' choice of governance structures empirically, we use the multinomial logit model. The probability that farmer  $i$  selects governance structure  $j$  is equal to the probability that alternative  $j$  maximizes his utility after evaluating each and every alternative in the choice set  $j = 0, 1, \dots, J$ . In notation,

$$\Pr ob (y_i = j) = \Pr ob (U_{ij} > U_{ik}) = \frac{e^{x_i \beta_j}}{\sum_{k=0}^J e^{x_i \beta_k}} \quad \text{for } j = 0, 1, \dots, J \quad (2)$$

where  $Y$  represents the total choice set of governance structures. We assume that  $U_{ij}$  is maximum among  $J + 1$  choices. Based on the survey, governance structures were mutually exclusive meaning, a farmer was not transacting with more than one trader for the same harvest

<sup>15</sup> The approach has been used to analyze institutional choices, for example, Boger, S. 2001. Quality and contractual choice: a transaction cost approach to the Polish hog market. *European Review of Agricultural Economics* 28 (3): 241-261. and Hatirli. 2004.

at the same time. The reference choice “commissioners” was chosen as the base group. We therefore obtain vector  $\beta_j$  only for contractors and wholesalers. Hence, Equation 3 will now be:

$$P(y_i = j) = \frac{e^{x_i \beta_j}}{1 + \sum_{k=1}^J e^{x_i \beta_k}}, \quad \text{for } j = 0, 1, \dots, J \quad (3)$$

and,

$$P(y_i = 0) = \frac{1}{1 + \sum_{k=1}^J e^{x_i \beta_k}}$$

Equations 2 and 3 represents a choice model known as the multinomial logit model whose probabilities defined in equations 2 and 3 must sum to 1. Therefore we need to normalize the model such that the parameters  $\beta_0 = 0$  for the base group. The  $J$  log-odds ratios can be computed as:  $\ln [P_{ij} / P_{i0}] = x_i \beta_j$  and  $\ln [P_{ij} / P_{ik}] = x_i (\beta_j - \beta_k)$  in order to predict the relative probability of farmer  $i$  choosing governance structure over another. Because the coefficients’ meanings are not always straightforward, marginal effects are computed from parameter estimates to give better explanation of results (Greene 2003: 722). The equation for computing the marginal effects is as follows:

$$\frac{\partial P_j}{\partial x_i} = P_j \left( \beta_j - \sum_{k=1}^J P_k \beta_k \right) \quad \text{for } j = 0, 1, 2, \dots, J \quad (4)$$

In our case,  $J = 2$ , and the alternatives  $j = 0, 1, 2$  represent commissioner, wholesaler and contractor, which correspond to market-based, partly-market partly-hybrid and hybrid governance structures, respectively.

## 7.2 Data Management and Hypotheses

### 7.2.1 Data Management

Data used for this analysis consists of the 450 farmers interviewed who traded exclusively with commissioners (260), contractors (48) and wholesalers (142) at the time of the survey. Farmer, farm, and transaction characteristics, social capital and market-related farmer perceptions were collected from the respondents.

In our initial approach we entered farm, farmer characteristics and all social capital statements<sup>16</sup> as explanatory variables in a conventional multinomial logit model using data from all respondents. The preliminary tests offered significant results. However we wanted to investigate if we could distinguish farmers' decision-making based on their inherent social capital. Specifically, we wanted to know if farmers with low social capital chose governance structures differently from farmers with high social capital. For this reason, we decided to find clusters of homogeneous farmers within the data set based on their measurable social capital statements. First, we conducted hierarchical cluster analysis using average linkage within groups. In *average-linkage* clustering, we consider the distance between one cluster x and another cluster y to be the mean of all pair wise distances between items contained in x and y (Field, 2000: 423). Initially, there were three clusters formed that were comprised of one big group and two smaller groups. Because the two smaller clusters partitioned early at cluster distance 4, arbitrarily increasing the grouping threshold to a cluster distance of 12 resulted in the merging of the two small groups into one. This resulted in two farmers' clusters and a more balanced distribution of items between the two groups. The decision to merge the two smaller groups was also done in order to avoid severe degrees-of-freedom problems for the choice of contractors later on.

Then, using the stricter K-means cluster analysis, specifying for two groups, we came up with two final farmer clusters. Group 1 was formed having 230 farmers with low social capital and Group 2 having 220 farmers with higher social capital. Shown in Table 20 are the descriptive statistics for farmers in the two clusters.

**Table 20: Descriptive Statistics of Farmers with Low and High Social Capital**

| Variable   | Low Social Capital group,<br>n= 230 observations |          |     |     | High Social Capital group<br>n= 220 observations |          |     |     |
|--|--|----------|-----|-----|--|----------|-----|-----|
|  | Mean <sup>a</sup>                                | Std. Dev | Min | Max | Mean <sup>b</sup>                                | Std. Dev | Min | Max |
| Farmer's characteristics   |  |          |     |     |  |          |     |     |
| Farmer's gender<br>(0= female, 1=male)   | 0.69   | 0.46     | 0   | 1   | 0.69   | 0.89     | 0   | 1   |
| Age (years)  | 40.22  | 9.47     | 18  | 70  | 41.53  | 11.39    | 20  | 79  |
| Years farming  | 14.82  | 8.75     | 1   | 40  | 15.59  | 9.48     | 1   | 50  |
| Number of people in the household  | 6  | 2.33     | 1   | 13  | 5.8  | 2.56     | 1   | 20  |
| Final education, the farmer's finished education level,<br>(0=primary, 1=secondary, 2=tertiary)        | 0.91   | 0.65     | 0   | 2   | 0.99   | 0.70     | 0   | 2   |
| Ibaloi ethnicity, dummy for Ibaloi ethnicity, (0= if the farmer is not Ibaloi, 1= if farmer is Ibaloi) | 0.33   | 0.47     | 0   | 1   | 0.30   | 0.46     | 0   | 1   |
| Kankanaey ethnicity, dummy for   | 0.59   | 0.49     | 0   | 1   | 0.61   | 0.49     | 0   | 1   |

<sup>16</sup> We removed the two statements on poverty perception because the statements exhibited high collinearity with each other.

