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目 次

Socio-Economic Dynamics in a Tank-Irrigated Rural Area in Contemporary Tamil Nadu, India

Introduction: Socio-Economic Dynamics in a Tank-Irrigated Rural Area in Contemporary Tamil Nadu, India
Employment Structure and Rural-Urban Migration in a Tamil Nadu Village: Focusing on Differences by Economic Class
Goat-Rearing Practices and the Limited Effects of the SHG Program in India: Evidence from a Tamil Nadu Village ······· (52)
Self-Help Groups and the Rural Financial Market in South India: A Case of a Tamil Nadu Village
Deterioration of the Informal Tank Institution in Tamil Nadu: Caste-based Rural Society and Rapid Economic Development in India
The Effects of Expansion of Private Wells on Rural Livelihood in Tank Intensive Watersheds: A Case Study in Upper Gundar River Basin, Tamil Nadu
書評
John Kleinan and Manon Osseweijer, eds. <i>Pirates, Ports, and Coasts in Asia:</i> <i>Historical and Contemporary Perspectives</i> . Leiden: IIAS; Singapore:

ISEAS, 2010, 299p.	··E	ric'	Tagl	IACO	zzo ····· (151)
Duncan McCargo. <i>Tearing Apart the Land: Islam and Legitimacy</i> <i>in Southern Thailand</i> . Ithaca: Cornell University Press, 2008, 264p.	Nis	SHIZ/	aki Yo	oshir	nori (152)
津田浩司. 『「華人性」の民族誌――体制転換期インドネシアの 地方都市のフィールドから』世界思想社, 2011, 373p.	ひ 	貞	好	康	志(154)

SOUTHEAST ASIAN STUDIES

Vol. 49, No. 1

June 2011

CONTENTS

Socio-Economic Dynamics in a Tank-Irrigated Rural Area in Contemporary Tamil Nadu, India

Fujita Koichi	Introduction: Socio-Economic Dynamics in a Tank-Irrigated Rural Area in Contemporary Tamil Nadu, India
Sato Keiko	Employment Structure and Rural-Urban Migration in a Tamil Nadu Village: Focusing on Differences by Economic Class
Sato Keiko	Goat-Rearing Practices and the Limited Effects of the SHG Program in India: Evidence from a Tamil Nadu Village(52)
Fujita Koichi Sato Keiko	Self-Help Groups and the Rural Financial Market in South India: A Case of a Tamil Nadu Village(74)
Muniandi Jegadeesan Fujita Koichi	Deterioration of the Informal Tank Institution in Tamil Nadu: Caste-based Rural Society and Rapid Economic Development in India
Sato Takahiro Periyar Ramasamy Duraiyappan	The Effects of Expansion of Private Wells on Rural Livelihood in Tank Intensive Watersheds: A Case Study in Upper Gundar River Basin, Tamil Nadu
Book Reviews	
Eric Tagliacozzo	John Kleinan and Manon Osseweijer, eds. <i>Pirates, Ports, and Coasts</i> <i>in Asia: Historical and Contemporary Perspectives.</i> Leiden: IIAS; Singapore: ISEAS, 2010, 299p(151)
Nishizaki Yoshinori	Duncan McCargo. Tearing Apart the Land: Islam and Legitimacy in Southern Thailand. Ithaca: Cornell University Press, 2008, 264p(152)
Sadayoshi Yasushi	Tsuda Koji. The Ethnography of "Chineseness": Fieldwork in a Local Town in Indonesia in the Era of Changing Order. Sekaishisosha Co., Ltd., 2011, 373p

Introduction: Socio-Economic Dynamics in a Tank-Irrigated Rural Area in Contemporary Tamil Nadu, India

FUJITA Koichi*

Abstract

After reviewing the major socio-economic changes occurring during the last 40 years or so in the study area of this special issue, namely, the Madurai District, Tamil Nadu, this introduction contextualizes the five papers that follow. The major socio-economic changes include 1) the high economic growth and the preceded rapid increase in food (rice and coarse cereals) production in the state and the district, 2) the technological changes in agriculture (mainly the development of well irrigation and the diffusion of agricultural machineries such as power tillers/tractors and combine-harvesters), 3) the development of major government policies and programs in the state such as the Public Distribution System, the Self-Help Group program, the National Rural Employment Guarantee Scheme, and others.

Keywords: Tamil Nadu, socio-economic changes, Green Revolution, government programs

Introduction

This is an in-depth introduction to the special issue on "Socio-Economic Dynamics in a Tank-Irrigated Rural Area in Contemporary Tamil Nadu, India." We will focus mainly on the Madurai District in Tamil Nadu, which is a tank-irrigated rural area typical of the state. Before contextualizing the five articles included in this special issue this introduction presents the current socio-economic situation of the study area, with some historical background.

I Process of Socio-Economic Change in the Madurai District

I-1. Economic Growth and Food Production

Globalization has drastically transformed rural India, bringing about rapid economic development and urbanization within the country. It seems there are largely two sources of change: technological change

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in agriculture, especially in the staple cereal production sector (the "Green Revolution"), often triggered by the introduction of groundwater irrigation in the Indian context; and the development of nonagricultural sectors with increased availability of remunerable non-farm employment opportunities for the rural workforce, including former agricultural laborers.

A review of recent economic development in India shows that technological change in agriculture, especially food production, became "saturated" by the early 1990s. As is well known, the "Green Revolution" in India started in the mid-/late-1960s, mainly in north India (Punjab, Haryana, and western Uttar Pradesh), leading to food self-sufficiency by the end of the 1970s. However, this first phase of the "Green Revolution," mainly in north India, did not greatly contribute to raising rural living standards in the country as a whole since it was largely confined to the wheat crop and relatively small rural areas. In contrast, the second phase of the "Green Revolution," which mainly occurred in the 1980s and covered almost all the major crops (including rice) and almost all rural India, did have a substantial impact on raising rural income.¹⁾ The reduction of poverty in rural India in the 1980s was, therefore, an important pre-requisite for accelerated economic growth led by the non-agricultural sectors since the mid-1990s.²⁾ This was because rural India provided a good market for the commodities and services for such emerging and developing non-agricultural sectors [Fujita 2010]. Hence, along with the "success" of economic liberalization policies implemented since 1991, the Indian economy started to grow very fast, led by the growth of non-agricultural sectors, and it provided a lot of, though not enough, job opportunities for the rural workforce. This accelerated shift of the labor force from agriculture to nonagricultural sectors resulted in a substantial rise in agricultural wages, which in turn facilitated the re-structuring of agricultural production systems. At the same time, however, after the mid-1990s, whereas the economic growth rate in India as a whole accelerated, the agricultural sector started to stagnate at around 2-2.5% per annum. This resulted in a rapidly widening disparity between rural and urban areas.3)

If we turn our attention to the situation of Tamil Nadu, we note that the average growth rate of Net State Domestic Product (NSDP) during 1994/95–2006/07 was 6.1% per annum, but the agricultural sector (including forestry and fisheries) grew at only 2.5%, which more or less coincided with the

Note that the "Green Revolution" benefitted not only land owners and owner farmers but also rural households in general, including agricultural laborers. This was because among others, there were various linkage effects among different sectors, such as backward linkage, forward linkage, and most importantly the "final demand effect" of the "Green Revolution."

²⁾ After the mid-1990s, the overall economic growth rate in India jumped to 6–7% per annum on average.

³⁾ According to the Planning Commission [2008: viii], "One of the most disappointing features of the Ninth Plan was the deceleration in agricultural growth which set in after the mid-1990s with GDP in agriculture growing at only around 2% per annum after growing at 3.6% per annum between 1980 to 1996."





Fig. 1 Rice Production Trend in Tamil Nadu

Source: GoT [2006; 2009].

movement in India as a whole. Therefore, the share of agriculture in NSDP declined sharply from 25.6% (1993/94) to 13.2% (2007/08).⁴⁾ Moreover, the agricultural growth rate fluctuated substantially and recorded negative growth during 2001/02–2003/04 due to severe droughts. These droughts resulted in serious damage to state agriculture and its rural economy, especially in semi-arid tank-irrigated areas including the Madurai District.

On the other hand, the farm household income data collected during the period 1971–2003 under the Cost and Cultivation of Principal Crops (CCPC) scheme in Tamil Nadu showed that since the mid-1990s a sharp increase was observed in non-farm income vis-à-vis farm income for the sample farm households [Kajisa and Palanichamy 2006]. This indicates that it was after the mid-1990s when the development of non-agricultural sectors started to affect rural areas more directly in Tamil Nadu.

Fig. 1 shows the trend of rice production in the state. First, from the 1980s to the end of the 1990s, the "Green Revolution" in rice production made progress in Tamil Nadu.⁵⁾ The yield per hectare (milled rice) increased from 2 to 3.5 tons during this period, but started to show a declining trend after the year 2000. Second, the sown area also started to decrease after the year 2000.⁶⁾ It is further evident from

⁴⁾ The tertiary sector increased its share from 41.6% to 60.6% while the secondary sector decreased from 32.2% to 25.9% during the same period.

⁵⁾ As shown in Fig. 1, the first wave of the "Green Revolution" occurred in the late-1960s.

⁶⁾ As shown in Fig. 1, the decline of sown area of rice began during the 1980s.

東南アジア研究 49巻1号



Fig. 2 Trend of Sown Area and Yield of Rice Production

Note: The unit is kg/ha for yield, '000 ha for area sown in Tamil Nadu, but '00 ha for the Madurai District.

the data that the damage from the droughts in the early part of the decade was very serious because rice production in 2003/04 recorded the lowest figure in the last half a century. On the other hand, if we focus on the situation of the Madurai District (Fig. 2), we can discern that the declining trend of sown area of rice was similar to the state as a whole, but the yield was always higher than the state average and recorded 5 tons/ ha at its peak in the late-1990s.

The declining trend of rice yield after the year 2000, on the other hand, seems to be related to the shift in rice varieties to more drought-tolerant and/or consumer-preferable ones. Table 1 lists the major rice varieties grown in the state. Our field surveys in rural Madurai District during 2006–10 revealed that the introduction of varieties developed in the International Rice Research Institute (IRRI), such as IR-8, IR-20, and IR50, was attributed to the "Green Revolution" achieved in the area during the 1980s. And it was followed by the introduction of varieties developed at Tamil Nadu Agricultural University, such as CO-43, which raised rice yield even further by the late-1990s. However, after the mid-1990s, varieties such as *Culture ponni* (ADT-39), *Delux ponni* (ADT-36), and *Palottu* (ASD-16) became more widespread, and they were more drought-tolerant and/or high-priced, but with a lower yield.^{7) 8)}

Source: GoT [2006; 2009].

⁷⁾ Palottu is preferred by farmers especially during water shortage years as it is the most drought-tolerant among the three varieties, and is suitable for *idly* and *dosa* making. *Culture ponni*, which is also a drought-tolerant variety and requires smaller amounts of chemical fertilizers, was adopted by many farmers. It is also good for *idly* and *dosa* making. On the other hand, *Delux ponni* is known for being a fine rice and is best for cooking *biryani*. But it requires more water because of its longer growing period. The market price of paddy per bag in September 2010 was; Rs.900 for *Delux ponni*, Rs.700 for *Culture ponni* and Rs.650 for *Palottu*. Note that Rs.1 was roughly equivalent to 2 yen in the late-2000s.

FUJITA K.: Introduction

Local Name	Official Name	Growing Period (days)	Year of Dissemination
IR-20	IR-20	125-130	1972
IR-50	IR-50	105-110	1983
Delux ponni	ADT-36	140-160	1980
CO-43	CO-43	120-130	1982
Palottu	ASD-16	110-115	1986
Culture ponni	ADT-39	125-130	1988
Chella ponni	ADT-45	115	2001

Table 1 Major Rice Varieties in Tamil Nadu

Source: Subramanian et al. [2005].

Now, let us look at the production trend of coarse cereals in the Madurai District (Fig. 3). Coarse cereals here include sorghum (*cholam*), pearl millet (*cumbu*), finger millet (*ragi*), as well as other major coarse cereals except maize.⁹⁾ First, the sown area of coarse cereals was almost the same as that of rice in the late-1970s, but declined rapidly afterwards and reached less than 100,000 hectares by the middle of the first decade of the 21st century. Second, the yield of coarse cereals increased from the mid-1980s until the late-1990s, but started to decline thereafter. According to our field survey in rural Madurai District in 2008, villagers used to eat coarse cereals as staple foods roughly until the end of the 1980s. Recently, production decreased to less than 100,000 tons, one-fourth of rice production, and is mainly used for animal feed or processed food.¹⁰⁾ In the meantime, the quality of ration rice under the Public Distribution System (PDS) improved substantially after the beginning of 2000s decade and most of the rural people started to consume ration rice, and the substitution of coarse cereals with rice as a staple food in rural Tamil Nadu.

⁸⁾ According to our interview with a farmer in a village in the Madurai District in 2010, IR-20 was the most popular IRRI variety. When the farmer introduced IR-20 (replacing local variety named *Sandial*) in 1989, the yield per acre jumped from 14 bags (equivalent to 2.4 tons/ha) to 36 bags (6.2 tons/ha). In 1992 he introduced CO-43 and got 42 bags (7.3 tons/ha), which was the peak in his yield record. Then in 1995, when he introduced *Delux ponni*, he got only 30 bags (5.2 tons/ha), followed by the introduction of *Culture ponni* in 2001 with 30 bags. After that, he continued to grow *Culture ponni* and its yield has remained unchanged until 2007.

⁹⁾ Maize was a minor crop until the late-1980s in the Madurai District, but started to increase rapidly thereafter. By the middle of the first decade of the 21st century, there were more than 40,000 hectares of sown area and 80,000 tons of production in the district, almost the same as the total production of major coarse cereals. Maize production was stimulated by an increase in demand for poultry feed.

