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# Potential of Social Capital for Community Development

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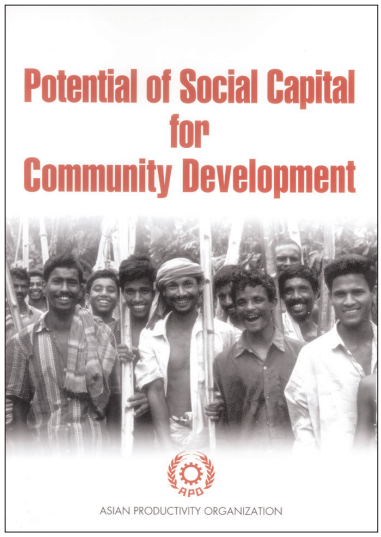
**Report of the APO Survey and Symposium on Redesigning Integrated Community Development 2003–2005**

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# Potential of Social Capital for Community Development

ASIAN PRODUCTIVITY ORGANIZATION

Report of the APO Survey and Symposium on Redesigning Integrated Community Development 2003–2005 (03-AG/IC-GE-SUV-01, 04-AG/IC-GE-SUV-01, 05-AG/IC-GE-SYP-01).

This volume was edited by Mr. Shigeki Yokoyama and Dr. Takeshi Sakurai, Japan.


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# FOREWORD

The focus of development efforts has evolved from the building up of simple physical (financial resources and infrastructure) and human (education and technology transfer) capital to the creation of social capital (organizational/institutional development and trust/networks/norms among people). Social capital is a key but hidden factor that can make a critical difference in productivity. The Asian Productivity Organization (APO)'s Integrated Community Development (ICD) Program has been in place since 1996 with the aim of assisting member countries to promote community-based productivity enhancement activities, including entrepreneurial development and employment generation. Under the ICD Program, a "community" is considered not only to be the object of development but also the most important actor in the process. Given the close human relationships in traditional communities, social capital is often taken for granted. The nature of communities in Asia, however, has been changing due to outmigration from rural to urban areas, aging of rural communities, and diversification of rural production from the agriculture base. Methods for rural community development, including the ICD Program, should therefore be modified to ensure that the role of social capital is not neglected in changing communities.

To analyze the impact of social capital on development performance at the village level during rural transformation, the APO undertook a survey to measure social capital under the ICD Program. In 2004, a regional survey on recent aspects of rural transformation and the accumulation of social capital was undertaken in 10 APO member countries: the Republic of China, India, Indonesia, the Islamic Republic of Iran, Japan, Lao PDR, Malaysia, Sri Lanka, Thailand, and Vietnam. A follow-up symposium was held in April 2005 to examine the results of the survey and to find ways to improve the community development efforts of member countries by redesigning the APO's ICD Program.

This publication is a compilation of the summary of the survey results, selected country reports, and the findings of the follow-up symposium. It is hoped that it will make a positive contribution to community development efforts in the Asia-Pacific region.

The APO is grateful to the Government of Japan for its generous financial support for the ICD Program; the Government of the Republic of China, particularly the Council of Agriculture, for hosting the symposium; and the resource persons for their valuable contributions. Special thanks are due to Mr. Shigeki Yokoyama and Dr. Takeshi Sakurai for leading the survey and editing this volume.

Shigeo Takenaka
Secretary-General

Tokyo
September 2006

# PART I SCOPE AND METHODOLOGY

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# INTRODUCTION AND EXECUTIVE SUMMARY

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This volume is the final product of a three-year research project "Redesigning Integrated Community Development (2003–2005)" under the Integrated Community Development (ICD) program of the Asian Productivity Organization. This project was formulated following the results of the first phase of the ICD program (1996–2000).

## BACKGROUND AND JUSTIFICATION

The concept of Integrated Community Development (ICD) is "a multi-dimensional, continuous and dynamic process through which people in local communities improve the quality of their lives and standard of living comprehensively and effectively with maximum utilization of their own resources as well as resources from outside resulting in sustainable activities" (Munakata 2002). The first phase of the program showed many successful cases of community development of APO member countries through rural infrastructure development, income-generation activities, rural enterprises achieved through cooperatives, and social developments. Rural communities in Asia characteristically have relatively stronger community organization and trust among village people, creating a so-called "community force." It has been clearly shown that mobilizing this community force is essential for productivity enhancement and rural life improvement.

However, the characteristics of Asian communities have been changing along with the rapid economic growth of the region and many constraints still remain or are even newly emerging in the course of implementing various development efforts. Rural transformation can be seen in the form of out-migration from rural areas, feminization and aging of farming populations, and diversification of agriculture and other socio-economic aspects of rural life.

To further promote sustainable development it is necessary to tackle a number of problems (Pradhan 2002). On the administrative scene the familiar "red tape" was experienced in the form of: a) slow dispatch of guidelines/directives from the top, b) excessive bureaucratic procedures, c) non-transparent budget allocation, d) frequent changing of management staff, e) too many agencies involved without proper coordination, f) thinly spread resources, g) inactive/ineffective monitoring, and h) low

enforcement of loan repayments. Meanwhile, at the project sites themselves, planners and administrators often face various problems including: a) difficulty in recruiting able staff, b) racial, religious and cultural sensitivities, c) risk of natural calamities, d) social unrest, e) cash deficits, and f) poor human resources.

Most of these problems could be solved or at least mitigated through collaboration between the administration and the villages, and moreover through villagers' communal efforts. Therefore the focus of the second phase of the APO-ICD program shifted, or went back, onto the community itself. "Community" is a group of people who are mutually identifiable and characterized by intense social interactions among themselves (Aoki and Hayami 2001). There are, in fact, two types of community. One is formed by non-voluntary membership based on kinship or territoriality, such as family, tribe, or village. The other is a purposefully organized group such as a farm co-operative, sports team, or cultural gathering. The tight human relationships among community members are passed from generation to generation, especially in the case of kinship and territoriality. According to game theory, there are three conditions for realizing cooperative games that restrain members from opportunistic behavior, namely, a limited number of players, plentiful information on each player's behavior in the past, and that each player does not ignore the future. The major characteristics of community present all three conditions. Those social and human factors, namely networks, norms and trust, that enable people to act collectively, have been conceptualized as social capital (Putnam 1993). To make the concept of community force more operational and practical, the survey tried to identify and measure social capital, which was the focus of this study.

**Project Implementation**

The project was implemented in three stages as follows. The first stage was a three-day expert meeting to design a survey that was held in Tokyo in November 2003. The second stage was actual survey implementation during 2004. The survey was conducted in the 10 APO member countries of India, Indonesia, Iran, Japan, Lao PDR, Malaysia, Sri Lanka, Taiwan, R.O.C., Thailand, and Vietnam. The national experts, who are researchers or community development specialists in their respective countries, selected study sites and conducted interviews with villagers based on the survey questionnaire. The survey questionnaire, which was elaborated based on Social Capital Assessment Tool (SOCAT) developed by the World Bank (Grootaert and Bastelaer 2002), included questions asking about participation in community organizations and community activities, and asking about trust and cooperation among villagers and with governmental officers. The survey also collected data on the income/expenditure, agriculture production, health status, etc., of sample households.

The survey was carefully planned correctly recognizing some key requirements. Social capital cannot be understood without its local and historical context. Formation and accumulation of social capital is highly path dependent. Its tangible function and how it works is location-specific. These characteristics of social capital required the study teams to use in-depth case studies with due consideration to historical perspective. Then, the Symposium on Redesigning Integrated Community Development was organized in Taichung, Taiwan, R.O.C. in April 2005 in collaboration with the China Productivity Center, the National Chung-Hsing University, and the Chung-Hwa Association of Rural Development as the third stage to present and discuss the results of the survey.

## THE STRUCTURE OF THIS BOOK

This volume is a compendium of selected papers presented at the symposium. Part I (Chapters 1–3) provides the conceptual framework and the survey and analytical methods for implementing empirical studies on social capital. Part II (Chapters 4–9) presents the results of country studies featuring relevant topics for the respective socio-economic settings. Part III tries to generalize the findings of the studies. Chapter 10, exemplifying using previous studies, summarizes the role of social capital on economic development and raises remaining issues for both theoretical and empirical study. The final chapter, Chapter 11, synthesizes the results of the country studies and concludes with policy implications.

Chapter 2 briefly reviews the definitions and dimensions of social capital from the perspective of community development. It also touches on practical issues with respect to data collection, measuring social capital, and data analysis. It is well demonstrated that the concept of social capital is useful in discussing how to formulate effective community development programs for the purpose of enhancing the well-being of rural dwellers. Moreover, the author points out that when conducting a survey covering multiple nations through a standardized questionnaire format, the questions should be carefully translated and, if necessary, modified to avoid biased results due to differences in culture, language, religion, ethnicity, and other social and political factors. There is a tradeoff between the quality of the data and the costs of collecting the data; therefore, a well-structured survey design should be devised. In applying statistical or econometric analysis, it is necessary to consider the status of each variable – which variable is independent, which is dependent, and sometimes, which is latent – while considering other factors that affect community development besides social capital.

Chapter 3 provides the guidelines for research implementation. It emphasizes that postulating testable hypotheses for the specific objectives of the study is the most important step to develop the analytical framework and to design a survey to collect necessary data. The measurement of social capital as well as that of welfare can be done at two different levels: community level and household level. Hence, the analysis can be conducted at any combination of the measurement levels. For the measurement of social capital, at either community or household level, SOCAT can be used with necessary modification in the specific context of the study site. Based on the data collected by the instruments, social capital variables can be quantified and converted into indices. They can then be used in regression analyses. Although qualitative analysis is useful to gain insight into the social relationships in a research site, quantitative analysis is recommended as it has obvious advantage in having general conclusions which can be compared with the results from other areas or countries and which can be applied to many different community development projects, since statistical tests are more robust and convincing in most cases.

The Indonesian study in Chapter 4 focused on the empowerment program of a Water Users Association (WUA) in which a local NGO took a primary role as facilitator. The program started with socializing the roles of the WUA to government officials, community leaders, and the board of the WUA. After socialization, the program was continued to include problem identification. Rules and norms were established based on agreements made by the WUA members through successive meetings. The institutional strengthening has brought about increased participation in irrigation management, resulting in improved water service for rice production, then the enhancement of farmers' satisfaction. The

outcome of the empowerment program was the development of social capital in both cognitive and structural form. The transparency of WUA management including formation of an organizing committee and financial management facilitates mutual trust among members and increased participation in irrigation channel maintenance work.

The Iranian study in Chapter 5 included a quantitative analysis of the impacts of cognitive social capital on collective action and public work participation in respect to farmland consolidation. To measure social capital two types of indicators were used. The input indicators include solidarity and trust. Trust is further divided into trust in neighbor farmers and trust in agricultural extension agents. For output indicators, farmer participation in local collective action and land consolidation programs were used. In addition to these variables, those of age, education level, size of land holdings, and occurrence of conflict among farmers were assessed. The study showed that a farmer's trust in his neighbor farmers promoted village collective action, while it had no relationship with the farmer's decision to accept land consolidation. In contrast, farmer trust in extension agents significantly affected land consolidation participation but not village collective action. The relationship between a sense of solidarity among farmers and their behavior was found to be vague. Size of land holdings had a negative relationship with the farmer's decision to accept land consolidation. No relationship was seen to exist between the occurrence of conflict between farmers and participation in land consolidation.

Chapter 6 investigated the role of social capital in mountainous rural areas of Japan. In the study area various types of agro-related economic activities such as agro-tourism and farmers markets have emerged thus the structure of regional agriculture is increasingly well diversified. Increased interactions with urban societies also facilitate diversified rural life styles. To set up these new activities, the cooperation of residents is indispensable. Therefore the networks of residents and other social arrangements were analyzed. For collecting data and investigating the general characteristics of the study area, a community-level survey and household-level survey were conducted. The result of the community survey showed that structural social capital, horizontal networks in particular which have been accumulated historically, provides the basis for collective action, contributing to the development of rural diversification. Community-based organizations in which members are tied loosely and horizontally are the basis for collective actions with a flexible mindset. The effects of social capital on common regional problems (specifically, forest management, abandoned farmland, and wild animal damages) were found to be weak. Quantitative analysis based on the household survey showed that structural social capital promotes agricultural production, while the effects of cognitive social capital were uncertain.

Chapter 7 provides multifaceted aspects of social capital based on the quantitative study of household surveys directed at rice farmers in southwest Malaysia. The study found that three welfare indicators, namely, rice yield, health, and income, are influenced by social capital variables. As for the self-rated health status of household heads, educational level shows a positive effect. On social capital variables, those attending more community activities appear less healthy. This is because it seems that older farmers normally have more time to spend on community activities and they are more loyal to their organization. In terms of agricultural productivity, frequency of attending community activities and duration of involvement in the organization contribute to higher rice yields. Farmers who have wider and longer relationships with organizations seem to perform better farming, while official status in a formal organization and involvement in a farmers'

organization (PPK, in this study) was seen to cause a decline in rice productivity. It seems that progressive young farmers have little incentive to participate in PPK, while older farmers are more likely to be in an official position of a formal organization. Interpretation of social capital is highly contextual in terms of socio-economic, political, cultural, and historical settings. The Malaysian rice sector has been highly politicized as the nation's dominant farm policy agenda shifted from food problems to agricultural adjustment. Thus, PPK eventually came to function mainly as a distributional channel for government subsidies to rice farmers. The finding that bonding/bridging structural social capital has a positive effect on productivity suggests that to further improve farming performance, more spontaneous and horizontal farmer-to-farmer connections become increasingly important.

Poverty in Sri Lanka is still largely a rural phenomenon and raises the question whether current poverty reduction programs are effective in rural areas. In this regard, Chapter 8 investigates the income-generating effects of social capital with a view to redesigning rural poverty reduction policy, featuring One Product/One Village Program (RVROOP). The empirical analyses are based on primary data collected from a sample of 540 households. Three significant findings were as follows. First, among relatively poor households social capital is crucial to enhance household income complementing physical and human capital, but such an effect of social capital diminishes as household income increases. Second, each dimension of social capital has a different impact on household income. While traditional types of social capital such as participation in groups and collective works and solidarity were found to have no positive effect on household income, new types of social capital that facilitate sharing of and caring for the village's common productive assets significantly increase household income. Third, social capital that strengthens external networks does not have a positive effect on household income, indicating that the networks provided by NGOs and government officers have not actually helped income generation. In conclusion, the findings clearly suggest the need for redesigning the integrated community development programs. What is required is new types of social capital that will meet the needs of market-driven development in Sri Lanka.

The Indian study in Chapter 9 tried to understand social capital as a source of development by examining the performance of self-help groups (SHG). Data for this study were collected from 138 SHG members and 138 non-SHG members in the Tamil Nadu State. The effect of social capital on the improvement of people's livelihoods was evaluated by a comparison between SHG members and non-SHG members with respect to the following three aspects: income and credit support, gender issues, and health status. SHGs are found to facilitate savings among members and ensure timely credit to the members. Not just those financial aspects; SHGs also enhance members' skills and potential for income generation. As a result, SHG members perceive that the SHG has a direct impact on household income. Such opportunities are not available to non-SHG members, and therefore the differences are quite significant. As for social status of women, SHGs have brought a considerable improvement at both the household and community level. Among non-SHG members, the changes are relatively low and slow. However, in terms of health status there was found to be no significant difference between SHG members and non-members. But SHG members benefit from membership, for example, by receiving financial support to meet health-related expenses. In sum, all the empirical evidence supports the significant, positive role of social capital fostered by SHG activities in the improvement of the livelihoods of rural households. Considering that the linkages with other SHGs, banks, and local government are crucial for the success of SHGs, policy interventions to support their networking need to continue.

Chapter 10 discusses the roles of social capital in economic development in terms of (1) common property management, (2) market development, and (3) social security nets. In the case of common property management, structural social capital created by the establishment of a formal forest users group in Nepal facilitates collective action to protect local forests. As for market development, the case of the milled rice market in Ghana is presented, in which millers clustered inside urban areas foster bonding social capital and bridging social capital with rice producers. As a result, millers in the clusters adopt innovations in milling technology and establish a quality/price relationship that is critical for market development. In addition, the lower information costs among them as well as bridging social capital enable millers in the clusters to provide farmers with loans. A third example is the case of Burkina Faso, where a civil war in a neighboring country, Côte d'Ivoire, has caused population shocks due to the returnees as well as income shocks from the suspension of remittances from outside sources and seasonal migration. In such a region-wide disaster, structural social capital at the village level is found to enhance the likelihood of receiving external aid probably thanks to the bridging social capital embodied in the structure. Thus, all the examples demonstrate positive effects of social capital on community development. However, cross-sectional data does not provide enough information on investment flow of social capital, and hence it is not possible to estimate the time and money required to establish social capital, nor is it possible to tell whether investment in social capital is better than other investment opportunities. To solve this problem, the use of panel data is recommended, although the time required for significant change to occur is unknown. In addition, there is some concern that unequal distribution of current endowments of social capital will tend to widen the income gap.

Chapter 11 summarizes the above findings. In general it is safe to say that social capital has positive impact on agricultural production, income, and health status of community people. Regarding structural social capital, participation in functional organizations has clear-cut impact on productive activities. The Malaysian study, however, stands as an exceptional case in that it found that participating in a farmers' organization negatively affects agricultural productivity. This seeming contradiction can be rationally interpreted when considering the socio-political situation of Malay rice farming. The Sri Lanka study shows that involvement by NGO negatively affects farm income. The Malaysian case also shows that participation in communal organization negatively affects health status. The possible interpretation for these findings is that more-disadvantaged households tend to depend more on NGO and such organizations. As for cognitive social capital, bonding, bridging (horizontal) and linking (vertical) social capital are proved to be positive in welfare enhancement and facilitation of collective action. The Iranian study shows that cognitive-bonding social capital promotes communal collective actions but is not necessary to facilitate participation in mutual beneficial public works, while cognitive-linking (vertical) social capital has no influence on collective action but significantly affects public work participation. The findings of the Sri Lanka study implies that traditional forms of social capital do not have positive impact for the upper income population, suggesting the necessity to create a new form of social capital to further improve rural economy in the globalization era. However, this raises an equity issue. If a new form of social capital has no positive effect on the poor, this may degrade community welfare as a whole. Negative consequences of market-driven economic development facilitated by a new form of social capital could be mitigated by another type of social capital that functions as a safety net. Another question is about the opportunity cost of social capital formation. If the return from investment in social capital is not high enough

compared to physical/human capital, this investment loses rationality. It is interesting to note that our empirical studies suggest that formation/accumulation of social capital does not necessarily require additional investment. The case of irrigation rehabilitation in Indonesia shows that the investment in physical capital by-produces social capital. The investment in human capital (SHG in India, RVROOP in Sri Lanka) may also enhance social capital. These interactions of social capital with physical and human capital well represent the dynamism of community development. This complexity requires further investigation into the role of social capital in wider perspectives.

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# SOCIAL CAPITAL AND COMMUNITY DEVELOPMENT: A REVIEW

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## ABSTRACT

This paper reviews how social capital matters in community development and what sort of issues have been raised in previous studies with respect to data collection, measuring social capital, and data analysis. It has been well demonstrated that social capital, positively on frequent occasions or negatively less often, affects the level of community development. Thus the concept of social capital is to a great extent useful in discussing how to more effectively formulate community development programs for the purpose of enhancing the well-being of rural dwellers. When conducting research into the relationship between social capital and community development, we should keep in mind as follows: First, when conducting a survey covering multiple nations through a standardized questionnaire format, the questions should be carefully translated and, if necessary, modified to avoid biased results due to differences in culture, language, religion, ethnicity, and other social and political factors. Second, there is a tradeoff between the quality of the data and the cost of collecting that data; therefore, a well-structured survey design should be devised. Finally, in applying a suitable statistical or econometric tool for the analysis, it is necessary to consider the status of each variable – which variable is independent, which is dependent, and sometimes, which is latent – while considering other factors that affect community development besides social capital.

## INTRODUCTION

Policymakers and social scientists have long tried to find persuasive accounts for why there are wide economic disparities between countries and between communities within a country irrespective of economic development levels. Since Coleman (1988 and 1990) and Putnam (1993) published their epoch-making works in the late 1980s and early 1990s, various empirical studies have claimed that the notion of social capital is by itself one of

the possible explanations.[1] The definition of social capital, however, differs to some extent with each researcher and therefore remains unclear. Despite the problems that are recognized at the moment, we cannot help denying that the notion of social capital is considered a trump for eradicating poverty and enhancing the well-being of dwellers in backward areas, particularly in poverty-stricken rural areas of developing countries.[2] It is, therefore, important to obtain insights into the links between social capital and the well-being of rural dwellers, not only to bring us closer to understanding several debatable issues in rural/community development in general, but also to provide a useful practical framework for making rural/community development strategies more effective. Hence, the main objective of this document is to broadly describe how social capital matters in community development and what sort of issues have been raised in previous studies with respect to data collection, measuring social capital, and data analysis.

This document is organized into four sections, including this introduction. Beginning with a definition of social capital in line with several previous studies, the second section outlines various dimensions of social capital with additional information on measuring social capital, and reviews several previous studies that have investigated the effect of social capital on socio-economic aspects in community development. The third section explains issues related to measuring social capital indicators, data collection, and data analysis, and the final section presents brief concluding remarks.

## DEFINITIONS AND DIMENSIONS OF SOCIAL CAPITAL

### What is Social Capital?

To begin with, although defining social capital as such is not the main objective of this paper, a brief description of social capital seems necessary, as the term often appears to be unfamiliar even to policymakers and practitioners in charge of community development.

In defining its Sustainable Livelihoods Approach, the Department for International Development (DFID) of the United Kingdom stipulated that the primary factors for determining the level of livelihood are natural capital, human capital, physical capital, financial capital, and social capital (DFID 1999; Sakata 2002). Among these factors, although the first four notions of capital can be clearly defined, the notion of social capital remains ambiguous. Human and social capital and social arrangements are closely related and likely to be confused. The OECD report made a clear distinction between them: Human capital is embodied in individuals; social capital resides in social relations, while political, institutional and legal arrangements are rules and institutions in which human and social capital work (OECD 2001). Hence, social capital has been, on frequent occasions, vaguely understood to be the last resort to account for *residuals* of socio-economic matters that cannot be clearly explained by the above-mentioned four types of capital. In other words, *social capital* can compensate for a lack of other types of capital (DFID 1999). With its versatile acceptation, the term *social capital* is widely adapted by

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[1] The World Bank provides a "Social Capital for Development" website covering a wide range of topics relevant to social capital (http:// www.worldbank.org/poverty/scapital).

[2] Several empirical studies suggest that returns to social capital are as high as those to formal education (Grootaert 1999, Grootaert and Narayan 2000).

researchers, policymakers and practitioners as a convenient concept in matters related to community development.

For instance, Coleman (1990) suggests that "social capital is defined by its function; it is not a single entity, but a variety of different entities having characteristics in common: they all consist of some aspects of a social structure, and they facilitate certain actions of individuals who are within the structure." Furthermore, Grootaert and Bastelaer (2002a) define social capital as "institutions, relationships, attitudes, and values that govern interactions among people and contribute to economic and social development." Based on the above and other various definitions, the term *social capital* is currently categorized into the following types: (1) structural and cognitive forms, which are divided based on whether social capital involves socio-economic institutions and networks or relates to individual states of mind;[3] (2) macro (national), meso (regional and community), and micro (household or individual) levels, which are categorized based on the level of economic structure that social capital affects; (3) bonding, bridging, linking and bracing types,[4] which are based on functions that social capital works inside one community or between several organizations and/or individuals in different communities.

While actually measuring these different types of social capital, structural social capital is the most observable of them all. Krishna and Uphoff (1999) and Uphoff (2000) concretely say that the structural form of social capital, which emphasizes the relationships between human behavior and organizations, includes rules, social networks, associations, institutions, roles, procedures, and precedents. As regards the cognitive form of social capital that focuses more on the psychological side of the individual, it indicates norms, shared values, reciprocity, solidarity, attitudes, trusts, and beliefs. It is widely accepted that both structural and cognitive forms of social capital are complementary. Many empirical studies such as Krishna and Uphoff (1999) and Isham and Kähkönen (1999) summarize that structural and cognitive social capital respectively *facilitates* and *supports* mutually beneficial collective action.

With respect to social capital formation, many previous studies describe that history, culture, and existing social structures matter (Putnam 1993, Grootaert and Narayan 2000). However, social capital is *capital*,[5] so that the *stock* of social capital may increase (or decrease) depending upon the current socio-economic environment. On balance, as is pointed out by Krishna and Uphoff (1999), history matters, but as such it does not strongly determine the stock of social capital at the household or village level.

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[3] For a more detailed discussion on structural and cognitive forms of social capital, see Uphoff (2000).

[4] Bridging social capital is essentially horizontal, connecting people with more or less equal social standing, while linking social capital is more vertical, connecting people to political resources and formal economic institutions across power differentials (Grootaert et al. 2004). Rydin and Holman (2004) proposed "bracing" social capital to capture the complexity of cross-sectoral (horizontal) and cross-scale (vertical) relation, "primarily concerned to strengthen links across and between scales and sectors but only operates within a limited set of actors."

[5] Defining social capital as a sort of *capital* is still a controversial issue. Solow (2000) criticized that "social capital" is not a "capital (which) stands for a (purposefully reserved) stock of produced or natural factors of production that can be expected to yield productive services for some time." Arrow (2000) even urged "abandonment of the metaphor of capital and the term 'social capital'," reasoning that human networks/organizations are not built up for economic purposes, but building and enjoying existing social relations have intrinsic values to the participants.

**Dimensions of Social Capital**

Based on the above discussion, in this subsection we will explain each dimension of social capital while reviewing previous studies on the subject. It is widely agreed that human capital cannot be measured directly, so that, for instance, education level as a typical proxy has been used for measurement. Likewise, social capital itself cannot be measured directly without using some proxy variables. In addition to that, judging from the fact that social capital encompasses a large array of concepts, we have to specify proper proxy variable(s) in each dimension and collect appropriate and reliable data through intensive interview or questionnaire surveys and, if necessary, participatory methods (e.g., the Participatory Rural Appraisal and the Rapid Rural Appraisal) with a view to capture social capital comprehensively at the community level.

Although various dimensions of social capital have already been presented and a wide range of studies regarding the links between well-being and social capital have also been conducted, introducing all the dimensions of social capital is almost infeasible. Besides, an all-embracing discussion would be too complicated and lead to a divergence from our issues. In this paper, we therefore select dimensions especially related to community development, namely networks and memberships, social trusts, and collective action and reciprocity, focusing on their contents and summarizing the findings of previous studies.

*Networks and Memberships*

Networks and memberships form one dimension of structural social capital. Regarding network, its size, internal diversity, and the extent of assistance in case of trouble are measured as standards. In their study on agricultural commodity traders in Madagascar, Fafchamps and Minten (1999) pointed out that social networks enabled traders to reduce transaction cost under a situation of imperfect information and then have higher margins.

On the other hand, when analyzing membership, the numbers of groups and associations (e.g., religious groups, school clubs, academic or professional societies, labor unions, political organizations, and fraternal organizations), the frequency of joining group activities, the extent of involvement in groups (e.g., as leader, executive, influential member, ordinary member), and the membership diversity are well used. In general, network and membership have positive effects on the well-being of community dwellers and then community development.

For instance, using U.S. data aggregated at the state level, Kawachi et al. (1997 and 1999) confirmed a striking inverse relationship between per capita membership in voluntary groups and all-causes mortality rates or self-rated health conditions, even after adjustment for income differences between states and individual-level factors.[6] An elaborate study in rural Tanzania by Narayan and Pritchett (1999) concluded that village-level social capital, gauged by both qualitative and quantitative aspects of membership (and social trust), induced greater use of modern agricultural inputs and hence had to some extent a positive effect on household incomes.[7] Although numerous studies of agricultural and development economics have investigated the effect of human capital (e.g., education) on agricultural inputs allocation, the adoption of new technologies and then productivity at

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[6] For a broad discussion on issues of social capital and health, see Pilkington (2002).

[7] In their study on agricultural extension in Mali, Reid and Salmen (2002) described that success of agricultural extension service mainly depends on the degree of social capital (cohesion) at the village level.

farm level (Feder and Slade 1984, Huffman 1974, Pudasaini 1983, Rahm and Huffman 1984, Yang 1997), few such studies of social capital have been done, so much so that Narayan and Pritchett's (1999) study could be worth paying enough attention to.

In terms of ethnicity, income, religion, and their like, there is debate as to which is more efficient and contributes to community development, whether a homogeneous or a heterogeneous membership. Researchers who support heterogeneous groups point to various factors, including the possibility of sharing network and diversified information responsible for innovation and more rapid diffusion of new technology among members (Narayan and Pritchett 1999, Grootaert 1999, Grootaert et al. 1999, Grootaert and Narayan 2000). Conversely, researchers who support homogeneous membership point to higher solidarity and consolidation between members (Kähkönen 2002). This means there is no agreement regarding the merits or demerits of the homogeneity of group members.

*Social Trust*

Social trust, which is one dimension of cognitive social capital, consists of complex sub-dimensions, so that many sorts of questions are usually asked to respondents to gauge the level of social trust. It is widely practiced that responses to several questions are combined into a single or several composite indices using statistical tools, in particular factor analysis. For instance, using their survey data collected in Tanzania, Narayan and Cassidy (2001) found several different sub-dimensions of trust, such as trust by people in their own tribe or caste, in other tribes in the same village, and in politicians, family members, and government service providers.

On the other hand, the extent of trust has been usually assessed by responses to the following question which was originally asked by the European Values Survey and then adapted by many subsequent surveys, such as the World Values Surveys,[8] the General Social Survey of the USA, and the Integrated Questionnaire for the Measurement of Social Capital (Grootaert et al. 2003).[9]

"Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?"

1. Most people can be trusted.
2. Need to be very careful.
3. Don't know.

Besides this question, it is also possible to measure the level of trust by asking whether specific people (such as government officials and extension workers) can be trusted or not.

Using the 1972–94 General Social Surveys of the USA, Brehem and Rahn (1997) pointed out that interpersonal trust enhances civic engagement (measured by memberships in groups) and then confidence in politics, suggesting that contrary to Putnam's (1993)

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[8] The World Values Surveys, which was first carried out as the European Values Survey in 10 European countries in 1981 and later on extended to cover more than 50 countries worldwide, provide useful time-series and cross-sectional data. For full text of the 1990, 1995-96 and 1999-2002 World Values Survey questionnaires, access http://wvs.isr.umich.edu/ques3.shtml (last accessed by the authors 31 May 2004).

[9] Narayan and Cassidy (2001) alternatively used this query in order to measure the extent of "generalized norm."

findings, cognitive social capital, such as trusts and norms, influences structural social capital.

In addition to that, Kawachi et al. (1997 and 1999) found that lower levels of social trust, as measured by the proportion of respondents who believed that people could be trusted, resulted in higher proportions of residents whose health conditions were poor and then higher rates of most major causes of death in the United States.

Putting these previous studies together, it would seem more likely that social trust is a key factor for enhancing individual well-being as well as socio-economic development at the community level.

The conventional approach to measure "trust" is the self-reported survey as in the cases of the above studies. Survey is a good method to collect behavioral data. Ordinary respondents would not respond falsely to questions such as "How many social activities do you participate in?" However, when using survey data three types of bias are a concern, namely, hypothetical bias, idealized personal bias, and incentive compatibility. And a growing amount of evidence has been elicited in experimental economics that survey-based measuring of social capital may lead to misleading results. Carpenter (2002) showed the advantage of economic experiments to gain truthful responses by providing incentive compatibility. He suggests the complementarities between the two methods and proposed simultaneously employing them both for further understanding of social capital.

*Collective Action*

Strictly speaking, it seems more appropriate to say that collective action is not a dimension of social capital (Kajisa 2002), but an outcome of social capital, including social trust, norms, and reciprocity. Woolcock and Narayan (2000) also argue that social capital includes norms and networks that enable people to act collectively with respect to development policies. Therefore, in many empirical studies collective action has been treated as an output indicator of social capital (Grootaert and Bastelaer 2002b). However, collective action itself fosters norms of collaboration and formation of organization, and considering the finding of Grootaert et al. (2003) that "collective action is an important aspect of community life in many countries," collective action could be an important indicator in measuring the level of social capital.[10] In this paper, therefore, a brief description of collective action is presented, irrespective of whether it is a dimension of social capital or its outcome. In previous studies, it was common to collect information regarding collective action as follows: "the extent of collective action, the type of activities undertaken collectively, and an overall assessment of the extent of willingness to cooperate and participate in collective action" (Grootaert et al. 2003). The extent of action undertaken collectively corresponds to the number of collective actions of the entire community and the frequency of participation of individuals in collective action. They can be measured by the following questions: "What proportion of people in this village contribute time or money toward common development goals such as …?" or "How many days in the past 12 months did you or anyone else in your household participate in community activities?"[11] When measuring the extent of willingness to cooperate and

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[10] As pointed out by Grootaert et al. (2003), collective action cannot be used as an indicator of social capital in a totalitarian society.

[11] These questions are cited from the Integrated Questionnaire for the Measurement of Social Capital (SC-IQ) in Grootaert et al. (2004).

participate in collective action, it is widely accepted to use responses in an imaginary situation, such as a water supply problem, which would affect almost all or a large portion of respondents of the community, to judge their commitment to collective action.

Because collective action itself is a well-known concept in the social sciences, much research has already been done on collective action, as a context of social capital. Many previous studies conclude that collective action is more prevalent in successfully developed communities. For instance, Krishna and Uphoff (1999) found that social capital was highly correlated with village-level performances of mutually beneficial collective action and common land development in India.

Currently there are two different views with respect to the effects of membership homogeneity on collective action. Krishna and Uphoff (1999) concluded in their study in India that heterogeneous communities were *not less* likely to act collectively than more homogeneous communities. On the contrary, in his literature review study on irrigation management, Kähkönen (2002) summarized that economic and social homogeneity of irrigators made them work more collectively. Grootaert (1999) also reported that heterogeneity in group memberships had a negative effect on collective action in Indonesia.

## SEVERAL ISSUES FOR MEASUREMENT AND DATA ANALYSIS

This section examines several issues relevant to data collection and measurement of social capital, specifically, the setting of questionnaire items, the relation between sample size and data quality, the determination of variables, and endogeneity.[12]

### Setting of Questionnaire Items

There are at least three issues related to the setting of questionnaire items. The first issue is that the meaning of specific words used in a questionnaire might be to a certain extent different in countries or communities with their different languages, ethnic groups, religions, and various other social backgrounds (Kajisa 2002). Although English standardized questionnaires, such as the Social Capital Assessment Tool (SOCAT) and the Integrated Questionnaire for the Measurement of Social Capital (SC-IQ),[13] which were developed by World Bank research groups, are available, questionnaire items and sentences should be set with careful consideration of socio-economic and cultural factors in the target community.

Second, for more accurate measurement of social capital, it is not enough to use quantitative data from questions such as "participation in a given organization" only; qualitative data from questions such as "consciousness of the members of the organization" and the characteristics of the organization itself are also necessary. However, it should be kept in mind that subjective bias of interviewees has more influence on qualitative data than on quantitative data.

Finally, regional specificities are an important issue (Kajisa 2002). For example, when investigating the issue of collective action, asking a question like "If there were a

[12] For more detailed discussions on these matters, refer to Grootaert et al. (2003) and Kajisa (2002).

[13] For detailed discussions on SOCAT and SC-IQ, refer to Krishna and Shrader (1999 and 2002) and Grootaert et al. (2003).

water supply problem in this community, how likely would it be that people will cooperate to try to solve the problem?" would not be effective to assess the extent of collective action in a community where water shortage seldom occurs. Alternatively, an appropriate and relevant question should be asked.

**Sample and Questionnaire Size vs. Data Quality**

The more questions there are to cover a variety of responses, the more likely it will be to secure high-quality data. However, it should be noted that the costs of carrying out a questionnaire or interview survey in terms of money and time are proportionally related to the size of the questionnaire and that of the sample, and therefore there is a tradeoff between the quality of the data and the costs incurred by the survey. For this reason, it is necessary to carefully design the most suitable questionnaire framework subject to time and budget constraints.

In general, a relatively large portion of previous studies, based on the General Social Survey, the World Values Survey, and household/individual studies, as many as 1,000 or even more households or individuals were surveyed (Table 1). If we pay close attention to disparities in development levels between communities, as did Krishna and Uphoff (1999) and Narayan and Prichett (1999), who sampled 64 and 87 communities respectively, we see that it is preferable to collect a sufficient number of community samples to obtain robust results from cross-sectional analyses between communities.

Consequently, even when only a limited number of communities are sampled because of time and budget constraints, the fixed effects of social capital inherent in the respective communities can be detected using the dummy variables method. Nevertheless, in general the fewer the number of communities investigated, the more difficult it seems to analyze the effects of the characteristics of the community; thus, there could be no other choice than to put emphasis on social capital measurable at the household or individual level in the research.

**Variables Determination and Endogeneity**

In analyzing the survey data, it is necessary to consider the status of each variable: which variable is independent, which is dependent, and if any, which is latent (Grootaert et al. 2003). To that end, setting up a clear-cut hypothesis is definitely required.

In addition, it seems necessary to consider several dimensions of social capital concurrently in examining what sorts of factors explain the outcomes of social capital. For example, if the reason that a collectively managed irrigation system works well in a community is strong leadership, this means that a key person imparting strong and efficient leadership is involved in the management, which points to structural social capital background. On the contrary, on occasions in which heightened consciousness toward norm or reciprocity of the community dwellers is the utmost reason for success, cognitive social capital background has to be paid attention to. This simple example clearly suggests that analyzing limited dimension(s) of social capital is likely to be insufficient to clarify the impact of social capital on community development. It seems reasonable therefore to collect a wide range of data on the dimensions of social capital to comprehensively analyze the factors determining community development levels.

For further analysis of the data, on the other hand, choosing a suitable statistical or econometric tool for data analysis is indispensable. By looking into previous studies, we see that tools for multivariate analyses – such as ordinary least squares (OLS), instrumental variables method (IV), probit model, and qualitative regression – and factor

analysis and covariate structural analysis have been widely applied. In this regard, it is important to note that whether the variables of social capital are endogenous or exogenous are important for model building, as aptly pointed out by Grootaert et al. (2003). For instance, if social capital is actually an endogenous variable[14] but is taken as an independent variable and OLS is applied, the results would be biased. In that case, as done by Narayan and Pritchett (1999) and Grootaert and Narayan (2000), it might be necessary to use the IV tools or their likes to eliminate the bias. Besides, as mentioned above, the creation of social capital is a highly complex path-dependent process influenced by social, political, and cultural factors. Therefore, the construction of an empirical model in which social capital is considered as a dependent variable would be more complicated than that in which it is considered as an independent variable (Grootaert et al. 2003; 2004). A variety of qualitative in-depth studies is necessary to better understand the creation (or destruction) process of social capital. Quantitative multivariate analyses then could be applied for empirical tests on specific aspects of social capital creation process hypothesized based on the findings of the results of these qualitative studies (Grootaert et al. 2004).

## CONCLUSION

Many previous studies have demonstrated that social capital, positively on frequent occasions or negatively less often, affects the level of community development. This paper, based upon such findings of previous studies on social capital, pointed out that the concept of social capital is to a great extent useful in discussing how to formulate community development programs more effectively for the purpose of enhancing the well-being of rural dwellers. However, conducting research into the relationship between social capital and community development, we should keep in mind several issues as follows: First, when conducting a survey in various nations through a standardized questionnaire format, the questions should be carefully translated and, if necessary, modified to avoid biased results due to differences in culture, language, religion, ethnicity, and other social and political factors. Second, there is a tradeoff between the quality of the data and the costs of collecting the data; therefore, a well-structured survey design should be devised. Finally, in applying a suitable statistical or econometric tool for the analysis, it is necessary to consider the status of each variable – which variable is independent, which is dependent, and sometimes, which is latent – while considering other factors such human capital, physical capital, and institutional settings that affect community development besides social capital.

[14] Assuming a model in which social capital is part of the household's exogenous assets determining income and one component of social capital, e.g., social club, is pursuing leisure activities. It is possible that demand for participation in that social club rises with income. If this is the case, social capital is in part a consumption good, then becomes an endogenous variable in the model (Grootaert et al. 2004).

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Table 1. Summary of Previous Studies on Social Capital

| Study | Location | Social capital measures used | Methodologies | Data sources mainly used | Conclusions |
|---|---|---|---|---|---|
| Household or Individual Level | | | | | |
| Brehm and Rahn (1997) | USA | Civic engagement, interpersonal trust, and confidence in government | Factor analysis and pooled cross-sectional analysis | 1972–94 General Social Survey | Interpersonal trust enhances civic engagement and then confidence in political institutions. |
| Fafchamps and Minten (1999) | Madagascar | Social network | Ordinary least squares and instrumental variables method | Individual survey (n=729 traders) | Social networks enable agricul-tural traders to have higher margins. |
| Narayan and Pritchett (1999) | Tanzania | Group memberships, characteristics of groups and trust in various institutions and individuals | Ordinary least squares, instrumental variable method and probit model | Household survey (n=1,376 households in 87 clusters) | Village-level social capital has to some extent a positive effect on household incomes. |
| Isham and Kahkonen (1999) | Indonesia | Memberships (quantity and quality of local groups) | Probit model | Interview survey (n=1,100 households) | In a village with more social capital, demand-responsive water services are more efficient, so that improvement of health conditions is more significant. |

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| Study | Location | Social capital measures used | Methodologies | Data sources mainly used | Conclusions |
|---|---|---|---|---|---|
| Grootaert (1999) | Indonesia | Memberships in local associations (density of associations, internal heterogeneity, frequency of meeting attendance, etc.) | Ordinary least squares, probit model and quantile regression | Household survey (n=1,200 households) | Social capital results in poverty reduction and welfare improvement. Heterogeneity in group memberships gives positive effects on welfare improvement but negative effects on collective action. |
| Grootaert and Narayan (2000) | Bolivia | Membership in local associations and organizations | Ordinary least squares, probit model, quantile regression and instrumental variable method | Household survey (n=1,000 households) | Social capital contributed to poverty reduction and welfare improvement. Moreover, returns to social capital were higher than those to education. |
| Narayan and Cassidy (2001) | Ghana and Uganda | Group characteristics, generalized norms, togetherness, everyday sociability, neighborhood connections, volunteerism and trust | Factor analysis and multivariate technique | Household and individual surveys (n=1,471 households in Ghana and 950 individuals in Uganda | Social Capital measures were confirmed as fundamental dimensions of social capital. |
| Reid and Salmen (2002) | Mali | Trust and social cohesion | Qualitative (descriptive) analysis | Individual survey (n=60 individuals in 6 villages) | Strong community cohesion embedded in a community led to enhancing the effect of agricultural extension services. |

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| Study | Location | Social capital measures used | Methodologies | Data sources mainly used | Conclusions |
|---|---|---|---|---|---|
| Daiz et al. (2002) | Peru | Participation, trust and social connectedness | ANOVA, t-test and chi-square test | Individual survey (n=789) | A significant tendency was found for economic development and food security to be high when social capital is also high. |
| Binam et al. (2004) | Cameroon | Club membership | Stochastic frontier production function analysis | Farm household survey (n=450 farmers) | The role of social capital in providing incentives for efficient agriculture production was found. |
| Chavez et al. (2004) | Australia | Neighborhood attachment, attachment, network, trust, reciprocity, local, engagement, and so on | Factor analysis and multiple regression analysis | Household survey (n=521) | With the exception of feeling of trust and reciprocity, no other social capital component made significant contributions to explaining health variance among respondents. |
| Martin et al. (2004) | USA | Trust, reciprocity and social networks | Logistic regression | Household survey (n=330 low income households) | Household with higher levels of social capital are unlikely to go hungry. |
| Wu and Pretty (2004) | China | Social connectedness | Descriptive analysis | household survey | Household with social connections were more likely to adopt a range of new technologies, and hence had higher income. |

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| Study | Location | Social capital measures used | Methodologies | Data sources mainly used | Conclusions |
|---|---|---|---|---|---|
| Cramb (2005) | Philippines | Participation and group membership | Logistic regression and qualitative analysis | Interview with project staff and other key informants, farm household survey (n=104 households), Case studies of 12 community landcare groups | The formation of social capital enhanced collective efforts for soil conservation. However, continuing support could be needed to maintain stock of social capital. |
| Community or Regional Level | | | | | |
| Kawachi et al. (1997) | USA | Membership in voluntary groups and social trust | Ordinary least squares and pass analysis | General Social Survey (n=7,654 individuals in 39 states) | Income inequality leads to disinvestment in social capital and hence to increased mortality rates. |
| Krishna and Uphoff (1999) | India | Structural (network and role) and cognitive (norms, values, attitudes and beliefs) social capital | Correlation analysis (Pearson) and factor analysis | Individual survey (n=2,397 individuals) and focus group interviews with village leader | Social capital is highly correlated with performances of collective action and common land development. |
| Kawachi et al. (1999) | USA | Trust, reciprocity, group membership | Contextual analysis | Behavioral Risk Factor Surveillance System and General Social Survey (n=16,259 individuals in 39 states | Even after adjustment for individual-level factors, social capital is positively associated with self-rated health conditions. |

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| Study | Location | Social capital measures used | Methodologies | Data sources mainly used | Conclusions |
|---|---|---|---|---|---|
| Reid and Salmen (2002) | Mali | Social cohesion | Descriptive comparison between socially cohesive and divided villages | Interview survey (n=90 individuals) | Success of agricultural extension services depends on the degree of village-level social capital (cohesion) and the quality of agricultural extension agents. |

*Note*: We made partial reference to Krishna and Shrader (1999) to compile the above table.

# MEASUREMENT AND ANALYSIS FRAMEWORK OF SOCIAL CAPITAL

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## INTRODUCTION

It has been well recognized recently that community-level factors such as community structure, norms, and networks are critical for successful rural development, and hence the APO's research project "Redesigning Integrated Community Development" was initially intended to identify community factors that are useful for redesigning rural development. After several discussions, however, we decided to use "social capital" instead of "community factors" to focus our intent in the research project although these are not exactly the same.[1] In a sense the term *community factors* is broader than *social capital* because the former includes, for example, human capital, collective action, and ethnic heterogeneity at the community level that may affect the performance of community-level activities and household welfare. In another sense, however, social capital can be defined at several levels other than community: that is, social capital is often defined at individual level and household level as a kind of asset that the individual or household possesses. In addition, when networks outside a community are considered, the concept of social capital extends beyond the community. The objective of this paper is to discuss methodological issues for the measurement and analysis of social capital, specifically as guidance for the country experts who are involved in this APO research project. As such, even though the term *social capital* is used in this paper, reflecting the original idea given by APO, it could also include community factors that are usually not regarded as social capital in the literature.

The usefulness of the analysis of social capital is twofold. First, it can be used to select communities with a good chance of success in rural development. Due to limited available resources, it is definitely important to select communities under favorable conditions for development projects. This selection may help cause other communities with less-favorable structure and norms to stay poor, but in the medium and long run those communities under unfavorable conditions will also benefit from the economic growth in the more favorable communities. Second, such analyses can identify problems at community level as well as individual/household level. The concept of social capital is that people can invest in it to enhance its stock level just like physical and financial capital. This means that intervention may be possible to enhance social capital

[1] For the definition of social capital and the literature on its role in community development, refer to Chapter 2 of this book.

endowments so that living standards can be improved at community level as well as individual/household level.

## ANALYTICAL FRAMEWORK

### Hypotheses

For any research, postulating testable hypotheses is its most critical aspect. Since hypotheses determine what kind of data the researchers need to collect in order to test them, without hypotheses it is not possible to design a survey. A preliminary survey is usually required prior to postulating testable hypotheses.

The general objective of this research project is to investigate the effect of social capital on the performance of community development. Therefore, it is necessary to postulate the hypotheses along this line. However, each country should have its own focus and problems, and accordingly, specific hypotheses to test, which will in turn determine what type of social capital to consider and what kind of performance to examine.[2] Thus this paper does not present any specific hypothesis, but rather provides a general framework for testing hypotheses.

## LEVEL OF ANALYSIS

As discussed above, social capital can be measured at several different levels. Performance also can be evaluated at several different levels. Therefore, any combination of the levels of social capital and its effect can be used to postulate hypotheses. The analyses also can be done at any level, but needless to say, the level of analyses is determined by the levels at which the hypotheses are postulated, if it is to test the hypotheses.

In this section an analytical framework is advanced in the form of equations. Equations are used to convey the concept of the framework easily but this does not mean that all the analyses should be based on multiple regression. In fact, we argue that qualitative analyses are sometimes more effective and convenient. However, it is also true that quantitative analyses have obvious advantages in supplying general conclusions that can be compared with the results from other areas or countries and that can be applied to many community development projects, since statistical tests are more robust and convincing in most cases.

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[2] Social capital can be classified in several ways, and the classification will help to postulate appropriate hypotheses in a specific context. For example, structural social capital and cognitive social capital (Krishna and Uphoff, 1999), and bonding social capital and bridging social capital (Narayan, 1999). Structural social capital includes "rules, social networks, roles, procedures that facilitate mutually beneficial collective action by lowering transaction costs, coordinating efforts, creating expectations, making certain outcomes more probable, (and) providing assurance about how others will act." On the other hand, cognitive social capital means "norms, values, attitudes, and beliefs which create and reinforce positive interdependence of utility functions and which support mutually beneficial collective action." On the other hand, bonding social capital works within groups to facilitate cooperation and/or collective action among members, while bridging social capital improves the access to the outside such as markets, NGOs, and government, and hence facilitates the construction of a social safety net outside the community.

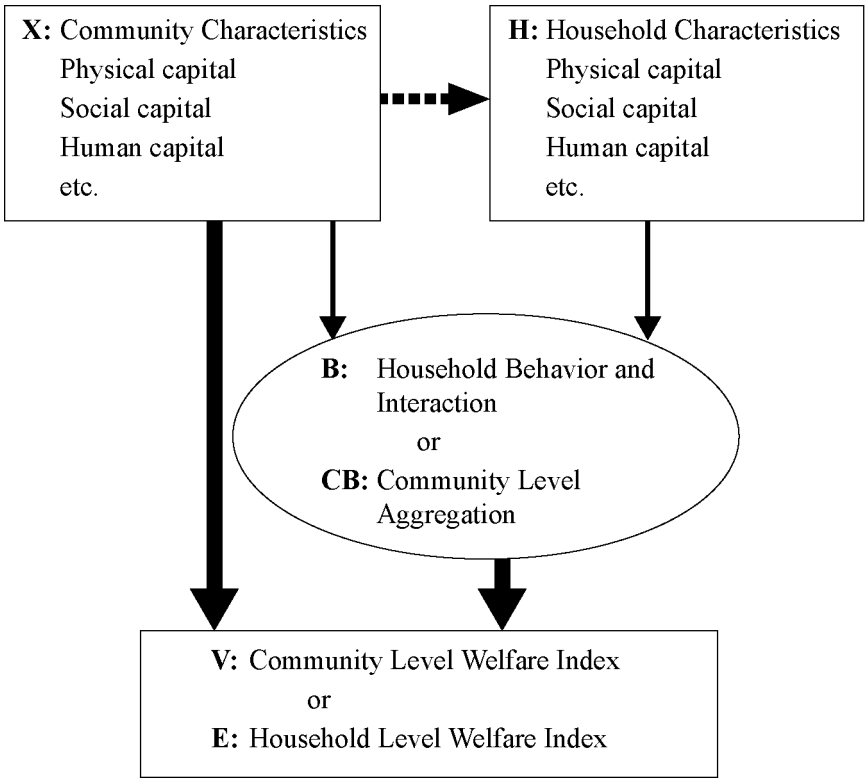


Figure 1. Analytical Framework

The analytical framework to be used in this research project is shown in Figure 1, where the relationship of groups of variables is presented. These groups are: community characteristics (X); household/individual characteristics (H); household/individual behavior and interaction (B); community-level aggregation of household/individual behavior and interaction (CB); community welfare indicator (V); and household/individual welfare indicator (E). This relationship can be written as below.

Community Level

$$B = \Phi (X, H) \quad (1)$$

$$CB = \Sigma (X, B) = \Sigma (X, \Phi (X, H)) = \Sigma (X) \quad (2)$$

$$V = \Pi (X, CB) = \Pi (X, \Sigma (X)) = \Pi (X) \quad (3)$$

Household Level

$$B = \Phi (X, H) \quad (4)$$

$$E = \Psi (X, B) = \Psi (X, \Phi (X, H)) = \Psi (X, H) \quad (5)$$

Equation (3) implies that community-level welfare indicator (V) is a function of various community characteristics (X), where household characteristics in the community as a whole (CB) are assumed to be explained by community characteristics (X) as shown in equation (2). At the household level, on the other hand, equation (5) indicates that

household welfare (E) is determined by household characteristics (H) as well as community characteristics (X).

**Community-Level Analysis**

Equation (3) can be written in linear form as follows:

$$V_k = \alpha + \theta_1 X_k + \theta_2 R + \varepsilon_k \qquad (6)$$

where subscript k stands for community k, and the variables and parameters are defined as below.

$V_k$ = index or indicator of community-level welfare for community k
$\alpha$ = constant term
$X_k$ = vector of community-level variables for community k
$\theta_1$ = coefficients of vector $X_k$
R = vector of region-level variables (optional)
$\theta_2$ = coefficients of vector R
$\varepsilon_k$ = error term

$V_k$ is an index or an indicator of welfare defined at community level, which reflects the performance of rural development. The selection of this variable depends on the hypotheses to test. There are two types of example for $V_k$: one is related to the community's common resources such as forest, grazing land, and water; the other is an aggregation based on an individual household's decision or situation. Examples of the common resources are: percentage of area irrigated in the total common area in a village; change in forest biomass in a village during the last 10 years; grass quality of the community's common grazing land; quality of basic services such as education, health facilities, drinking water available for the community; and so on. Examples of the aggregation of household behavior are: village average (or normal) yield of specific crops; adoption rate of modern varieties at village level; village average (or normal) level of chemical fertilizer application; mortality rate at village level; and so on.

$X_k$ is a vector of community-level exogenous variables that explains $V_k$. $X_k$ can include variables classified as follows: (i) variables for community-level social capital; (ii) variables for community-level human capital as well as physical capital; and (iii) other community characteristics. An advantage of a multiple regression model is that several variables can be included at the same time in $X_k$, and that the effect of social capital can be separated from the influence of other variables such as physical capital and human capital.

(i) Examples of variables for community-level social capital are: number of organizations in a community (either formal or informal); participation rate of one or several important community organizations such as a forest users group, water users association, microfinance groups, and so on; and existence of informal institutions and norms in specific events or situations such as disaster relief, protection and management of common forests, maintenance of irrigation facilities. (ii) Examples of variables for community-level human capital are: adult male literacy rate; adult female literacy rate; number of years since the establishment of primary school in the village; number (or percentage) of male high-school graduates living in the village; and number (or percentage) of female high-school graduates living in the village. On the other hand, variables for community-level physical capital may include natural capital. Examples are: transportation and communication facilities, irrigation facilities, total area of agricultural

land, size and condition of forest, soil type, rainfall level, and so on. (iii) Other community characteristics are also important in equation (1), particularly to control for the influence of such variables. Examples are: village population, village population density, village population growth rate, distance to market, distance to the regional capital, distance to the nearest paved road, year-round accessibility by vehicles, number of years since the establishment of the village, ethnic diversity, asset inequality, percentage of landless household, and average land holding size.

R is a vector of variables at the region level. This is not always required. But if the data is collected from a wide area covering several distinguishable regions, region-level variables will be required. If community-level welfare is highly correlated with a region's characteristics such as proximity to urban areas and the level of annual rainfall, without controlling for the regional effect the impact of social capital cannot be correctly estimated.

One or several of the variables in $X_k$ will be used to test the hypotheses. That is, if estimated coefficients for the variables in question have the expected signs and are statistically significantly different from zero, the hypothesized relationship is judged to be empirically supported by the data.

**Household-Level Analysis**

Equation (5) can be expressed in linear form as below.

$$E_{ik} = \beta + \delta_1 H_{ik} + \delta_2 X_k + \delta_3 R + \sigma_{ik} \qquad (7)$$

where subscript i and k stand for household i and community k respectively, with the variables and parameters are defined as follows:

$E_{ik}$ = index or indicator of household welfare
$\beta$ = constant term
$H_{ik}$ = vector of household-level variables
$\delta_1$ = coefficients of vector H
$X_k$ = vector of community-level variables
$\delta_2$ = coefficients of vector X
R = vector of region-level variables (optional)
$\delta_3$ = coefficients of vector R
$\sigma_{ik}$ = error term

$E_{ik}$ is an index or an indicator of welfare defined at household level, which should be determined by many different factors including hypothetically social capital at household level as well as community level. Again, the selection of this variable depends on what hypotheses are going to be tested. But since poverty is the major topic of recent study, household welfare is typically measured by household income or expenditure per capita. Other examples are: agricultural technology adoption at household level (e.g., modern varieties, chemical fertilizer, soil conservation measures, etc.); agricultural productivity (profitability or yield either of a specific crop or at farm level); and health status.

$H_{ik}$ is a vector of exogenous variables at household level, which include household characteristics as well as social, human, and physical capital at household level.[3] Household characteristics are age, age squared, sex, ethnicity, and religion of the household head; household size; dependency rate, and so on. Social capital at household level is often measured by the number of organizations/associations in which the household members participate. Human capital, on the other hand, is usually proxied by the number of years of schooling of the household head. But sometimes both male and female education levels are separately used depending on the hypotheses.

$X_k$ is a vector of exogenous variables at community level and is the same that appears in the community-level analysis. Such variables are required even in the case of household level analysis because some social capital indicators are defined only at community level and other community characteristics also are likely to influence household-level welfare.

R is a vector of variables at region level. This is also the same as in the community-level analysis, and hence is optional.

**Measurement of Social Capital**

When we apply the analytical framework presented above, how to construct social capital variables will require the most elaboration. The construction of social capital variables is based on quantitative as well as qualitative information collected from communities and households/individuals so that the constructed variables can somehow capture the unobservable social capital that the communities and households/individuals possess. In this sense, the data collection and the variables construction together can be considered to be the measurement of social capital. With this regard, a standard method to measure social capital by a set of questions, or Social Capital Assessment Tool (SOCAT), has been established by researchers at the World Bank (Grootaert and Bastelaer 2002; Grootaert et al. 2003).

However, there are several problems if we adapt the standardized World Bank methodologies. First, although the World Bank questionnaires are comprehensive, they include so many questions and take such a long time to administer that they cannot be easily implemented, particularly in a case where other types of information such as income, consumption, agricultural production, etc. are also being collected. From a purely practical point of view, this is the most serious weakness of the World Bank approach. Moreover, there is still even a fundamental question as to how one can measure social capital because social capital, such as trust and networks, is not observable, and what can be observed are the *results* of social capital. Hence, the question is, as Sobel (2002) argues, if we can use some consequences of social capital as measurement of social capital itself in another context. Nevertheless, since there is no agreement regarding the

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[3] According to the "Sustainable Livelihood (SL) approach" for poverty alleviation of the UK's Department for International Development (DFID), household capital that supports its livelihood is classified into five categories (Ashley and Carney 1999). They are: natural capital, physical capital, human capital, financial capital, and social capital. Among them, natural capital is usually not possessed by households, but rather belongs to the community or region, and hence is treated as community characteristics. Financial capital belongs to households, but formal financial institutions are often not available in rural areas of developing countries, and even if they exist the amount of household savings is small relative to the value of other capital. Moreover, it is not easy to obtain accurate information about the savings from interviews. Therefore, financial capital is often ignored in studies on rural households.

measurement, it is advisable that we should adapt the SOCAT, and modify it in the specific context of the study site and the objectives.

Social capital variables are included in the vector of community-level variables ($X_k$ in equation (6)) and/or the vector of household-level variables ($H_{ik}$ in equation (7)). Even if SOCAT is adapted, how to construct social capital variables from the data collected is still an issue. There is no standardized way to do it. A simple way is to pick up one or several questions that may better reflect the level of social capital than others in the specific context. For example, if it is structural social capital that matters, the number of associations in which a household participates can be used as a measure of the household's social capital. And if the focus is on cognitive social capital, an answer to a five-scale question about the degree of trust in neighbors is considered to capture it.[4] This way is simple, and hence can avoid the technical problem of presenting too many questions. But if a researcher decides, following the hypotheses postulated, to include only one or a few questions to use as a measure of social capital in advance and does not collect other survey information to save time and cost, there is a large risk that the researcher will realize later that the social capital variables do not work well in the analyses.

In addition, since social capital should have several dimensions (Narayan and Cassidy, 2000), a simple approach will be subject to the possible criticism that it misses other dimensions of social capital. Hence, data related to other dimensions such as the number of friends living outside the village, the number of instances of participation in community work, etc., need to be collected. Or even within the same dimension, several variables can be created based on different questions. In this way, one can increase the number of social capital variables that may capture different aspects of social capital. However, the distinction between the dimensions is not so obvious, and consequently the more social capital variables there are, the more difficult it becomes to interpret the regression results. Moreover, some of the variables may be highly correlated and hence will cause multicollinearity problems in the regression analysis. Therefore, even if several different variables for social capital are assumed to have some impact, we cannot use too many variables at the same time particularly if they are correlated.

One way to avoid the problems above is to create one or a few composite indices based on multiple social capital variables. Sometimes it is just a simple sum of numerical variables, but in other cases arbitrary weights are used for each variable. A sophisticated method is to apply principal component analysis that can determine an appropriate weight for the respective variables. Although this is the most sophisticated approach, there is no way to judge which is the best to investigate the effect of social capital. In reality, people tend to choose an analytical method that gives the most acceptable results.

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[4] A typical question is, for example, "How much do you trust your neighbors?" The answer is to be selected from the following scale: 1. To a very great extent, 2. To a great extent, 3. To neither great nor small extent, 4. To a small extent, and 5. To a very small extent. In this way, qualitative perception is converted into quantitative data.

## DATA COLLECTION

What kind of data should be collected depends on the hypotheses, and hence this paper does not provide any fixed set of questionnaires. But the following points need to be considered in designing a survey.

### Selection of Communities

As discussed in the previous sections, the analyses can be done at any level depending on the hypotheses postulated. But since community-level social capital and community-level other factors are expected to have significant effect on community development, it is desirable to have an adequate number of communities in the sample so that the sample can have diversity in terms of social capital and other factors at community level. Considering the resource constraints, however, random sampling of a large number of communities may not be feasible. Hence, a small, but adequate number of communities should be purposefully selected, based, for example, on proximity to a major city and accessibility such as seasonal road conditions.

In addition, a practical problem is how to define a community. Is it the minimum administrative unit or a naturally developed hamlet? Is a list of the communities available based on which sample communities can be selected? If it is an administrative unit, local government should have the list. But if it is a natural hamlet, very often no list of hamlets is available, and consequently a bias may occur in the sample selection since remote and isolated hamlets would not be selected.

### Selection of Households

In general, it is not likely a researcher will have information on household characteristics based on which sample households are specifically drawn (stratified sampling) before conducting the actual survey. Therefore, the best way of sampling is to conduct a census in advance to make a household list with key information that can be used for stratification. If a researcher has enough time and budget, he/she is strongly recommended to do this census before conducting the household survey. The key information will depend on the hypotheses, but usually wealth level is used to stratify the households of a community into several strata.

A second-best case is when a list of households without key information is readily available. If the list is large enough, a random sample from the list should be justifiable. Otherwise, a researcher needs to develop the best, most feasible method of household sampling for his/her own specific objectives, which must be as random as possible.