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|   |                     |          |         |       |                      |          |        |       |  |
|---|---------------------|----------|---------|-------|----------------------|----------|--------|-------|--|
| Kankanaey ethnicity, (0= if the farmer is not Kankanaey, 1= if farmer is Kankanaey)   |                     |          |         |       |                      |          |        |       |  |
| Land ownership, (0 if farmer does not own the land, 1 if otherwise)   | 0.69**              | 0.46     | 0       | 1     | 0.81**               | 0.39     | 0      | 1     |  |
| Vehicle ownership for vegetable transport<br>(0=no, 1=yes)  | 0.19*               | 0.39     |         |       | 0.26*                | 0.44     | 0      | 1     |  |
| Other sources of income, off-farm<br>(0=no, 1=yes)  | 0.14**              | 0.35     | 0       | 1     | 0.24**               | 0.43     | 0      | 1     |  |
| Farmer's need for credit for production purposes<br>(0=no, 1=yes)   | 0.54***             | 0.50     | 0       | 1     | 0.35***              | 0.48     | 0      | 1     |  |
| Farmer's farm income for the season under survey (in Philippine pesos)  | -71.25 <sup>a</sup> | 17970.53 | -105000 | 82500 | 2013.24 <sup>b</sup> | 16702.74 | -68000 | 58200 |  |
| Farm characteristics  |                     |          |         |       |                      |          |        |       |  |
| Farm size (in Ares) <sup>17</sup>   | 49.71**             | 63.99    | 1       | 500   | 66.45**              | 70.82    | 3      | 500   |  |
| Hours away, farm to vegetable trading post distance measured in hours of travel time  | 2.82**              | 1.70     | 0.08    | 6     | 3.14**               | 1.72     | 0.08   | 7     |  |
| Transaction Characteristics   |                     |          |         |       |                      |          |        |       |  |
| Farmer's experience of conflict<br>(0=no, 1= yes)   | 0.33***             | 0.47     | 0       | 1     | 0.58***              | 0.49     | 0      | 1     |  |
| Farmer's experience of delayed payment<br>(0=no, 1= yes)  | 0.50*               | 0.50     | 0       | 1     | 0.58*                | 0.49     | 0      | 1     |  |
| Farmer's knowledge of vegetable prices<br>(0=no, 1=yes)   | 0.33                | 0.47     | 0       | 1     | 0.31                 | 0.46     | 0      | 1     |  |
| Farmer traveling to the market just to learn prices (0=no, 1=yes)   | 0.07*               | 0.26     | 0       | 1     | 0.12*                | 0.33     | 0      | 1     |  |
| Social Capital  |                     |          |         |       |                      |          |        |       |  |
| Do you agree that most people could be trusted? (Ordinal, 1= strongly disagree, 5=strongly agree)                               | 2.08***             | 0.69     | 1       | 5     | 2.53***              | 0.91     | 1      | 5     |  |
| Do you trust the municipal government and their policies towards agriculture? (Ordinal, 1= strongly disagree, 5=strongly agree) | 2.31***             | 0.79     | 1       | 5     | 3.43***              | 0.73     | 1      | 5     |  |

<sup>17</sup> 1 hectare = 100 ares = 10,000 square metres

| Farmer perceptions   |         |      |   |   |         |      |   |   |
|--|---------|------|---|---|---------|------|---|---|
| Do you agree that traders tend to withhold important transaction-related information from farmers? (0=no, 1=yes) | 0.41*** | 0.49 | 0 | 1 | 0.75*** | 0.43 | 0 | 1 |
| Do you agree that farmers tend to withhold important transaction-related information from traders? (0=no, 1=yes) | 0.05**  | 0.21 | 0 | 1 | 0.12**  | 0.32 | 0 | 1 |
| Do you think local government can do more for farmers? (0=no, 1=yes)   | 0.34*** | 0.47 | 0 | 1 | 0.65*** | 0.48 | 0 | 1 |

Notes: \*, \*\*, \*\*\* indicate 10%, 5% and 1% significance level respectively, for a t-test of the equality of cluster means

a 228 observations

b 220 observations

Significantly more farmers in the high social capital group own their farms, have vehicles for farm-to-market harvest transport and receive off-farm income than farmers in the low social capital group. Note that off farm income could originate from many sources: the farmer himself or from the farmer's family members who contribute to the household's finances from sources which are not farm-related.

Previous studies suggest that when present, social capital in Benguet is strongest in the form of informal networks. Grootaert (2002: 56) argued that one of the important ways that social capital contributes to farmer's welfare is the effect of greater profitability through better access to resources as a result of his personal networks. The building up of networks among people in the context of a non-financial social setting spills over into financial benefits (Dasgupta, 1988; Fukuyama, 1995). Coleman (1988: 98) maintains that productive activities are encouraged and motivated in people who share common values and norms. Their structural relations allow them to reap and collectively share the benefits of economic success.

The variable "need for credit" accounts for farmers who obtained financial or material credit from a trader for production purposes. We assumed here that there was no problem with regards to credit access and no rationing of credit: farmers who wanted to borrow production capital acquired it. The table shows that the low social capital group has more farmers who accessed agricultural credit than the high social capital group (54% compared with 35%). Average farm size was also significantly smaller in the low social capital group (49.7 Ares) than in the high social capital group (66.5 Ares). Again, farmers with low social capital appear to have poorer ties and did not associate as well as the other group with other farmers, traders and people in their community. Because of their low community association and participation, farmers in this group do not have the same level of access to resources as the high social capital group. They may have to resort more often to production loans because, for example,



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information sharing in terms of employment applications, agricultural inputs and technology is lower for farmers in this group (Grootaert, 1998; Grootaert, 2002: 4; : 63).

More farmers in the high social capital group experienced delayed payments and conflicts with traders compared to the low social capital group. Moreover a significantly higher proportion of farmers in the high social capital group believe that traders have a tendency to withhold critical transaction related information to farmers and that farmers have a tendency to withhold important transaction-related information to traders. Farmers in the high social capital group put relatively more trust in people, in the institutional environment and in organizations, meaning they also expect others to behave in a trustworthy manner (Beugelsdijk and Schaik, 2001: 18). They expect their trading partners not to exploit their vulnerability. Our hypothesis is that the good faith of farmers in the high social capital group may have been taken advantage of by trading partners through but not limited to, delayed payments and withholding critical transaction-related information. For this reason, more farmers in this group believe that traders and farmers have higher tendency to withhold information. Our assumption is that the lower numbers of positive responses on the statement “Do you believe farmers have a tendency to withhold critical market information from traders” suggest that farmers are referring to themselves when they replied to this question (otherwise, the means would have been higher). Still we observe that more farmers from the high social capital group have a tendency towards honesty, because they admit to this fact.