¹⁰⁾ According to our field surveys, *cholam* is powdered and utilized to make processed food such as biscuits. It is also used as feed for poultry or cows. *Cumbu*, by contrast, is boiled and crushed, and used as feed for cows and buffalo. However, some villagers told us that they still sometimes eat *cumbu* for the sake of their health.

東南アジア研究 49巻1号



Fig. 3 Trend of Coarse Cereals Production in the Madurai District Source: GoT [2006; 2009].

I-2. Technological and Institutional Change in Agriculture

Based on information obtained through field surveys during 2006-10 in rural Madurai District, the following section summarizes the major technological changes in agriculture which have occurred in the study area (Fig. 4).

(1) Irrigation

During the 1950s, nearly 40% of the net irrigated area in Tamil Nadu was irrigated by tanks,¹¹⁾ but this has been reduced to less than 20% in recent years, while the share of wells has increased from around 25% to nearly 50% [Palanisami and Ester 2000: 28].

The history of digging open wells for irrigation in the study area started long ago, even before the British colonial regime. These were usually large, roughly 10 meters in diameter. For many years, groundwater was extracted by means of bullock power. The irrigation efficiency was so low that the wells were used just for supplementary purposes in tank-irrigation or for irrigating a small patch of dry land to grow high-valued cash crops such as oil seeds. But since the early 1970s, energized (usually electricity-operated) pumps spread and irrigation efficiency increased sharply. This in turn brought

¹¹⁾ The interruption of the southwest monsoon by the Western Ghats Mountains makes the climate of south India semi-arid, except for the Maravar coasts. Tanks for irrigating paddy fields have been a common feature of the south Indian cultural landscape. In Tamil Nadu there are more than 39 thousand tanks at present, many of which were built in the 18th and 19th centuries by kings and *zamindars*, and even under British rule [Palanisami and Ester 2000: 9].

FUJITA K.: Introduction

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Fig. 4 Major Incidents and Policies in Tamil Nadu

Source: Prepared by the author.

Note: DMK: Dravida Munnetra Kazhaga

(AI) ADMK: All India Anna Dravida Munnetra Kazhagam

about a rapid decline in the groundwater level and depletion of water inside open wells. Digging deeper and deeper wells thus started soon after the introduction of energized pumps. And finally, bore-well drilling from the bottom of open wells also started along with the proliferation of tube-wells.¹²⁾ Bore-/tube-wells expanded not only in tank-command areas (*nañcai*) but also in dry land (*puñcai*). With the rapid increase in the number of energized pumps, well irrigation became more and more important. By the end of the 1980s, the electrification of wells was more or less completed in the study area. Electricity for agricultural purposes was at first charged according to volumes actually consumed by farmers (measured by meters), but in 1987 it became free of charge in Tamil Nadu,¹³⁾ which encouraged the over-exploitation of groundwater. As the groundwater level went down, farmers (with wells) were obliged to drill deeper bore-/tube-wells. According to a professional well driller working in a company in Peraiyur town (in the Madurai District) interviewed in February 2007, the drilled depth increased from 100–150 feet in 2000 to 300 feet in 2007 in his working area.¹⁴

(2) Deterioration of Informal Tank Institution

Large differences in the performance of informal tank institutions in the study area were observed, often differing village by village. However, according to information obtained through our field surveys, the serious deterioration of tank institutions started in the mid-1990s. The most fundamental reason lay in the development of non-agricultural sectors, which has been strongly felt in rural areas since then, and was also aggravated by the drought in 1995. Later, 3 years of continuous, severe droughts during 2001/02–2003/04¹⁵⁾ eroded the work incentives of the water turners (*Neerkattis*), who had been playing a vital role in tank management under a hereditary system (as will be argued later). Many *Neerkattis* stopped working amidst the severe droughts. Of course as non-agricultural sectors developed and the wage rate soared, some *Neerkattis* had already started to seek other remunerable jobs in the village or surrounding places. But the severe droughts led many *Neerkattis* to the final decision to quit their

¹²⁾ Bore-wells are different from tube-wells in the sense that they are built by "boring" the ground.

¹³⁾ See Sato and Periyar Ramasamy [2011] in this special issue for more detail.

¹⁴⁾ One example showed that a farmer with an open well (dug in 1966) with a depth of 40 feet, dug another 12 feet in 1990, followed by an additional 12 feet (1994), 13 feet (1996), 15 feet (1998) and 15 feet (2003), before he finally introduced a bore-well by trying to drill in three directions from the bottom of the open well with 100 feet each (Interviewed in February 2007 in a village in the Madurai District).

¹⁵⁾ In the study area, in 3–5 years out of every 10 a tank fails (with no water at all), and in 2 of those years a tank under-performs (with insufficient water for irrigation). In other words, only once in 3–5 years does a tank perform well. The effect of the severe droughts experienced during the first half of the 2000s was tremendous because many farmers became disappointed and finally decided to abandon farmland (including in tank-command area), which remained fallow. This resulted in the intrusion of a thorny shrub called *Prosopis juliflora* into farmland.

traditional occupation, especially in the lower part of the river basins where less sufficient water is available for tanks.

There were at least two other major reasons why informal tank institutions started to deteriorate seriously since the mid-1990s.¹⁶⁾ First, land prices started to rise sharply after the year 2000 and many urban-based housing developers started to occupy land (illegally) even in relatively pure rural areas, expecting further surges in land prices.¹⁷⁾ The occupied land is often located in the foreshore of tanks and thereby blocked water supply to the tanks. Second, there was an increasing trend of renting-in (or mortgaged-in) farmland, especially by the scheduled caste (SC) people, which made tank water management more difficult, because small numbers of large and medium sized owner farmers were increasingly replaced by large numbers of small tenant farmers in the tank-command area. In cases where *Neerkattis* themselves rented-/mortgaged-in land, the situation became worse because tanks often lost their water-turners.

(3) Diffusion of Agricultural Machineries

According to our field surveys, tractors/power tillers started to spread throughout the study area in the early 1980s, replacing bullocks. The custom of plowing farmland by bullocks finally disappeared in the mid-1990s.¹⁸⁾ Further, combine-harvesters were introduced for rice harvesting in 2004 in the study area and spread very rapidly after that.

The wages for rice harvesting (including threshing) used to be paid to laborers in kind. According to our survey in June 2007, 4 *marakkals* (a *marakkal* is a local unit of capacity; 1 *marakkal* equals 4.25–4.50 kg of paddy¹⁹⁾) of paddy were paid per day of work in January 2007, whereas it had been 3 *marakkals* before 2002 and 2 *marakkals* before 1997; that is, the wage rate for rice harvesting doubled in terms of paddy during the last 10 years. Note that the paddy price in 2007 was Rs.400 per bag (Rs.5.8/kg), indicating that the daily wage rate can be estimated at around Rs.100 in that year.²⁰⁾ According to our estimate, to finish rice harvesting (including threshing) 17 man-days were necessary per acre. If laborers were paid 4 *marakkals* of paddy (Rs.100) per day, the total labor cost would reach Rs.1,700 per acre (Rs.1,275 in cases of 3 *marakkals*). On the other hand, if farmers used a combine-harvester, Rs.1,100–

¹⁶⁾ Another basic factor which caused the deterioration of informal tank institutions was the introduction of private wells, because private wells enabled farmers to reduce their dependency on tanks [Kajisa *et al.* 2007].

¹⁷⁾ For example, an interviewed farmer explained that the price of farmland (*naňcai*) per acre surged from Rs.6,000 in 2004 to Rs.13,000 in 2007, Rs.60,000 in 2009 and Rs.100,000 in 2010.

But note that many farmers still used bullocks for leveling paddy fields after plowing once or twice by tractors/ power tillers.

¹⁹⁾ Four (4) paddis is equivalent to 1 marakkal and 15 marakkals is equivalent to 1 bag.

²⁰⁾ It was almost the same as the agricultural wages for men in other seasons.

東南アジア研究 49巻1号

1,600 was charged per acre, and they had to hire 4 women laborers to harvest the edges of paddy fields (which could not be harvested by machinery), which cost Rs.280. Thus, the total cost was Rs.1,380–1,880, slightly higher than the cost of manual harvesting. However, considering the time-saving benefits of combine-harvesters, farmers rapidly increased their use in the study area.

I-3. Expansion of Non-farm Job Opportunities

There has been an accelerated expansion of non-agricultural job opportunities in the study area, especially since the mid-1990s. However, a review of the history of the area shows that the migration of people from rural to urban areas had already begun as early as the 1920s or the 1930s, with the *Brahmins* migrating to urban areas for white-collar jobs as lawyers, doctors, military personnels, and bureaucrats [Yanagisawa 1996]. They were the major landowning class and sold their land mainly to people of the next-highest caste. As shown in detail by Sato [2011] in this special issue, one can observe from rural villages a lot of migrants to urban areas at present, engaging not only in white-collar jobs but also in blue-collar jobs and other daily labor. The wage rates of blue-collar workers (in factories, restaurants, car workshops, bus service companies, etc.) were almost the same as the daily agricultural or construction labor wages, but their advantage was that they were almost fully employed throughout the year. By contrast, if one obtained some white-collar jobs either in the public or private sector, he/she could enjoy a very high and stable salary with various kinds of fringe benefits. However, without great investment in higher education over many years, this could not be realized. We observed a strong tendency among the richer people in rural areas to obtain more white-collar employment than the others.

With the progress of the shift in employment structure in rural areas from agriculture to nonagriculture and the associated large-scale rural-urban migration, farmlands hitherto owned by the people of the wealthiest/highest castes are gradually being transferred to members of the other, lower classes and/or castes, including the scheduled castes (SCs). Another notable development that can also be observed is that the agricultural production system is also being gradually transformed from one which is highly dependent on hired labor to one which is basically based on family labor.

I-4. Increased Role of Gram Panchayat

As shown in Fig. 4, the two major political parties (*Dravida Munnetra Kazhaga* or DMK and All India *Anna Dravida Munnetra Kazhagam* or (AI)ADMK) in Tamil Nadu won in the state elections in turn after 1990; that is, ADMK during 1990–96, followed by DMK (1996–2001), ADMK (2001–06) and DMK (2006–11). During the elections, both parties competed fiercely by promising attractive policies and

FUJITA K.: Introduction

programs for the general populace. At the same time, after the passage of the 73rd amendment of the Constitution in 1992, the *Panchayat Raj* system was strengthened in Tamil Nadu, as in others states in India. Before that, *gram panchayat* (GP) in Tamil Nadu had malfunctioned, the collection of taxes being their major task.

In 2001, a clerk was employed in every GP, and in 2006 the position of clerk became permanent.²¹⁾ One of the most prioritized policies implemented by the newly empowered GP in the study area was the development of a drinking water system.²²⁾ According to the Block Development Officer (BDO) at T. Kallupatti Block (with 42 GPs, 215 villages, and a population of 760,000) interviewed in 2010, there were two engineers under BDO, one ostensibly responsible for drinking water and the other for tanks, but actually both of them worked most of the time for drinking water. According to him, by the late-1990s construction of drinking water facilities was completed in the block, but even after that engineers were busy repairing and maintaining facilities.²³⁾ Under such a situation, repair and maintenance of tanks had been relatively neglected.²⁴⁾

I-5. Social Safety Net Programs of the Government

(1) Public Distribution System

The Public Distribution System (PDS) was established in India in the mid-1960s. It is a distribution system of basic necessities such as rice, wheat, sugar, and kerosene through networks of fair price shops nationwide. Earlier, it was a universal system, but in 1997 the government introduced the Targeted PDS, in which households were classified as either "above poverty level" (APL) or "below poverty level" (BPL) with the latter receiving priority in the distribution of basic necessities. Furthermore, in

²¹⁾ By contrast, in 1982, the revenue official at the grassroots level became permanent much earlier, with the creation of the Village Agricultural Officer (VAO) post.

²²⁾ According to our interview with the President of S *Gram Panchayat* (GP), Madurai District, in February 2007, the major tasks of the GP were to 1) coordinate with officials and politicians of the upper level administration, 2) maintain drinking water supply, 3) maintain street lights, and 4) maintain other public facilities. In terms of revenue and expenditure of the GP, the annual revenue was around Rs.3 lakh (Rs.1 lakh from local taxes, and the other Rs.2 lakh from the subsidies from the upper administration system) and the expenditure was Rs.2 lakh for salaries and electricity bill and Rs.1 lakh for maintenance of street lights, pipelines if there existed a drinking water system, and others. In the S GP, there were a total of 20 wells for the drinking water system, out of which 10 were 5 HP and the other 10 were 1 HP.

²³⁾ Rural households benefitting from the general public water distribution system had to pay Rs.30 per month as a water tax to GP. If a household drew water pipes inside the house, they had to deposit Rs.1,000 at the beginning and regularly pay Rs.50 per month or Rs.600 per year.

²⁴⁾ It is also noted that the budget allocated to the Public Works Department (PWD) for tanks was only Rs.550/ha/ year (Interview with the Chief Engineer, Madurai Region PWD Office in September 2010). Hence, due to the shortage of government budget for tanks, tank rehabilitation has been conducted mainly by using funds from donor agencies, including the European Economic Commission and the World Bank.

December 2000, another category of the poorest group, called *Antyodaya Anna Yojona* (AAY) was introduced.