### Number of Samples

In order to conduct statistical analyses comfortably, we would like to have at least 50 observations. But it depends on the data as well as the objectives. In the case of a community-level survey, data collection from a large number of communities is very costly, but on the other hand diversity in community characteristics is relatively easily satisfied. Hence, the minimum number of communities can be as small as 30 depending on the cases. On the other hand, in the case of a household-level survey, since the additional cost to have one more sample household in one community is not so high, a large sample size will be achieved more easily than in the case of a community-level survey. But since the diversity in household characteristics may not be so large, a relatively large number of

samples is required for household-level analysis. Probably the minimum number of households is between 60 and 100 depending on how diverse they are.

Thus, if a researcher will conduct both community-level and household-level analyses, at least 30 communities should be sampled purposefully or randomly and in each community at least five households need to be randomly chosen, to make a sample of 150 households (Table 1). If a researcher will do only community-level analysis, then as argued above, at least 30 communities need to be selected, which could be done either purposefully or randomly. But if the number of communities increases to, say 50, the data set will become much better because it is often the case that not all the observations can be used in the analyses due to missing values. As for cases in which only household-level analysis will be done, sample households should be drawn from several different communities in order to obtain diversity. Hence, one needs to choose five to 10 communities purposefully, then in each community six to 20 households should be randomly selected in order to make the total sample size at least 60 to 100 (Table 1).

Table 1. Proposed Sampling Scheme for the Survey

| | Community-level survey only | Household-level survey only | Both community and household level |
|---|---|---|---|
| Minimum number of communities | 30 | 5–10 | 30 |
| Community sampling method | Purposeful or random | Purposeful | Purposeful or random |
| Minimum number of households | 0 | 6−20 per community | 5 per community |
| Household sampling method | NA | Random | Random |
| Total number of households | 0 | 60–100 | 150 |

## EXAMPLES OF ANALYTICAL FRAMEWORK

This section provides some examples of analytical framework explaining what kind of variables are used in the regression analysis.

### Community-Level Analysis

An example of community-level analysis is drawn from Sakurai et al. (2001), and its points are summarized in Table 2. The general hypothesis of this study is that community-level social capital enhances a community's welfare. The data were collected from 44 community forest users groups in the Dang district, Nepal. The sample was randomly drawn from a list of forest users groups registered at the district forest office. Therefore, in this example a forest users group is regarded as a community, and its welfare is measured by the improvement of the condition of the forest that the forest users group manages ($V_k$ in equation (6)). The improvement is judged by comparison of aerial photographs taken in 1978 and in 1996. On the other hand, social capital at a forest users group is proxied by the number of years since the forest was handed over to the forest users group (one

variable of $X_k$ in equation (6)). Here, an *a priori* assumption is that the longer a group has been managing a community forest, the more social capital will have been accumulated within the group. Hence, the hypothesis can be expressed more specifically that the more years that have passed since the hand-over, the greater the improvement in the forest. Other explanatory variables included in vector $X_k$ are the number of group members, the number of Brahmin households, traveling time to the market, forest size, soil type dummies, and forest location. Region-level variables (R in equation (6)) are not included. Thus, the hypothesis is tested by estimating equation (6): If the estimated coefficient for the social capital variable included in vector $X_k$ is significantly different from zero, the hypothesis is supported.[5]

Table 2. Example of Community-Level Analysis

| Points to consider | Description | |
|---|---|---|
| Analysis level | Community (forest users group) | |
| Number of samples | 44 forest users groups (randomly sampled from the list) | |
| Community welfare indicator | Improvement of the forest condition | |
| Social capital | Proxied by the number of years since the forest was handed over to the forest users group | |
| Hypothesis | The more social capital a forest users group possesses, the better welfare condition it has | |
| Other variables for control | Social structure | Number of members<br>Number of Brahmin households |
| | Infrastructure | Traveling time to market |
| | Natural capital | Forest size, soil type, forest location |

**Household-Level Analysis**

Narayan and Pritchett (1999) provide an example of household-level analysis. As shown in Table 3, they used data collected from 846 randomly selected households distributed across 53 randomly selected villages in rural Tanzania. The general hypothesis here is that social capital, either household level or community level, increases a household's welfare. The household welfare indicator ($E_{ik}$ in equation (7)) is household expenditure per person. The household social capital index is made from three dimensions of social capital: (i) the number of groups in which an individual was a member, e.g., Christian churches, mosques, village burial societies, women's groups, political party, cooperatives, rotating-credit groups, and so on; (ii) the characteristics of those groups; and, (iii) the individual's values and attitudes, particularly trust and social cohesion. Therefore, there is only one variable that represents household-level social capital in the vector $H_{ik}$ in equation (7). Then, by aggregation of the household-level social capital index, community-level social capital index is also created, which is in the vector $X_k$ in equation

[5] In this particular example, the estimated coefficient is not significantly different from zero, hence the hypothesis is rejected (Sakurai et al., 2001).

(7).[6] The household-level vector ($H_{ik}$) includes household size, household assets, education, and so on. In addition, "the distance to the nearest market" is included in the community-level variables ($X_k$), and dummies of agroclimatic zones are used as region-level variables (R in equation (7)). Then, the hypothesis is tested by estimating equation (7) including both household-level and community-level social capital indices. The hypothesis is supported if the estimated coefficients of social capital variables are significantly different from zero.[7]

Table 3. Example of Household-Level Analysis

| Points to consider | Description | |
|---|---|---|
| Analysis level | Household (forest users group) | |
| Number of samples | 846 households randomly selected from 53 random villages | |
| Household welfare indicator | Household expenditure per person | |
| Social capital | Household level | An index made from three dimensions:<br>Number of groups participated in<br>Characteristics of the groups<br>Individual values and attitudes on trust and social cohesion |
| | Community level | Aggregation of the household-level social capital index up to village level |
| Hypothesis | The more social capital a household possesses, the better welfare condition it has. | |
| Other variables for control | Household level | Household size, household assets, education, other household characteristics |
| | Community level | Distance to the nearest market |
| | Regional level | Dummies of agroclimatic zones |

## CONCLUSIONS

Postulating testable hypotheses for the specific objectives of the study is the most important step to develop the analytical framework and to design a survey to collect necessary data. In general, the hypothesis is "social capital enhances welfare." The measurement of social capital as well as that of welfare can be done at two different levels: community level and household level. Hence, the analysis can be conducted at any combination of the measurement levels. For the measurement of social capital, at either

[6] The aggregated community-level social capital index excludes the household's own social capital. Note that community-level social capital variables (or indices) can be obtained directly from community-level data collected during the community survey, as explained in previous sections, rather than aggregating household level data.

[7] The results of this study show that the village-level social capital index has more effect on household income than the household-level social capital index (Narayan and Pritchett, 1999).

community or household level, SOCAT can be used with necessary modification for the specific context of the study site although there are several shortcomings. Based on the data collected by the instruments, social capital variables can be quantified and converted into indices. They are then used in regression analyses. Although there are several ways to do analyses and to test hypotheses, regression analyses have obvious advantage in permitting general conclusions that can be compared with the results from other areas or countries and that can be applied to many community development projects, since statistical tests are more robust and convincing in most cases.

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# PART II COUNTRY STUDIES

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# COMMUNITY EMPOWERMENT AND IRRIGATION MANAGEMENT: A CASE OF WATER USERS ASSOCIATION IN SOUTH SULAWESI, INDONESIA

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## INTRODUCTION

### Background and Justification for Study

One of the main issues facing farm irrigation today is the growing scarcity of water due to the increase of non-agricultural water demands. The situation requires anticipative action with which communities can end the competitive nature of water usage, which has the potential to spur conflicts over water, either among the same kind of user (i.e., farmers), or among different sectors (i.e., agriculture and industry), and among different regions and even generations (Bustomi Zen, 2003).

Historically, the construction and operation of major irrigation systems has involved two main actors: farmers and the government. The balance of the roles played between them has changed depending on the social, economic, and political situation. In 1988, the government made a new policy to transfer the responsibility in operating small irrigation networks, 500 ha or less, to the Water Users Association (Perkumpulan Petani Pengguna Air, hereinafter WUA) (Helmi 1998).

Further stated by Helmi (1998) is that a logical implication of the new policy was the necessity of a strong and long-enduring WUA. To strengthen WUA capability, the government undertook policy reformations, including the amendment of the country's Irrigation Management Policy issued by the president on April 13, 1999 which stated in Presidential Instruction No. 3/1999, on the empowerment of WUA as follows:

- The rearrangement of tasks and responsibility of the irrigation managing institution by assigning bigger roles to farmers in decision making on irrigation management.
- The empowerment of independent, autonomic, community-based WUA, and democratically establish a legalized economic business unit.
- Gradually, selectively and democratically transfer the irrigation network management to WUA, using a "one-network-one-management" approach, and joint management of the irrigation network between government and WUA.
- Seek income resources to support the operation and maintenance, rehabilitation and construction of irrigation networks. All collected, managed, and established by the WUA through regular [i.e., monthly] contribution for irrigation water service (Iuran Pelayanan Air Irigasi, hereinafter IPAIR).
- To assure sustainability of the irrigation network system, by establishing policy on water resources and prevent function shift of irrigated land.

Participatory Rural Appraisal (PRA) has been carried out by local governments in collaboration with NGOs. In South Sulawesi, the Small Scale Irrigation Management Project (SSIMP), a collaboration between the Government of Indonesia and Nippon Koei Co., Ltd. & Associates, has been in effect since the beginning of 2003 up to the present.

**Objectives**

The overall objective of this study is to understand and analyze the impact of the empowerment of WUA, focusing on member farmers' attitudinal changes and their own evaluations of irrigation management.

To fulfill the above, the following immediate objectives were to be achieved:

- To understand the empowerment process of WUA;
- To comprehend irrigation management;
- To know the economical and social impact of WUA empowerment, either collectively in the community or individually (at household level); and,
- To better know the stakeholders (staff of the water management office, board of WUA, informal leaders, farm community, and NGO).

## METHOD AND DATA

**Hypothesis**

We postulated the general hypothesis as: "The empowerment has developed the WUA institution and improved individual and group assets." To verify the above, we clarified the following working hypothesis as follows:

a) The empowerment improves farmer participation in meetings, community works, and the payment of water fees (IPAIR).
b) The empowerment has improved farmer satisfaction over irrigation water availability.
c) The empowerment has increased rice production.

**Survey Method**

The Saddang Irrigation Area covers three regencies (Pinrang, Sidrap, and Wajo). The regency of Pinrang has the widest area of rice fields and irrigated areas. The sub-regency of Tiroang has larger rice fields compared to the other four sub-regencies in the regency of Pinrang, though many of the WUAs there do not yet function well. Based of this condition, the NGO LEPSEM selected this sub-regency as the project site as funded by JBIC for the WUA empowerment project.

Tiroang sub-regency comprises five villages, three of which were designated as research sites: 1) Tiroang Village, representing the upstream area; 2) Marawi Village, representing the mid-stream area; and 3) Pakkie Village, representing the lower-stream area.

In each village there were two data resources:

*1) Community Level: WUA*

The number of WUA in the study sites is 24 groups: 12 in Tiroang Village, six in Marawi Village, and six in Pakkie Village. Twenty-two groups were taken as a sample. The informants were the boards of WUA. Other informants in this level were government

officials (the head of the irrigation section in the sub-regency office, the head of the irrigation section at the village level, and the head of each village), and NGO (fieldworkers). The kind of data gathered at this level included the agricultural profile, irrigation management, empowerment activities of WUA, participation level of members, water sufficiency, and member satisfaction level.

*2) Household Level*

One hundred and fifty households, 50 in each of the three villages, were selected randomly. The kind of data gathered included both primary and secondary data. The primary data involved all variables researched, comprising five categories of data: 1) identity of respondents (age, number of household members, education level of the members); 2) status of farm activities (ownership and land use for agriculture, planting pattern, production and production cost, income from agricultural business), 3) farmer participation in empowerment activities, 4) satisfaction level in respect to irrigation water sufficiency before and after empowerment activities, and 5) production improvement after the empowerment.

Structured interviews using a questionnaire and group interviews were done with the informants (NGO workers, the head of the irrigation section in the Tiroang sub-regency office, the head of the irrigation section in the village office, and the head of each village). The survey was conducted by four enumerators.

**Profiles of the Sample Villages and Households**

*Location and land use*

For our study, three sample villages were selected: Tiroang (upper stream), Marawi Marawi (middle stream), and Pakkie (lower stream). Tiroang, 30 square kilometers in size, is the biggest of the five villages in Tiroang Sub-regency. Its distance from the capital of the regency is 15 km, or about 25 minutes by car. Marawi Village, about 20 square kilometers, is about 3 km from the town of Tiroang and 13 km from the capital of the regency. Pakkie Village, at 10 square kilometers, is located 5 km from the capital. The topography of the three villages is quite flat, and farmers can harvest rice twice a year under irrigation conditions. Land use is presented in Table 1.

Table 1. Agricultural Land Based on Land Usage Patterns

| Land use | Tiroang (upper stream) | | Marawi (middle stream) | | Pakkie (lower stream) | |
|---|---|---|---|---|---|---|
| | Size (ha) | % | Size (ha) | % | Size (ha) | % |
| Irrigated rice fields | 2,445 | 81 | 1,119 | 57 | 694 | 69 |
| Industrial crop land | 409 | 14 | 395 | 20 | 150 | 15 |
| Dry land | 32 | 1 | 26 | 1 | 5 | 1 |
| Yard land | 75 | 3 | 85 | 4 | 50 | 5 |
| Brackish water ponds | – | – | – | – | – | – |
| Forest | 31 | 1 | 36 | 18 | 75 | 8 |
| Miscellaneous | 38 | 1 | 298 | 15 | 25 | 3 |
| Total | 3,030 | 100 | 1,958 | 100 | 999 | 100 |

*Source*: Office of Tiroang Sub-regency, 2004

*Socio-Economic Conditions*

The population of Tiroang, according to the most recent census data (2002), is 5,255, with a population density of 171/km$^2$. The population of Marawi is 4,044, with a density of 209/km$^2$. The population of Pakkie is 2,801, with a density of 281/km$^2$. Table 2 shows the population breakdowns at the three research sites.

Table 2. Population Breakdown According to Age and Gender

| Age group | Tiroang (upper stream) | | | Marawi (middle stream) | | | Pakkie (lower stream) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Male | Female | Total | Male | Female | Total | Male | Female | Total |
| 0 – 14 | 752 | 752 | 1,504 | 941 | 744 | 1,685 | 361 | 600 | 961 |
| 15 – 60 | 1,563 | 1,831 | 3,394 | 964 | 958 | 1,922 | 660 | 814 | 1,474 |
| > 60 | 177 | 180 | 357 | 200 | 237 | 437 | 166 | 200 | 366 |
| Total | 2,492 | 2,763 | 5,255 | 2,103 | 1,939 | 4,044 | 1,187 | 1,614 | 2,801 |

*Source*: Office of Tiroang Sub-regency, 2004

The proportion of the population in their productive years is quite high in all three villages. Farming is the dominant occupation, while a quite small number work in trading, carpentry, transportation, etc. (Table 3).

Table 3. Population Breakdown According to Occupation

| Occupation | Tiroang (upper stream) | | Marawi (middle stream) | | Pakkie (lower stream) | |
|---|---|---|---|---|---|---|
| | Number | % | Number | % | Number | % |
| Civil servant/Police | 37 | 2.27 | 58 | 5.67 | 29 | 1.79 |
| Trader | 52 | 3.18 | 21 | 2.05 | 21 | 1.30 |
| Rice transport | 35 | 2.14 | 15 | 1.47 | 23 | 1.42 |
| Carpenter | 38 | 2.33 | 18 | 1.76 | 22 | 1.36 |
| Private company worker | 113 | 6.92 | – | – | 18 | 1.11 |
| Tailor | 5 | 0.31 | 11 | 1.08 | 6 | 0.37 |
| Farmer | 1,355 | 82.98 | 900 | 87.98 | 1,499 | 92.65 |
| Total | 1,633 | 100.00 | 1,023 | 100.00 | 1,618 | 100.00 |

*Source*: Office of Tiroang Sub-regency

The educational level of the residents of the sample villages is considerably low. This can be seen in the relatively high proportion of the illiterate population together with those who did not finish primary school. (Table 4) The number of those who reached junior and high school are higher in Tiroang compared to Marawi and Pakkie. This is to be expected because Tiroang is the capital of the sub-regency where educational facilities and infrastructure are easier to access and relatively better equipped.

The socio-economic infrastructure available in these villages is relatively sufficient, such as schools and markets, and access to these facilities is relatively good. Junior and

senior high schools, which are located in the capital of the sub-regency, are close enough and supported by a good transportation system (Table 5).

Table 4. Population Breakdown According to Education Level

| Education level | Tiroang (upper stream) | | Marawi (middle stream) | | Pakkie (lower stream) | |
|---|---|---|---|---|---|---|
| | Number | % | Number | % | Number | % |
| Under school age | 507 | 10 | 259 | 6 | 620 | 22 |
| No schooling or illiterate | 107 | 2 | 278 | 7 | 236 | 8 |
| Did not finish primary school | 305 | 6 | 273 | 7 | 275 | 10 |
| Primary school graduate | 2,715 | 52 | 2,892 | 72 | 1,480 | 53 |
| Junior high school graduate | 1,025 | 20 | 158 | 4 | 150 | 5 |
| High school graduate | 583 | 11 | 148 | 4 | 35 | 1 |
| University level | 13 | 0 | 36 | 1 | 5 | 0 |
| Total | 5,255 | 100 | 4,044 | 100 | 2,801 | 100 |

*Source*: Office of Tiroang Sub-regency, 2004

Table 5. Socio-Economic Facilities and Infrastructure

| Facilities / Infrastructure | Tiroang (upper stream) | Marawi (middle stream) | Pakkie (lower stream) |
|---|---|---|---|
| Village market | 1 | 1 | – |
| Shops (big and small) | 50 | 20 | 5 |
| Cooperatives | 2 | 1 | – |
| Electricity | Supplied | Supplied | Supplied |
| Public health service | 1 | 1 | – |
| Integrated public health services | 4 | 2 | 3 |
| Schools | | | |
| Kindergarten | 1 | 1 | 1 |
| Primary school | 6 | 4 | 2 |
| Junior high school | 1 | – | – |
| Senior high school | 1 | – | – |
| Mosque | 6 | 4 | 2 |

*Source*: Office of Tiroang Sub-regency, 2004

Electricity has been supplied within all three villages for a number of years, and has even reached remote hamlets a considerable distance from the capital of the sub-regency. Transportation facilities and the infrastructure of these villages are in relatively good condition with most hamlets having laid asphalt roads permitting vehicle access in all weather conditions.

**Characteristics of Sample Households**

*Number of Household Members*

Table 6 shows that in most households, the number of members is four or less, including core family members (father, mother, and children).

Table 6. Distribution of Households by Family Size

| Family size | Tiroang (upper stream) | Marawi (middle stream) | Pakkie (lower stream) |
|---|---|---|---|
| ≤ 4 | 39 (78) | 40 (80) | 44 (88) |
| 5 – 6 | 7 (14) | 9 (18) | 4 (8) |
| ≥ 7 | 4 (8) | 1 (2) | 2 (4) |
| Total | 50 (100) | 50 (100) | 50 (100) |

*Note*: Numbers in brackets are percentages.

*Age and Education Level of Farmers*

Age is one of the factors affecting an individual's productivity level (Mosher 1985). There is a tendency that younger persons have a higher ability to realize the basic necessities of life compared to older people. Most of the population in these three irrigation areas fall within the ages of 15–45 years, leaving a small portion in the age category of 60 years or older. With this age profile, we can say that the village populations are quite productive in maintaining their livelihood (Table 7).

Table 7. Distribution of Heads of Households by Age

| Age group (yrs) | Tiroang (upper stream) | Marawi (middle stream) | Pakkie (lower stream) |
|---|---|---|---|
| 15 – 30 | 10 (20) | 10 (20) | 6 (12) |
| 31 – 45 | 21 (42) | 29 (58) | 23 (46) |
| 46 – 60 | 17 (34) | 10 (20) | 15 (30) |
| > 60 | 2 (4) | 1 (2) | 6 (12) |
| Total | 50 (100) | 50 (100) | 50 (100) |

*Note*: Numbers in brackets are percentages.

The education level of the heads of households in each irrigation area is varied, from no school at all up to university graduate level (Table 8).

Table 8. Distribution of Household Heads by Educational Level

| Education level | Tiroang (upper stream) | Marawi (middle stream) | Pakkie (lower stream) |
|---|---|---|---|
| No formal schooling | 5 (10) | 1 (2) | 2 (4) |
| Primary school | 36 (72) | 30 (60) | 33 (66) |
| Junior high school | 6 (12) | 12 (24) | 6 (12) |
| High school | 3 (6) | 6 (12) | 8 (16) |
| University | 0 (0) | 1 (2) | 1 (2) |
| Total | 50 (100) | 50 (100) | 50 (100) |

*Note*: Numbers in brackets are percentages.

The education level in all three irrigation areas is relatively low where we can see that the highest percentage is filled by primary school graduates. The percentage of junior high school graduates is higher in the middle-stream area (Marawi) compared to the upper-stream (Tiroang) and lower-stream (Pakkie) areas. As for high school graduates, in the lower-stream area we can find 16%, which is due to greater availability of educational facilities compared to the upper-stream irrigation area which is located farther away from the capital of the regency or sub-regency.

*Type of Occupation*

The main occupation of the head of households in these irrigation areas is farming (on average 97%), while side jobs are trading and transporting rice (29%). The side jobs are primarily done when farming activities are in less demand (Table 9).

Table 9. Distribution of Sampled Households by Occupation

| Occupation | Tiroang (upper stream) | | Marawi (middle stream) | | Pakkie (lower stream) | |
|---|---|---|---|---|---|---|
| | Main job | Side job | Main job | Side job | Main job | Side job |
| Farmer | 47 (94) | 3 (6) | 49 (98) | 1 (2) | 50 (100) | – |
| Civil servant | 3 (6) | – | 1 (2) | – | – | – |
| Trader | – | 15(30) | – | 19 (38) | – | 10 (20) |
| Rice transport | – | 15 (30) | – | 10 (20) | – | 20 (40) |
| Unemployed | – | 7 (14) | – | 20 (40) | – | 20 (40) |
| Total | 50 (100) | 50 (100) | 50 (100) | 50 (100) | 50 (100) | 50 (100) |

*Note*: Numbers in brackets are percentages.

*Size of Farm Land Holdings*

The size of rice fields owned by the respondents varies. In the upper-stream irrigation area generally the respondents owned land 0.5–1.0 ha in size (44%), the middle-stream owners had a higher percentage of land under 0.5 ha, and the lower-stream owners had more land 0.5–1.0 ha in size. As for dry land, most of respondents in the upper-, middle-, and lower-stream areas owned dry land under 0.5 ha in size (Table 10).

Table 10. Distribution of Sampled Households by Size of Land in Irrigation Areas

| Land size (ha) | Tiroang (upper stream) | Marawi (middle stream) | Pakkie (lower stream) |
|---|---|---|---|
| Rice fields | | | |
| < 0.5 | 6 (12) | 28 (56) | 22 (44) |
| 0.5–1.0 | 22 (44) | 10 (20) | 23 (46) |
| > 1.0 | 22 (44) | 12 (24) | 5 (10) |
| Total | 50 (100) | 50 (100) | 50 (100) |
| Dry fields | | | |
| < 0.5 | 48 | 45 | 50 (100) |
| 0.5–1.0 | 2 | 5 | – |
| Total | 50 (100) | 50 (100) | 50 (100) |

*Note*: Numbers in brackets are percentages.

Rice fields can be planted twice a year (March-September and October-February) with a planting pattern of rice-rice. After the harvest of the first planting season, usually the farmers take a hiatus from rice until the second season. During this free time, normally they engage in some other activities such as building repair or may cultivate dry land they additionally own.

Farmers who own dry land and industrial cropland often dedicate it to fruit or similar crops (banana, mango, or jackfruit), corn, cacao, cashew nut, and coconut. Produce they achieve from dry land will mostly be consumed by the household. However, cacao and chestnut are the dominant industrial crops with their production going to the market and the money used to support daily living expenses. The amount of income varies by farmers who are operating rice farms in different parts of the irrigation channel. The annual incomes received from industrial crops are 1.892, 0.839, and 1.270 million rupiah in the lower-, middle-, and upper-stream areas, respectively.

Other sources of household incomes are animal husbandry and seasonal work in other villages. The annual amounts received in this fashion by lower-, middle-, and upper-stream farmers are 2.226, 1.780, and 1.395 million rupiah, respectively.

Some farmers who have rice fields and small parcels of dry land near their home village will also have dry land in another region (Sidrap regency) which they use to cultivate crops of cacao and cashew nut. This situation causes the farmer to temporarily migrate to his dry land holdings, attend to his secondary crops, then later return to his village when normal planting season comes. This regular migration schedule is mostly followed by farmers with low participation in empowerment activities. Some of the farmers also usually cultivate their own fields at the end of the crop season. This can cause problems to rise up over water management, especially at the time of harvesting since half of the farmers still require water for their fields while the rest will have already satisfied their water requirements.

## GENERAL INFORMATION ON SADDANG IRRIGATION AND THE WATER USERS ASSOCIATION

### Historical Development of Irrigation in Saddang

The officially designated Irrigation Area of Saddang, which is located in Pinrang Regency, is operated as an agricultural area in the Pinrang Regency region with a total expanse of 62,203 ha, consisting of irrigated rice fields (54,674 ha), dry land (4,443 ha), and others (3.086 ha).

Table 11 summarizes the nearly 70-year history of irrigation activities within Saddang.

Table 11. History of Irrigation Network in Saddang

| Year | Irrigation activity |
|---|---|
| 1939 | Benteng Reservoir constructed by Dutch Colonial government |
| 1937–1940 | Main irrigation channels of Sawitto and Rappang constructed and operated for first time with 55,000 ha service area |
| 1940–1945 | During WWII no irrigation channel development took place |

(continued on next page)

(continuation)

| Year | Irrigation activity |
|---|---|
| 1945 | After the independence of the Republic of Indonesia was declared, there were new opportunities to develop irrigation channels |
| 1970–1984 | Improvement project involving 54,000 ha in North Saddang area, and tertiary development of 28,500 ha funded by the World Bank |
| 1988–1993 | Irrigation Sub-Sector Project (ISSP), an assistance project funded by the Asian Development Bank (ADB), as a continuation of a previous project to rehabilitate the area's irrigation infrastructure |
| 1992–1996 | Provincial Irrigated Agricultural Development Project (PIADP), funded by the World Bank, to develop a tertiary line serving an area 23,000 ha in size, 230 km of agricultural road network, 197 km of irrigation channels, agricultural development, and land surveys/certification. |
| 2000–present | Small Scale Irrigation Management Project III (SSIMP-III), funded by JBIC loan No. IP-499, to conduct a study on water management improvement. |
| 2001 | Water Irrigation Reform Implementation Project (IWIRIP) carried out by the government of South Sulawesi, Pinrang Regency to focus on farmer's empowerment with irrigation management transference. |

*Source*: Decentralized Irrigation System Improvement in Eastern Region of Indonesia, 2004

**Irrigation Management and Water Users Association**

Irrigation management is handled by the government and farmers with their own respective tasks and responsibilities, as described in the following.

*Operation & Maintenance (O&M) of Main Channel*

This work is handled by the Local Executing Unit (UPTD). O&M of the main channel (consisting of Benteng dam and the Rappang main channel in Pinrang Regency), is carried out according to a handbook (Measurement of Irrigation Water and Measurement Gate Operation) and an annual discussion of the water distribution organization conducted by the Irrigation Committee. The official Irrigation Area of Saddang is divided into three groups: 1) areas with similar planting patterns (that is, rice fields with differences in planting times in each planting stage); 2) areas situated far away from the Main Irrigation Channel firstly served; and 3) the closest area receiving water after one month. In the main channel, the provincial government is responsible for financing labor and O&M costs through the National Budget, because the working area of the channel is inter-regency in nature (comprising Pinrang, Sidrap, and Wajo Regencies). The mechanism of water distribution in the main channel is based on the requests of the Irrigation Office of each regency. At the beginning of the planting season, the Irrigation Office proposes the expected water demand according to the amount of water needed by the rice areas within the respective regencies. Every two weeks after the first request, the Irrigation Office puts forward an order in accordance with its need to UPTD. This process is repeated until the harvest.

*O&M of Secondary Channel*

The local government and WUA/WUA-G are responsible for O&M of the irrigation network in terms of finance and labor. Gate operation in secondary and tertiary channels is operated by water gate staff (PPA), coordinated by the head of the sub-branch. Each PPA also operates some tertiary gates.

*O&M of Tertiary Network*

Water distribution in the tertiary network is managed by WUA assisted by the head of the sub-branch and PPA. The costs for repairing and maintaining the channels are paid by the collection of an obligatory fee. However as the payment from the obligatory fee would not yet be implemented, the interim costs usually come from the monthly water fee. In the tertiary channel (at the farm level), the water distribution is carried out by the *ulu-ulu* (water masters), who open and close water boxes as necessary.

The Water Users Association (WUA) is the organization of water users set up to control, manage, and maintain irrigation facilities at the tertiary level. In 2000, there were 789 WUAs in the irrigation area of Saddang. Of those associations, only 12% were active. The number of active WUAs was higher in Sidrap regency especially in the payment of irrigation fees.

In Pinrang regency, the number of WUAs is 456, with 38 WUA-Gs (Water User Association Groups)**.** Especially in Tiroang sub-regency (the research site), there are six WUA-Gs that consist of 66 WUAs as follows:

- WUA-G Pole Wali-wali, 13 WUAs
- WUA-G Tujuh Wali-wali, 12 WUAs
- WUA-G Pole Massiddi Adae, 14 WUAs
- WUA-G Sipakangka, 5 WUAs
- WUA-G Massumpuloloe, 15 WUAs
- WUA-G Wae Tuo, 7 WUAs.

These WUAs were established between 1987 and 2003, and each WUA has 40 to 279 members, with the size of rice fields from about 0.25−3.0 ha. The establishment of each WUA is according to the capacity of the tertiary network in watering rice field areas.

**Organizational Structure of WUA**

There are two water users organizations, namely WUA and WUA-G. The WUA committee consists of the head, vice head, secretary, treasurer, *ulu-ulu* (water master at the level of tertiary channel), and head of block (water distributor at the level of quarterly channel). The number of WUA members varies depending on the number of farmers at the tertiary level. In the different WUAs within the work area of Tiroang Branch Office, membership ranges from about 40 to 279 persons totalling 20 to 163 ha rice fields. The organizational structure of a WUA is illustrated in the following figure.

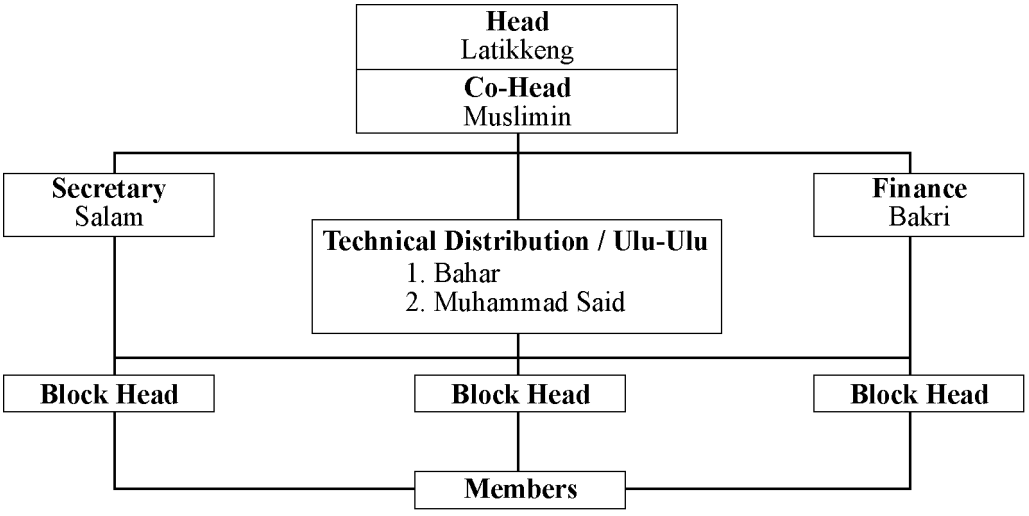


Figure 1. Structure of WUA Organization

The WUA committee is elected by the members according the following rules:

- Head, secretary, and treasurer are elected by WUA members who live within the working area village of that WUA.
- The block head is elected from among the members the respective block.

The committee is responsible for the members' meeting, and to be successful in implementing their tasks, the members of committee should pay constant attention to these principles: transparency, integration, togetherness, and intimacy.

WUA-Gs consist of WUAs that are located in the secondary channel and comprise from 5 to 15 WUAs.

The WUA-G committee consists of the head, vice head, secretary, treasurer, farming unit, IPAIR unit (irrigation fee), and enterprise unit. The committee members of the WUA-G are elected by the WUA committee from among the members of the respective WUA-G. An example of the WUA-G organizational structure is illustrated in the following figure.

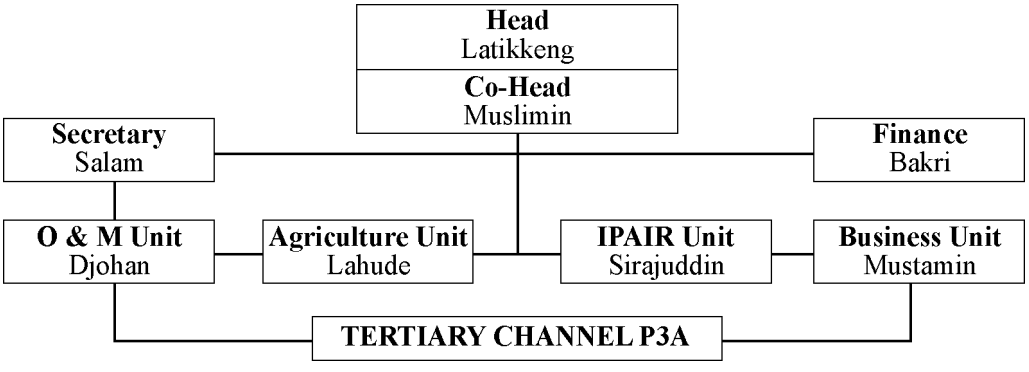


Figure 2. Structure of WUA-G Organization

**Rights, Duties and Responsibilities of Members**

Each WUA member has the following rights: (a) to obtain irrigation water according to the rights and stipulations determined by the organization and the prevailing regulations; (b) to elect, and to be elected as, committee member; (c) to express opinions in members' meetings; and (d) to examine the organization and policy of the committee through the members' meetings.

The duties of each WUA member are as follows: (a) to obey all regulations and prevailing laws; (b) to pay the membership fee and other fees stipulated at members' meetings; (c) to implement and obey the sanctions determined by members' meetings for violating the agreed rules; (d) to accept and comply with the water distribution system determined by the organization and prevailing laws and regulations; (e) to attend and be active in members' meetings; and (f) to inform the committee when land ownership has changed.

## EMPOWERMENT OF WATER USERS ASSOCIATION (WUA)

**Process of Empowerment**

In relation to the handing over of irrigation management from government to WUA, the Main Project of Irrigation and Swamp of South Sulawesi (PIRASS), in cooperation with the local NGO, Institute of Research and Community Consultation Society (LEKMAS- Lembaga Kajian and Konsultasi Masyarakat), has been implemented aiming at WUA empowerment through WUA/WUA-G strengthening in the irrigation area of Saddang Pinrang regency for 12 months (December 2002–November 2003).

The successive stages of these activities has consisted of:

***1. Socialization and meetings***

The preliminary activities of socialization and meetings are intended to introduce and convey the work plan of the LEKMAS team to the government officials of the Pinrang regency. The activities are:

- Coordination with the head of regency, head of irrigation office, project leader of Sipolemajupi, all heads of irrigation office branches, sub-branch of irrigation office, head of sub-office, head of villages, agriculture offices, and other related offices.
- Preliminary visits (field discussions) to meet community elders, religious leaders, committee of WUA/WUA-G, and farmers either at their houses or rice fields.
- Facilitate the implementation of internal meetings of WUA/WUA-G incidentally.

***2. Identification of WUA/WUA-G problems***

The identification is carried out to collect and inventory the problems of WUA/WUA-G at the institutional or network level. The activity is conducted by using PRA (Participatory Rural Appraisal) methods. This is intended to motivate the committee of WUA/WUA-G in identifying and solving the problems. The activities carried out as follows:

a) Network search
   Network search conducted by field facilitator together with staff of the Irrigation Office branch, staff Irrigation Sub-branch Office, committee of WUA/WUA-G, and farmers in general.

b) Institutional identification
This activity is conducted to gather data and information regarding the conditions of WUA/WUA-G. The understanding of the initial condition of WUA/WUA-G becomes the basis for implementing the assistance activities.

***3. Improvement/establishment of WUA/WUA-G***

Capacity building/reshuffling of committees, and merging of some WUA/WUA-G are conducted for the improvement/establishment of WUA/WUA-G. This is according to the agreement of committee members of WUA/WUA-G together with the branch of the Irrigation Office and related offices. In the branch office of Tiroang sub-regency, the capacity building/reshuffling of committees and merging of some WUA/WUA-G that succeeded are shown in Table 12.

Table 12. Result of Capacity Building/Reshuffling of Committees and Merging of Some WUA/WUA-G

| Description | Original number | After reshuffling |
|---|---|---|
| Reshuffling of WUA | 79 | 66 |
| Reshuffling of WUA-G | 6 | 6 |

*Source*: Supporting document, 2004

Reshuffling of a committee consists of a consolidation of board members and restructuring of the organization. In the first activity of empowerment, most of the 79 WUAs were determined to have ceased functioning, and had an unclear organizational structure. Based on the meetings of the empowerment facilitator, Institute of Water Service, and WUA board members who were still actively involved, the 79 WUAs were reshuffled into 66 with restructuring of each WUA organization and reorganization of board members. Reshuffling of the six WUA-Gs was done to restructure their boards and improve organization. These reshuffling actions were done to make them more effective and to heighten the efficiency of the empowerment process.

***4. Assistance and facilitating of WUAs/WUA-Gs***

This assistance was carried out in all branches of the Irrigation Office directed at both active and non-active WUAs/WUA-Gs. The assistance activity consisted of:

- Facilitating the arrangement of statutes, mutual support activity, cleaning of secondary channels, tertiary channels, repairing damaged channels.
- Motivating/socializing the understanding of statutes for those WUAs that already had them, and legalizing the statutes of WUAs through the committee, village head, sub-regency, and regency.
- Facilitating the provision of and how to fill out the administrative books of WUAs/WUA-Gs, procurement of WUA stamps and secretariat sign boards.
- Facilitating the WUAs in increasing the payment of water fees.
- Facilitating WUAs/WUA-Gs by conducting capacity building/reshuffling of committees to prepare their work plans.
- Facilitating the committees of WUAs/WUA-Gs that collect water fees to open the necessary bank accounts.

*Socialization of Handling Over O&M to WUAs*

This activity was carried out by the facilitators' team to build understanding of the WUA/WUA-G committee and its members in respect to the responsibility and network management that fall under the authority of each WUA. The activity is implemented in the forms of:

- Assisting the socialization of Local Regulation (PERDA) No. 3 Year 2003 regarding irrigation management in Pinrang Regency.
- Facilitating the WUA in implementing the rehabilitation of tertiary channels.
- Facilitating the WUA/WUA-G and its members in conducting mutual supporting activity, particularly the cleaning of the main, secondary, tertiary, and quarterly channels.

*Operation & Maintenance (O&M) Training*

The O&M training by the LEKMAS team was implemented in one of the work areas of the Irrigation Office branch. This training was attended by representatives from all office branches by sending the committee of each WUA/WUA-G.

**Participation by Stakeholders**

There are several stakeholders involved in WUA empowerment activities in Pinrang Regency, namely, an international agency, NGO, government, and farmers. Below is the explanation of the role of each stakeholder in respect to these activities.

*International Agency*

The international agency involved in this program is Nippon Koei Co. Ltd. This agency originally was working in collaboration with the Department of Regional Settlement and Infrastructure (KIMPRASWIL). Together they run a program for irrigation network rehabilitation and WUA empowerment. After identifying the irrigation network condition and its problems, they then designed the rehabilitation scheme, for which the actual rehabilitation was planned to start by the end of 2004 for the network located within the administrative area of Tiroang. The funds used in this program came from JBIC Loan IP-509. The empowerment program run by Nippon Koei was in cooperation with a local NGO (LEPSEM-Institute for Community Socio-Economic Empowerment). The form of their cooperation was that Nippon Koei provided funds and LEPSEM provided people to work in the field.

*NGO (Non-Governmental Organization)*

For the empowering activity, the field assistants and facilitators came from LEPSEM, an NGO. Their functions included:

- Facilitating WUA and farmers in respect to problem identification.
- Facilitating WUA and farmers on institutional development (organization and regulation) of WUA and WUA-G
- Administrative management of WUA and WUA-G (such as administration of IPAIR)
- Facilitating meetings (member meetings, board meetings). At each meeting, the facilitator assisted the meeting between farmers and government staff (irrigation office and agriculture office). The meetings were held to discuss and overcome the farmers' problems concerning irrigation.

- Facilitating WUA and farmers on mutual supporting activity (for instance, irrigation channel maintenance)
- Facilitating WUA and farmers on making project proposals to the regency government.

*Regency Government*

For the empowering activity, functions of the regency government are carried out by the irrigation office. The government provides funds through a local budget designated for repairing the irrigation network. Other roles of the irrigation office include facilitating the WUA at each meeting and mutual support activity in collaboration with facilitators (from the NGO).

*Community (Farmers)*

Stakeholders in the community consist of farmers who make up the boards and membership of WUA. They are supposed to be the main agents of development, and in the case of empowering activity, they become the main agents for every activity. The boards of WUA and WUA-G have a duty to prepare and carry out institutional strengthening, administrative management and member and board meetings. As well as conducting mutual support activities, the boards of WUA and WUA-G collaborate with their members. Another key role of community stakeholders is to manage IPAIR (water fee contributions), both collecting and utilizing.

**Impact of WUA Empowerment**

*Institutional Strengthening of WUA*

The institutional strengthening is aimed to give WUAs the capability to manage irrigation (especially in secondary channels and tertiary networks) independently, in terms of operation and financing. The institutional strengthening comes from the development of organization and norms/rules through the members' agreement that are facilitated by the facilitators and government staff. Some of the activities of institutional strengthening are:

*Formulation of Statutes*

As an organization, it is very important for each WUA and WUA-G to have statutes as basic guidance in irrigation management. Before assistance, almost all statutes of farmer groups were formulated by staff of the irrigation office without the involvement of WUA committees and members. After the facilitation process, the formulation of statutes was carried out by the respective WUA committees and members assisted by field facilitators and the government (heads of office branches). In Tiroang sub-regency, which is part of the Tiroang Irrigation Office Branch, all 66 WUAs developed statutes that were made official by the Head of Regency (Bupati). As the result of WUA-G/WUA capacity building assisted by the facilitator, several agreements led to further institutional strengthening.

*General Assembly Meeting*

The general assembly meeting is the highest authority in the WUA structure. The tasks and authorities of the meeting are: (a) formulate/stipulate and/or amend the statutes; (b) form and reassign/assign committee members; (c) prepare the work plan and annual budget; (d) accept accountability; (e) determine type and amount of member's fees; and (f) settle violations and disputes. The meeting is held at minimum once each planting season

and is convened when the planting season begins, and at other times if there is any important matter that requires immediate action. The meeting comes into effect under these conditions: (a) if it is attended by one-half or more of the total number of members or attended by blocks and WUA representatives (the number of participants can be decided based on proxy attendance of representatives); (b) if it is attended by less than one-half the members, the meeting can be postponed for one week; and (c) if the same situation recurs, then the meeting can be carried out even though less than one-half the members attended.

According to reports by WUA committees, the activity of general assembly meetings, as measured through frequency and member attendance, increased after being facilitated (Table 13).

Table 13. Activities of Member Meetings

| Meeting type / Attendance | Before and after facilitation | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Upper stream | | Middle stream | | Lower stream | | Total | |
| | Before | After | Before | After | Before | After | Before | After |
| Annual Meetings: | | | | | | | | |
| • Never held | 5 | 1 | 4 | 2 | 5 | 2 | 14 | 5 |
| • Held | 5 | 9 | 2 | 4 | 1 | 4 | 8 | 17 |
| Frequency of board meetings | | | | | | | | |
| • Never | 3 | 2 | 1 | 1 | 3 | – | 7 | 3 |
| • Once/crop season | 7 | 7 | 5 | 3 | 1 | 4 | 13 | 14 |
| • Twice/crop season | – | 1 | – | 2 | 2 | 2 | 2 | 5 |
| Level of member presence | | | | | | | | |
| • Low (≤50%) | 10 | – | 3 | – | 4 | 2 | 17 | 2 |
| • Moderate (51-80%) | – | 5 | 2 | 5 | 2 | 2 | 4 | 12 |
| • High (> 80%) | – | 5 | 1 | 1 | – | 2 | 1 | 8 |

*Source*: Research findings, WUA committee reports, 2004

In respect to annual meetings, the number of WUAs that organized meetings substantially increased from eight groups (36%) before the empowerment program to 17 groups (77%) after the program. The activity of the board was also enhanced as its meetings became more frequent. The level of attendance of WUA members improved significantly, as before the program 17 (77%) of the WUA committees stated attendance levels were less than half, while after the program 20 (81%) of the WUA committees reported that attendance level had grown to more than half, moreover eight (36%) WUAs reported member attendance higher than 80%.

*Source of Funds*

There are three financial sources for irrigation management as follows:

- Member deposits: Each member is obligated to deposit Rp. 20,000–Rp. 50,000 when joining the WUA. Referred to as "main savings," this is an enduring fund that can be used any time or when other sources of funds (i.e., obligatory contribution

and IPAIR contribution) are not adequate. In fact, the level of fulfillment of these main savings is quite low for most WUAs.

- IPAIR (water contribution): This water usage fee is determined through agreement among WUA members. IPAIR on each WUA is based on the condition of irrigation. The agreed IPAIR is about Rp. 5,000–Rp. 12,500/ha. The amount of IPAIR for each member is determined according to the area of the rice field being irrigated. For farmers who have fields less than 1 ha, the IPAIR is Rp. 5,000 and more than 1 ha is Rp. 10,000–12,500. The IPAIR can be paid with money or in-kind (rice). The IPAIR is accumulated and managed by WUA-G to finance O&M activities on secondary channels.
- Obligatory savings: This kind of contribution is used to finance repair and maintenance of tertiary channels, with the amount determined by members and managed by the WUA. The obligatory savings are paid immediately after the harvest. Such obligatory contributions are not yet being realized in all WUAs, thus the repair and maintenance of tertiary channels at those WUAs are instead funded by IPAIR.

With the institutional strengthening of WUAs, the percentage of WUA members who pay IPAIR fees has increased, the committees report. Table 14 shows the percentage of IPAIR payments before and after empowering activity.

Table 14. Participation Level of WUA Members in IPAIR Payment Program

| Level of participation | Number of WUAs | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Upper stream | | Middle stream | | Lower stream | | Total | |
| | Before | After | Before | After | Before | After | Before | After |
| None (0) | 4 | 1 | 4 | – | 4 | – | 12 | 1 |
| Low (≤30%) | 4 | 6 | 2 | 1 | 2 | 3 | 8 | 10 |
| Moderate (31%–50%) | 2 | 2 | – | 4 | – | 2 | 2 | 8 |
| High (>50%) | – | 1 | – | 1 | – | 1 | – | 3 |

*Source*: Field research, 2004

IPAIR utilization, which is managed by the board of WUA-Gs based on the agreement of members of WUA-Gs, is different for each WUA-G. The IPAIR utilization consists of:

- O&M : 50–60%
- Administration : 10%
- Collection : 10%
- Board of WUA-G : 20–30%

Board members usually do not take an honorarium, with most money going to actual repair and maintenance of the irrigation network. This is partly due to the fact that the majority of board members are prosperous farmers.

*Activity Program*

The board of organization annually arranges the activity program that is approved in the general meeting. The activity program consists of:

- Listing of maintenance and repair projects for irrigation channels and network building within the WUA work area. The duration of these activities is about one month or no longer than two months toward the beginning of planting time, either in the rainy and dry season.
- Determining the schedule of land preparation for each block according to the pattern and schedule of planting, and beginning the irrigation watering schedule in rainy and dry seasons.
- Determining the rice nursery schedule for each block.
- Transplanting rice for each quarter block based on the arranged planting schedule.

*Sanctions for Violating Regulations*

- For delaying an agreed payment, a fine equal to 50% of the missed payment for members, and 100% for boards.
- For absence from group meetings without reasonable cause, the members have to agree to and follow any decisions made in their absence.
- For absence from mutual support activity without notification and reasonable cause, the absent member must finish any remaining task that he or she is supposed to do, or be fined.
- For any board, member or livestock owners who damage the irrigation network or channel building, they are required to restore the damaged part back to its previous condition and bear the repair cost, and acknowledge that it will not be repeated, and that if it occurs again he or she will be subject to arrest.
- For throwing garbage in a channel, the offender must clean the garbage from the channel.
- For board members who embezzle money from the contribution fund for personal interest, the offender must return the money not later than a month before the next planting season and will be discharged. If the money is not returned by the determined period, the offender is subject to arrest and criminal action.
- The investigation team for such violations as given above includes the technical executives assisted by the chairman of the blocks, and is headed by the chairman of the WUA.

The sanctions for such violations as in the statutes had not been entirely implemented at the time of the study because the regulations had just been agreed upon and had not yet been well socialized. However, there were several groups that had enforced the sanctions against members who had violated provisions concerning mutual support activity and delay of IPAIR payments (Table 15).

Before the assistance activity, most of the WUAs had never implemented sanctions in respect to either channel maintenance or IPAIR payment. But following WUA empowerment, most WUAs began to inform members of the sanctions and made efforts to carry out enforcement. The implemented sanctions tended to reflect the farmers' capability, however, and not necessarily the specified fines. Such a policy was taken because the regulations had recently been implemented and an adjustment period was thought to be necessary.

Table 15. Number of Groups Implementing Sanctions

| Description | Number of WUAs | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Upper stream | | Middle stream | | Lower stream | | Total | |
| | Before | After | Before | After | Before | After | Before | After |
| Channel maintenance | | | | | | | | |
| • Never | 7 | – | 5 | 1 | 5 | 1 | 17 | 2 |
| • Always | 3 | 10 | 1 | 5 | 1 | 5 | 5 | 20 |
| Maintenance | | | | | | | | |
| • Insufficient (0–1) | 7 | 1 | 6 | 1 | 6 | 1 | 14 | 2 |
| • Enough (2–3) | 3 | 9 | – | 5 | – | 5 | 8 | 20 |

*Source*: Field research, 2004

**Operation and Maintenance of Irrigation Network**

Operation and maintenance (O&M) is the activity of WUAs in operating and maintaining the irrigation facility at the tertiary channel level. *Operation* activities consist of: (a) arranging the schedule for water supply; (b) executing the schedule for water supply (operating the dam and support channels); (c) connecting farmers and government staff; and (d) monitoring the water supply. *Maintenance* activities consist of: (a) regular maintenance (cleaning, etc.); (b) irregular maintenance (channel repair); (c) connecting government staff and farmers; and (d) monitoring maintenance work.

Table 16 shows the sort of activities that were conducted by WUA. The dominant activities were connecting government staff and farmers (head of branch office and sub-office staff), preparing the water schedule, and monitoring the water release. After assistance, most of WUA did "enough" operation activities. In the case of maintenance activity, it was considered "less" before assistance on WUA activity, consisting of only irregular maintenance (repairing the irrigation channel if needed). After assistance, maintenance activity was considered "enough" and the dominant activities were regular maintenance (irrigation channel cleaning and water retaining), irregular maintenance, and monitoring of maintenance activity and connecting government staff and farmers.

Table 16. Operation and Maintenance Activities Before and After Empowerment

| Number of activities | Number of WUAs | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Upper stream | | Middle Stream | | Lower stream | | Total | |
| | Before | After | Before | After | Before | After | Before | After |
| Operation | | | | | | | | |
| • Less (0–1) | 8 | 3 | 4 | – | 4 | 2 | 16 | 5 |
| • Enough (2–3) | 2 | 7 | 2 | 6 | 2 | 4 | 6 | 17 |
| Maintenance | | | | | | | | |
| • Less (0–1) | 9 | 1 | 4 | – | 5 | 1 | 18 | 2 |
| • Enough (2–3) | 1 | 9 | 2 | 6 | 1 | 5 | 4 | 20 |

*Source*: Field research, 2004

As reported by WUAs, generally the participation level in O&M activities increased after assistance, with 15 WUAs (68%) being categorized as having a "high" level of member participation. This compared to a "low or moderate" level of member participation by most WUAs before assistance (Table 17).

There were seen to be different levels of member participation in O&M activities in the upper-, middle-, and lower-stream areas both before and after assistance. In the upper-stream area, the level of member participation was relatively lower than the middle- and lower-stream areas. This was thought due to the fact that the middle- and lower-stream areas were more easily accessible by facilitators.

Table 17. Participation Level of WUA Members in O&M Activities

| Level of participation | Number of WUAs | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Upper stream | | Middle stream | | Lower stream | | Total | |
| | Before | After | Before | After | Before | After | Before | After |
| Low (≤ 30%) | 8 | – | 2 | – | 2 | – | 12 | – |
| Moderate (31–50%) | 2 | 6 | 4 | – | 3 | 1 | 9 | 7 |
| High (> 50%) | – | 4 | – | 6 | 1 | 5 | 1 | 15 |

*Source*: Field research, 2004

There was also an increased level of member participation due to higher "mutual support value" among farmers on the repair and maintenance of irrigation channels and for farmer group activities (Table 18).

Table 18. Farmer Mutual Support Value

| Mutual supporting value | Number of WUAs | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Upper stream | | Middle stream | | Lower stream | | Total | |
| | Before | After | Before | After | Before | After | Before | After |
| Cleaning and repairing | | | | | | | | |
| • Low | 4 | – | 3 | – | 2 | – | 9 | 1 |
| • Moderate | 6 | 4 | 3 | 1 | 3 | 1 | 12 | 12 |
| • High | – | 6 | – | 5 | 1 | 5 | 1 | 9 |
| Farmer group activities | | | | | | | | |
| • Low | 4 | 1 | 3 | – | 3 | – | 10 | 1 |
| • Moderate | 4 | 8 | 1 | 1 | 3 | 3 | 8 | 12 |
| • High | 2 | 1 | 2 | 5 | – | 3 | 4 | 9 |

*Source*: As reported by WUA boards, field research, 2004

The increased O&M activity level by the members was found to have a positive effect on water need fulfillment. Most WUA boards expressed that they were "dissatisfied" on the volume of water that reached their working area before the assistance activity, but said they were "more satisfied" with the quantity of water after the assistance activity due to improved water sufficiency (Table 19).

In the upper- and middle-stream areas, all farmers groups stated they were "satisfied" over the volume of water that reached their area, whereas in the lower-stream area, 50% of

WUAs remained "dissatisfied," because the volume of water reaching the lower-stream area was inadequate.

This insufficiency of water in the lower-stream area was seen to have an effect on disobedience in respect to the arranged planting schedule (Table 20).

Table 19. Satisfaction Level of WUA Boards on Water Volume in Tertiary Canals

| Satisfaction level | Number of WUAs | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Upper stream | | Middle stream | | Lower stream | | Total | |
| | Before | After | Before | After | Before | After | Before | After |
| Dissatisfied | 5 | – | 2 | – | 6 | 3 | 13 | 3 |
| Satisfied | 5 | 7 | 4 | – | – | 2 | 9 | 9 |
| Very satisfied | – | 3 | – | 6 | – | 1 | – | 10 |
| Total | 10 | 10 | 6 | 6 | 6 | 6 | 22 | 22 |

*Source*: Field research, 2004

Table 20. Percentage of Farmers Who Followed Arranged Planting Schedule

| Level of participation | Number of WUAs | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Upper stream | | Middle stream | | Lower stream | | Total | |
| | Before | After | Before | After | Before | After | Before | After |
| ≤ 50% | 7 | – | 1 | – | 4 | – | 12 | – |
| 50–70% | 3 | 7 | 4 | – | 2 | 3 | 9 | 10 |
| >70% | – | 3 | 1 | 6 | – | 3 | 1 | 12 |
| Total | 10 | 10 | 6 | 6 | 6 | 6 | 22 | 22 |

*Source*: Field research, 2004

Table 20 indicates that even after assistance there were still farmers who did not follow the arranged planting schedule in the upper-, middle- and lower-stream areas. There were various reasons given: the water was not available yet, particularly for some farmers in the lower-stream area; and shared rice fields in another area where planting usually is carried out earlier than the rice fields located in this area.

As a result of the different planting schedules, conflicts sometimes occurred both between farmers and between areas, especially toward harvesting season. This sometimes occurred because most farmers who followed the arranged planting schedule no longer needed water toward harvesting season while others who planted behind the schedule still needed water. There are several ways to overcome such conflicts, including lengthening the opening time of water gates in order that farmers who planted behind the schedule can receive water, and allowing irrigation channels to remain open, especially tertiary channels in areas that still need water. A third way to solve the water insufficiency is for farmers to apply a pumping system to draw water from the secondary channel. For this, farmers pay 20% of the harvest to the water pump provider with payment in kind.

**Farmer Attitudes and Satisfaction**

*Attitudinal Changes*

The involvement of farmers in the empowerment process is a "learning" medium for them. With such a learning process, they can improve their knowledge and skills, resulting in attitudinal changes that are indicated by increased participation in mutual support and IPAIR payment (Table 21).

Table 21. Participation of Community in Irrigation Management After Empowerment Activity

| Participation of community | Upper stream | Middle stream | Lower stream | Total |
|---|---|---|---|---|
| Empowering activity | | | | |
| Never | 8 (16) | 18 (36) | 7 (14) | 33 (22) |
| Sometimes | 14 (28) | 6 (12) | 13 (26) | 33 (22) |
| Always | 28 (56) | 26 (52) | 30 (60) | 84 (56) |
| Mutual support activity | | | | |
| No increase | 19 (38) | 13 (26) | 11 (22) | 43 (28) |
| Increased somewhat | 29 (58) | 37 (74) | 39 (78) | 105 (70) |
| Significantly increased | 2 (4) | – | – | 2 (1.3) |
| IPAIR | | | | |
| Not increased | 23 (46) | 18 (36) | 33 (66) | 74 (49.3) |
| Increased | 26 (52) | 32 (64) | 17 (34) | 75 (50) |
| Dramatically increased | 1 (2) | – | – | 1 (0.7) |

*Source*: Field research, 2004

The reasons farmers gave for participating are highlighted by the comments below.

"The cooperation between group members has increased since there has been facilitation; it is indicated by the increased number of members who are present in each meeting, and by the mutual support of secondary and tertiary irrigation channel cleaning activity." (Interview, July 2004)

The percentage of farmers who did not increase participation (i.e., participated at the same level before and after assistance) was 29%. This was attributed to several factors, such as: there are WUAs that were not optimally facilitated because the distance to meetings was too far, or the relatively small number of facilitators to assist the number of WUAs being facilitated. As one of the facilitators said:

"I have the duty of assisting WUAs that are located in the work area of Tiroang Branch Office which includes four sub-regencies with 69 WUAs. The WUAs in remote areas that were difficult to reach I facilitated rarely. Consequently, assistance processes were not optimal." (Interview, July 2004)

Concerning IPAIR payments, the number of participating farmers increased to 51%. This occurred mainly with the farmers who get the main benefit from greater water service, as some respondents noted below:

"The increase in people's (mutual) self-support activities and increase in the number of farmers who pay IPAIR were due to the collector being more active in collecting the

payment from the members. (Meanwhile) farmers already know how to utilize IPAIR, and after all, the water service is getting much better." (Interview, August 2004)

As the head of the Tiroang office said:

"Following government policy before assistance, the collected IPAIR funds were stored in BRI. However, because people did not know yet how to utilize (the money), this caused many farmers to not pay IPAIR. After the change in government policy in which the IPAIR funds began to be managed by WUA-G, and the utility of IPAIR became clearer, the number of farmers who paid IPAIR increased." (Interview, August 2004)

The change in farmer satisfaction levels is presented in Table 22. The dissatisfaction with water service occurred in all areas (upper-, middle-, and lower-stream). Complaints included water service that was not optimal (volume and sharing time were not appropriate to farmer needs) simply because of damaged or poorly maintained channels clogged by buildup of trash, debris, and sediment. Particularly in the lower-stream area, the percentage of farmers who were dissatisfied with their water service was quite high at 60%.

Table 22. Level of Farmer Satisfaction with Water Service

| Satisfaction level | Upper stream | Middle stream | Lower stream | Total |
|---|---|---|---|---|
| Less than satisfied | 2 (4) | 4 (8) | 30 (60) | 36 (24) |
| Satisfied | 39 (78) | 42 (84) | 20 (40) | 101 (67.3) |
| Very satisfied | 18 (18) | 4 (8) | – | 13 (8.7) |
| Amount | 50 (100) | 50 (100) | 50 (100) | 150 (100) |

*Source*: Field research, 2004

**Water Sufficiency**

The sufficiency of supplied water in each development phase has an effect on rice productivity levels. A number of farmers experienced less-than-adequate water service not only before but also after empowerment.

In the upper- and middle-stream areas, water inadequacy tended to simply be the result of deterioration or damage to water channels, and illegal water use (in the local vernacular: *balombong*). Meanwhile, at the lower-stream area, inadequacy was mainly due to the long distance water had to travel from secondary channels. The water sufficiency level before and after empowerment is shown in Table 23.

The number of farmers who said they experienced inadequate water supply during the planting process decreased after assistance measures were taken. However, 21% WUAs were still reporting insufficient water supply. The reason is that the priority of assistance activity during the year (2003−2004) was focused on institutional strengthening of WUAs (organizational and regulations). Meanwhile, activity concerning O&M was confined to assistance aimed at the rearrangement of networks at the farmer level, assistance to mutual support activities, and farmer awareness concerning the O&M network. During this period, repair and rehabilitation of damaged irrigation channels or less-utilized irrigation channels were still merely in the planning stage. What repair did occur in 2004 was the construction of a secondary gate located in Tiroang village. This activity was funded by the government through the local budget. This construction work involved community participation for both labor and supervision.

Table 23. Sufficiency Level of Water Before and After Empowerment

| Sufficiency level | Number of WUAs | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Upper stream | | Middle stream | | Lower stream | | Total | |
| | Before | After | Before | After | Before | After | Before | After |
| Very insufficient | 2 (4) | – | 1 (2) | – | 1 (2) | 1 (2) | 4 (2.7) | 1 (0.7) |
| Somewhat sufficient | 13 (26) | 1 (2) | 9 (18) | 3 (6) | 31 (62) | 27 (54) | 53 (35.3) | 31 (20.7) |
| Sufficient | 35 (70) | 49 (98) | 40 (80) | 47 (94) | 18 (36) | 22 (44) | 93 (62) | 118 (78.7) |
| | 50 (100) | 50 (100) | 50 (100) | 50 (100) | 50 (100) | 50 (100) | 150 (100) | 150 (100) |

*Source*: Field research, 2004

**Agricultural Productivity**

The empowerment activities carried out included institutional enhancement and improved operation and maintenance of the irrigation network. Together these had a positive impact on WUA and irrigation management. As a result, the water needs of most rice farmers were better met. This improved water sufficiency gave a boost to rice productivity and, consequently, an increase in farm income (Table 24).