Now that farmers are grouped according to their social capital, we want to see the total number of farmers that actually selected a certain governance structure. Table 21 shows farmers’ trader choice for the low social capital group, the high social capital group and the pooled sample. Across groups and the pooled sample, it is clear that more farmers used commissioners as their preferred trading partners while the contractors are the least employed trader types.

**Table 21: Farmers' Trader Choices by Social Capital Group**

| Trader type                           | Low Social Capital group | High Social Capital group | Pooled sample |
|---------------------------------------|--------------------------|---------------------------|---------------|
| Commissioners                         | 125                      | 135                       | 260           |
| Contractors                           | 25                       | 23                        | 48            |
| Wholesalers                           | 80                       | 62                        | 142           |
| Total                                 | 230                      | 220                       | 450           |
| Pearson chi2 (2) = 2.5287             |                          | Pr = 0.282                |               |
| Likelihood-ratio chi2 (2) = 2.5337    |                          | Pr = 0.282                |               |
| Gamma = -0.1362 ASE = 0.085           |                          | Approx sig: 0.112         |               |
| Kendall's tau_b = -0.0720 ASE = 0.045 |                          | Approx sig: 0.112         |               |

We tested the null hypothesis that the distribution of farmers based on the trader type they selected is independent of their social capital group. Using the Pearson and Likelihood Ratio chi<sup>2</sup> tests, resulting significance values ( $Pr=0.282$  and  $Pr=0.282$  respectively) leads us to fail to reject  $H_0$  and conclude that trader choice is independent of their social capital group. In order to determine the strength, direction and relationship between row and column variables, we use ordinal symmetric measures such as Goodman and Kruskal's gamma and Kendall's tau<sub>b</sub>. Significance value of 0.112 for gamma and also for Kendall's tau<sub>b</sub> indicates there is no relationship between the distribution of farmers based on their selected traders and their social capital. However, this does not mean that there is no difference in the way high and low social capital farmers choose traders. It just signifies that the outcome, in relative frequencies, is the same.

### *7.2.2 Hypotheses concerning Trader Choice*

Benguet vegetable farmers have to choose between three types of trading partners, each of which offers them a unique governance structure.

Commissioners act as intermediaries between farmers and their buyers. Farmers know that using commissioners is a one-shot game leaving them free to choose another commissioner if the transaction fails. By definition, the farmer-commissioner relationship is price-motivated. Moreover, the identity of the buyer and the farmer's relationship with him does not matter. Thus, this choice frees farmers from forming any relational ties that might hinder additional income in the future.

In general, there is a low level of trust between farmers and commissioners. A farmer who selects a commissioner is aware that with commissioner-led transactions behavioural uncertainty is high. We hypothesise that better-off farmers can afford to take risks by using the market and are more likely, *ceteris paribus*, to use commissioners in order to increase their chances of capturing higher market prices. [H1] Farm size is taken as a proxy for the farm's medium-term income status.

This distrust and risk may be reduced if farmers speak the same dialect as the commissioner, because shared language facilitates communication. This equates to belonging to the same ethnic group [H2]. Commissioners actually use the dialect to their advantage in order to approach farmers in the trading post and secure transactions.

As a secondary function, commissioners provide farmers with market information, particularly prices, during the search process for buyers. In general, availability of market information is inversely related to the farm-to-market distance. We hypothesise that as farmers' distance from trading posts increases, so does their preference for commissioners because they provide market information and indirectly give access to a wide network, thereby improving farmers' chances of obtaining higher selling prices.[H3]

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Wholesalers are end-buyers, whose primary function is to buy farmers' harvested output in the trading posts. Thus, transactions between farmers and wholesalers involve an immediate transfer of property rights over the vegetables. Wholesalers are the "moneyed" traders, who hire or own warehouses in La Trinidad or Baguio city for vegetable storage. Wholesalers mostly originate from Manila. Only a few big wholesalers are local to the province, and even they tend to work for Manila-based wholesalers. Wholesalers are therefore viewed as outsiders. Farmers who attach importance to ethnicity and their local municipalities would tend to avoid using wholesalers [H4].

The wholesalers' secondary function is to provide farmers with critical production inputs such as chemicals, seeds and fertilisers. They are in fact farmers' main source of informal credit. We therefore expect that farmers in need of credit are more likely to use wholesalers. [H5] Farmers pay credit back in one of two ways: more commonly, the farmer promises to sell his crops to the wholesaler, and less commonly the farmer repays in cash with (relatively high) interest. If prices collapse, farmers fail to recoup their production costs and become indebted to the wholesalers. As a result, farmer-wholesaler relationships tend to be characterised by lock-in effects and safeguards. By lock-in effects we mean that a farmer who received production inputs is bound by his promise or his debt to the wholesaler, and is constrained to sell to this wholesaler. At the same time, however, there is a safeguard insofar as the farmer has a guaranteed buyer. A further safeguard is that a direct transaction between farmer and wholesaler involves no middlemen. The farmer knows that the vegetable payments go directly to him, based on his agreement with the wholesalers. Price is a secondary consideration, whereas input access, partner identity and the safeguards that the relationship provides are of major importance. We hypothesise that farmers with larger farms are better off and have less need for agricultural credit, as well as being more open to bargaining and taking risks in an attempt to capture high market prices. If so, farmers with larger farms are less likely to use wholesalers.[H6]

Using wholesalers gives farmers little room to discover prices or to bargain. Wholesalers provide less market information than commissioners because with wholesalers the search process for transacting partners (which provides price information) is limited. We assume that farmers who live in remote municipalities are less informed about prices and would therefore prefer to transact with traders who provide as much market information as possible. Therefore, we expect that farmers who live farther away from trading posts are less likely *ceteris paribus* to use wholesalers. [H7]

Contractors, like wholesalers, buy directly from farmers. Transacting with contractors implies that property rights over the vegetables are transferred immediately after harvest, at the farm level. The strength of the farmers' personal relationship with the contractor, which is determined by mutual adjustment and relationship-building, motivates the governance structure. Trust is built between farmer and contractor from repetition and reputation. Repetition refers to

the frequent recurrence of farmer-contractor transactions while reputation refers to the importance of the identities of transacting parties. Trust is critical, particularly when contracting involves the farmer’s income for the whole season. For this reason, we hypothesise that high social capital predisposes towards choosing a contractor.[H8] However, it is important to differentiate between interpersonal trust and institutional trust. Although farmers’ trust towards their core environment is high (interpersonal), they may also at the same time exhibit low trust towards their external environment (institutional). Conversely, farmers who put trust in local institutions such as the municipal government are not necessarily trusting at other levels: their trust in local institutions may well signify a preference for interactions that are local. For this reason, we hypothesise that farmers who have institutional trust are more likely to select local traders (commissioners and contractors) and less likely to use non-local traders (wholesalers).[H9]