However, in Tamil Nadu, the distinction between APL and BPL was not introduced, whereas the category of AAY was adopted. The non-AAY households (accurately, a nuclear family with parents and children is a unit for the PDS) excluding government servants, were given a "Rice Card," by which they were entitled to buy basic necessities at fixed prices, although there were certain volumetric limitations imposed on purchases each month. In the case of rice, it had been distributed at Rs.3.5/kg, but the rate was reduced to Rs.2 in June 2006 and finally to Rs.1 in October 2008. Note that the market price of rice (coarse) was around Rs.25/kg in 2010. It should also be noted that around the year 2000 the quality of ration rice became much better than before, and people started to eat it. In Tamil Nadu, the PDS functions very well as a safety net and a subsidized program of basic necessities even in rural areas.²⁵

(2) Micro-finance Schemes

The Integrated Rural Development Program (IRDP) and the Self-Help Group (SHG) Program were the

²⁵⁾ The following was the result of an interview with a salesman in a fair price shop in a village in the Madurai District. The distributed ration cards in the village (with 134 households) were in total 246, out of which 223 were the "Rice Card" and the remaining 23 were for the AAY families. In addition, 12 cards were distributed to senior citizens under the Old Age Pension (OAP) scheme. The OAP is basically a pension program (explained later) and a different distribution system is applied to the beneficiaries. The OAP is given to the following five categories: aged persons, physically handicapped destitute, destitute widows, destitute agricultural laborers, and deserted wives. The difference between "Rice Card" holders and AAY families was that the latter families were entitled to buy up to 35 kg of rice per month. The limitations on rice purchasable by the "Rice Card" holders were: 12 kg per month for a family with a single adult, 14 kg for a family with an adult and a child, 16 kg for a family with two adults, 18 kg for a family with two adults and a child, and 20 kg for a family with more than three adults. OAP families are provided with 2 kg of free rice per month (or 10 kg per month for Rs.1/kg). According to the salesman, 98% of allocated rice, 100% of allocated sugar, and 100% of allocated kerosene are actually sold. In contrast only 50% of allocated wheat is sold in the shop. Note that the shop was open every Wednesday; in the first and second week rice and sugar were available, while in the third and fourth week kerosene and other commodities (wheat, red gram, and black gram) were available. The price and purchase limitation per month for wheat, sugar, and kerosene were as follows: for wheat flour Rs.11/kg with monthly limitation of 1 kg for every card holder, for wheat (raw) Rs.7.5/kg with limitation of 5 kg per month for every card holder, for sugar Rs.13.5/kg (Rs.30-40 in the market) with monthly limitation of 1 kg for a family with less than 2 members, 1.5 kg for a family with three members, and 2 kg for a family with more than 4 members, and for kerosene Rs.8.8 per liter (there was no market due to prohibition of sales) with monthly limitation of 3 liters for every card holder. The state to state difference in the performance of PDS seems to be large. For example, according to my field survey in Nadia District, West Bengal in 2010, only BPL families (roughly 10-15% of total rural families) were entitled to purchase a maximum of 35 kg of rice per month at Rs.3/kg, a maximum of 1 liter of kerosene per week at Rs.11 per liter, and wheat (raw) at Rs.3/kg (the limitation was unknown). The APL households were only entitled to buy wheat (raw) at Rs.10/kg (the limitation was also unknown). The shop was open only on Saturday and Sunday.

two major micro-finance schemes introduced in the study area in the beginning of the 1980s and the 1990s respectively. Although the IRDP was a scheme of micro-credit delivered mainly by public commercial banks, the SHG was totally different in that it mobilized savings from its members for the purpose of lending the money back to the members themselves at a low interest rate. It was basically a mutual help system among the rural "poor" women, organized largely by NGOs. However, an NGO monitors its activity for a while, and, if its performance is judged favorable, the NGO recommends primarily public commercial banks to provide them with loans under concessional conditions (a low interest rate and without collateral), which is called the "SHG-Bank Linkage Program."

However, both the IRDP and the "SHG-Bank Linkage Program" were similar in the sense that the government of India encouraged rural poor (women) to purchase and keep livestock such as milch animals and goats/sheep by providing them with small bank loans.

(3) National Rural Employment Guarantee Scheme (NREGA)

The NREGA is a national program in India. It was first introduced to some limited areas in 2005 (8 districts of Tamil Nadu were included), but has expanded nationwide since 2006. In Tamil Nadu, persons over 18 years old who are willing to work under the scheme should be registered in the GP office.²⁶⁾ The registered persons are guaranteed 100 days' employment by the government at a daily wage of Rs.80, regardless of gender. Note that the wage rate is advantageous for female workers, given the large wage gap between female and male workers generally observed in south India. According to the field survey in a village in the Madurai District with 134 households, there were 134 persons registered in the GP office under this program in 2009.

(4) Other Programs

<u>Indira Awas Yojona (IAY)</u> is a subsidy program for house construction for the poor (BPL households), which started in India in 2001 and spread throughout the study area. According to our field survey in a village in the Madurai District in September 2010, the amount of subsidy was Rs.70,000 per household. In addition, there is a governmental house-construction project for the poor, and selected poor households are entitled to live in the houses in an area, which is usually called an Indira Colony. <u>The Mid-day</u> <u>Meals Program</u> provides free noon meals to school children up to the 10th standard. It was introduced initially in 1960 in Tamil Nadu (during the Madras Presidency) then completely revamped and renamed

²⁶⁾ In West Bengal the system was that only BPL families can be registered in GP offices and a "Job Card" is distributed to each family. All the workforces of the family are entitled to work under the program (interview by the author at the Getugachi GP, North 24 Pargana District, West Bengal in September 2010).

東南アジア研究 49巻1号

the Nutritious Mid-day Meal Program in 1982. The present DMK government upgraded the program in 2006 by including eggs three times a week.²⁷⁾ The Old Age Pension Scheme also started in 2006 as one of the policies of the present DMK government in Tamil Nadu. If one is recognized as a beneficiary, he/she can be provided Rs.400 per month for life. It was raised from Rs.200 to Rs.400 a month in August 2006. The conditions for being recognized as a beneficiary were: one must be without sons, and over 40 years old. The *Sivagami Ammaiyar* Memorial Girl Child Protection Scheme (SAMGCPS) was introduced in 2006 as one of the major policies of the present DMK government for "promoting family planning, eradicating female infanticide and promoting the welfare of girl children in poor families and to raise the status of girl children."²⁸⁰ The scheme is divided into two: Scheme I for one girl child and Scheme II for two girl children. A fixed deposit receipt in the amount of Rs.12,200 is provided to the family in the name of the girl child under Scheme I, while a fixed deposit receipt of Rs.15,200 for each girl child is given under Scheme II. The interest rate of the fixed deposit was 7% per annum in 2010 and beneficiary families can get a lump sum amount when the girl child becomes an adult.²⁹⁾ Moreover, an amount of Rs.150 as a monthly incentive is given to the girl child on completion of 5 years from the date of deposit and up to the 20th year of deposit for her educational purpose.

I-6. Summary

To sum up, major socio-economic changes have been experienced recently in the study area of rural Madurai District, Tamil Nadu. The major sources of change were largely three: 1) technological change in agriculture, especially the rice "Green Revolution" that occurred after the 1980s; 2) accelerated expansion of non-agricultural job opportunities, especially since the mid-1990s; and 3) policy interventions by the government and NGOs, especially since the 1980s onwards, the impact of which seems to have increased over time. The most striking impacts were brought about by the second factor, the expansion of non-agricultural employment options. All of the above three sources of change, however, have been functioning to transform "traditional" agrarian society in India, characterized by its caste-

²⁷⁾ The Supreme Court of India directed the government in 2001 to initiate similar programs all over the country.

²⁸⁾ The income limit is below Rs.50,000 per annum per family for Scheme I and below Rs.12,000 per annum for Scheme II. Other conditions include: either of the parents should have undergone sterilization before the age of 35, and the family should have only one/two female children and no male child. On evaluation of the program, see Srinivasan and Bedi [2009].

²⁹⁾ The fixed deposit is renewed every 5 years, which means that the amount of deposit will be more than 4 times in 20 years. It should be mentioned, on the other hand, that the dowry price is surging in south India, including the study area. According to our field survey in 2010, the prevalent rate of dowry was 80–250 grams of gold, equivalent to Rs.2–7.5 lakh. In addition, roughly three-fourths of the Rs.2 lakh expense for the marriage ceremony should be borne by the bride's family. Regarding the problem of dowry in south India, see Srinivasan [2005] and Srinivasan and Bedi [2007].

based hierarchical organization, and often based on a highly skewed land ownership structure.³⁰

II Papers Included in the Special Issue

The overall objective of this special issue is as follows.

Since 1991, when India started to implement full economic liberalization policy, there has been a great acceleration in its economic growth rate, although high agricultural sector growth in the 1980s was one of the most important prerequisites for this acceleration. On the other hand, the agricultural sector, especially the food production sector, started to stagnate at around 2–2.5% per annum growth rate, leading to an expansion in the rural-urban income gap. Therefore, migration from rural to urban areas accelerated. Also notable is that at present there is a strong symptom that the Indian economy, which has been suffering from high population pressure and pervasive un-/under-employment among the masses, started to turn into a labor-scarce economy for the first time in its recent history, a fact which is more common in south India, including Tamil Nadu.

On the other hand, south India, especially Tamil Nadu, is famous for its strong caste influences which have remained pervasive in everyday livelihood amidst this rapid economic change. Inevitably, frequent conflicts are observed among different castes, especially among the scheduled castes and the others. One of the most apparent examples is within the management system of tanks for irrigation, because tanks have been managed by the traditional hierarchical village governing system based on castes. Water turners, *Neerkattis*, traditionally appeared from some particular scheduled castes in a hereditary system, and played a pivotal role in tank management, under the guidance of high caste village leaders. There, a widespread deterioration of tank management institution due to the increased intercaste conflicts has been observed, since there are now many "exit" options available to the *Neerkattis*, made possible by rapid economic development and change.

This special issue deals with the drastic rural social changes in India induced by rapid economic development. The first three articles deal with the rapid economic change and related issues in rural

³⁰⁾ However, a series of recent research clarified that the "traditional" agrarian society in India was formed by the 16th-17th century, which was characterized by the system of entitlements (over shares of diverse kinds of resources, especially food), granted through local hereditary assignments as well as through appointment by the state [Kotani 2002; Tanabe 2005; Mizushima 2006]. It was therefore after the British introduced a private land ownership system that the bundles of rights hitherto enjoyed by diverse entitlement-holders were deprived, and many low-caste people became mere landless laborers or service-providers. Also note that the system of entitlements here should be discriminated from the "*jajmani* system." The latter, basically dyadic patron-client relationships, is considered to be a product of colonial times introduced after the pre-colonial system of labor division and exchange had broken down [Mayer 1993].

Tamil Nadu. One of the common issues is financing; i.e., financing for higher education and livestock purchase, or the rural financial market itself. The next two articles deal with the issue of tank management and the transformation of tank-irrigated agriculture.

The first article, "Employment Structure and Rural-Urban Migration in a Tamil Nadu Village: Focusing on Differences by Economic Class" by Keiko Sato, deals with the shifts in employment from agriculture to non-agriculture, and labor migration from rural to urban areas, the most significant change experienced in the study area, based on her intensive study of a village in the Madurai District. Her study village was characterized as a single-caste village, with the *Reddiyar* households comprising nearly 90% of all the households. She classified a total of 134 households into five economic classes using the wealth ranking method, and made a detailed analysis of the occupational structure of household members, including "temporary migrants" who stayed outside the village, "independent migrants," and "migrated-away workers." Her major findings were as follows. First, the "upper" class people tend to get more white-collar jobs, after giving long-term, expensive, and advanced education to their sons and daughters. They still occupied a substantial proportion of farmland in the village, which was managed by aged fathers, depending on hired laborers. Interestingly, many such fathers had retired from government and other white-collar jobs in urban areas. They returned to their village and engaged in agriculture, in addition to working as informal village leaders, even as they were receiving quite substantial pensions.

On the other hand, the "upper middle" and the "middle" class people were the most "active" farmers, although not a few of their children also started to migrate to urban areas and engage in whitecollar and blue-collar jobs. By contrast, the "lower middle" and the "lower" class people had relatively small farmland, and have been working as laborers until recently. But they also started to engage in some blue-collar jobs and daily labor jobs, such as construction labor. Since the daily wage rate has been rapidly increasing, they are also benefitting from recent rapid economic growth. A notable fact, how-ever, is that many "lower" class households were female-headed households, and it was found that they could not benefit from the higher wage rate, simply because of the shortage in the labor force.

One of the major contributions of Keiko Sato in the article is that she clarified how rural households migrate to urban areas step by step. First, sons of village households go to an urban area to pursue higher education and finally become employed in white-collar jobs after graduation from school. They become "temporary migrants" who often come back to the village to see their parents. Then, after they marry, they form independent households, usually continuing to stay in the urban area. After many years, when the sons retire, they may return to their village and manage inherited farmland, or they may bring their parent(s) to the urban area to live together. In the latter case, if they sell out their

FUJITA K.: Introduction

farmland, the migration of a rural household to an urban area is completed.

The second article, "Goat-Rearing Practices and the Limited Effects of the SHG Program in India: Evidence from a Tamil Nadu Village" by Keiko Sato, deals with goat rearing in her study village in the Madurai District. She clarified the detailed goat-rearing practices of the villagers and by doing so she found that, unexpectedly, the poor households could not rear goats to the same extent as the "middle" and the "upper middle" household people did. The most important reason for the relative failure of the poor to rear goats was that they faced a shortage of labor because many of the poor were femaleheaded households which lacked access to the adult male labor force. Those benefitting most from the Self-Help Group (SHG) program were the "middle" and the "upper middle" classes, who reared goats while engaging in agriculture.