Table 24. Rice Yield and Value Before and After Empowerment Activities

| Rice yield | Upper stream | | Middle stream | | Lower stream | |
|---|---|---|---|---|---|---|
| | Before | After | Before | After | Before | After |
| Production (t/ha) | 3.9 | 4.0 | 4.3 | 4.4 | 4.6 | 4.6 |
| Production value (Rp. 1,000) | 3,338 | 3,512 | 3,700 | 3,888 | 4,460 | 4,554 |

*Source*: Field research, 2004

## CONCLUSIONS AND POLICY IMPLICATIONS

**Conclusions**

- Empowering processes of WUA conducted by facilitators start from socialization to government staff, community stakeholders, and the existing boards of Water Users Groups (WUAs). The members of the WUAs identify problems related to irrigation management and WUA administration, together with government staff and community stakeholders.
- Based on the identified problems, facilitators assist the respective WUAs on institutional strengthening. Organizational development aspects are conducted by reorganizing the WUA as required on the number of boards, organizational structure, and the makeup of the boards themselves. Reformation of WUA administration is also conducted by the boards, WUA members, village heads, and other related local government officials. The agreement on institutional

strengthening both in organizational and regulation aspect is documented in the form of officially approved statutes.

- Empowering activity is started with problem identification and need assessment of the community (farmers), increased farmer participation in meetings, mutual support activities (repairing and maintaining irrigation channels), and IPAIR payment (water contributions).
- The high level of farmers' participation in empowering activity is seen to have a positive effect on maintenance of irrigation networks. With the improved condition of irrigation networks that are well maintained, water required for rice planting can be fulfilled. This significantly increases rice production and income generated by all types of agricultural activity surrounding rice farming.
- The high level of farmers' participation in empowering activity is also seen to have a positive effect on "solidarity attitudes" regarding management and better utilization of water. This is proved by the decreased number of conflicts between farmers in each tertiary channel area and decreased conflicts between WUAs.
- Institutional strengthening without repairing physical facilities had an effect on the participation of farmers, which remained low. This was due to dissatisfaction of some farmers over insufficiency of supplied water.

**Policy Implications**

- The expected impact of empowerment is greater independency and self-reliance of farmers. Empowerment activity was done over about one year (2003/2004), increasing the participation of farmers in WUA/WUA-G activities and improving irrigation management. However, there was no immediate evidence that empowering activity actually enhanced farmer self-reliance. Therefore, the government and other stakeholders through their own roles need to continue the WUA empowering activity through assistance activity until the WUA groups can manage irrigation networks autonomously.
- The participation of all farmers can and will increase if they are satisfied with irrigation water services and the water supplied is sufficient for their planting. The institutional strengthening that was conducted during the one-year period did not occur simultaneously with actual physical repair of the water network, thus the insufficiency of water for some farmers (particularly in the lower-stream area) meant that their participation level continued to remain low. Therefore, during any subsequent empowering activity, institutional strengthening should be done along with repair of facilities (irrigation network rehabilitation).
- The cooperation among the several stakeholders (government, NGO, international institution, and farmers) had an effect on the success of WUA empowering activity. This was proved by increased participation of WUA members in irrigation management.
- The success of this WUA empowering activity can be a model for other development activities. Development activity should be conducted using the community empowerment approach. Thus institutional capacity development (organization, regulation) and asset development (human resources, knowledge, skill and attitude; physical: individual and collective) can be achieved.

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# THE IMPACTS OF SOCIAL CAPITAL ON LAND CONSOLIDATION PROJECTS: A CASE OF ARAK COUNTY, IRAN

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## INTRODUCTION

The importance of social structures and their impacts on the development process have gained wide recognition among academicians and practitioners. Qualitative as well as quantitative studies have demonstrated this relationship and a body of literature has formed around the idea to the extent that these networks and structures have become known as "social capital." Social capital helps individuals maintain solid relationships with others and facilitates collective action and group work. Social capital is important because it empowers individuals to organize themselves into groups for development. This is especially important in respect to those programs for which implementation is conditional upon group agreement, such as group-based micro credit programs, water user committees, and land consolidation projects. The impact of social capital on land consolidation projects is an interesting area of investigation to which this study was devoted.

Farming is a major source of income and employment generation for the rural community in many parts of Iran. The activities related to farming are not very efficient, which is due to many factors. One of the frequently cited factors for inefficiency is land fragmentation because it causes inefficient utilization of available resources, especially water, machinery, and human labor. Therefore, this issue should also be addressed in respect to rural community development in Iran, since its impact on farm income and adoption of technology is undeniable.

There have been a number of efforts beginning in the early 1960s to address this issue. One solution has been land consolidation, which has been implemented in many countries with good results. However, land consolidation has not been moving very rapidly in Iran. Though the idea has been introduced to many farmers, the rate of adoption and spread of consolidation are quite slow. This phenomenon has attracted the attention of policymakers at the provincial and ministerial levels. Some fundamental questions have subsequently emerged, such as: What are the underlying factors of the slow progress? Why have some farmers accepted land consolidation and participated in the program, while others have not? Can this be explained by social capital? What is social capital and what are its indicators? What is its role in the process of land consolidation? What are the other factors that contribute to adoption or non-adoption of land consolidation proposals by farmers? It should be noted that although there have been many studies about social capital and land consolidation carried out separately, studies about the impact of social capital on land consolidation are not very common. Therefore, this study is a step towards

the examination and conceptualization of social capital in the context of land consolidation.

In the first section, the relationship between community development and land consolidation is discussed. The second and third sections look at the land tenure structure and land consolidation procedure. In section four, a brief review of social capital literature is presented. Section five discusses the sampling framework and socio-economic features of the study area. In section six we present a definition of social capital and discuss its components, and also evaluate its relationship with different socio-economic variables. In section seven an econometric model is discussed for evaluating the impact of the dimensions of social capital on land consolidation acceptance. In chapters eight and nine the impacts of output indicators of social capital on land consolidation are evaluated.

**Rural Community Development and Land Consolidation**

One of the main objectives of rural community development programs is to increase the level of welfare in rural communities by reducing or eliminating the root causes of inefficient utilization of available resources. Several studies (Najafi, 2003; Arsalanbod 1999) show that land fragmentation leads to inefficient utilization of available scarce resources. This is particularly important in the central plateau of Iran where water resources are scarce. According to Nabizadeh (1994) the main problems associated with land fragmentation are:

- Water wastage
- Under-utilization of human labor due to distances between farm parcels
- Rising depreciation rate of agricultural machinery
- Unfeasibility of implementing land improvement programs
- Ineffective methods of pest management

The implementation of land consolidation is possible only if all affected farmers participate in the process. Although it is an individual decision, the implementation of consolidation requires the participation of all the individuals.

This provides an appropriate context to study the impact of social capital. Figure 1 shows the analytical framework of this study. It indicates that the social, physical and human stocks of capital available to a farmer can influence his decision to accept land consolidation. The output of land consolidation implementation is a rise in production and the outcome is improved farm income and farmer welfare. In this regard, we should first look more closely at two concepts, land consolidation and social capital, before proceeding further.

**Land Tenure Structure in Iran**

The following main features characterize the present land tenure structure in the country.

- Smallness of the land holdings: The great majority of holdings are small, with 78% less than 10 ha in size (Nabizadeh 1994; Abdoallahi 1998).
- Fragmentation: Holdings of a farmer can consist of a number of separate land parcels. For example, holdings just one hectare in size are composed of 2.4 parcels on average (Table 1).
- The distance of parcels from each other: Parcels are often some distance apart; in the western part of the country, this distance can be from 0.2 to 2.3 km.

- Inappropriate shape for farming: Parcels are often awkwardly shaped for agricultural purposes as some are very narrow and long, making it difficult to use machinery.

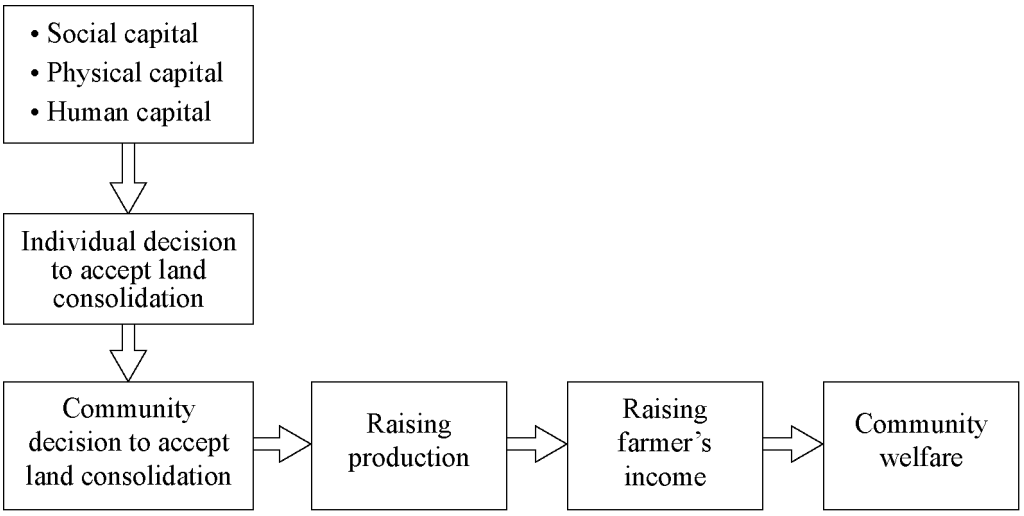


Figure 1. Analytical Framework

Table 1. Land Fragmentation Situation in Iran

| Land holding categories (ha) | No. of parcels | Average parcel size (ha) |
|---|---|---|
| < 1 | 2.4 | 0.18 |
| 1–2 | 2.8 | 0.45 |
| 2–5 | 4.2 | 0.73 |
| 5–10 | 6.3 | 1.06 |
| 10–50 | 9.6 | 1.8 |
| 50–100 | 14.6 | 5.02 |
| >100 | 12.4 | 15.75 |

*Source*: Center for Statistics, Farming Statistics 1992

Several studies (Najafi 2003; Nabizadeh 1994) have shown that land fragmentation has worsened during the last 30 years due to factors such as the institution of land inheritance practices that tend to subdivide the land.

**Approaches to Land Consolidation in Iran**

There are two main approaches to land consolidation in the country, which can be categorized as voluntary consolidation and government-induced programs for land consolidation.

*Voluntary or Spontaneous Consolidation*

As early as the 1960s, after national land reform when the ownership of land was transferred from big landholders to peasants, the problem of land fragmentation showed itself with more intensity. Farmers began to recognize land fragmentation as a problem and to solve it they started to re-allocate the parcels of land through local arrangements. This has been carried out both collectively and individually. In collective instances, groups of farmers redistribute and exchange land parcels to reduce the number. In the individual type of consolidation, a farmer reallocates his parcels of land by exchanging or purchasing parcels owned by one or more other farmers. Though we do not discuss this approach in detail here, it would be an interesting area of research on local community initiatives for solving land fragmentation issues.

*Government Programs for Land Consolidation*

Since spontaneous consolidation has not been very widespread, from the early 1990s the government has intervened to speed up the process. The lack of a common ground in understanding the concept has led to different practices in Iran. In some areas, the implementers have concentrated solely on reducing the number of land parcels. In this approach, all the parcels that belong to a particular farmer have been relocated into one or two parcels. In other parts, the implementers concentrated on water scarcity and attempted to reallocate the land to achieve more organized irrigation and farming systems. In this approach, total plowable lands of a village or farm are divided into zones (usually three or four), which are locally called *keshtkhan* or *bekar*. As an example, if a village has three zones (*keshtkhan*), one is devoted to spring cultivation, one to autumn cultivation, and one is allowed to remain fallow. Each farmer has one parcel of land in each zone. The parcels are allocated through drawing lots. All the farmers concentrate their farming in one particular *keshtkhan* sector, instead of cultivation in several different sectors designated as *keshtkhan*. By doing this they save on water, because it means that water is efficiently irrigating only one *keshtkhan* instead of circulating through multiple ones. By concentrating the cultivation in one or two *keshtkhans*, farmers can also control pests more effectively. In some cases, they grow only one type of crop, which further facilitates pest control and the saving of water. In the next section, practical steps for the implementation of this model are explained.

*Stages Followed for Land Consolidation Projects*

- Problem identification: In this stage an officer from the Agricultural Extension office who is also knowledgeable on the traditional and local customs of land utilization systems in the area evaluates and assesses the existing farming and irrigation systems, the situation of land parcels, water sources, water canals, land topography, access roads, main roads, and geographical aspects. A group of farmers who are well aware and informed on the local farm situation and farmers' shares advises the officer. The officer consults with the farmers and informs them of the problems and inefficiencies associated with the prevalent farming method.
- Preparation: Several meetings are organized to explain the program to the farmers and convince them of the project's benefits. Then farmers discuss the idea among themselves, which in some cases has taken three years to convince some farmers that the project would be beneficial to them. It should be noted that even the opposition of just a single farmer can be enough to stop a project. At one of the farms under study, a doubting farmer stopped the implementation of consolidation

because he felt the government staff had not kept their promises. As part of the education process, they will take the farmers to visit farms that have already been consolidated. After all the farmers are persuaded, the next step is to announce their agreement in a joint session with a representative from the Ministry of Jihad for Agriculture, and an official document is created that all the stakeholders sign to formalize their agreement and approval of the plan. By doing this, the involved parties also announce their adherence to the commitments they must undertake. The farmland and all boundaries are surveyed and mapped, and the locations of planned access roads, canals, and other amenities are identified on a map. In addition, in a joint session with the interested parties lots are drawn to reallocate the land among the farmers, and finally with the help of farmers the program is implemented.

*Responsibilities and Obligations of Each Party*

The commitments of the agricultural office are:

- Land renovation, including leveling, isolation and coverage of irrigation canals, as financed through the provincial budget;
- Topographic mapping and land surveys to determine the boundaries precisely;
- Extending soft loans from specials funds to farmers who cannot afford their share of the consolidation costs for which farmers are responsible;
- Supplying the farmers with necessary information and extension services; and,
- Coordinating with other state agencies such as water management offices.

The commitments of the farmers are:

- Introducing farmer representatives as the heads of local divisions to the agricultural office and extension agents;
- Participating in financing the costs of operation, in cash or in-kind;
- Following a homogenous pattern of crop production after execution of the plan;
- Resolving possible disputes arising from the process through local mechanisms; and,
- Intermediation of influential farmers who are respected by most farmers.

**What is Social Capital?**

The works of Bourdieu, Coleman and Putnam are central in the social capital literature. Bourdieu divides capital into three forms: economic, cultural, and social. He has suggested that one form of capital is convertible to another form. For example, he believes that economic capital is convertible to social capital under certain conditions. He defines social capital as the aggregate of actual or potential resources possessed by the members of a group. These resources are the result of relations and interactions between members of the group.[1]

According to Coleman, social capital consists of different components, but all these components have two common features. First, all have some aspects of social structure. Second, they facilitate certain actions of actors within the structure. Social capital is capital because it is productive and can facilitate the achievement of certain objectives that

[1] As cited in Winter (2000).

are not possible in its absence. It is a public good and this feature distinguishes it from other forms of capital.[2]

Putnam enriched the discussion and put additional light on the subject. He believes social capital refers to features of social organizations such as networks, norms, and trust that increase the productive potential of a community. He has illuminated his discussion with an example from Italy. In the early 1970s, strong local governments were established in the south of Italy. The nature and structure of these local governments were alike but the political, socio-economic and cultural environments surrounding them were very diverse, from feudal to modern structures. The performances of some of these governments were not very efficient and satisfactory, while some of them were very efficient. The factor that contributed to the success of the latter was the strong civil support from the community. The coordination and mutual trust between the community and government enabled the economy to prosper.[3]

Grootaert and Bastelaer (2002) define social capital as institutions, relations, attitudes, and values that govern the interactions between individuals and groups of individuals that have an impact on the social and economic development of a community.

Social networks include family, formal and informal associations, and groups. Social networks can be horizontal and vertical. The members of horizontal networks are equal with respect to their socio-political status, while the members of a vertical network are not equal.

*Types of Social Capital*

There are two types of social capital: structural and cognitive. *Structural social capital* is an objective and tangible concept. It comprises informal and formal organizational structures in a community. *Cognitive social capital* refers to generalized norms, attitudes, and values among individuals. It is a subjective concept. Examples of cognitive social capital include trust and solidarity, which together determine the level of interactions and relationships between individuals. The two types of social capital are complementary. The existence of structural social capital does not necessarily mean the relations between the individuals of that group are very strong, because participation in the group may be involuntary or not based on trust.

*Dimensions of Social Capital*

Social capital has three dimensions: bonding, bridging, and linking. *Bonding social capital* consists of strong ties within a horizontal network such as family, friends, neighbors, colleagues, and farmers in a division. *Bridging social capital* consists of ties with the members of other groups with similar economic and political status, such as relationships between the farmers of two divisions or farmers of other farms. *Linking social capital* consists of vertical relations with formal institutions and organizations, which is the level of trust between farmers and extension agents, or the staff of government agencies.

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[2] As cited in Winter (2000).
[3] As cited in Winter (2000).

The first two dimensions of social capital are horizontal (that is, connecting people with more equal social standing), while the latter is vertical. Access to linking social capital is very important for the well being of the individual and the community.

**Measurement Issues**

Like other multi-faceted concepts in social science, it is not possible to measure social capital directly. Indicators need to be used for this purpose. In this respect, social capital resembles human capital. In order to measure human, capital indicators such as the years of education are usually used in the literature, so in this part we will discuss the indicators that are typically used.

*Levels of Measurement*

The indicators measure social capital at the micro and macro levels. Micro-level indicators measure social capital at individual and household levels. Macro-level indicators measure social capital at the national level.

*Types of Indicators*

Input and output are two broad groups of indicators (Narayan and Cassidy, 2001; Grootaert, 2002). Trust and solidarity are examples of input indicators that have been widely used in social capital literature. Trust can be categorized into generalized and institutional trust. (Stones, 2002). The first measures the extent of trust between individuals within a community. The second measures the extent of trust in formal institutions, such as government institutions, whether at the local or national level.

The second group of indicators measures the outcomes of social capital. The construction of this type of indicator is based upon the assumption that the presence of social capital in a community or for an individual may lead to positive outcomes. One of the most-cited outcomes is the facilitation of collective action. If an individual trusts other individuals, he is more willing to participate in collective actions within the community (Grootaert, 2002). According to Isham (2000) local social structures can reduce the collective action dilemma. Another output indicator is conflict. Grootaert (2002) argues that the presence of conflict within a village, neighborhood or larger area is often an indicator of a lack of trust or lack of appropriate structural social capital to resolve conflicts, or both.

## STUDY FRAMEWORK

**Objectives of the Study**

There were two main objectives in this study:

- To measure social capital
- To assess the impact of social capital on land consolidation projects

Social capital in this study is defined as social relationships that are available to an individual characterized by trust and solidarity and offer that individual a flow of benefits. The study measures social capital at the individual level.

*Study Site*

Administratively, Iran is divided into a number of governorates-general (*ustan*), which are subdivided into governorates (*shahristan*). These in turn consist of a number of

districts (*bakhsh*). The lowest administrative unit in Iran is the village. In the Persian language, a village is called *dih*, serving as the center of the population and the place of residence and work for a number of families engaged in agricultural operations in nearby village lands. The village houses tend to be clustered together and the cultivated lands are situated around the village, while beyond them lay village pasture areas. The site chosen for this study was Markazi Province (*ustan*), situated in the central plain of the country in a semi-arid zone. It comprises five *shahristans*, with Arak as the center of the *ustan*.

The history of most villages under this study goes back one hundred years, when powerful landlords required peasants to migrate to the newly established villages. Before national land reform there was an absentee landlord. All villagers were landless peasants who worked the crops of land belonging to the landlord except in Abbasabad where small land holdings were prevalent. During the harvest time the landlord came to the village to collect his share of the produce. The share claimed by the landlord was one-third of the total harvest. The peasant contributed seed and human labor to the production process while the landlord's contributions were land and water. The *qanat* (underground irrigation system) was owned by the landlord. After land reform the ownership of lands and the associated share of qanat were transferred to the peasants.

At this time in all the villages except Abbasabad, the landlord was responsible for the upkeep and maintenance of the *qanat* irrigation system and the villagers contributed labor. After land reform, fresh wells were dug because the amount of water provided by the *qanat* system was not enough to irrigate all land newly added for cultivation.

Presently, nearly half of the province's population live in rural areas working in the agricultural sector or follow other occupations such as mining, taxi, bus or truck driving, public services, small shop trade, wage work, and the like.

We selected Markazi Province for the study because it was among the first provinces to implement land consolidation. In fact, land consolidation was introduced to some villages during the early 1980s and compared to the experience of land consolidation in other parts of the country, one can find more published information. Most of the village inhabitants (95%) still depend on farming as a source of income and employment generation and the village community has kept some of its traditional and local identity.

Land consolidation does not have a blueprint pattern across Iran and different versions have been introduced even within the same province. To eliminate these differences for the study we selected a site that has been managed by a similar team.[4] On the whole this team has introduced land consolidation to 30 different farms, of which some have accepted the proposal and some have rejected it. We could not include all the farms in our sample, because the time of accepting/rejecting land consolidation dated back more than five years in some cases and this would cause a bias in our study, as we wanted to measure the stock of social capital and other socio-economic variables at the present time. To reduce this problem we concentrated on villages that have either accepted or rejected

[4] In Markazi Province several people have the responsibility to introduce land consolidation to the farms. Mr. Shahvardi and his team were responsible for introducing the proposal to the farms situated in Arak County. They started their work in 1990.

the proposal within the past four years (i.e., from 2000 to 2003), with the assumption that the stock of social capital has not changed significantly during this period.[5]

*Definition of Key Terminology*

- Farm: In some parts of the country,[6] the unit of land consolidation is the village, but in Arak it is the farm (*mazraeh*). Farms are considered to be areas with no human dwellings, which are cultivated by a group of farmers from the neighboring village. A village may have from one to as many as seven farms. For example, the village of Dehno has just one farm, while Moradabad counts seven. A farm is subdivided into divisions, locally called *dang*, and the number of divisions can vary between six to 10. Each division is subdivided into shares. The shares are locally called *sahm,*[7] *shair*,[8] or *juft*.[9] A farmer can have shares from several different divisions.
- Farmer: A farmer is a landowner who cultivates a specific plot of land or his allotted share of a farm. After land reform in 1962, the lands were distributed among the peasants according to the existing *nasaq* (field layout of village lands, and division of the village land into plow lands). Irrigated lands were transferred to the farmers with the water rights from *qanats*[10] or wells belonging to it according to local custom. The distributed lands were jointly held by the farmers, which are locally referred to as *musha*. In this type of ownership a group of farmers owns a farm, but the exact size of individual ownership and the location of the land are not recorded officially, but have been agreed upon and are recognized locally. The number of farmers attached to each farm is different; for example, in Deheno, as many as 75 farmers owned the village farm.
- Farm household: The farm households in this study consisted of one to 15 persons who live together in a joint dwelling, and at least one of the members of each household works the land. Other members of a household usually help in farming activities, particularly males.

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[5] It should be noted that the target population comprises 11 farms, but on starting the field work we were informed by the staff of the Soil and Water office that we should omit one farm, because the farmers have conflicts with one of the government agencies active in the area, i.e., Natural Resource Preservation office at provincial level. It prohibited the farmers from cultivating the rain-fed lands that they had been cultivating for years. They argued that since the farmers were not satisfied with this decision, their replies to the questions related to government efforts in their farm might be biased and the farmers were not very receptive to the outsiders at the time, so they might not cooperate with the field work.

[6] For example, in Qazvin Province.

[7] Unit into which the farms in some villages are divided; also, it is a measure of water of varying volume.

[8] In some villages the farm is divided into 96 *shairs*.

[9] This means a yoke of oxen, that is, the amount of land a yoke of oxen can cultivate.

[10] *Qanat* is an underground conduit, which by using less slope than that of the soil surface, brings water to the surface. The qanat starts in a water–bearing layer at a depth of 50-300 ft. In the upper section the qanat collects through one or more galleries; in the lower section it conducts the water through impervious layers to the spot where it reaches the surface. From this point it continues as an open channel. The excavated soil is lifted to the surface through vertical wells in buckets (Lambton, 1969).

*Sampling Framework*

Since the total number of farmers in the study area was 308, the appropriate size for the sample was judged to be 177. We used a stratified sampling method, i.e., the population was divided into two strata. The first strata included those who had accepted the land consolidation proposal and the second strata included those who had not. Since the farmers belonged to different farms, the farmers in each strata were subdivided according to their farms, such that we had representation from all farms in our sample. In each farm the elements were selected randomly.

*Data Collection*

The main method of data collection in this study was quantitative. Data were collected through a questionnaire. To design the questionnaire several sessions were organized with different groups of farmers and two questions were discussed with them:

- What are the collective activities in their communities?
- Why do they accept/reject land consolidation?

Also in separate sessions we held discussions with the extension staff members who were responsible for the introduction and implementation of the land consolidation program. These sessions were fruitful and helped us to design the questionnaire. In addition to these sessions, several different questionnaires were also studied and localized.

**Socio-economic Description of Study Site**

A demographic description of the villages is presented in Table 2. In some villages there were more females than males, which has caused some imbalances in the community, and some of the men's customary duties have consequently been transferred to the women.

Young people under the age of 40 are reluctant to work in the agricultural sector and this phenomenon has threatened local communities during the last decade, causing a depletion within the community of human and social capital. Unfortunately, a lack of data has made it impossible to compare the stock of capital at present with that of the past to investigate the impact of migration of the young on the stock of social capital. Another problematic factor is that over 30% of the farmers have become elderly, which is expected to create several new stresses on the farm communities. For example, it may undermine principles such as reciprocity, since the elderly are unable to return the help and support they receive from younger people, particularly in the case of manual labor. Nearly 87% of the farmers are just semi-literate, which is another problem in the agricultural sector and is a potential barrier for the adoption of modern technology and improved farming practices (Tables 3 and 4).

Table 2. Demographic Description

| Village | Population | | | No. of HH | No. of literate persons | |
|---|---|---|---|---|---|---|
| | Total | F | M | | F | M |
| Moradabad | 300 | 200 | 100 | 53 | 100 | 100 |
| Dehno | 800 | 450 | 350 | 165 | 150 | 200 |
| Shahrejerd | 500 | 250 | 250 | 120 | 150 | 200 |
| Susanabad | 550 | 250 | 300 | 118 | 200 | 185 |

(continued on next page)

(continuation)

| Village | Population | | | No. of HH | No. of literate persons | |
|---|---|---|---|---|---|---|
| | Total | F | M | | F | M |
| Shamsabad | 130 | 60 | 70 | 36 | 45 | 40 |
| Sakiolia | 164 | 90 | 74 | 32 | 60 | 70 |
| Abbasabad* | 9* | 3 | 6 | 3 | 1 | 3 |
| Azadmarzabad | 184 | 85 | 99 | 47 | 54 | 77 |

*Source*: Survey data, Village database, the Ministry of Jihad for Agriculture
*Note*: In Abassabad, only one household was still present while all other residents had left the village.

Table 3. Age Structure

| Age breakdown among farmers | Frequency | Proportion (%) |
|---|---|---|
| 24–40 | 38 | 21 |
| 41–65 | 84 | 47 |
| 66–75 | 40 | 23 |
| 76–90 | 15 | 9 |

*Source*: Survey data

Table 4. Level of Education

| Education category | Frequency | Proportion (%) |
|---|---|---|
| Illiterate | 64 | 36 |
| Reading & writing | 32 | 18 |
| Primary | 58 | 33 |
| Secondary | 14 | 8 |
| High school diploma and above | 9 | 5 |

*Source*: Survey data

Villages do not differ from each other significantly with respect to infrastructural facilities. The government, with some cash and labor contribution by local people, has provided most of the infrastructure (Table 5). Government has carried out the design and implementation of most of it. There is an argument that such an approach can raise local community dependency and undermine many avenues of collective action in the community. This is the main reason that in recent years, the government is attempting to raise the farmers' contributions in the planning and construction of new infrastructural facilities. At present, villagers are responsible for the maintenance of these facilities. According to Ostrom (1999), "When national or regional government take over full responsibilities for large areas of human activities, they crowd out other efforts to enter these fields. Creating dependent citizens rather than entrepreneurial citizens reduces the capacity of individuals to generate capital."

Table 5. Infrastructure

| Village | Educa-tion* | Health center | Road type | Drinking water | Electri-city | Telecom. center | Transport | |
|---|---|---|---|---|---|---|---|---|
| Moradabad | 1 | 0 | Asphalt | 1 | 1 | 1 | Public* | Private* |
| Dehno | 1, 2, 3 | 1 | Asphalt | 1 | 1 | 1 | 1 | 7 |
| Shahrejerd | 1 | 1 | Asphalt | 1 | 1 | 1 | 3 | 15 |
| Susanabad | 1 | 0 | Asphalt | 1 | 1 | 1 | 1 | 60 |
| Shamsabad | 1 | 0 | Asphalt | 0 | 1 | 1 | 1 | 6 |
| Sakiolia | 1 | 0 | Unpaved | 1 | 1 | 1 | 1 | 2 |
| Abbasabad* | – | 0 | Asphalt | 1 | 1 | 0 | 0 | 2 |
| Azadmarazabad | 1, 2 | 1 | Asphalt | 1 | 1 | 1 | 2 | 20 |

*Source:* Survey data

*Notes*:

* 1 = Primary school, 2 = Middle school, 3 = Secondary school
* Public transport refers to any means of transportation for the public that is owned and operated privately.
* Private transport refers to any means of transportation owned by a household and used by its members privately.

The agricultural potential of the area is presented in Table 6. The main agricultural products[11] are wheat, barley, beans, and potatoes. In recent years, many fruit orchards have been destroyed due to recurring drought. The sources of irrigation are wells and *qanat*. In some villages farmers have been prohibited from cultivating rain-fed lands due to ecological reasons. This has led to disputes and ill will directed toward the government personnel who are responsible for executing this law. The farmers complained that they have lost a source of income in years blessed with good rain. Farmers sell wheat, barley, beans, and potatoes to the markets while the main purchaser of wheat is the government. Some farmers complained about this process and they believed some of the staff responsible for arranging the government purchases are not treating the farmers fairly by sometimes rejecting their products. Consequently, they are forced to sell leftover wheat to middlemen at a lower price. One of the main problems in virtually all villages is frequent water shortages. This issue is not limited to this area and in many parts of the country, particularly in the central plain, south, and eastern part of the country drought and water shortage is a serious and continuing threat to rural livelihoods.

Most of the farmers owned less than 10 hectares of land, which is the main feature of many farm cultivators in the country (Table 7). In addition to the fragmentation of farming lands, the smallness of land size is another impediment to the adoption of large-scale machinery.

The level of monthly expenditure was taken as a proxy for the level of welfare in this study. By this measure, 85% of farmers' monthly expenditures were less than 230 US dollars (Table 8).

[11] More details about the main agricultural products are presented in Appendix A, Table A-1.

Table 6. Agricultural Potential

| Village | Source of irrigation | No. of well rings | | Main agricultural products |
|---|---|---|---|---|
| | | Common | Private | |
| Moradabad | Well | 4 | 4 | Wheat, barley |
| Deheno | Well | 2 | 3 | Wheat, barley |
| Sharejerd | Well | 3 | 15 | Wheat, barley |
| Susanabad | Well | 2 | – | Wheat, barley |
| Shamsabad | Qanat | – | 3* | Wheat, barley, bean |
| Sakiolia | Well | 2 | 2 | Wheat, barley, bean |
| Abbasabad | Well | 1 | – | Wheat, barley, bean |
| Azadmarazabad | Well | 2 | 5 | Wheat, barley, bean |

*Source*: Survey data
*These wells were not operating due to drought conditions.

Table 7. Categories by Land Size

| Land size (ha) | Frequency | Proportion (%) |
|---|---|---|
| < 5 | 137 | 77 |
| 6–10 | 21 | 12 |
| 11–16 | 12 | 7 |
| 17–20 | 4 | 2 |
| 20–30 | 3 | 2 |
| Total | 177 | 100 |

*Source*: Survey data

Table 8. Monthly Expenditures

| Monthly expenditures (USD) | Frequency | Proportion (%) |
|---|---|---|
| 34–115 | 71 | 40 |
| 125–227 | 80 | 45 |
| 239–340 | 25 | 14 |
| 352–455 | 1 | 1 |

*Source*: Survey data

*Formal and Informal Organizations*

During the last decade the number of cooperatives has been increased considerably, such that the number of production cooperatives alone has been increased from 25 in 1989 to 974 in 2003.[12] There were no production cooperatives at all in Markazi Province in 1991, while at present the number of cooperatives in the province has risen to 12. The

[12] Official statistics from Extension and Land Utilization Department, Ministry of Jihad for Agriculture.

cooperatives distribute consumer goods or agricultural inputs among villagers and most farmers are co-op members.

Informal organizations have mostly been concentrated around religion or production. The most important informal organization, which is organized around food production, is the *mazraeh* (farm). To coordinate their activities the members of the *dang* (division) elect a head (locally called *sardang*). The elected leaders usually have a good reputation among the farm groups and hold the trust of most farmers. They receive no monetary compensation for their efforts. They coordinate between the farmers in each division and across divisions. Since the workloads of the heads of divisions are heavy, in some farms they change every year. The head's duties include the collection of money when repairs are needed, intermediation between farmers and government staff and other such activities. Most farmers believe collective actions were more prevalent in the past, and farmers were more willing to cooperate with each other. The main reasons behind the decline in collective activities are many, some of which are discussed here.

The growing rate of rural-urban migration has undermined the basis for collective action and cooperation in the local community because many of these activities are based on reciprocity. A farmer helps his co-farmer expecting him to return the help in the future. When the young leave the village and the majority of those left behind consist of old farmers, the younger are not willing to cooperate in collective activities because they have to bear a heavier workload in comparison to the elders and cannot expect much return for their efforts. In fact, migration does not only erode villages of their human capital, but it also erodes the stock of social capital in a community.

Introduction of modern technology to the production process is another factor that reduces the basis for collective action. In the past, some activities related to planting, cultivating, and harvesting were carried out collectively, while at present these forms of collective action have been substituted by wage labor or machinery.

*Reasons for Rejecting Land Consolidation Program*

Farmers cited the following points as reasons for rejecting land consolidation:

- Lack of trust in extension agents;
- Farmers' lack of interest to pursue follow-up activity to the implementation process;
- Consolidation of lands by some farmers prior to the program;
- Low literacy level;
- Inability of farmers to finance the associated costs;
- Lack of cooperation and solidarity between the farmers;
- Size of land and its fertility; and,
- Distance from water sources.

The two most frequently cited reasons were: consolidation of lands by some of the farmers prior to the program (26%), and lack of trust in extension agents (13%).

*Reasons for Accepting Land Consolidation Program*

Farmers cited the following points as reasons for accepting land consolidation:

- Preventing water wastage;
- Facilitating the use of modern technology and agricultural machinery;
- Reducing the number of land parcels;
- Increasing the quality of cultivated lands;
- Raising the level of income;

- Saving time and human labor; and,
- Benefiting from government construction activities associated with the program such as construction of canals and roads.

The two most frequently cited reasons were: preventing water wastage (26%), and facilitating the use of modern technology and agricultural machinery (24%).

**Components of Social Capital in this Study**

We postulated several dimensions, attempting to measure social capital against them. The dimensions of social capital are presented in Figure 2 and are discussed in detail.

*Solidarity and Mutual Support*

The first dimension of social capital is solidarity and its degree between the farmers. Many studies used solidarity or mutual support as an input indicator to measure social capital (Krishna and Shrader, 2002; Grootaert, 2002). According to the American Heritage Dictionary solidarity means: "a union of interest, purposes, or sympathy among members of a community or a group."

Solidarity and mutual support in such informal networks as friends, neighborhood, and community produce a flow of benefits for the members of that network. They are very important because they can provide farmers with certain services that formal arrangements are unable to furnish. These services include non-monetary and monetary assistance in special contingencies. This is particularly important in rural areas, where social security systems are not well developed. Solidarity between the members of a group encourages members of that group to prefer group interest over individual interest. This facilitates coordination within the group and the group can make collective decisions more rapidly. It should be noted that solidarity can act against land consolidation; that is, the farmers agree not to cooperate with government staff and act together to reject land consolidation. The items that deal with the concept of solidarity are discussed next.

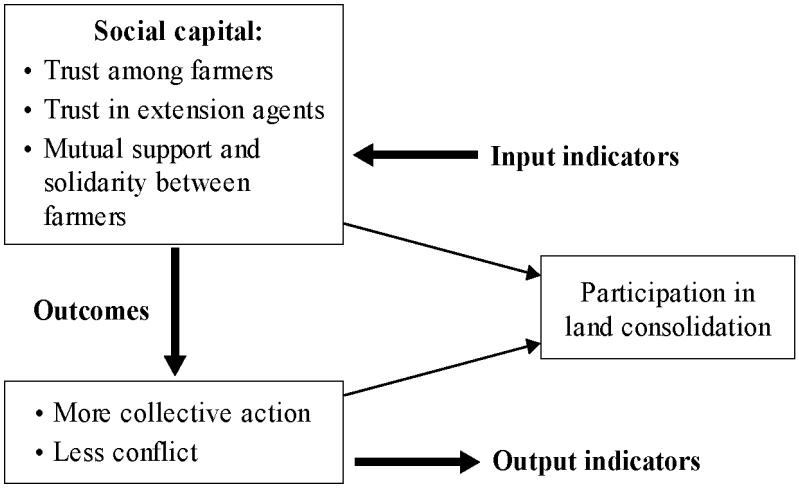


Figure 2. Dimensions of Social Capital

- Item 1: Do you agree with this sentence: "Most people in your farm only think about their own welfare." (S1)

Nearly half of the farmers agreed with this statement, while 41% disagreed (Table 9). Some respondents believed altruistic feelings were more common in the past. Though farmers were poorer then, it was felt that they were more generous.

Table 9. Frequency of S1

| Variable | Category | Frequency | Proportion (%) |
|---|---|---|---|
| S1 | 1 = Agree | 94 | 53 |
| | 2 = Undecided | 10 | 6 |
| | 3 = Disagree | 73 | 41 |
| | Total | 177 | 100 |

*Source*: Survey data
*Note*: Chi square = 64.78, df = 2, p = 0 < 0.05

According to Table 10 no relationship exists between S1 and acceptance status.

Table 10. S1 Across Acceptance Status (%)

| Variable | Category | S1 | | |
|---|---|---|---|---|
| | | 1 | 2 | 3 |
| Acceptance status | 0 = no | 47 | 7 | 46 |
| | 1 = yes | 60 | 4 | 36 |

*Source*: Survey data
*Note*: Chi square = 3.032, df = 2, p = 0.22 > 0.05

- Item 2: Do you agree with this sentence: "If you need help, most of your co-farmers would help you." (S2*)*

Nearly 61% of farmers agreed with this statement and expected to receive assistance from others, while 28% of farmers did not agree (Table 11).

Table 11. Frequency of S2

| Variable | Category | Frequency | Proportion (%) |
|---|---|---|---|
| S2 | 1 = Disagree | 49 | 28 |
| | 2 = Undecided | 19 | 11 |
| | 3 = Agree | 109 | 61 |
| | Total | 177 | 100 |

*Source*: Survey data
*Note*: Chi square = 71.186, df = 2, p = 0 < 0.05

The relationship between the two variables (S2 and acceptance status) was not significant. Nearly 60% of farmers in both groups thought they would receive assistance when they need it (Table 12).

Table 12. S2 Across Acceptance Status (%)

| Variable | Category | S2 | | |
|---|---|---|---|---|
| | | 1 = disagree | 2 = undecided | 3 = agree |
| Acceptance status | 0 = no | 28 | 10 | 62 |
| | 1 = yes | 27 | 12 | 61 |

*Source*: Survey data
*Note*: Chi square = 0.153, df = 2, p = 0.926 > 0.05

- Item 3: "Suppose something unfortunate happens to you, like the destruction of your home, how many farmers from your farm would help you?" (S3)

Several different categories were identified that include farmers who think no one would help them during a crisis. A second category consists of farmers who thought that one to four co-farmers would help them, and >5 signifies it is believed that more than five farmers would help should a hardship occur. We assume that the larger the number of co-farmers a farmer thinks would help him in a crisis situation, the higher the level of solidarity between him and other co-farmers, and the higher the level of social capital available to him. Nearly 40% of farmers thought no one would assist them, while 60% were confident someone would assist them in time of crisis (Table 13).

Table 13. Number of Co-Farmers a Farmer Thinks Would Help Him in a Crisis

| Variable | Category | Frequency | Proportion (%) |
|---|---|---|---|
| Number of people who would assist a farmer in a crisis (S3) | 0 | 68 | 39 |
| | 1–4 = 1 | 50 | 28 |
| | > 5 = 2 | 59 | 33 |
| | Total | 177 | 100 |

*Source*: Survey data
*Note*: Chi square = 2.746, df = 2, p = 0.253 > 0
S3 is primarily recorded as an interval variable but to make it more presentable we recoded it into three categories.

Table 14 shows there is no relationship between acceptance status and S3. Nearly 60% of farmers in both groups thought they could count on at least one co-farmer to help them in time of crisis.

Table 14. Percentage of Farmers Who Expect to Receive Help by Acceptance Status

| Variable | | S3 | | |
|---|---|---|---|---|
| Acceptance status | Category | 0 | 1 | 2 |
| | 0 = no | 42 | 29 | 29 |
| | 1 = yes | 36 | 27 | 37 |

*Source*: Survey data
*Note*: Chi square= 1.182, p = .554 > 0.05

None of the variables used to measure solidarity and mutual support has a relationship with acceptance status. The correlations between the three variables as shown in Table 15

are moderate and significant. We use S1, S2 and S3 later to construct a composite index for solidarity.

Table 15. Correlation Between Solidarity Variables

| Variable | S1 | S2 | S3 |
|---|---|---|---|
| S1 | 1 | | |
| S2 | 0.425<br>0* | 1 | |
| S3 | 0.373<br>0 | 0.418<br>0 | 1 |

*Source*: Survey data
*Note*: N = 177, * Correlation is significant at the 0.05 level (two-tailed).

**Extent of Solidarity**

In order to assess whether solidarity extends beyond one's close family (bridging social capital), the next item was asked of respondents:

- "What is your relation with the person who you are most sure you can borrow from when you suddenly need money?"

It should be noted that unless the solidarity extends beyond one's family it might not have positive externalities; that is, the feeling of mutual support and solidarity is beneficial to the community when spread to other members of the community beyond close family. Almost 40% of farmers thought no one would help them if they need money suddenly, 22% thought their immediate family would help them, and 38% thought they could obtain assistance beyond their immediate family (Table 16).

Table 16. Frequency and Percentage of Farmers Who Believe They Could Obtain Loans from Different Networks

| Network | Frequency | Proportion (%) |
|---|---|---|
| 0 = no one | 69 | 39 |
| 1 = close relatives | 39 | 22 |
| 2 = distant relatives | 5 | 2 |
| 3 = neighbors | 19 | 11 |
| 4 = friends | 27 | 15 |
| 5 = co-farmers | 18 | 10 |
| Total | 177 | 100 |

*Source*: Survey data
*Note*: Chi square = 84.72, df = 5, p = 0 < 0.05

Nearly 39% of farmers in both groups believed they could not obtain a loan from anyone around them, and 20% in both groups felt they could rely on close relatives (Table 17).

Table 17. Percentage of Farmers Who Believe They Could Obtain Loans from Different Networks Across Acceptance Status

| Variable | | Percentage of farmers who thought they could obtain assistance from different networks | | | | | |
|---|---|---|---|---|---|---|---|
| Acceptance status | Category | 0 = no one | 1 = close relatives | 2 = distant relatives | 3 = neighbors | 4 = friends | 5 = co-farmers |
| | 0 = no | 39 | 26 | 4 | 13 | 13 | 5 |
| | 1 = yes | 39 | 19 | 2 | 8 | 17 | 15 |

*Source*: Survey data
*Note*: Chi square = 6.830, p = 0.234 > 0.05

**Trust**

Trust is the most widely used indicator in the measurement of social capital. Trust means to have belief or confidence in the honesty, goodness, skill, or security of a person or an organization. In sociology trust is a relationship between actors. It involves the suspension of disbelief that one actor will have towards another actor or idea. It especially involves having one actor thinking that the other person or idea is benevolent, competent, good, or honest. Much work has been done on the notion of trust and its social implications. Barbara Misztal (2001) attempts to combine all notions of trust together. She suggests there are three basic things that trust does in the lives of people: It makes social life predictable, it creates a sense of community, and it makes it easier for people to work together. Trust can be said to be the basis of all social institutions. It is also integral to the idea of social influence as it is easier to influence or persuade someone who is trusting. According to Luhman (1995), "The everyday social life which we have taken for granted is simply not possible without trust." In the context of land consolidation there are two types of trust: trust in other farmers and trust in extension agents or the staff of the Agriculture Service Center because they are the ones who introduce land consolidation and other technological aspects to farmers. The first two items deal with trust levels among farmers and the last item deals with trust in extension agents.

*Trust Levels Among Farmers*

- Item 1: "Some say 'We can trust most farmers in our farm.' What do you think?" (T1)

Nearly 80% of farmers indicated they trust their co-farmers, while only 14% did not trust their co-farmers. It should be noted that in some villages farmers were reluctant to reply to this type of question, because they did not want to present a negative picture of their village to outsiders. They argued that the villagers should not share their secrets with outsiders. (Table 18).

Farmers did not differ significantly in the two groups (no relationship exists between T1 and acceptance status). More than 75% in both groups said they trusted other farmers (Table 19). However, the important issue is how much they trust other farmers, which was examined by the next question.

Table 18. Frequency of T1

| Variable | Category | Frequency | Proportion (%) |
|---|---|---|---|
| T1 | 1 = disagree | 25 | 14 |
| | 2 = undecided | 7 | 4 |
| | 3 = agree | 145 | 82 |
| | Total | 177 | 100 |

*Source*: Survey data
*Note*: Chi square = 190.78, df = 2, p = 00 < 0.05

Table 19. T1 Across Acceptance Status (%)

| Variable | | T1 | | |
|---|---|---|---|---|
| | Category | 1 = disagree | 2 = undecided | 3 = agree |
| Acceptance status | 0 = no | 21 | 3 | 76 |
| | 1 = yes | 8 | 4 | 87 |

*Source*: Survey data
*Note*: Chi square = 5.49, df = 2, p = 0.064 > 0.05

- Item 2: "How much can you trust your co- farmers?" (T2)

Almost 60% of farmers said they trusted their co-farmers highly, while 15% had little trust (Table 20).

Table 20. Level of Trust in Co-farmers

| Variable | Category | Frequency | Proportion (%) |
|---|---|---|---|
| T2 | 1 = little | 27 | 15 |
| | 2 = moderate | 42 | 24 |
| | 3 = high | 107 | 60 |
| | Total | 176 | 99 |

*Source*: Survey data
*Note*: Chi square = 61.648, df = 2, p = 00 < 0.05, missing 1

The percentage of farmers who said they trusted their co-farmers "little" were twice the number (21%) in the first group compared to the second group (10%), and it can be concluded there is a relationship between the two variables that is significant (Table 21).

Table 21. T2 Across Acceptance Status (%)

| Variable | | T2 | | |
|---|---|---|---|---|
| | Category | 1 = little | 2 = moderate | 3 = high |
| Acceptance status | 0 = no | 21 | 14 | 65 |
| | 1 = yes | 10 | 33 | 57 |

*Source*: Survey data
*Note*: Chi square = 10.3, df = 2, p = 0.006 < 0.05

The correlation between T1 and T2 is significant.[13]

*Extent of Trust*

"If you had to leave your family, to whom would you entrust the protection and supervision of your family?" (Trust 1)

The responses to this question showed that half the farmers said they did not trust anyone, and 21% indicated that they trusted only their close family (Table 22).

Table 22. Extent of Trust in Others (Protection of Family)

| Variable | Category | Frequency | Proportion (%) |
|---|---|---|---|
| Trust1 | 0 = no one | 91 | 51 |
| | 1 = close relatives | 48 | 27 |
| | 2 = others | 38 | 22 |
| | Total | 177 | 100 |

*Source*: Survey data
*Note*: Chi square = 208.186, df = 5, p = 0 < 0.05

In order to compare the two groups the average scores were calculated (using information from Table 23).

0*38+1*26+2*18= 62
0*53+1*22+2*20= 62

The average scores of the two groups were similar.

Table 23. Trust Across Acceptance Status

| Variable | | Trust 1 | | |
|---|---|---|---|---|
| | Category | 0 = no one | 1 = close relatives | 2 = others |
| Acceptance status | No = 1 | 38<br>(42) | 26<br>(54) | 18<br>(47) |
| | Yes = 2 | 53<br>(58) | 22<br>(46) | 20<br>(54) |

*Source*: Survey data
*Note*: Chi square= 1.967, df = 2, p = 0.374 > 0.05
Numbers in parentheses are percentage.

[13] Kendall's tau b = 0.61, p = 0 < 0.05
Pearson Correlation = 0.688, p = 0 < 0.05

*Trust in Extension Agents*

Item 1: "When one of the staff of the Agricultural Services Center says something to your co- farmers, do they listen and accept it?" (T3)

Table 24. Trust in Extension Agents

| Variable | Category | Frequency | Proportion (%) |
|---|---|---|---|
| T3 | 1 = not trusted | 40 | 23 |
| | 2 = trusted | 136 | 76 |
| | Total | 176 | 99 |

*Source*: Survey data
*Note*: Chi square= 52.364, df = 1, p = 0 < 0.05, missing 1

The staff members of the Agricultural Service Center are responsible for introducing the land consolidation idea to farmers. Yet the study indicated that fully 23% of respondents neither listened to nor trusted their extension agents (Table 24). During our interviews, many farmers expressed dissatisfaction with government performance and activities in respect to the distribution and supply of agricultural inputs such as pesticide application and other development projects. Some expressed the belief that government staff discriminate between farmers, did not listen to them, and failed to keep promises made to farmers even in relation to land consolidation. It was highly interesting to note that nearly half the farmers who do not participate in land consolidation also do not trust extension agents (Table 25). The relationship between the two variables (T3 and Acceptance status) is significant.

Table 25. T3 Across Acceptance Status

| Variable | | T3 | |
|---|---|---|---|
| | Category | 1 = not trusted | 2 = trusted |
| Acceptance status | 0 = no | 43 | 57 |
| | 1 = yes | 5 | 95 |

*Source*: Survey data
*Note*: Chi square = 35.848, df = 1, p = 0 < 0.05, missing 1

The most important source of information about land consolidation is extension agents, and therefore trust in extension agents can facilitate the participation of farmers in land consolidation (Table 26).

The role of extension agents is also important for those who participated in land consolidation. Activities of extension agents such as organizing workshops to explain and justify land consolidation to farmers and tours of other farms have been cited as the two most important factors that induced farmers to participate in land consolidation (Table 27).

Table 26. Most-important Sources of Information on Land Consolidation

| Source of information | Frequency | Proportion (%) |
|---|---|---|
| Relatives | 5 | 3 |
| Friends | 1 | 1 |
| Extension agents | 143 | 82 |
| Other farmers | 6 | 3 |
| Village council | 13 | 7 |
| Farmers from other villages | 5 | 2 |
| Total | 173 | 98 |

*Source*: Survey data
*Note*: Chi square = 66.451, df = 6, p = 0 < 0.05, missing 4

Table 27. Factors Encouraging Farmers to Accept Land Consolidation

| Variable | Frequency | Proportion (%) |
|---|---|---|
| 1 = Visiting other farms already consolidated | 26 | 27 |
| 2 = Workshops about land consolidation | 41 | 43 |
| 3 = Friends | 14 | 15 |
| 4 = Village council | 8 | 8 |
| 5 = Other farmers | 4 | 4 |
| Total | 93 | 98 |

*Source*: Survey data
*Note*: Missing 2

*Constructing Indicators for Social Capital*

To construct an indicator for solidarity it is possible to add up the scores of farmers on items related to solidarity:

S1 + S2 + S3 = sc1 solidarity

Similarly, adding up the scores for items related to trust among farmers allows us to construct an indicator for trust.

T1 + T2 = sc2 trust among farmers

Only one item is used to measure trust in extension agents (T3), which was renamed as sc3.

T3 = sc3 trust toward extension agents

To make these indicators more meaningful, it is desirable to convert the scales so that they have a specified minimum and maximum value. One way to achieve this is to use the following transformation formula:

new scale = (old scale - minimum scale value) / range) × n

n = upper limit for new scale = 100

This transformation yields scores that range from 0 to 100.

Table 28 shows the mean values of sc1 and sc2 across the two groups of farmers. The mean of sc1 for the first group is 53, the mean of sc1 for the second group is 52, and the overall mean is 52. The difference between the means of the two groups is not significant.[14]

The mean of sc2 for the first group is 75, the mean of sc2 for the second group is 81, and the overall mean is 78. The difference between the means of the two groups is not significant.[15] Since one item only is used for the measurement of trust in extension agents we did not perform the above transformation for it.

Table 28. Mean Values of sc1, sc2 Across Acceptance Status

| Acceptance status | | sc1 | sc2 |
|---|---|---|---|
| 0 = no | Mean | 53 | 75 |
| | N | 82 | 82 |
| | Std. deviation | 34 | 38 |
| 1 = yes | Mean | 52 | 81 |
| | N | 95 | 95 |
| | Std. deviation | 36 | 28 |
| Total | Mean | 52 | 78 |
| | N | 177 | 176 |
| | Std. deviation | 35 | 33 |

## MULTIVARIATE ANALYSIS OF SOCIAL CAPITAL

The purpose of this section is to determine the factors that influence acceptance status significantly. The following conceptual model can summarize the theory behind the analysis. The description of the variables in the model is presented in Appendix A (Tables 2 and 3).

AS = f (sc1, sc2, sc3, age, level of education, size of irrigated land holding)

The acceptance status (AS) of a farmer is captured by a dichotomous (0, 1) variable. The probability function of this random variable is presented in Table 29:

Table 29. Probability Distribution of Participation in Land Consolidation

| Y | Pr(Y=y) |
|---|---|
| 1 | P |
| 0 | 1–P |

[14] F = 0.084, df = 1, sig = 0.773
[15] F = 1.431, df = 1, sig = 0.233

Equation 1 gives the probability of a positive response.

$$Pi = Pr(Yi=1) = E(Yi/Xi) = \frac{1}{1+e^{-(\beta_1+\beta_2 x_2+.....+\beta_K x_K)}} \quad \text{(Equ. 1)}$$

Under this specification the probability of a negative response is:

$$1-Pi = 1-\frac{1}{1+e^{-(\beta_1+\beta_2 x_2+.....+\beta_K x_K)}}$$

$$= \frac{e^{-(\beta_1+\beta_2 X_2+.....\beta_k X_k)}}{1+e^{-(\beta_1+\beta_2 x_2+.....+\beta_K x_K)}} \quad \text{(Equ. 2)}$$

Division of Pi by 1–Pi gives the probability ratio in favor of a farmer accepting land consolidation.

$$\text{Odd ratio} = \frac{Pi}{1-Pi} = e^{\beta_1+\beta_2 X_2+.....+\beta_k X_k} \quad \text{(Equ. 3)}$$

To determine equation Equ. 3 we take the natural logarithm of both sides, hence:

$$\log(\frac{Pi}{1-Pi}) = \log e^{\beta_1+\beta_2 X_2+.....+\beta_k X_k} \quad \text{(Equ. 4)}$$

$$Li = \log(\frac{Pi}{1-Pi}) = \beta_1+\beta_2 X_2+....+\beta_k X_k \quad \text{(Equ. 5)}$$

Where Xi's are variables that influence the decision of each farmer to participate in land consolidation and $\beta s$ 's are unknown parameters.

*Hypotheses*

- After national land reforms some of the farmers enlarged the extent of their ownership by purchasing land from others. The farmers who expanded their land holdings also tended to invest in their lands to enhance their fertility and quality, and some consolidated their parcels individually so they were subsequently reluctant to participate in land consolidation. Therefore, the willingness to participate in land consolidation is expected to be inversely related to the size of farmer land holding (physical capital). Thus, the larger the size of his land holding, the less likely a farmer is to participate in land consolidation.
- The willingness to participate in land consolidation is expected to be directly related to solidarity (sc1), trust among farmers (sc2) and trust in extension agents (sc3).
- No *a priori* assumptions are made about the effects of a farmer's level of education or age on AS.

Results[16]

Three models are used to assess these hypotheses. In the first model we assess the impacts of social capital on AS, while in the second model we add physical capital (size of land) and human capital (LE). In the third model we add another variable, age. The variables are entered so that we can compare McFadden R squared[17] and other statistics.

- The first model includes sc1, sc2, and sc3. The sign of sc1 is negative and significant. Solidarity has an inverse relationship with AS; however, its impact on AS is very negligible (a marginal impact equal to 0.002). The sign of sc2 is positive and insignificant. The sign of sc3 is positive and significant (an impact equal to 0.69); that is, the higher the level of trust in extension agents, the more likely it is that a farmer will participate in land consolidation. The overall model is significant at the 0.05 level according to the model chi-square statistic. The McFadden's $R^2$ is 0.17 (Table 30).
- The second model includes land size and level of education. The results from Model 2 show LE, sc1 and sc2 are not significant at the .05 level (95% confidence level). The $\beta$ coefficient of land is negative and significant. This means the larger the land size, the less likely the farmer is to participate in land consolidation. The $\beta$ coefficient of sc3 is positive and significant again. The overall model is significant at the 0.05 level according to the model chi-square statistic. The McFadden's $R^2$ is 0.21, which is higher than Model 1 (Table 30).
- In the third model age is also included, but the results show age does have not a significant relationship with AS. LE, sc1 and sc2 are not significant, while land size and sc3 are significant. The overall model is significant at the 0.05 level according to the model chi-square statistic. The McFadden's $R^2$ is 0.23, which is higher than the latter two models (Table 30).
- The important variables that affect land consolidation are land size and the level of trust in extension agents, while other variables are judged as insignificant. The farmers who participate in land consolidation trust extension agents more than the other group of farmers. This confirms our earlier findings. The marginal impacts of all variables in the third model[18] are presented in Appendix A (Table 4).

**Collective Action and Social Capital**

Some activities have been carried out collectively in villages and on farms and they are very important for the rural community. The following are examples of collective activities in the villages under study:

- Writing protest letters to government offices
- Organizing social and religious ceremonies such as weddings or funerals
- Infrastructural activities related to the maintenance and upkeep of water systems
- Animal husbandry

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[16] To calculate the results in this part Limdep software has been used.

[17] There is no equivalent measure in logistic regression to $R^2$ in OLS. There are several Pseudo $R^2$ statistics in logistic regression. One Pseudo R square is the McFadden's $R^2$ statistic (sometime called the likelihood ratio index), where $R^2$ is a scalar measure that varies between 0 and 1.

[18] The slope coefficient (B) in logistic regression is the rate of change in the log odds as X changes. This is not very intuitive; instead the marginal effect is usually computed.

- Upkeep and maintenance of public facilities such as mosques, mortuaries and public baths
- Tree planting
- Helping each other in everyday life

The most important collective activity at the village level is the maintenance and upkeep of the drinking water system. In the villages where the *qanat* water system is the main source of water, villagers are collectively responsible for system maintenance. The second most important activity is the maintenance of the village's public bath. And the third most important is the construction and maintenance of the village mosque. Most public meetings are organized in the mosque. Villagers contribute both their time and money to these activities. Nearly 70% of respondents participate in the collective activities prevalent in their respective villages (Table 31).

Table 30. Land Consolidation and Social Capital

| Dependent variables = AS | | | | | | |
|---|---|---|---|---|---|---|
| | Model 1 | | Model 2 | | Model 3 | |
| Variable | Coefficient | t statistic | Coefficient | t statistic | Coefficient | t statistic |
| Constant | –4.7 | –4.51 | –3.870 | –3.552 | –6.922 | –2.669 |
| Age | | | | | 0.06 | –0.751 |
| Age squared | | | | | –0.0002 | –0.369 |
| Level of education | | | 0.017 | 0.120 | 0.32 | 1.516 |
| Land size | | | –0.136 | –2.782 | –0.133 | –2.673 |
| sc1 | –0.01 | –1.978 | –0.01 | –1.849 | –0.0106 | –1.734 |
| sc2 | 0.005 | 0.931 | 0.005 | 0.832 | 0.004 | 0.597 |
| sc3 | 2.78 | 5.148 | 2.6 | 4.774 | 2.7 | 4.828 |
| Model Chi-Sq.<br>Df<br>Sig | 41.6<br>3<br>0 | | 51<br>5<br>0 | | 56.2<br>7<br>0 | |
| McFadden's $R^2$ | 0.17 | | 0.21 | | 0.23 | |

Table 31. Collective Activities in Village

| Variable | Category | Frequency = Number of farmers in each category | Proportion (%) |
|---|---|---|---|
| Participation of farmers in collective activities (PCA) | 0 = Not participating in any collective activities | 55 | 31 |
| | 1 = Participating in collective activities | 122 | 69 |
| | Total | 177 | 100 |

*Source*: Survey data

In this section we examine the impact of different components of social capital and other variables on participation of the farmer in collective activities prevalent in his

village. We summarize this in the following model. A description of the variables in the model is presented in Appendix A, Tables 2 and 3:

$$PCA = f(sc1, sc2, sc3, PR, Age)$$

Since dependent variable is dichotomous we should use a logistic model.

*Hypothesis*

- The willingness to participate in collective activities prevalent in the village (PCA) is expected to be directly related to solidarity (sc1), trust among farmers (sc2) and trust in extension agents (sc3).
- No *a priori* assumptions are made about the effects of age and PR (place of residence) on participation of a farmer in collective activities prevalent in his village (PCA).

*Results*

The results in Table 32 show trust among farmers has a positive and significant effect on farmer willingness to participate in collective activities, though its effect is not very considerable (marginal impact is equal to 0.002). This confirms Grootaert's (2002) hypothesis that if an individual trusts other individuals, he is more willing to participate in collective activities in the community. The effect of age and PR on PCA is also significant. The overall model is significant at the 0.05 level according to the model chi-square statistic (=33.8). The McFadden's $R^2$ is 0.156.

Table 32. Collective Action and Social Capital

| Independent variables | $\beta s$ | t statistic | Marginal effect |
|---|---|---|---|
| Constant | – 7.9 | – 3.27 | – 1.6 |
| sc1 | 0.009 | 1.48 | 0.001 |
| sc2 | 0.01 | 2.27 | 0.002 |
| sc3 | 0.68 | 1.59 | 0.13 |
| Age | 0.17 | 2.17 | 0.03 |
| Age squared | – 0.001 | – 1.917 | – 0.0002 |
| PR | 1.27 | 2.187 | 0.25 |

Land consolidation is a collective action in which different stakeholders participate. The process entails disagreement and conflicts between the involved parties, particularly between farmers. One idea is that a farmer who participates in collective activity prevalent in the village would be more willing to participate in land consolidation. Farmers who work together become familiar with the roles and rules of a collective endeavor. Such thinking is borne out by the theory advanced by Hirschman[19] who believes prior experience with collective action can help people participate in new collective activities more readily. We can summarize this relationship in the following model:

[19] As cited in Krishna, Anirudh, and Norman Uphoff (1999).

$$AS = f(PCA, PR, LE, NP)$$

Since the dependent variable is dichotomous we should use a logistic model. A description of the variables in the model is presented in Appendix A, Tables 2 and 3.

*Hypothesis*

- A farmer who participates in collective activities prevalent in his village would be more willing to accept land consolidation.
- No *a priori* assumptions are made about the effects of LE (level of education), PR (place of residence), or NP (number of parcels before consolidation) on acceptance status (AS).

*Results*

The results in Table 33 show PCA has a positive relationship with AS, which is significant at the 95% confidence level. This confirms our hypothesis. The relationships of LE and NP with AS are not significant while that of PR with AS is positive and significant (95%).