Another feature of the farmer-contractor arrangement is the distribution of risk between the two transacting parties. Since contractors take over harvest and post-harvest activities while the vegetables are still on farm, the risk of loss from transportation and quality decline is borne by contractors. Moreover, contractors assume market risk due to price fluctuations. Thus, it is hypothesized that farmers who are financially better off (less loss-averse) would prefer governance structures other than contracting.[H10] Similarly, farmers who have years of vegetable marketing experience are already more comfortable with predicting short-term price movements and know better how to cope with risk. For this reason, experienced farmers are less likely to use contractors and more likely to use other governance structures. [H11]

Contractors are concentrated in trading centres, and can be expected to try and reduce transport costs by offering more attractive terms to farms nearby. Hence, we expect that increasing distance from the trading post reduces the preference for contractors [H12]. Table 22 presents a summary table of the hypotheses.

**Table 22: Summary of Hypotheses**

|  | Commissioner | Contractor | Wholesaler |
|--|--------------|------------|------------|
| H1, H6, H10 Farm size                  | +            | -          | -          |
| H2, H4 Dominant dialect                | +            | (+)        | -          |
| H3, H7, H12 Distance from trading post | +            | -          | -          |
| H5 Farmer needs credit                 | -            | -          | +          |
| H8 High social capital                 | (-)          | +          | (-)        |
| H9 Institutional trust                 | +            | +          | -          |
| H11 Years of experience                | (+)          | -          | (+)        |

### 7.3 Estimation Results

From a first-round all-inclusive pooled model consisting of 41 explanatory variables, parameters that did not appear significant in subsequent rounds of testing were eventually removed. The initial 41 variables were composed of 19 farmer, farm and transactions characteristics and 22 farmer's social capital statements. In the final rounds, the model was reduced to 14 remaining variables.

We conducted a likelihood ratio test (LR) to see if segmenting the observations into two groups, Group 1 with low social capital and Group 2 with high social capital fits the data set better than using a pooled sample. The resulting likelihood ratio was equal to 77.23 (df =30; p=0.000) meaning there is a statistically significant difference between the  $\beta$ 's of the two sub-models. Therefore, it gives richer results to segment the sample into low and high social capital groups and separately explain their governance structure choice. For this reason, only estimation results of segmented groups are presented and discussed from hereafter. Test results from the pooled model are shown only in the prediction table for comparison purposes.

#### *7.3.1 The Choice of Trading Partners*

Table 23 presents the results of the multinomial logit estimation of the models using low and high social capital clusters. The choice for commissioners was set as the base group. The p-values are presented under the coefficients in parentheses.

The two social capital groups seem to base their trader choice on different factors. Oftentimes, variables which are found to be significant in the choice of the low social capital group are found insignificant in the selection process of the high social capital group and vice versa. Three variables however, appear to influence in the same way the choice of traders for both social capital groups. Vehicle ownership, perception of the openness of farmers and institutional trust negatively influences the selection of contractors over commissioners but is positive for the selection of wholesalers relative to commissioners, regardless of social capital grouping.

**Table 23: Multinomial Logit Estimates for Low and High Social Capital Groups**  
(coefficient, p-value)

|   | Low Social Capital Group <sup>a</sup> |                      | High Social Capital Group <sup>b</sup> |                      |
|---|---------------------------------------|----------------------|--|----------------------|
|   | Contractor                            | Wholesaler           | Contractor                             | Wholesaler           |
| Age   | 0.050<br>(0.354)                      | 0.024<br>(0.544)     | 0.096**<br>(0.040)                     | 0.004<br>(0.907)     |
| Years farming   | -0.014<br>(0.796)                     | -0.0466<br>(0.281)   | -0.121**<br>(0.022)                    | -0.004<br>(0.919)    |
| Farm size   | -0.022*<br>(0.073)                    | -0.009*<br>(0.091)   | 0.003<br>(0.489)                       | -0.042***<br>(0.000) |
| Farm-to-market distance   | 0.007<br>(0.976)                      | -0.254<br>(0.174)    | -0.860***<br>(0.001)                   | -0.201<br>(0.179)    |
| Land ownership  | -0.317<br>(0.687)                     | 0.104<br>(0.838)     | -1.642**<br>(0.039)                    | 0.877<br>(0.210)     |
| Dummy for Kankanaey ethnicity   | -0.822<br>(0.349)                     | -3.763***<br>(0.000) | 0.163<br>(0.827)                       | -2.285***<br>(0.000) |
| Experience of delayed payment   | 0.403<br>(0.562)                      | 0.335<br>(0.528)     | -2.879***<br>(0.000)                   | 1.501**<br>(0.006)   |
| Need for credit   | -3.510***<br>(0.000)                  | 0.624<br>(0.256)     | -1.268<br>(0.167)                      | 0.292<br>(0.538)     |
| Knowledge of vegetable prices   | 3.924***<br>(0.000)                   | 0.078<br>(0.901)     | -0.181<br>(0.801)                      | 0.484<br>(0.379)     |
| Vehicle ownership   | -2.042**<br>(0.034)                   | -1.241*<br>(0.092)   | 1.422<br>(0.105)                       | 0.024<br>(0.967)     |
| Perception that traders withhold critical transaction-related information | 2.074**<br>(0.026)                    | -1.179<br>(0.742)    | 1.496<br>(0.119)                       | 0.368<br>(0.570)     |
| Perception that farmers withhold critical transaction-related information | -3.777**<br>(0.018)                   | -2.748**<br>(0.038)  | -1.293<br>(0.211)                      | -1.124<br>(0.158)    |
| Trust towards municipal government/ institutional trust                   | -0.996**<br>(0.032)                   | -0.620*<br>(0.053)   | -0.598<br>(0.219)                      | 0.106<br>(0.746)     |
| Other off-farm income sources   | 0.036<br>(0.971)                      | 1.610**<br>(0.034)   | -0.662<br>(0.405)                      | 0.536<br>(0.318)     |
| Constant  | -1.192<br>(0.600)                     | 3.049*<br>(0.065)    | 1.443<br>(0.557)                       | 0.100<br>(0.957)     |

Notes: Dependent variable: Trader choices: commissioner, contractor, wholesaler. Reference category is commissioner.