The third article, "Self-Help Groups and the Rural Financial Market in South India: A Case of a Tamil Nadu Village" by Koichi Fujita and Keiko Sato, deals with the financial aspect of rural change, mainly through a focus on micro-finance schemes of SHGs, based on a detailed study of the same village which was studied in the first and second articles. The authors found that SHGs, rather than a tool of poverty alleviation through giving bank loans, functioned more as a tool to accumulate savings, although the cost of higher education is much higher than many can save through SHGs. SHGs functioned for them as a tool of accumulating savings, either in the form of goats or cash money of Rs.5,000–6,000 every five years.

The fourth article, "Deterioration of the Informal Tank Institution in Tamil Nadu: Caste-based Rural Society and Rapid Economic Development in India" by Muniandi Jegadeesan and Koichi Fujita, deals with the problem of tank management in the study area. The paper is a detailed account of the current status of informal tank institutions, based on their study in the six tank-irrigated villages on the foot of the Western Ghats Mountains in the Madurai District. Their focus of analysis is the *Neerkattis*, water-turners, who have played a pivotal role in tank management. The task of the *Neerkattis* has been a hereditary assignment given to a particular scheduled caste (SC), the *Pallar* in the study area. However, under rapid economic development and with increasing non-agricultural job opportunities, SCs have also started to shift their jobs from agricultural labor to non-agricultural jobs (mainly blue-collar jobs), especially since the mid-1990s. The article describes how the fundamental contradiction between the "traditional" caste-based tank management system and the rapid socio-economic changes in India is contributing to the deterioration of tank irrigation performance.

The fifth and final article, "The Effects of Expansion of Private Wells on Rural Livelihood in Tank Intensive Watersheds: A Case Study in Upper Gundar River Basin, Tamil Nadu" by Takahiro Sato and Periyar Ramasamy Duraiyappan, deals with one of the recent movements in agriculture: the shift from foodgrains to high-valued crops such as fruits and vegetables. They have covered a whole upper river basin and, by utilizing Geographic Information System (GIS), clarified land-use changes in the area during the last 20 years from the late-1980s. They found that in the upper part of the basin where water resources are relatively plentiful, farmers successfully shifted from foodgrains to high-valued crops such as fruits and vegetables by introducing private well irrigation, whereas farmers in the lower part of the basin failed to transform their farming practices, and fallow land increased substantially in such areas.

These five articles can be understood more easily in the context of the socio-economic changes in the Madurai District which were presented in this introduction. Finally, we hope that this special issue can contribute to the understanding of the recent rapid transformation of the "traditional" agrarian society in India, especially in Tamil Nadu.

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FUJITA K.: Introduction

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Employment Structure and Rural-Urban Migration in a Tamil Nadu Village: Focusing on Differences by Economic Class

SATO Keiko*

Abstract

Since the mid-1990s, migration of workforces from rural to urban areas has accelerated in south India accompanied by remarkable urban-based economic development. To investigate the nature of such ruralurban migration in detail, especially any differences influenced by economic class, a study village was selected from the Madurai District. The detailed analysis found the existence of clear inter-class difference in terms of the shift to non-agricultural occupations; that is, the wealthier class tended to find more remunerable non-agricultural jobs, such as white-collar jobs. The most striking finding was that the traditional class structure in rural India based on ownership of farmland was basically unchanged even after non-agricultural jobs became much more important. This was because of the huge expenditure for education necessary to acquire remunerable jobs and the differential access to credit markets among the different classes.

Keywords: rural-urban migration, employment structure, white-collar job, economic class, caste

Introduction

Since the mid-1990s, migration of workforces from rural to urban areas has accelerated in India, especially south India, with the remarkable urban-based economic development.¹⁾ The income which can be earned in the non-agricultural sectors, especially by white-collar workers, is much higher than in the agricultural sector. Thus, by shifting occupation from agriculture to non-agriculture, people can raise their income substantially and mitigate poverty [Lanjouw and Murgai 2009; UNDP 2009]. Accordingly, within the agricultural sector itself, there has been a surge in the wage rate and a shift from cereal

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According to *Census of India 2011 Provisional Population Totals*, the total population of Tamil Nadu stands 72.14 million whereas the rural population 37.19 million and the urban population 34.95 million respectively. Its decadal growth rate during 2001–11 in rural and urban areas was 6.5% and 27.2% respectively [GOI 2011].

production to high value-added production such as livestock and horticulture.

Several studies have sought to understand the nature of such accelerated rural-urban migration in India, including those analyzing government statistics, such as the National Sample Survey [Singh 1986; Pal and Kynch 2000; Usami 2002; Mitra and Murayama 2008] and studies based on information obtained through field surveys at the village level [Paul 1989; Walker and Ryan 1990; Landy 1992]. But due to inherent difficulties in scrutinizing the process of rural-urban migration [Banerjee 1981; De Haan 1997], especially in collecting information on migrants staying in other areas from the study village [Misra 2009], the details of this phenomenon are not yet fully understood.

The meaning of the term "details" here is at least twofold. One is how to capture the diversity of non-agricultural jobs. Even within employed jobs (other than self-employed jobs), we need to at least discriminate among white-collar jobs, blue-collar jobs and daily labor jobs, since labor conditions are totally different among the three. The blue-collar job category is especially important in the case of south India, including Tamil Nadu, where not only opportunities for white-collar jobs and daily labor jobs but also a wide variety of blue-collar jobs have expanded rapidly. Blue-collar jobs include both regular and non-regular working opportunities in factories, hotels, restaurants, workshops, bus service companies and car rental companies, for instance.

The other meaning of "details" here is how to grasp the multiple steps of migration, that is, how rural households transfer their various resources from their village to urban areas. First of all, higher education (at least up to the 12th standard and increasingly up to the college/university or even the graduate school level) is becoming indispensable for acquiring remunerable non-agricultural jobs, not only for white-collar jobs but also for some of the blue-collar jobs [Lanjouw and Murgai 2009]. The process requires huge expenditure in education for extended periods of time, and how to finance it has become a big question for all rural households [Lanjouw and Sharief 2004; Oka 2006]. In fact, parents engaging in non-agricultural jobs are more active in spending income on their children's education [Gidwani and Sivaramakrishnan 2003]. On the other hand, parents in rural areas often have to sell/mortgage their assets (such as land or livestock) to cover this expenditure. Furthermore, financing from relatives who have already got remunerable non-agricultural jobs, particularly white-collar jobs, sometimes becomes crucial [*ibid*.]. It can also be even observed that all the household members move to an urban area in order to facilitate the higher education of their children. But note here that first, even if children finish higher education, it is not easy for them to land remunerable jobs, especially in the government sector, without having social networks already established within urban areas [Banerjee 1983]. Second, after children acquire remunerable jobs in urban areas, questions arise regarding whether and how much they remit to their parents. In some cases they start to assist higher education of their brothers and sisters. Even parents sell off their assets such as livestock and land then later on buy them back. Third, there are different strategies employed after children get married and they (especially sons) form independent households, remaining in urban areas. What kind of relationship they keep with the parents' household in the original village depends on various factors. Fourth, after retirement if sons do not return to the village, and often call their old parent(s) to their household in the urban area, the whole rural-urban migration process becomes completed. Otherwise, the process will be transferred to the next generation. In the former case, implications to the rural economy will differ depending upon how they deal with their assets (especially land and houses) in their village.

Now, the key questions are as follows. Given the traditional, highly stratified rural society based on unequal land ownership in India, 1) how economic class is related to the employment structure, including self-employed agriculture, agricultural and other daily labor, self-employment in nonagriculture, and white-collar and blue-collar jobs in non-agricultural sectors? 2) how households with different economic class are adopting different strategy regarding the choice of jobs for members of the younger generation, and thereby the attitudes toward the higher education of children? 3) to what extent education is affecting the choice of jobs for the younger generation, and how various categories of job differ in terms of labor conditions and economic return (income)? And finally 4) how much money is necessary to finish higher education and what are the strategies employed to finance the necessary education, which may differ among different economic classes?

In order to investigate the above questions, the author selected a study village in the Madurai District, Tamil Nadu, one of the relatively successful states of India, and collected detailed data. The composition of this article is as follows. The following chapter presents the outline of the study village. Chapter II delineates the characteristics of households in the village in terms of ownership of farmland, durable goods and income by classifying them into five economic classes. Chapter III analyzes the employment structure of the households, with special attention to migration to urban areas, by classifying jobs into white-collar, blue-collar, and daily labor. Chapter IV focuses on the educational requirements for non-agricultural jobs, and investigates the costs of higher education and the differences among the economic classes in financing such education costs. Finally, a summary and conclusion follows.

I Outline of the Study Village

The study village (hereinafter, Si Village) is located approximately 34 kilometers southwest from Madurai City via Thirumangalam Town (Fig. 1). It belongs to Sowdarpatti *Gram Panchayat* (hereinafter,

S GP), Thirumangalam *Taluk* of the Madurai District.²⁾ S GP is one of the 52 GPs belonging to Thirumangalam *Taluk*. According to the 2001 Population Census data, the population size of Madurai City and Thirumangalam Town was 929 thousand and 44 thousand, respectively [GOTN 2009b].³⁾ There is a direct bus service 10 times a day from Si Village to Thirumangalam Town, which takes about 30 minutes. Another one hour is needed from Thirumangalam Town to Madurai City by other bus services. However, a direct bus service from Si Village to Madurai City was started in 2009, enabling villagers to reach Madurai City in less than 90 minutes.

Tamil Nadu State is famous for the development of manufacturing industries in India. Madurai District is not an exception and, according to government statistics, there were 27,385 units of "micro small medium enterprises (registered)" as of 31 March 2007 in the district [*ibid*.].⁴⁾ The largest number was classified as "Hosiery and Ready-made Garments" (24.8%), followed by "Food Products" (9.2%), "Paper and Paper Products" (8.6%), "Metal Products and Parts" (6.6%), "Machinery and Parts except Electrical" (5.3%), and "Rubber and Plastic Products" (4.3%). In and around Thirumangalam Town, together with Madurai City, especially after the 1990s, there has been a rapid growth of industries such as textile, match factories, as well as hand-made craft shops, which have grown to be a center for attracting surplus rural labors [GOI 2001].⁵⁾ The development of the service sectors was also observed in the district.

S GP had 862 households and 3,131 residents in 2001 (Table 1). The table indicates that although the number of households increased during the two decades between 1981 and 2001, the population itself decreased⁶⁾ as the average number of members per household declined from 4.37 to 3.63. According to the table, the percentage of workers in agriculture (farmers plus agricultural laborers) was still more than 80% in 2001, but as argued later in detail, recently many villagers stay outside the village (mostly in urban areas), engaging in various types of non-agricultural jobs, which are difficult to identify through the use of government statistics.

S GP is composed of 9 villages (hamlets) and divided into 2 revenue villages. Revenue Village I, to which Si Village belongs, has an area of 1,677 hectares (4,144 acres) including 154 acres of wet farmland (*nañcai*) in tank-command area (*ayacut*) and 1,680 acres of dry farmland (*puñcai*) (Fig. 1).

Gram Panchayat is the lowest local administrative unit in rural India. In ascending order, the next administrative unit is taluk and then district.

Madurai was the third largest city in Tamil Nadu next to Chennai (4,344 thousand) and Coimbatore (931 thousand).

⁴⁾ The number of units in the district was the sixth largest in Tamil Nadu, next to Chennai (56,912), Coimbatore (54,471), Salem (44,245), Kancheepuram (37,531), and Erode (30,353).

Same are reported to the area closer to the Karur-Tirupur textile industry belt in the former Tiruchirapalli district, Tamil Nadu [Djurfeldt et al. 2008].

⁶⁾ The rural population in the Madurai District as a whole decreased by 6.2% during 1991 to 2001 [GOTN 2009c].



Fig. 1 Map of the Study Village

Source: Prepared by the author.

		1981	1991	2001
No. of Households		795	868	862
Population	Male	1,709	1,622	1,566
	Female	1,769	1,666	1,565
	Total	3,478	3,288	3,131
Average No. of members per hous	4.37	3.79	3.63	
Literacy rate (%)	Male	69	62	75
	Female	41	37	54
Cultivators among workers (%)	Male	40	33	38
	Female	24	35	31
Agricultural Laborers among workers (%)	Male	43	51	40
	Female	70	58	57
Others among workers (%)	Male	17	16	22
	Female	6	7	12

 Table 1
 Demographic Features of S Gram Panchayat

Source: GOI [1981; 1991; 2001].

SATO K.: Employment Structure and Rural-Urban Migration in a Tamil Nadu Village

Casto (inti)	Cotogomy	No. of	No. of Size of Farmland (acre)									
Caste (Jall)	Category	HH	0	0.01 - 0.60	0.61 - 1.80	1.81 - 3.60	3.61 - 6.00	6.01 - 9.00	9.01 - 18.00			
Reddiyar	BC	118	22	4	20	25	25	16	6			
Naidu	BC	1						1				
Chettiyar	BC	1	1									
Asari	MBC	8	3		2	3						
Wannar	MBC	5	2	1	1			1				
Ampattar	MBC	1	1									

Table 2 Caste Wise Distribution of Households by the Size of Farmland Holdings in Si Village

Source: Prepared by the author based on the field survey in 2008.

Notes: For the caste category see Oshikawa [1990], GOTN [2009a], and Ministry of Law and Justice [2009]. BC: Backward Caste, MBC: Most Backward Caste.



Fig. 2 Combination of *Puñcai* and *Nañcai* for All the Househols in Si Village Source: Prepared by the author based on the field survey in 2008.