Table 33. Collective Action and Social Capital

| Variables | $\beta$ coefficient | t statistic | Marginal effect |
|---|---|---|---|
| Constant | – 2.45 | – 2.469 | – 0.59 |
| PCA | 1.27 | 3.1 | 0.31 |
| LE | – 0.06 | – 0.42 | – 0.015 |
| NP | 0.01 | 0.31 | 0.003 |
| PR | 2.03 | 2.4 | 0.4 |

**Conflict and Social Capital**

The presence of conflict between individuals in a community is an indicator of the lack of trust and social capital, so part of the questionnaire deals with conflict. The number of times conflicts between farmers have occurred is recorded in Table 34. There are some disagreements between farmers, but this is not very common, such that 68% of farmers report having had no problems with other farmers during the past five years.

Table 34. Occurrence of Conflicts Among Farmers During Past Several Years

| Variable | Frequency | Proportion (%) |
|---|---|---|
| Occurrence of conflicts | Number of farmers | |
| No conflict | 121 | 68 |
| 1–4 | 38 | 22 |
| >5 | 18 | 10 |
| Total | 177 | 100 |

*Source*: Survey data

*Note*: The number of conflicts among farmers is primarily recorded as an interval variable but to make it more presentable we recoded it into three categories.

The most important causes of disagreements and conflicts among co-farmers were as follows:

- possessing the lands of other farmers unlawfully
- distribution of irrigation water
- permitting livestock to graze on the land of other farmers

The mechanisms for resolving the disputes and disagreements are presented in Table 35. Most of the disputes were settled by elders and village councils. These institutions are instances of social capital of a community that traditionally settles disputes that arise amongst farmers. Of all disagreements between farmers noted in this study, 21% were referred to the courts, which would result in costs for both sides. These costs include transportation expenses to courts (which are usually in the cities), and the time that a farmer must devote, which is particularly important during cultivation season. These are the instances of cost reductions that social capital can generate within a community.

Table 35. Conflict Resolution Mechanisms

| Sources of conflict resolution | Proportion (%) |
|---|---|
| Other farmers | 23 |
| Village council and elders | 56 |
| Court | 21 |

*Source*: Survey data

Now we will examine empirically the influence of social capital on conflict. We can summarize this relationship in the following model. A description of the variables in the model is presented in Appendix A, Tables 2 and 3:

$$C= f (sc1, sc2, sc3)$$

Where C is the occurrence of conflicts among farmers.

*Hypothesis*

- The higher the levels of sc1, sc2, sc3 are, the lower will be the level of conflicts among the farmers. Therefore, we expect the signs of sc1, sc2, and sc3 to be negative.

*Results*

As shown in Table 36, sc1 and sc3 do not have a significant relationship with conflict. Sc2 has an inverse relationship with conflict, which is significant. That is, the lower the level of trust among farmers, the higher the level of conflict between individuals will be. However, the R squared is very low.

Table 36. Social Capital and Conflict

| Dependent variable = conflict | | | |
|---|---|---|---|
| Independent variable | $\beta$ | t statistic | Significance |
| Constant | 19.316 | 2.343 | 0.020 |
| Sc1 | 0.018 | 0.303 | 0.762 |
| Sc2 | – 0.179 | – 2.890 | 0.004 |
| Sc3 | 0.52 | 0.118 | 0.906 |

*Note*: R squared = 0.055

The next issue examined in this section is the impact of the occurrence of conflicts among farmers and participation in land consolidation. The following model estimates this proposal. (The description of the variables in the model is presented in Appendix A, Tables 2 and 3).

AS=F [Conflict (C), place of residence (PR), monthly expenditure (ME), size of household (SHH), main source of income (MSI)]

*Hypothesis*

- It is assumed that the more a farmer has conflicts with other farmers the less likely he will be willing to participate in land consolidation.
- No *a priori* assumptions are made about the effects of MSI, PR, SHH and ME on the farmer's decision to accept land consolidation.

*Results*

As seen in Table 37, the relationship between conflict occurrence and AS is not significant. Other variables in the equation do not have a significant relationship with AS. The only variable that has a significant relationship with AS is PR. This means that if a farmer resides in the city he is less willing to participate in land consolidation programs.

Table 37. Conflict and Participation in Land Consolidation

| Variable | $\beta$ | t statistic | Marginal effect |
|---|---|---|---|
| Constant | –0.68 | –0.91 | –0.1 |
| PR | 1.23 | 2.1 | 0.3 |
| ME | –0.001 | –0.58 | –0.0002 |
| C | 0.004 | 0.67 | 0.001 |
| SHH | –0.01 | –0.27 | –0.004 |
| MSI | –0.03 | –0.1 | –0.008 |

## CONCLUSION

- Land consolidation is important for the economic advancement and welfare of the local community, so some of the factors that contribute to this process have been identified in this study including social capital.
- Social capital is a multi-dimensional concept, therefore, in this study trust and the level of solidarity between farmers have been measured through different questions as indicators of social capital. Trust is divided further into trust among farmers and trust in extension agents.
- We constructed three indicators for social capital by adding up the items related to each dimension.
- The econometric results indicate that trust in extension agents has a significant relationship with a farmer's decision to accept land consolidation. The study shows that farmers with a more trusting relationship with extension agents are more ready to accept land consolidation proposals. The importance of trust in extension agents and other government staff working in rural communities is clear and undeniable. It should be noted that the government plays a highly important role in the development process in the country. Most development projects are planned, financed, and supported by the government. Therefore, mutual trust between rural communities and government agencies is crucial for the success and prosperity of land consolidation and other group-based development projects.
- Land size was seen to have an inverse relationship with the farmer decision to participate in land consolidation
- We also examined the relationship between social capital and collective activities. The study showed there is a positive and significant relationship between the level of solidarity and collective action. There is a positive and significant relationship between participation in collective activities and acceptance of land consolidation. A farmer who participates in collective activities at the village level is more likely to accept land consolidation.
- Trust has an inverse and significant relationship with conflict. That is, the lower the level of trust, the higher the level of conflict between individuals. This study could not establish a significant relationship between the occurrence of conflicts among farmers and participation in land consolidation.

**Policy Recommendations**

The results of this study cannot be generalized for the country overall but there are some lessons that should be considered in the design and implementation of land consolidation projects in particular, and other development projects in general.

- Social capital is important, and government should consider it in the design and implementation of rural development projects.
- Government agents should be more careful in their contacts with rural communities and should avoid activities that reduce the level of trust.
- Since the level of trust in extension agents is important in land consolidation projects, government efforts should be directed at enhancing it. The factors that influence the level of trust should be studied.
- In this study, we focused on men, because the majority of the landowners in the country are men. It should be reminded that the structure of the rural community is changing very rapidly due to permanent and seasonal migration of men to urban

areas, such that concentrating on and investing in only the organizations that men tend to participate in could be problematic for the future of rural communities. It is therefore necessary to pay more attention to women and their particular informal and formal organizations to enhance the level of social capital in the rural community.

- Further studies should be carried out to examine the impacts of social capital on rural development and welfare.

## APPENDIX A

Table A-1. Production Status

| Product | Total production (Ton) | Supply to market | Price (Kg-$US) |
|---|---|---|---|
| Wheat | 3,000 | 809 | 0.2 |
| Barley | 3,000 | 731 | 0.14 |
| Bean | 141 | 120 | 0.5 |
| Potato | 628 | 315 | 0.15 |
| Onion | 1.7 | 0 | – |

Table A-2. Description of Variables

| Variable | Description |
|---|---|
| AS | Participates in land consolidation<br>No = 0<br>Yes = 1 |
| LE | Level of education<br>Category<br>1 = illiterate<br>2 = reads & writes<br>3 = primary<br>4 = secondary<br>5 = high school diploma & over |
| Age | Age of farmer<br>Interval |
| Land | Size of land under cultivation<br>Interval |
| sc1 | Solidarity with other farmers |
| sc2 | Trust among farmers |
| sc3 | Trust in extension agents<br>0 = not trusted<br>1 = trusted |
| PCA | Participation in collective activities<br>0 = not participating in any collective activity<br>1 = otherwise |
| PR | Place of residence (dichotomous)<br>1 = village<br>0 = otherwise |
| NP | Number of parcels |
| C | Occurrence of conflict among farmers (interval) |
| SHH | Size of household (interval) |
| MSI | Main source of income (dichotomous)<br>0 = main source of income is farming<br>1 = otherwise |
| ME | Monthly expenditure in USD (interval) |

Table A-3. Descriptive Statistics of Variables

| Variable | N | Minimum | Maximum | Mean | Std. deviation |
|---|---|---|---|---|---|
| Level of education | 177 | 1 | 5 | 1 | 1.2 |
| Land size (ha) | 177 | 0.2 | 30 | 4.5 | 5.05 |
| Age | 177 | 24 | 85 | 55 | 16 |
| sc1 | 177 | 0 | 100 | 52 | 32.3 |
| sc2 | 177 | 0 | 100 | 78 | 33.24 |
| sc3 | 176 | 0 | 100 | 84 | 23.6 |
| Acceptance of land consolidation | 177 | Accepted = 95, Not accepted = 82 | | | |
| PCA | 177 | Yes = 122, No = 55 | | | |
| PR | 177 | 1 = village = 158<br>0 = otherwise (living permanently in city and coming to village during summer for farming) = 19 | | | |
| NP | 140 | 1 | 24 | 9 | 4 |
| C | 177 | 0 | 99 = very often | 7.03 | 23.8 |
| SHH | 177 | 2 | 15 | 5.49 | 2.48 |
| MSI | 177 | 0 = farming | 1 = otherwise | – | – |
| ME | 177 | 34 | 454 | 166 | 85 |

Table A-4. Model 3, Marginal Effects at Mean Points

| Variables | Coefficient<br>Marginal effects | t statistic | Mean of X |
|---|---|---|---|
| Constant | –1.72 | –2.663 | |
| sc1 | –0.015 | –1.735 | 52 |
| sc2 | 0.002 | 0.597 | 78 |
| sc3 | 0.69 | 4.799 | 1.7 |
| Land | –0.03 | –2.6 | 4.54 |
| LE | 0.08 | 1.516 | 1.29 |
| Age | 0.01 | 0.751 | 55 |
| Age squared | –0.00006 | –0.369 | 3303 |

*Note*: Partial derivatives of probabilities with respect to the vector of characteristics. They are computed at the means of the Xs.

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# ROLE OF SOCIAL CAPITAL IN RURAL DIVERSIFICATION: A CASE OF MOUNTAINOUS VILLAGES IN JAPAN

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## INTRODUCTION

### Constraints on Rural Development in Japan

Rural development is still an important issue for achieving sustainable development in harmony with urban society in many developed countries. The Japanese government has introduced various policies and strategies to support the rural economy and community. But many communities in rural Japan have suffered from various constraints.

First, depopulation is a serious problem for rural communities. Many rural hamlets face difficulties in continuing agricultural production and regional resource management to support high-quality rural life because of decreased population, the able young in particular. The recent tendency to a low birthrate in Japan may also worsen this problem.

Second, becoming an aging society is more serious in rural areas than in urban areas. Problems derived from aging contain two aspects. One is the decrease of able farmers who manage their farmland, which might lead to the improper use of farmland and abandonment of marginal land and forest, resulting in environmental degradation. The other is the relative decrease of younger generations, which relates to depopulation.

In addition, most farm households are still engaged in small-scale farming. The Ministry of Agriculture, Forestry and Fishery (MAFF) has followed a Structural Adjustment Policy since the 1960s to encourage farm size enlargement. But topographical constraints (e.g., dispersed small farmlands in hilly areas) and the strong intention of farm households to retain inherited farmlands as household assets are major obstacles to structural adjustment. This issue is especially serious in hilly and mountainous areas.

These problems are of great concern in the current stage of rural development in Japan.

### New Trends in Rural Development in Japan

On the other hand, many rural communities have tackled these difficult problems, and some of them have revitalized their rural socio-economies. Their experiences indicate new trends in rural development in Japan.

First, in many rural communities, farmers and farming groups are trying to introduce "value-added" products, including new varieties and local-branded processed foods. They expect premium prices for their products.

Second, rural features (e.g., natural beauty, historical and cultural heritage, and lifestyle) have attracted peoples' attention again. Until a half century ago, rural residents had long lived in harmony with natural environments fully utilizing local resources. But the modernization of rural society (approximately since the 1960s) has changed the rural

lifestyle, and some resources lost their importance. But over-urbanization has prompted the reevaluation of rural life. Not only villagers but also some urban residents are interested in rural resources and are trying to make good use of them. This trend presents opportunities to utilize rural resources for community-based socio-economic activities.

Third, diversification of the rural economy is occupying the interest of both residents and researchers. Some activities show that new agribusiness[1] (business related to the agricultural sector) has helped increase farm income and revitalize rural residents, especially elderly farmers and women farmers. These activities provide not only supplemental income, but also meaningful rural life, contributing to the endogenous development of rural communities.

**Rural Development and Social Capital**

These trends show the possibility of diversified rural activities for sustainable rural development. But note that well-experienced personnel, newcomers and returnees to rural areas are taking major roles in such activities in collaboration with local people. Through the various exchange activities among a wide range of people, social characteristics of rural residents have also changed and diversified. Human relationships and social networks within and outside communities are vitally important for successful community development. Therefore, it is important to investigate how residents communicate and make decisions on collective actions.

In addition, traditional factors remain in peoples' relationships in rural society and influence decision-making in communities, while other researchers point out that social characteristics of rural residents have become similar to those of city residents. In today's rural society, both traditional and new factors seem to coexist in social relationships among residents.

To evaluate new trends in rural activities and to select the proper strategy for rural revitalization, we should consider the complex human relationship in Japanese rural society. This issue is not solved by considering only the "individual" attributes and characteristics of community members. The concept of "social capital" has become an important research topic in recent years.

**Contents of this Chapter**

Considering the background mentioned above, the author examines the recent diversification of rural communities in Japan and considers the relationships between community activities and the residents' personal relationships, including social capital.

First, the author presents the objectives of the survey, and describes the methods and procedures of the survey, and some of the problems encountered during data collection. Then the author presents a profile of the study area, using official statistics and the results of a community-level survey. The next section follows the historical development of the study area, focusing on the recent process of rural diversification. And the author presents the results of a community-level survey and a household-level survey, examining the exact situation of social capital in the study area, then clarifies the impact of social capital on

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[1] The term "agribusiness" has two meanings: a) an enterprise (especially multinational) which conducts agriculture or related activities, and b) a group of farmers concerned with agricultural production and related activities. This report uses the second meaning.

rural socio-economies at both the farm household and community level. At the final section, the author summarizes the conclusions and policy implications.

## OBJECTIVES OF THE STUDY

Based on the concerns mentioned above, this study aims at elucidating the effect of community factors, including "social capital" (SC) on the development and diversification of rural socio-economies in Japan, through a survey in the Awa area of Japan, south of Tokyo.

The overall objective is achieved by fulfilling the immediate objectives specified as follows.

*1) To trace the changes in socio-economic conditions in the study area over the last 20 years.*

The Japanese economy has experienced both an intense boost and a rapid retraction in the last 20 years. Globalization of the food system has also changed the economic environment of the agricultural and food sectors. In addition, the customary way of life of people has altered gradually. As a consequence, many rural societies increasingly face problems such as aging, depopulation, and the relative decrease of the importance of the agricultural sector.

On the other hand, many researchers have argued that the rural community in Japan has a long history, and that many traditional institutions, customs, and group activities still influence socio-economic performance.[2] Although each researcher evaluates these impacts both positively and negatively, traditional factors in rural Japan cannot be ignored. Recent researchers and practitioners have called attention to the importance of new movements in rural communities to observe in a study area.

Therefore, as part of a survey in a study area, it is important to examine and compare both traditional and new dimensions of rural activities by tracing the process of the transformation of communities along with socio-economic development.

*2) To investigate trends in rural diversification in Japan.*

This study covers rural diversification, not only in the agricultural sector, but also in the industrial structure in rural communities as a whole.[3] The structure of income sources for rural residents is roughly divided into three categories: agriculture, agribusiness (any economic activity having either backward or forward linkages with agriculture), and non-agricultural sectors. Most previous studies have focused on comparisons between agricultural and non-agricultural sectors. This survey instead focuses on the importance of agribusiness. The emergence of agribusiness at the local level provides wider opportunities for rural revitalization. Even though the business scale is still small, well-organized agribusiness could produce value-added products or services by utilizing rural resources, thus improving employment opportunities.

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[2] Concerning Japanese rural society, see Torigoe (1985) and Adachi (1985).

[3] On the concept of rural diversification and case studies in Japan, see Ohe (2003).

*3) To scrutinize and categorize community factors related to rural diversification by their structure and function, specifying them as social capital.*

Community plays an essential role in assembling and mobilizing regional resources to facilitate new agribusiness and related socio-economic activities. This survey lists the organization and group activities that support community ties. Then these community factors are to be specified as social capital categorized by their forms and functions.

*4) To quantify the effects of social capital on promotion of collective actions leading to rural revitalization.*

The role of social capital is evaluated quantitatively by statistical analyses. A wide range of empirical studies on social capital have been conducted in developing countries, but few studies deal with social capital in the context of Japanese rural society, especially quantitatively.[4]

*5) To evaluate the survey process.*

This objective was added at the request of the APO consultant. A survey is a fundamental measure for collecting data in a study area. But it takes much time, budget, manpower, and other resources. Under limited resources, research staff should design a survey plan carefully and conduct it smoothly with the cooperation of the residents of the study area.

In this report, the author describes the process of surveys in Japan, investigates problems when conducting surveys, and shows some possible solutions for improving the survey process.

## METHODS AND DATA

### Hypotheses

At the working party meeting of the APO-ICD survey in 2003, many useful papers concerning social capital were presented. In addition, a number of academic articles that deal with social capital in the context of community development have been released in recent years.[5] After reviewing these documents and considering the specific interests of the survey in Japan, the author set up two main hypotheses:

a) Social capital influences some aspects of rural development (income, level of diversification, profitability of activities)
b) Historical foundations influence the current structure and functions of a community

Hypothesis a) is related to the overall objective of the APO-ICD survey. Hypothesis b) is related to a specific issue in Japan: investigating the impact of historical and traditional factors on social capital and rural development. The working team discussed the issue and hypothesized that the state of traditional foundations may either encourage or

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[4] Ohe (2003) mentions the importance of building a method for evaluating human and social factors into agricultural economics. But in his case studies, variables are limited to human capital.

[5] The main articles and books to which the author often refers are Grootaert and Bastelaer (2002), Grootaert et al. (2003), Sato (2001), and Ishida and Yokoyama (2004).

discourage residents in respect to conducting new community activities and indirectly cause positive or negative effects on rural revitalization (Figure 1).

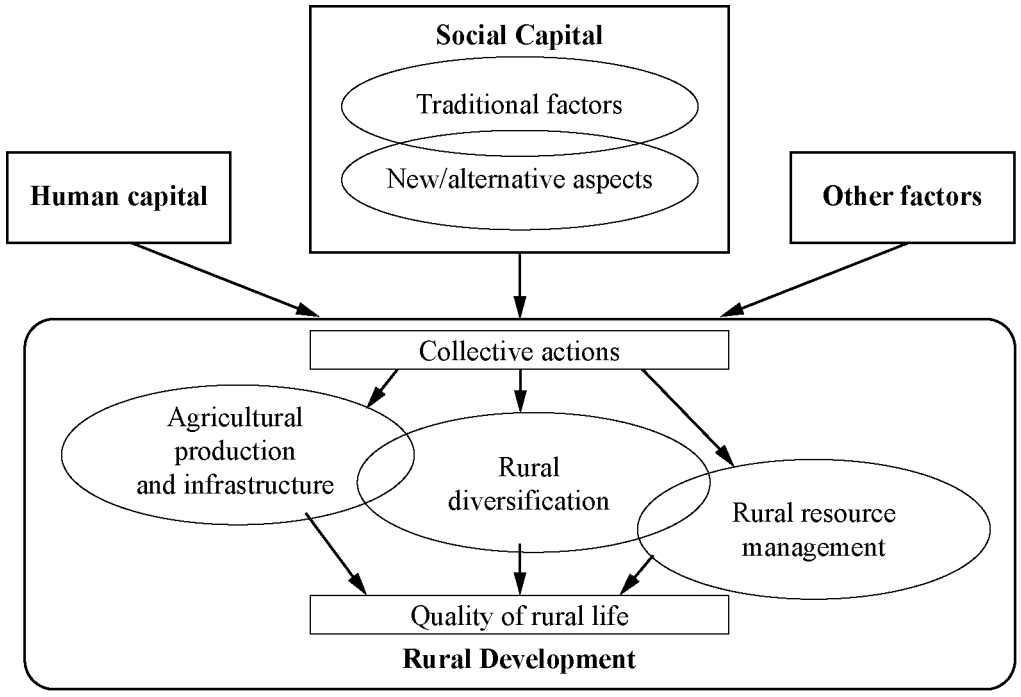


Figure 1. Impact of Social Capital on Rural Development

In relation to rural development, the working team hypothesized several stages and dimensions of rural development. Collective actions by residents affect three dimensions of community activities: agricultural production, rural diversification (new or alternative activities in rural development) and rural resource management. Development of these three dimensions improves the quality of life in a rural community, and a rural economy or society can be fully developed.

**Survey Methods and Procedures**

*Preliminary Survey*

To obtain general information on the study area, the research staff conducted group interviews with local government staff in each municipality and with agricultural extension workers in the study area.

*Community Survey*

To collect information on socio-economic conditions (including agriculture) and community-related organizations and activities, a community-level survey was designed. Many researchers distinguish between two elements of social capital: structural social capital and cognitive social capital. Structural social capital refers to objective and externally observable social structures, such as networks, associations, and social groups. A community-level survey is a good opportunity to grasp the situation of local group activities, which are important indicators of structural social capital. Therefore some

questions directed at the type and level of group activities in rural communities were added to the survey questionnaire. In addition, questions about rural-urban linkage and usage or management of regional natural resources, which are emerging topics in rural area in Japan, were added.

*Household-Level Survey*

The situation of individual farm households cannot be discerned from official statistics and documents. To investigate the performance of farm households, we designed a household-level survey. It contained many descriptive aspects of the farm household economy. In addition, to probe the situation of cognitive social capital, which is a more subjective and intangible element of social capital, we added some questions about the residents' perceptions of their communities. Several sample questions about cognitive social capital,[6] developed by the World Bank Social Capital Initiative, were modified and adopted. Although it was difficult to put every type of question about cognitive SC into the questionnaire, we tried to include as many types as possible.[7]

*Use of Official Statistics and Historical Documents*

MAFF conducts a National Agricultural Census every five years. Data from the census, especially those on community surveys, is very useful for understanding the socio-economic structure of the study area. In addition, MAFF and Chiba Prefecture (the location of the study area) have collected many statistics on the demographic structure, industry, and welfare of the study area. We collected these statistics and used them to develop the survey. We also collected and utilized prefectural or municipal documents on local history, which provided helpful information on the study area.

*Case Study*

In the study area, some new agribusiness and related activities have begun. We conducted informal group interviews with the staff of farmers' markets, rural restaurants, and other activities to understand how these activities were managed. Respondents' firsthand perspectives and comments based on real-life experiences are valuable and helpful for considering concrete policy implications in a study area.

**Data collection**

*Preliminary Survey*

A preliminary survey was conducted from January to March 2004. The working team[8] visited the Awa Agricultural Extension Center of Chiba Prefecture to explain the purpose and plan of the survey, asking the advice of extension staff on narrowing down the survey area and research focus. Their rich knowledge of regional agriculture was helpful for elaborating the design of the questionnaire. With the guidance of the extension

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[6] The World Bank proposes many sample questions concerning social capital, especially cognitive social capital. See Grootaert and Bastelaer (2002) and Grootaert et al. (2003).

[7] World Bank researchers recommend including six types of questions concerning cognitive SC (groups and networks, trust and solidarity, collective action and cooperation, information and communication, social cohesion and inclusion, and empowerment and political action) in a questionnaire. See Grootaert et al. (2003).

[8] The author wishes to express great thanks to the following working staff members for their devoted support during the survey: S. Yokoyama (NARO), H. Ono (NARC), T. Karasaki (National Agro-engineering Institute), S. Shimoura (Chiba Univ.), S. Matsushita (Tsukuba Univ.), M. Takeda and S. Nakajima (Univ. of Tokyo).

personnel, we identified seven municipalities for the survey. To specify the hamlets and households for the survey, we visited each town/village office.

*Selection of Rural Hamlets as Study Sites*

Considering the results of the preliminary survey, the working team selected 56 rural hamlets as concrete study sites for the community-level survey (Table 1).

Table 1. Distribution of Targeted Rural Hamlets in Study Area

| Municipality | Total rural hamlets | Selected hamlets | Returned household questionnaires |
|---|---|---|---|
| Takeyama city | 68 | 12 | 20 |
| Kamogawa city | 88 | 8 | 10 |
| Tomiura town | 12 | 6 | 3 |
| Tomiyama town | 17 | 8 | 12 |
| Miyoshi village | 19 | 10 | 31 |
| Maruyama town | 20 | 6 | 16 |
| Wada town | 15 | 6 | 12 |
| Study area total | 239 | 56 | 104 |

*Source*: Survey data and MAFF Agricultural Census 2000

*Pretest of Community Survey Questionnaire*

In April 2004, the working team conducted a pretest of the community survey in four hamlets by interview. Respondents commented on a few difficulties, including that it took too much time to complete an interview (in one case, over 3 hours), that some words and sentences were ambiguous, and that there was difficulty in giving precise numbers (e.g., the amount of planted area).

*Conduct of Community Survey*

Considering the above comments mentioned, the working team revised the questionnaire, and began the community survey in May 2004. Although the interview method is the best way to collect exact data, this method places a burden on respondents. Therefore, the working team adopted a "drop off, pick up" questionnaire method. It took two weeks to receive a reply on average, so the working team had to continue the survey until October 2004. Finally, 56 questionnaires were collected.

*Conduct of Household Survey*

While conducting the community survey, the working team revised the questionnaire for the household-level survey. After the pretest was finished, the household survey started in November 2004. Research staff visited the same respondents as before, and filled in the questionnaire by interview. The staff then asked respondents to introduce other candidates in the same hamlet, aiming to collect five respondents in each hamlet. As of February 2005, 104 questionnaires were collected (Table 1).

**Analytical methods**

*Qualitative Analysis*

Using official statistics and the responses to the pretest interviews, the author describes the recent situation of socio-economic conditions in the study area. The results are confirmed by a simple frequency distribution of the variables from the community-level survey. Historical analysis based on interviews and documents revealed and confirmed the long-term transformation of the rural economy and society in the study area. Previous studies of social capital were reviewed in order to make the framework of the survey more theoretical and analytical.

*Quantitative Analysis*

On the basis of the survey data and some additional data (mainly from official statistics), the general characteristics of the socio-economic conditions of the study area could be elucidated. Situations of group activities, social networks, and residents' perceptions of their hamlets, which may relate to social capital, were investigated. Several variables showing the performance of socio-economic activities and proxy variables of social capital are compared by statistical methods, such as cross-tabulation analysis and Student's t-test. Finally, through multiple regression analysis, the author tries to estimate the impact of social capital on the development of the study area and farm household economy.

**Constraints on the Survey Process**

In designing and conducting the survey, the working team experienced many problems. Since methods for social capital surveys have not been developed and standardized, it is important for researchers to share experiences in the survey process and consider possible solutions. In this part, the author describes the problems of and constraints on community and household surveys, and suggests some possible solutions.

*Constraints on Resources for Surveys*

Several pilot surveys such as the SOCAT-based survey by the World Bank[9] are well organized large-scale surveys with adequate support of both budget and human resources. But in many cases, researchers have to face the constraints of tight budgets, human resources, and time. They have to coordinate the survey design so as not to exceed the limit of these resources. In the Japanese case, organizing a joint research team between a university and a national institute could secure minimum numbers of research staff.

*Who is the Key Person?*

In a community-level survey, researchers have to find respondents who know much about the situation of the target community. But it takes effort to find such a key person. In this case, the working team visited each municipal office and asked the identity of local leaders. The position of recommended leaders is varied by each municipality.[10] Each position was seen to have both advantages and disadvantages. For example, "the head of a hamlet" is an important position in every hamlet and deserves to be involved. But some

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[9] For example, Grootaert and Bastelaer (2002), Grootaert et al. (2003).

[10] Recommended positions were the head of the hamlet (two municipalities), members of an agricultural committee (three), and the head of the local agricultural association (two).

heads are not farmers, and they are not able to provide adequate answers to agriculture-related questions. Nevertheless, getting advice from municipality officials is a good way to identify a key person. Some officials helped the working team by sending information to respondents in advance so that they could understand the purpose of the survey.

*Problems in Sampling*

One of the fundamental principles of social science is that the research must represent the population being described. In a household survey, it is better to select respondents by random sampling. A complete list of the households in a community is necessary for sampling, but it is difficult to get such a list. Owing to growing concern about protection of personal information, it is difficult to use residents' or voters' records for sampling in Japan.

In this survey, the research staff visited respondents to the community survey again and asked them to introduce other residents in the community who are knowledgeable and would be willing to be interviewed. This approach is known as the "snowball method." It is effective for finding volunteers, but it causes some bias in data collection. In general, respondents were male and elderly. Therefore, introduced candidates were also inclined to be male and elderly. The proportion of female and younger respondents was low in the household survey.[11]

*Design of Questionnaire*

SOCAT and other pilot questionnaires are well organized but contain too much volume for conducting local surveys. Researchers have to check the contents, modify the structure, and reduce the volume of the questionnaire.[12] From the experience of our survey, an interview should last less than 2 hours, and approximately 1 hour is preferable for keeping cooperative relations with villagers.

Not only the volume but also the order of questions is important for conducting a survey smoothly. Related questions should be grouped so that respondents can answer more easily.

Questions for gleaning farming practices should be modified on the basis of local context. In the Japanese case, the working team used the format of the National Agricultural Census for modifying the questionnaire, as Japanese farmers are accustomed to answering that particular census.

Whether or not to allow neutral answers (e.g., "don't know") in the questionnaire is a controversial issue. Japanese people are often said to select neutral answers when they are unsure or don't want to express an opinion. Some researchers prefer to omit such answers so as to obtain clear results. In SOCAT, for example, some questions do not allow neutral choices. But in our survey, some respondents were unable to answer this type of question.[13] So to make the respondents' mental task easier, it is necessary to add a neutral choice, even though ambiguous answers might increase.

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[11] For example, female respondents constituted only 9% of total respondents.

[12] In the Japanese case, 15 pages (community survey) and 10 pages (household survey). The working team tried to reduce the volume as much as possible, but still many respondents complained about the burden imposed by the many questions.

[13] A typical example is a question of social trust ("Can neighborhoods be trusted or not?"). Some respondents said that they were unable to select one or other choice.

When people are asked to evaluate a situation, they are often inclined to give not their actual evaluation but what they think is the desired evaluation. In questions focused on cognitive social capital, researchers should keep in mind this tendency and try to improve the design (wording, list of choices, etc.) of the questionnaire.

Many people also do not wish to divulge, or simply do not know, their exact income. Most farmers do not keep accounts of agricultural transactions, particularly part-time farmers, whose farm income is a minor part of their whole household economy. To grasp the level of annual agricultural output, the questionnaire listed 13 levels of output so any respondent could mark the approximate level easily. The median level was used for statistical analysis. This method overcomes the reluctance to answer questions concerning household economy.

Since the original surveys were developed overseas, problems deriving from language can arise. Confusion can derive from the translation of key terms. For instance, the author's experience shows that "trust" in the Japanese language has a stronger connotation than in English. It is also difficult to translate "cohesion" into a common Japanese term, and the question in Japanese can seem redundant and ambiguous.

These experiences underline the importance of pre-testing. The research team found many mistakes as well as inappropriate design during the pre-test. These findings were useful in restructuring the questionnaire for actual use.

*How to Contact Respondents*

People are becoming increasingly conscious about their privacy. Therefore, respondents' attitudes to surveys have become more cautious. The enforcement of the code for private information protection (in effect in Japan since 2005) and the rapid increase in the number of con artists on the phone also make people nervous. Researchers should therefore carefully explain the purpose of the survey to respondents.

*Other Possible Solutions*

Unstructured group interviews are important in survey design. In the Japanese case, the interviews with extension workers and municipality officials were very effective in revising the contents of the questionnaires into a form more suitable to the local context. Group interviews also provide an opportunity for researchers to become familiar with the actual situation of the target community and "feel" the local context, which cannot be perceived through written information.

## PROFILE OF THE AWA AREA

### Reason for Awa's Selection as Study Area

The author selected the Awa area of Chiba Prefecture for the study. Awa is located at the southern end of the Boso Peninsula, about 100km south of Tokyo. It contains 11 municipalities (two cities, eight towns, and one village). To meet the objectives of the survey, it needed to exclude the influence of the local fishing industry, so the author omitted four coastal municipalities from the study area, leaving the seven listed in Table 1.

Because of the mild climate and accessibility to nearby metropolitan areas, agriculture in Awa has become diversified. Many types of crops are grown and shipped. Several types of agribusiness also have been introduced and are now further developing in

various ways. Judging from the dynamics of farming systems and agribusiness development, Awa is suitable for investigating rural diversification.

In spite of being exposed to urban influences, Awa still retains the characteristics of a rural way of life. Traditional festivals and customs show that various community factors are still functioning there. Therefore, Awa is also a suitable site for investigating the situation of rural communities, including the distribution of social capital.

*Historical Background*

Various crops are grown in Awa, and some have a long cultivation history. For example, the loquat was introduced there more than 250 years ago.[14] Cut flowers and other ornamental plants also have a long tradition. After the opening of the railway in the 1910s, merchants and technicians visited the area and spread floriculture practices.

In addition, Awa is famous as being the foundation of Japanese dairy farming, which saw its first trials there in the 18th century. After the Meiji Restoration, western techniques were introduced, and modern dairy farming began.[15]

Since the 1960s, the Ministry of Agriculture, Forestry and Fisheries (MAFF) has followed an agricultural structure adjustment policy. Under this policy, the expansion of certain types of farming was recommended according to local conditions. Horticulture was a typical example. Since then, many horticultural crops, such as citrus fruit and vegetables, have been grown.

Since the 1970s, domestic tourism has developed in Japan. Being in close proximity to Tokyo and other big cities, Awa receives many urban tourists who come to enjoy short-term stays. The tourism boom has provided opportunities for a variety of agro-related economic activities, such as pick-your-own fruit gardens and farmers' markets.

Under these changes in socio-economic conditions, farmers in Awa have introduced various crops and agro-related activities. Their continuous trial and error has resulted in well-diversified socio-economies in the area.

*Natural and Agricultural Conditions*

Climate*:* The average annual temperature in Tateyama, the biggest city in Awa, is 16.2°C and the annual precipitation was 2,055 mm in 2002. The warm climate enables Awa to raise various types of crops year-round.

Forest Management: Awa is dominated by hilly and mountainous topography covered by forest. Forest management used to be an important part of rural life. But the loss of market value of timber and rapid changes in the rural way of life created a crucial situation for forest management. As shown in Table 2, most respondents feel that forest management has slightly worsened over the previous 10 years. A typical problem caused by poor forest management is crop and residential damage by wild animals.

Irrigation System: Although rainfall is reliable there, Awa sometimes suffers from a shortage of water for irrigation. Because of the lack of big rivers and the area's complicated geography, small-scale irrigation systems have been developed in each hamlet. In general, each hamlet has a water users association. According to the community survey, over half of the hamlets depend on streams or pipelines for irrigation purposes. Many hamlets still use small farm ponds. Therefore the irrigation system can be very

[14] See Chiba Prefecture (1999).
[15] See Chiba Prefecture (2002).

complicated. Nevertheless, over 90% of farms currently have access to irrigation water, and the risk of water shortage has decreased.

Table 2. Evaluation of Forest Management

| Type of ownership | Average evaluation score | |
|---|---|---|
| | Present | 10 years ago |
| Government | 3.7 | 3.0 |
| Prefecture | 2.3 | 2.4 |
| Rural hamlet | 3.2 | 3.0 |
| Private | 3.6 | 3.4 |
| Absentee landlord | 3.7 | 3.6 |
| Others | 4.0 | 4.0 |

*Source*: Community survey
*Note*: Score 1 = "Management is very good" to 4 = "Management is very bad"

*Socio-economic conditions*

Demographic Conditions: Table 3 shows population trends in Awa. The total population has decreased slightly, but it is nothing like the dramatic decrease seen generally in other less-favored mountainous areas in Japan. On the other hand, the proportion of farm households and the number of family members per farm household are gradually decreasing. This tendency indicates that younger people are leaving farm households.

Table 3. Population of Awa Area

| Year | Total population | Total households | Proportion of farm households | Number of family members/farm household |
|---|---|---|---|---|
| 1970 | 169,661 | 42,855 | 37.2% | 4.56 |
| 1980 | 165,911 | 46,785 | 29.5% | 4.24 |
| 1990 | 160,556 | 50,656 | 24.0% | 4.04 |
| 2000 | 150,357 | 54,327 | 18.1% | 3.81 |

*Source:* National Demographic Survey

Social Infrastructure: Most households have drinkable tap water. Municipalities take care of most main roads, while residents (farmers and neighbors) are responsible for the maintenance of farm roads. Major public facilities (e.g., schools and hospitals) have been constructed in most municipalities. Therefore, basic social infrastructure and services are provided to most residents.

Employment Structure: In Awa, there are few farm households in which all adult family members are engaged only in farming. Many family members work in the non-agricultural sector. According to the community survey, two-thirds of non-farmers work for private companies, and the rest are engaged in the public sector or operate their own small businesses. Their workplace is not far from home, with most having less than a 30-minute commute. But the recent depression in the Japanese economy has caused the bankruptcy of some local companies and brief shutdowns of some area factories.

Therefore, non-agricultural job opportunities have been decreasing in the Awa area, and perhaps decreasing the non-agricultural income in farm households.

*"Yoriai" General Meeting: Autonomy and Decision-Making in Rural Hamlets*

In most rural hamlets in Japan, a general meeting called the *Yoriai* is held regularly. The smallest official units of authorized community decision-making in Japan are the *shi* (city), *machi* (town), and *mura* (village). These municipalities are composed of several hamlets. Therefore, the general meeting of each hamlet is a kind of informal and voluntary association. Nevertheless, most households attend the *Yoriai*. Some kinds of community activities, such as the management of community resources, are conducted according to the decisions of the *Yoriai*. The municipal offices signify *Yoriai* meetings as an important venue for conducting community activities, and often use them as a channel of communication between local government and residents. Therefore, the *Yoriai* functions as an important unit of decision-making and helps maintain the autonomy of rural hamlets. The general characteristics of the *Yoriai* are as follows:[16]

- All member households should attend the meetings.
- Final decisions are made with every member's consent, which can take a long time.
- The main topics of meetings are the management of common properties, planning of rural events, and coordination of land and water use in agriculture.

But the modernization of rural life and the increase of demographic mobility (especially the declining number of younger residents and fewer opportunities to attend community activities) have changed the characteristics of the *Yoriai*. The results of the community-level survey indicate this tendency. For example, the frequency of meetings that all members attend is not high. The survey found that the average number of meetings all members attend per year is 3.4, which was lower than expected.[17] This result indicates that meetings among selected members are often held in many hamlets. The community survey also revealed a difference between the norm and the actual selection of attendants from households. Many hamlets responded that "any one member of each household" could attend the *Yoriai*. But according to the comments during the survey, the household heads usually attend. Therefore, most attendants are usually older men, while women and young people have fewer opportunities to attend. Considering the situation mentioned above, the *Yoriai* could be an indicator of social capital, but it is inappropriate to use it as the only indicator. Other group activities should be taken into due consideration as indicators of social capital.

**Farming System**

*Rice farming*

Rice is one of the most important crops in Japanese agriculture, but most paddy fields are owned by small-scale and part-time farm households. In addition, overproduction has been a serious problem for nearly 40 years. In rural communities, coordination among

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[16] See Torigoe (1985).

[17] According to the National Agricultural Census 2000, over half of the hamlets responded that the meeting was held almost monthly. But on the census survey, meetings by selected members are also counted.

farm households for rice production is very important. Therefore, rice farming has a strong relationship to community management, especially at the level of rural hamlets.[18]

The national government has implemented an agricultural infrastructure development program to improve the productivity of rice farming. In the implementation and enforcement of land improvements, the Land Improvement Act requires agreement of two-thirds of authorized persons (land owners and leaseholders).[19] However, in practice, no project starts until nearly one hundred percent agreement is attained so as to avoid conflict among community members. As most farmland improvement projects are initiated by government, local government officials make every effort to gain agreements through persuasion and negotiation with local people. This process often takes quite a long time, and both formal and informal meetings at the community level play crucial roles. It takes a long time to complete infrastructural developments such as land consolidation and construction of irrigation and road networks. According to the community survey, approximately 80% of paddy fields were improved through land improvement projects, and many farmers reported that working hours for rice farming had decreased. But the yield of rice in Awa has not been improved much. The low yields seem to derive from the soil and climatic conditions. It is relevant that most of the farmers have little incentive to improve rice productivity, since they grow rice mainly for home consumption and not for commercial sale.

Overproduction of rice has forced every rural community to set aside land. In some rural communities, hamlets have an important role in this work. But the community survey revealed that the proportion of hamlets in which residents jointly set aside land is only 25%, though almost all farmers grow rice. This low rate of collaboration in rice production may reflect the fact that the importance of rice in the rural economy and community activities has been declining as agriculture has diversified in the area.

*Other Crops and Livestock*

As mentioned above, various horticultural crops including vegetables, fruit, and flowers have long been grown in Awa, as is described in detail in the next section.

Most livestock farmers keep dairy cows. The average number of cows per farm household is approximately 30 to 50. This is almost on the same scale as the average herd size in Chiba Prefecture. But the household survey revealed that many farms have quit dairy farming recently. The main reasons are the low price of milk and the small management scale. In addition, dairy farmers today face the additional burden of proper treatment of cow manure. Since the enforcement of the nation's new waste disposal regulations, every livestock farm is forced to treat excreta in a proper waste treatment plant. This requires additional investment, which is unaffordable for small-scale and elderly farmers.

*Agricultural Marketing*

In general, the agricultural cooperative in Japan (JA) takes the initiative in collection, transportation, price negotiation, and other related activities. But in Awa, the cooperative's activities are relatively limited. Many farmers ship their products by themselves or through

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[18] For the relationship between rice farming and community activities, see the case study based on census data by Ando (2002).

[19] See The Society of Agricultural Extension Service (1993).

voluntary groups. On the other hand, in response to growing consumer concerns about product quality and safety, small-scale and diversified marketing opportunities such as farmers' markets are widening, in which small lots of various products are acceptable.

**Rural Diversification in Awa**

*Diversification of Agriculture*

As mentioned earlier, many varieties of crops have long been cultivated along with dairy farming in Awa. Table 4 shows the components of agricultural output by commodity in terms of value. Note the continuous decrease of the proportion of rice output. Although rice is cultivated by most farm households, its planted area per household is relatively small, and considerable amounts of rice are consumed at home. Therefore, the importance of rice production in the rural economy has been decreasing. On the other hand, horticultural crops account for about half the total output. Flowers in particular have increased in recent years. Floriculture not only contributes agricultural income, but also creates a beautiful landscape and indirectly contributes to the development of tourism.

Table 4. Ratio of Agricultural Output by Commodity in Awa

| Year | Total output (million yen) | Commodity | | | | | |
|---|---|---|---|---|---|---|---|
| | | Rice | Vegetables | Fruit | Flowers | Livestock | Others |
| 1971 | 16,110 | 25.0% | 21.2% | 5.8% | 10.5% | 34.5% | 2.9% |
| 1981 | 33,880 | 21.4% | 17.5% | 4.1% | 15.1% | 40.0% | 1.9% |
| 1991 | 38,310 | 16.5% | 17.7% | 4.4% | 29.7% | 30.2% | 1.5% |
| 2001 | 32,730 | 14.1% | 14.1% | 3.1% | 32.5% | 27.0% | 1.3% |

*Source*: Chiba Prefecture

Many kinds of horticultural crops are grown, but the production area of each crop is usually small, distributed among one or two municipalities (See Table 5). An exception is rape bud,[20] which is grown all over Awa in winter as a secondary crop after rice. Other important horticultural crops and their production areas (municipalities) are loquats (Tomiura and Tomiyama), mandarins (Miyoshi), strawberries (Tateyama), and carnation flowers (Wada and Tomiura). Dairy farming accounts for most livestock output. Although the number of farmers is decreasing, dairy farming still retains an important position in the region's agriculture.

Traditionally farmers have cultivated various crops in dispersed small plots and raised small numbers of domestic farm animals. This subsistence-oriented peasant farming system was rational under high production risks. However, technology has reduced production instability, while local markets have been integrated by modern transportation systems, resulting in more commercialized agriculture under competitive markets. Concentration on fewer crops suitable for local production and market conditions to achieve efficient large-scale farming was a major nationwide policy target from the early 1960s to the late 1980s. The agricultural structure in Awa became disadvantaged in this

[20] Rape bud is the bud of rape blossoms. It is harvested before blooming for food.

context. The role of agriculture in the region declined drastically after that. However, its role has been reconsidered in a new perspective since the 1990s. Environmentally friendly production systems are now in demand, and consumers want more high-quality and specialty products. In this sense, Awa still has potential for providing various products aimed at consumers' needs.

Table 5. Main Agricultural Products in the Study Area (2000)

| Municipality | Total agricultural output (million yen) | Main products / Proportion to total output (%) | | | | | |
|---|---|---|---|---|---|---|---|
| | | No. 1 | | No. 2 | | No. 3 | |
| Tateyama city | 7,410 | Rice | 15.2 | Milk | 11.6 | Broiler | 9.2 |
| Kamogawa city | 6,370 | Rice | 28.9 | Milk | 18.5 | Lily | 5.8 |
| Tomiura town | 2,190 | Loquat | 24.7 | Rape bud | 15.2 | Rape bud | 11.9 |
| Tomiyama town | 2,800 | Milk | 45.4 | Rape bud | 8.9 | Rice | 8.6 |
| Miyoshi village | 2,620 | Milk | 29.0 | Rice | 15.6 | Rape bud | 11.1 |
| Maruyama town | 3,800 | Milk | 20.8 | Rice | 13.7 | Rape bud | 6.6 |
| Wada town | 2,670 | Milk | 31.8 | Carnations | 14.6 | Rice | 8.7 |
| Awa area total | 34,940 | Milk | 18.7 | Rice | 14.3 | Rape bud | 6.8 |

*Source*: Statistics by Chiba Prefecture
*Note*: Ratio is evaluated by sales.

*Diversification of Farm Household Economy*

Table 6 shows the general situation of farm households in Awa, compared with the average in Japan. Although these figures show that Awa farm households are slightly more engaged in agriculture as a major income source than the average in Japan, most agriculture in Awa is carried out by part-time farm households. The head of the household usually works outside the farm. Therefore, the elderly and women farmers are engaged mainly in farming.

The high proportion of part-time farm households indicates the dependence of household income on non-agricultural sectors. In many cases, the head of household (usually male) or his adult offspring work in offices and factories close to home. But the recent depression of the Japanese economy has negatively affected the regional economy of Awa. Some factories have reduced or stopped operation, and job opportunities have been decreasing. Under these situations, diversified farming and agricultural marketing have been re-evaluated in terms of employment and income generation. In addition, many city workers who had earlier left their rural homes are now returning at the age of 60[21] and

[21] Often referred to as the "Baby Boomer Generation." They are the biggest cohort in the Japanese population structure, and are expected to enter the agricultural sector. Sixty years old is the expected age of retirement in many Japanese enterprises.

are taking up farming again. Some are eager to enter new types of agribusiness, as described below.

Table 6. Data on Farm Households in Awa

| | Awa | All Japan |
|---|---|---|
| Total No. of commercial farm households | 7,267 | 2,336,908 |
| Percentage of: | | |
| Business farm h/h | 27.8% | 21.4% |
| Full-time farm h/h | 27.6% | 19.8% |
| Part-time farm h/h I | 16.6% | 15.0% |
| Part-time farm h/h II | 55.8% | 66.8% |
| Part-time farm h/h II in which household head is engaged in farming | 15.2% | 14.8% |

*Source*: Agricultural census 2000

*Notes*:

1. A business farm h/h is a household that earns its main income from farming, in which the main cultivator is <65 years old and works >60 days in farming.
2. Part-time farm h/h I is a household that earned its main income from farming. Part-time farm h/h II is a part-time farm h/h other than h/h I.

**Introducing Agribusiness**

*Development of Direct Marketing Channels*

Since the 1980s, facilities for direct marketing of agricultural products and processed foods have been increasingly prevalent in Awa. The number of these facilities has gradually increased in the last 10 years (Table 7). As various fruits and flowers can be grown in Awa, pick-your-own farms have become popular. Many tourists visit these farms to pick flowers, strawberries, mandarin oranges, and loquats. Pick-your-own farms extend over most of Awa. Farmers' markets have also increased. In Miyoshi and Tomiyama, farmers' markets have grown into large-scale, complex facilities, in which local cultural events are held, and many farmers bring a variety of products. The annual turnover of each market exceeds 100 million yen. Therefore, farmers' markets have developed as an economically important marketing channel. Medium- and small-scale markets have also emerged around Awa, and provide fresh products for consumers. Some women farmers' groups have founded food processing facilities. Members make various processed foods such as fruit jam, soybean curd, rice cake, and pickles. Most are traditional home-made foods. These products are sold mainly at farmers' markets. These activities have created a new marketing channel and give residents an opportunity to reconsider the value of traditional foods in rural areas.

Table 7. Number of Facilities Related to Direct Marketing in Awa (2002)

| Type of facility | Number |
|---|---|
| Pick-your-own produce service | 94 |
| Farmers' markets (permanent) | 37 |
| Processing facilities (including restaurants) | 31 |
| Small-scale morning markets | 5 |

*Source:* Survey by Awa Agricultural Extension Center

These activities have had various effects on participant farmers. First, they have created new direct-marketing channels from farms to consumers. Even though the management scale of each activity is not large, these activities give farmers a source of income. Second, they give many farmers various opportunities to conduct community-related business. For example, farmers' markets enable both large-scale and small-scale farmers to sell local products. Various farmers (including part-time, elderly, women, or new residents) participate in the activities and enjoy both economical and social benefits. Third, the new agribusiness has gradually constructed a rural-urban linkage through marketing activities. Since many urban residents visit the markets, farmers learn the needs of consumers directly, and can improve growing or processing methods. Urban people also realize the value of rural communities through direct and intimate communication with farmers at the site. As a result, it is probable that the development of direct marketing activities has contributed greatly to the increase in the number of visitors. The total number of tourists visiting Awa slightly increased from 1.2 million in 1990 to 1.3 million in 2000. But in some municipalities where relatively few tourists once visited, the increase has been dramatic. For example, visitors to Miyoshi increased from less than 100,000 in 1990 to 450,000 in 2000.[22]

*Linking Agribusinesess*

As many types of agribusiness activities were founded, some groups began to exchange information and establish linkages among them. In Awa, two typical examples are described.

The first example is the formation of an agribusiness network in Miyoshi. Several groups were separately founded for the purpose of agribusiness in the early 1990s. They had no relationship with each other at the time, even though they shared common interests. But in the late 1990s, spontaneous and informal meetings were often held among groups, and members began to exchange information and share common issues. As a result, the following activities were started (Figure 2):

- Establishment of farmers' association for joint negotiation with travel agencies to improve customer management of pick-your-own gardens.
- Accumulation of agribusiness facilities related to local foods in a *michi-no-eki*.[23]
- Continuous support from the village office.

In Miyoshi, the relationship among agribusiness groups is horizontal. Therefore, there seems to be no strong leader to lead groups in a particular direction. But continuous discussion has resulted in the gradual development of member groups' spontaneous and original strategies.

Another example is seen in Tomiura, where a *michi-no-eki* was also constructed. In contrast to the case in Miyoshi, the town office took the lead role from the planning stage. A third-sector company, funded completely by the town office, was founded to manage *michi-no-eki*. The staff of the *michi-no-eki* draws up new agribusiness projects (pick-your-own, processing, etc.) and invites local farmers to participate in those projects. In

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[22] See Sakurai (2002)

[23] *Michi-no-eki* literally means "railway station on the road" in Japanese. The former Ministry of Construction introduced the idea, and many facilities have been constructed by municipalities. At typical *michi-no-eki* roadside facilities, a rest stop for motorists, an information booth, a souvenir shop, and a restaurant are usually operated.

Tomiura, the relationship among agribusiness groups seems to be more vertical. But several cultural events held by the *michi-no-eki* give local residents the opportunity to understand the strategy and mitigate the negative aspects of the vertical relationship.

Since the agribusiness activities are usually locally based, social aspects seem to help the formation of networks among groups. The difference between Miyoshi and Tomiura is a good example of the process of network formation, but deeper consideration needs more data about community factors (including social capital).

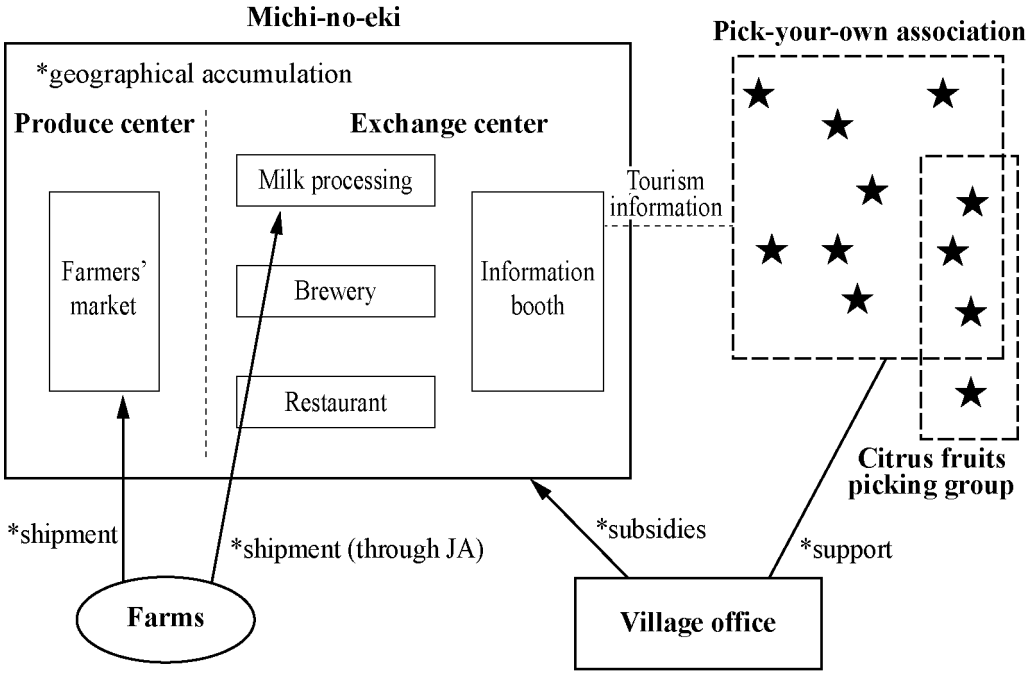


Figure 2. Network Formation of Agribusiness in Miyoshi Village

## RESULTS OF SURVEYS AND DISCUSSIONS

### Outline of Community-Level Survey

*Movement of Residents in Rural Hamlets*

Table 8 shows the average number of households that moved out of or into each rural hamlet surveyed during the last 10 years. More households moved in than moved out. An increase in demographic mobility is apparent in the study area. Over half of the residents who moved into hamlets were newcomers from a town far away ("I-turn" migration). On the other hand, relatively few people moved back to their home hamlet ("U-turn" migration).[24]

[24] "J-turn" refers to people who move into the community from neighboring towns.

Table 8. Number of Transition Households in Past 10 Years

| | Average | Maximum |
|---|---|---|
| Moved out | 3.1 | 22 |
| Moved in | 5.4 | 27 |
| I –turn | 3.2 | 22 |
| J- turn | 1.8 | 18 |
| U-turn | 0.4 | 4 |

*Source:* Community survey data

*Evaluation of Situation in Hamlets*

Table 9 lists recent situations in target hamlets concerning typical recent issues in rural society. Higher scores indicate improved satisfaction levels of respondents. Many respondents evaluated the present state of their hamlets positively in general. But they also evaluated some issues negatively, such as the situation of the regional economy, job opportunities, abandoned farmland, and forest management. Economic conditions and the management of resources are common problems faced by remote areas in Japan; respondents felt that these situations had been getting worse in the past 10 years. This symptom indicates that rural residents are worried about the future of their hamlets.

Table 9. Evaluation of Present and Past Situation in Hamlets

| Issue | Present state | Compared to 10 years ago |
|---|---|---|
| Environmental problems caused by livestock | 2.4 | 2.2 |
| Abandoned farmland | 2.2 | 1.6 |
| Forest management | 2.2 | 1.7 |
| Landscape of the hamlet | 2.8 | 2.0 |
| Access to primary school | 2.8 | 2.2 |
| Facilities for sports and cultural activities | 2.7 | 2.1 |
| Elderly care | 2.6 | 2.3 |
| General situation of regional economy | 2.1 | 1.5 |
| Job opportunities | 2.1 | 1.6 |
| General evaluation of living conditions | 2.4 | 1.9 |

*Source*: Community-level survey

*Note*:

Present state: 1 = very bad, 2 = bad, 3 = no problem

Compared to 10 years ago: 1 = worse, 2 = no change, 3 = improved

*Eco-Friendly Farming*

Since environmental problems became a great matter of concern, MAFF has recommended since late 1990s that farmers adopt eco-friendly farming practices. Consumer demand for eco-friendly agricultural products has also been increasing. Therefore, the development of eco-friendly farming is expected to diversify and vitalize the rural economy.

According to the survey, 39 hamlets (69.6%) out of 56 have adopted eco-friendly farming. The spread of each activity is shown in Table 10. As many dairy farms are located in the area, activities related to livestock farming (manure treatment and compost application) are often adopted, and the reduced use of agricultural chemicals follows. But labor-intensive practices such as organic farming have not been diffused yet.

Table 10. Activities of Eco-Friendly Farming

| Activities | Hamlets practicing the activity | Proportion (%) |
|---|---|---|
| Soil enrichment with manure | 34 | 60.7 |
| Reduced use of agricultural chemicals: rice | 25 | 44.6 |
| Proper manure treatment | 21 | 37.5 |
| Reduced use of agricultural chemicals: others | 18 | 32.1 |
| Organic farming | 13 | 23.2 |
| No chemical fertilizers | 11 | 19.6 |
| Cooperation between arable and livestock farming | 9 | 16.1 |
| Others | 2 | 3.6 |

*Source*: Community survey data

*Introducing Value-Added Products*

To attract consumer attention, many farmers are trying to produce value-added products. The activities directed at value-added products could be a direct indicator of the development of local agribusiness. According to the survey, 25 hamlets (44.6%) were engaged in some activities directed at value-added products (Table 11). But compared with eco-friendly farming, adoption of such activities has been limited. The reason seems to be the difficulty in searching for buyers and the inexperience of farmers in sales promotion.

Table 11. Activities to Introduce Value-Added Products

| Activity | Hamlets practicing the activity | Proportion (%) |
|---|---|---|
| Using regional or unique trademarks | 12 | 21.4 |
| Contract farming to retailers | 9 | 16.1 |
| Organic farming and marketing | 8 | 14.3 |
| Chemical-reduced farming and marketing | 8 | 14.3 |
| Regional food processing | 8 | 14.3 |
| Growing high-quality products | 5 | 8.9 |
| Contract farming with manufacturers | 4 | 7.1 |
| Others | 4 | 7.1 |

*Source*: Community survey data

*Conservation of Natural Habitats and Cultural Heritage*

As most of the surrounding nature, including forests, is secondary growth, proper resource use and management have contributed to the conservation of precious natural habitats and cultural heritage. The existence of natural habitats and cultural heritage sometimes gives opportunities for supporting collective activities by residents and people interested in conservation.

Table 12 shows the distribution of conservation activities in the study area. Only festivals and events are preserved in many hamlets. Some festivals have been restored after having been abandoned long ago. Although many residents point out the difficulty of finding successors in younger generations, festivals are still important social events and attract people. On the other hand, only a few examples of the conservation of natural habitats were found.

Table 12. Activities for Conservation of Natural Habitats and Cultural Heritage

| Rural resources for conservation | Hamlets practicing the activity | Proportion (%) |
|---|---|---|
| Traditional festivals or events | 37 | 66.1 |
| Rivers or streams | 7 | 12.5 |
| Traditional architecture or streetscapes | 4 | 7.1 |
| Swamps or farm ponds | 3 | 5.4 |
| Terraces (paddy fields) | 2 | 3.6 |
| Village forests | 2 | 3.6 |
| Others | 11 | 19.6 |

*Source*: Community survey data

*Rural-Urban Exchange*

In the past couple of decades, many researchers and practitioners have pointed out the importance of rural-urban linkages for sustainable development of both rural and urban economies. The number of visitors from urban areas has gradually increased. In response, various activities related to rural-urban exchange have started. These activities include agribusinesses such as farmers' markets and pick-your-own produce farms.

Table 13 shows the activities related to rural-urban exchange reported in the study area. The most common activity is farmers' markets. Farmers' markets are found in almost all of Awa, and various types of farmers participate. Farmers' markets provide many farmers with supplemental income and close contact with consumers. Pick-your-own produce farms constitute another important agribusiness and attract many tourists. The mild climate and natural beauty of Awa are advantages for arranging various types of pick-your-own sites. On the other hand, educational and participative programs are conducted in a few hamlets. The many effects of these activities have been highlighted, but it will take time to diffuse them.

Table 13. Activities Related To Rural-Urban Cooperation

| Activities | Hamlets practicing the activity | Proportion (%) |
|---|---|---|
| Farmers markets | 35 | 62.5 |
| Pick-your-own produce farms | 16 | 28.6 |
| Educational programs about rural life | 8 | 14.3 |
| Direct marketing to consumers | 6 | 10.7 |
| Farm inns | 4 | 7.1 |
| Cultural exchange by events | 4 | 7.1 |
| Forest management | 4 | 7.1 |
| Voluntary farming | 3 | 5.4 |
| International exchange | 2 | 3.6 |
| Others | 4 | 7.1 |

*Source*: Community survey data

*Rural Community Agreement*

In 2002, MAFF started a direct payment program for rural community revitalization and proper management of rural resources. Eligible community groups in hilly and mountainous areas can receive direct payments. But it is necessary to draw up a formal "rural community agreement" signed by most residents in order to get the authorization from the municipality. Therefore, the existence of an agreement indicates a high level of social capital, especially bonding SC. Twenty-one hamlets (37.5%) have already established such an agreement among residents. The objectives of agreements are, for example, maintenance of paddy terraces and crop rotation.

*Group Activities in Rural Communities*

The general meeting is a multi-purpose and formal decision-making body in rural hamlets. But there are many other voluntary groups based on community ties, such as elderly peoples' associations and young men's associations. Both functional groups, which are responsible for indispensable regional activities, and informal groups related to hobbies and religious activities exist.[25] To understand the structural social capital of the study area, we need to consider the distribution and level of various group activities. Table 14 lists typical local groups in the study area. As the sphere of each group is not limited to the territory of the hamlet, distribution by geographical coverage is also shown. The level of activity is based on respondents' answers.

The main findings are as follows:

- The number of (formal) women's or young men's associations have decreased considerably. Elderly peoples' groups and children's associations remain but the membership has been extended to municipality level owing to population decline.
- Functional groups are found in most hamlets, but the sphere of the groups exceeds the territory of the hamlet. These groups have a relationship with the municipal administration.

[25] For information concerning the variety of regional groups in Japan, see Torigoe (1985).

