Rural Diversification and Social Capital in Rural Japan

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1. Introduction

Rural development remains an important issue in term of achieving sustainable development in harmony with urban society within many developed countries. Many rural communities in Japan have suffered from various constraints such as depopulation, aging, and the small-scale nature of farming. To address these problems, some rural communities are trying to introduce community-based agribusiness to increase farm income and revitalize rural residents. The emergence of agribusiness at the local level increases the number of diversified rural activities, boosts sustainable development, and provides wider opportunities for rural revitalization[1].

These new diversified activities are affected by community factors such as norms, social networks, and institutions. Both traditional and new factors seem to coexist within social relationships in Japanese rural society, and it is therefore important to evaluate the impact of community factors on the progress of diversified activities. To investigate complex human relationships and their impact on the rural economy, much attention has focused on the role of social capital (SC), especially via empirical studies of social capital in developing countries[2]. However, few studies have dealt with social capital in the context of rural society in developed counties such as Japan.

Considering the backgrounds described above, we examined the recent diversification of rural communities in Japan and thereby explain the effects of community factors such as social capital on the development and diversification of rural or household economies.

2. Methods and Data

Figure 1 illustrates the general hypotheses of the impact of social capital on rural development, including the dimension of diversification in Japanese rural communities. Social capital

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[1] Concerning the concept of rural diversification, see Ohe (2003).
[2] See Sato (2001) and Grootaert and Bastelaer (2002).

influences aspects of rural development such as income, level of diversification, and profitability of activities. In addition, the state of traditional practices encourages or discourages residents in conducting new diversified activities and indirectly generates positive or negative effects on rural revitalization.

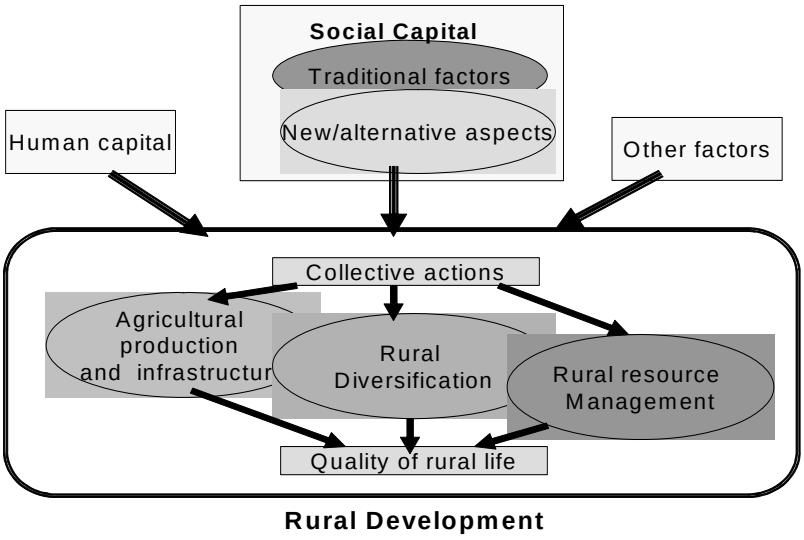

Figure 1: Impact of social capital to rural development

We use official statistics and the responses to both community and household surveys to describe the socio-economic conditions and development of rural diversification in the study area. On the basis of the survey data, we then investigate the nature of group activities, social networks, and residents' perceptions of their hamlets in relation to social capital.

We use statistical methods such as cross-tabulation analysis and Student's T-test to compare several variables that include the performance of socio-economic activities related to rural diversification and proxy variables of social capital. We also estimate the impact of social capital on the general development of the study area and the diversification of the farm household economy.

Many researchers distinguish two elements of social capital: structural SC, which refers to objective and observable social structures, and cognitive SC, which is subjective and contains intangible elements. To grasp the nature of socio-economic conditions of the study area and local group activities that are important indicators of structural SC, we conducted a

community survey of 56 rural hamlets during 2004[3]. To investigate the performance of farm households and probe the nature of cognitive SC, the household survey was also conducted in 2004 and 2005. A total of 104 questionnaires were collected by interview.