According to my household survey in 2008, Si Village had a total of 134 households and 421 persons, with an average of 3.14 members per household. Out of the 134 households, 105 households (78.4%) owned farmland; its caste (*jati*) wise distribution is shown in Table 2. From the table, we can see that although the village is categorized as a single-caste village dominated by the *Reddiyar* caste (who occupied 87% of households and 92% of owned farmland), land distribution among the households was fairly skewed. Fig. 2 shows the combination of *nañcai* and *puñcai* land for all the households. Only 58 households (43.3%) had *nañcai* land (mostly less than an acre), whereas 103 households (76.9%) owned *puñcai* land, with large differences in their size (maximum 16 acres). Relatively few households owned *nañcai* land, mainly due to its distance from the village.

The land lease market for *nañcai* land was active in the village. More than half (51.7%) of the households which owned *nañcai* land leased-out all or a part of it. Out of 30 households that leased-out *nañcai* land, 25 households and 7 households were under the contract of mortgage (*otti*) and tenancy (*saibogam*), respectively.⁷⁾ The major households that leased-in *nañcai* land were the *Moopar* caste living in V Village, one of the neighboring villages in S GP (Fig. 1). On the other hand, there was no household which leased-in *nañcai* land among the villagers. Therefore, the number of households cultivating *nañcai* land was only 28 (48% of total). In contrast, the land lease market for *puñcai* land was inactive. Nine households (8.7% of *puñcai* land-owning households) leased-out *puñcai* land (under mortgage contract) and 13 households leased-in *puñcai* land (under tenancy contract). As a result, 96 households (93% of total) cultivated their own *puñcai* land.

Fig. 3 shows the 25-year trend in cropped area of major crops in the Madurai District since the 1980. The cropped area of paddy, sorghum (*cholam*), and cotton has been decreasing whereas that of maize has been increasing. The same trend can be observed in Si Village; the most popular crop was maize (85 households), followed by sorghum (45 households) and cotton (41 households). Due to the small cultivated *nañcai* land, paddy (28 households) was not so important. According to my interviews, the cost for paddy production was relatively high compared to other crops,⁸⁾ and also the risk of ungermination due to the shortage of rainfall. Because of the tiny plot of *nañcai* land, lack of economies of scale and the necessity for purchasing expensive well water made the villagers further avoid paddy cultivation. On the other hand, in *puñcai* land, cotton cultivation, which was previously widespread, has become less popular in recent years due to its labor-intensive nature; it requires lots of hired labor especially for weeding and harvesting. Instead, a combination of maize cultivation and livestock rearing (mainly goats) has become more popular, under which the villagers can give maize as a feed for goats to minimize rearing costs [Sato 2011].⁹

Note here that the major agricultural season in the study area was from September to March. April to July was basically the agricultural lean season for both farmers and agricultural laborers, with the exception of small areas under cotton cultivation. Therefore, during the dry season, villagers tried to

⁷⁾ Two households made both tenancy and mortgage contracts. Tenancy can be divided into sharecropping and lease. Under the sharecropping contract, both the production and the cost of current input are shared 50:50 by tenants and landowners. Under the lease contract, usually Rs.1,000 per acre is paid to landowners as a land rent. On the other hand, under the mortgage contract, Rs.10,000 is usually paid to obtain usufructuary rights of an acre of land. The period is usually 3 years, when the principal money Rs.10,000 is repaid. But if landowners wish to get land back by returning Rs.10,000, the contract can be terminated even before finishing the term. Note that Rs.1–2 yen.

⁸⁾ See also Table 8 in Jegadeesan and Fujita [2011] in this special issue.

⁹⁾ Maize cultivation had another advantage of less labor-intensiveness, which is particularly convenient for farm households with side jobs, such as temporary work at a factory or restaurant during the agricultural lean season.



SATO K .: Employment Structure and Rural-Urban Migration in a Tamil Nadu Village



Source: Data from Department of Economics and Statistics (Tamil Nadu) [2008 (also from 1980–2005)]. Modified by the author.

Notes: Calculation is based on the following data: From 1980 to 1984 Madurai only, from 1984 to 1995 Madurai and Anna (Dindigul), from 1996 to 2005 Madurai, Dindigul and Theni, respectively.

obtain off-farm jobs, working, for example, as waiters at restaurants or casual workers at factories in Thirumangalam Town. As Sato [*ibid.*] showed, factory work has become more popular among the villagers than goat rearing in recent years.

II Economic Class Structure in the Study Village

Using the wealth ranking method,¹⁰ we classified the total 134 households in the study village into five economic classes: "upper" (15 households), "upper middle" (17 households), "middle" (37 households), "lower middle" (39 households), and "lower" (26 households).¹¹ The wealth-ranking method is a technique to classify households by the subjective judgment of native villagers themselves, and is therefore the most time-saving method for classification. Furthermore, its reliability is usually high,

Wealth ranking is a method of classifying village households into multiple economic classes by subjective judgment of a villager who knows the village very well [Gardin 1988].

¹¹⁾ Wealth ranking was actually conducted by a 60-year old farmer who had 8 acres of farmland, belonging to the *Naidu* caste. His wife, belonging to the *Reddiyar* caste, was a leader of two Self-Help Groups (SHGs) in the village. For details on SHGs, see Fujita and Sato [2011] in this special issue.

東南アジア研究 49巻1号

C1	No. of	Size of Farmland (acre)										
Class	HH	0	0.01 - 0.60	0.61 - 1.80	1.81 - 3.60	3.61 - 6.00	6.01 - 9.00	9.01 - 18.00				
Upper	15	1				4	4	6				
U. Middle	17	1	1			6	8	1				
Middle	37	3		1	16	12	5					
L. Middle	39	6	2	17	11	3						
Lower	26	18	2	4	2							
Total	134	29	5	22	29	25	17	7				

Table 3 Relation between Economic Class and Farmland Ownership

Source: Fieldwork by the author in 2008.

Table 4 Relation between Economic Class and Poseession of Durable Goods

Class	No. of HH	Car/Motor Bike	Refrigerator	DVD /PC	Radio /CD	Electric Fan	Phones /Cell	Armali	<i>Pucca</i> House
Upper	15	4	5	4		14	14	14	14
U. Middle	17	1	1	1	1	13	7	12	13
Middle	37			2	10	30	16	28	21
L. Middle	39				9	29	12	23	9
Lower	26				3	9	2	13	6
Total	134	5	6	7	23	95	51	90	63

Source: Fieldwork by the author in 2008.

since villagers themselves know each other fairly well. However, in order to persuade the reader, let us examine the classification result by comparing it with some *objective* indicators.

First, we investigated the relation between economic class and asset ownership. Table 3 and Table 4 show the relationship between the economic class and the ownership of farmland¹²⁾ and durable goods,¹³⁾ respectively. It revealed that wealthier households tended to own larger farmland and also more expensive household appliances such as cars, motor bikes, and refrigerators. By contrast, almost all classes of households except for the "lower" class owned low-priced home appliances such as *armari* (lockers) and electric fans. The relatively wide diffusion of *pucca* (brick or concrete-made) houses can partly be attributed to the IAY (*Indira Awas Yojona*) program which subsidizes house-building for the poor.¹⁴⁾

¹²⁾ As argued later, there observed a strong tendency that migration to urban areas was taking place from wealthier households (same is reported by Greenwood [1971]), usually after selling their farmland. In fact, there were some wealthy households with a very small size of farmland remaining who were going to migrate very soon. Therefore, if classification is conducted based on the size of land holding it may sometimes be misleading.

¹³⁾ When conducting a survey on holdings of durable goods in developing countries such as India, it is common to check TV sets and bicycles [see Oshikawa 1996]. However, in the case of Tamil Nadu, TV sets were almost exclusively diffused because of the government's recent free distribution program. And a free bicycle was also distributed to the households with students in the 9th standard or higher till FY 2010. Therefore, TV sets and bicycles were not included in Table 4.

¹⁴⁾ See Fujita [2011] in this special issue.

	Female No. of				Living in the	e Village (2	Living Outside (60 Persons)				
Class	No. of HH	Headed Single Income HH	Workers per HH	Agriculture 1)	Daily Laborers ²⁾	Blue- collar Workers ³⁾	White- collar Workers ⁴⁾	Non- agricultural Self Employment ⁵⁾	Daily Laborers ²⁾	Blue- collar Workers ³⁾	White- collar Workers ⁴⁾
Upper	15		2.40	18		1	3	2		1	11
U. Middle	17	3	2.35	26		6	1	2		5	
Middle	37	6	2.21	66		6				7	3
L. Middle	39	12	2.23	42	6	11		3		18	7
Lower	26	14	1.73	4	19	14			1	7	
Total	134	35	2.16	156	25	38	4	7	1	38	21

Table 5 Types of Major Jobs by Economic Class

Source: Fieldwork by the author in 2007-09.

Notes: ¹⁾ Including agricultural management and livestock rearing.

²⁾ Including agricultural laborers, wood chopping laborers, construction laborers and laborers hired by the NREGA (Mahatma Gandhi National Rural Employment Guarantee Act) program.

³⁾ Including workers at mill and match factories, sewing factories, and restaurants, house cleaners, electricians, drivers of either truck or autorickshaw, conductors, guards, quarry managers, third class civil engineers, midday meals cooks, metal workers, and washing workers.

⁴⁾ Including military officers, school teachers, nurses, accountants, office workers, company drivers, and second class public servants.

⁵⁾ Including shop owners and merchants in the village.

Second, we investigated the relation between economic class and major jobs (and thereby income level). Table 5 shows the types of major jobs according to economic class. Note here that the workers "living outside the village" mean that they are "temporary migrant workers," usually staying in urban areas for work but often returning to the village to join their families. The table indicates that workers from wealthier households are engaged more in white-collar jobs, rather than blue-collar jobs or daily labor jobs, while workers in the "upper middle" and the "middle" classes are engaged more in self-employed agriculture.

On the other hand, generally speaking, the type of job is the major determinant of income level (Table 6). Monthly salary was more or less as follows: Rs.10,000–50,000 for white-collar workers,¹⁵) around Rs.5,000 for blue-collar workers,¹⁶ around Rs.1,200–2,500 for daily laborers. Note also that income from agriculture was lower than for white-collar workers, but usually higher than for blue-collar workers or daily laborers.

¹⁵⁾ However, a large wage difference existed among the white-collar workers. Workers in the IT sector with IT-related college or graduate degrees in particular, earned a lot; education for this job requires more expensive tuition fees (see for instance, the TNAU homepage [2010]). Indeed, most of the IT engineers working in the US were graduates of the Indian Institute of Technology (or its affiliated colleges) and received almost the same salary as US engineers. But there were no students or workers in the IT-related sectors in Si Village. So the rough estimates of monthly salary (including stipend) of the white-collar workers in the village ranged from Rs.10,000 to Rs.50,000.

¹⁶⁾ Note that the permanently employed skilled factory workers in public sectors, although not found in the study village, are classified here to blue-collar workers.

東南アジア研究 49巻1号

Category	Cla	SS	Vocation and Its Salary ¹⁾
White-collar workers	Ι	Higher grade professionals	Army officers (12,000–50,000), School teachers (12,000–), Nurses (10,000–35,000), Accountants
	II	Lower grade professionals including administrators and officials	Office workers (including drivers, teleoperators & store keepers at public/private firm: 6,000–10,000), Public servants (first and second class)
Blue-collar workers	Ι	Routine non-manual employees including managers, supervisors, and business workers	Managers at mill/match factories, Quarry supervisors, Third class civil engineers, Metal workers, Sales persons at established shops (4,500–6,000)
	Π	Routine manual employees	Workers at mill/match factories (temporary 4,000–5,000), Waiters at restaurants, Cleaning persons (4,500–5,000), House servants, Electricians (5,000), Autorickshaw or Truck drivers, Midday meals organizer & cook (1,300–2,500), Tailors (2,100), and Washer men.
Agriculture			Farm management and livestock raring
Daily laborers			Agricultural laborers (Male: 100–150, Female: 60–80), Wood chopping laborers (120), Construction laborers (150), Laborers under NREGA (80–100)
Non-agricultural self employment			Glossary shopkeepers and Merchants (agricultural product)

Fable 6 Monthly Income Level of Various Occupation

Source: Fieldwork by the author in 2007-09.

Notes: The categorization of the job is based on the modification of the class scheme presented on Erikson *et al.* [1979]. The unit of income is in Indian Rupee (Rs.). Rs.1=2 yen.

Salaries are specified only where available.

¹⁾ Daily wage in the case of daily laborers.

In sum, it can be concluded that the classification of households into the five economic classes by the wealth ranking method was quite accurate, from the viewpoint of both asset holding and household income.

Fig. 4 shows the population distribution in the study village according to decadal age group. In the figure, boxes in black indicate persons who stayed outside the village. More villagers, especially younger generation in their 20s and 30s, were "temporary migrant workers," who stayed mainly in urban areas for non-agricultural jobs.

Fig. 5 is a map of the study village made by the author, in which all the households were classified into the five economic classes. Major public facilities are also shown in the figure. The village had a nursery¹⁷⁾ and a primary-cum-middle school (1st–8th standard), a post office, a bus stop, a sub-health center, a village pond, several temples, several grocery shops, a village hall, and a fair price shop under the Public Distribution System (PDS). Compared to the neighboring villages, there were more *pucca*

¹⁷⁾ Nursery was installed for the nutrition and pre-school education to pre-school kids by the government's Tamil Nadu Integrated Nutrition Program (TINP), which was funded by the Women and Child Development Project (WCDP) of the World Bank. See Heaver [2002] for details.