- In Awa, a traditional group activity called *Koh* remains in effect, and its sphere of activity is concentrated tightly within the hamlet.
- Levels of activities are around 2.0 (=active) in most activities. But the score is relatively low in women's associations and young men's associations.

**Impact of Structural Social Capital on Rural Activities**

The following analyzes the impact of structural social capital on the performance of rural activities, including rural diversification. To standardize the data on the activities of regional groups in each hamlet, the author used the score of the level of group activities in each hamlet[26] as the indicator of structural social capital. This score is an aggregate of the activity level score of each group evaluated by respondents.

To measure the performance of rural activities, the following topics were selected:

*a) Agricultural production*
- Coordination of set-aside program
- Evaluation of irrigation system management

*b) Rural diversification*
- Introduction of eco-friendly farming
- Introduction of value-added products
- Conduct of activities related to rural-urban exchange

*c) Evaluation and performance of rural resource management*
- Evaluation of forest management
- Situation of abandoned farmland
- Evaluation of landscape around the hamlet
- Countermeasures to mitigate the damage by wildlife
- Conduct of activities to conserve natural habitats and cultural heritage
- Conclusion of rural community agreement

*d) Quality of rural life*
- Evaluation of elderly care
- Generic evaluation of the quality of life in the hamlet (compared with the quality 10 years ago)

All hamlets were divided into two categories according to the level of performance or the situation in each topic. For example, in the coordination of set-aside programs, hamlets were divided into Group A (coordinated) or Group B (not coordinated). Then the average scores of each social capital indicator were calculated, and the author compared the scores between categories. Finally, to test the statistical significance of the difference between scores, Student's t-test was conducted.

[26] The classification of the level of group activities is shown in a note to Table 14.

Table 14. Distribution of Group Activities

| Groups | No. of hamlets where group is active | Propor-tion | Sphere of activities | | | | | Level of activity |
|---|---|---|---|---|---|---|---|---|
| | | | Ham-lets | Former munici-pality | Muni-cipality | Beyond munici-pality | Un-known | |
| Elderly peoples' associaton | 45 | 80.4% | 30 | 7 | 5 | 2 | 1 | 2.0 |
| Women's association | 16 | 28.6% | 14 | 2 | 0 | 0 | 0 | 1.4 |
| Young men's association | 24 | 42.9% | 21 | 1 | 2 | 0 | 0 | 1.5 |
| Children's association | 45 | 80.4% | 34 | 4 | 7 | 0 | 0 | 1.7 |
| PTA (primary schools) | 51 | 91.1% | 4 | 24 | 20 | 0 | 3 | 1.9 |
| PTA (secondary schools) | 50 | 89.3% | 1 | 13 | 32 | 0 | 4 | 1.9 |
| Sports clubs for children | 29 | 51.8% | 0 | 9 | 14 | 2 | 4 | 2.1 |
| Fire brigades | 53 | 94.6% | 6 | 22 | 20 | 3 | 2 | 2.2 |
| Hobbyist associations | 17 | 30.4% | 4 | 2 | 9 | 1 | 1 | 2.1 |
| *Koh* (traditional group) | 48 | 85.7% | 47 | 1 | 0 | 0 | 0 | 1.9 |
| Others | 8 | 14.3% | 7 | 1 | 0 | 0 | 0 | 1.8 |

*Source*: Community survey data
*Note*: Level of activity is the average score given by respondents: 1 = Not active, 2 = Active, 3 = Very active

The results are presented in Table 15. Firstly, no significant difference in the level of social capital could be found in agricultural production or infrastructure management. Secondly, in hamlets where programs related to rural diversification were introduced, the score was significantly higher than that of hamlets where programs were not introduced. Thirdly, in the evaluation and conduct of rural resource management, only the rural community agreement shows a significant difference in activity level between hamlets where the program has been concluded and hamlets where it has not been concluded. Fourthly, no significant difference could be found in the quality of rural life in general.

Finally, there are four cases in which the t-test shows a statistically significant difference, and all are related to new types of rural activities introduced in recent years. These four activities are contributing to diversified rural development.

Table 15. Comparison of Performance of Rural Activities and Social Capital Indicators

| Dimension of performance | Score of level of group activities | | | |
|---|---|---|---|---|
| | Performance | No. of hamlets | Average | T-test |
| a) Agricultural production and infrastructure | | | | |
| Coordination of set-aside program in the hamlet | Conducted | 13 | 8.5 | |
| | Not conducted | 42 | 7.6 | |
| Irrigation system management | Improved | 22 | 8.0 | |
| | No change / worsened | 29 | 7.7 | |
| b) Agricultural and rural diversification | | | | |
| Introduction of eco-friendly farming | Introduced | 38 | 8.5 | * |
| | Not introduced | 17 | 6.4 | |
| Introduction of value-added products | Introduced | 19 | 9.2 | * |
| | Not introduced | 36 | 7.1 | |
| Activities related to rural-urban exchange | Conducted | 40 | 8.4 | * |
| | Not conducted | 15 | 6.3 | |
| c) Rural resource management | | | | |
| Evaluation of forest management | No problem | 26 | 7.1 | |
| | Bad / very bad | 29 | 8.4 | |
| Situation of abandoned farmland | No problem | 38 | 7.7 | |
| | Bad / very bad | 17 | 8.2 | |
| Evaluation of rural landscape | No problem | 46 | 7.9 | |
| | Bad / very bad | 9 | 7.1 | |
| Taking measures to mitigate damage by wildlife | Conducted | 24 | 8.7 | |
| | Not conducted | 31 | 7.1 | |
| Conservation of natural habitats and cultural heritage | Conducted | 48 | 8.1 | |
| | Not conducted | 7 | 5.9 | |
| Rural community agreement | Conducted | 21 | 9.4 | ** |
| | Not conducted | 34 | 6.9 | |
| d) Quality of rural life | | | | |
| Evaluation of elderly care | No problem | 37 | 7.4 | |
| | Bad / very bad | 17 | 8.1 | |
| Total quality of daily life in the hamlet (compared with the quality 10 years ago) | No change | 43 | 7.6 | |
| | Worsened | 10 | 8.9 | |

*Source*: Community survey data
Note: Level of significance (t-test): ** 5% *10%

Considering these findings, the author estimates that structural social capital is being accumulated in hamlets where various community activities are conducted. In addition, social capital has an impact on new types of rural activities in Awa, where traditional factors remain. How the historically accumulated social capital affects the new activities will be considered later in this article.

**Distribution of Social Capital from Household Survey**

Social capital cannot be grasped only through a community survey. In particular, cognitive social capital can be grasped only by a household-level survey, because it is related to the respondents' perceptions and attitudes toward trust, solidarity, values, and norms. In addition, network formation, which is one dimension of structural social capital, can be assessed from a survey of individuals. The distribution of social capital grasped through the household survey is as follows.[27]

*Cooperation*

Table 16 shows the willingness of respondents to participate in community activities that seem to be beneficial to most residents but not necessarily beneficial to the respondent him/herself. Most respondents answered that they would participate in the activity. On the related question about the willingness to donate, the result was almost the same. Most residents in Awa seem to want to participate in collective action if it is signified as useful for community development.

Table 16. Willingness to Participate in Community Activity Not Necessarily Beneficial to Respondent

| | Frequency | Proportion (%) |
|---|---|---|
| Never participate | 0 | 0.0 |
| Likely not | 1 | 1.0 |
| Don't know | 4 | 3.8 |
| Might participate | 47 | 45.2 |
| Definitely would participate | 52 | 50.0 |
| Total | 104 | 100.0 |

*Source*: Household survey data

*Social Trust and Social Cohesion*

Table 17 shows respondents' general trust within neighborhoods. Over 70% of respondents answered that their neighbors can be trusted, but some did not agree.

[27] Many researchers have categorized social capital into several dimensions. The author also relies on the grouping mentioned in previous surveys such as Grootaert and Bastelaer (2002), Grootaert et al. (2003), and Ishida and Yokoyama (2004), but cannot explain all dimensions.

Table 17. Social Trust of Respondents

| | Frequency | Proportion (%) |
|---|---|---|
| People can be trusted | 79 | 76.0 |
| You can't be too careful | 22 | 21.2 |
| D.K. & N.A. | 3 | 2.8 |
| Total | 104 | 100.0 |

*Source*: Household survey data

Social trust is one dimension of "bonding social capital,"[28] which ties together people living in the same community and sharing some demographic characteristics. Another way to grasp bonding social capital is evaluating residents' awareness of social cohesion in the community. Table 18 shows respondents' assessment of the extent of differences among residents' characteristics in general. The range of responses is wider than the results of social trust. The results indicate that social cohesion has been loosening in some hamlets and residents also have become aware of the change.

Table 18. Social Cohesion Within the Hamlet
*(Q: To what extent do any such differences characterize your hamlet?)*

| | Frequency | Proportion (%) |
|---|---|---|
| To a very great extent | 12 | 11.5 |
| To a great extent | 29 | 27.9 |
| Neither great nor small extent | 24 | 23.1 |
| To a small extent | 31 | 29.8 |
| To a very small extent | 8 | 7.7 |
| Total | 104 | 100.0 |

*Source*: Household survey data

*Perceived Reliability of Public Officials*

The extent of perceived reliability of public officials affects the conduct of community activities when the community has problems and needs assistance from public organizations that are linked vertically. Table 19 shows attitudes toward the reliability of public officials who are involved in community activities or daily rural life. In general, many respondents trust public officials to some extent. But the variance of scores in the evaluation of officials directly related to agriculture (extension workers and cooperative staff) is larger than that of other types of officials, indicating that some respondents are not satisfied with the performance of such officials.

[28] See Grootaert et al. (2003).

Table 19. Reliability of Officials
*(Q: To what extent do you trust ...?)*

| | Average score | Variance |
|---|---|---|
| Municipal officials | 4.1 | 0.84 |
| Police officers | 3.9 | 1.10 |
| Agricultural extension workers | 3.7 | 1.37 |
| Agricultural cooperative staff | 3.5 | 1.25 |
| Public officials (overall) | 3.4 | 0.70 |

*Source*: Household survey data
*Note*: 5 = Can be trusted to a very great extent
1 = Can be trusted to a very small extent

*Network Formation*

The research staff asked respondents to call to mind five important people (friends or acquaintances) in their daily life and to specify their gender, age (cohort), residence, and occupation. The score of network diversification was calculated.[29] The result is shown in Table 20. Respondents' human networks are concentrated within the same gender. On the other hand, acquaintances are spread across wide areas and the networks seem to be extending geographically.

Table 20. Extent of Respondents' Human Network (Average)

| Dimension | Score |
|---|---|
| Gender | 0.48 |
| Cohort (age) | 1.17 |
| Residence | 1.85 |
| Occupation | 1.27 |

*Source*: Household survey data
*Note*: Scores were standardized using the standard deviation.

*Information Access*

Most respondents rely heavily on mass media for information concerning daily life, education, and political and economic issues. But concerning agriculture their reliance on radio and television was low, and agricultural organizations (cooperatives, extension service), friends, or hamlet-related groups have more importance.

[29] Measures used to calculate the score are as follows: Compare the notified person's attribute to that of the respondent. Sex: if the same gender = 0, opposite = 1; Cohort (age): same cohort (within 10 years) = 0, differs by 1 decade = 1, differs by 2 decades = 2 … ; Residence: same hamlet = 0, same municipality = 1, same prefecture = 2, in Japan = 3, overseas = 4; Occupational situation: same occupation = 1, different or no occupation =2. Then scores of 5 notified people are aggregated on each dimension. The average score of each dimension is divided by the standard deviation for standardization.

*Impact on Agricultural Performance*

Table 21 shows the coefficients of correlation between social capital assessed at the personal level and three indicators of agricultural performance: annual agricultural output per capita (farm worker), number of agro-related activities (including agribusiness),[30] and the number of marketing channels. Each correlation coefficient indicates that there is statistically little or no correlation between agricultural performance and social capital. The impact of cognitive social capital on agricultural activities cannot be explained statistically from these survey data.

Table 21. Correlation between Social Capital (Personal Level) and Agricultural Performance

| | Social capital | | | |
|---|---|---|---|---|
| Performance | Social trust | Social cohesion | Network diversification | Reliability of officials |
| Agricultural output per capita | –0.057 | 0.084 | –0.028 | –0.152 |
| No. of types of diversified activities | 0.120 | –0.057 | 0.013 | –0.012 |
| No. of types of marketing channels | 0.036 | –0.127 | 0.100 | –0.090 |

*Source*: Household survey data

*Notes* 1: The score of the trustworthiness of public officials is the aggregate of average scores for the five types of officials listed in Table 19.

2: Score of network diversification is the aggregate of the average scores of the four dimensions in Table 20.

**Regression Analysis**

This section describes the regression analysis used to confirm the level of impacts of social capital on rural development.

*Agricultural Output and Physical/Human/Social Capital*

Not only social capital but also other factors such as physical and human capital affect the performance of agriculture and community activities. If agricultural output is selected as the indicator of farm-household welfare, the relationship can be estimated as follows:[31]

$$\ln Y = a + bPC_i + cHC_i + dSC_i + e$$

[30] The following eight activities were listed on the questionnaire for the elements of agro-related activities: farmers' markets, pick-your-own produce service, interchange events for consumers, food processing, farm inns, support of farming experience programs, community gardens, and other specified activities.

[31] This model has been used by many other researchers such as Grootaert et al. (2002) and Narayan and Pritchett (1999).

Where Y = total agricultural output per each household farm worker
$PC_i$ = physical capital indicator
$HC_i$ = human capital indicator
$SC_i$ = social capital indicator
e = error term

The following variables were selected as indicators of each form of capital.

Physical capital:
- household size
- size of cultivated land
- dummy for livestock (1 = livestock kept, 0 = livestock not kept)

Human capital:
- years of education of the respondent

Structural social capital:
- agro-related organization index[32]
- network diversification index

Cognitive social capital:
- bonding social capital index[33]
- trustworthiness of public officials

Table 22. Agricultural Output And Physical/Human/Social Capital
(Regression Analysis: OLS Model)

| Dependent variable: Total agricultural output per household farm worker (ln) | | | | |
|---|---|---|---|---|
| | Model I | | Model II | |
| | Coefficient | *t*-value | Coefficient | *t*-value |
| Physical capital | | | | |
| Household size | 0.016 | 0.22 | | |
| Cultivated land | 0.002 | 3.13*** | 0.002 | 3.20*** |
| Dummy for livestock | 0.305 | 1.11 | 0.325 | 1.18 |
| Human capital | | | | |
| Years of education (respondent) | 0.122 | 1.85* | 0.120 | 1.82* |

(continued on next page)

[32] This index is the aggregate of the respondents' evaluation of all of agro-related organizations in which household members participate. The degree of participation point is as follows: very active = 3, somewhat active = 2, not active = 1

[33] Bonding social capital index = 5 (binary score of social trust) + (score of social cohesion)

(continuation)

| Dependent variable: Total agricultural output per household farm worker (ln) | | | | |
|---|---|---|---|---|
| | Model I | | Model II | |
| | Coefficient | *t*-value | Coefficient | *t*-value |
| Structural social capital | | | | |
| Agro-related organization index | 0.040 | 1.79* | 0.039 | 1.79* |
| Network diversification index | | | 0.019 | 0.39 |
| Cognitive social capital | | | | |
| Bonding social capital index | –0.032 | –0.77 | –0.031 | –0.74 |
| Constant | 2.844 | 3.24 | 2.819 | 3.27 |
| Ω Adjusted $R^2$ | 0.201 | | 0.202 | |
| DW | 1.44 | | 1.44 | |
| Number of observations | 101 | | 101 | |

*Source*: Household survey data
*Note*: ***, **, and * respectively indicate 1%, 5%, and 10% levels of significance.

The result is shown in Table 22. By adjusting independent variables to avoid multiple co-linearity, the author derived two models. In both cases, cultivated land, years of education, and agro-related organization index gave statistically significant effects. The agro-related organization index gives a positive effect on agricultural output. This indicates that group activities related to agriculture enhance the welfare of member farm households. On the other hand, other factors related to social capital did not give statistically significant effects. In particular, t-values of cognitive social capital were low. But the signs of effects (plus or minus) were consistent in both cases. Bonding social capital might have negative effects.

*Rural Diversification and Physical/Human/Social Capital*

As the indicator of diversification, the author used the conduct of agro-related activities. In the household survey, research staff listed eight types of agro-related activity.[34] According to each respondent's answer, binary scores were as follows.

The equation for estimation is based on the same frame of the previous model, but as the dependent variable is binary, a logistic regression model was applied for estimation.

The result is shown in Table 23. By adjusting independent variables to avoid multiple co-linearity, the author derived two models.

The accuracy of the prediction and correlation ratio indicates that these models have low predictive power. Even considering this problem, though, both indicate that human capital (education) has a positive impact on the diversification of agricultural production and marketing. The agro-related organization index has a positive effect on social capital in both cases, while cognitive social capital is not statistically significant.

[34] Activities listed on the questionnaire are as follows: farmers' markets management, pick-your-own produce service, interchange events for consumers, food processing, farm inns, support of farming experience programs, community gardens, and other specified activities.

Table 23. Rural Diversification and Physical/Human/Social Capital (Logistic Model)

| Dependent variable: Conduct of agro-related activities (binary) | | | | |
|---|---|---|---|---|
| | Model I | | Model II | |
| | Coefficient | *P*-value | Coefficient | *P*-value |
| Physical capital | | | | |
| Household size | –0.091 | 0.53 | –0.041 | 0.77 |
| Cultivated land | 0.004 | 0.07* | | |
| Dummy for livestock | 0.489 | 0.38 | 0.516 | 0.35 |
| Human capital | | | | |
| Years of education (respondent) | 0.274 | 0.05** | 0.266 | 0.05** |
| Structural social capital | | | | |
| Agro-related organization index | 0.075 | 0.10* | 0.106 | 0.01*** |
| Network diversification index | 0.039 | 0.68 | 0.021 | 0.82 |
| Cognitive social capital | | | | |
| Bonding social capital index | 0.056 | 0.49 | 0.057 | 0.47 |
| Constant | –4.739 | 0.01*** | –4.485 | 0.01*** |
| Accuracy of prediction | 67.3% | | 72.1% | |
| Correlation ratio | 0.178 | | 0.164 | |
| Number of observations | 104 | | 104 | |

*Source*: Household survey data

*Note*: ***, **, and * respectively indicate 1%, 5%, and 10% levels of significance.

- 1 = respondent engaged in some agro-related activities
- 0 = no agro-related activity

## DISCUSSION

The results of the community survey reveal the positive effect of social capital on community-based collective actions. In particular, the analysis of structural social capital shows the impact of social capital on the activities that have been initiated in recent years. Community-based social organizations usually have few linkages to agricultural production. For example, the traditional groups called *Koh* originate from religious gatherings or collective village works other than agriculture.[35] Functional groups around the hamlet such as fire brigades also have no direct relation to regional agriculture. Therefore, these group activities have few connections to community farming practices, and they are not likely to have direct effects on collective activities related to farming in this area, such as irrigation management or the coordination of the set-aside program.

But the continuity of these group activities fosters the relationships among members and makes loose networks in and around the hamlet. Since these activities are not related

[35] Characteristics of *Koh* are described in Takeuchi (1957), Fukutake (1976), and Torigoe (1985). Fukutake stresses the importance of horizontal network and equality of membership in *Koh*.

to economic activities, networks among members extend horizontally. These groups form the minimum unit that confirms and maintains horizontal relationships among residents in the community. If a new issue or task becomes a matter of great concern in the community, the existence of this loose horizontal network could provide a foundation for social gatherings, offering an affable forum for discussion, support, and exchanging information. It is worthy of note that the existence of loose and horizontal networks that are not related to industry could facilitate residents' collective activities.

On the other hand, the ambiguous results of the household survey might be caused by the problems of data collection. The regression analysis shows that structural social capital can be accounted for in the same way as physical and human capital. It could be said that the degree of participation in agro-related groups, one of the dimensions of structural social capital, has an impact on household activities related to agriculture and rural diversification. Statistical analysis of the household survey also shows that dimensions of cognitive social capital are not as accountable as structural social capital. But analyzing cognitive social capital is difficult and depends deeply on the design of the survey questionnaire.

In conclusion, the author can report two main findings. First, at the community level, the continuity of various group activities has accumulated social capital, and this social capital has had positive effects on several community activities, including new activities such as agribusiness. The accumulation of social capital provides the potential for activating community activities and has contributed indirectly to diversified rural development in Awa. Second, the impact and direction of social capital can change depending on the target of activities or projects. In Awa, continuity of group activities not directly related to agriculture offers opportunities for accessing or founding new types of agro-related activities. On the other hand, cognitive social capital seems to have little impact on agricultural performance.

## CONCLUSIONS AND POLICY IMPLICATIONS

### Conclusions

Firstly, the analysis of various group activities indicates that the accumulation of structural social capital supports community activities by preparing the preconditions for discussion. The case study in the Awa area also indicates that horizontal networks made by long-term regional activities have positive effects on the formation of new types of activity, including agribusiness. Generally, in previous Japanese rural studies, the negative aspects of rural traditions, e.g., persistence of land ownership and conservative decision-making processes, were emphasized as the obstacles for social modernization. On the other hand, many rural communities have lost the vitality of their community activities. In this situation, the author thinks that the performance of the remaining rural activities should be reconsidered. The results of the survey show the potential for positive impacts of traditional cultural activities on the development of new activities.

Secondly, the results of quantitative analysis indicate that the level and direction of the impacts of social capital differ depending on the situation of the target community. The regression analysis based on household survey slightly suggests that structural social capital has a positive effect on agricultural output, but might have a negative effect on the diversification of marketing channels. The regression analysis also revealed that the level of the impact of each dimension of social capital is statistically different. The results of the

community survey also indicate that the accumulation of group activities that are not related to farming practice might have positive effects on new types of diversified activity compared to ordinary types of agricultural production activity. These findings show that the way in which social capital affects community activities depends on the economic and social conditions of the target area. In the case of Awa, agricultural infrastructure, especially that related to rice farming, has already been well developed in many hamlets. This is one reason why social capital affects relatively new types of activity, even though the source of social capital seems to be traditional group activities.

Thirdly, through the qualitative investigation of the study area, the author described the development of rural diversification. Various agribusinesses have started in Awa, providing new income sources and opportunities for rural-urban exchange. The survey also reveals that a variety of rural residents participate in these activities, including elderly farmers and women farmers. In addition, activities have not developed independently. Networks of various agribusiness activities operate in the study area. The author stresses that agribusiness activities are not only the activities supported by social capital, but also the place where social capital accumulates.

Finally, the survey revealed that the management of some rural resources had serious problems. Forest management is a typical example of poor management. This finding is not directly related to the objective of the survey. But the management of rural resources is partially related to the villagers' way of life. Therefore, this issue needs to be considered in the context of social capital analysis.

**Summary of the Survey Process**

The research staff designed both the community and household surveys. Before designing the surveys, the working team talked with extension workers and municipal officials, which they found helpful for coordinating questionnaires and because of their familiarity with the local context of the study area. The findings of the pre-test made the survey process more effective. Still, many mistakes and inappropriate treatments occurred, such as limitation of survey resources, sampling problems, and difficulties in selecting key persons as respondents.

The structure of questionnaires and the method of interviews definitely affect the collection of accurate data, especially that on cognitive social capital. Cognitive social capital can be grasped only through the responses to well-organized questionnaires or through long interviews with respondents. In this survey, the working team relied on previous studies conducted by the World Bank[36] for the questionnaire design and other research methods. But still many misunderstandings were found during and after the conduct of the survey.

Since people are now more aware of their rights to privacy, and because long interviews impose a burden on respondents, researchers should take care in contacting respondents beforehand so that they can understand the objectives of the survey and cooperate fully.

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[36] See Grootaert et al. (2003). This article gives examples of errors and misunderstanding in social capital surveys.

**Policy Implications**

The importance of group activities that build structural social capital was emphasized. But it is dangerous to extend one finding to broader cases. Social capital contains several dimensions, and the degree of its impact differs according to the general conditions of the survey area. Before conducting a project involving the concept of social capital, researchers need to evaluate both the distribution of social capital and the general conditions of the target area. But if the survey is properly conducted and useful information is collected about the area, the results of a social capital survey offer useful knowledge for planning and conducting a project smoothly. Data collected in the Agricultural Census also offers useful information on the distribution of social capital.[37] Preliminary analyses would be helpful.

The possibility of boosting social capital is a controversial issue. In Awa, traditional and continuous activities are a source of social capital. In this case, it seems difficult to enforce traditional factors directly and rapidly. But during the survey, the research team observed the formation of new networks among agribusiness units. Various types of activity form rural-urban linkages. Rural diversification can allow the formation of new networks and linkages among people, and social capital can accumulate and contribute to the development of new activities in a chain reaction.

**Remaining Issues**

Firstly, although newcomers are increasing in rural communities, the author could not investigate their characteristics. Nearly all new residents are not engaged in agriculture. But they usually meet old residents and sometimes attend the same community activities. In addition, the new residents have changed the style of general meetings in some hamlets. New residents' opinions and conduct might change the distribution and characteristics of social capital. This needs further detailed investigation.

Secondly, the author could not investigate the function of women farmers groups. In many rural communities, activities of women's groups contribute to the production of processed foods (especially traditional products) and other agribusiness activities.[38] In Awa, there are some women farmers groups. But in both the community and household surveys, women farmers' activities were not observed so often. This fault could be due to the bias in the selection of respondents mentioned previously. Additional case studies should be investigated.

Thirdly, functions of cognitive social capital could not be specified well in this survey. The reason for the ambiguous result seems to be the shortage of sample data from the household survey and the problem of the research method, including the questionnaires. Since the design of the questionnaire to assess cognitive social capital is affected by the local context of the study area, researchers should prepare questionnaires carefully and conduct surveys at several study sites for comparison.

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[37] The National Agricultural Census collects much data on rural communities every 10 years. But the data has not been utilized by government officials or researchers recently. Changes of research topics also make the utilization of data difficult. See Hasumi (2003).

[38] Recent activities of women farmers' groups are described by Iwasaki and Miyagi (2001).

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# SOCIAL CAPITAL AND RURAL COMMUNITY DEVELOPMENT IN MALAYSIA

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## INTRODUCTION

### Brief Country Profile

Malaysia was created in 1963 through the merging of Malaya (which became independent in 1957) and the former British colony of Singapore, both of which formed West Malaysia, Sabah and Sarawak in North Borneo, which composed East Malaysia. Singapore separated from the Federation in 1965. It is located in Southeastern Asia, the peninsula, and northern one-third of the island of Borneo, bordering Indonesia and the South China Sea, south of Vietnam. The climate is tropical with a total area of 329,750 $km^2$.

The estimated population of Malaysia today is at around 25.6 million people of whom about 34% are below 15 years of age. Malaysia is a multi-racial and multi-religious country. The population is comprised of Malay and other indigenous groups (58%), Chinese (27%), Indian (8%), and others 7%. The major religions are Islam, Buddhism, Hinduism, and Christian.

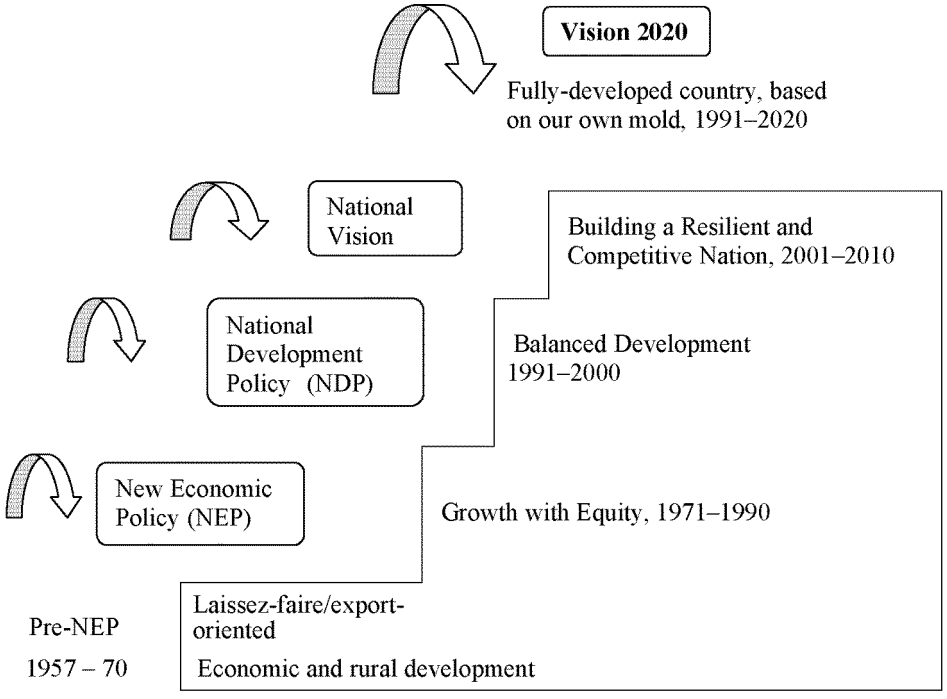
Malaysia is a middle-income country that transformed itself from a producer of raw materials into an emerging multi-sector economy by the late 1990s. GDP in 2001 grew only 0.5% due to an estimated 11% contraction in exports, but a substantial fiscal stimulus package by the government mitigated the worst of the recession and the economy rebounded in 2002, but remains vulnerable to a more protracted slowdown in Japan and the U.S., which are both top export destinations and key sources of foreign investment.

For the first three decades following independence, agriculture was the main contributor to the national economy and was the driving force behind the economic growth of the country. The rapid industrialization during the last decade led to a decline in the sector's relative contribution to national income, export earnings, employment, and investment. For example, the share of agriculture in the Gross Domestic Product (GDP) has steadily declined from 20.8% in 1985 to only 8.4% in 2002. Its contribution declined because the national economy as a whole registered a higher growth rate of 8.7% as compared to only 3.0% for agriculture during same period. Appendix 5 shows some selected economic indicators for the nation.

### Major Economics Policies and Community Development

Community development (especially rural development) in Malaysia has always been an important agenda item of the government. It has both sociological and political objectives primarily in addressing poverty issues. Malaysia started giving priority to

overcoming issues of poverty soon after independence in 1957. Improvements were made to then-existing infrastructure and special attention was paid to the agricultural sector. In enhancing economic growth, Malaysia introduced the New Economic Policy (NEP) in 1970. It concentrated on maximizing poverty eradication efforts through "In-Situ Development" Projects and New Land Development. The key policy objective is "growth with equity." This period saw the creation of many federal and state agencies as the vehicle in the implementation of the NEP. Subsequent major economic policies were the National Development Policy (NDP), 1991 – 2000, and the National Vision Policy (NVP), 2001 – 2010. Figure 1 shows the evolution of all the major economic policies and their major policy objectives. It should also be noted that in 1991, The Vision 2020 Policy was introduced. This policy not only focused on reducing poverty among those in the low-income bracket, but also aimed to raise the status of the rural areas, making them developed, attractive and economically viable. The implementation of the economic policies mentioned above has been quite successful. The country's poverty rate decreased from 49.3% in 1970 to 5.1% in 2002 (Anon 2004). This tremendous decrease was due to implementing strategies that focus on restructuring the society, increasing ownership of assets and equity to the needy communities, and reducing the poverty gap between the rural and urban communities, and among racial groups.




*Source*: The Economic Planning Unit, Prime Minister Department

Figure 1. Major Economic Policies of Malaysia

The poverty line income (PLI) for Malaysia differs based on region and is adjusted periodically. In the Malaysian context, Rahmah (2004), defined it as *"an income sufficient to purchase a minimum basket of food to maintain household members in good nutritional*

*health and other basic needs such as clothing and footwear, rent, fuel and power, transport and communication, health care, education and recreation."* Table 1 depicts the definition of PLI for various regions in Malaysia.

Table 1. Poverty Line Income in Malaysia for 2002

| Region | Family income per month (RM)* | Household size |
|---|---|---|
| Peninsular Malaysia | 529 | 4.6 |
| Sabah | 690 | 4.9 |
| Sarawak | 600 | 4.8 |

* 1USD = RM3.8

There is also another group of households categorized as falling under hardcore poverty. Their household income is about half of PLI. In 1990, the hardcore poor accounted for 3.9% of the nation's households. By 2002, only 1% of such households remained in the country. Table 2 and Figure 2 below illustrate the progress made on poverty eradication in Malaysia from 1970 to 2002. The forecast for 2005 is that only 0.5% of the total households will remain under the poverty line.

Table 2. Poverty Eradication Achievements, 1970–2005

| | 1970 | 1980 | 1990 | 1999 | 2002 | 2005 |
|---|---|---|---|---|---|---|
| Total | 49.3 | 37.4 | 16.5 | 7.5 | 5.1 | 0.5 |
| Rural | 58.6 | 45.8 | 21.1 | 12.4 | 11.4 | |
| Urban | 24.6 | 17.5 | 7.1 | 3.4 | 2.0 | |
| Hard-core poor | n.a | n.a | 3.9 | 1.4 | 1.0 | |

*Source*: Economic Planning Unit, Department of the Prime Minister

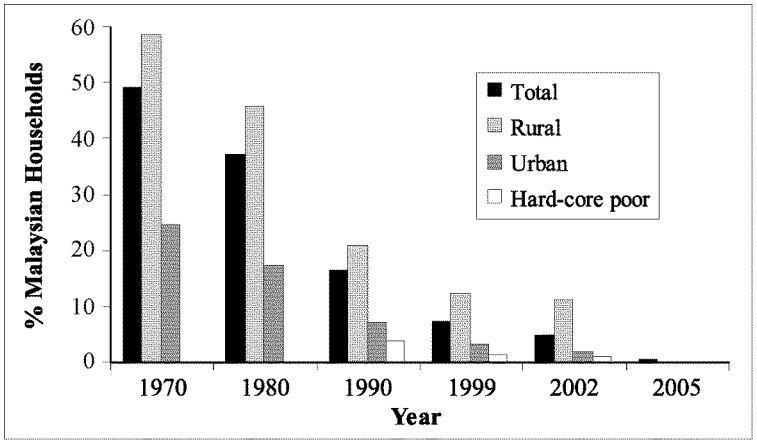



Figure 2. Poverty Eradication Achievement, 1970–2005

The Ministry of Rural and Regional Development (MRRD) is playing a key role in ensuring that the objectives and policies of national development are achieved. Its latest

corporate objective is *"to promote / encourage effort in development and modernization of the rural sector, guided by the philosophy and new strategies of Rural Development towards Year 2020, aligned with the national development objectives as stipulated under the National Vision Policy."* The focus is to bring changes to the people in rural areas to minimize the gap between the rural and urban sectors. Generally, the MRRD, through its various regional development agencies implements projects that cover wide ranges of socio-economic activities. Agriculture development remains the mainstay of its strategy and thus the Ministry often works in tandem with the Ministry of Agriculture.

**Selected National Land and Regional Development Agencies and Projects**

Since the nation's independence in 1957, the government had established numerous formal and structured land development agencies or projects benefiting the vast majority of the rural population. Among the agencies / projects that played a significant role in community developments have been:

- *Federal Land Development Authority (FELDA):* Landless farming families are settled in various land schemes (primarily oil palm and rubber) and eventually are given individual ownership after the development cost is completely repaid through monthly instalments deducted from the sales of agricultural output.
- *Federal Land Consolidation and Rehabilitation Authority (FELCRA):* This is more like a landlord-in-trust scheme whereby landowners lease their idle land to FELCRA for cultivation in return for monthly rentals or the right to participate in the intended economic activities. The farmers / landowners benefit through a profit-sharing arrangement as well as being employed as paid labor. Land productivity enhancement has been the main objective of this organization.
- *Integrated Agricultural Development Project (IADP):* The development of hundreds of mini estates and group farming projects to improve land productivity through organized farming employing professional managers and management. Various government agencies are involved to ensure the success of the project. The landowners are required to work as a team following a work schedule prepared by the management of the project.
- *Regional Land Development Agencies:* These are statutory bodies established under the Rural and Regional Development Ministries to develop specific areas and types of economic activities. These statutory bodies support one of the latest programs from the ministry, the "Vision Village Movement." One of the objectives of the "Vision Village" concept is to identify villages that have good attributes to be developed into a model village from a social, economic, knowledge, and moral perspective. Once it has achieved "Vision Village" status, the village will be used as a benchmark in developing other villages.

**Community Development in Padi Granary Area**

Padi cultivation is conducted by about 116,000 households that depend on rice as a major source of income, representing about 3% of total households in the country. There are an estimated 296,000 padi farmers in the country. About 138,000 are located in eight rice-growing areas of the country (also known as granary areas) operating on about 212,000 hectares of rice fields. This gives an average farm size of 1.5 hectares. However, about 65% of the farmers have farm holdings of less than one hectare. There had been an overall increase in farm size due to the consolidation of farms into larger operating units within the main rice producing areas.

The incidence of poverty in the padi sector has always been among the highest in the country. In 1990, the poverty level of padi farmers stood at 40%, against its highest level of about 80% in the 1970s. Recent observations within the main granary areas pointed to a lower poverty level as family income has improved through higher agricultural productivity as well as increased income from non-farm sources.

## JUSTIFICATION FOR THE PROJECT

The Integrated Community Development (ICD) Program was launched in 1996 with financial support from the Government of Japan (Munakata, 2002). The ICD was considered to be an effective strategy to be adopted by the Asian Productivity Organization (APO) member countries (MC) for their overall socio-economic development. The APO envisions that all communities in MCs should enjoy reasonable living standards through proper sustainable community development approach.

Malaysia has been focusing on providing physical and human capital to develop communities. There had been no formal consideration or recognition of the possible role of social capital in enhancing development. Toward this end, it is timely that the "incidental" contribution of social capital to community development be recognized, quantified, and nurtured.

This report examines the economic and social status of villages under study as well as explains how community factors affect rural development. It also identifies critical success factors that need greater emphasis in formulating future integrated community development programs.

## OBJECTIVES

The overall objective of this study is to investigate the effect of "community factors" on rural development in an agriculture-based community. Specifically, it includes:

- To document baseline information regarding social, human, and physical capital of selected community and households.
- To investigate the role of social capital in community development relative to other factors such as human and physical capital.
- To test and strengthen research tools on social capital analysis for application in future research.
- To recommend policy options with regard to community development at the national level based on evidence on the contribution of social capital to the overall community development

## METHOD AND DATA

### Hypotheses

Since Malaysia gained independence in 1957, there has been a pragmatic approach in addressing rural community development, specifically the poverty issue. Historically, the community development program in Malaysia focused on "visible" capital such as human capital, physical capital, and financial capital. There has been no formal consideration or

recognition on the possible role of social capital in enhancing development. Empirical evidence elsewhere (Grootaert, and Bartelaer, 2001) shows that social capital contributes significantly to sustainable development. Thus, community factors or elements of social capital shall also contribute to the overall development of rural Malaysia.

**Theoretical Framework**

The concept of human and social capital is that people can invest in them to enhance their level like physical and financial capital (Sakurai, T. 2003). Social capital shares several attributes with other forms of capital. For example, it is not costless to produce, as it requires an investment, at least in terms of time and effort if not always money. A trusting relationship among members of an organization often requires years of meeting and interacting to develop.

Fukuyama (1999) argued that many of the definitions given to social capital refer to its manifestations rather than to social capital itself. He defined social capital as *an instantiated informal norm that promotes cooperation between two or more individuals*. The norms can range from a norm of reciprocity between two friends, all the way up to complex doctrines such as religion or cultural beliefs. The definition by the World Bank is "*Social capital refers to the institutions, relationships, and norms that shape the quality and quantity of a society's social interactions among people and contribute to economic and social development* (Grootaert and Bartelaer, 2001). Increasing evidence shows that social cohesion is critical for societies to prosper economically and for development to be sustainable. Social capital is not just the sum of the institutions which underpin a society – it is the glue that holds them together.

Social capital can be a set of horizontal associations between people, consisting of social networks and associated norms that have an effect on community productivity and well-being. Social networks can increase productivity by reducing the costs of doing business. In other words, social capital facilitates coordination and cooperation.

Measuring social capital is challenging because it is comprised of concepts such as "trust," "community," and "networks" which are difficult to quantify. The challenge increases when one considers that the quest is to measure not just the quantity but also the quality of social capital on a variety of scales. Hence, measuring social capital may be difficult, but it is not impossible, and several excellent studies have identified useful proxies for social capital, using different types and combinations of qualitative, comparative and quantitative research methodologies (Woolcock and Narayan, 2000).

The most comprehensive definitions of social capital are multidimensional, incorporating different levels and units of analysis. Trust, civic engagement, and community involvement are generally seen as ways to measure social capital. Depending on the definition of social capital and the context, some indicators may be more appropriate than others.

The conceptual basis for this study primarily follows the measurement of social capital framework developed by Narayan and Cassidy (2001). A simplified version of this framework is shown in Figure 3. In the model, neither determinants nor outcomes constitute exhaustive sets. There could be more variables, which the model does not cover. This is true as the social capital model, according to Grootaert and Bartelaer (2001), may currently be at the same early stage that human capital theory was 30–40 years ago. They suggest that social capital indicators should only focus on three types of proxy indicators: membership in local associations and networks, indicators of trust and adherence to

norms, and an indicator of collective action. Ishida (2003) also proposed network and memberships, social trust and collective action as proxies for social capital indicators.

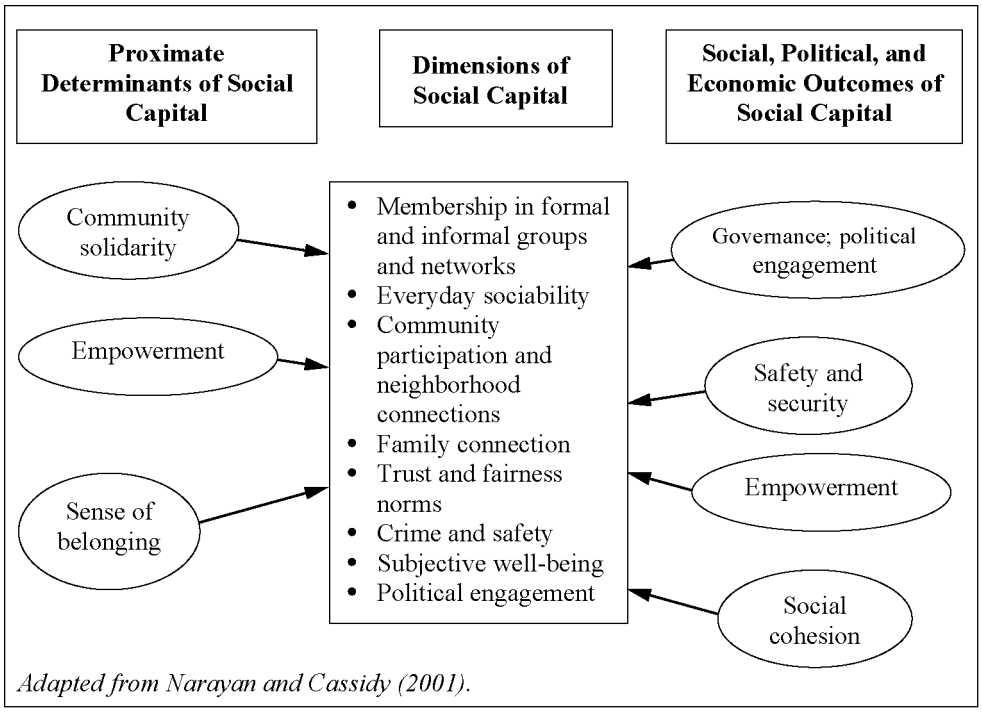



Figure 3. A Simplified Social Capital Measurement Framework

**Data Collection and Analysis**

A preliminary visit to the potential study area was conducted in the early part of 2003 to determine a manageable sample size based on time and budget limitations. Our discussion with MARDI officers on the ground settled on individual surveys of households from six villages in two sub-districts within the district of Kuala Selangor, in the state of Selangor. These villages represent the typical living conditions of a farming community in Malaysia, particularly in rice granary areas.

Survey respondents consisted of 10 household heads from each village. The selection of households was based on modified stratified random sampling, where the Village Security and Development Community Chairperson (Pengerusi Jawatankuasa Pembangunan dan Keselamatan Kampung or JKKK) is automatically selected. This selection of the chairperson is crucial because of the dominant role he plays in all aspects of community affairs. The chairperson is also responsible for responding to community or village questionnaires.

Based on the understanding of the social capital concept acquired during the Tokyo meeting as well as literature search, a structured questionnaire was designed to capture the following data that is grouped into welfare indicators (mainly independent variables) and explanatory variables (dependent variables). The variables believed to influence community development (welfare indicators used as proxy) and to be collected were:

*Welfare indicators*

- Household income
- Health status
- Expenditure pattern
- Rice yield

*Explanatory variables*

- Household characteristics: Age, religion, dependency rate, type of family
- Social capital variables: Organizations involved in, level of participation, frequency of attending meetings, and networking,
- Human capital: Education level of household heads
- Community profile: No. of households, infrastructure / facilities, etc.

Two enumerators who were MARDI field officers stationed in the area conducted the field survey. They were very familiar with the area and had a good rapport with the villages. The survey was carried out after office hours, and at the convenience of the respondents.

This study uses both descriptive statistics and quantitative analysis by applying multiple regression models proposed by Sakurai (2003). Additionally, the study also incorporates qualitative analysis wherever appropriate in order to explain certain phenomena on the effect of all the descriptive variables on each welfare indicator.

## THE STUDY AREA

**Reason for Selection of the Study Area**

As mentioned earlier, the selected area is located in two sub-districts within the district of Kuala Selangor, in the state of Selangor, Malaysia. The area is located in one of the eight main rice granaries area in the country and is selected because it is one of the communities where a high proportion of income is from agricultural activities. In view of the time and budget limitations, the basis of selection was also due to the area being the nearest "real" farming community to the author's workplace. Figures 4 and 5 give one an idea about the location of the study area. Additionally, Figure 6 shows a typical administrative structure in rural Malaysia.

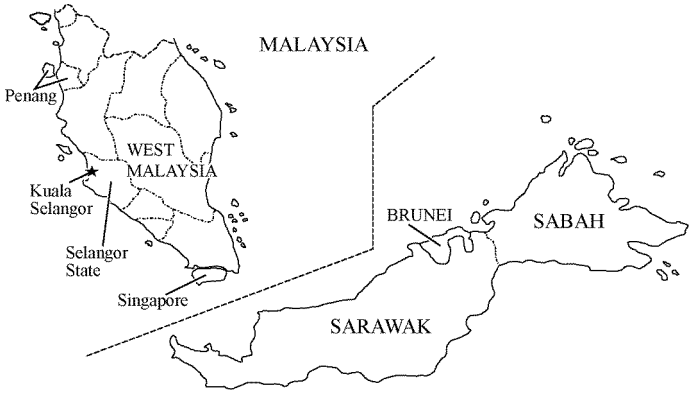



Figure 4. Location of the Study Area

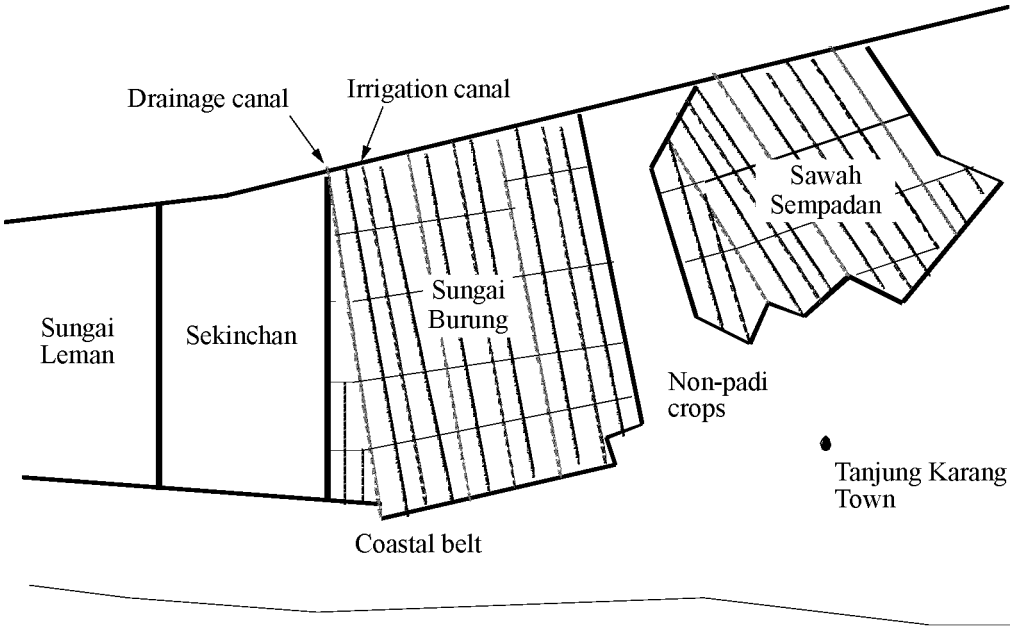



Figure 5. Detail of Villages Surveyed

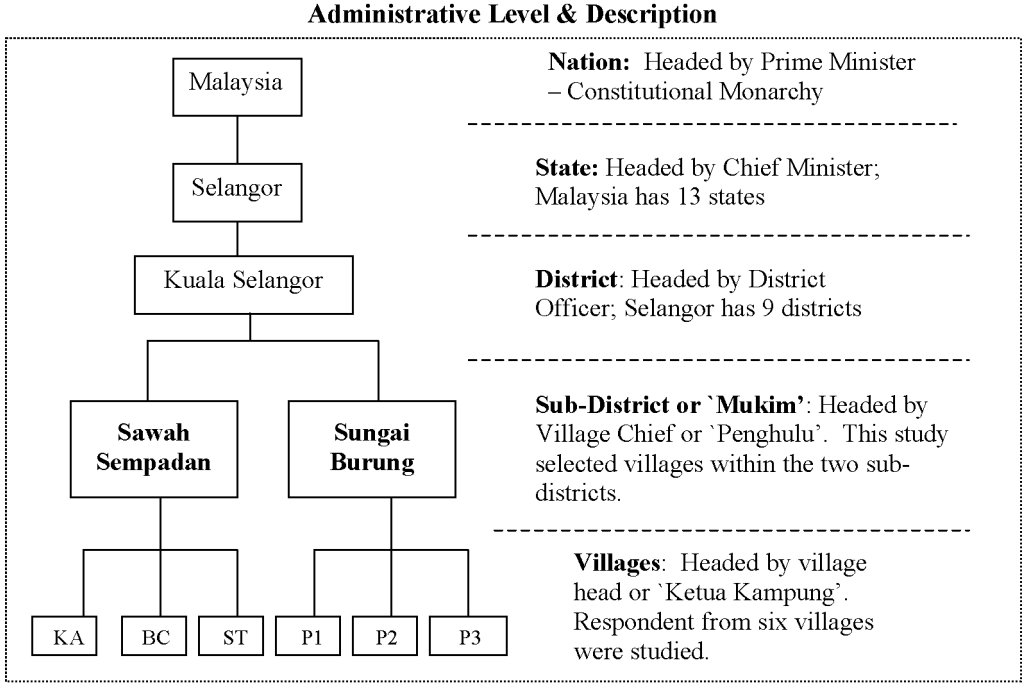



Figure 6. Typical Administrative Structure in Rural Malaysia

**Description of the Area and Villages Selected**

Kuala Selangor is one of the nine administrative districts of the Selangor state. It was and still is the most important rice-growing area in the state. In 1920, about 4,000 hectares of rice were grown in the district, representing about half the total rice area in Selangor (Hill, 1977). Most of it however, was "dry' cultivation which indicates a lack of irrigation infrastructure.

Today, the North-West Selangor Integrated Agricultural Development Project or "Projek Barat Laut Selangor" (PBLS), one of the eight main padi-growing areas in the country, is within the district. All the eight main granaries have practiced double-cropping since the early 1970s due to massive infrastructure investment to facilitate double-cropping. For example, by 1994, a total of 124,184 km of drainage canals and 74,256 km of irrigation canals were built within the area. A comprehensive village survey conducted in 1995 found that Kuala Selangor had 8,725 rural households and a population of 44,883 people (Anon, 1995). Key baseline information regarding Kuala Selangor reported in the survey are:

- Racial breakdown: Malay (85.3%), Chinese (7.7%), Indian (6.9%), others (0.1%)
- Educational level: No schooling (6.4%), primary school (42%), high school (46.2%), higher institution (5.4%)
- Type of employment: Self-employed (61%), wage earner (39%)
- Type of self-employment: Agriculture (80.3%), trading (5.5%), others (14.2%)
- Basic amenities coverage: Water (99.9%), electricity (99.9%)

Another survey focusing on PBLS conducted in 1987 (Anon, 2004) revealed that only 66.8% and 85.6% of the households within the area were supplied with tap water and electricity, respectively. In addition to farming, non-farming activities contributed about 40% of their income.

The latest profile on the selected villages surveyed is summarized in Table 3. This information was gathered from the village heads using a structured questionnaire.

"The nearest town" as mentioned in the table is Tanjung Karang (Figure 5). It is a relatively modern town with most of the population requirement for farming and daily needs easily found. Mainly Chinese traders populate the town. They accounted for most of the "trading" type of self-employment in the 1995 survey. Padi farmers of Chinese descent are concentrated in the Sekinchan sub-district, bordering Sungai Burung.

The family size of the six villages ranges from 2.4 to 5.1 persons per household. This is comparable with the size of 4.52 reported in the national census of 2002. Two of the villages (Parit 1 and Parit 2) have many shops and relatively small family size, which is indicative of urban-like characteristics. Selangor is one of the most urbanized states in Malaysia with almost 88% of the population being urban dwellers. Our observation shows that all the villages are conveniently accessible to medium-size towns nearby as well as Kuala Lumpur (the nation's capital) which is less than 100 km from the study area. The small household size is due to many of the young adults having left the village to work and live in the city, primarily Kuala Lumpur. Padi cultivation in this area is almost 100% mechanized, and thus manual labor requirements are minimal.

In terms of employment, there is not much difference from the survey results of 1995 in which it was shown that 61% of the people were self-employed. The employment status of the six villages surveyed is between 50% to 80% working as farmers, which are considered as being self-employed. About 10% of the population is above 60 years of age. These are either retired farmers or those who came to settle in the village after spending

their working life in the city. Since almost all operations in rice production currently are mechanized, the farmers have ample time for other economic and social activities. There are farmers who rent rice land from other owners within the village as well as from other villages and sub-districts. In other words, a village of small size does not mean that the land the farmers work is also small, as their operations are not confined to land holdings within the same village. It should be noted that those working as a government servant or working in the public sector might also be involved in rice farming.

Table 3. Profile of the Study Area/Villages

| Sub-Districts | | Sawah Sempadan | | | Sungai Burung | | |
|---|---|---|---|---|---|---|---|
| Villages or *Kampung* | | Kunci Air (KA) | Blok C/0J (BC) | Sri Tiram Jaya (ST) | Parit 2 (P2) | Parit 1, Sungai Sireh (P1) | Parit 3 (P3) |
| Area ($km^2$) | | 8 | 3.8 | 17 | 7.5 | 4.5 | 7.5 |
| Population size | | 597 | 950 | 2730 | 1,400 | 1,287 | 1,300 |
| Number of households | | 125 | 185 | 657 | 462 | 528 | 262 |
| Family size | | 4.8 | 5.1 | 4.2 | 3.0 | 2.4 | 5.0 |
| Distance from nearest town (km) | | 2.5 | 7 | 10 | 16 | 10 | 8 |
| Employment for population above 18 years old (%) | Farmers | 70 | 71 | 50 | 60 | 60 | 80 |
| | Civil servants | 10 | 5 | 20 | 15 | 10 | 5 |
| | Private sector | 10 | 9 | 20 | 15 | 20 | 10 |
| | Elderly & underemployed | 10 | 15 | 10 | 10 | 10 | 5 |
| Type of crops grown (%) | Padi | 80 | 100 | 35 | 70 | 80 | 70 |
| | Oil palm | 20 | | 60 | 25 | 10 | 20 |
| | Others | 0 | | 5 | 10 | 10 | 10 |
| Kindergarten | | 1 | 2 | 1 | 1 | 3 | 1 |
| *Surau* (mini mosque) | | 1 | 2 | 1 | 4 | 7 | 4 |
| Mosque | | 1 | 1 | 1 | 2 | 1 | 0 |
| Public phone | | 1 | 3 | 1 | 1 | 9 | 3 |
| Community hall | | 1 | 1 | 1 | 2 | 6 | 4 |
| Distance to elementary school (km) | | 0.5 | 0.5 | 0.5 | 4.8 | 2 | 0.5 |
| Distance to high school (km) | | 2.5 | 5 | 0.5 | 6 | 6.4 | 6.4 |
| No. of convenience stores | | 2 | 8 | 1 | 4 | 9 | 6 |
| No. of coffee shops | | 1 | 5 | 1 | 4 | 15 | 6 |
| Television availability | | 100 | 95 | 100 | 100 | 100 | 95 |
| Telephone availability | | 80 | 65 | 70 | 75 | 50 | 50 |

The majority of the villages grow padi as the main crop with one village (Block C/O/J) having no other crops except padi. However, in one of the villages surveyed (Sri

Tiram Jaya), oil palm constitutes a higher percentage of land use than padi. Other crops grown to supplement padi and oil palm income are various types of vegetables.

Generally, the physical infrastructure in the area is good. Communication or transportation is not a problem as the network of roads is well developed. All households have at least a motorcycle to move around. Some of the households even own one or more cars. Between 50 to 80% of the households own fixed line telephones. However, all the villages are provided with at least one public telephone, with one of the villages with the least percentage of telephone ownerships (Parit 1) having nine public telephones. Still, the percentage of telephone ownership is not a reflection of the villager's ease of telecommunication as some of them choose not to install fixed line telephones. This is due to the increasing popularity of mobile phones among villagers. The rate charge is very competitive and the coverage has improved significantly. Almost all houses in the villages surveyed own a television set.

The village head indicated some social problems among the youth in the area. These problems include incidence of drug abuse and illegal racing (motorcycle racing). The facilities to channel these youth to some healthy activities are available in all the villages. For example, all the villages have at least one community hall (Balai Raya). Some basic sports facilities such as badminton courts are available at the community hall. During our visit these facilities were not utilized accordingly.

## EMPIRICAL RESULTS AND DISCUSSION

### Profile Analysis of Respondents

Selected profiles and analyses of the respondents surveyed are presented below. These are the explanatory variables as well as the welfare indicators that are used in the model specification later in this report. Since they were selected randomly, these profiles shall represent the overall situation or status of households in all the six villages surveyed. All the respondents are involved in rice farming, but a small minority may not state farming as their main occupation.

*Age Distribution of Household Heads*

All the household heads surveyed were male, with an average age of 47 years. The majority (60%) of respondents were in the 31–50 year-old age group, which is considered the most productive age bracket. Very few (3.3%) were young farmers, indicating a lack of interest in farming among the younger generation. Those age 51 and above were quite substantial. This group of farmers is usually less educated, thus may be less responsive to technological changes introduced to rice production.

Table 4. Age of Household Head

| Age range | Number of respondents | Proportion (%) |
|---|---|---|
| 30 and below | 2 | 3.3 |
| 31–50 | 36 | 60.0 |
| 51 and above | 22 | 36.7 |
| Total | 60 | 100.0 |

*Level of Education*

Table 5 shows that the majority of farmers are not well educated, with more than 60% having only elementary education. They were, however, all literate except for one farmer. Two of the respondents had college education, but they are not full-time farmers. Farming in Malaysia is still considered a less attractive profession. Most high school leavers still prefer to work in the public sector. Otherwise, they will find jobs in the manufacturing and service sectors in the city that still employ immigrant workers.

Table 5. Education Level of Household Head

| Education level | Number of respondents | Proportion (%) |
|---|---|---|
| No education | 1 | 1.7 |
| Elementary | 38 | 63.3 |
| Lower secondary (SRP) | 7 | 11.7 |
| High school (SPM, STPM) | 12 | 20.0 |
| Diploma | 1 | 1.7 |
| College degree and above | 1 | 1.7 |
| Total | 60 | 100.0 |

*Gross Income*

The mean gross income reported is RM38,445. The average net return as a percentage of revenue in the study area is estimated at 71%, which is higher than the average for the whole PBLS area (see calculation in Appendix 1 and 2). Our survey revealed that rice-farming activities contribute about 76% of the gross income. Based on this information, estimates of mean household net income were calculated as shown in Table 7. The mean net income of RM29,972 compares favorably with the national average. The latest figures reported in 1999 reveal the annual average household income of RM20,616, RM37,236 and RM29,664 for rural, urban and all households, respectively (Henderson et. al, 2002). Using 1990 constant prices, it took 10 years for the rural households to double their income (1990 income was RM11,412). The mean Malay household's income for 1999 stood at RM23,808. Experience suggests that respondents always under-declare their income, thus the mean income reported here might be a conservative estimate.

Table 6. Gross Income of Households in 2003

| Income range | Number of respondents | Proportion (%) |
|---|---|---|
| RM4,000 – RM25,000 | 16 | 26.7 |
| RM25,001 – RM50,000 | 29 | 48.3 |
| RM50,001 – RM100,000 | 14 | 23.3 |
| RM100,001 and above | 1 | 1.7 |
| Total | 60 | 100.0 |
| Mean | RM38,445 | |
| Income from padi | 76% | |

Table 7. Respondents' Average Household Net Income (Estimated)

| Item | Gross income | Net income |
|---|---|---|
| Mean gross income | RM38,445 | |
| Rice farming proportion (76%) = .76 x 38,445 | RM29,218 | |
| Average net income from rice farming Activities = .71 x 29,218 | | RM20,745 |
| Income from other sources = 38,445 – 29,218 | | RM 9,227 |
| Total average net household income | | RM29,972 |

*Income from Main Occupation*

Out of 60 respondents, only four, or about 7%, indicated that farming is not their primary job. The majority of farmers earned as much as the two teachers in the survey. The income range of RM20,000 – RM40,000 annually reflects the wage scale of a graduate teacher or a very senior teacher with diploma qualification. In the Malaysia context, income of more than RM40,000 a year is considered lucrative. The mean annual household income in Malaysia for 1999, for example, was RM57,216 and RM26,448 for the top 20% and middle 40% of household respectively (Anon, 2001). Appendix 3 shows the detailed strata breakdown of household income in Malaysian households.

Table 8. Income from Main Occupation

| Income range | Main occupation | | | Total |
|---|---|---|---|---|
| | Farmer | Teacher | Gov't. worker | |
| RM1,000 – RM20,000 | 17 | – | 2 | 19 |
| RM20,001 – RM40,000 | 23 | 2 | – | 25 |
| RM40,001 – RM60,000 | 13 | – | – | 13 |
| RM60,001 – RM80,000 | 1 | – | – | 1 |
| RM80,001 and above | 2 | – | – | 2 |
| Total | 56 | 2 | 2 | 60 |

*Yield*

All farmers in the area practice double-cropping with no distinct variation between the main and off-season yield. The mean yield for the two seasons in 2003 was 12.6 tons or about 6.3 tons per season. This yield level is higher than the mean yield for the whole PBLS area, which registered an average yield of 5.49 tons for the main season in 2003. However, it is still below the aspiration of the government to achieve yields level of 10 ton/ha in the main granary areas. Table 9 below indicates wide variation in terms of achievable yields among farmers in the study area.

Table 9. Padi Yield in Study Area

| Yield range (ton/ha) | No. of respondents | Proportion (%) |
|---|---|---|
| ≤ 10 tons | 11 | 18.3 |
| 10.1–14 tons | 34 | 56.7 |
| ≥ 14.1 tons | 15 | 25.0 |
| Total | 60 | 100 |
| Mean | 12.6 tons / ha | |

*Household Expenditure*

The majority of households (60%) spent between RM501–RM1,000 monthly. The expenditure includes money spent on all household needs, excluding the cost of agriculture inputs. The mean spending is RM1,025 per month indicating a high spending pattern for those with high incomes. With a mean household income in excess of RM25,000 per year, we can assume that some of the respondents do save their earnings.