<sup>a</sup> Number of observations: 230.  $\chi^2 = 230.97$  \*\*\*,  $p < 0.01$ , Pseudo  $R^2 = 0.5342$

<sup>b</sup> Number of observations: 220.  $\chi^2 = 185.52$  \*\*\*,  $p < 0.01$ , Pseudo  $R^2 = 0.4723$

\*, \*\*, \*\*\* indicate 10%, 5% and 1% significance level, respectively

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Observe that farm size has a negative effect on the selection of wholesalers relative to commissioners for both social capital groups but is only negative for the selection of contractor rather than commissioners in the low social capital group. Furthermore, Kankanaey ethnicity makes farmers in both social capital groups more likely to choose commissioners and less likely to choose wholesalers. Details of these are more closely examined using the marginal effects later on.

In order to have an overall picture of how well the two models managed to predict farmers' governance structure choices, Table 24 is constructed. It contrasts the choices predicted by the model with the actual choices made by the farmers.

Table 24: Actual and Predicted Trader Choice

| Actual choice       | Predicted choice |            |            | Total actual choices (% of SC group) | % of choices correctly predicted |
|---------------------|------------------|------------|------------|--------------------------------------|----------------------------------|
|                     | Commissioner     | Contractor | Wholesaler |                                      |                                  |
| Low Social Capital  |                  |            |            |                                      |                                  |
| Commissioner        | 106              | 6          | 13         | 125 (54.3)                           | 84.8                             |
| Contractor          | 7                | 16         | 2          | 25 (10.9)                            | 64.0                             |
| Wholesaler          | 12               | 0          | 68         | 80 (34.8)                            | 85.0                             |
| Total predicted     | 125              | 22         | 83         | 230                                  | 82.6                             |
| High Social Capital |                  |            |            |                                      |                                  |
| Commissioner        | 120              | 3          | 12         | 135(61.4)                            | 88.9                             |
| Contractor          | 10               | 11         | 2          | 23(10.5)                             | 47.8                             |
| Wholesaler          | 14               | 1          | 47         | 62(28.2)                             | 75.8                             |
| Total               | 144              | 15         | 62         | 220                                  | 80.9                             |

The choices in the sample are: commissioner: 58.9%, contractors: 8.9%, wholesalers 31.3%. Although the preference for commissioners is weaker, and for wholesalers stronger, among for the low social capital group, the proportions are not significantly different between the two social capital groups according to the Pearson  $\chi^2$  test ( $p=0.28$ ) and Kendall's tau test ( $p=0.11$ ). Eighty per cent or more of choices in both groups are correctly predicted. However, amongst high social capital households, the model wrongly allocates more than 40 per cent of the contractor choices to commissioners.

### 7.3.2 The Marginal Effects

The multinomial logit results are better interpreted when using marginal probability. Marginal probability measures the likelihood of choosing an alternative option with an infinitesimal change in the explanatory variable  $(\partial prob_j / \partial x_j)$ , assuming other variables remain constant at the mean or average level. However, for continuous variables, we assume a one unit change (for example, age increases by one year) when interpreting the effect of a change in age towards governance structure selection. For discrete variables, we assume a discrete change from 0 to 1 (for example, from land owner to land tenure) when interpreting the effect of land tenure towards trader choice. The marginal effects of the models for the low and high social capital group are shown in Table 25. P values are written in parenthesis under the marginal coefficients.

The variable age was also not a significant factor in the selection of governance structures of farmers in either group. This means that farmers with low and high social capital, young and old alike were not influenced by their age in terms of choosing transacting partners. Longer



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farming experience, on the other hand, made farmers in the high social capital group less likely to select contractors but didn't have an effect on the low social capital group's decision-making. Farmers with long farming experience are seen to know yearly price trends and are therefore aware of the risks of marketing crops. Through their farming experience, they are assumed to be able to discern which strategies to employ to reduce risk. Therefore trading with contractors that offer risk reduction is not as crucial anymore.

Increasing farm size in both groups increases the likelihood that commissioners are selected. However, for the high social capital group; bigger farms also reduce the probability that wholesalers are chosen. Arable land is scarce in the province where steep slopes characterize the terrain. Farmers with big farms are most probably financially better off compared to farmers with smaller parcels. Farmers who are better off could afford to take the risk of selling their products through spot markets via commissioners in an attempt to capture higher market prices. This makes commissioners more preferred rather than wholesalers because trading with wholesalers does not allow the farmer much room to negotiate and bargain.

Whereas the variable distance did not play any role in the selection process of farmers in the low social capital group, distance is a critical variable that farmers in the high social capital group consider in the selection among three governance structures. Distance has direct impact on crop quality and farmer's profit. For farmers in the high social capital group, farm-to-market distance increased the probability of selecting of commissioners and reduces that of contractors. Distance does not only affect the perishability of crops but also have an effect on the social capital between farmers and traders. It is a fact that physical inaccessibility reduces the rate of social and economic exchange between farmers and traders. However, the variable was not significant in the choice structure of farmers in the low social capital group. Farmers with low social capital who attach little importance to frequent interaction and relationship-building would naturally find distance irrelevant in their decision-making.

Results concur with von Thünen's theory of land use. According to the theory, farmers who cultivate high value crops are located more often near the centres where land rent is expensive. Contractors prefer to buy high value crops for institutional consumers that are located in the cities. Relatively lower value crops, and those that are storable and less perishable are cultivated in the remote areas. Commissioners are found to mediate for almost every crop in the market, but have a tendency to facilitate the sale of lower value crops from farther municipalities.

Farmers with low social capital did not permit their land tenure status to influence their decision-making whereas farm-ownership increased the probability of farmers in the high social capital group to select wholesalers. Growers who cultivate their own farms do not need to pay rent to the landlord. For this reason, farmers are relatively under less strain to increase profits by capturing market prices or to reduce risk making wholesalers the preferred choice. However,

although farm owners have less pressure, they would of course still pursue a transaction with straightforward exchange mechanisms. Since trading with wholesalers is characterized by an immediate transfer of property rights and money between the grower and the wholesaler, the higher social capital of land owners overrides the fact that wholesalers are outsiders and makes the choice of wholesalers a rational decision for farmers.