SATO K.: Employment Structure and Rural-Urban Migration in a Tamil Nadu Village



Fig. 4 Population Distributions by Age Group in Si Village

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Source: Fieldwork by the author in 2007-09.
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Note: White indicates for those staying in the village, whereas black for those outside the village.

houses and paved roads¹⁸⁾ which extended throughout the village.¹⁹⁾

III Job Structure and Migration Process of Households by Economic Class

III-1. Current Status

Table 5 in the previous chapter presented the type of major jobs for workers in the study village by economic class. The table also indicated the existence of a large number (60 out of 290 workers or 20.7%) of "temporary migrant workers," who emigrated alone to urban areas and engaging in non-agricultural jobs. They came back to the village periodically and often supported their families. However, in addition to such temporary migrant workers, we also observed a non-negligible number (32) of "independent migrant workers" who stayed outside the village with new independent households but kept in close contact with their original families. They used to be "temporary migrant workers," but after they married they formed new households in urban areas and became "independent migrant workers." Finally, there were 30 households whose members used to stay in the village but by the time of the survey in 2008, had left the village and settled in urban areas completely, returning only occasion-ally for festivals and/or crop harvest. For convenience in this article, we term them "migrated-away workers." Some of them still had their houses in the village, which were mostly left empty. Typical cases display the pattern of parents leaving the village to join their sons' families in urban areas after

Some of the paved roads in the village were constructed by Sampoorna Grameen Rozgar Yojana (SGRY) program (in FY 2007–2008). See GOI [2009] for details.

¹⁹⁾ However, at the far end of the village, there were some streets with less extent of pavement where kucha houses (made of mud and organic materials) were more dominant.



Fig. 5 Map of the Study Village

Source: Prepared by the author based on fieldwork in 2008.
the sons become "independent migrant workers."

In sum, the typical process of migration of rural households to urban areas is as follows: first, children (especially sons) move to urban areas to pursue higher education and then obtain some non-agricultural jobs after graduation (temporary migrant workers); second, when they get married if they form new households in urban areas they become "independent migrant workers"; third, after that if they bring parent(s) to their residence to live together in order to take care of them they become "migrated-away workers." When parent(s) leave the village, they usually sell farmland and residential houses, but some of them keep their assets for leasing-out or leave them unused. Therefore, the land sales market was active in the study village. In fact, at the time of the survey in 2008, it was found that 51 households (38% of total) in the village answered that they had either sold or purchased farmland in the past. The major direction of land transfer was from the wealthy to the less affluent, and from the *Reddiyar* of Si Village to the *Moopar* or *Ampattar* of the neighboring villages.

The following will now explain the details of the employment situation according to the category of workers.

1) Workers staying in the village

As shown in Table 5, out of 230 workers who stayed in the village, the overwhelming number (156 persons; 67.8%) worked in self-employed agriculture, followed by blue-collar workers (16.5%), daily laborers (10.9%), self-employed non-agricultural workers (3.0%), and white-collar workers (1.7%).

2) Temporary migrant workers

No one in this category was engaged in agriculture, and the largest number of workers could be found among blue-collar workers (63.3%), followed by white-collar workers (35.0%) and daily laborers (1.7%).

3) Independent migrant workers

Table 7 shows the number of households with "independent migrant workers" and the types of the job they were engaged in. The places they stayed were as follows: 5 persons in Thirumangalam Town, 3 in Madurai City, 2 in other major cities in Tamil Nadu, 10 in small rural towns and villages in Tamil Nadu, and 4 in other states of India. The number of white-collar workers accounted for the majority (50.0%), followed by blue-collar workers (37.5%) and self-employed non-agricultural workers (12.5%).²⁰⁾ Each category included military, drivers and conductors in state railway company, various

²⁰⁾ Compared to the "temporary migrant workers," the share of white collar workers was high. The interpretation of it seems to be rather difficult. Deshingkar [2006] argued that "employment is the secondary motivation to marriage" and suggested those who were lucky enough to get higher quality job have more desirable characteristics for marriage and hence more easily become "independent migrant workers" (reported by Behrman *et al.* [1995] as well). Anyway, the factors for explaining the phenomenon remain to be explored in the future.

東南アジア研究 49巻1号

		No. of HH	Types of Job	of Migrated Relati	ve Household
Class	No. of HH	which Had Migrated Relatives	Blue-collar Workers	White-collar Workers	Non-agricultural Self-employment
Upper	15	5		4	1
U. Middle	17	6	1	5	
Middle	37	9	1	5	3
L. Middle	39	9	7	2	
Lower	26	3	3		
Total	134	32	12	16	4

Table 7 Migrated Relatives of the Sutdy Village

Source: Fieldwork by the author in 2007-09.

Notes: Each job category is explained as in Tables 5 and 6.

public servants, school teachers, engineers, a nurse (white-collar jobs), painters, tailors, mechanics (blue-collar jobs), a photocopy shop owner, an agent at a real estate business, a news stand owner, and metal workers/jewelry processer-cum-moneylender (self-employed non-agricultural jobs).

4) Migrated-away workers

According to my survey, the number of migrated-away workers was 30. Generally speaking, they were highly educated and engaged in white-collar jobs in urban areas. In some cases, they still owned fairly large farmland in the village. If we exclude the 3 households with unknown residential arrangements, the places they stayed were: 13 households in Thirumangalam Town, 2 in another major city in Tamil Nadu, and 12 in various towns and villages in Tamil Nadu. Eighteen households (60%) had workers engaging in white-collar jobs; teachers (4 persons), military/policemen (6 persons), public servants in the power corporation, telecommunications, the public works department (PWD) and the *panchayat* union (6 persons), a medical doctor (1 person), and a nurse (1 person). In addition, there was a migrant worker in Dubai (1 person), 2 workers employed at spinning mills, and a waiter at restaurants.²¹⁾ Recently, the number of migrated-away workers from the study village has been increasing, and they tend to send their children to a private school, well-known for its English-based education from the primary level onwards, in urban areas.²²⁾

The next summarizes salient features regarding the differences in employment structure according to the five economic classes in the study village.

First, the "upper" class household members were most engaged in white-collar jobs among others:

²¹⁾ He owned a tractor and conducted a tractor rental business.

²²⁾ Besides seeking better white-collar jobs in urban areas, seeking better educational opportunities for children was becoming a major reason for migration from rural areas.

there were 3 persons from the first category (workers staying in the village), 11 persons from the second category (temporary migrant workers), and 4 persons from the third category (independent migrant workers). At the same time, 2 persons had a self-employed business in the village and 18 persons were engaged in self-employed agriculture. However, because of large farm size, they usually did only managerial work and depended on agricultural laborers for their farming. Moreover, out of 18 farmers, 7 were people retired from their white-collar jobs in urban areas. After retirement they came back to the village and embarked on farm management. Many of them were receiving pensions, and they also played an important role in the village society as informal leaders.²³⁾ In the future, it seems that at least some of the 11 temporary migrant workers now working in urban areas as white-collar workers will eventually come back to the village after retirement.²⁴⁾

Second, the "upper middle" and the "middle" class household members were engaged mostly in self-employed agriculture; 92 persons (86% of all the workers in these classes) were from the first category (workers staying in the village). They owned large farmland, although smaller than the "upper" class, and were also active in leasing-in farmland. Compared to other classes, goat rearing was the most popular activity among them [Sato 2011]. Also, many members were working as blue-collar workers (12 persons each from the first and the second categories, plus 2 persons from the third category) and white-collar workers (1 person, 3 persons, and 10 persons from the first, second, and third categories, respectively). Compared to the "upper" class, they were more actively involved in farming and tended to engage more in blue-collar jobs.

Third, the "lower middle" class household members were also engaged mainly in self-employed agriculture; 42 persons (68% of all workers) were from the first category. However, their farm size was smaller and thus they needed to find some other jobs to supplement their income. Blue-collar jobs were dominant among them, although not a few people were engaged in daily labor and white-collar jobs as well. In fact, the numbers of blue-collar workers were 11, 18, and 7 from the first, second, and third category, respectively. In contrast, the number of daily laborers was 6 (from the first category), whereas white-collar workers was 7 (from the second category) and 2 (from the third category), respectively.

²³⁾ In the study village, there was an informal local autonomous body, the activities of which were supported by a common fund. To manage this local body is one of the major tasks of the informal leaders. The major revenue source of the fund was a tax imposed on sellers of various products (mainly crops and livestock) in the village. The product-wise tax rates are determined in an annual meeting and the right to collect taxes is sold to the highest bidders. The system is locally called *"magemai."* The common fund is spent mostly for village festivals, which are celebrated usually once in 2 years. See Sato [2008] for details.

²⁴⁾ There were two distinctive groups in this class: one in which both parents and children were engaged in whitecollar jobs and the other in which parents were engaged in blue-collar jobs but children were engaged in whitecollar jobs.

Fourth, the "lower" class household members were mainly daily laborers; 19 persons (51% of all workers) were from the first category and 1 person from the second category.²⁵⁾ However, there were many blue-collar workers also; 14 persons, 7 persons, and 3 persons were from the first, second, and third categories, respectively. Also notable was the fact that 4 persons were engaged in self-employed agriculture, although their farm size was minimal.

It should be pointed out here that as shown in Table 5 a large number of households in the "lowermiddle" (30.8%) and the "lower" (53.8%) classes were the so-called female-headed households. They were the poorest in the village, as can be observed extensively in rural India.²⁶)

Although the number of daily laborers in the study village was small (Table 5), if we include workers whose main jobs were something else but occasionally worked as daily laborers for supplementary income, almost 100 such laborers were found in the whole village. Especially among the farm house-holds with small farm size, there were many agricultural laborers working 10–20 days to earn around Rs.1,200–2,500 per month. Therefore, daily labor was still a very important source of income in the village, especially among the poorer households.

There are primarily two types of systems for hiring laborers: first, laborers are employed individually when they were needed by farmers and paid on a daily basis and second, laborers are managed by a labor group leader²⁷⁾ working on a seasonal basis. For example, 5–7 laborers were recruited by a group leader for weeding some plots and the wages were paid through the leader. In general, the prevailing wage rate for the daily laborers was Rs.100–150 for men and Rs.50–60 for women, but for some hard tasks requiring physical strength such as wood chopping, the rate was higher. During the agricultural peak season (such as crop harvesting period) the wage rate tended to be higher than usual. Also, under the NREGA, a 100-day employment guarantee program for the registered laborers in the GP office, started in 2006 in the study village, the daily wage rate of Rs.80 (or Rs.100 since FY 2008–09) was paid regardless of the gender of the laborers, which benefitted women more than men. An interview with the clerk of S GP in January 2009 revealed that 134 persons from the study village were registered for the scheme; most of them were females and either elders, newly married young females, or agricultural laborers (from the four classes except the "upper").

III-2. Some Historical Background

So far, the article has discussed a typical migration path, in which mainly wealthier Reddiyar caste

²⁵⁾ See Mosse et al. [2005] for the case of the poor migrant daily workers for construction.

²⁶⁾ See Yagi [1999] for instance.

²⁷⁾ Leaders of labor groups were found in S, P, and M Villages in S GP (Fig. 1).

people migrated from the village to urban areas. Let us now consider this phenomenon in a historical perspective. Table 8 contains a summary of the socio-economic structural change occurred in S GP, based on my interviews. The number of households of S GP in 2008 is a rough estimate based on an interview at the GP office,²⁸⁾ whereas that of Si Village is the actual number based on my household survey in 2008.

As shown in the table, the socio-economic structure of S GP in the 1910s was characterized by the dominance of the *Brahmin*²⁹⁾ who occupied most of the farmland. The castes of *Reddiyar/Naidu*,³⁰⁾ *Maravar/Kallar*,³¹⁾ and *Vallayar* (*Moopar*)³²⁾ leased-in land from the *Brahmin* and cultivated it while depending on *Pallar*³³⁾ people, who were employed as agricultural laborers. In addition, there were a variety of artisan caste people such as *Chettiyar*³⁴⁾ and *Asari*,³⁵⁾ and service caste people such as *Wannar* and *Ampattar*.³⁶⁾ However, since the 1920s or 1930s, the *Brahmin* people started to migrate to urban areas for higher education and then obtained white-collar jobs such as lawyers, medical doctors, and other public servants created under the British colonial regime.³⁷⁾ They sold their farmland mainly to *Reddiyar* and *Kallar* caste people who used to work as their tenants. According to a *Brahmin* still living in S GP (interviewed in February 2007), there were around 60 *Brahmin* households for the whole GP

²⁸⁾ Total number of households was 1,360, although the Population Census data showed that it was 862 in 2001 (Table1). There is a big gap between the two, but the reason remained unclear.

²⁹⁾ Originally they were sent to the study area from a temple in Tanjore and provided with the *nañcai* land attached to Sowdarpatti and Allaparachelli tanks, as salary for their works to perform *pujya* (ritual ceremony) and became large landowners.

³⁰⁾ They are one of the dominant agricultural castes in south India known as "kshatriya" and are characterized by active acquisition of farmland [Srinivas 1989]. The *Reddiyar* people in S GP used to work as attached laborers earlier, but later became tenants for the *Brahmin* households.

³¹⁾ They are the dominant caste originally staying in Thirumangalam Town and Madurai City, and used to work as attached laborers for the *Brahmin* people throughout the British regime.

³²⁾ They originally stayed in Ramanathapuram and used to represent 5% of the total population in Tamil Nadu (Population Census 1971). They might have *jajmani* relations with service castes [Setty 1990]. In fact, in Si Village, they worked for *Reddiyar* caste people as their tenants, but later purchased land from the *Reddiyar* people when they migrated to urban areas.

³³⁾ They were the rulers of Tamil during the 14th–15th century and later became cultivators of wet land. Though not classified as SC in Andra Pradesh, in Tamil Nadu they were ranked the highest SC among all SCs, and were discriminated by the other higher castes, while looking down and employing other SC people to work for them [Ramaiah 2004].