Table 10. Household Expenditure

| Expenditure range | Number in household | Proportion (%) |
|---|---|---|
| RM350–RM500 | 3 | 5.0 |
| RM501–RM1000 | 39 | 65.0 |
| RM1001–RM1500 | 11 | 18.3 |
| RM1501–RM2000 | 7 | 11.7 |
| Total | 60 | 100.0 |
| Mean | RM1,025 | |

*Farming Experience*

In terms of farming experience, "years of involvement" is quite evenly distributed. There is still interest in rice farming is shown by 15% of the relatively new entrants into this economic activity.

Table 11. Years of Involvement in Rice Farming

| Range | No. of farmers | Proportion (%) |
|---|---|---|
| 1–10 | 9 | 15.0 |
| 11–20 | 14 | 23.3 |
| 21–30 | 18 | 30.0 |
| 31–40 | 11 | 18.3 |
| 41 and above | 8 | 13.3 |
| Total | 60 | 100.0 |

*Health Situation*

To gauge the respondents' health status, they were asked to state what they think of their level of health. The results as presented in Table 12 show that about half of the respondents believed that they are in excellent health condition.

Table 12. Respondents' Health Status

| Health level | No. of respondents | Proportion (%) |
|---|---|---|
| Moderately healthy | 19 | 31.7 |
| Healthy | 12 | 20.0 |
| More healthy | 29 | 48.3 |
| Total | 60 | 100.0 |

- More profile analysis of respondents, especially regarding the explanatory variables collected, is given in Appendix 4.

**Model Specification and Estimation**

In establishing the model specification, the household-level analysis approach proposed by Sakurai (2003) was adopted and tested. The general form of the model is:

$$W = \alpha + \beta S + \theta H + \rho O + \upsilon$$

Where:

W = Welfare indicator for household
$\alpha$ = Constant term
S = variables representing social capital
$\beta$ = Coefficient of variable S
H = Variables representing human capital
$\theta$ = Coefficient of variable H
O = Variables representing other characteristics
$\rho$ = Coefficient of variable O
$\upsilon$ = Error term

**Clarification of selected variables used in the model**

*A. Welfare indicators*

- Health status: Household head perception on their health (1=least healthy, 10=very healthy)
- Yield: Actual yield in tons per hectare in a year (double-cropping)
- Household expenditure per capita: Monthly per capita in RM, excluding agriculture inputs

The descriptive statistics of selected welfare indicators are presented in Table 13 below.

Table 13. Welfare Indicators

| Indicator | Minimum | Maximum | Mean | Standard deviation | N |
|---|---|---|---|---|---|
| Health status (scale 1–10) | 5 | 10 | 7.8 | 2.2 | 60 |
| Yield (ton) | 8 | 27 | 12.6 | 2.8 | 60 |
| Household expenditure per capita (RM per month) | 50.00 | 800.00 | 280.7 | 185.5 | 60 |

*B. Explanatory Variables*

- Frequency attending community activity: This includes only formal organization activity
- Involvement in formal organization: Years respondent has been member of organizations
- Participation in organization: Number of organizations respondent is a member of
- Dummy importance of PPK: PPK is "Persatuan Peladang Kawasan," or Area Farmers Organization. Perception on the role of PPK (Important = 1, No = 0)
- Dummy community trust: Perception on trust (All can be trusted = 1, No = 0)
- Dummy involvement in PPK: Involved in PPK activities = 1, Not involved = 0
- Dummy level of participation: Office holder = 1, just a member = 0
- Main income of household: Income from padi activities for year 2003
- Land holdings: Hectares of owned and rented land for 2003 operation
- Years of formal education: Number of years attending school or college using government approved curriculum

The descriptive statistics of selected explanatory variables are shown in Table 14.

## BRIEF DESCRIPTION OF PPK – AREA FARMERS ORGANIZATION (AFO)

In view of the dominant role played by PPK in agricultural communities, as well as it being the most important formal organization for farmers, brief background information on PPK is presented. Prior to the formation of the Farmers' Organization Authority (FOA) and the Farmers' Organization in 1973, there were 1,531 agro-based cooperative societies and 119 farmers associations serving the farmers in rural areas. However, they were governed by different ministries and departments, which resulted in overlapping functions among the farmer institutions. Thus, the Farmers' Organizations Act 1973 was enacted to specifically reorganize the farmers' associations and agro-based cooperatives. Under this act, farmers' associations were dissolved and re-registered as farmers' organizations while agro-based cooperatives were reorganized to become member units of the farmers' organizations.

There are today numerous PPKs throughout the country. Basically, there is one PPK in almost all administrative areas that have agricultural activities (excluding Sarawak). The PPKs are supported by a government agency under the Ministry of Agriculture and Agro-based Industry, specifically the FOA. The main function of the FOA is to promote, stimulate, facilitate, and undertake economic and social development of Farmers Organizations (FOs) to register, control and supervise FOs, and to provide management services to FOs, including training.

To date, there are 208 PPKs in the country, of which 14 are in Selangor. The objectives of a PPK are to improve farmer economics and social status; enhance knowledge and skills; increase farm yields and income; and create farm communities that are progressive, self-reliant, prosperous, and united. To realize these objectives, each PPK is empowered to engage in business related to a wide area of agribusiness such as production and marketing of agricultural products, including processed products; trade in agricultural inputs; providing agricultural services (such as agricultural mechanization); and facilitating as well as providing cash deposit services for the rural community. In short, the primary function of a PPK is to serve as "service centers" where the service

providers channel every service that is required by the farmer members. "Service providers" are the various government departments and agencies that provide services such as extension, supplies, etc., that have been identified by the Ministry of Agriculture and Agro-Based Industry.

Table 14. Selected Explanatory Variables

| Indicator | Minimum | Maximum | Mean | Standard deviation | N |
|---|---|---|---|---|---|
| Frequency attending community activity | 0 | 36 | 8.8 | 9.3 | 60 |
| Involvement in formal organizations | 0 | 43 | 17.3 | 11.4 | 60 |
| Participation in organizations | 0 | 6 | 3.1 | 1.6 | 60 |
| Main income of household (RM) | 2,087 | 87,958 | 30,579 | 18,265 | 60 |
| Land holdings (ha) | 0.6 | 10.3 | 3.6 | 1.2 | 60 |
| Age of household head | 29 | 67 | 47.5 | 10.5 | 60 |
| Years of formal education | 0 | 18 | 7.6 | 2.8 | 60 |

Tables 15, 16, and 17 summarize the results on the determinants of all three welfare indicators using multiple regression models.

Table 15. Determinants of Health Status in Sungai Burung and Sawah Sempadan

| Dependent variable | Health status |
|---|---|
| Household-level variables | Coefficients |
| Social capital | |
| Frequency of attending community activities | –0.0177 (–1.827)** |
| Involvement in formal organizations | 0.0046 NS |
| Participation in organization | –0.182 NS |
| Dummy importance of PPK | 1.164 (2.434)** |
| Dummy community trust | 0.875 NS |
| Human capital | |
| Years of education of household head | 0.193(1.891)** |
| Other household characteristics | |
| Age of household head | –0.119 (–3.128) * |
| Main income of household | 0.0000169 NS |
| Constant (α) | 12.336 (6.324)* |
| $R^2$ | 0.536 |
| Number of observations | 60 |

OLS is used for the estimation. t-statistics are in parentheses.
*, **, *** respectively indicate 1%, 5%, and 10% levels of significance.
NS = Not significant

Table 16. Determinants of Yield Per Hectare in Sungai Burung and Sawah Sempadan

| Dependent variable | Yield |
|---|---|
| Household-level variables | Coefficients |
| Social capital | |
| Frequency of attending community activities | 0.0587 (1.228)** |
| Involvement in formal organizations | 0.0851 (1.627)** |
| Participation in organization | –0.284 NS |
| Dummy importance of PPK | –0.190 NS |
| Dummy involvement in PPK | –1.425 ( –1.389)** |
| Dummy level of participation | –2.267 (–1.387)** |
| Human capital | |
| Years of education of household head | 0.204 (1.202) ** |
| Other household characteristic | |
| Age of household head | –0.284 (NS) |
| Constant (α) | 12.079 (3.788)* |
| $R^2$ | 0.221 |
| Number of observations | 60 |

OLS is used for the estimation. t-statistics are in parentheses.
*, ** respectively indicate 1% and 10% levels of significance.
NS = Not significant

Table 17. Determinants of Monthly Household Expenditure Per Capita in Sungai Burung and Sawah Sempadan

| Dependent variable | Expenditure per capita |
|---|---|
| Household-level variables | Coefficients |
| Social capital | |
| Frequency of attending community meetings | 14.047 NS |
| Involvement in formal organization | –0.1643 NS |
| Dummy importance of PPK | 996.764 (2.085)** |
| Dummy Involvement in PPK | –866.622 (1.802)*** |
| Dummy level of participation | 1526.902 (1.676)*** |
| Other household characteristics | |
| Age of household head | –34.212 NS |
| Land holdings (owned and rented) | 125.073 (2.335)** |
| Constant (α) | 3376.502 (2.826)* |
| $R^2$ | 0.278 |
| Number of observations | 60 |

OLS is used for the estimation. t-statistics are in parentheses.
*, **, *** respectively indicate 1%, 5%, and 10% levels of significance.
NS = Not significant

**Determinants of Health Status**

The model yields a relatively high $R^2$ of 0.536, which is high for social science research. The more than 50% variation in the health level of respondents is explained by the model. Old respondents, as expected, are not as healthy as young respondents. On the social capital variables, those attending more community activities (structural social capital) are usually less healthy. This phenomenon occurs because old farmers normally have more time to spend on community activities and they are more loyal to their organization. The other two structural social capital variables used in the model are not significant. Perception on the importance of PPK, and whether people can be trusted, represent cognitive social capital. Those who think PPK is important are relatively healthier. However, the community trust variable is not significant. Education level shows a positive effect on a respondent's health level. A more-educated respondent is healthier than those who are less educated.

**Determinants of Padi Yield Obtained**

In terms of yield achievement in the study area, the best-fit model with an $R^2$ of .221 includes six social capital predictors with at least a 10% level of significance. Frequency of attending community activities and duration of involvement in organizations contribute to the yield level. For example, with the addition of one instance of attendance of community activity, the farmers' yield is seen to increase by about 0.06 ton per hectare (and other variables remain constant). The dummy variables built into the model indicate that the farmer's membership in PPK and official status in any formal organization has some bearing on the level of padi yield achieved. Counter-intuitively, involvement in PPK and holding a position in the organization were seen to cause a decline in padi productivity. These variables merit further investigation, as the role of PPK specifically was to facilitate productivity improvement efforts by the government. The only human capital used in the model, proxies with years of education of the household head, shows a positive relationship with yield level obtained by farmers. Many government agencies responsible for developing PBLS render intensive extension and advisory services. Thus, rice farming in that area is quite well established and to transfer any new technology successfully may require a certain level of education on the part of the recipients.

**Determinants of Monthly Household Expenditure Per Capita**

Table 17 presents the regression results for this welfare indicator. Higher spending on household expenditure should indicate a better standard of living. The most significant variables are size of rice area (both owned and rented). Those who rent more rice land are supposed to be more enterprising and should generate more income. Consequently, they command better spending power. This study indicates that an increase of one hectare in land size will swell per capita household spending by about RM125.00 per month. Both structural social capital variables (attending community activities and years of involvement in formal organizations) do not have any influence on the amount of per capita household spending. Household spending amount is also shaped by involvement in PPK and the level of participation (holding an official post or just being a member in the organization). Farmers who are involved in PPK activities have lower household expenditures relative to those who do not participate. Those holding an official post in PPK spend relatively more on per capita household expenditures compare to ordinary members. The office holders are believed to be enjoying more economics benefit from their position, thus have more spending power.

## QUALITATIVE ANALYSIS

### Health Status of Household Heads

About half of the respondents consider themselves very healthy and these include those who are not members of any formal organization. The table indicates that those who are members of many organizations tend to be less healthy and vice versa. Older farmers might be involved in many organizations compared to younger farmers who may see themselves more capable and thus less dependent on help from an organization or the community.

Table 18. Health Status and Membership in Organizations

| Health status | No. of organizations | | | |
|---|---|---|---|---|
| | 0 | 1–2 | 3–4 | ≥ 5 |
| Somewhat healthy (N=19) | – | 5 (26.3%) | 9 (47.4%) | 5 (26.3%) |
| Healthy (N=12) | 1 (8.3%) | 4 (33.3%) | 2 (16.7%) | 5 (41.7%) |
| Very Healthy (N=29) | 1 (3.4%) | 14 (48.3%) | 11 (37.9%) | 3 (10.3%) |
| Total | 2 | 23 | 22 | 13 |

### Padi Yield Achieved and Membership in Organizations

Membership in organizations has a negative effect on productivity. The two respondents who are not members of any organization achieve relatively higher yields. Out of 13 respondents with membership in more than five organizations, 30% were in the poor performance bracket (annual yields less than 10 tons per hectare). This poor performance among those who are active in community activities could be due to less time and energy devoted to farming. The other reason is, being active in an organization offers alternative income-generating activities, thus forfeiting some income from farming is tolerable.

Table 19. Relationship Between Yield and Membership in Organizations

| No. of organizations | Yield range (ton/ha) | | |
|---|---|---|---|
| | ≤10 | 10.1–14 | ≥14.1 |
| 0 (N=2) | – | 1 (50%) | 1 (50%) |
| 1–2 (N=23) | 3 (13.0%) | 14 (60.9%) | 6 (26.1%) |
| 3–4 (N=22) | 4 (18.2%) | 12 (54.5%) | 6 (27.3%) |
| ≥5 (N=13) | 4 (30.8%) | 7 (53.8%) | 2 (15.4%) |
| Total | 11 | 34 | 15 |

### Padi Yield Achieved and Social Trust

Eight of the respondents indicated they have absolute trust in everybody and they are not as productive (in terms of yield) compared to those who have reservations on trusting everybody. The majority that gained high padi yields are from the latter group. The former group of respondents are probably more simple people who are less motivated and have less competitive spirit. However, with such a small sample, we cannot conclusively assume that they are actually less productive.

Table 20. Yield and Social Trust

| Social trust | Yield range (ton/ha) | | |
|---|---|---|---|
| | ≤10 | 10.1–14 | ≥14.1 |
| Everybody can be trusted (N = 8) | 2 (25%) | 5 (62.5%) | 1 (12.5%) |
| Need to be careful (N = 52) | 9 (17.3%) | 29 (55.8%) | 14 (26.9%) |
| Total | 11 | 34 | 15 |

**Padi Yield and Collective Action**

In terms of yields achieved, there is not much difference in whether farmers frequent community meetings or not. Those not attending community activities do have high and low levels of padi yield. Probably not much benefit is gained from such meetings (as shown in Table 16).

Table 21. Yield and Frequency Attending Community Activity in a Year (Collective Action)

| Frequency | Yield range (ton/ha) | | |
|---|---|---|---|
| | ≤10 | 10.1–14 | ≥14.1 |
| 0 (N = 18) | 3 (16.7%) | 11 (61.1%) | 4 (22.2%) |
| 1–10 (N = 26) | 6 (23.1%) | 14 (53.8%) | 6 (23.1%) |
| 11–20 (N = 8) | 1 (12.5%) | 4 (50%) | 3 (37.5%) |
| ≥ 21 (N = 8) | 1 (12.5%) | 5 (62.5) | 2 (25%) |
| Total | 11 | 34 | 15 |

**Padi Yield and Health Status**

Respondents who reported being in excellent health achieved consistently higher yields than those who said they were not as healthy. However, there are those who said they are very healthy (13.8%) who nonetheless attained less than 10 tons per hectare yearly. This is possible because although they may be healthy, resources spent on rice farming were not sufficient. Many of the farmers also are involved in other economic activities.

Table 22. Padi Yield and Health Status

| Health status | Yield range (ton/ha) | | |
|---|---|---|---|
| | ≤10 | 10.1–14 | ≥14.1 |
| Moderately healthy (N = 19) | 4 (21.1%) | 12 (63.2%) | 3 (15.8%) |
| Healthy (N = 12) | 3 (25%) | 6 (50%) | 3 (25%) |
| Very healthy (N = 29) | 4 (13.8%) | 16 (55.2%) | 9 (31%) |
| Total | 11 | 34 | 15 |

**Household Expenditure and Membership in Organizations**

Those who are not members of any organization spent relatively more on household expenditure. However, the distribution is quite even, indicating that household spending is independent of the number of organizations to which a farmer belongs.

Table 23. Relationship Between Expenditure and Membership in Organizations

| No. of organizations | Expenditure level (RM) | | | |
|---|---|---|---|---|
| | ≤ 500 | 501–750 | 751–1000 | ≥ 1001 |
| 0 (N = 2) | – | – | 1 (50%) | 1 (50%) |
| 1–2 (N = 23) | 1 (4.3%) | 5 (21.7%) | 12 (52.2%) | 5 (21.7%) |
| 3–4 (N = 22) | 1 (4.5%) | 2 (9.1%) | 11 (50%) | 8 (36.4%) |
| ≥ 5 (N = 13) | 1 (7.7%) | 3 (23.1%) | 5 (38.5%) | 4 (30.8%) |
| Total | 3 | 10 | 29 | 18 |

## CONCLUSION AND POLICY IMPLICATION

Efforts to develop rural communities in Malaysia have always focused on providing infrastructure facilities in the communities coupled with allocating a high proportion of the national budget to enhance human capital through education. This is reflected by Malaysia consistently spending a high proportion of its development budget on agriculture and rural development, transportation, and educational services. For example, out of almost RM40 billion spent on development in 2004, 8.6%, 22.5%, and 14.4% were for agriculture/rural development, transportation, and education, respectively (Anon 2005). The budget for education has always outstripped that of security. Strategies on harnessing social capital have never been institutionalized explicitly in our national development policy.

To measure poverty by comparing income groups is known as relative poverty. In Malaysia, to identify the poorest of the poor, the government introduced the concept of hardcore poverty. A household is considered in the hardcore poverty group if its income is half of the poverty line or less. The concept of absolute poverty and hardcore poverty is used in the implementation of the national poverty eradication programs. In Malaysia, the poverty group identified comprises fishermen, padi farmers, coconut growers, estate workers, rubber smallholders, agriculture laborers, and residents of Chinese New Villages. This study only focused on padi farmers in the most productive area, and we found hardly any evidence of poor households. Poor padi farmers are mostly tenant or landless farmers, while our samples are mostly owner/operators that also improve their income by renting more rice land. PBLS, as the most productive area, has the highest rental rate of RM1,000 per season (see Appendix 1). Even at that rate, there is hardly any idle land left. The government's main poverty eradication strategies, at least in the PBLS area, seem relatively successful. Among the strategies are:

- Increasing productivity through new and modern production technologies
- Movement from low productivity to higher productivity activities or sectors.
- Improving quality of life through various assistance programs implemented by federal and state agencies

In short, it is a two-prong strategy of wealth creation and quality of life enhancement.

The main outcome and lesson learned from this study, although not highly conclusive, is that social capital has more positive than negative effects on rural community development. The study area has well developed agriculture infrastructure such as irrigation and drainage systems as well as formal organizations for farmer welfare. Thus, it is timely that more focus and resources be given to social capital development. Investment in harnessing social capital both at community and household levels may further enhance farmers' quality of life. Social problems such as juvenile delinquency are increasingly serious problems in the area (according to our interviews with village heads). Experiences suggest that improving income levels alone cannot solve the problem, and social capital might play an important role in future community development. Therefore, specific policies aiming to enhance social capital, supported by programs and budget allocation, are deemed crucial to hasten general community development.

As mentioned earlier, this study does not cover the whole spectrum of the focus groups. Furthermore, all the respondents were Malay of Javanese stock. Their beliefs and cultural behavior may not provide sufficient variations for more meaningful results. Besides fishermen and the other poverty groups identified earlier, there are also regional poverty issues such as those in East Malaysia, the East Coast, and the indigenous population of Malaysia. A bigger and more comprehensive study covering larger samples is required to understand the effects and role played by all the "community factors" on national community development. It is not necessarily limited to rural community development, but should also include urban. In fact, urban dwellers outstrip rural households in Malaysia today.

The poor are characterized by, among others, a low level of education, insufficient skills, substandard living conditions, and relative non-involvement in community or association activities. Some kind of collective action among them could better facilitate their development. Recently, the Ministry of Agriculture and Agro-based Industries launched the Ministry of Agriculture Incorporated (MOA INC.) concept. Its main aim is to improve the livelihood of the farming community by modernizing the agriculture sector. This concept sees agriculture as a viable business venture through value-adding activities. A few value-adding activities have been identified as suitable for the rural communities (Abu Kasim and Hamdzah, 2003). Among them are snack foods, sauces, and condiments in which much of the raw material is readily available or can be produced easily by farmers. A special program is being implemented in which specialized agencies will assist participants in technological assistance, financing, and marketing of their produce. The critical success factors in this program require social capital inputs as well as other capital. For example, all their produce will carry one brand "Malaysia Best" promoted by a specialised agency. Quality assurance and control will be monitored by another agency. Besides, the participants in this program are encouraged to form a consortium to benefit from economy of scale. To be able to work and be involved in this kind of activity requires a high degree of social trust, collective action, and organizational networking.

Theory on social capital as we know it is at the early stage of development, and particularly as it relates in this country. Continuous capacity building is crucial to improve understanding and analytical skills to conduct good research. A good understanding of the dynamics of community, household behavior, organizational behaviors, and various other sociological dimensions is crucial in social capital research. As for analytical skills, other quantitative as well as qualitative techniques such as factor analysis or scenario analysis might produce a better understanding of the role of social capital in community development.

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## APPENDIX 1

Cost & Return of One Hectare of Padi Production by Seeding During the 2002/2003 Main Season for Study Area

| | DETAILS | Cost/Sales RM/ha |
|---|---|---|
| A | YIELD = 12.6 tons/2 seasons = 6.3 tons per season | |
| | Average price = RM700/ton<br>Price subsidy = RM250/ton<br>Revenue = 6.3 x 950 | 5,985.00 |
| | I. COST OF INPUTS | |
| a | Seed | 146.67 |
| b | Fertilizer (including subsidies) | 230.00 |
| c | Weed control | 38.00 |
| d | Insect & disease control | 230.00 |
| | Subtotal (I) | 644.67 |
| | II. COST OF LABOR/OPERATION | |
| a | Preparation of padi field | 183.00 |
| b | Preparation of seed | – |
| c | Repair of bunds | 116.67 |
| d | Sowing | 37.50 |
| e | Fertilizing | 33.30 |
| f | Insect & disease control | 100.00 |
| g | Control of water & maintenance of bunds | – |
| h | Harvesting & transportation | 595.00 |
| | Subtotal (II) | 1,065.47 |
| | III. QUIT RENT/WATER RATE CONTROL | |
| | Total Average Cost by Owners (I) (II) (III) | 1,710.14 |
| | IV. RENTAL OF LAND | 1,000.00 |
| | Total Average Cost by Tenants (I) (II) (IV) | 2,710.14 |
| B | Average Net Return by Owner = 5,985.00 – 1,710.14 | 4,274.86 |
| C | Average Net Return as Percentage of Revenue = (B/A) x 100% | 71% |

*Source*: Primary survey data on the six villages in 2003

## APPENDIX 2

Cost & Return of One Hectare Padi Production by Seeding During the 2002/2003 Main Season for PBLS

| | DETAILS | Cost/sales RM/ha |
|---|---|---|
| A | YIELD = 5,492kg (5.492 tons) | |
| | Average price = RM700/ton<br>Price subsidy = RM250/ton<br>Revenue = 5.492 x 950 | 5,217.00 |
| | I. COST OF INPUTS | |
| a | Seed | 183.50 |
| b | Fertilizer (including subsidies) | 527.80 |
| c | Weed control | 243.20 |
| d | Insect & disease control | 224.80 |
| | Subtotal (I) | 1,079.30 |
| | II. COST OF LABOR/OPERATION | |
| a | Preparation of padi field | 201.40 |
| b | Preparation of seeds | – |
| c | Repair of bunds | – |
| d | Sowing | 14.60 |
| e | Fertilizing | 216.00 |
| f | Insect & disease control | 247.25 |
| g | Control of water & maintenance of bunds | – |
| h | Harvesting & transportation | 442.10 |
| | Subtotal (II) | 1,121.35 |
| | III . QUIT RENT/WATER RATE CONTROL | 48.50 |
| | Total Average Cost By Owners (I) (II) (III) | 2,249.15 |
| | IV. RENTAL OF LAND | 1,000.00 |
| | Total Average Cost by Tenants (I) (II) (IV) | 3,249.15 |
| B | Average Net Return by Owner = 5,217.00 – 2,249.15 | 2,967.85 |
| C | Average Net Return as Percentage of Revenue = (B/A) x 100% | 57% |

*Source*: Adapted from Padi Statistics, various issues, Ministry of Agriculture and Agro-based Industry, Malaysia

## APPENDIX 3

Distribution of Household Income by Strata: Malaysia 1979–1999

| Proportion of households | Income share (%) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1979 | 1984 | 1987 | 1990 | 1993 | 1995 | 1997 | 1999 |
| Overall | | | | | | | | |
| Top 20% | 55.8 | 53.2 | 51.2 | 50.4 | n.a. | 51.3 | 52.4 | 50.5 |
| Mean Household Income (RM) | n.a. | n.a. | n.a. | n.a. | n.a. | 5,202 | 6,854 | 6,268 |
| Middle 40% | 32.4 | 34.0 | 35.0 | 35.3 | n.a. | 35.0 | 34.4 | 35.5 |
| Mean Household Income (RM) | n.a. | n.a. | n.a. | n.a. | n.a. | 1,777 | 2,250 | 2,204 |
| Bottom 40% | 11.9 | 12.8 | 13.8 | 14.3 | n.a. | 13.7 | 13.2 | 14.0 |
| Mean Household Income (RM) | n.a. | n.a. | n.a. | n.a. | n.a. | 693 | 867 | 865 |
| Rural | | | | | | | | |
| Top 20% | 53.2 | 49.5 | 48.3 | 47.1 | n.a. | 47.4 | 48.2 | 47.9 |
| Mean Household Income (RM) | n.a. | n.a. | n.a. | n.a. | n.a. | 3,153 | 4,130 | 4,124 |
| Middle 40% | 34.4 | 36.4 | 36.7 | 37.1 | n.a. | 37.1 | 36.6 | 36.5 |
| Mean Household Income (RM) | n.a. | n.a. | n.a. | n.a. | n.a. | 1,235 | 1,564 | 1,577 |
| Bottom 40% | 12.4 | 14.1 | 15.0 | 15.8 | n.a. | 15.5 | 15.2 | 15.6 |
| Mean Household Income (RM) | n.a. | n.a. | n.a. | n.a. | n.a. | 515 | 649 | 670 |
| Urban | | | | | | | | |
| Top 20% | 55.6 | 52.1 | 50.8 | 50.6 | n.a. | 49.8 | 50.2 | 48.7 |
| Mean Household Income (RM) | n.a. | n.a. | n.a. | n.a. | n.a. | 6,474 | 8,470 | 7,580 |
| Middle 40% | 32.1 | 34.5 | 35.0 | 35.1 | n.a. | 35.7 | 35.6 | 36.5 |
| Mean Household Income (RM) | n.a. | n.a. | n.a. | n.a. | n.a. | 2,323 | 3,000 | 2,844 |
| Bottom 40% | 12.3 | 13.4 | 14.2 | 14.3 | n.a. | 14.5 | 14.2 | 14.8 |
| Mean Household Income (RM) | n.a. | n.a. | n.a. | n.a. | n.a. | 842 | 1,193 | 1,155 |
| Parity ratio | | | | | | | | |
| Urban: Rural | 1.77 | n.a. | n.a. | 1.70 | 1.75 | 1.95 | 2.04 | 1.81 |
| Chinese: Bumiputera | 1.90 | n.a. | n.a. | 1.76 | 1.78 | 1.80 | 1.83 | 1.74 |
| Indian: Bumiputera | 1.29 | n.a. | n.a. | 1.31 | 1.29 | 1.33 | 1.46 | 1.36 |

*Source:* Eighth Malaysian Plan, 2001–2005, Ministry of Finance, Malaysia.

## APPENDIX 4. PROFILE ANALYSIS TABLES

Table 4-1. Years of Involvement in Formal and Informal Organizations

| Range | No. of respondents | Proportion (%) |
|---|---|---|
| Not involved | 2 | 3.3 |
| 1–10 | 24 | 40.0 |
| 11–20 | 14 | 23.3 |
| 21–30 | 14 | 23.3 |
| 31–40 | 5 | 8.3 |
| 41 and above | 1 | 1.7 |
| Total | 60 | 100.0 |

Table 4-2. Membership in Organizations

| Range | No. of respondents | Proportion (%) |
|---|---|---|
| 0 | 2 | 3 |
| 1–2 | 23 | 38 |
| 3–4 | 22 | 27 |
| 5 or more | 13 | 22 |
| Total | 60 | 100 |

Table 4-3. Frequency of Attending Organization Activities

| Range | No. of respondents | Proportion (%) |
|---|---|---|
| 0 | 18 | 30 |
| 1–10 | 26 | 43 |
| 11–20 | 8 | 13 |
| 21 or more | 8 | 13 |
| Total | 60 | 100 |

Table 4-4. Level of Participation

| Organization | Participation level | | | Total |
|---|---|---|---|---|
| | Head, secretary, treasurer | Committee member | Member | |
| PPK (farmers association) | 3 | 1 | 27 | 31 |
| JKKK | 4 | 8 | 2 | 14 |
| Mosque | 3 | 10 | 4 | 17 |
| Mini mosque (Surau) | 5 | 18 | 2 | 25 |
| Death fund | 4 | 7 | 24 | 35 |
| Political group | 6 | 9 | 17 | 33 |
| Parent/teacher organization | 2 | 5 | 23 | 30 |

Table 4-5. Attitude Toward Organization

| Organization | Proportion (%) | | |
|---|---|---|---|
| | More important | Important | Not important |
| PPK | 45.0 | 18.3 | 36.7 |
| JKKK | 45.0 | 8.3 | 46.7 |
| Mosque | 45.0 | 10.0 | 45.0 |
| Mini mosque (Surau) | 43.3 | 18.3 | 38.4 |
| Death fund | 40.0 | 38.3 | 21.7 |
| Political group | 45.0 | 16.7 | 38.3 |
| Parent/teacher organization | 45.0 | 36.7 | 18.3 |

Table 4-6. Type of Household

| Type | No. of households | Proportion (%) |
|---|---|---|
| Single family | 12 | 20.0 |
| Nuclear family | 34 | 56.7 |
| Extended family | 14 | 23.3 |
| Total | 60 | 100.0 |

Table 4-7. Social Trust Indicator

| Level of trust | No. of respondents | Proportion (%) |
|---|---|---|
| Everybody can be trusted | 8 | 13.3 |
| Need to be careful | 52 | 86.7 |
| Total | 60 | 100.0 |

Table 4-8. Perception on Usage of Water

| Rate | No. of respondents | Proportion (%) |
|---|---|---|
| Insufficient | 25 | 41.7 |
| No problem | 35 | 58.3 |
| Total | 60 | 100.0 |

Table 4-9. Technology Adoption Indicator

| Variety | No. of respondents | Proportion (%) |
|---|---|---|
| MR 219 | 52 | 86.7 |
| MR 220 | 9 | 15.0 |
| MR 211 | 5 | 8.3 |
| MR 202 | 1 | 1.7 |

## APPENDIX 5. KEY ECONOMIC INDICATORS OF MALAYSIA

| Indicator | 1970 | 1995 | 2002 |
|---|---|---|---|
| Gross Domestic Product (1978 prices), RM million | 21,548 | 120,309 | 219,309 |
| Contribution from: (%) | | | |
| Services | 38.2 | 44.3 | 57.0 |
| Manufacturing | 14.8 | 33.1 | 30.1 |
| Construction | 4.1 | 4.5 | 3.3 |
| Mining | 14.2 | 7.4 | 7.2 |
| Agriculture | 30.9 | 13.5 | 8.4 |
| | | | |
| Exports at current prices, RM million | 5,163 | 185,325 | 354,475 |
| Contribution from: (%) | | | |
| Manufacturing | 11.1 | 79.6 | 85.3 |
| Mining | 5.2 | 5.8 | 6.1 |
| Agriculture | 74.4 | 13.1 | 5.0 |
| Others | 9.3 | 1.5 | 3.6 |

*Source:* Economic Report, Ministry of Finance Malaysia, various issues

# REVITALIZING PRODUCTIVITY AND INCOME EFFECTS OF SOCIAL CAPITAL: MAINSTREAMING SOCIAL CAPITAL FOR RURAL POVERTY REDUCTION IN SRI LANKA

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## INTRODUCTION

Sri Lanka's population was 19.7 million in 2004 and its GDP per capita was USD870, almost the second highest in South Asia. With the public investment in social development since the nation's independence, the indicators of education and basic health facilities are quite satisfactory. However, poverty levels in Sri Lanka remain high in spite of considerable public support provided through anti-poverty programs (Ahmed and Ranjan, 1995). According to the most recent statistics, while the annual growth rate of GDP per capita was 3.2% on average from 1990 to 2002, the reduction of the poverty rate did not match that growth: from 26.1% to only 22.7% (World Bank, 2005). In fact, although the poverty rate in the urban sector became half, i.e., from 16.3% to 7.9%, that of the rural sector remained almost unchanged during the same period. It is even argued that during the last 40-year period, the rates of poverty, inequality, and standard of living in the rural sector remained almost the same.

The rural sector in Sri Lanka consists of about 15 million people, or 75 to 80% of the total population. Out of the total rural population, 90% or 13.5 million (about 3.2 million to 3.5 million households) are considered to be poor.[1] Disparity between the urban and rural economies is quite visible, indicating that economic growth in the cities does not equally affect the rural sector.[2] Rural poverty is emerging as one of the most serious challenges facing the policymakers in Sri Lanka (World Bank, 2000). Most urgently, the primary responsibility for fighting poverty lies with the government and people of the rural sector. Therefore, it is high time for Sri Lanka to redesign its poverty reduction strategy so as to ensure the benefits of the market reforms renewed in the early 1990s.[3]

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[1] Poverty statistics/indicators of Sri Lanka are provided by the Department of Census and Statistics (2004).

[2] Disparity between urban and rural sectors has been discussed extensively and the government has programmed to adopt a comprehensive poverty reduction action plan since 2002. The plan was well structured in "Connecting to Growth: Sri Lanka's Poverty Reduction Strategy," Development Forum Colombo, June 2002.

[3] Since independence, Sri Lanka has changed its economic policy several times: from independence to 1977 it focused on an inward-looking, self-sufficient economy; since 1977 it has adopted a liberalized, market-based approach; and in the early 1990s the market reforms were renewed.

This study is devoted to an evaluation of the key elements of community factors using a household survey undertaken in rural areas, and to deriving policy lessons for redesigning integrated community development in Sri Lanka. According to studies of Ahmed and Ranjan (1995), Anand and Kanbur (1995), and Silva et al. (2002), the fundamental weakness of the poverty reduction strategy in Sri Lanka is insufficient attention paid to production/trade orientation and creating a level playing field for rural producers relevant to the markets. Gunatilake and Thusara (1999) have confirmed the same relevant to poverty reduction projects funded by donors.[4] With this regard, economists as well as sociologists consider that social capital is a missing link that needs to be given due concern when redesigning future development strategies.[5] For example, Collier (1998) examined social capital and its related benefits to traders enhancing their income while Fafchamps and Minten (1999) envisaged the network effects and entrepreneurial benefits of social capital. Social capital is considered as one of the key resources that contribute to the production of goods and services (Grootaert and Narayan, 2001). A study by Grootaert and Bastelaer (2002) further confirmed the role of social capital in terms of generating positive contributions to economic and social well-being. However, the concept of social capital from an economic perspective has not yet been demonstrated as a part of the poverty reduction programs in Sri Lanka (Uphoff and Wijayaratna, 2000). Therefore, this study focuses on social capital so that it will serve to enrich the poverty reduction programs incorporating its societal dimensions, which would be relevant not only to Sri Lanka but also to many other developing countries.

The empirical part of this study is based on data collected at the project site of Rural Village Resuscitation: One Product/One Village Program (RVROOP) that is in operation at present as a completely different approach to rural poverty reduction implemented by the Rural Economy Resuscitation Trust Fund (RERTF) in Sri Lanka. RVROOP is based on the principle of a community-driven and demand-driven approach. RVROOP is involved in redesigning a new approach to poverty reduction in Sri Lanka and it will be a fruitful ground to test the importance of social capital for poverty reduction.

The rationality of this study is as follows. First, there is a need for redesigning integrated efforts as a solution to the on-going poverty dilemma. Second, it is necessary to ascertain what form of social capital is needed to rebuild the integrated effort to community development, as mentioned by Woolcock (2001) and Songco (2002). Third, specifically a debate on trade liberalization is going on in Sri Lanka: some argue that widespread poverty is a result of an erosion of social capital that had been crucial in traditional subsistence villages; but others, for example Abeyratna (2001), have sought to show that market integration has generated more benefits than the cost to the rural villages in terms of new employment, foreign remittances, resource mobilization, and enhancing income levels together with a better living standard than found in traditional agricultural

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[4] The study of Reimer (2002) and van de Walle (2002) showed that search for market-related solutions and linking trade with poverty reduction program help rural households to enhance their income.

[5] Definition of social capital is not discussed in this paper. Grootaert (2001) describes social capital as some set of norms, networks, and organizations through which people gain access to power and resources and through which decision-making and policy formulation occur. Woolcock (2001) views social capital as "one's family, friends, and associates that constitute an important asset," and "one that can be called upon the crisis and enjoyed for its own sake."

villages.[6] All the points above make it clear that an investigation into the income effect of social capital for village-based economies is critically important and a pressing need for market integration and modernization (Dissanayake, 2001a and 2001b; Abeyratna, 2001).

In respect to the organization of this paper, the author first presents the objectives of the study; Section 3 describes the outline of the data and methodology; Section 4 presents the characteristics of sample households; Section 5 discusses the regression results; and Section 6 provides concluding remarks and policy implications.

## OBJECTIVE

The overall objective of this study is to investigate the income effect of household-level social capital with a view to redesigning rural poverty reduction policy in Sri Lanka. The hypothesis is that social capital enhances income at household level.

In achieving this objective, the study considers the dimensions of social capital and analyzes the income effect of each dimension so that relevant policy implications for successful integrated community development can be drawn.

There is some delimitation in this study. First, this study focuses attention only on rural producer households and their economic activities in selected villages. Second, this study is limited to an evaluation of the role of social capital, and other forms of capital, i.e., natural capital, physical capital, human capital, and financial capital, are not analyzed. Third, this study is limited to an analysis of the impact of social capital in terms of poverty reduction and does not evaluate the related development outcome particularly the equity aspects.

## DATA AND METHODOLOGY

### The Data

The primary data for this study were collected in 32 villages purposefully selected from 198 villages where RVOOP is implemented (see the map in Appendix 1 for their location). To have diversity among sample villages in terms of subsistence strategy, all the villages were stratified into three clusters and sample villages were randomly drawn from each cluster. The three clusters are (1) paddy-based agricultural villages, (2) export-crop villages, and (3) off-farm activity villages. The sample sizes are 10 villages from the first cluster, 12 villages from the second cluster, and 10 villages from the third cluster. Then, 10 to 20 households were randomly selected in each sample village for the household survey.

The household surveys were undertaken by independent surveyors who interviewed each household head separately from May to September 2004.[7] The survey schedule

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[6] Comparative household income/expenditure data show that an unprecedented growth of household income and assets has taken place since the 1980s and the overall living standard has gone up with a diverse set of income generation sources as a result of trade liberalization and globalization (Department of Census and Statistics, 2003).

[7] The surveyors were government community officers specially trained for the purpose, who are not strangers to the villagers.

consisted of five main sections. They were: (i) village level collective data section, (ii) household level basic data section, (iii) household collective action, cooperation, social cohesion and collective social activities, (iv) economic activities of the household, and (v) rural markets and prices for the rural produce. A similar data set has been used by Narayan and Pritchett (1997), Grootaert (1999), and Wiig (2003) to investigate the role of social capital in providing service delivery and in affecting rural communities' welfare and poverty reduction. Uphoff and Wijayaratna (2000) too investigated the demonstrational benefits from social capital in Gal Oya area in Sri Lanka using a similar set of data collected from that particular community. Krishna and Uphoff (1999) and Krishna (2004) did a similar study in Rajasthan State in India.

In addition, qualitative data were collected by selected surveyors who are working at community-level organizations. The survey schedule was designed to collect data at village level as well as household level, and data were collected through interviews, focus group discussions, and observations covering households, village leaders, community associations, village-level government officers, social workers, and different social representatives in the village. Sometimes, the surveyors participated in the meetings of the village community associations and observed the associational responses. At the same time, the views of the community associations have been compiled with village leaders, members as well as non-members, in order to get a balanced view. Moreover the surveyors collected qualitative data and information on each household through observations, private interviews, and discussions with family members.

Secondary data for this study were obtained from the publications of the Central Bank and the Department of Census and Statistics. Secondary data play a dual role in this study. Firstly, they will be filling gaps and deriving meaning for a given household situation. Secondly, they will help to cross check the validity of the primary information.

**Sample Village Profile**

The profile of the 32 sample villages is presented in Table 1. The total population of the sample villages is 19,819, and the number of households amounts to 5,440. Thus, an average of 3.5 to 4.0 persons reside in one household. Of the total households, 41% are Samurdhi recipients, who are considered to be living below the poverty line. In each sample village, about 10% of total households were randomly selected for the household survey, and hence the sample size becomes 540 out of 5,440 households.

The first cluster consists of 10 paddy-based agricultural villages located in the Kuliyapitiya East and West Divisional Secretary Divisions in Kurunegala District. Paddy and coconut production is the dominant economic activity in the two divisions. The number of sample households is 137, which is nearly 10% of the total of 1,341 households in the 10 villages. The average income of the 1,341 families is estimated to be 12,440 rupees (USD124) per month or USD31 per person per month, which includes 524 Samurdhi recipients.

In the second cluster, 12 villages in Kolonna Divisional Secretary Division of Ratnapura District were selected. Households in this division rely on the income from several export crops such as tea, cardamom, pepper, coffee, cinnamon, clove, and nutmeg that are cultivated in 1 to 2 acres of home gardens. Some of them have small paddy fields, cultivated as a supplemental income source. These villages are situated about 150 kilometers from Colombo and 50 kilometers from Ratnapura. The distance is a major factor affecting the price of crops. Very often, farmers receive low prices offered by intermediary traders who come to the villages because these villages are on highlands

without proper roads and other facilities. There are 941 Samurdhi recipient families out of 1,668 total households in the 12 villages, from which 190 households were selected for the survey. The average income is estimated to be 6,027 rupees (USD60) per month, which is significantly lower than the other two clusters.

Table 1. Sample Village Profile

| Village name | Size of population | Number of households | Number of Samurdhi recipients | Household income (Rupees/month) | Number of sample households |
|---|---|---|---|---|---|
| Cluster 1: Paddy-based agricultural villages | | | | | |
| Korossa | 205 | 72 | 58 | 13,450 | 10 |
| Wathukana | 909 | 246 | 100 | 16,263 | 20 |
| Dunupotha | 603 | 157 | 92 | 11,075 | 20 |
| Katuwaththewela | 338 | 102 | 53 | 15,210 | 10 |
| Pitadeniya | 519 | 200 | 30 | 13,817 | 18 |
| Kurakkanhengedara | 158 | 39 | 24 | 10,625 | 11 |
| Rukmale | 121 | 49 | 40 | 11,120 | 10 |
| Dalupothagama | 864 | 165 | 70 | 9,519 | 10 |
| Karangamuwa | 887 | 265 | 21 | 10,169 | 18 |
| Kekulakada | 140 | 46 | 36 | 13,155 | 10 |
| Total (average) | 4,744 | 1,341 | 524 | (12,440) | 137 |
| Cluster 2: Export-crop villages | | | | | |
| Buthkanda | 218 | 49 | 34 | 8,157 | 15 |
| Udawaththa | 1,824 | 562 | 316 | 3,933 | 15 |
| Pitakandagama | 554 | 155 | 84 | 6,907 | 15 |
| Samagipura | 235 | 44 | 34 | 4,417 | 15 |
| Galkandagoda | 400 | 56 | 48 | 5,483 | 15 |
| Thalagahawaththa | 815 | 142 | 75 | 4,987 | 14 |
| Kellagama | 154 | 30 | 19 | 3,546 | 14 |
| Buluthota | 417 | 92 | 28 | 4,903 | 15 |
| Akkarayaya | 168 | 35 | 10 | 4,590 | 15 |
| Kelikanda | 237 | 60 | 45 | 4,879 | 15 |
| Wallarawa | 975 | 191 | 146 | 6,269 | 21 |
| Wellikanna | 1,264 | 252 | 102 | 14,255 | 21 |
| Total (average) | 7,261 | 1,668 | 941 | (6,027) | 190 |

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(continuation)

| Village name | Size of population | Number of households | Number of Samurdhi recipients | Household income (Rupees/month) | Number of sample households |
|---|---|---|---|---|---|
| Cluster 3: Off-farm activity villages | | | | | |
| Palagama | 1,777 | 487 | 55 | 11,680 | 20 |
| Weniwelkola | 1,150 | 320 | 82 | 12,423 | 20 |
| Maldeniya | 228 | 119 | 24 | 7,665 | 20 |
| Kongolla | 861 | 250 | 164 | 9,035 | 20 |
| Yahalegedara | 685 | 176 | 50 | 9,195 | 20 |
| Palugama | 465 | 134 | 100 | 8,186 | 25 |
| Hawluwa | 376 | 94 | 69 | 12,133 | 25 |
| Manawa | 597 | 137 | 98 | 12,613 | 24 |
| Maniyangama | 473 | 360 | 200 | 11,100 | 20 |
| Ihalakosgama | 1,016 | 264 | 13 | 9,548 | 19 |
| Total (average) | 7,628 | 2,341 | 855 | (10,358) | 213 |
| Overall | 19,819 | 5,440 | 2,390 | (9,608) | 540 |

The third cluster consists of 10 villages spread over three districts. These villages are classified as non-agricultural villages producing handicrafts, pottery, ornamental items, and traditional crafts with home-based agricultural activities. Three of the 10 villages, namely Palagama, Weniwelkola, and Ihalakosgama, are located in Colombo District, closer to the capital city. Thanks to better market opportunities, the poverty in terms of Samurdhi recipients is not comparative to the other villages. That is, 13 households are receiving Samurdhi out of 264 households in Ihalakosgama, 55 out of 487 households in Palagama, and 82 out of 320 households in Weniwelkola. The other five villages are situated in Kurunegala District 100 to 150 kilometers from Colombo, and the remaining two villages are in Kegalle District about 50 kilometers from Colombo. The average income of the households in the 10 villages is 10,358 rupees or USD103 per month.

**Construction of Capital Variables**

The survey has been designed to examine the impact of household social capital endowments on the level of household income by controlling for human capital and physical capital endowments that are already known to have a positive effect on income. For this purpose, an index of social capital was constructed following the literature, as a weighted sum of indices of six dimensions shown in Table 2.

The first dimension concerns the household's involvement in existing village-level associations. In the study site, funeral societies are the most popular, followed by farmer associations, cooperative societies, savings societies, Samurdhi societies, craftsmen societies, teacher/parent associations, and Buddhist temple societies. In traditional craftsmen communities, associational relationship is an essential part of village life (Wiig, 2003). Rural associational connections are considered to be a vital aspect of social capital that reduces the transaction cost among the members (Uphoff, 1993; Grootaert, 1998).

The second dimension measures the internal connectedness in traditional, informal groups since groups based on caste, culture, occupation, age, and/or kin are still very powerful in Sri Lankan villages. These characteristics are still quite influential in cast-based villages while other villages have somewhat modern types of internal relationships. In addition to them, household mutual contributions to neighbor welfare and household societal friendship are included in this dimension. Three types of village-level exchange systems in Sri Lanka, Attam, Kayya, and Sramadhana are particularly considered in this context.

Sri Lankan village communities are well known for group-based collective activities. This factor has been taken in the third dimension of the study as follows. First, household participation in RVROOP-sponsored construction of roads, markets, community centers, etc. is rated. Second, household participation in other collective work during the last 12 months is rated. The third factor is household voluntary contributions to the Samurdhi Program, and the fourth is household solidarity in terms of voluntary contributions to community common projects. Then, finally, the leadership of the household in those group-based community works is taken into account.

Household personal relationships with government officers, such as Divisional Secretary, Grama Seva officers, and others, constitutes the fourth dimension, because they are an important part of village life in Sri Lanka affecting community development through organizing and carrying out governmental works.

The fifth dimension is household utilization of village public goods such as schools, health centers, community centers, cooperative societies, roads, etc. The utilization means sharing and caring of these public goods, which are considered to reflect household social capital.

The last dimension is meant to capture the extent of networking with external organizations. In Sri Lankan villages, there are many private contributors and non-governmental organizations such as NGOs, credit and saving associations, banks, traders, manufacturing companies, women's organizations, etc., which are involved in village activities.

Table 2. Dimensions of Social Capital Index

| Dimensions | Weight in 100 | Remarks |
|---|---|---|
| Involvement in associations/societies in the village | 20 | Household involvement in existing village-level associations/societies on the basis of active memberships, holding of posts in the associations, payment of membership fees, and involvement in the decision-making process |
| Connectedness within groups/communities | 25 | Household relationship with neighbors, kin group, and age groups. In addition, household mutual contributions to neighbor welfare and household societal friendship are considered |

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| Dimensions | Weight in 100 | Remarks |
|---|---|---|
| Participation/contribution to village collective group works and projects | 25 | Household voluntary participation in and contribution to village-level collective group works and projects such as construction of roads, community centers, Samurdhi program, as well as its leadership |
| Relationship with government officers | 10 | Household personal relationship with government officers such as Divisional Secretary, Grama Seva officers, and others |
| Utilization of village common facilities | 10 | Household utilization (i.e. sharing and caring) of village common facilities such as public school, health center, community center, cooperative societies, tank, roads, etc. |
| Involvement in NGOs and other external organizations | 10 | Household involvement in the activities of external private/non-governmental organizations such as NGOs, credit and saving associations, banks, traders, manufacturing companies, women's organizations, etc. |

Table 3. Dimensions of Human Capital Index

| Dimension | Weight in 100 | Remarks |
|---|---|---|
| Age and workable period | 10 | Household member age and workable period, which is assumed to be from age 18–60 |
| Education and professional level | 20 | Academic qualifications attained by household members |
| Occupational experience | 10 | Number of years/periods of employment and job experience of household members |
| Training/Special skills | 10 | Special training, certificate, and usage of training on the job by household members |
| Income earning avenues | 20 | Household's main income earning job and other additional jobs |
| Capacity and income earning ability | 30 | Resources and capacity owned by household members for income generation |

Table 4. Dimensions of Physical Capital Index

| Dimension | Weight in 100 | Remarks |
|---|---|---|
| Productive immovable assets | 25 | Household ownership of productive lands, buildings, and cultivated leased lands |
| Movable assets used for production | 25 | Household ownership of vehicles, machinery, equipment, tools, and any other production accessories |
| Public and private business infrastructure | 25 | Usage of all infrastructure facilities owned by the household or by the public |
| Other income generating assets | 25 | Household ownership of assets for extra income earning |

If we classify the six dimensions of social capital, the first three dimensions are considered to have existed traditionally in Sri Lankan villages facilitating cooperation and solidarity among villagers, while the last three dimensions are relatively individualistic and new forms of social capital that promote relationships with outside-village agents such as NGOs and government officers and utilization of non-traditional common facilities.

On the other hand, a human capital index is constructed on the basis of the six dimensions as shown in Table 3. The human capital index focuses the economic behavior or income earning characteristics of individuals as well as households as shown by Schuller (2001). Similarly, a physical capital index is a composite variable of four dimensions as shown in Table 4. The four dimensions cover all types of productive physical capital, either movable or immovable, that a household possesses and the level of their utilization. In addition, not only privately owned assets but also public goods such as infrastructure are included.

The three capital indices are used as explanatory variables in the analyses to be explained in the following section.

**The Data Analysis Framework**

The methodology of this study follows previous quantitative studies on the effect of social capital such as Narayan and Pritchett (1997), Collier (1998), Grootaert (1999), Grootaert and Bastelaer (2002), Pretty and Ward (2001), Wiig (2003), and Krishna (2004). The data analysis framework has four stages. At the first stage, the social capital is measured as an index in the way explained in the previous section. Then, at the second stage, the direct relationship between the social capital index and the level of household income is investigated. Third, the human capital and physical capital indices are included in the model so as to test if the social capital index has any impact on household income by controlling for other capital endowments. Finally, the social capital index is disaggregated into six dimensions in order to discern differential impacts of each social capital dimension in the same model as the previous stage.

The first model is simply to examine whether a higher social capital endowment leads to a higher income, as follows.

$$E_i = \alpha_0 + \alpha_1 SC_i + \epsilon_i \quad (1)$$

where subscript i stands for household i, the dependent variable $E_i$ is household's current expenditure per capita per month used as a proxy for household income, and the explanatory variable $SC_i$ is the social capital index. Both $E_i$ and $SC_i$ are expressed in terms of natural logarithm. The coefficients to be estimated are $\alpha_0$ for the constant term and $\alpha_1$ for social capital, and $_i$ is the error term.

Then, the inclusion of the variables for human and physical capital indices in equation (1) gives the second model as below.

$$E_i = \beta_0 + \beta_1 SC_i + \beta_2 HC_i + \beta_3 PC_i + \quad _i \qquad (2)$$

where $HC_i$ and $PC_i$ are human capital index and physical capital index respectively in terms of natural logarithm. $\beta_0$, $\beta_1$, $\beta_2$, and $\beta_3$ will be estimated.

However, there is possibility that the each dimension of social capital may have a different effect on household income. In order to see such differential impact, the social capital index is disaggregated in the third model as below.

$$E_i = \gamma_0 + \gamma_1 SCa_i + \gamma_2 SCc_i + \gamma_3 SCg_i + \gamma_4 SCb_i + \gamma_5 SCv_i + \gamma_6 SCn_i + \gamma_7 HC_i + \gamma_8 PC_i + \quad _i \qquad (3)$$

where the social capital index in equation (2) is disaggregated into six variables (refer to Table 2): $SCa_i$ is for "involvement in associations/societies in the village," $SCc_i$ is for "connectedness within groups/communities," $SCg_i$ is for "participation/contribution to village collective group works and projects," $SCb_i$ is for "relationship with government officers," $SCv_i$ is for "utilization of village common facilities," and $SCn_i$ is for "involvement in NGOs and other external organizations." All the variables are expressed in terms of natural logarithm. $\gamma_0$, $\gamma_1$, $\gamma_2$, $\gamma_3$, $\gamma_4$, $\gamma_5$, $\gamma_6$, $\gamma_7$, and $\gamma_8$ are parameters to be estimated.

## SURVEY RESULTS

The survey results, as shown in Table 5, reveal that the mean household income per month is around 9,401[8] rupees which implies that the mean per capita income is about 2,350 rupees per month.[9]

As shown in Figure 1, income distribution among the sample households is highly skewed, where the highest is 46,000 rupees per month and the lowest is 2,500 rupees. The highest is found in Wathukana Village in Kurunegala District although there are 100 Samurdhi recipients in the same village. This is a paddy-based agricultural village with income from coconut sales. Except for 10 landless households, all have their own land

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[8] National household income per month is Rupees 12,803 or US $128 for a family with 3.8 members, according to the Department of Census and Statistics (2004). The district level figures are as follows: Kurunegala, Rupees 10,771; Ratnapura, Rupees 8,518; Kegalle, Rupees 8,342. The highest household income, Rupees 22,420, is found in Western Province, while household income in other districts is reported to be less than the national average, indicating income distribution disparity in Sri Lanka.

[9] The Department of Census and Statistics (2004) announced in June 2004 that Sri Lanka's official poverty line is Rupees 1,423 per person per month in 2002 prices. The department also figures that per capita income of the poorest 40% is less than Rupees 1,672 per month, while the richest 10% earn more than Rupees 5,717 per month.

with coconut trees. There are six households whose income is more than four times the average income of the village; they rely on either government pension or foreign remittances. With respect to the foreign remittances, 70 households out of 540 sample households receive foreign remittances from their family members, which ranges from USD50 to USD150. On the other hand, the lowest household income is reported in Kellagama Village in Kolonna Divisional Secretary Division in Ratnapura District. This village belongs to the second cluster, export-crop villages. Udawaththa Village, also in the second cluster, has a low income of less than 4,000 rupees per month. These villages in the second cluster are located in a very remote area and their per capita income is 1,359 rupees on average, which is below the official poverty line of 1,423 rupees. On the other hand, the average household income of the third cluster, off-farm activity villages, is about 10,358 rupees, which is much higher than in the second cluster.

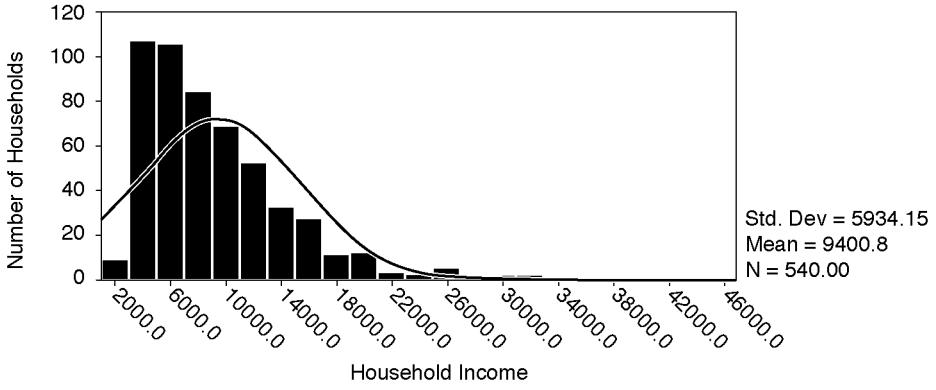


Figure 1. Distribution of Income

Table 5. Descriptive Statistics of the Results

| Item | Household income | Social capital | Human capital | Physical capital |
|---|---|---|---|---|
| Mean | 9,401 | 52 | 45 | 35 |
| Median | 8,000 | 52 | 44 | 34 |
| Mode | 5,500 | 49 | 42 | 45 |
| Standard deviation | 5,934 | 9.87 | 13.1 | 15.5 |
| Skewness | 1.98 | –0.39 | 0.27 | 0.43 |
| Minimum | 2,500 | 20 | 16 | 8 |
| Maximum | 46,000 | 77 | 87 | 90 |
| Number of samples | 540 | 540 | 540 | 540 |

As for physical capital, the mean of the physical capital index is 35 while the median is 34 (Table 5). This implies that physical capital is quite evenly distributed, but as shown in Figure 2 its distribution shows two peaks ranging from 8 to 90. This is consistent with the known reality in Sri Lanka (World Bank, 2000; Department of Census and Statistics, 2004). The household with the highest physical capital index of 90 is in Weniwelkola

Village in Colombo District and its monthly income is 40,000 rupees. This household has five acres of paddy land, agricultural equipment, a hand tractor, and employs three people. The lowest physical capital index of 8 is found with a household in Akkarayaya Village in Ratnapura District and its household income is less than 3,600 rupees per month. Akkarayaya Village is far away from Ratnapura located in mountains 4,000 feet above sea level. The villagers occasionally visit the closest town, Embilipitiya, while agents of traders come to the village to collect village produce at a lower price. There are no marketing facilities or a connected rural road.

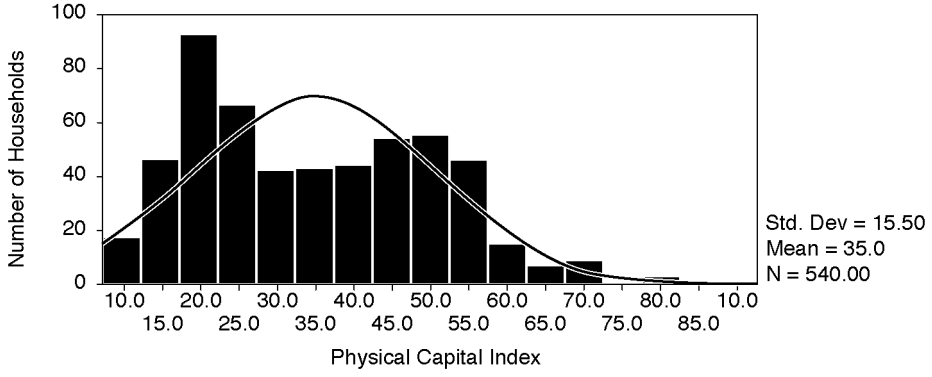


Figure 2. Distribution of Physical Capital

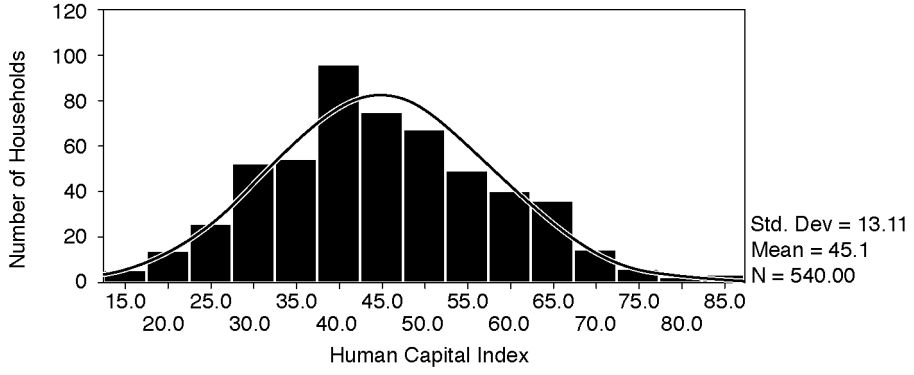


Figure 3. Distribution of Human Capital

The human capital index, on the other hand, shows a distribution close to normal with a mean of 42 and a median of 44 ranging from 16 to 87 (Table 5 and Figure 3). The highest human capital endowment is found in paddy-based agricultural villages with a considerable level of education, special skills, training, and competence in some income-earning avenues. In Wathukana and Palagama, many are educated and their income is also high when compared with that of other villages. In Wathukana, the head of the household with the highest index of 84 is a university graduate maintaining diversified income sources. Similarly, in Palugama, the household with the highest index of 80 has a high income with special training and fairly satisfactory physical capital. The lowest human capital index of 16 is found in a household in Akkarayaya Village, whose income is less

than 100 rupees a day. However, in some cases, households with a good human capital index have low income. Such households are found in Samagipura, Akkarayaya, and Galkandagoda in the Kolonna Divisional Secretary Division in Ratnapura District, where a household whose human capital index is 84 earns 6,000 rupees per month, another household with an 80 human capital index earns 4,000 rupees and another household with a 67 human capital index earns 4,200 rupees. Such a situation happens because educated people cannot have a meaningful income opportunity due to the high unemployment rate in Sri Lanka.