Regardless of social capital group, being of Kankanaey ethnicity increases the tendency to select commissioners *ceteris paribus* but reduces the probability of selecting wholesalers. From a parallel survey of 195 traders which was conducted at the same time as farmer interviews, a total of 102 traders were of pure Kankanaey descent while 20 traders were of mixed-Kankanaey origin. Therefore, the results suggest that holding other variables constant, farmers of Kankanaey origin are more likely to select commissioners because they prefer to conduct transactions with traders with whom they can communicate well.

Table 25: Marginal Effects of Determinants on Trader Choice for Low and High Social Capital Groups

| Variable                      | Low social capital group |                    |                     | High social capital group |                    |                     |
|-------------------------------|--------------------------|--------------------|---------------------|---------------------------|--------------------|---------------------|
|                               | Commissioners            | Contractors        | Wholesalers         | Commissioners             | Contractors        | Wholesalers         |
| Age                           | -0.005<br>(0.50)         | 0.001<br>(0.45)    | 0.004<br>(0.56)     | -0.003<br>(0.38)          | 0.003<br>(0.10)    | 0.000<br>(0.99)     |
| Years farming                 | 0.009<br>(0.29)          | -0.000<br>(0.97)   | -0.009<br>(0.29)    | 0.004<br>(0.368)          | -0.004*<br>(0.08)  | 0.000<br>(0.99)     |
| Farm size                     | 0.002*<br>(0.05)         | -0.000<br>(0.2)    | -0.001<br>(0.11)    | 0.003***<br>(0.008)       | 0.000<br>(0.17)    | -0.004***<br>(0.00) |
| Farm-to-market distance       | 0.046<br>(0.19)          | 0.001<br>(0.77)    | -0.047<br>(0.17)    | 0.042**<br>(0.03)         | -0.027**<br>(0.03) | -0.015<br>(0.28)    |
| Land ownership                | -0.014<br>(0.88)         | -0.007<br>(0.68)   | 0.021<br>(0.82)     | 0.029<br>(0.74)           | -0.978<br>(0.19)   | 0.069*<br>(0.09)    |
| Dummy for Kankanaey ethnicity | 0.676***<br>(0.00)       | 0.007<br>(0.54)    | -0.683***<br>(0.00) | 0.252**<br>(0.00)         | 0.145<br>(0.49)    | -0.266**<br>(0.00)  |
| Experience of delayed payment | 0.067<br>(0.50)          | 0.006<br>(0.65)    | 0.060<br>(0.54)     | 0.018<br>(0.82)           | -0.155**<br>(0.01) | 0.137**<br>(0.01)   |
| Need for credit               | -0.015<br>(0.89)         | -0.124**<br>(0.03) | 0.139<br>(0.13)     | 0.006<br>(0.90)           | -0.037<br>(0.14)   | 0.031<br>(0.50)     |
| Knowledge of vegetable prices | -0.168<br>(0.19)         | 0.207**<br>(0.03)  | -0.040<br>(0.70)    | -0.040<br>(0.52)          | -0.007<br>(0.73)   | 0.047<br>(0.41)     |
| Vehicle ownership             | 0.204**<br>(0.02)        | -0.023<br>(0.14)   | -0.182**<br>(0.03)  | -0.062<br>(0.40)          | 0.067<br>(0.24)    | -0.005<br>(0.93)    |

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|  |                    |                  |                     |                   |                  |                   |
|--|--------------------|------------------|---------------------|-------------------|------------------|-------------------|
| Perception that traders withhold transaction-related information | -0.011<br>(0.92)   | 0.057<br>(0.14)  | -0.047<br>(0.63)    | -0.063<br>(0.26)  | 0.036<br>(0.12)  | 0.027<br>(0.59)   |
| Perception that farmers withhold transaction-related information | 0.269***<br>(0.00) | -0.022<br>(0.11) | -0.247***<br>(0.00) | 0.097**<br>(0.03) | -0.027<br>(0.15) | -0.071*<br>(0.08) |
| Trust towards municipal government/institutional trust           | 0.127**<br>(0.03)  | -0.016<br>(0.16) | -0.111*<br>(0.06)   | 0.008<br>(0.81)   | -0.020<br>(0.22) | 0.011<br>(0.69)   |
| Other off-farm income sources                                    | -0.351**<br>(0.04) | -0.010<br>(0.51) | 0.359**<br>(0.04)   | -0.036<br>(0.58)  | -0.020<br>(0.30) | 0.056<br>(0.36)   |

\*, \*\*, \*\*\* indicate 10%, 5% and 1% significance level, respectively

An experience of delayed payment with the current trader does not play a role in the selection process of farmers in the low social capital group but has a profound effect in the high social capital group. Farmers in the high social capital group who experienced a postponement in payments have lower probabilities to use contractors but higher probabilities to use wholesalers. It seems that a delayed payment from a wholesaler is an accepted fact by farmers in the high social capital group. For this reason, despite the experience of delayed payments, farmers will still transact with wholesalers. The organization of governance and the contractual relationship between farmers in the high social capital group and contractors is structured in such a way that contractors are not expected to pose payment delays in transactions. If contractors do delay payments, farmers would naturally prefer to transact with another trader because a payment delay signals that there is no difference between trading with contractors and with other traders. When contractors delay payments, the benefits that the farmer obtains from trading with contractor, in terms of quick and assured payments, in exchange for lower buying prices, are missing. Trust, the most important component of social capital, is critical in the efficient conduct of transactions through the facilitation of actions of players involved (Douma and Schreuder, 2002: 165-167). However, if one's confidence in the exchange partner falters (for example, due to a promised payment that was delayed), one does not trust people to fulfill their agreements in the future, and agreements are not entered into (Dasgupta, 1988: 332). Then it makes sense that farmers with high social capital who have had a negative experience of delayed payment in the past, will then have a higher tendency to transact with wholesalers because transacting with them involves a straightforward exchange of money.