³⁴⁾ They are a merchant caste originally from Pudukottai, a city between Madurai and Tanjore, but have migrated overseas (especially to Malaysia and Burma) and become successful.

³⁵⁾ There were two types in Si Village: blacksmiths (cum moneylenders) and carpenters.

³⁶⁾ Wannar and Ampattar were originally untouchable castes, who were traditionally engaged in washing and hair cutting, respectively. But depending on states, now some of them are categorized as the most backward caste (MBC), and receive less merit under the reservation scheme [Oshikawa 1990]. The "migrated-away workers" to urban areas had tended to be engaged in traditional caste jobs but are now engaged more in white-collar jobs, especially among the younger generations.

³⁷⁾ This phenomenon was commonly observed in Tamil Nadu. See Yanagisawa [1996] for details.

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Classification	Category	General Names)	Occupation	Panchayat	Village	Owner (Cultivator	lenant	abor	Rural L	Jrban C)wner (Cultivator	lenant	Labor	Rural	Urban
Priest	FC	Brahmin	Priest	2		×	×										×
	BC	Reddiyar/Naidu		400	119			×				×	×		×		×
Cultivator	BC	Maravar/Kallar	Cultivator	300				×				×	×		×		×
	MBC	Vallayar (Moopar)		500				×					×	×	×		
a	BC	Chettiyar	Merchant	10	1					×			L			×	×
Uransmen	MBC	Asari	Metal worker	10	8					×						×	×
	MBC	Wannar	Washer	10	5					×						×	×
Service	MBC	Ampattar	Haircutter	10	1					×						×	×
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 Table 8
 Summary of Historical Change in Rural Socio-Economic Structure in S Gram Panchayat

Source: Fieldwork by the author in 2007-09, USINKawa [1990]; GUIN [2009a]; MIINISITY Of Law and JUSING [2009].

Notes: × denotes major occupational trend by respective caste in 1910s and 2010s, based on the broad and general observation and hearings.

Caste (*jati* in general names) appear is used in Madurai, Tamil Nadu. Under the reservation scheme by government, more quotas for the entry examination for the tertiary education and the placements for government jobs were introduced to SC/ST and other backward caste categories to mitigate the economic and social dominance by upper caste people in India. See Oshikawa [1990].

The administrative categories used here are those used in Tamil Nadu. FC=Forward Castes, BC=Backward Castes, MBC=Most Backward Castes, SC = Scheduled Castes, ST = Scheduled Tribes. in the 1930s but the number decreased to around 20–25 by the 1980s, and finally declined to only 2 households in 2007.

As shown in Table 8, at the time of my survey, the dominant inhabitants in S GP were *Reddiyar*, *Maravar/Kallar*, and *Vallayar* as owner-cultivators and *Pallar* as agricultural laborers. However, as already noted, a highly skewed land distribution was observed even among the same caste households (e.g., *Reddiyar* in Si Village) and many labor households were observed among the *Reddiyar* households as well. The "upper" class people of *Reddiyar* started to migrate to urban areas for non-agricultural jobs (mainly white-collar jobs). And they also started to sell their land to the next highest caste people and also to the poorer households in the same caste. Thus, the farmland continued to be transferred from the higher to lower caste/class people, and the structure of caste-based land ownership is not as rigid as it used to be.

IV Education, Its Cost and Source of Financing

IV-1. Occupation and Educational Requirement

At present, one of the most important requisites for getting white-collar jobs, and thereby stable and high income in the context of India, is to attain at least an HSC/ITI (finished up to the 12th standard, as explained later) or even a college/university degree [Lanjouw and Sharief 2004; Oka 2006]. To confirm this point in the study village, the years of education among village workforces, especially younger generations, was investigated and the result for non-household head members³⁸⁾ is shown in Table 9 by types of job and by economic class.

Note here that the education system in Tamil Nadu is as follows: after 5 years of primary education (2 years of pre-school often precede), students move on to 3 years of middle school, followed by 4 years of secondary school. The secondary school is divided into a 2-year curriculum leading to the Secondary School Leaving Certificate (SSLC), and, later, another 2 years of higher secondary education for the qualification exam, the Higher Secondary Examination (if one passes it he/she is granted the Higher Secondary Certificate, or HSC). Once an SSLC is obtained, one can choose to take a 1 to 3-year vocational course at Industrial Training Institutes (ITI).³⁹⁾ On the other hand, an HSC is necessary for applying to college/university, which is usually a 3–4 year degree program. The entrance to college

³⁸⁾ One of the major reasons for dealing only with non-household heads is that in the case of household heads, there were many aged farmers who had retired from white-collar jobs, especially among the "upper" class.

³⁹⁾ ITI is the government or private owned training organization that provides post-school technical training for the persons who passed the SSLC.

東南アジア研究 49巻1号

		Workers (Staying in th 114 persons	ne Village		Tempora	ary Migrant (52 persons)	Workers
Class	Agriculture	Laborers	Blue- collar Workers	White- collar Workers	Non- agricultural Self- Employment	Laborers	Blue- collar Workers	White- collar Workers
Upper	8.9				8.0		10.0	11.9
U. Middle	7.4		9.4	12.0	8.0		10.2	
Middle	6.1		7.3				11.2	12.3
L. Middle	5.3	6.0	8.2		10.0		8.9	12.3
Lower	6.2	6.5	6.1			9.0	8.0	
Average	6.4	6.4	7.6	12.0	9.0	9.0	9.4	12.1

Table 9 Average Years of Education for Non-household Heads in Si Village

Source: Fieldwork by the author in 2007-09.

depends on the mark attained in the HSE but the condition for the placement (especially at state universities) differs depending upon the caste categories.⁴⁰

As Table 9 shows, in order to obtain white-collar jobs, at least 12 years of education (HSC/ITI holder) is necessary. We should note, however, that even blue-collar workers, especially the younger generations working as "temporary migrant workers," had had 10 or more years' educational back-ground. By contrast, for the workers in self-employed agriculture and daily laborers from poorer classes, the average years of education ranged between 5 to 6 years, indicating either primary school graduates or middle-school dropouts.

In the study village a primary-cum-middle school for 8-year education was established during the 1990s, and almost all the children started to finish at least up to the middle school level. As shown in Table 10, the level of education increased year by year in the village, which was accelerated after the 1980s (for males) and the 1990s (for females). In the late part of the 2000s, almost 100% of children obtained an SSLC (10th standard). Note that increasing consciousness of the need for higher education is a nationwide phenomenon. In fact, in order to join the National Defense Academy (NDA), for example, the minimum educational requirement for applicants was raised from 10th standard to 12th standard (the so called "plus 2") in 2007.

Let me now focus on the "temporary migrant workers" and "independent migrant workers" aged

⁴⁰⁾ According to the government reservation policy in Tamil Nadu, the minimum score for placement at state universities is as follows: 60% for open competition including students belonging to Forward Castes (FC), 55% for students belonging to Backward Castes (BC), 50% for students belonging to Most Backward Castes (MBC) and "Pass" (regardless of marks) for students belonging to Scheduled Castes/Scheduled Tribes (SC/ST) etc. See the TNAU homepage [2010] for detail.

SATO K.: Employment Structure and Rural-Urban Migration in a Tamil Nadu Village

	early 20s	late 20s	30s	40s	50s	60s	70s
Male	96%	76%	67%	15%	41%	18%	14%
Female	96%	72%	27%	24%	13%	3%	0%

Table 10 Percentage of SSLC Holders in Si Village by Age Group and Sex

Source: Fieldwork by the author in 2007–09.

Notes: For the age group of 70s, ESLC (= 8 years completion) and 4th Form, both of which are regarded the same level as SSLC, are included.

between 15 and 30 to examine their educational background (Table 11). Nearly half of them (47% of males and 46% of females) attained 12 years or more of education. Even in the case of workers without an SSLC (less than 10th standard), most of them were found to complete 8 years of education. In fact, among young people aged more than 20, higher education has become much more popular than it appears in the table. But if we focus on the difference by economic class, poorer households show lower educational attainment. Among the "lower" class households there was no one who entered college/university.

IV-2. Cost of Education and Source of Financing

The cost of education has been surging in recent years in Tamil Nadu, including the study village.⁴¹⁾ For instance, as noted before, a private English school, offering courses up to the higher secondary level (matriculation school)⁴²⁾ and located in Thirumangalam Town, attracted many parents in wealthy house-holds who were concerned for their children's education. In fact, all 10 students who went to the private English-based school from Si Village (including 2 who had already migrated-away in 2010) belonged to either the "upper" or the "upper-middle" class. They commuted to the school from pre-school or primary school level. The entrance fee and the annual tuition fee of the pre-school⁴³⁾ were Rs.2,000 and Rs.6,000 respectively, equivalent to a few months' wage for an agricultural laborer.

On the other hand, if children go to public schools, the tuition fee for primary education was free, together with text books and lunch.⁴⁴⁾ However, payment of a tuition fee was necessary afterwards,

⁴¹⁾ See Education Cost India [2010].

⁴²⁾ It is a kind of higher secondary school, with a curriculum which is aimed at enabling students to pass the HSC with a high grade for entry into competitive placements at colleges/universities. According to Minamino [2003], more than 80% marks on qualification exams such as the HSE are required to apply for the affiliated colleges to the Indian Institute of Technology (IIT) and the Indian Institute of Management (IIM), the most competitive ones in India.

⁴³⁾ These figures are the fee structure at St. Francis Higher Secondary Matriculation School in Thirumangalam Town in which students of Si Village prefer to attend. See GOTN [2010a] for the list of the fee structure of all the private school in Madurai District.

⁴⁴⁾ See GOTN [2010b] for details of the welfare schemes implemented for school education in Tamil Nadu.

東南アジア研究 49巻1号

	No. of			М	ale					Fer	nale		
Class	HH	No. of Persons	Below SSLC	SSLC	HSC or ITI*	College /Univ.*	Graduate School*	No. of Persons	Below SSLC	SSLC	HSC or ITI*	College /Univ.*	Graduate School*
Upper	15	9	1	2	2	2	2	10	1	2	3	2	2
U. Middle	17	9		4	3	2		9		2	4	1	2
Middle	37	23	6	5	9	3		23	7	3	11	2	
L. Middle	39	22	8	4	8	2		19	6	7	4	2	
Lower	26	7	6	1				16	12	2	2		
Total	134	70	21	16	22	9	2	77	26	16	24	7	4

Table 11 Educational Attainment of Young People Aged from 15 to 30 in Si Village

Source: Fieldwork by the author in 2007–09.

Notes: Including temporary migrant workers and independent migrant workers.

* includes those who have not completed yet at the time of the survey. Also for the Graduate School, BA+diploma of education is included.

amounting to Rs.500–650 and Rs.700–900 annually in the middle level (6th–8th standard) and the higher secondary level (9th–12th standard), respectively. The annual tuition fee at the college/university has become much more expensive, ranging from Rs.60,000 for Bachelor of Science to Rs.260,000 for Bachelor of Information Technology (IT) for 4 years.⁴⁵⁾ But note that expenditures other than tuition fees, such as living expenses, are relatively small compared to the tuition fees, since many students stay in their relatives' houses or in university hostels.

Given that the monthly income of blue-collar workers and daily laborers in the study village was around Rs.5,000 and around Rs.1,200–2,500, respectively, there was no room left for saving money to cover the cost of higher education for their children. Even for white-collar workers with monthly incomes exceeding Rs.10,000, educational expenditure is a heavy burden on their household economy. Furthermore, after graduating from college/university, in order to obtain white-collar jobs especially in the government sector, a recommendation from a person (generally a relative or friend of parents) who has special connection is indispensable, and a commission of roughly Rs.50,000 should be paid to him/her as a custom in the study village.⁴⁶⁾ Therefore, access to credit sources is critical for households across all classes.

⁴⁵⁾ See the TNAU homepage [2010]. However, the cost for college tuition differs, depending on type of public or private institutes.

⁴⁶⁾ However according to Banerjee [1984] during the 1980s no commission was needed to get a job in the government sector. There has been a rapid increase in the number of college graduates all over India, although there is only a small increase in job opportunities. According to GOI [2007], the annual rate of increase of placements was -0.54% and 0.92% in the public and private sectors during 1994–2006, compared to 1.54% and 0.44% during 1982–1994. In urban areas, more college graduates were obliged to take low-paid jobs in the private sectors and continued to study through distant learning. Once they obtain higher degrees, they change their job for better salary.

SATO K.: Employment Structure and Rural-Urban Migration in a Tamil Nadu Village

	No. of	No. of HH		Source	of Fund	
Class	HH HH	with Valid Answer	Savings	Selling Goat	Bank Loan	Loan from Relatives
Upper	15	3	1	1		1
U. Middle	17	16	3		3	10
Middle	37	13	1	5	4	3
L. Middle	39	7	1	5	1	
Lower	26	2		2		
Total	134	41	6	13	8	14

Table 12 Major Source of Financing the Cost for Education

Source: Fieldwork by the author in 2007-09.

Table 12 shows the sources of financing for expenditure on higher education by economic class. Because of the small number of valid answers in the case of the "upper" class, the author gathered more information by interviewing the "upper" class villagers. The result was that most of them did not face serious problems in financing their children's education because they were white-collar workers in urban areas and could draw on their own salaries or savings. However, for the "upper middle" class people, cases of education financed by their own savings were limited, and many of them depended on relatives. They borrowed money from relatives who were working as blue-collar workers.