3. Rural Diversification in the Study Area

Profile of the Awa Area

The Awa area is located at the southern end of the Boso Peninsula, about 100km south of Tokyo. Because of the warm climate and accessibility to the metropolitan areas, agricultural production in Awa is diversified. Several types of agribusiness have also been introduced and are developing in various ways. Awa is therefore a suitable area for investigating rural diversification. Despite being close to metropolitan areas, Awa retains the traditional aspects of rural life. Awa is therefore also a suitable site for investigating rural communities, including the distribution of social capital.

Diversification of Agriculture

Table 1 shows the components of agricultural output by commodity value. Horticultural crops (vegetables and floriculture) account for about half of the total output, while the importance of rice cropping has decreased in recent decades. Floriculture not only generates agricultural income, but also creates a beautiful landscape and indirectly contributes to the development of

Table 1: Agricultural output in the Awa area for 1971 and 2001

Year	Total output (million Yen)	Commodities					
		Rice	Vegetables	Fruits	Flowers	Livestock	Others
1971	16,110	25.0%	21.2%	5.8%	10.5%	34.5%	2.9%
2001	32,730	14.1%	14.1%	3.1%	32.5%	27.0%	1.3%

Source: Chiba prefecture

[3] A hamlet is the smallest unit of communal habitation and remains an important unit of rural society in Japan.

tourism. Diversified production in Awa is managed by many small-scale and part-time farm households, but under the recent conditions of depression in local economy, diversified farming and related marketing activities have been re-evaluated in terms of employment and income generation.

Introducing Agribusiness and Other Activities

Since the 1980's, local facilities for the direct marketing and processing of agricultural products (farmers' markets, pick-your-own schemes, and processing facilities) have been established in the Awa area. The development of these facilities has created new marketing channels from farmers to consumers. These activities also provide various opportunities for conducting community-related business and have gradually established a new rural-urban linkage. In some villages, agribusiness groups have begun to exchange information and establish agribusiness networks. The networks have acted to boost the domain of diversified local activities from marketing to cultural activities and have increased the opportunity for residents to participate in these activities.

Table 2:Activities related to rural diversification in Awa (community level)

Activities	Hamlets participating the activity	Percentage
Conservation of natural habitats and culural heritage	48	85.7%
Rural-urban coorporation	40	71.4%
Eco-friendly farming	39	69.6%
Introducing value-added products	25	44.6%
Rural community agreement (direct paying)	21	37.5%

Note: Total no. of hamlets = 56
Source: Community survey data

Table 3: Respondents' participation in diversified activities (household level)

Activities	Frequency	Percentage
Some diversified activities	63	60.6%
Farmers' markets	40	38.5%
Educational Programs	19	18.3%
Local food processing	16	15.4%
Events with consumers	13	12.5%
Pick-your-own service	13	12.5%
Parcel or other direct marketing	10	9.6%
Others	5	4.8%

Note: Total no. of respondents = 104
Source: Community survey data

According to the community survey, most hamlets have adopted some types of activities related to rural diversification (Table 2). The

result of the household survey also shows that more than half of farm households are engaged in various activities related to the marketing of local food or some form of rural-urban cooperation (Table 3).

4. Impact of Social Capital I: Results of the Community Survey

This section analyzes the impact of social capital, especially structural SC revealed by the community survey, on the performance of rural activities including rural diversification.

There are many different groups related by community ties and performing indispensable regional activities in the Awa area. To understand the structural SC of the study area, the distribution and level of various group activities should be taken into account. Table 4 lists the prominent local groups in the Awa area. Firstly, functional groups such fire brigades and PTA groups exist in most hamlets, but the sphere of the groups exceeds the territory of each hamlet. Secondly, some groups based on life stage, such as young men's and women's associations, have experienced a marked decrease in activity. Thirdly, the traditional group activity of "Koh" remains active, and its sphere of activity is concentrated tightly within each hamlet.