Need for credit did not significantly influence governance structure selection among farmers in the high social capital group but decreased the probability of selecting contractors in the low social capital group. Our survey showed that among the 125 farmers in the low social capital group that needed loans for agricultural production, 48% borrowed from commissioners, 50% borrowed from wholesalers and only 2 percent obtained from contractors. Given that

farmers in this group have lower social capital, they are already less predisposed to borrow from contractors. And since, borrowing money entails paying it off in cash or selling the produce to the lender at the end of the cropping season, farmers in the low social capital group will naturally have decreased probabilities to sell to contractors. Transacting with contractors requires relationship-building mechanisms built over repetition and reputation, which is in short supply among the low social capital group. In addition, contractors do not pay significantly different from commissioners and wholesalers except for selected high value crops. Therefore, farmers who need to pay off their production loans would stay away from contractors not only because they do not share social capital with each other but also because the need to pay their credit entails that they try other marketing arrangements which provide a higher possibility of capturing increased current market prices.

Knowledge of vegetable prices didn't influence the decision-making of farmers in the high social capital group but increased the probability of choosing contractors in the low social capital group. Farmers who enter contractual agreements know that contractors will shoulder harvest and transportation costs of the crop. Because farmers in the low social capital group have weaker ties with contractors in general, we suppose that farmers would want to take advantage of risk reduction offered by contractual agreements only when they are certain that the price offer of contractors are consistent with current market prices. Among farmers, knowledge of vegetable prices is one of the most difficult to attain in the region owing to the existence of strong information asymmetries due to weak market information dissemination infrastructures. Thus, despite the low solidarity between farmers with low social capital and contractors, when farmers know the prices, they can easily estimate whether the contractors pricing structure is fair and can easily decide on whether to transact with them or not. Although marginal effects didn't appear significant, the likelihood to transact with commissioners or wholesalers decrease when farmers know the prices because the knowledge of prices empowers farmers early on, to decide that they do not need to capture market prices via the other two arrangements.

Vehicle ownership was not an issue in the selection of governance structure among farmers in the high social capital group. For farmers in the low social capital group, owning a vehicle increases by 0.20 the probability of using commissioners but decreases the probability of using wholesalers by approximately the same magnitude. This is what we suppose: farmers with low social capital who have the means to transport produce to the physical markets would tend to prefer governance structures that also require lower social capital between trading partners. For this reason, commissioners are selected over wholesalers. The presence of a vehicle that they can use to transport vegetables allows them the mobility to bring the vegetables back to the farm and back again to the market the next day, when the crops are not all sold by the commissioner.

As mentioned earlier, many farmers with low social capital do not own vehicles for farm-to-market vegetable transportation. Thus, it is not surprising that marginal effects for vehicle ownership were detected in this group alone. The test showed that farmers who own transport vehicles have a significantly higher tendency to select commissioners but a lower tendency to

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select wholesalers and contractors (although not significant). At the outset, farmers with low social capital tend to select commissioners because this arrangement requires the least trust and association among transacting parties. Therefore, owning a vehicle just speeds up harvest transportation of low social capital farmers towards commissioners. Wholesalers are less likely to be selected because given a choice to personally deliver crops between an arrangement where identity is irrelevant (commissioners) and an arrangement where partner identity holds a value (wholesalers or contractors), farmers with low social capital will naturally prefer the former.

Farmers in the high and low social capital group also decide similarly when considering perceptions that they themselves withhold important information from traders. The low mean values obtained for this variable during the survey suggest that farmers are describing themselves when they answered the question. Farmers who admit that they and co-farmers tend conceal facts from traders are more likely to choose commissioners but are less likely to choose wholesalers. Remember that in commissioner-based transactions farmers has the option to change governance structures as soon as the current transaction is completed.

The perception that farmers withhold transaction-critical information was significant in both groups, but only involved a switch between the choice for commissioners (positive) and wholesalers (negative). In both groups, the perception that farmers withhold information posed negative effects to the selection of contractors, but was not significant. Note that in this case, this variable pertained to farmers' own assessment of their honesty in transactions. Farmers who are open enough to admit that they tend to withhold transaction-related information to traders are more likely to select commissioners and are less likely to select wholesalers. Withholding critical transaction information means that knowledge is not shared between transacting parties and that recurrent activity is not expected (cf Ostrom, 2000: 176). The fact that marginal effects for both types of farmers are the same implies that farmers who have no intention to build social capital with the transacting partner will prefer a trader that works with minimal trust. Therefore, farmers who tend to withhold market information will avoid wholesaler and contractor arrangements where identity and reciprocity abide in order not to damage relationships.

Institutional trust did not play a role in the selection process of farmers in the high social capital group but had a substantial impact on the decision-making of farmers in the low social capital group. Increasing institutional trust of farmers in the low social capital group increased their likelihood to choose commissioners but decreased their likelihood of choosing wholesalers. Since commissioners are regarded by farmers as the most local among the three trader types, farmers who have faith in local institutions are also more likely to patronize local traders.

Farmers who have lower social capital in general but possess high trust in institutions are significantly more likely to trade with commissioners than with wholesalers and contractors (but not significant). Despite the lower social capital, farmers who have higher institutional trust may prefer commissioners because these traders embody a sense of community because they are

generally perceived as „local“. Commissioners may be perceived by farmers with low social capital (those farmers with weak village ties) as conduits between them and the neighborhood. Wholesalers and contractors are traders who are less involved in the local community because wholesalers work for, or are from other regions while contractors are mostly located around the two trading areas and not in the village itself.

The availability of off-farm income for the farmer and his family was not a decisive factor in the selection process of farmers in the high social capital group. However, farmers with low social capital who had off farm income sources are less likely to use commissioners and more likely to select wholesalers. This makes sense; farmers who have other sources of cash outside the farm feel less pressured to capture high market prices through commissioners. Farmers prefer to transact with wholesalers who will give an upfront price and receive the money payment immediately.

In the sample, farmers in the low social capital group had less sources of additional income aside from agriculture. The marginal effects of the presence of a non-farm source of income were noted only among farmers with low social capital and involved a switch in the selection of commissioners (negative) and wholesalers (positive). The selection of contractors were negatively influenced by off-farm sources of income, however, this did not appear to be significant. Farmers with low social capital who had off farm sources of income were less likely to select commissioners and contractors but were more likely to select wholesalers. Although transaction characteristics of arrangements with commissioners would fit well with low social capital farmers, an additional source of income supersedes the tendency. The additional financial stability that off-farm jobs offer to farmers allows them to behave in such a way that the need to capture market prices with commissioners is not of primary importance anymore. Rather, despite the low social capital, farmers with off-farm jobs will prefer to transact with traders that provide transaction safeguards (by means of an assurance that farmers will receive their payments) but do not go as far as relationship building and mutual understanding.

## **8 Summary and Conclusions**

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### **8.1 On Social Capital Measurement**

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. For both farmers and traders, 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.