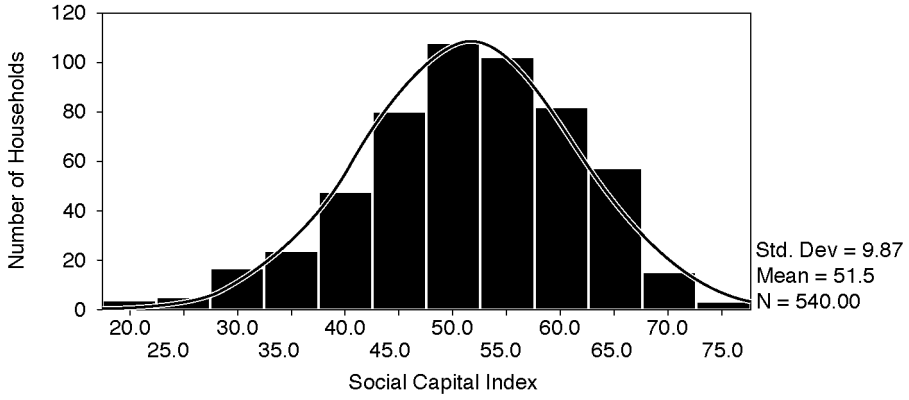


Figure 4. Distribution of Social Capital

Table 6. Disaggregation of Social Capital

| Social capital dimensions | Cluster 1 | Cluster 2 | Cluster 3 |
|---|---|---|---|
| Involvement in associations/societies in village | 10 | 9 | 11 |
| Connectedness within groups/communities | 14 | 13 | 13 |
| Participation/contribution to village collective group works | 14 | 14 | 13 |
| Relationship with government officers | 4 | 5 | 4 |
| Utilization of village common facilities | 5 | 6 | 6 |
| Involvement in NGOs and other external organizations | 5 | 6 | 5 |
| Aggregated Index | 52 | 52 | 51 |

Finally, the social capital index is found to be quite evenly distributed close to normal (Table 5 and Figure 4). The highest social capital endowments exist in paddy-based agricultural villages such as in Samagipura, Dunupotha, Wathukana, and Katuwaththewela while the lowest social capital endowments are in Akkarayaya of the second cluster and in Wellarawa and Yahalegedara of the third cluster. Since Akkarayaya shows the lowest physical as well as human capital indices, the result may indicate that low social capital endowments are also associated with low income. However, as shown in Table 6, the average level of social capital index does not much differ among the three clusters. Even

though the index is disaggregated into six dimensions, there seems to be little difference among the three clusters. Therefore, unlike physical capital and human capital endowments, the impact of social capital endowments on household income is not so obvious. Accordingly, regression analyses are required to investigate the effect of social capital by controlling for other factors.

## REGRESSION RESULTS

The result of the estimation of equation (1) is given in the first column of Table 7, which confirms the significant income-enhancing effect of social capital endowments. However, $R^2$ is very low in this regression implying that household income is largely determined by other factors such as physical capital and human capital. Hence, equation (2), which includes both physical and human capital indices, is estimated. The result is in the second column of Table 7. Now, $R^2$ is satisfactorily high, and both human and physical capital are found to increase household income significantly, as expected. However, unlike the result of equation (1), social capital endowments have now a significantly negative effect on household income.

Table 7. Impact of Social Capital on Household Income

| Explanatory variables | Equation (1) | Equation (2) |
|---|---|---|
| Constant | 30.2 (4.29)*** | -8.90 (1.16) |
| Social Capital Index | 0.499 (6.65)*** | -0.150 (2.12)** |
| Human Capital Index | NA | 0.125 (2.26)** |
| Physical Capital Index | NA | 1.41 (30.6)*** |
| $R^2$ | 0.08 | 0.680 |
| Number of Observations | 540 | 540 |

Dependent variable is household expenditure per capita per month.
T-statistics are in the parenthesis. *** and ** respectively indicate 1% and 5% levels of significance.

In order to explore the reason why equation (1) and equation (2) provide inconsistent results, the relationship between household income and capital endowments are graphically presented in Figure 5, using the data of 24 households in four villages: Yahalegedara, Kongolla, Palagama, and Weniwelkola. As shown in the figure, while both human and physical capital endowments have a positive relationship with household income all over the index range, social capital does not show such a monotonous relationship with household income. For relatively poor households, the relationship between social capital and household income is positive, but for relatively rich households, the relationship is negative. This implies that among relatively poor households social capital is important to enhance household income complementing physical and human capitals, but such an effect is diminishing as household income level increases. Probably this feature of social capital is causing the inconsistent results of equation (1) and (2), and it suggests that each dimension of the aggregated social capital index may have a different

impact on household income. Hence, instead of the aggregated social capital index used in equations (1) and (2), disaggregated social capital indices are used in equation (3).

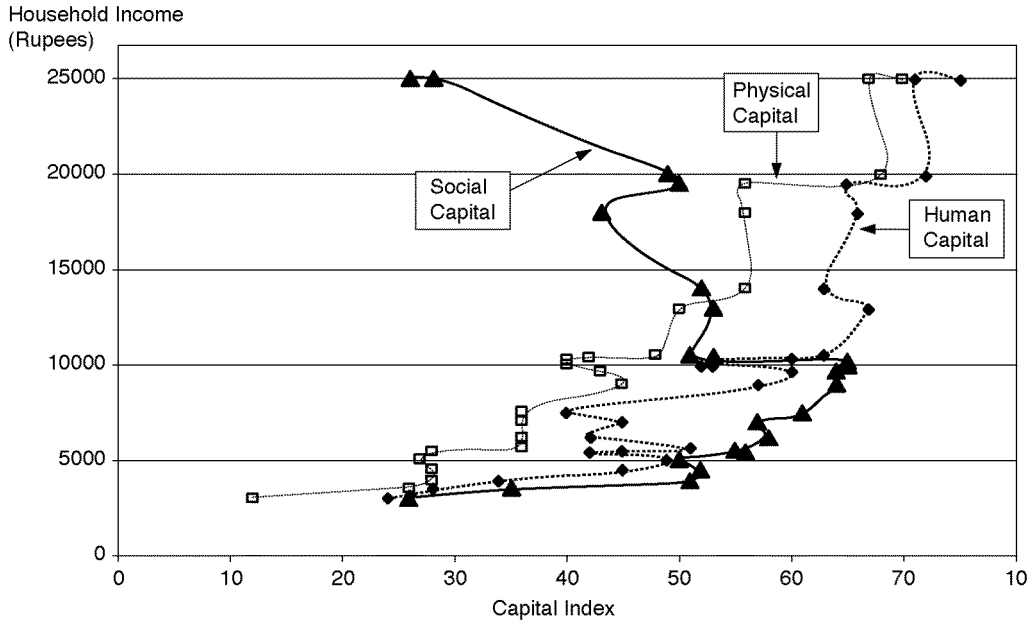


Figure 5. Relationship Between Household Income and Capital Endowments

The estimated result is given in Table 8. As expected, $R^2$ is as high as equation (2), and coefficients for human and physical capital indices are very close to those of equation (2). However, it is found that while one of the six social capital dimensions has a positive, significant effect, the others have no or a negative effect.[10]

First of all, among the three new dimensions of social capital, "utilization of village common facilities" has a significantly positive effect on household income, which is related to the rate of sharing and caring of public goods. It has been well demonstrated that the rate of utilization and sharing of village-based public goods is considered to be strong part of village-level collective social capital (Uphoff and Wijayaratna, 2000). For example, households in off-farm villages need to share community centers and commonly owned machines such as for clay processing. The observation in Yahalegethera and Palugama reveals that productivity increased after replacing common clay processing facilities. Those are related to income-generating activities particularly in a market-oriented economy.

[10] Since the level of correlation between the independent variables is not so high, multicollinearity does not seem to be a serious problem in the estimation of equation (3).

Table 8. Dimensions of Social Capital

| Explanatory variables | Equation (3) |
|---|---|
| Constant | –13.25 (1.61) |
| Social Capital Indices | |
| Involvement in associations/societies in village | 0.07 (0.66) |
| Connectedness within groups/communities | –0.04 (0.66) |
| Participation/contribution to village collective group works | –0.04 (0.87) |
| Relationship with government officers | –0.04 (0.63) |
| Utilization of village common facilities | 0.07 (2.19)** |
| Involvement in NGOs and other external organizations | –0.18 (2.38)*** |
| Human Capital Index | 0.13 (2.22)** |
| Physical Capital Index | 1.40 (30.19)*** |
| $R^2$ | 0.68 |
| Number of observations | 540 |

Dependent variable is household expenditure per capita per month.
T-statistics are in the parenthesis. *** and ** respectively indicate 1% and 5% levels of significance.

However, the other two non-traditional dimensions, "involvement in NGOs and other external organizations" and "relationship with government officers" do not have any positive impact on household income, or even the former is found to have a significantly negative effect on household income. In the study site, five villages have NGO activities while informal groups have many activities such as women empowerment, credit societies, non-alcohol societies, and religious and environmental group activities in other villages. Their non-positive impact on household income was not expected since both are assumed to strengthen household networks with the outside. The reason for the unexpected effect is not well explained, but at least it is obvious that such activities except for credit do not give any direct economic benefit to households and that the more involved one becomes, the more time to lose.[11] Moreover, because villagers in general do not trust government officers and politicians, according to discussions with villagers, a relationship with them will not work to explore income generation opportunities.

On the other hand, none of the three traditional dimensions of social capital shows any significant effect on household income. "Involvement in associations/societies in the village" should have a positive impact because they could provide villagers with financial benefits to some extent. The most popular association is funeral societies in the villages which pool resources for sharing in an emergency situation. Other typical associations include farmers' societies, Samurdhi societies, craftsmen societies, and youth clubs.

[11] A seemingly easier interpretation is that relatively poor households tend to participate in those activities. However, such an interpretation inverses the causality: it is not an effect of social capital on income, but an effect of economic status on social capital. This study assumes that social capital has been accumulated for a long period of time, while household income measured by current expenditure reflects only one-time economic status, and hence the reverse causality is not acceptable. In addition, it is not consistent with Figure 6 where the negative relationship is observed among relatively rich households.

However, focus group discussions reveal that these associational relations are now almost destroyed by political interferences. For example, Samurdhi societies are highly politicized and financial and non-financial benefits of Sumurdhi recipients are directly linked to the associational relationship with different political cliental. This tendency is considered to be the reason for the non-significant effect. In fact, many households believe community associations are unproductive and a waste of time because there are too many associations in one village.

"Connectedness within groups/communities" does not have a significant impact on household welfare, either. Such internal ties are still strong in traditional rural villages, but the analysis result implies that traditional characteristics are no longer important in the modern market economy. The effect of "participation/contribution to village collective group works and projects" is also insignificant, which may be unexpected since collective works such as tank management are still an important part of the village economy even in the modern market economy. The reason is explained as follows. The economic impact should depend on the performance of collective action itself, which may be determined by the number of participants and the contribution (work effort or money contribution) of the participants. Therefore, participation of one household has little to do with the performance of collective action, and hence no effect on his/her own income is observed.

The summary of the findings from the regression analyses is as follows. First, the analyses indicate that although aggregated social capital index seems to be positively associated with household income, each dimension of social capital has a different influence on household income once physical and human capital endowments are controlled for. This is considered to cause the backward-bending shape of the aggregated social capital index shown in Figure 5. Second, the analyses show that village common facilities have a positive effect while other dimensions of social capital have no or negative effect on household income. Among them, participation in collective work, the number of associations, and connectedness within groups are considered to be plenty in traditional communities in Sri Lanka, but have no significantly positive impact on household income. Hence, it can be concluded that the market-oriented reforms have changed household relationships with others, and brought different ideas and new opportunities to the villagers and consequently are requiring individualistic, new forms of social capital that facilitate household income generation in the villages. On the other hand, "involvement in NGOs and other external organizations" and "relationship with government officers" would have a positive influence on household income in market-oriented economy since they provide villagers with external networks. However, the fact that they have no positive effect implies that NGOs and government officers are not promoting income-generation in the liberalized economic environment.

## CONCLUSIONS

The investigation of income effects of social capital is the major concern of this study. The empirical analyses are based on primary data of 540 sample households spread over 32 villages in four districts in Sri Lanka. First of all, as expected, the data show significantly positive relationship between physical capital and household income as well as between human capital and household income. An interesting observation from the data, however, is that there is a positive relationship between the aggregated social capital and household income to a certain level of income and thereafter it resulted in a negative relationship

when the income went further up. This implies that among relatively poor households social capital is crucial to enhance household income complementing physical and human capitals, but that among relatively rich households social capital does not necessarily enhance household income.

The analysis using disaggregated social capital indices shows that each dimension of social capital has a different effect on household income, which is considered to be the reason why the aggregated index does not show a monotonous relationship with household income. The results of this analysis indicate that some types of social capital that conserve traditional values like solidarity and cooperation among communities have little impact on household income. On the other hand, individualistic, new forms of social capital for sharing and caring of village common facilities for production is found to facilitate income-generation and to enhance household income in the market-oriented environment. But social capital related with external networks does not show a positive influence on household income even though it is also non-traditional. The insignificant effect implies that the external agents such as NGOs and government officers are not yet market-oriented and consequently do not help households to generate income through market activities.

In summary, the survey findings clearly suggest the need for redesigning the integrated community development programs because the existing poverty reduction efforts are no longer economically effective and feasible in the present context. In this endeavor, social capital has been identified as a missing link of capital endowments, and hence it needs to be incorporated into all poverty-reduction programs. However, what is required is not traditional social capital but new social capital that will meet the needs of market-driven development in Sri Lanka.

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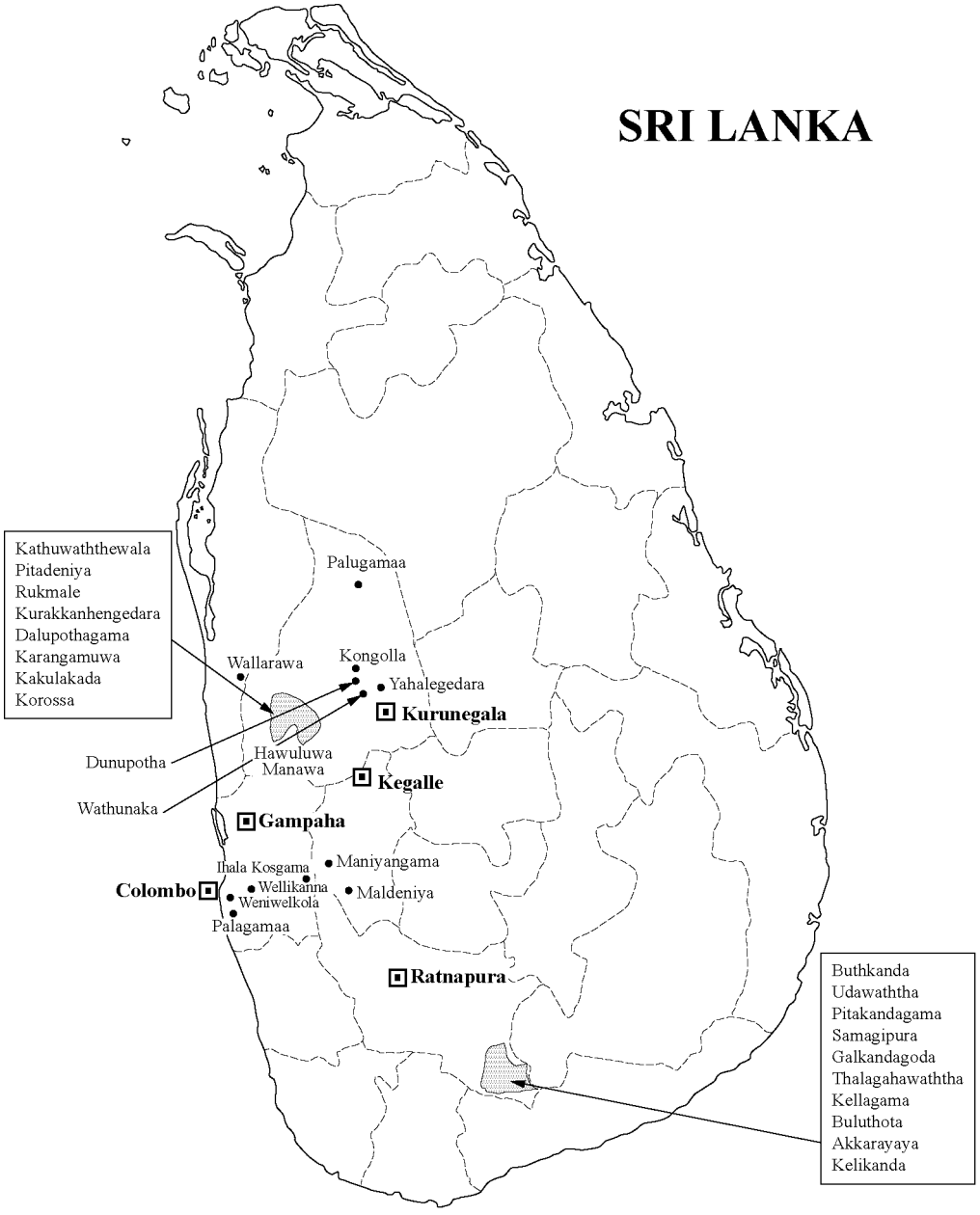
## APPENDIX 1. SAMPLE VILLAGE LOCATION



# SOCIAL CAPITAL AND RURAL DEVELOPMENT IN INDIA: ROLE OF SELF-HELP GROUPS IN DEVELOPMENT

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## INTRODUCTION

The widespread prevalence of poverty and under-nutrition in India is due to the non-availability of productive employment to a large number of people. Rural employment opportunities are declining due to a general decline in the rural economy. While the GDP growth rate has increased in India, there was a sharp decline in the employment growth rate from 3.8% to 2% between 1992 and 2001, especially in the agriculture sector, which is the primary sector contributing to a significant proportion of the total employment in India. Small-scale enterprises are the second-largest employment provider to the Indian workforce after agriculture, but only 13% of them are located in rural areas and serving rural communities. Hence it is essential to generate employment opportunities in the rural sector especially among socially and economically disadvantaged groups. To this end, Self-Help Groups (SHGs) are expected to play an important role.

A typical SHG is a group of rural people usually with not more than 20 members. In several parts of India during the mid-1980s, non-governmental organizations (NGOs) adopted the SHG as an appropriate local institution which provides the poor with opportunities to improve their life through group activities such as savings & loans. Subsequently National Bank for Agriculture and Rural Development (NABARD) in collaboration with NGOs, experimented with the concept of banking with rural poor households, and found that the reimbursement rate from the groups was more than 90%. The launching of a pilot phase of the SHG bank linkage program in February 1992 can be considered a landmark development in banking with the poor, in which 500 SHGs were financed. In 1994, India came out with wide-ranging recommendations on internalization of the SHG concept as a potential intervention tool in the area of banking with the poor.

The number of poor women and men enrolled in SHGs all over rural India has been increasing remarkably since 1992. As of March 2003, the number of SHGs that are linked with banks amounts to 717,360. The recent statistics show that 1,079,000 SHGs are instrumental in channelling bank financing to 16.7 million poor families all over the nation. Despite the quick progress, SHGs have reached only 22.3% of poor families in the country as a whole (11.6 million out of 52 million families). The SHGs have found a place in the National Budget (2003–2004) that indicates a target to bridge 585,000 SHGs through credit linking with formal financial institutions during the period up to March 31, 2007. In spite of all this, in most of the cases it is a "numbers game," which may lack the

quality of self-sustenance of the self-help movement. Hence, it is necessary to examine if SHGs are really effective to improve rural people's livelihood.

Although SHGs' primary activities are thrift and credit, nowadays they have become involved in natural resource management, development work, literacy, participation in local body governance, common property resource management, and so on. Moreover, there are a considerable number of SHGs that have taken up group enterprises thereby generating income. With this regard, social capital should be a critical factor for successful SHG activities, because social capital is a requisite for collective action, applicable for an individual and for a group. Be it formal or informal, interrelationships and interactions between members can foster social capital.

The works on social capital have made an effort to identify particular social conditions that lead to good economic conditions and improve the conditions of society (Coleman 1988; Putnam 1993). They also refer trust and norms of civic-minded behavior as manifestations of social capital.[1] A study conducted by Narayan (1997) shows that ownership of social capital by households in Tanzania has strong effects on household welfare. Chopra (2002) discusses the precise nature of the creation of social capital and the role it plays in furthering development interventions at the local level as well as the nature of interaction between new institutions and older formalized networks. The study by D'Silva and Pai (2002) in Adilabad district of Andhra Pradesh shows that the presence of social capital is crucial for the successful functioning of participatory programs such as Joint Forest Management and Watershed Development.

As presented above, some of the studies on social capital have demonstrated that social capital is important in the context of development projects. However, it has not yet demonstrated what the implications of the presence of social capital are for the welfare of households and whether social capital helps the poor and the very poorest. Hence, the present study makes an attempt to understand the impact of social capital in a micro context. Instead of measuring social capital, this paper assumes that social capital has been fostered among SHG members by their involvment in group activities, and examines the impact of such social capital on the practice, knowledge, and perception at the household level through a comparison between households in SHGs and those not in SHGs.

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[1] This paper does not discuss the definition of social capital in detail, but as Fukuyama (1999) points out, many of the definitions refer to manifestations of social capital rather than to social capital itself; that is, "Trust, networks, civil society, and the like which have been associated with social capital are all epiphenomenal, arising as a result of social capital but not constituting social capital itself." Lin (2001) defines social capital as resources embedded in a social structure, which are accessed/mobilized in purposive actions. Harris (2001) in his critical reflection upon the popular conception of social capital says that it systematically obscures power, class and politics. DeFilippis (2001) argues in the same line that there is a need to understand the issue of power in the production of communities because it is divorced from economic capital. Moreover, Sobel (2002) points out that social capital, as an attribute of an individual, cannot be evaluated without knowledge of the society in which the individual operates. The extent to which an individual has access to resources through social capital depends on the person's connections (whom they know, but also connections through common group membership), the strength of these connections, and the resources available to these connections. He adds further that the institutional and cultural frameworks that foster trust may be different in different countries. Controlling for these features may therefore have different implications in different settings. While the authors of this present paper accept their arguments, the analyses in this paper are not necessarily based on them.

Specifically, the impact is investigated in terms of the following three aspects: income and credit support, gender issues, and health status at the household level.[2]

**Method and Data**

Reddiarchathram block was selected for the study site, where M.S. Swaminathan Research Foundation (MSSRF) has been facilitating SHGs. The block is located in the District of Dindigul, in the central part of Tamil Nadu, South India. Agro-ecologically this block belongs to a semi-arid zone. Residential localities of 244 settlements are situated in this block with a total population of 107,123. The number of females per 1,000 males amounts to 994.

Land utilization of the block is: 19,534 ha of net area sown, 1,620 ha of current fallow, 902 ha of cultivable waste, 2,006 ha of forest, 1,789 ha of barren land, 2,223 ha of non-agricultural land, and 135 ha of land planted with miscellaneous tree crops. Out of the total area under crop 5,676 ha are irrigated and 13,858 ha are non-irrigated. The crops that are cultivated in the irrigated area are rice, sorghum, groundnut, coconut, cotton, sugar cane, hot pepper, tobacco, banana, tapioca, vegetables, and floricultural crops. The crops cultivated in the non-irrigated area are sorghum, pearl millet, red gram, black gram, green gram, Bengal gram, groundnut, ginger, sunflower, cotton, coriander, and plantation crops like black pepper, coffee, cardamom, and banana. The area of major crops in the block comprises of 605 ha of paddy, 3,624 ha of sorghum, 4,250 ha of maize, 547 ha of groundnut, 1,844 ha of coconut, 987 ha of sugar cane, and 723 ha of banana.

The primary unit of the study is comprised of villagers who are members of SHG and villagers who are not members of SHG. First, 15 villages were selected (Table 1). They were purposefully chosen since in those villages a number of SHGs have been established by the facilitation of MSSRF. The total number of SHGs in the 15 villages amounts to 109, out of which 36 SHGs were selected for the survey. They are all SHGs that have been functioning for at least three years. The number of SHGs selected in a village varies from one to six. Then, about 30% of the total members in a SHG were taken from each SHG as samples, with the minimum number for one SHG was fixed at four. As a result, a total of 138 SHG members were selected for interviews. Moreover, an equal number of villagers who do not belong to a SHG but with similar socio-economic status were selected from

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[2] Another important issue that this paper does not deal with is how to create social capital. With this regard, a study undertaken by Krishna (1999) in the state of Rajasthan indicates that the highest levels of social capital arise when beliefs about participation are reinforced by the village rules that are clear to follow and are implemented fairly. An evolving and increasing stock of social capital forms a necessary input for sustained development. According to Manor (1999), the experiment with democratic decentralization of the People's Campaign for Decentralised Planning in 1996 in the state of Kerala has a concrete example of "social capital" and "civil society." It has shown the way for "constructing social capital" through which has drawn people into what are clearly "civic endeavors" and it has "consolidated civil society." It has increased "participation" by involving more people in decision-making about matters of public concern (Harris 2001). John (2002) in the study of a village panchayat in Kottayam, Kerala looks at the objectives and trends that characterize "institutional revolution" and assesses its implications for social capital formation and the building up of a vibrant civil society capable of playing a vital role in local governance. Social capital of these groups is a gateway for decentralized planning and governance. Building social capital focuses on strengthening of local institutions, directly through training, capacity building, and deploying resources and indirectly through creating an open and democratic environment.

the same villages where SHG members were samples.[3] Hence, the survey covered 276 (SHG and non-SHG) people.

Table 1. Distribution of Sample Households

| Village Panchayat (Number of SHGs) | Villages selected | Total number of SHGs | Survey undertaken | | |
|---|---|---|---|---|---|
| | | | Number of SHGs selected | Number of SHG households | Number of non-SHG households |
| Kannivadi (40) | Reddiarpatty | 8 | 4 | 10 | 10 |
| | Kannivadi | 5 | 2 | 8 | 8 |
| | Navapatty | 7 | 1 | 4 | 4 |
| | Chockalingapudur | 3 | 2 | 8 | 8 |
| T.Pudupatty (22) | T.Pudupatty | 10 | 6 | 22 | 22 |
| | Kapiliyapatty | 6 | 1 | 3 | 3 |
| Pannaipatty (18) | Velanservaikaranpatty | 2 | 1 | 4 | 4 |
| Karisalpatty (17) | Karisalpatty | 14 | 3 | 13 | 13 |
| H R Kottai (30) | Samiyarpatty | 6 | 4 | 17 | 17 |
| Dharmathupatty (48) | Bodampatty | 5 | 1 | 4 | 4 |
| | Dharmathupatty | 29 | 7 | 29 | 29 |
| | Sevanakaraiyanpatty | 6 | 2 | 8 | 8 |
| | Palaniyur | 3 | 1 | 4 | 4 |
| | Ramanathapuram | 5 | 1 | 4 | 4 |
| Total | | 109 | 36 | 138 | 138 |

The questionnaires were designed to address the variables relevant to the objectives of the study. They are broadly categorized under the following sub-divisions:

- Household general socio-economic conditions
- Self-Help Group information
- Intra-household perception
- Impact on economic conditions
- Impact on the social conditions
- Impact on health status
- Village or community level conditions
- Perception of the respondent on the role and responsibility of SHG on other activities

The same questionnaires were used for non-SHG respondents except for the questions on the SHG. The survey was carried out over a period of 20 days.

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[3] The number of members to be interviewed in a SHG was informed to each SHG in advance. Then, each group decided which specific members to be interviewed. Hence, the sampling is not random. And for the samples of the non-SHG category, the parameters for the selection of non-SHG households were briefed to SHG members and their help was taken to introduce households that were not SHG members.

Some of the questions were about the household where the respondent belongs, but others were about personal perceptions held by the respondent. Moreover, questions on the SHG were about the SHG in which the respondent participates, and were specifically posed to SHG members. That is, there is variation in terms of the level of questions. This paper uses SHG households and non-SHG households in the case of household-level questions, and SHG respondents and non-SHG respondents in the case of individual level questions. Even in the case of SHG level questions, the responses are based on personal opinion or perception, and hence either SHG respondents or SHG members is used.

## RESULTS AND DISCUSSION

### Socio-economic Details of the Sample Households

Numerically dominant caste groups among the SHG households are: *Parayar* (15.9%), *Udayar* (12.3%), *Moopanar* (9.4%), *Chakliar* (11.6%), *Pallar* (8.7%), *Devar* (8.7%), and *Vanniar* (8.0%), as shown in Table 2. The non-SHG households are more or less represented in the same percentage except for a higher share of *Moopanar* (22.5%). At the block level, *Moopanar* and *Vettuva Goundar* are demographically dominant, and therefore the caste composition of the SHG households is not necessarily representative of the block. As per the Indian constitutional status, *Parayar*, *Chakliar* and *Pallar* are classified as Scheduled Castes (SC). Those groups are at the lowest level of the caste hierarchy and traditionally work in the field of the higher caste groups as laborers. The rest of the caste groups mentioned above are classified as Backward Communities (BC) and Most Backward Communities (MBC).

The occupational classifications are shown in Table 3: 34% of the SHG households depend exclusively on agricultural labor, and the share of the next-largest category is 12.3%, which depends on agriculture followed by 8.7% of employment in both the agriculture and private sectors and another 8.7% of private sector employment only. In the case of non-SHG households 36% depend on agricultural labor, 8.7% on agriculture, 11.6% on private sector employment. The result clearly shows the majority of the sample households, whether SHG members or non-members, depend on agricultural labor and small-scale agriculture for their livelihoods.

With reference to literacy level, 21.7% of the SHG respondents have been educated up to high school, which is the highest category (Table 4). Among non-SHG respondents the highest category is illiterate (27.5%), followed by high school educated (16.7%). The difference in illiteracy rates between SHG and non-SHG respondents indicates that relatively educated people are more likely to join in SHGs.

The income range of the sample households varies (Table 5). The largest number of the SHG households (18.8%) falls between Rs. 15,001–Rs. 20,000, and the second-largest number (13.8%) comes in the range of Rs. 20,001−25,000. A considerable percentage of the SHG households (11.6%) make annual earnings less than Rs. 10,000. Non-SHG households seem to have lower income than SHG households: the largest number (20.3%) earn between Rs. 10,001–Rs. 15,000, followed by the category below Rs. 10,000. However, more than 90% of sample households, either SHG members or non-members, do not make any surplus in their annual income, according to the survey.

Table 2. Caste Composition of Sample Households

| Caste | SHG households (%) | Non-SHG households (%) |
|---|---|---|
| Pallar | 12 (8.7) | 13 (9.4) |
| Devar | 12 (8.7) | 13 (9.4) |
| Vanniar | 11 (8.0) | 9 (6.5) |
| Nathaman/Udayar/Suruthiman | 17 (12.3) | 9 (6.5) |
| Achari | 2 (1.4) | 1 (0.7) |
| Agamudai Servai | 2 (1.4) | – |
| Valayan | 1 (0.7) | 4 (2.9) |
| Chettiyar | 4 (2.9) | 1 (0.7) |
| Sholiga Velallar | 3 (2.2) | 2 (1.4) |
| Pillai | 3 (2.2) | 4 (2.9) |
| Parayar | 22 (15.9) | 20 (14.5) |
| Vettuva Gounder | 2 (1.4) | 6 (4.3) |
| Moopanar | 13 (9.4) | 31 (22.5) |
| Kuyavar | 4 (2.9) | 3 (2.2) |
| Chakliyar | 16 (11.6) | 14 (10.1) |
| Nayakar/Naidu | 9 (6.5) | 5 (3.6) |
| Yadava | 3 (2.2) | – |
| Agamudaiyan | 2 (1.4) | – |
| Reddiar | – | 1 (0.7) |
| Konar | – | 1 (0.7) |
| Total | 138 (100) | 138 (100) |

Table 3. Primary Occupation of Sample Households

| Primary occupation | SHG households (%) | Non-SHG households (%) |
|---|---|---|
| Only farming | 17 (12.3) | 12 (8.7) |
| Only wage labor in agriculture | 47 (34.1) | 50 (36.2) |
| Only small business or self-employed | 7 (5.1) | 6 (4.3) |
| Only employment by government | 4 (2.9) | 6 (4.3) |
| Only employment in private sector | 12 (8.7) | 16 (11.6) |
| Farming & agricultural wage labor | 3 (2.2) | 10 (7.2) |
| Agricultural wage labor & self-employed | 6 (4.3) | 1 (0.7) |
| Agricultural wage labor & private sector employment | 12 (8.7) | 17 (12.3) |
| Self-employed & private sector employment | 9 (6.5) | 2 (1.4) |
| Government employment & private sector employment | 5 (3.6) | 1 (0.7) |
| Other combinations | 16 (11.5) | 17 (12.3) |
| Total | 138 (100) | 138 (100) |

Table 4. Educational Status of Sample Households

| Educational attainment | SHG households (%) | Non-SHG households (%) |
|---|---|---|
| Only ability to sign | 19 (13.8) | 20 (14.5) |
| Primary education | 29 (21.0) | 19 (13.8) |
| Elementary education | 23 (16.7) | 19 (13.8) |
| High school | 30 (21.7) | 23 (16.7) |
| Higher secondary | 14 (10.1) | 14 (10.1) |
| Graduation | 3 (2.2) | 3 (2.2) |
| Post-graduation | 1 (0.7) | 2 (1.4) |
| Illiterate | 19 (13.8) | 38 (27.5) |
| Total | 138 (100) | 138 (100) |

Table 5. Annual Income of Sample Households

| Annual income | SHG households (%) | Non-SHG households (%) |
|---|---|---|
| Less than 10,000 | 16 ( 11.6) | 21 (15.2) |
| 10,001–15,000 | 14 (10.1) | 28 (20.3) |
| 15,001–20,000 | 26 (18.8) | 20 (14.5) |
| 20,001–25,000 | 19 (13.8) | 18 (13.0) |
| 25,001–30,000 | 16 (11.6) | 7 (5.1) |
| 30,001–35,000 | 7 (5.1) | 5 (3.6) |
| 35,001–40,000 | 12 (8.7) | 15 (10.9) |
| 40,001–45,000 | 5 (3.6) | 6 (4.3) |
| 45,001–50,000 | 8 (5.8) | 5 (3.6) |
| 50,000 and above | 15 (10.9) | 13 (9.4) |
| Total | 138 (100) | 138 (100) |

**Activities of SHGs**

According to the sample from SHG members, more than two-thirds (68.8%) have become members by their own choice, but 26.8% were persuaded by others to join the group. With regard to membership status, 94.9% have held membership from the group's inception.

In principle, irrespective of gender difference, both female and male members are encouraged and mobilized to form SHGs. But the survey shows that 65.9% of the SHG respondents belong to all-women groups, 26.8% belong to all-men groups, and the remaining (7.2%) belong to mixed-gender groups. Regarding nativity, almost all the SHG respondents are natives of the same village (97%). Kinship relationships and caste affiliation have influenced the formation of SHGs to some extent (24.6% and 37.7%, respectively), but such influences are not dominant. In fact, 93.5% of the SHG respondents say that they mingle equally without a feeling of any caste-based discrimination. But in the village context the situation is different: while 65.2% of the SHG respondents believe

there is no discrimination on the basis of caste, 16.7% still feel that discrimination of lower-caste people prevails.

Attending monthly SHG meeting is mandatory, and the majority of SHG respondents (87%) attend regularly irrespective of occupational variations. Apart from regular meetings, SHGs hold special meetings for the following reasons: whenever there is a need (17.4%), when receiving visitors from outside (5.1%), to discuss urgent credit need (4.3%), to discuss village common problems (2.2%), to discuss issues related to enterprise (2.2%).

A majority of the SHG respondents (79.0%) consider the main objective of the SHG to be savings and internal crediting. But 13.8% believe that apart from savings and internal lending, the group as a unit or the group members individually could start income-generation activities, and 5.8% think that the objectives of SHGs include working on common problems.

**Social Capital in SHGs**

Although this study does not attempt to measure the level of social capital fostered in SHGs, this section provides some evidence of social capital in SHGs. One way to classify social capital is based on its function: bonding social capital and bridging social capital, according to Narayan (1999). The former works within groups to facilitate cooperation and/or collective action among members, while the latter improves the access to the outside, such as markets, NGOs, and government.

As for bonding social capital, there is evidence that SHGs facilitate mutual support as they foster social capital among the members if compared with the non-SHG cases. Of the SHG respondents, 18.8% say that the SHGs have contributed to improve the occupational aspects of members by sharing occupational materials. But among non-SHG respondents 14.5% say that they get help from others in the same occupational field. As for food sharing, on the other hand, 51.4% of the SHG respondents say that SHGs also facilitate sharing of food among the members. With this regard, the percentage among the non-SHG respondents is slightly higher (56.8%). Pertaining to monetary contributions, 46.4% of the SHG respondents replied positively, but among the non-SHG respondents the percentage is reduced almost to half (24.6%). As such, 76.1% of the SHG respondents consider that his/her own SHG exists on the basis of mutual understanding and cooperation among the members.

With regard to bridging social capital, 85.5% of the SHG respondents do not interact with other SHGs. Among the remaining, 5.8% jointly organize functions, and 5.1% have done training at the other SHGs for better management. Some SHG respondents (8.0%) also indicated that they collaborate with other non-SHG groups for holding functions within the village. For certain needs and services the SHGs in the same villages come together, but still such linkage is very limited.

Strengthening horizontal associations will help to establish vertical linkages. Of the SHG respondents, 5.1% had approached *panchayat* unions, while 10.1% of the SHG respondents said they had been approached by *panchayat* unions for various reasons. At the district level, while 2.9% of the SHG respondents mentioned that the District Rural Development Agency (DRDA) had approached them, 2.2% of them had approached DRDA. As for linkage with the local agricultural extension department, only 10.9% have established formal linkages for conducting training programs and organizing camps on specific themes. About SHG links with elected village *panchayat*, it was reported that 21.0% of the SHG respondents had approached the village *panchayats* to take up

development activities, while 18.1% said that local village *panchayats* had approached them for executing jointly some of the activities. Among non-SHG respondents only 1.4% answered positively to this question on active participation for common issues. With regard to active involvement in the election of the local bodies as a group, 8.7% of the SHG respondents had openly supported candidates in local contests; likewise 8.7% had supported specifically the female candidates. The collective strength is the advantage of SHGs, but sometimes it also leads them to challenge the legitimate institutional structures established at different levels. The proximity could be one of the reasons to challenge these structures operating at the village level: 19.6% of the SHG respondents reported they had done it. Similarly, 3.6% answered they had challenged the block-level administration. The local bodies and the government departments have started identifying SHGs as their partners in the community development programs. The partnership relation extends support to execute the development programs. Sometimes SHGs act as a pressure group to make certain genuine demands from the state.

Evidence presented above clearly suggests that bonding as well as bridging social capital has been fostered within SHGs relative to the case of non-SHG. Then, in the next sections, we will see the impact of social capital on the villagers' welfare.

**Impact of SHGs**

*On Income and Credit Support*

As shown, a majority of SHG respondents consider that that the main objective of SHGs is saving and credit. In this section, it is examined whether SHGs meet that main objective.

With respect to saving, SHG members arrive to a consensus on the amount they can save every month. The single criteria applied while deciding the amount is that everyone in the group, especially the poorest person, should be able to pay the amount without much difficulty. Though in general nearly 81% of the SHG respondents are regularly paying into their monthly savings, it varies based on occupation (Table 6). Nearly 96% of the SHG respondents that are involved in private jobs are able to pay their monthly savings followed by farming families (90.9%), people who are involved in small business (78.9%), housewives (76.9%), and agricultural labor households (74.1%). The regular monthly payment is less among people who are engaged in government jobs (66.7%) and retired from the lower-level government employment (50.0%). If we look at non-SHG respondents data, it reveals that 73.9% of them do not have the habit of personal savings.

Table 6. Relationship between Occupation and Regular Payment of Monthly Savings by SHG members

| Occupation | Proportion of respondents regularly paying monthly savings (%) |
|---|---|
| Agriculture | 90.9 |
| Agricultural laborer | 74.1 |
| Self employed/Small business | 78.9 |
| Government employment | 66.7 |
| Private employment | 95.8 |
| Retired | 50.0 |
| Housewife | 76.9 |

Table 7 shows that landless households significantly more often fail to meet the monthly saving requirement (only 76.0% of them save regularly), and that households that own both wet and dry land are able to pay without any lapse when compared with households that have only one type of land: in the case of owners of wetland only 94.7% of them save regularly and in the case of owners of dry land only it is 89.5%. Defaulters request the group to provide grace time but in most of the cases the group asks the defaulters to pay a nominal amount as a fine. Although there are some defaulters, the survey results clearly shows that SHGs have created savings among the members, which could not have happened without SHGs.

Table 7. Relationship between Landholding Type and Regular Monthly Savings by SHG members

| Landholding type | Proportion of respondents regularly paying monthly savings (%) |
|---|---|
| Landless | 76.0 |
| Wet land only | 94.7 |
| Garden land only | 100 |
| Dry land only | 89.50 |
| Wet & dry land | 100 |
| Garden & dry land | 100 |

Then, before looking at the credit facilities provided by SHGs, the general situation of credit utilization in the study site is described based on the survey data.[4] In order to meet

[4] There is a high credit need among poor farmers during certain periods of the year: when the main agricultural season begins (June-July); while manuring and weeding the fields (August-September and November-December); and when the schools reopen (June–July) for the academic year. Apart from these reasons they need credit during the important cultural festivals and when family members go for pilgrimage. Professional moneylenders are the source for crisis management with a nefarious rate of interest. The negative impact of the money lending in rural areas has been identified as compounding interest and confiscation of landed property. The local commercial banks deny the credit facility to the poor pointing out the rampant default rate. Inability to provide collateral automatically excludes the poorest from the formal banking sector. Inability to repay the dues in the scheduled time and the cumulative interest force them to get into a perpetual debt trap. The other reason identified is the high level of transaction cost which makes the bankers show a negative attitude in lending to poor farmers. On the other hand the banks are biased in favor of the property-owner class and large enterprise, and hence bank credits largely remain in the hands of the landed population.

Lack of facility for timely credit makes the poor and the poorest resort to local moneylenders for *avesara vatti* or *kanthu vatti* methods where the interest rate ranges from 30% to 263% per year and the repayment period varies from one day, one week, 10 days (*varakanthu, pathu vaaram* and *bamparam, munvatty*) or one month. Very urgent credit requirements force the rural poor to resort to local sources for high interest rates (around 120%, *metervatti*). *Kaimathu* is another practice to meet immediate cash demands, in which neighbors, relatives, or friends provide financial support without interest up to one month and if the period exceeds more than this they add a nominal interest (varying between 24–36% per annum base). The confidence is expressed in terms of the borrower's credit worthiness, timely payment, prevailing labor opportunities, and assets owned in terms of jewels, savings, land, house, etc. The other options adopted to meet immediate credit needs, especially poor households which could not manage to obtain credit through the above said modes, where the borrower pledges materials such as household vessels, jewels (less than 8 grams), etc. Usually women used to pledge these items. In cases where there is no access to credit, immediately they go for selling the assets or

the household budget deficit, the sample households receive credit from different sources (Table 8). Apart from SHGs, major sources are professional moneylenders (21.7%) and relatives, friends and neighbors (15.2%) in the case of SHG households. But the dependency of non-SHG households on moneylenders is much higher (36.2%) while on relatives, friends and neighbors it is lower (8.0%). It is also interesting to note the purpose for which SHG households borrow money: 10.9% use it for agricultural expenses and the next highest usage is to meet general household expenditures (8.7%). We see that for non-SHG cases the highest category is to organize special functions and celebrations (14.5%) followed by health care (8.7%). In repaying the borrowed money, the proportion of non-SHG households that have not made any repayments is considerably higher than SHG households (33.3% vs. 20.3%), and SHG households have made reasonable partial payments more often than non-SHG households (13.8% vs. 7.9%). Managing the annual expenditure with a deficit budget is the reality that rural poor families are facing, and eventually it makes them susceptible to exploitation by moneylenders. The difference of dependency on moneylenders by SHG households and non-SHG households indicates the positive role played by SHGs on the rural credit system.

Table 8. Details of Loans Obtained (Other than SHG and SHG Federation)

| | SHG households (%) | Non-SHG households (%) |
|---|---|---|
| Source | | |
| Not applicable | 78 (56.5) | 67 (48.6) |
| Professional moneylenders | 30 (21.7) | 50 (36.2) |
| Relatives/friends/neighbors | 21 (15.2) | 11 (8.0) |
| Banks and society | 9 (6.5) | 10 (7.2) |
| Total | 138 (100) | 138 (100) |
| To buy land and construct house | 7 (5.1) | 11 (8.0) |
| Agriculture | 15 (10.9) | 7 (5.1) |
| Health care | 7 (5.1) | 12 (8.7) |
| Functions and festivals | 9 (6.5) | 20 (14.5) |
| Business and cattle purchase | 6 (4.3) | 9 (6.5) |

(continued on next page)

resort to higher interest rates (more than 120%). Some other means of managing their credit needs by agricultural families include mortgaging land. In this method instead of taking interest, the person who provides money cultivates the land until the borrower repays the loan. In another mode called *nemittu kirayam,* the period for repayment is fixed as three years or five years, and if the borrower fails to repay he loses the land. In some cases close relatives help to manage the credit need without taking interest for a very short period (from a week to a month). The first priority of expenditure in landless and near landless groups is to buy grain, pulses, and other food items and the next priority in the order is purchasing poultry or goats or in some cases milch animals, followed by clothes and special food during festival occasions, occasional visits to relatives in other villages, etc. The informal village-level traditional credit methods like chit funds (*ela chittu*, *kullukkal chittu*) which are available for men and women, and informal womens' associations (*mahalir sangam*) are the primary credit-leveraging sources by women without bank credit linkage but are declining nowadays.

(continuation)

| | SHG households (%) | Non-SHG households (%) |
|---|---|---|
| General household expenses | 12 (8.7) | 8 (5.8) |
| No answer | – | 4 (2.9) |
| Total | 138 (100) | 138 (100) |
| Repayment | | |
| Not applicable | 78 (56.5) | 67 (48.6) |
| Paid back | 2 (1.4) | 4 (2.9) |
| Partially paid | 19 (13.8) | 10 (7.9) |
| Paying only the interest | 9 (6.5) | 5 (3.6) |
| Haven't made any payment | 28 (20.3) | 46 (33.3) |
| No answer | 2 (1.4) | 6 (4.3) |
| Total | 138 (100) | 138 (100) |

The main reason expressed for credit needs by non-SHG households is to conduct special functions and lifecycle rituals in a grand manner. But organizing functions for various occasions is a common practice in the rural areas of Tamil Nadu, not only among non-SHG households but also among SHG households. Gift-giving is an essential component of these occasions. Gift creates an obligation to accept and reciprocate. It has both positive and negative sides; the negative side is that enormous amounts are spent and the positive side is that the gift-giving activity of the celebration adds value to individual connection.

According to the local population, in the recent past the number of occasions of organizing functions had increased drastically. Table 9 provides details on the number of functions organized, guests attending, and the amounts spent. The data reveal that 27.7% of SHG households organized at least one function during the last year, but the situation is different for non-SHG households: only 11.6% reported holding at least one event. The distribution of the estimated number of guests attending the functions organized by SHG households and by non-SHG households did not differ much. The expenditure incurred among SHG households ranges from the lowest amount of Rs. 700 to the maximum of above Rs. 20,000 to organize a single event. In the case of non-SHG households the lowest amount was less than Rs. 1,000 and the maximum was Rs. 15,000. The functions and celebrations being organized by rural households attract huge gatherings. This incurs a huge budget that is normally managed through borrowing from different sources like moneylenders, relatives, neighbors, friends, and SHGs.

Members can benefit from the SHG facility of credit among its members. Around 35.5% of SHG households responded that SHGs had helped by permitting access to credit from the savings of group members, and 21.7% reported having taken out loans from banks thanks to credit linkage with local commercial banks that the groups have established (Table 10). With regard to the range of credit support, 31.9% said they have received loans less than Rs. 1,000 while the next highest amount (26.1%) is between Rs. 2,000 and Rs. 5,000 (Table 11). The credit amount has been used to meet different requirements: the highest is meant for their children's education (10.1%), followed by

purchasing cattle and expenses for agricultural activities (8.0% each). The perception of the difference on credit facility offered by SHGs and local moneylenders is as follows: 46.4% of the SHG respondents said that the interest rate of money lenders is very high, while 21.7% believed the interest rate of SHGs is less; 12.3% felt that SHGs provide a suitable repayment schedule that can easily be followed by the members; and 5.8% reported that moneylenders treat borrowers very badly and indulge in harassment for the repayment.

Table 9. Functions Hosted by Households in the Previous Year

| Functions hosted | SHG households (%) | Non-SHG households (%) |
|---|---|---|
| Yes | 30 (21.7) | 16 (11.6) |
| No | 108 (78.3) | 122 (88.4) |
| Total | 138 (100) | 138 (100) |
| Number of outside guests | | |
| 0 | 108 (78.3) | 122 (88.4) |
| 50 | 6 (4.3) | 2 (1.4) |
| 100 | 5 (3.6) | 1 (0.7) |
| 150 | 2 (1.4) | 1 (0.7) |
| 200 | 2 (1.4) | 1 (0.7) |
| 500 | 12 (8.6) | 6 (4.2) |
| 1,000 | 3 (2.2) | 2 (1.4) |
| Total | 138 (100) | 138 (100) |
| Amount spent | | |
| 0 | 108 (78.3) | 122 (88.4) |
| Below 1,000 | 1 (0.7) | 1 (0.7) |
| 1,000 | 2 (1.4) | 2 (2.2) |
| 2,000 | 3 (2.2) | 1 (0.7) |
| 3,000 | 3 (2.2) | 1 (0.7) |
| 4,000 | 3 (2.2) | 1 (0.7) |
| 5,000 | 2 (1.4) | 1 (0.7) |
| 8,000 | 1 (0.7) | 1 (0.7) |
| 10,000 | 3 (2.2) | 1 (0.7) |
| 15,000 | 6 (4.3) | 7 (5.0%) |
| 20,000 and above | 6 (4.3) | – |
| Total | 138 (100) | 138 (100) |

Table 10. Credit Received by SHG Members

| Creditor | Number | Proportion (%) |
|---|---|---|
| Have not received money from any source | 44 | 31.9 |
| SHG | 49 | 35.5 |
| Bank | 30 | 21.7 |
| Federation of SHGs | 9 | 6.5 |
| Did not mention | 6 | 4.3 |
| Total | 138 | 100 |

Table 11. Amount Borrowed as Credit by SHG Members

| Amount | Number | Proportion (%) |
|---|---|---|
| None | 44 | 31.9 |
| Less than 1,000 | 12 | 8.7 |
| 1,001 to 2,500 | 19 | 13.8 |
| 2,501 to 5,000 | 36 | 26.1 |
| 5,001 to 7,500 | 3 | 2.2 |
| 7,501 to 10,000 | 13 | 9.4 |
| 10,001 to 15000 | 2 | 1.4 |
| 15,001 to 20,000 | 4 | 2.9 |
| 20,001 to 25,000 | 2 | 1.4 |
| 25,001 and above | 3 | 2.2 |
| Total | 138 | 100 |

In spite of the credit facilities provided by SHGs, the response on overall household development due to SHGs was mixed: 51.4% of SHG respondents perceived no change in terms of economic improvement achieved (Table 12). However, 13.8% replied that there is slight improvement; 8.7% answered that easy credit access to meet their children's education had become available; 8.0% felt that they have been relieved from moneylender harassment; and 4.3% believed that the problem over food on a daily basis had been solved. With regard to the development of non-SHG households within the previous three years, 82.6% of the non-SHG respondents expressed that no development had taken place. Among the remaining, 8.0% felt that household amenities had increased and another 3.6% said that their income had increased.

Other than financial services, the survey results show that a remarkable number (71.7%) of the SHG respondents said there is an improvement in communication and negotiation skills. When we probe into further details we find that 23.9% mentioned that they developed better ability to communicate with clarity and without fear, 12.3% responded that exposure to different situations helped them to learn new things, 9.4% gained knowledge and skill in respect to credit management, 9.4% increased their capacity for fluent communication, and 7.9% developed the capacity to question when he/she finds fault. The non-SHG data were not as impressive: only 18.8% were positive on this aspect. Not only communication skill, but skill development in general is one of the important

contributions that SHGs provide to its members. Of the SHG respondents, 79.0% answered that SHGs have helped them to gain new skills in general and provided some valuable experiences related to social activities. The response from non-SHG respondents in this regard was very poor: only 2.9% said they had gained such skill within the previous three years. With regard to development of entrepreneurial skill to become involved in income-generating activity, 29.7% of the SHG respondents said they have developed this new skill. For instance, literate members within a group recently started helping other non-literate members to read and write (8.7%) and were helping them learn to sign their names (5.8%). Communication and negotiation skills have increased remarkably among SHG members, the survey indicated. The members have also gained entrepreneurial skills to initiate market-linked micro-enterprises. The results of non-SHG members are not impressive in these aspects. In this way, SHGs have helped the members to diversify their livelihoods, generate income, and improve general welfare.

Table 12. Household Development – Perceptions

| Development | SHG households (%) | Non-SHG households (%) |
|---|---|---|
| No improvement | 71 (51.4) | 114 (82.6) |
| Income has increased | 9 (6.5) | 5 (3.6) |
| Amenities have increased | 6 (4.3) | 11 (8.0) |
| Savings started | – | 3 (2.2) |
| Credit access for children's education | 12 (8.7) | 2 (1.4) |
| Health status has improved | – | 2 (1.4) |
| Marginal improvement in general | 19 (13.8) | 1 (0.7) |
| No difficulty for food on a daily basis | 6 (4.3) | – |
| Credits outside have decreased | 11 (8.0) | – |
| Has not improved yet, but will be improving now | 3 (2.2) | – |
| Could undertake agricultural activities | 1 (0.1) | – |
| Total | 138 (100) | 138 (100) |

According to their personal perception, 33.3% of the SHG respondents agree that SHG has direct impact on household income. To examine the positive impact in a more rigorous way, a composite indicator on the improvement of household income was created from the various questions related to household income as presented above. A comparison of the mean values of the indicator between SHG households and non-SHG households reveals that the difference is statistically significant at the 1% level (Table 13). As such, SHGs' positive impact on household income is confirmed.

Table 13. Impact of Social Capital on Income and Credit Support

| Categories | N | Mean | SD | T Value |
|---|---|---|---|---|
| SHG | 138 | 2.5870 | 2.4487 | 6.443** |
| Non-SHG | 138 | 0.9710 | 1.6387 | |

**: Significant at 1% level.

In conclusion on household income, SHG membership helps to improve the well-being of the households by ensuring timely credit to the member households, the source of which are their own groups' savings and bank linkage, and by providing skill and capacity development for income generation. If we compare the results on these aspects gathered from non-SHG households who act individually without any collective effort, there is an obvious difference.

*On Gender Issues*

A gender-sensitive approach in SHG promotion is being constantly emphasized by MSSRF. Hence, the impact of SHG was also evaluated in terms of changes in gender perception.

First, it was found that 39.9% of the SHG respondents believe that participation in SHG activities has resulted in positive change in their status at the household level. As for non-SHG respondents, only 23.2% of them perceive that there has been a change in status at the household level.

With regard to the perception of change in the status of women at the community level, 25.4% of SHG respondents agreed positively (Table 14). In this regard the gendered perception shows that the opinion is less favored among women (19.1%) than men (38.6%). On the other hand, among non-SHG respondents only 10.9% perceive change in the status of women. Here again the same trend is observed (women 9.9% and men 12.8%). Generally women manage domestic roles and responsibilities irrespective of community differences. Table 15 shows that nearly one-third of SHG respondents (31.9%) believed that positive change has been taking place in their traditional roles and responsibilities in the domestic arena due to women's active participation in the SHG movement. There is a considerable difference in gendered perception on this issue: 38.6% of men and 28.7% of women favor this. The results of non-SHG respondents on this aspect show that the percentage is reduced to half (16.7%) when compared to the SHG case. With regard to change in the roles, responsibilities and status in the external environment, 21.0% were affirmative in their opinion. In this regard there is a gap in the gendered perception on development: 14.9% of women and almost double the number of men (34.1%) replied positively. On the other hand only 8.7% of the non-SHG respondents have a positive opinion on the change in the roles and responsibilities of women in the external world.

Table 14. Gendered Perception on Change in Status of Women at Community Level

| Change | SHG respondents (%) | | | Non-SHG respondents (%) | | |
|---|---|---|---|---|---|---|
| | Female | Male | Total | Female | Male | Total |
| Yes | 18 (19.1) | 17 (38.6) | 35 (25.4) | 9 (9.9) | 6 (12.8) | 15 (10.9) |
| No | 76 (80.9) | 27 (61.4) | 103 (74.6) | 25 (27.5) | 16 (34.0) | 41 (29.7) |
| No comments | – | – | – | 57 (62.6) | 25 (53.2) | 82 (59.5) |
| Total | 94 (68.1) | 44 (31.9) | 138 (100) | 91 (65.9) | 47 (34.1) | 138 (100) |

Table 15. Gendered Perception on Change in Traditional Roles and Responsibilities of Women

| Change | SHG respondents (%) | | | Non-SHG respondents (%) | | |
|---|---|---|---|---|---|---|
| | Female | Male | Total | Female | Male | Total |
| Domestic | | | | | | |
| Yes | 27 (28.7) | 17 (38.6) | 44 (31.9) | 16 (17.6) | 7 (14.9) | 23 (16.7) |
| No | 67 (71.3) | 27 (61.4) | 94 (68.1) | 40 (44.0) | 30 (63.8) | 70 (50.7) |
| No comments | – | – | – | 35 (38.5) | 10 (21.3) | 45 (32.6) |
| Total | 94 (68.1) | 44 (31.9) | 138 (100) | 91 (65.9) | 47 (34.1) | 138 (100) |
| External | | | | | | |
| Yes | 14 (14.9) | 15 (34.1) | 29 (21.0) | 8 (8.8) | 4 (8.5) | 12 (8.7) |
| No | 80 (85.1) | 29 (65.9) | 109(79.0) | 25 (27.5) | 19 (40.4) | 44 (31.9) |
| No comments | – | – | – | 58 (63.7) | 24 (51.1) | 82 (59.4) |
| Total | 94 (68.1) | 44 (31.9) | 138 (100) | 91 (65.9) | 47 (34.1) | 138 (100) |

Women's mobility is considered as a major indicator, which reflects a change in the status of women (Table 16). More than half (60%) agreed that women's mobility has tremendously increased after they became members of SHGs. More than half of the male respondents (61.4%) and female respondents (66.0%) accept this opinion. But only 37.7% of non-SHG respondents believe it has increased, which is nearly 50% less when compared with the SHG case.

Table 16. Mobility of Women

| Increase in mobility | SHG respondents (%) | | | Non-SHG respondents (%) | | |
|---|---|---|---|---|---|---|
| | Female | Male | Total | Female | Male | Total |
| Yes | 62 (66.0) | 27 (61.4) | 89 (64.5) | 34 (37.4) | 18 (38.3) | 52 (37.7) |
| No | 32 (34.0) | 17 (38.6) | 49 (35.5) | 57 (62.6) | 29 (61.7) | 86 (62.3) |
| Total | 94 (68.1) | 44 (31.9) | 138 (100) | 91 (65.9) | 47 (34.1) | 138 (100) |

In order to confirm statistically the general tendency that SHG members have a more positive perception on women's status, an aggregated index is produced from the weighted scores given to the responses to the questions on change in the status and role within the household, neighborhood, and village as well as the responsive attitude of the male and female towards the activities. The difference in the mean values of the index is significant at the 1% level as shown in Table 17, indicating that SHGs have some impact on the members' perception on women's status.

Table 17. Impact of Social Capital on Gender

| Categories | N | Mean | SD | T Value |
|---|---|---|---|---|
| SHG | 138 | 5.4058 | 2.4394 | 16.729** |
| Non-SHG | 138 | –2.9638 | 5.3470 | |

**: Significant at 1% level.

Definitely the SHGs have brought considerable improvement in the social status of women at both the household and community level. It also promotes a positive change in the age-old patriarchal value system based on rigid traditional roles and responsibilities of these women members. New contexts bring new duties, which expand the space and enhance mobility of the rural women. Among non-SHG members the changes were seen to be relatively low and slow.

*On Health Status*

The last aspect to review is household health status. The survey result shows that more than half of the household members (52.9%) of the SHG households reported being sick once and 11.6% reported being sick twice in the previous year (Table 18). The numbers were quite similar for non-SHG households: 52.2% and 12.3% respectively. Even though there were several ailments reported, the primary illnesses recorded in the survey were fever, headaches, and colds. Note that "being sick" is defined as a case in which the respondent's household members visited a doctor. In the case of SHG households, nearly 35% visited private hospitals and 29.7% consulted government hospitals (Table 19). The situation is little different with non-SHG households, more than 40% visited the private hospitals and 23.9 % visited government hospitals. With regard to the amount of money spent on medical treatment, the mode is in the range of Rs. 101 to Rs. 1,000 for SHG households, which is the same for non-SHG households. The sources of the money also do not differ between the two groups.

Table 18. Household Members Health Status

| Health condition | SHG households (%) | Non-SHG households (%) |
|---|---|---|
| Number of times of illness | | |
| None | 49 (35.5) | 46 (33.3) |
| Once | 73 (52.9) | 72 (52.2) |
| Health condition | SHG households (%) | Non-SHG households (%) |
| Number of times of illness | | |
| Twice | 16 (11.6) | 17 (12.3) |
| Three times | – | 3 (2.2) |
| Total | 138 (100) | 138 (100) |
| Frequency of illness | | |
| Not applicable | 49 (35.5) | 46 (33.3) |
| Less than 6 months ago | 78 (56.5) | 70 (50.7) |
| Between 6 and 12 months | 11 (8.0) | 7 (5.1) |
| Often | – | 15 (10.9) |
| Total | 138 (100) | 138 (100) |

The survey indicates 32.6% of SHG respondents regularly discuss health-related issues in the periodical meetings of SHG. Almost one-fourth of the respondents (23.9%) were able to take follow-up actions on the points discussed during the SHG meetings. And 17.4% of the SHG respondents observe some change in their households. However, as shown previously, there is little difference between the two groups in terms of the chance of being sick. In fact, in the case of health status, the mean value of the aggregated health indicator does not differ significantly between SHG and non-SHG households as shown in Table 20. The factors that the indicator takes into consideration are: the number of visits to

a clinic/hospital in the last six months and in the last year, source of money borrowed for health-related expenses, type of hospital visited, and the number of persons in the household who had recently fallen ill.

Of the SHG households, 37% borrowed money from a SHG to meet expenses related to health. Apart from group support in terms of loans, 26.0% responded positively that they receive support from other members of their respective SHGs in the event of health-related emergencies. At the time of a crisis affecting anyone of their group members, nearly 18% of the SHG households gave collective support. Therefore, although current status concerning health does not differ much between SHG and non-SHG households, if there was no SHG, the health status of SHG households would be worse than it is currently. In this sense, SHG is effective to improve health.

Table 19. Details of Visits to Hospitals/Clinics and Money Spent

| Hospital / clinic visits | SHG households (%) | Non-SHG households (%) |
|---|---|---|
| Type of facility | | |
| Not applicable | 49 (35.5) | 46 (33.3) |
| Govt. hospital | 41 (29.7) | 33 (23.9) |
| Private clinic | 43 (31.2) | 45 (32.6) |
| Private hospital | 5 (3.6) | 12 (8.7) |
| Medical shop | – | 2 (1.4) |
| Total | 138 (100) | 138 (100) |
| Money spent | | |
| Not applicable | 49 (35.5) | 46 (33.3) |
| Less than 50 | 13 (9.4) | 13 (9.4) |
| 51 to 100 | 10 (7.2) | 9 (6.5) |
| 101 to 250 | 17 (12.3) | 7 (5.1) |
| 251 to 500 | 16 (11.6) | 17 (12.3) |
| 501 to 1,000 | 16 (11.6) | 18 (13.0) |
| 1,001 to 2,500 | 3 (2.2) | 7 (5.1) |
| 2,501 to 5,000 | 7 (5.1) | 10 (7.2) |
| 5,001 to 10,000 | 3 (2.2) | 6 (4.3) |
| 10,001 and above | 4 (2.9) | 5 (3.6) |
| Total | 138 (100) | 138 (100) |
| Source of money | | |
| Not applicable | 49 (35.5) | 47 (34.1) |
| Own money | 45 (32.6) | 44 (31.9) |
| Borrowed | 44 (31.9) | 45 (32.6) |
| Both | – | 2 (1.4) |
| Total | 138 (100) | 138 (100) |

Table 20. Impact of Social Capital on Household Health Status

| Categories | N | Mean | SD | T Value |
|---|---|---|---|---|
| SHG | 138 | 3.4783 | 2.7050 | 1.529 NS |
| Non-SHG | 138 | 4.0072 | 3.0339 | |

NS: Not Significant.