To standardize the data concerning the activities of regional groups in each hamlet, we used the score of the level of group activities in each hamlet as an indicator of structural SC. This score is an aggregate of the

Table 4: Distribution of group activitites in the study area

Groups	No. of hamlets where the group is active	Percen-tage	Proportion that the sphere of activity is whithn the hamlet	Level of activity (score)
Fire brigades	53	94.6%	11.3%	2.2
PTA (primary)	51	91.1%	7.8%	1.9
PTA (secondary)	50	89.3%	2.0%	1.9
Koh: traditional group	48	85.7%	97.9%	1.9
Aged people's assoc.	45	80.4%	66.7%	2.0
Children's assoc.	45	80.4%	75.6%	1.7
Sports clubs for children	29	51.8%	0.0%	2.2
Young men's assoc.	24	42.9%	87.5%	1.5
Hobby assoc.	17	30.4%	23.5%	2.1
Women's assoc.	16	28.6%	87.5%	1.4
Others	8	14.3%	87.5%	1.8

Note: Level of activity is the average score by respondents. Score was evaluated as follows: "very acive" = 3, "active" = 2, "not active" = 1.
Source: Community survey data

activity level score for each group except PTA[4], as evaluated by respondents. To measure the performance of rural activities, we selected 13 topics concerning rural diversification and related issues. All hamlets were divided into two categories in terms of the level of performance or the situation for each topic. The average scores for each SC indicator were then calculated, and compared between different categories. A Student's T-test was used to test the statistical significance of the differences between scores. Results are presented in Table 5.

Firstly, no significant difference in the level of SC was found for agricultural production or infrastructure management; however, in hamlets where these measures are practiced, the group activity score is relatively high for both measures. Secondly, in hamlets where programs related to rural diversification have been introduced, the score is significantly higher than that for hamlets where programs have not been

Table 5: Comparison of the performance of rural activities and structural SC indicators

Dimension of performance	Scores of the 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/wors	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 the damage by wildlife	conducted	24	8.7	
	not conducted	31	7.1	
Conservation of natural habitats and cultural heritages	conducted	48	8.1	
	not conducted	7	5.9	
Rural community agreement: direct paying	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 (compared with the quality in 10	no change	43	7.6	
	worsen	10	8.9	

Note: Level of significance (T-test) is **5%, *10%.
Source: Community survey data

[4] There is a strong correlation between the score for PTA and that for children's associations. To avoid overvaluation, the score for PTA was not included in our analysis.

introduced. Thirdly, there are four cases in which the t-test shows a statistically significant difference, with all four cases related to new types of rural activities that have been introduced in recent years.

On the basis of these findings, we estimate that structural SC has been accumulated in those hamlets where various community activities are undertaken. In addition, SC has an impact on relatively new types of rural activities in Awa, even where traditional factors remain active.

5. Impact of Social Capital II: Results of the Household Survey

Cognitive social capital can be understand only by a household-level survey, as it is related to the respondents' perceptions and attitudes toward trust, solidarity, values, and norms. In the household survey, the following four dimensions of cognitive SC were investigated using modified questionnaires based on a research format suggested by the World Bank[5].

1) Cooperation: Most residents had strong willingness to participate in collective action within the community.

2) Social trust: Over 70% of respondents considered that their neighbors could be trusted.

3) Social cohesion: Forty percent of respondents considered that differences between residents' characteristics have increased, while 40% considered that differences have decreased. Social cohesion in the study area has therefore been weakening over time .

4) Reliability of public officials: Most respondents trust public officials, but the variance of evaluation score differs with respondent occupation.

We adopted the same method as that described in Section 4 to investigate the impact of SC on diversified rural activities at the household level. Respondents were divided into two categories, related to whether they were engaged in some of the diversified activities listed in

[5] The World Bank designed a tool for measuring social capital called SOCAT. See Grootaert and Bastelaer (2002) and Grootaert et al. (2004) for more detail.

Table 3. The average score of each SC indicator was then calculated and compared between categories. For evaluating social capital, we calculated three types of structural SC indicators (level of agro-related and life-oriented group activities and the extent of social network[6]) and four dimensions of cognitive SC indicators. The results are shown in Table 6.

In terms of structural SC, respondents who were engaged in diversified activities showed relatively high scores of group activity, indicating a tendency to eagerly participate in both agro-related and life-oriented group activities. There is no significant difference in the cognitive SC score between categories. This indicates that dimensions of cognitive SC are not as accountable as structural SC within the study area. In terms of the participation score, the variance of the "conducted" category is significantly higher than that of the "not conducted" category, perhaps indicating that a high level of cognitive SC is accumulated uniformly among those engaged in diversified activities.