With regards to municipal means, the municipalities of Atok and Buguias scored significantly higher social capital than the mean scores for all of the municipalities covered in the research. Bokod scored significantly lower social capital scores than the means of all municipalities summed up together. The rest of the municipalities did not differ significantly from the mean.

Social capital in Benguet is influenced, in varying degrees, by gender, education, religion, age and ethnicity. Although there is no difference among men and women with regards to optimism, community participation and informal community networks, the study pointed to the evidence that women are happier with their lives than men. Investing in education for the population is important because higher education people generally exhibit more trust than lower educated people. It follows that it will be relatively easier to facilitate collective action and foster a national trust culture when the population is higher educated. Our tests showed that religious people volunteer more and participate more in community activities, trust the local government more, foster better community relationships and are generally more happy and satisfied with their lives than non-religious people. For this reason, 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, our tests showed that the youth are less active in religious organizations, neighborhood groups and in farmer cooperatives. Younger respondents were less inclined to socialize with other farmers. It seems 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 affects community relations in a profound manner. Tests revealed that ethnicity influences local government trust, community participation and volunteerism and membership into trader organizations. Culture dictates how members of an ethnic group participate in society on a formal level or informal association.

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.

## 8.2 On Modelling Farmer Decision-Making

With regards to the second part of the discussion paper, we set out with the two-fold objective of determining and analyzing factors that would explain farmer's selection of governance structures and examining whether social capital plays a role in farmer decision-making. Cluster analysis was used to segment 450 farmers into low and high social capital groups. The two segments were independently tested using multinomial logit analysis. A likelihood ratio test comparing the two models with a model using pooled observations suggest that farmers with low social capital approach decision making in a different way from farmers with high social capital.

A t-test comparing the means of several variables between low and social capital groups revealed that significantly more farmers in the high social capital group owned vehicles, bigger farms and had additional off farm income sources for the household. Farmers in the low social capital group had significantly smaller farm sizes but availed themselves more of agricultural credit than farmers in the high social capital group. These farmers also lived significantly nearer to the vegetable trading centers but traveled less often to the markets.

Analysis showed that farmers' decision-making was influenced by their inherent social capital. Specific only to low social capital farmers, distance, land ownership, and an experience of delayed payment did not play any role in their selection process. However, these variables had



## Social Capital, Ethnicity and Decision-Making in the Philippine Vegetable Market

profound effects on the selection process of high social capital farmers. Specific only to high social capital farmers, need for credit, knowledge of vegetable prices, vehicle ownership, institutional trust and presence of off farm income sources did not influence farmer choice of governance structure. However, these variables had substantial effects on the selection process of low social capital farmers. The variables age and the perception that traders withhold critical market information had no consequence whatsoever in the selection process of both groups. The farmers' Kankanaey ethnicity and the opinion that farmers also withhold critical information from traders had similar effects on decision making for all farmers.

Most of the significant marginal effects on the choice of governance structure involve a switch between commissioners and wholesalers. In other words, if the increase in a determinant has a significant positive effect on the choice for commissioners, it usually has a significant negative effect on the choice of wholesalers and vice versa. The determinants for the choice of contractors, if significant, do not show any appreciable effect on the selection of either commissioner or wholesaler.

### 8.3 Overall Conclusions

Throughout the first part of the paper where social capital was measured, it was observed that the most influential factor in pulling social capital scores down for agricultural communities is their lack of interest in formally organized associations. We argue that participation in formal organizations is equally important as being associated in informal networks. For people involved in a business, the benefits of an extended social network outweigh the disadvantages. Particularly in Benguet agriculture, formal organizations can serve as a conduit for important market information, provide bargaining power and broaden the farmer or trader's network of marketing contacts.

Tests showed that gender, education, religion, age and ethnicity influence provincial social capital in varying degrees. To build the *bridging* social capital of the community, women are better mobilized than men with regards to social capital because women have denser community relations. Investments in education for community members will pay off because educated people have increased levels of general and institutional trust compared to low educated persons. Religion is a strong force that can be tapped to increase volunteerism and community participation among the population. The youth are less participative in formal organizations compared to community elders. Since low membership rates in formal associations was one of the reasons why total social capital scores were low, it is important to begin encouraging the youth to participate in formal organizations. The benefits of joining formal organizations should be explained to them. Belonging to an ethnic group negatively influences trust towards the municipal government and discourages volunteerism but positively influences relationship with traders and encourages membership in trader organizations. We discussed that

a common experience among people of different ethnicities can override ethnic barriers and cause them to have a collective perception of the institutions that surround them.

In the second part of the paper, we can summarize that by including social capital in the model, the analysis was able to understand the reasons why farmers prefer to use certain governance structures instead of the alternative. Empirical tests point to the evidence that not only farm and farmer characteristics but transaction attributes (such as farmers' need for agricultural credit and means of production and an experience of delayed payment) and social capital are critical factors used by farmers in their decision-making. Results suggest that social interaction and culture provide additional explanations behind the favoured-buyer marketing arrangements in provincial vegetable trade and that various levels of social capital make a difference in the way farmers select governance structures. The results confirm that bringing in elements such as social capital and culture in institutional economic analysis yields richer results in the explanation of behaviour of the market and its participants.

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## Appendix

### Appendix 1: Rotated Component Matrix for Benguet Farmers, 2003

|  | Component         |            |                     |              |                    |                   |
|--|-------------------|------------|---------------------|--------------|--------------------|-------------------|
|  | Informal networks | Core trust | Institutional trust | Common goals | Poverty perception | 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                           | ,076              | ,108       | -,014               | ,744         | ,135               | ,039              |



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|   |      |      |       |      |      |       |
|---|------|------|-------|------|------|-------|
| in policy making  |      |      |       |      |      |       |
| 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 |

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

a Rotation converged in 7 iterations.

### Appendix 2: Rotated Component Matrix for Benguet Traders, 2003

|  | Component        |                   |                     |              |                    |            |                   |
|--|------------------|-------------------|---------------------|--------------|--------------------|------------|-------------------|
|  | Outer core trust | Informal networks | Institutional trust | Common goals | Poverty perception | Core trust | 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              |

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|   |       |       |       |      |       |       |       |
|---|-------|-------|-------|------|-------|-------|-------|
| 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 |

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.  
Rotation converged in 7 iterations.

The following papers have been published so far:

- |        |  |  |
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