## CONCLUSIONS AND POLICY IMPLICATIONS

In this paper we tried to understand the social capital through Self-Help Group (SHG) membership and the result of it as a source of development at the household level. It is hypothesized that working for common objectives in close association with others develops social capital, and that the social capital contributes to the improvement of people's livelihood evaluated in the following three aspects: income and credit support, gender issues, and health status at the household level.

First, instead of measuring social capital, this paper confirms that bonding as well as bridging social capital has been fostered within SHG relative to the case of non-SHG. Hence, although indirectly, the differences between SHG members and non-members can be attributed to the different endowments of social capital.

A majority of SHG members consider the main objective of SHGs is savings and internal credit services. In fact, SHGs facilitate savings among members and ensure timely credit to the members. Not only limited to those financial aspects, SHGs also enhance members' skills and capacity for income generation. As a result, SHG members perceive that their SHG has a direct impact on household income. Such opportunities are not available to non-SHG members, and therefore the differences are quite significant.

As for social status of women, SHGs have brought a considerable improvement at both the household and community level. It also promotes a positive change in women's roles and responsibilities, and enhances the mobility of rural women. Among the non-SHG members the changes were seen to be relatively low and slow.

If we compare health-related aspects between SHG members and non-members, there is no significant difference. However, SHG members borrow money from their SHG to meet expenses related to health and also benefit from support provided by other members at the time of emergencies. Therefore, although current status concerning health does not appear to differ, SHGs are considered to be effective to improve health status which otherwise should be lower.

All the empirical evidence supports the significant, positive role of social capital fostered by SHG activities in the improvement of rural household livelihood. Although it is admitted that the main reason for the success of the SHG program is its participatory nature, obviously SHGs would not be established and developed without external facilitation, particularly in the aspects of the linkage with other SHGs, banks, and local government, and capacity development of members. With this regard, policy interventions to support their networking as scaling-up are still necessary and should be more effective.

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# PART III OVERVIEW

Inside Cover for Part III
(page 215)

# ROLE OF SOCIAL CAPITAL IN ECONOMIC DEVELOPMENT: EVIDENCE AND ISSUES

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## INTRODUCTION

It should be generally agreed that the goal of community development is to improve the living standards of the community members. On the other hand, because of the recent acceleration of commercialization and globalization and their strong influences in rural areas, people's livelihood has become more and more dependent on income generated through the market. No one can deny that cash income is the ultimate means to enhance well-being even though it is not everything. As such, the question is if there is any contribution of community in income generation, particularly through social capital. This paper tries to answer this question based on some empirical examples and shows the role of social capital in economic development.[1]

Hayami (2004) argues that communities have advantage in supplying local public goods which can be classified into three categories: (1) conservation of common-pool resources; (2) market development; and (3) social safety nets, and that all of them are based on the power of community relationships in preventing free riders who want to benefit from violating agreements or contracts. Here it is clear that community is the basis of market institutions and hence contributes to people's income generation through the market. However, the classification itself does not explain why some communities have better functioning markets and consequently are wealthier than others and how the role of community can be strengthened to achieve economic development. These questions are particularly important for community development, where interactions and trust-building among community members and/or with outsiders are involved. And it has been well recognized that the success depends on a community's characteristics including unobservable ones such as trust, norms, and networks, or in a word, social capital.

Social capital is a useful concept to understand the role of community since it considers community characteristics as flexible and assumes that they are the results of capital formation. It means that social capital, just like physical capital and human capital, is an accumulation of past flows of investment less past flows of depreciation and is

[1] Although social capital can be defined at individual/household level as well as group/community level, even individual/household level social capital is regarded as a community's characteristics because it reflects the individual/household's relationship with other community members as influenced by the community itself. However, the current paper focuses more on community-level social capital because local public goods supplied by communities are critical for economic development. The role of social capital in this context is close to the role of community or "community factors" in economic development.

somehow measurable. That is, if we consider a social production function, social capital is a fixed input in the short-run, but a variable input in the long-run like other capital inputs.[2]

In order to use the concept of social capital in empirical studies, it will be necessary to consider the elements of social capital. There are several ways to classify social capital, but with respect to the elements, two forms of social capital that correspond to the different roles of community should be distinguished. According to Krishna and Uphoff (1999), there are *structural forms* of social capital and *cognitive forms* of social capital. Structural social capital includes "rules, social networks, roles, procedures that facilitate mutually beneficial collective action by lowering transaction costs, coordinating efforts, creating expectations, making certain outcomes more probable, (and) providing assurance about how others will act." On the other hand, cognitive social capital means "norms, values, attitudes, and beliefs which create and reinforce positive interdependence of utility functions and which support mutually beneficial collective action." However, their roles are quite similar: both forms of social capital will not only facilitate/support collective action, but also reduce information costs as well as enforcement costs (Grootaert and Bastelaer 2002). The latter may be particularly important for market development since contract enforcement is indispensable for it.

With respect to market development, another classification of social capital is also relevant. It is bonding social capital and bridging social capital (Narayan 1999). The former works within the community to facilitate cooperation and/or collective action among members, while the latter improves access to the outside such as markets, NGOs, and government. Since market access enhances income opportunities, bridging social capital is certainly critical for community development in the era of globalization. In addition, considering that projects and services provided by NOGs and government are significant sources of income opportunities, bridging social capital needs to be increased to benefit from them.

As discussed above, social capital is one of the most important characteristics of community, and therefore this paper focuses on social capital in discussing the role of community in economic development. In the following sections, examples of common property management, market development, and social safety nets will be respectively provided as evidence of the role of community-level social capital. Then remaining issues will be discussed.

## EVIDENCE OF THE ROLE OF COMMUNITY-LEVEL SOCIAL CAPITAL

### Common Property Management

Following Hardin's "the tragedy of the commons," over-use or over-exploitation is regarded as the problem of common-pool resources. And since social capital is considered to facilitate/support collective action, it should have a positive effect on the performance of the management of common-pool resources. In this section, an example from the case of community forest management in Nepal is presented (Sakurai et. al. 2001).

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[2] Economists argue that "social capital" is not really like capital in economics; for example, Arrow (2000) writes "it does not meet the definition of capital used by economists in particular aspect of deliberate sacrifice in the present for future benefit."

Many scholars have shown that indigenous protection and management systems of natural forests had existed in Nepal for a long time (e.g., Fisher 1989; 1991). But the Nepalese government nationalized all the forest lands and resources by introducing the Private Forest Nationalization Act of 1957, thereby taking over the tasks of protection and management of all forests in the country. Due to insufficient protection by the government and the weakened traditional forest management systems, the nationalization has resulted in severe degradation of the national forests (Metz 1991). Other factors, such as population pressure, would have been also responsible for deforestation (Gilmore and Fisher 1991). The policy of handing-over of formal usufruct rights to "user groups," the people who actually used the forests, was legalized in the amended Forest Act of 1987. The new legislation requires those communities that wish to obtain use rights of forests to form a formal forest user group (FFUG).[3] Thus, FFUG with several rules governing their community forests is treated as structural social capital. On the other hand, cognitive forms of social capital cannot be observed by definition, but are assumed to be proxied by the number of years since the hand-over of formal usufruct rights because the activities of community forestry would have fostered trust among the members.


Figure 1. Map of Nepal and Study Site (Dang District)
The map is adapted from CIA World Factbook.

The study site is in Dang District located in inner Tarai area of Nepal (Figure 1). From the list of registered community natural forests provided by the district forest office,[4] we randomly selected 52 forests. For all the sample community forests, a forest management survey by means of group interview in the presence of the chairman or secretary of the FFUG committee was carried out in 1997. In addition, forest conditions of all the selected natural forests were assessed using aerial photos taken in 1978 and 1996.

First, the effects of structural social capital are examined by the comparison of collective forest management before and after hand-over. Table 1 presents current

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[3] As indicated above, formal and informal user group management coexists in Nepal, even though both are called community forestry. Although some empirical studies report that informal ones have been able to protect and manage forests for a sustainable supply of forest resources (e.g., Fisher 1991), others call into question their ability to carry out sustainable management of forests in view of their weak financial basis (e.g., Dahal 1994).

[4] There are also community plantations in this district.

regulations (i.e., as of the survey time in 1997) on community natural forests as well as the change in the regulations. In the current regulations, grazing and the cutting of live branches are totally prohibited in most forests, while collection of grass and dead firewood are permitted with some restrictions in most cases. It is also noteworthy that timber harvesting is not totally prohibited in the majority of cases. As is shown in the same table, regulations have become stricter after hand-over, especially for grass and dead firewood collection and grazing. In contrast, it is interesting to observe that regulations on timber harvesting have been relaxed after hand-over in one-third of the sample forests. This is because before hand-over local people were not allowed to harvest timber. This observation is consistent with the fact that the New Forest Act of 1993 allowed FFUGs to harvest timber for sales, which will bring cash revenue to the members. Thus, we expect that FFUGs have stronger incentive to manage their forests after hand-over. The comparison continues to Table 2: the average number of watchers has increased after hand-over; in addition, FFUGs abolished the rotation system of patrolling by their members and in-kind payment to hired watchers after hand-over. These changes seem to imply that because FFUGs now receive sales revenues, they are willing to and can afford to pay monetary rewards for watchers to protect forests. These observations as a whole indicate that the structural social capital brought by the establishment of FFUGs and the following hand-over has facilitated collective actions to manage community natural forests.

Table 1. Regulations in Community Natural Forests After Hand-Over in Inner Tarai, Nepal[1]

| | Current regulations | | | Changes in regulations after hand-over | | |
|---|---|---|---|---|---|---|
| Collection of: | Totally prohibited | Regulated/ controlled | No regulation | More restricted | No change | More relaxed |
| Grass | 7.7 | 69.2 | 23.1 | 64.0 | 34.0 | 2.0 |
| Dead firewood | 5.8 | 84.6 | 9.6 | 75.5 | 18.4 | 6.1 |
| Green firewood | 78.8 | 21.1 | 0 | 38.0 | 48.0 | 14.0 |
| Grazing | 61.5 | 34.6 | 3.8 | 74.0 | 26.0 | 0 |
| Timber harvest | 23.5 | 74.5 | 2.0 | 42.0 | 22.0 | 36.0 |

[1]Numbers are percentages of corresponding forests in the sample community natural forests.

Table 2. Use of Watchers Before and After Hand-Over in Inner Tarai, Nepal[1]

| | Before hand-over | After hand-over | T-statistics |
|---|---|---|---|
| Average number of watchers per FUG[2] | 1.45 | 1.74 | 2.00* |
| Use of rotation system | 8.3 % | 0 % | 1.77* |
| In-kind payment to hired watchers | 23.3 % | 3.3 % | 2.95** |

[1] ** indicates significance at the 1% level, and * at the 5% level.
[2] FUG: forest users group. Forest area did not change after hand-over.

Then, the effect of cognitive social capital is tested using the number of years passed since hand-over of forest use rights to FFUGs as a proxy. Here it is assumed that cognitive

social capital such as norms and trust can be enhanced by community forest activities, and hence the more years have passed since hand-over, the more cognitive social capital has accumulated.[5] The number of years ranged from 1 to 9 as of 1997 with the mean being 2.8. On the other hand, according to the interpretation of aerial photos, 25 community forests out of 52 community forests showed improved forest conditions between 1978 and 1996. Thus, a probit regression is estimated to examine whether the improvement of forest conditions can be explained by "years since hand-over," where the dependent variable is a binary dummy variable for the improvement. As shown in Table 3, the variable "years since hand-over" has no significant effect on the improvement of forest conditions. This may be explained by the fact that the period after hand-over is generally too short to exert significant effect on crown cover.

To sum up, while data in Tables 1 and 2 strongly indicate that structural social capital strengthened the collective action in protection and management of community forests after hand-over, the regression results fail to confirm the significant effects of cognitive social capital on forest conditions. It is conjectured that the period after hand-over is too short to observe a positive and significant effect of the accumulation of social capital.

**Market Development**

As discussed, contract enforcement is indispensable for market development, and social capital endowed in a community will play an important role in it by reducing transaction costs/information costs. In addition, social capital at individual/household level will facilitate access to the market and increase income through markets because connections and networks with outside are also included in social capital. The former may be regarded as bonding social capital, while the latter can be classified as bridging social capital. An example for this is from rice milling in Ghana (Sakurai et al. 2005; 2006).

Rice is not a traditional staple food in Ghana as in most parts of West Africa. However, due to urbanization Ghana has recently seen a dramatic increase in rice consumption per capita; average yearly consumption of milled rice per capita increased from 7.7 kg in the 1980s to 13.6 kg in the 1990s (FAO 2004). During the same period, while domestic rice production increased from 46,500 tons to 110,600 tons in milled rice equivalent, milled rice imports also increased from 50,400 tons to 122,400 tons (FAO 2004). This indicates that both imports and domestic production equally increased during the past 20 years, but also implies that domestic production could not sufficiently meet the increasing demand for rice. The question is why Ghanaian farmers do not increase rice production to benefit from the high demand for rice by paddy field expansion and/or paddy yield enhancement. One of the perceived reasons is poor quality of domestic milled rice that cannot compete with imports from Asian countries and the USA. In order to improve the quality, a clear relationship between price and quality needs to be established in the market so that the improvement can be rewarded. However, such a relationship is generally missing in Ghana probably because rice marketing has only a short history. Hence, this study is to investigate the role of social capital in the development of domestic milled rice market in Ghana.

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[5] One of the most popular ways to measure cognitive social capital is to create a synthetic index based on the answers to a set of questions asking subjective judgment about belief, trust, norms, etc. using structured questionnaires (e.g., Grootaert and Bastelaer 2002). However, this study did not take such an approach.

Table 3. Determinants of Improvement of Natural Community Forests in Inner Tarai, Nepal[1]

| Explanatory variables | Dependent variable: Crown cover improvement[2] |
|---|---|
| Social capital | |
| Number of years since hand-over | –0.19 (1.07) |
| Community Characteristics | |
| Number of users | 0.001 (0.82) |
| Percentage of Brahmin households | 0.01 (0.99) |
| Travelling time to market (min) | 0.001 (0.23) |
| Forest characteristics | |
| Walking time to forest (min) | 0.04 (1.37) |
| Forest area (ha) | –0.004 (2.07)* |
| Percentage of forest area located on slopes | 0.01 (1.42) |
| Soil type dummy (gravel) | 0.61 (1.13) |
| Soil type dummy (sandy loam) | 1.82 (2.73)** |
| Soil type dummy (loam) | 1.17 (1.66) |
| Soil type dummy (clayey loam) | 2.21 (2.53)** |
| Constant | –2.72 (2.40)** |
| Fraction of correct predictions | 0.77 |
| Number of improved forests | 22 |
| Number of samples | 44 |

[1] Probit is used for the estimation. T-statistics are in parentheses. ** indicates significance at the 1% level, and * at the 5% level.
[2] The improvement of crown cover is represented by a dummy variable (unity for improvement), whose judgment is based on aerial photos taken in 1978 and 1996.

To study this issue, the Kumasi area, in central Ghana, was selected (Figure 2). Kumasi is the second-largest city in Ghana with more than one million population according to the 2000 census. And there are huge areas of lowlands that are not currently used for cultivation around Kumasi, where a significant expansion of lowland rice area is possible.

Millers are one of the key players in Ghana's rice market. Figure 3 shows the distribution system of local rice in the Kumasi area. After hand threshing, rice producers transport the paddy to millers by themselves. The millers mill the paddy and charge a milling fee to the producers, depending on the amount (i.e. volume) of milled rice produced. Then, the producers sell the milled rice to traders who come to the millers to purchase it. Unlike other places where rice millers are also rice traders, the role of millers in the Kumasi area is only as an intermediary: each miller announces the prices of milled rice that is traded at his mill, and based on the announced prices, transactions between producers and traders take place. Therefore, this study focuses on millers.

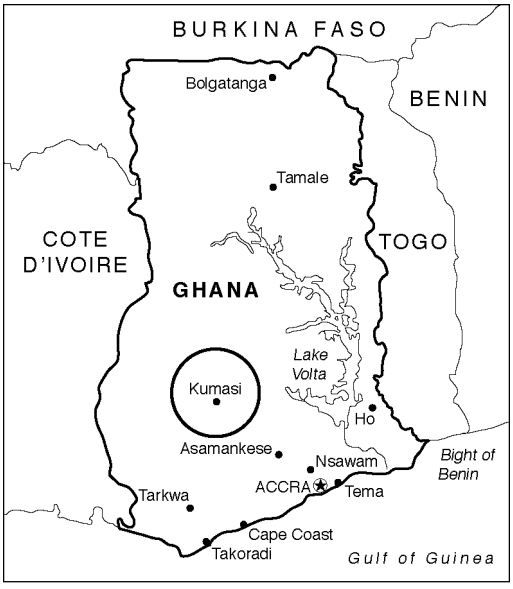


Figure 2. Map of Ghana and Study Site (Kumasi area)
The map is adapted from CIA World Factbook.

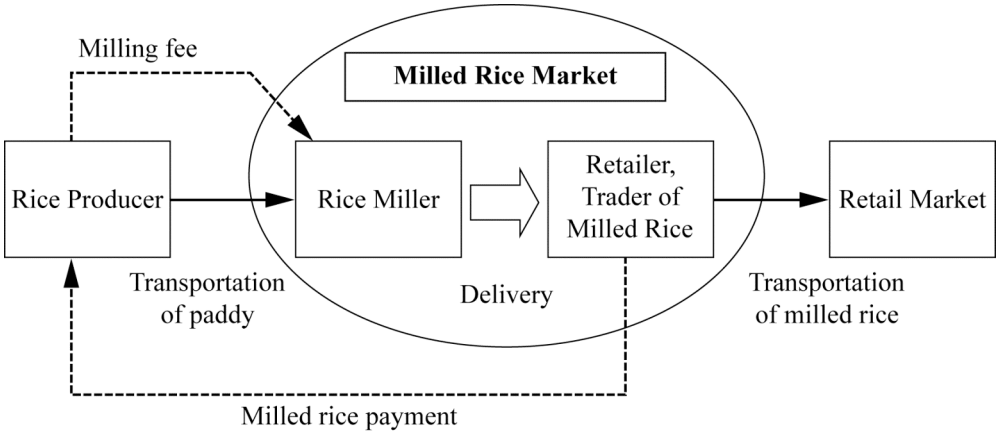


Figure 3. Rice Distribution System in the Kumasi Area, Ghana

One of the interesting observations on millers in the Kumasi area is that millers in the urban area of Kumasi city form a few clusters, while millers in satellite towns or villages are isolated. In addition, millers in Kumasi city are members of a millers association. Hence, this study assumes that millers in Kumasi city are in a community fostering social capital and that millers in other towns/villages do not participate in the community. Therefore, by comparing the millers in Kumasi city with the millers in satellite towns/villages, the effect of social capital will be identified. Both bonding social capital and bridging social capital can be considered here. If bonding social capital exists among the millers in Kumasi city, they can share the information. This study examines its consequence in terms of the improvement of milled rice quality as well as the

establishment of price/quality relationship, which may be facilitated by low information cost among millers in the clusters. Moreover, bridging social capital may be developed between millers and farmers. This social capital together with low information cost in the clusters is hypothesized to make it easy to enforce contracts and hence allow millers in the clusters to provide credit to farmers.

Data were collected in 2002 from 24 millers located in clusters within Kumasi city and 39 millers scattered over 25 satellite towns/villages around the city.

Table 4. Milled Rice Quality at Millers in Kumasi Area, Ghana[1]

| | In Kumasi city | In rural area | Difference[2] |
|---|---|---|---|
| Price (cedi/kg milled rice) | 2737 (160) | 2802 (377) | |
| Quality depending on processing | | | |
| Whole grain (weight %) | 67.1 (10.7) | 60.4 (12.2) | ** |
| Large broken grain (weight %) | 2.98 (1.51) | 3.90 (2.00) | ** |
| Small broken grain (weight %) | 21.8 (8.33) | 26.7 (10.8) | * |
| Impurity (weight %) | 0.43 (0.33) | 0.60 (0.40) | * |
| Colored grain (weight %) | 5.60 (9.78) | 3.54 (3.49) | |
| Immature grain (weight %) | 1.44 (0.98) | 1.82 (1.31) | |
| Quality depending on genetics and processing | | | |
| Red-colored grain (weight %) | 0.64 (1.34) | 3.03 (2.00) | *** |
| Whiteness (score) | 33.9 (6.21) | 35.0 (5.86) | |
| Transparency (score) | 1.54 (0.29) | 1.39 (0.35) | * |
| Quality depending on genetics | | | |
| Grain shape (length/width) | 2.34 (0.11) | 2.35 (0.18) | |
| Amylose content (weight %) | 26.9 (1.08) | 26.0 (1.64) | *** |
| Volume expansion ratio | 4.65 (0.21) | 4.65 (0.33) | |
| Cooking time (minutes) | 24.3 (1.79) | 24.27 (2.08) | |
| Sample size | 27 | 33 | |

[1] Standard deviations are in parentheses. Only Ashanti rice, the most-popular local variety, is used.

[2] Two means are different at the significance level of 1% (***), 5% (**) and 10% (*) respectively. The next question is if there exists a price/quality relationship.

Table 4 compares milled rice quality between the millers in the Kumasi clusters and the millers scattered in rural area.[6] The physical quality is obviously better at the millers in the Kumasi clusters than in the rural area: the content of whole grains is higher; and the content of large broken grains, small broken grains and impurity is lower. The content of

[6] From 63 sample millers, we collected all the types of milled rice available at the time of interview, resulting in 85 samples of milled rice. Physical and chemical characteristics of all the milled rice samples were determined by the Africa Rice Center (WARDA) grain quality laboratory in Bouaké, Côte d'Ivoire. The 85 samples consisted of eight different varieties of locally produced rice. Among them, 50 samples are what is called "Ashanti rice," which is considered to be a traditional, local variety. This paper presents the analysis results of this variety only.

red-colored grains is genetically determined, but also reflects the degree of milling. Table 4 shows that milled rice at the rural millers is significantly more reddish and less transparent. All the quality differences suggest that milling technique is poor in the rural area. With respect to the technology, there are two different types of milling machines in the study site: one-pass type mill and Engelberg type mill. The former is usually made in Japan or China and has a relatively large capacity, while the latter is locally made or imported from India. In addition to the cheaper price, the advantage of the Engelberg type mill is that it is a multi-purpose mill, that is, it not only mills paddy but also grinds maize and cassava by simple replacement of attachments. But it sacrifices milling quality. Our data show that about 70% of the millers in the Kumasi clusters use the one-pass type mill, while the adoption rate is only 20% among the rural millers. That is to say, millers in the Kumasi clusters are more technologically advanced. Therefore, it can be concluded that social capital fostered in the millers' community in Kumasi city lowers information costs and induces the spillover of this innovative milling technology, and consequently improves milled rice quality.

Table 5. Determinants of Milled Rice Price at Millers in Kumasi Area, Ghana[1]

| Explanatory variables | Dependent variables | |
|---|---|---|
| | Price of Ashanti rice in Kumasi (cedi/kg) | Price of Ashanti rice in rural area (cedi/kg) |
| Milling quality | | |
| Whole grain content (weight %) | 6.62 (2.56)** | –3.07 (5.81) |
| Impurity (weight %) | 60.1 (81.9) | 167 (167) |
| Red-colored grain content (weight %) | 38.6 (20.2)* | 32.8 (17.4)* |
| Genetic quality | | |
| Grain shape (length/width) | 193 (245) | 1898 (456)*** |
| Amylose content (weight %) | 21.2 (26.0) | 68.7 (38.6)* |
| Volume expansion ratio (after/before cooking) | –40.4 (134) | –230 (219) |
| Cooking time (minutes) | –37.5 (16.4)* | 20.5 (30.8) |
| Miller location | | |
| Millers scattered on Sunyani road[2] | NA | –265 (137)* |
| Constant | 2319 (967)** | –2752 (2118) |
| $R^2$ | 0.52 | 0.58 |
| Sample size | 27 | 30 |

[1] OLS is used for the estimation. Standard errors are in parentheses. ***, ** and * indicate significance levels of 1%, 5% and 10% respectively.
[2] Relatively a large number of rice-producing lowlands exist in the area on Sunyani road, and hence more rice is supplied to the local market there.

To examine it, the price of Ashanti rice is explained in a multiple regression framework. As shown in Table 5, in the Kumasi clusters, the content of whole grains significantly increases the milled rice price, while in rural-area milling quality has no significant effect on the price. This finding implies that social capital that reduces

information costs in the Kumasi clusters has facilitated to establish the quality-price relationship. This is critical for market development.

With respect to money-lending by the millers, 27 out of 63 sample millers provided loans to rice producers in 2001 under the agreement they would deliver their paddy to the millers. But 21 out of the 27 money-lending millers did not charge any interest, suggesting that the interest-free loans are used to enhance operation rate of milling machines (Furuya and Sakurai 2005). Hence, it is hypothesized that this kind of unenforceable contract is only possible in a community with a sufficient amount of social capital that lowers information costs and maintains norms and trust. Thus, the determinants of money-lending are identified by regression, whose results are shown in Table 6. Since the Kumasi cluster dummy has a significantly positive effect on money-lending, it is interpreted that bonding as well as bridging social capital fostered in the clusters allows millers to be engaged in an otherwise unenforceable contract with farmers. Moreover, the positive effect of the number of years since the establishment implies that long-term continuous transactions create mutual trust and cooperation, that is, social capital has been accumulated. Finally, the last column of Table 6 shows that money-lending significantly increases milling profit, that is, millers that lend money improve milling efficiency. Considering that social capital makes money-lending possible, the conclusion is that bonding and bridging social capital accumulated in the clusters enhance the efficiency of the market, which benefits not only millers but also rice producers.

Table 6. Determinants of Money-lending and Its Effect on Milling Profit in Kumasi Area, Ghana[1]

| Explanatory variables | Dependent variables | |
|---|---|---|
| | Dummy for money-lending[2] | Profit per output[3] ($10^{-3}$ cedi/kg) |
| Social capital | | |
| Located in Kumasi (dummy) | 1.04 (0.48)** | –66.0 (35.5)* |
| Years since establishment | 0.047 (0.023)** | –0.80 (1.43) |
| Human capital | | |
| Owner's age | –0.030 (0.015) | NA |
| Operator's age | NA | –0.74 (0.897) |
| Years of operator's experience | NA | –0.20 (0.17) |
| Owner's experience in rice farmer (dummy) | 0.34 (0.46) | 0.48 (0.20) |
| Owner's experience in rice trader (dummy) | –0.33 (0.69) | 81.0 (41.7)* |
| Owner's experience in milling (dummy) | 0.83 (0.70) | –50.3 (28.2)* |

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(continuation)

| Explanatory variables | Dependent variables | |
|---|---|---|
| | Dummy for money-lending[2] | Profit per output[3] ($10^{-3}$ cedi/kg) |
| Physical capital | | |
| Workshop floor size (100 $m^2$) | –0.22 (0.42) | NA |
| Mill capacity (100 kg milled rice/day) | 0.035 (0.019)* | NA |
| Predicted probability of money-lending | NA | 832 (404)** |
| Predicted value of probability density | NA | 965 (878) |
| Constant | –0.13 (0.83) | –806 (579) |
| Fraction of correct prediction/$R^2$ | 0.78 | 0.26 |
| Number of money-lending millers | 29 | NA |
| Sample size | 63 | 63 |

[1] Standard errors are in parentheses. ***, ** and * indicate significance levels of 1%, 5% and 10% respectively.
[2] Probit is used for the estimation.
[3] OLS is used for the estimation.

**Social Safety Net**

A traditional community is known to have some kind of insurance mechanism: that is, it provides social safety nets to those members who need to be relieved from incidental crisis (Udry 1994). This insurance is usually supported as a community's norm, and hence social capital particularly in cognitive forms should matter. On the other hand, if it is the case of a region-wide disaster like earthquake or war, such community mechanisms will not work effectively because almost all community members suffer at the same time. In this case, aid from external sources, such as government, NGOs, and relatives living abroad, are supposed to be provided. And it is considered that receiving external aid depends on community networks and connections to such external sources, which is the role of bridging social capital. This section gives an example of the latter case where a region-wide disaster takes place (Sakurai 2004; 2005).

Burkina Faso is a landlocked country located on the southern edge of the Sahara desert in West Africa (Figure 4). Most of the country's territory belongs to the Savanna zone whose annual precipitation varies from 400 mm in the northeast to 1,200 mm in the southwest. This unfavorable climatic condition causes the stagnation of agricultural productivity, and consequently the country remains one of the poorest in the world. The poverty has made the rural population rely on external migration (mostly to neighboring Côte d'Ivoire) as well as remittance from relatives living outside the country. It is estimated that such revenue constitute 10 to 20% of their total income. On the other hand, this regional migration has reduced population pressure on the land. However, due to the civil war in Côte d'Ivoire that took place in September 2002 (or the so-called Ivorian crisis), a considerable number of Burkinabés were obliged to return from Côte d'Ivoire to their home and the total number was officially estimated to be some 350,000 as of July 2003. That is, a crisis in the neighboring country has imposed unexpected income reduction as well as unexpected population pressure on rural Burkina Faso. This section

presents the analyses of the effect of social capital on the social safety nets in the relief from the Ivorian crisis.

Data collection at village level was conducted in December 2003 in 208 villages selected randomly from 13 provinces out of 45 provinces in Burkina Faso. The villages spread over four distinctive agro-ecological zones in Burkina Faso. From the north they are: the northern Sudanian zone (550 mm average annual rainfall); the southern Sudanian zone (id. 700 mm); the northern Guinean zone (id. 900 mm); and the southern Guinean zone (id. 1,100 mm).


Figure 4. Map of Burkina Faso
The map is adapted from CIA World Factbook.

First, the existence of Ivorian shock in rural Burkina Faso is confirmed by the data. As shown in Table 7, village population increased on average after the Ivorian crisis: in the northern and southern Sudanian zones and the southern Guinean zone, the population increased by more than 10%, while in the northern Guinean zone the growth rate is 4.4%. In addition, the crisis reduced significantly the percentage of households receiving external transfer and the percentage of households that out-migrate seasonally, which naturally should affect household income negatively. That is, village population has increased significantly and the reliance on external income sources has declined significantly on average in the 208 sample villages. As a result, government as well as NGOs distributed some emergency aid primarily to supply food for the returnees. Table 7 shows that in the southern Sudanian zone and the southern Guinean zone, more than half of the sample villages received such aid, while the number of villages receiving aid is relatively small in the northern Guinean zone reflecting a relatively small number of returnees in this zone.

Table 7. Village Level Impact of Ivorian Crisis in Burkina Faso

| Agro-ecological zone | Sudanian Savanna Zone | | Guinean Savanna Zone | |
|---|---|---|---|---|
| | North | South | North | South |
| Annual rainfall (mm) | 550 | 700 | 900 | 1,100 |
| Number of sample villages | 50 | 64 | 47 | 47 |
| Village population and returnees | | | | |
| Village population as of 1996 | 1,222 | 1,604 | 1,146 | 1,390 |
| Number of returnees per village | 81 | 160 | 43 | 226 |
| Percentage of returnees | 8.3 | 11 | 4.2 | 33 |
| Percentage of households receiving external transfer | | | | |
| Before the crisis | 54 | 45 | 26 | 44 |
| After the crisis | 11 | 14 | 0.8 | 3.4 |
| Impact[1] | –1.62 | –1.75 | –1.72 | –1.67 |
| Percentage of households out-migrating seasonally | | | | |
| Before the crisis | 43 | 27 | 26 | 49 |
| After the crisis | 2.1 | 5.0 | 8.6 | 13 |
| Impact[1] | –1.26 | –1.51 | –1.33 | –1.81 |
| Number of villages receiving external aid after the crisis | 16 | 40 | 6 | 25 |

[1] The impact of the Ivorian crisis was assessed by the villagers in group interviews using a 5-point scale: from –2 (very significant negative impact) to +2 (very significant positive impact).

The main question of this section is if this distribution of aid is affected by the social capital of the recipients. It is hypothesized that villages with plenty of bridging social capital should have strong networks with outside and hence are more likely to receive aid. This hypothesis is tested in a multiple regression, where a binary dummy variable for the reception of aid is the dependent variable and variables for structural social capital are included in the explanatory variables. They are the number of organizations/associations in the village, a proxy of bridging social capital, and the sum of the years since the establishment of those organizations/associations, a proxy of bonding social capital. Since most of village organizations/associations in rural Burkina Faso were established under external assistance, their number in a village is considered to reflect the connection with outside agents or networks with outside. On the other hand, it is assumed that the longer villagers have been involved in the activities, the more cooperation or bonding social capital should have been fostered among them. As shown in Table 8, the number of organizations/associations in the village and the sum of years since their establishment seem to differ over agro-ecological zones.

Table 8. Social Capital and Village Characteristics of Sample Villages in Burkina Faso

| Agro-ecological zone | Sudanian Savanna | | Guinean Savanna | |
|---|---|---|---|---|
| | North | South | North | South |
| Annual rainfall (mm) | 550 | 700 | 900 | 1,100 |
| Number of sample villages | 50 | 64 | 47 | 47 |
| Social capital | | | | |
| Number of organizations or associations in the village (bridging social capital) | 2.3 | 4.2 | 4.7 | 7.8 |
| Sum of years since their establishment in the village (bonding social capital) | 11.6 | 31.3 | 7.4 | 19.7 |

The regression results are in Table 9.[7] First of all, the coefficient for bridging social capital variable is estimated to be positive and significantly different from zero, indicating that village networks with outside work to receive external aid. However, bonding social capital has no significant effect on receiving external aid as expected.[8] In addition, relatively more affected zones, i.e., southern Sudan savanna zone and southern Guinean savanna zone, are more likely to receive external aid, also as expected. With respect to village-level shocks, the percentage of returnees increases the probability of receiving external aid. Although income shocks have no significant impact on it, villages that usually receive a large amount of remittance tend not to receive external aid. These results as a whole imply that external aid is distributed to villages according to agro-ecological zones as well as the magnitude of population shock or observable need for external aid. However, social capital still has room to enhance the chance to receive the external aid. It clearly shows the important function of bridging social capital in the case of crisis management.

[7] Table 9 shows only the regression results for "receiving external aid." But in reality a bivariate probit regression model is used where not only "receiving external aid" but also "receiving mutual aid from relatives and friends living in the same village or neighboring villages" are the dependent variables. Both of the dependent variables are binary dummy variables, and hence two probit models are simultaneously estimated in the framework of bivariate probit regression. As expected, the correlation between the residuals of the two probit regression models is significantly positive, indicating that the two forms of aid are complementary.

[8] Although the results are not presented in this paper, the bivariate probit regression (see footnote 7) reveals that bonding social capital significantly enhances the probability of receiving mutual aid, which is as expected considering the role of bonding social capital.

Table 9. Determinants of Aid Reception at Village Level in Burkina Faso[1]

| Explanatory variables | Dependent variable |
|---|---|
| | Binary dummy for external aid |
| Constant | –1.648 (1.158) |
| Agro-ecological zone dummies | |
| Northern Sudanian zone | 0.882 (0.539) |
| Southern Sudanian zone | 1.515 (0.434)*** |
| Southern Guinean zone | 1.052 (0.462)** |
| Social capital indicator | |
| Number of organizations in the village (bridging social capital) | 0.103 (0.033)*** |
| Sum of the years since their establishments (bonding social capital) | 0.003 (0.012) |
| Shock indicators | |
| % of returnees in village population | 0.446 (0.144)*** |
| Decrease in % of households receiving external transfer | 0.001 (0.004) |
| Decrease in % of households out-migrating seasonally | 0.002 (0.004) |
| Village assets | |
| Financial capital | |
| Total amount of remittance received in normal years ($10^7$ F) | –0.176 (0.084)** |
| Total amount of seasonal migration income in normal years ($10^7$ F) | 0.319 (0.334) |
| Physical capital | |
| Distance to the provincial capital (km) | –0.012 (0.008) |
| Distance to the nearest paved road (km) | –0.003 (0.006) |
| Number of years since the installation of telephone line | 0.054 (0.220) |
| Availability of cellular phone service (dummy variable) | –0.471 (0.285)* |
| Human capital | |
| Village population (100 persons) | 0.020 (0.015) |
| Number of years since the establishment of primary school | –0.005 (0.012) |
| School attendance rate of 7-year-old boys | –0.095 (0.121) |
| School attendance rate of 7-year-old girls | 0.053 (0.110) |
| % of ethnic majority population in village population | 0.007 (0.009) |
| Natural capital | |
| Number of food-shortage years in the last 5 years | –0.003 (0.066) |
| Normal fallow period (years) in the village | –0.047 (0.063) |
| Number of villages having received external aid | 87 |
| Number of samples[2] | 200 |

[1] Bivariate probit model is used for the estimation, but only half of the results are presented. Standard errors are in parentheses. ***, ** and * indicate significance levels of 1%, 5% and 10% respectively.

[2] The number of samples is less than 208 due to missing values.

## REMAINING ISSUES

In the previous sections, the roles of social capital in economic development have been discussed in terms of the three categories of local public goods that communities can supply. The examples demonstrate positive effects of social capital. However, there are so many remaining issues concerning the roles of social capital. Needless to say, the measurement of social capital is still the biggest problem, although many people discuss and elaborate it. But this paper is not meant to deal with this technical issue. Rather, this section will discuss the implications for community development.

### Time Required to Foster Social Capital

As discussed, one of the innovative ideas about social capital is that it can be accumulated intentionally in expectation of its positive effect on economic development. And what we are measuring, either at the individual/household level or group/community level, is the level of accumulated social capital, that is, social capital is a stock variable. This means that social capital should reflect all the past behaviors and activities that could affect the stock level, either negatively or positively. There are many studies that show, using a cross-section data set, the positive relationship between the level of social capital and the income. But it does not necessarily mean that a community with a low income can increase its income by simply enhancing measurable social capital, for example, setting up additional associations in the village. It will take time for a new association to foster social capital such as networks, trust, cooperation, etc., that may have effects on villagers' well-being. But the problem is that we do not know empirically how many years it will take to start exerting influence because most studies use only cross-section data that do not have any time dimension. In order to solve this problem, we need to use panel data, but again how many years are enough remains unknown. And although this section does not address the measurement issue, how to measure social capital in a consistent manner over time will be a challenging problem.

### Return on Investment in Social Capital

Not only the time required to foster social capital, but also the relationship between the investment in social capital (i.e., flow) and the observed social capital (i.e., stock) is still unanswered. How much do we need to invest? And how much return can we expect from it? That is, most studies on social capital fail to calculate the rate of return from investment in social capital. Another technical problem arises here: how to measure the flow of investment in social capital. Although we have good, almost-agreed methods to measure the level of social capital, we have not established methods to measure the flow. Theoretically, the difference in the level should be the flow; for example, the change in the number of associations between two points of time may be considered to be the flow. However, even if the number does not change, social capital can be accumulated by the activities of the associations. This means that there should be unobservable investment in social capital. When we compare the level of social capital using cross-section data, we can assume that observable structure captures such unobservable social capital although errors could be large. On the other hand, most studies try to measure cognitive forms of social capital by asking about people's subjective judgment about trust, norms, etc. A social capital index based on such questions may be useful to compare households or communities in a cross-section framework, but it is not clear if we can construct a time

series of subjective judgment. Even if it is possible, how can we define investment in cognitive forms of social capital?

**Cost of Investment in Social Capital**

Another important question is the cost of investment in social capital. Even if social capital index can capture the level of social capital as well as the change in the level, we do not have an established method to estimate its cost. In most cases, fostering social capital is time consuming, and hence the opportunity cost should be considered to be the cost. However, how can we measure the time spent to enhance social capital? Sometimes, it may be a bi-product of other economic activities. In this case, can we assume that the investment in social capital is costless? It is natural that social capital as social security nets is indispensable in rural areas of poor countries where insurance and credit markets are usually missing and consequently people invest a lot of time and money in social capital building (e.g., in the form of ceremony, ritual, etc.). In this way they try to establish good relationships with others so that they can obtain help in case of urgency. Although there is no formal calculation, such costs should be very significant and negatively affect economic growth since the time and money could have been invested in more productive activities. In order to verify or deny this conjecture, we need to have a good estimation of the cost of investment in social capital, and compare the rate of return to social capital investment with other investment, such as infrastructure, agriculture, small businesses, education, and so on.

**Inequality of the Distribution of Social Capital**

Finally, a more practical concern is the difference among communities. The studies on social capital assume that the level of social capital differs among communities depending on their investment in social capital in the past as discussed above. Here, it may be implicitly assumed that the rate of return to social capital investment is the same over the communities. However, there is a good reason that we could expect that the rate of return also differs among the communities because it depends community characteristics including the endowment of social capital itself. This will cause a disparity in investment flow among communities, which may widen the inequality of social capital endowment among communities. If it is true that social capital is useful for economic development, the inequality will create income inequality as is the case of other assets. This is not an imaginary situation, but is happening everywhere. We can see that some particular communities receive many projects and subsidies for development, while other communities receive only a few. This can be explained by the fact that those communities with many projects possess a very high level of social capital and hence their expected success rate of the projects is quite high. Because government and NGOs want to avoid a failure, they tend to choose good communities, rather than communities that really need assistance. As a result, the gap in the level of social capital will be widening, or even if it stays the same, the situation will lead to increasing income inequality. How should we use social capital for economic development? One possible way is, just like the case of other assets, that those who are living in such communities with poor social capital endowment should benefit from the economic development by other communities, particularly through the markets that are developed elsewhere. Shall we recommend it?

## CONCLUSIONS

This paper discusses the roles of social capital in economic development, particularly in terms of three categories of local public goods that communities can supply. They are (1) common property management, (2) market development, and (3) social security nets. Examples corresponding to each category are provided. In the case of common property management, structural social capital created by establishment of formal forest users groups in Nepal facilitates collective action to protect their community forests. Then, as for market development, the case of milled rice market in Ghana is presented, where millers' clusters in urban area foster bonding social capital among them and bridging social capital with rice producers. As a result, millers in the clusters adopt innovation in milling technology, and establish a quality/price relationship that is critical for market development. In addition, the lower information costs among them as well as bridging social capital enable millers in the clusters to provide farmers with loans. A third example is the case of Burkina Faso, where a civil war in its neighboring country, Côte d'Ivoire, has caused population shock due to the returnees as well as income shocks due to the suspension of remittance and seasonal migration. In such a region-wide disaster, structural social capital at village level is found to enhance the likelihood to receive external aid probably thanks to bridging social capital embodied in the structure. Thus, all the examples demonstrate positive effects of social capital on community development.

Not only these examples but almost all studies on social capital use cross-section data, and show positive relationship between the level of social capital and the income. The limitation of this approach is discussed in the last sections. That is, such an approach does not properly deal with the historical process in which social capital has been accumulated. Due to the nature of data, investment flow of social capital cannot be analyzed, and hence we cannot estimate the time and money required to establish social capital and we cannot tell whether investment in social capital is better than other investment opportunities or not. To solve this problem, the use of panel data is recommended, although we do not know how many years will be needed to see any significant change. In addition, there is some concern that the unequal distribution of current endowment of social capital will be a widening income gap. The conclusion of this discussion is that we do not have yet enough evidence to justify investment in social capital for community development, even though studies show that communities with a high level of social capital tend to have high income. This conclusion is not discouraging, but rather encourages us to continue further studying.

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# POTENTIAL OF SOCIAL CAPITAL FOR COMMUNITY DEVELOPMENT: LESSONS LEARNED AND CHALLENGES AHEAD

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This chapter synthesizes the research findings of the 10 country studies and concludes with policy implications for further development of APO-ICD program.

**Issue Identification of Country Study**

Reflecting the diverse situations and policy emphasis by country, there is a great variety of selected issues and study objectives (Table 1 on page 240). However, some commonalities can be pointed out. First, all the countries are experiencing rapid changes in both social and economic aspects under globalization. Advanced technology requires a change in farm structure which may affect not only the economic but social life of the villages. Second, globalization and trade liberalization directly and indirectly have significant impacts on rural socio-economy as well. Third, these changes present both opportunity and threat for local people. Thus, fourth, all the country studies focus on dual goal of growth and equity. And fifth, all the studies touch on the environment and natural resource management issue more or less, though not necessary mentioned explicitly.

Capturing the emerging opportunities but not degrading social equity and natural environment under drastic change is the question posed. Neither government nor market alone can answer this question. The role of community became crucial in this context. Structure and functions of community must be studied. Formation and accumulation of social capital is a matter that goes back several hundreds of years (Putnam 1993). Strong social capital might hold back the initiative members of a community from starting up challenging and innovative activities. How the old, established norms and human relationships can respond to new challenges is another question to be answered.

**Level of Study and Survey Method**

Social capital, which resides in social relations, is an attribute of community. Therefore, a community, a geographically defined village community in particular, seems an appropriate observation unit for its measurement. However, a purposefully organized community consists of members beyond village boundaries. Moreover, an important function of linking and bridging social capital is connecting people in different hierarchies, e.g., farmers and government officials, and different social settings, e.g., rural and urban. Thus it is necessary to conduct survey both at community and individual levels. As shown in Table 2 on page 241, most of the country studies conducted household survey sampling from different villages.

**Hypothesis and Measurement**

Basic framework of this survey is that social capital affects, either positively or negatively, welfare through facilitating collective actions. There is no consensus on an established definition of social capital (Chapter 2 in this book). We follow the broad concept of social capital: "institutions, relationships, attitudes, and values that govern interactions among people and contribute to economic and social development" (Grootaert, et al. 2002). The effects of social capital take three forms: i) increased availability of information and its lowered cost; ii) facilitated collective decisions/actions; and iii) reduced opportunistic behavior by community members (Grootaert, et al. 2002). In general, social capital facilitates mutually beneficial collective actions by reducing transaction costs.

Dependent variables as an indicator of welfare at the individual level are selected widely as agricultural productivity (yield, gross sale per capita), income or expenditure, health status, and gender issue. Individual behavior such as project acceptance and experience of conflict is also used as a direct measurement of social capital effect on cooperative attitudes.

Community-level indicators to be explained by social capital are mostly related to development efforts, namely, performance of various community activities (farming, irrigation management, road maintenance, rural-urban social exchange, village-based agribusiness), performance of government program, and village development status (Table 3 on page 243).

Social capital is categorized by its forms (structural and cognitive) and functions (bonding, linking, and bracing) (Chapter 2). Selected types of social capital in the studies are assembled in a matrix (Table 4 on page 245). Various types of organizations are observed in the rural area. Some are spontaneously arising village-based communities (*gemeinschaft*), others are purposefully constructed organizations whether formal or informal (*gesellschaft*). In the country studies, the individual's participation in, and his/her subjective evaluation of, those organizations are often measured as an indicator of structural social capital. Personal attitudes toward one's neighbors and government officials is also a common research item to measure the level of cognitive social capital.

To construct a single indicator of social capital by aggregating all different factors is the question. The conceptual literature has not yet provided a rigorous theoretical explanation for the treatment of social capital variables of different dimensions in the econometric model. In practice, previous works empirically found support both for the use of an aggregate index (either multiplicative or additive) and for applying social capital variables separately (Grootaert et al. 2002). Many of our case studies sum up ordinal numbers, e.g., degree of trust, of a group of variables measuring same aspect of social capital to construct an indicator. Examples are organization (formal/informal) participation, human network, cohesion, and trust. Further aggregation to construct one single indicator of social capital is tried in the Sri Lanka study.

**Functions of Social Capital Verified by Quantitative Analyses**

Quantitative analyses were conducted in four country studies: Iran, Japan, Malaysia and Sri Lanka. The major findings of these analyses are summarized as follows:

Structural social capital:

- Participating in functional organization positively affects agricultural production (Japan).

- Participating in functional organization positively affects agricultural productivity (Malaysia).
- Participating in functional organization positively affects innovative farming activities (Japan).
- Participating in bureaucratic organization negatively affects agricultural productivity (Malaysia).
- Participation in communal organization negatively affects health status (Malaysia).
- Participation in communal organization positively affects income (Sri Lanka).
- Involvement of NGO negatively affects income (Sri Lanka).
- Sharing public goods positively affects income (Sri Lanka).

Cognitive social capital:
- Trust in bureaucratic organization positively affects health status and household expenditure (Malaysia).
- Trust in government officials positively affects project participation (Iran).
- Trust in neighbors has positively affects collective action (Iran).

Aggregated social capital on income (Sri Lanka):
- Positive effect for lower income population
- Negative effect for upper income population

**Dynamics of Community Development and Changing Role of Social Capital**

How should we interpret the above findings? In general it is safe to say that social capital has positive impact on agricultural production, income, and health status.

Regarding structural social capital, participation in functional organizations has clear-cut impact on productive activities as expected. The Malaysian study, however, stands as an exceptional case that participating in bureaucratic organization negatively affects agricultural productivity. This seeming contradiction can be rationally interpreted when understanding the socio-political situation of Malay rice farming. The role of PPK was originally to facilitate productivity improvement strongly guided by the government. Thanks to the government's longstanding rice policies, the modern rice production technologies have been well diffused among farmers. Meanwhile, PPK continue to provide the usual routine services such as delivery of input materials and transportation of harvested rice. Considering these situations, small-scale part-time farmers, who have little incentive to increase productivity as their farm income is negligible, have good incentive to join PPK to save transaction costs in purchasing input materials and marketing their harvest. In contrast, more productive full-time farmers may tend to transact directly with merchants for procurement of production materials in bulk at a discount and to seek a more-favorable rice market. The Sri Lanka study also shows that involvement in NGO negatively affects income. However, if NGO functions as a social safety net for poor populations, this finding is not necessary counterevidence against our hypothesis.

The impact of social or cultural gatherings, which represent more "social" spontaneous organizations, is vague in our studies. For the measurement of fundamental human relations and basic characteristics of a specific society, spontaneously arising social institutions are a more relevant indicator of social capital. The Malaysian case even shows that participation in communal organizations negatively affects health status. Possible interpretation is that disadvantaged households depend more on such communal organizations, as is the case of NGO in Sri Lanka. If that is the case, social capital

provides people in need with social welfare. However, to verify this we need to compare the health status between communities by the level of communal organizations while controlling other factors.

As for cognitive social capital, bonding, bridging (horizontal) and linking (vertical) social capitals are proved to be positive in welfare enhancement and facilitation of collective action. The Iranian study clearly shows that cognitive-bonding social capital promotes communal collective actions but is not necessary to facilitate participation in public work such as land consolidation project, while cognitive-linking social capital has no influence on collective action but significantly affects public work participation.

**Coexistence, Complementarity, and Substitution**

We should pay due attention to the negative side of social capital. One of the findings of the Sri Lanka study implies that traditional forms of social capital do not have positive impact (or have negative impact) for upper income population in a market-oriented economy. Negative effects of social capital are also observed in somewhat contradictive cases of bureaucratic organizations in Malaysia and NGO involvement of Sri Lanka. These findings suggest that it is necessary to create a new form of social capital to further improve rural economy when reaching a certain level of development. However, this suggestion raises a question: Is a new form of social capital positive (or negative) for the poor? If not positive (or negative), this may worsen income distribution, resulting in degraded community welfare as a whole.

Coexistence and complementarity between different types of social capital may provide a clue to solve this dilemma. As clearly illustrated in Chapter 10 of this book, social capital plays three different roles: i) common property management, ii) market development, and iii) serving as a social safety net. Thus, negative consequences of market-driven economic development facilitated by a certain type of social capital could be mitigated by another type of social capital that functions as a safety net.

Another question concerns the opportunity cost of social capital formation. If a return from investment in a new form of social capital is not high enough compared with that of another form of capital, e.g., physical or human capital, this investment loses rationality. However, the three forms of physical, human, and social capital work together in a dynamic way. Social capital provides the social settings in which physical capital and human capital are fully mobilized and utilized. Moreover, a certain type of social capital (linking and bracing, in particular) may induce the replacement of informal institutions by formal ones in the course of economic development. If that is the case, a return from social capital investment is embodied in increased return from physical and/or human capital. Putnam (1993) argues that social capital enhances the benefits of investment in physical and human capital. In other words, social capital induces social innovation, resulting in a shift of the entire production function (Serageldin and Grootaert, 2000). In addition, our empirical studies suggest that the formation or accumulation of social capital does not necessary require an additional investment. The case of irrigation rehabilitation in Indonesia suggests that the investment in physical capital by-produces social capital. The investment in human capital (SHG in India, RVROOP in Sri Lanka) may also enhance social capital. These interactions of social capital with physical and human capital well represent the dynamism of community development. This complexity requires further investigation into the role of social capital in wider perspectives.

**Social Capital Formation through Research Project Implementation**

During the course of project implementation from the preparatory stage of issue identification to household survey, the working team of each participating country reached a further understanding of the structure and function of community. Moreover, without sincere support from various local institutions and people, the surveys which touched on sensitive matters such as human relations and personal faith could not have been conducted. We understand the interactions between all actors involved in this project demonstrated the process of formation and accumulation of social capital.

It is highly recommended that the APO-ICD program will incorporate the above research results and suggestions for further improvement of its design and implementation.

Table 1. Study Focus and Objectives

| Country | Background | Study focus | Objectives |
|---|---|---|---|
| Japan | Depopulation, aging, and environmental degradation in less-favored areas | Rural diversification as a new strategy | Elucidating the effects of social capital on development and diversification |
| Taiwan, ROC | Recovery from devastating earthquake in mountainous villages | Policy evaluation on structural readjustment programs | Identifying key factors making policy effective |
| Malaysia | Chronic poverty in paddy granary area | Income generation from increased agricultural productivity and non-agricultural employment | Measuring the effects of physical, human and social capitals on farmers' well-being |
| Thailand | Nationwide survey for classification of development status providing benchmark for National Development Plan | Prioritizing target areas for poverty alleviation under changing socio-economic situations | Identifying relevant development indicators and methodology for prioritizing |
| Indonesia | Transferring responsibility of irrigation management from government to farmers under budget constraints and decentralization policy | Capacity building of farmers' organization in irrigated rice production area | Process and effectiveness of NGO initiative empowerment project |
| Islamic Republic of Iran | Slow progress of farmland consolidation as a basis for agricultural modernization | Difficulty of gaining unanimous approval as a condition of land consolidation implementation | Identifying factors which affect individual decision-making on land consolidation |

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| Country | Background | Study focus | Objectives |
|---|---|---|---|
| Lao PDR | Integrated Rural Accessibility Planning Project (IRAP/UNDP 1995–2000) in eight provinces aiming at development of basic rural infrastructures | Capacity building of village organization for road maintenance | Clarifying the effectiveness of communal road maintenance and impact of road construction |
| India | Growing numbers and formation of network of Self-Help Groups and their multi-functionalities for poverty alleviation | Internal enforcement and external linking for further improvement of group performance | Evaluating impact of Self-Help Groups on income, gender issue, and heath status |
| Vietnam | Need for prioritizing immediate goals and targets to achieve poverty reduction and social equity | Five development programs of technology transfer and life improvement | Identifying factors for successful community development programs |
| Sri Lanka | Necessity of redesigning of development strategy under globalization and trade liberalization | Whether trade liberalization eroded social capital or not. Relevant form of social capital more suitable to market economy | Examining impact of social capital on income generation |

Compiled from the 10 country reports.

Table 2. Study Site, Observation Unit, and Survey Method

| Country | Study site | Observation unit | Survey method |
|---|---|---|---|
| Japan | • Seven municipalities in mountainous and hilly area<br>• Popular place for one-day sightseeing trip from Tokyo | • 56 rural hamlets<br>• 104 households | • Hamlets: purposefully selected using official statistics and suggestion of officials<br>• Group interview of community leaders<br>• Households: snowball sampling<br>• Individual interview with questionnaire |
| Taiwan, ROC | • Earthquake-damaged remote mountainous villages. Ecotourism promotion. | • 300 households in three villages<br>• (100 from each village) | • Purposefully selected using official registration<br>• Individual interview with questionnaire |

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| Country | Study site | Observation unit | Survey method |
|---|---|---|---|
| Malaysia | • Irrigated rice double-cropping area with good non-farm employment opportunities | • 60 households in six villages | • Group interview on community leaders<br>• Random sampling<br>• Individual interview with questionnaire |
| Thailand | • Nationwide | • 1,504 villages | • Officially organized nationwide survey for socio-economic base-line data to improve quality of coming NRD 2C |
| Indonesia | • South Slawesi. Irrigated rice double-cropping with subsistence upland farming. Limited non-farm employment opportunities. | • 22 water users associations from three villages upstream, midstream, and downstream of the same irrigation district.<br>• 150 households from the three villages (50 from each village) | • Group interview on leaders of water users associations, irrigation officials, and NGO staff<br>• Individual interview with questionnaire |
| Islamic Republic of Iran | • Semi-arid central plain with deep-well irrigation cultivating wheat, barley and beans.<br>• Land consolidation projects started from 1990. | • 177 households<br>• (95 from five farms (*mazraeh*) with land consolidation, 82 from five farms without land consolidation) | • Group discussion with local officials<br>• Stratified random sampling<br>• Individual interview with questionnaire |
| Lao PDR | • Project site of Integrated Rural Accessibility Planning Project (IRAP/UNDP 1995–2000) | • Five villages<br>• 241 households | • Key informant interview with questionnaire<br>• Individual interview with questionnaire |
| India | • Central Tamil Nadu, South India. Semi-arid partly irrigated with rice and upland food crops with sugarcane.<br>• Swaninathan Research Foundation conducts action research promoting Self-Help Groups (SHG) | • 276 households from 15 villages (138 SHG members, 138 non-members) | • Focus group discussion with community and SHG leaders<br>• Individual interview with questionnaire |

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| Country | Study site | Observation unit | Survey method |
|---|---|---|---|
| Vietnam | • 150 km northwest of Hanoi connected with highway.<br>• Irrigated rice with highly commercialized horticulture and livestock.<br>• Vietnam Productivity Organization led Green Productivity (GP) project sites | • Six villages<br>• 60 households (10 from each village) | • Individual respondents were randomly selected<br>• Individual interview with questionnaire |
| Sri Lanka | • Micro level: Central and south of the country<br>• Meso level: Rural Village Resuscitation: One Product One Village Program (RVROOP) covering mostly nationwide | • 32 villages from 4 districts (10 paddy based, 12 export crop based, 10 off-farm activity based)<br>• 540 households from above 32 villages<br>• 100 RVROOP villages from 13 districts | • Two-stage stratified random sampling for household survey<br>• Random sampling for RVROOP villages<br>• Focus group discussion<br>• Individual interview with questionnaire |

Compiled from the 10 country reports.

Table 3. Welfare Indicators, Measured Social Capital, and Findings

| Country | Welfare indicator (Dependent variable) | Measured social capital (Explanatory variable) | Findings |
|---|---|---|---|
| Japan | Agricultural gross sales per capita<br><br>Performance of collective activities<br>• Prod. coordination<br>• Irrigation management<br>• Eco farming.<br>• Value added products<br>• Rural-urban exchange<br>• Resource management | Physical capital (PC)<br>Human capital (HC)<br>Structural SC:<br>• Org. participation (SC1)<br>• Human network (SC2)<br><br>Cognitive SC:<br>• Cohesion (SC3)<br>• Reliability of officials (SC4) | Household level:<br>• PC: Positive<br>• HC: Positive<br>• SC1: Positive<br>• SC2: NS<br>• SC3: NS<br>• SC4: NS<br><br>Community level:<br>• Only SC1 measured<br><br>Eco, value, rural-urban:<br>• Positive |
| Taiwan, ROC | Performance of government reconstruction program | Identification of regional economic characteristics | Seemingly positive impact |

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| Country | Welfare indicator (Dependent variable) | Measured social capital (Explanatory variable) | Findings |
|---|---|---|---|
| Malaysia | • Rice yield<br>• Health status<br>• Household expenditure | Physical capital<br><br>Human capital<br><br>Structural SC:<br>• Community participation<br>• PPK participation<br><br>Cognitive SC:<br>• Importance of PPK | Rice yield<br>• Community participation: Positive<br>• PPK: Negative<br>• Importance of PPK: NS<br><br>Health status<br>• Community participation: Negative<br>• Importance of PPK: Positive<br><br>Household expenditure<br>• Community participation: NS<br>• Importance of PPK: Positive |
| Thailand | Indicators of village development status | Trial incorporation of 43 variables of participation and community strength into total 390 variables | Communal voluntarism is adopted |
| Indonesia | Participation in and performance of water users association | NGO initiated empowerment project | Increased member awareness, participation, satisfaction |
| Islamic Republic of Iran | • Acceptance of land consolidation program<br>• Collective action<br>• Conflict | • Solidarity (SC1)<br>• Trust among farmers (SC2)<br>• Trust in extension agents (SC3) | Land consolidation:<br>• SC1: NS<br>• SC2: NS<br>• SC3: Positive<br><br>Collective action:<br>• SC1: NS<br>• SC2: Positive<br>• SC3: NS |
| Lao PDR | Road network development as a basis for community development | Community participation in planning, implementation, and maintenance | • Increased income by better market access<br>• Improved health status, school enrolment |
| India | • Income<br>• Gender issues<br>• Health | SHG participation | Seemingly positive impact through internal functioning and external linking |

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| Country | Welfare indicator (Dependent variable) | Measured social capital (Explanatory variable) | Findings |
|---|---|---|---|
| Vietnam | Successful implementation of community development program | • Policy<br>• Technology<br>• Capacity building<br>• Transfer method<br>• Participation<br>• Financial contribution<br>• Awareness promotion | Technology and financial support are pointed out as crucial by farmers |
| Sri Lanka | Income | • Physical capital (PC)<br>• Human capital (HC)<br>• Social capital (SC)<br>• Associations (SC1)<br>• Homogeneity (SC2)<br>• Group work (SC3)<br>• Trust in bureaucracy (SC4)<br>• Sharing public goods (SC5)<br>• Involving NGO (SC6) | • PC: Constant positive<br>• HC: Constant positive<br>• SC: Inverse U shape (lower half positive, upper half negative)<br>• SC5: Positive<br>• SC6: Negative |

Compiled from the 10 country reports.

Table 4. Selected Social Capital by Form and Function

| | | Function | | | |
|---|---|---|---|---|---|
| | | Bonding | Bridging (horizontal) | Linking (vertical) | Bracing* |
| Form | Structural | Agricultural/Community organization<br>• Japan<br>• Malaysia<br>• Sri Lanka<br>• India | Inter-village network<br>• Japan<br>• Sri Lanka | Government-led project<br>• Vietnam<br>• Lao<br>• Taiwan<br><br>Bureaucratic organization<br>• Japan<br>• Malaysia | Empowerment project (NGO-Local gov-villagers)<br>• Indonesia<br><br>Management of common productive assets<br>• Sri Lanka<br><br>Rural-urban exchange<br>• Japan |
| | Cognitive | Solidarity<br>• Iran<br><br>Trust in neighbors<br>• Iran<br>• Malaysia | | Trust in officials<br>• Iran<br>• Malaysia | |

* Tripartite relationship in a limited set of actors (government, private sector and villagers).
Compiled from the 10 country reports.

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