Finally, we undertook a regression analysis to determine the impacts of social, physical, and human capital on household welfare. Many previous studies

Table 6: Comparison of the performance of diversified activities and SC indicators at the household level

	Conduct of some diversified activities (No. of respndents)		
	conducted (57)	not conducted (47)	(T-test)
Structural SC (and indicator)			
Agro-related group activities (group activity score)	10.6	8.0	***
Life-oriented group (group activity score)	5.7	4.1	**
Social network (score of acqaintance's residences)	10.0	9.8	
Cognitive SC (and indicator)			
Social trust (proportion of "trustful" choice by respndents)	78.7%	77.8%	
Cooperation (respondents' evaluation)	4.4	4.5	(*Note 3)
Social cohesion (respondents' evaluation)	2.7	3.1	
Reliability to public officials (aggregate of evaluation score by officials)	18.5	18.6	

Note 1: The measure of calculating group activity score is as same as the measure in Table 5.
2: Level of significance (T-test) is ***1%, **5%.
3: Concerning the variance of the score of "cooperation", statsitically significant (10%) difference is observed (F-test).
Source: household survey data

[6] Social network score is the aggregate of the points based on the residence of five important acquaintances nominated by the respondent as follows: same hamlet = 1, same municipality = 2, same prefecture = 3, in Japan = 4, overseas = 5.

have used the following model[7] to assess such impacts:

$$Y = a + bPCi + cHCi + dSCi + e$$

Where Y = dependent variable:

in this case, A: total agricultural output per individual household farm worker, and

B: the respondent's introduction of some diversified activities (binary)

PC = physical capital indicator,

HC = human capital indicator,

SC = social capital indicator, and

e = error term.

By adjusting independent variables to avoid multiple co-linearity, we derived the two models shown in Table 7. In both cases, agro-related group activities generated a positive effect, indicating that group activities, which are an important dimension of structural SC, can

Table 7: Physical/human/social capital and the performance of household economy

Dependent variables	A: Total agricultural output per household farm worker(ln)			B: Whether respondent is engaged in some diversified activities		
Model	OLS			Logistic model		
	Coefficient	t-value		Coefficient	p-value	
Physical capital						
Household size				-0.091	0.53	
Cultivated land	0.002	3.20	***	0.004	0.07	*
Dummy for livestock	0.325	1.18		0.489	0.38	
Human capital						
Years of education (respondent)	0.120	1.82	*	0.274	0.05	**
Structural social capital						
Agro-related group activities	0.039	1.79	*	0.075	0.10	*
Network diversification	0.019	0.39		0.039	0.68	
Cognitive social capital						
Cognitive SC index	-0.031	-0.74		0.056	0.49	
Constant	2.819	3.27	***	-4.739	0.01	***
Adjusted R2	0.202					
DW	1.44					
Accuracy of prediction				72.1%		
Correlation ratio				0.164		
No. of observation	101			104		

Note 1: ***,**, and * indicate 1%, 5% and 10% levels of significance respectively.
2: Cognitive SC index = 5*(binary score of social trust) + (score of social cohesion)
Source: household survey data

[7] See Grootaert and Bastelaer (2002) and Grootaert et al.(2004).

boost the performance of farm households including diversified activities. In contrast, the impact of cognitive SC is not statistically significant in the study area.

6. Conclusions

Various agribusiness activities have been established and form a network of diversified activities in the study area. Diversification of the rural economy provides new income sources, provides opportunities for a variety of rural residents to participate in agribusiness activities, and contributes to the sustainable development of both household and rural economies.

The operation of diversified activities is affected by community factors. Our results indicate that various group activities including the activities unrelated to agriculture at the local level support activities related to rural diversification. The continuity of various group activities has resulted in the accumulation of structural social capital, and the social capital has in turn had a positive effect on several diversified activities, including new agribusiness. The accumulation of social capital provides the potential for activating community activities and has contributed indirectly to the diversification of rural development in the study area.

The accumulation of cognitive social capital can also be observed to a high degree, but its impact on rural diversification in the study area cannot be accurately evaluated; this topic requires further detailed investigation.

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