An example of a household in the "middle" class is shown in Fig. 6. In the case of this household, there were two sons and a daughter and all of them studied up to college level. The education cost for the first son was provided by relatives who worked at factories (as shown in (1)). When the first son finished college, he got a job in Saudi Arabia and started to support the education of his brother and a cousin on his mother's side (both are shown in (2)). The second son also received support from a relative working as a small businessman, in the form of accommodations when he studied at a college in V City (as shown in (3)). The youngest child, a daughter, studied at a nearby college, and therefore only the tuition fee was needed. To finance three children's college education, they additionally borrowed Rs.50,000 from a jewelry shop in the urban area by providing jewelry as collateral and Rs.10,000 from a bank through the Self-Help Group (SHG). Later, all the loans were repaid within five years by the first son through remittance from Saudi Arabia.

On the other hand, as shown in Table 12, the poorer households depended more on sales revenue of goats for financing higher education costs. If they sell 10 goats, for instance, they can get Rs.30,000–40,000, although it is insufficient to cover all the expenses. Other sources of funding, although not listed in the table, were farm income, "jewelry loans" from moneylenders outside the village (as mentioned above), and borrowing from banks through SHG. But it is important to note that although the poorer households came to borrow from banks through SHG, as clarified by Fujita and Sato [2011], the

東南アジア研究 49巻1号



Fig. 6 Mutual Help among Relatives for Higher Education: A Case of a "Middle" Class Household

Source: Field work by the author in 2009.

- Notes: (1) is loan from relatives who work at mills to the eldest son, who is shown in bracket \Box , to support his cost to study at college.
 - (2) is a support (money giving) from the eldest son, who is shown in bracket \square , who graduated from college and now works in Saudi Arabia, to those who are/were college students, shown in dotted bracket \blacksquare .
 - (3) is a support (lodging) from a relative who moved to V city to the second son, when he was studying in V City.

limited amount of the loan (Rs.10,000) was far from sufficient to cover the costs of higher education for their children.

Summary and Conclusion

In India, especially south India, the expansion of non-agricultural jobs for rural people has accelerated since the mid-1990s, inducing a large-scale migration of workforces from rural to urban areas. To investigate the nature of such rural-urban migration (especially in terms of differences by economic

SATO K.: Employment Structure and Rural-Urban Migration in a Tamil Nadu Village

class) and its impact on rural economies, a detailed case study was conducted in a village in the Madurai District, Tamil Nadu.

Although the village in question was a single-caste village with nearly 90% of households belonging to *Reddiyar*, the cultivator caste, there was a large economic disparity among the households and economic disparity was observed not only in asset holdings (including farmland) but also in income level.

Out of a 290-member workforce in the village with 134 households, 60 (20.7%) stayed outside the village, mostly in urban areas, working as "temporary migrant workers." They were still single and often came back to their parents' residences in the village. Besides, however, there were 32 workers who had already formed an independent household in urban areas after marriage. Furthermore, 30 households had already "migrated-away" from the village, and came back only occasionally for festivals and/or crop harvest (in cases of owning farmland). Some of them still had houses in the village, which were mostly left empty. Typical cases displayed the pattern of parents leaving the village to join the families of their sons in urban areas.

Out of 60 "temporary migrant workers," 21 were working as white-collar workers and 38 as bluecollar workers. Similarly, out of 32 "independent migrant workers," 16 were white-collar workers and 12 were blue-collar workers. In the case of the "migrated-away workers," the share of white-collar workers was 60%. By contrast, out of 230 workers staying in the village, 156 (67.8%) were engaged in self-employed agriculture and another 25 (10.9%) were daily laborers, including agricultural laborers. There were only 4 white-collar workers and 38 blue-collar workers. Since the study village was located in a typically pure rural area, most of the non-agricultural workforce was obliged to stay in urban areas. The distinction between white-collar workers and blue-collar workers is important in terms of income level and relative stability of employment. Roughly speaking, the monthly salary observed among the workforce from the study village was Rs.10,000–50,000 for white-collar workers, around Rs.5,000 for blue-collar workers, and Rs.1,200–2,500 for daily laborers. Income from self-employed agriculture was typically lower than for white-collar workers, but usually higher than for blue-collar workers or daily laborers.

The total 134 households in the study village were classified into five economic classes; "upper," "upper middle," "middle," "lower middle," and "lower." The study found that the "upper" households owned the largest farmland and were engaged in agriculture, but many of them were white-collar retirees who were receiving pensions and also working as informal village leaders. Their children usually attained higher education and studied or worked in urban areas as white-collar workers. The "upper middle" and the "middle" class households, on the other hand, were the most active farmers in the village, with a fairly large farmland of their own. They were also active in leasing-in land and goat rearing was most popular among them. The education level of the parents generation was usually not high, but they were also enthusiastic in their intention to provide higher education for their children. However, the share of children who obtained white-collar jobs was much smaller than in the "upper" class. So far, blue-collar workers were dominant in these households.

Although marginal farmers and daily laborers were still dominant in the "lower middle" and the "lower" class households in the village, with the increasing education level among the younger generation in recent years, they have also started to work as blue-collar workers. At the same time, however, a substantial share (53.8% and 30.8% of the "lower" and the "lower middle" households, respectively) were female-headed households, the poorest of the poor, whose major problem was the lack of male workers.

In sum, the most striking finding was that the rural class structure in the study village still largely corresponded with the size of farmland ownership, in spite of the increased importance of non-agricultural employment today. The key to understanding this phenomenon is the high cost of education necessary to acquire white-collar jobs (or even some blue-collar jobs) and inter-class disparity in the access to credit (including relatives who have already obtained remunerable non-agricultural employment) for financing an expensive education. In other words, the high cost of higher education (especially in the college/university level) is reproducing (or even expanding) the traditional structure of economic disparity among households based on ownership of farmland.

However, contrary to the situation during the 1920s or 1930s, when *Brahmin* people migrated from rural to urban areas in Tamil Nadu, rural-urban migration after the mid-1990s is much more widespread, influencing almost all the economic classes, with the exception of some female-headed households, in terms of increase in both white-collar and blue-collar jobs, and the impact of this change is much more fundamental. One example is the labor shortage in agriculture, best exemplified by the rapid diffusion of combine-harvesters for rice harvesting since the mid-2000s. Another important difference is that the scheduled caste people, after receiving farmland through the central government's policy to transfer farmland on a large scale during the 1970s,⁴⁷ were able to gain an advantage in seeking higher education and government jobs by the reservation policy.

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⁴⁷⁾ This movement is called "Bhoodhan movement." See Sato [2011] in this special issue.

SATO K.: Employment Structure and Rural-Urban Migration in a Tamil Nadu Village

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Goat-Rearing Practices and the Limited Effects of the SHG Program in India: Evidence from a Tamil Nadu Village

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Abstract

Livestock rearing has been promoted in India by government-sponsored micro-finance schemes such as the IRDP and the "SHG-Bank Linkage Program," providing rural poor with small loans to augment their non-land assets and thereby alleviate poverty. However, even in the case of small livestock such as sheep and goats, although at a glance it seems easy for poor people to rear them by using their only asset, unskilled labor, the reality is contrary and thereby the effect of the micro-finance programs is questionable. Based on intensive field surveys in a village in Tamil Nadu, India, the author sheds light on goat rearing practices among different economic classes and finds that the poor face difficulties in rearing goats. The article tries to analyze why the rural poor cannot rear goats in the way that policy-makers expected and thereby questions the effectiveness of government-sponsored micro-finance schemes in India.

Keywords: goat rearing, economic class, SHG-Bank Linkage Program, India

I Introduction

Goat rearing has been promoted by various governmental and non-governmental organizations all over the world to mitigate rural poverty, especially in unfavorable arid/semi-arid tropical environments [Vries 2008]. Goats are a drought-tolerant animal, eating mainly wild grasses, tree buds and leaves. They require less care, and reproduce quickly as they start to bear kids from the age of one year old. They also provide small farmers and landless laborers with precious employment opportunities in agricultural lean seasons and play an important role as "livestock" since they can be sold when most needed, for instance, during a severe drought [Shankarnarayan *et al.* 1985].

According to recent data, there are more than 190 million sheep and goats being reared all over India [FAO 2009]. With India achieving rapid economic growth after economic liberalization since the

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early 1990s, demand for protein-rich food such as goat meat is rapidly increasing in the country, especially in urban areas. Therefore, goat rearing is a growing sector in India, including in Tamil Nadu.¹⁾

Also, the Indian government has been promoting livestock rearing among the rural poor through micro-finance programs. Since 1978, the Integrated Rural Development Program (IRDP), a micro-credit program of the central government providing rural poor with small loans (with a subsidy), was promoted throughout India until the end of the 1990s.²⁰ Through the IRDP the rural poor were provided with livestock such as cows and goats. But, mainly because of the low repayment rate, the scheme was replaced by the *Swarnjayanti Gram Swarozgar Yojana* (SGSY) in the late 1990s and since then has lost importance. On the other hand, the Self-Help Group (SHG), which started in the early 1990s, has been successful and is still being promoted today. An SHG consists of 10–20 women³⁾ who gather once a month and save small amounts of money, which is lent back to some members. The activity of the SHG is supported and monitored by NGOs, indicating that an SHG is an informal organization. However, if the performance of the SHG concerned is favorable (usually during a monitoring period of the first 6 months), the responsible NGO recommends that local national commercial banks (including cooperative banks) provide them with bank loans without collateral. In this way, rural poor women can obtain access to bank loans. Such a system is called the "SHG-Bank Linkage Program."⁴

The SHG-Bank Linkage Program is also used by the government to provide rural poor women with livestock. For example, in Madurai District, Tamil Nadu, where the present study was conducted, first-time loans from banks must be used to purchase livestock, such as goats. Veterinarians visit a beneficiary's house to check the health conditions of the purchased goats and tag the ear of each goat. It is obvious from such a practice that the Indian government intends to alleviate poverty by encouraging the rural poor to possess livestock, an important non-land asset. The basic idea of the governmentsponsored micro-finance schemes for rural poverty reduction seems to have remained unchanged since the IRDP was started in the late 1970s.

However, according to the author's survey at a selected study village in Madurai District, Tamil Nadu, the percentage of households that reared goats was less than 50% among the poor, compared to more than 80% among the "middle" class (categorized by using the wealth-ranking method to be described later). Although it seems that the rural poor can easily rear goats, especially compared to large livestock, such as cows, the reality shows otherwise. Why is this so? If the major reason were to

¹⁾ Goat meat is exported from Tamil Nadu to Kerala and the Gulf countries, besides being consumed locally. See Appendix Table 1, which shows the number of sheep and goats slaughtered in Tamil Nadu after 2000.

²⁾ See Dreze [1990], Kondo [1998a; 1998b] and Tsujita [2006], for instance, on the IRDP.

³⁾ Eighty five percent of the participants in SHGs were women [NABARD 2000].

⁴⁾ See Suda [2006] on SHGs in India and their functioning.

be found, this might have implications for government policies attempting to alleviate rural poverty.

Based on recent fieldwork in a village in Tamil Nadu, India, this paper, through close examination of actual goat-rearing practices and conditions in the study village, sheds light on this important issue, and tries to answer the question of why goat rearing is difficult for the rural poor.

The paper is organized as follows. Chapter II provides basic information on the natural environment and socio-economic conditions of the study area and the village. The basic characteristics of the economic structure in the village (in particular, differences in land holdings, occupations and incomes in five economic classes) are shown, based on data collected by the author in 2008. Then, in Chapter III, information on goat-rearing practices in the village is provided. The important finding is that goat rearing is not so popular among the poor. Chapter IV discusses the introduction and progress of the microfinance program, especially the SHG program, in the village. Particular focus is placed on the different participation rate among the economic classes. Chapter V explores why the rural poor are reluctant to rear goats, especially compared to the "middle" class households, by examining the availability of workers and their labor utilization. Cases of some poor households who engaged in goat rearing but had difficulties are also examined. Finally, a conclusion and some suggestions will be provided for government schemes for alleviating rural poverty.

II The Study Area and the Village

A series of intensive field surveys was conducted by the author during 2007–10 at a selected village in Sowdarpatti *Gram Panchayat* (S GP), which is named after Sowdarpatti tank, Thirumangalam *Taluk*, Madurai District, Tamil Nadu (the same village as analyzed in the preceded paper, Sato [2011] in this special issue). The topography of the area is basically flat with a slight slope from the northwest to the southeast, but we can also observe some granite hills that have almost no trees.⁵⁾ About 83% of the area is covered by red soil [GOI 2001]. The climate is semi-arid, receiving only 900 mm of rainfall on average and this fluctuates greatly year by year.⁶⁾ The area mainly benefits from the northeast monsoon rainfall from October to December, since the southwest monsoon (June–September) is largely interrupted by the Western Ghats Mountains between the states of Kerala and Tamil Nadu. Many water reservoirs (tanks) were constructed centuries ago and by using them paddy cultivation has been carried

⁵⁾ See also Fig. 1 in Sato [2011] in this special issue.

⁶⁾ According to the rainfall data in Thirumangalam Town, the average rainfall over 27 years from 1980 to 2006 was 906 mm. For reference, the rainfall (normal year) in Madurai District, which is a mixture of the rainfall data in various meteorological stations in the district, is 840 mm [Department of Economics and Statistics (Tamil Nadu) 2007b].

out in the tank command area (*nañcai*), followed by millets, pulses and cotton. In addition, there are extensive areas of dry land (*puñcai*) where millets, pulses and cotton have also been grown. After the harvest of non-rice crops between February and March, there is basically no agricultural work in the area until August.⁷⁾

The major industry of the study area has been agriculture (including livestock), but with rapidly growing non-agricultural industries and service sectors in the urban centers as well as in some parts of sub-urban rural areas, more and more villagers depend on non-agricultural jobs, especially the younger generation [Sato 2011]. Because of accelerating migration from rural to urban areas, the population of S GP has decreased by 10% during 1981–2001 [GOI 1981; 1991; 2001]. Such an outflow of workforces has caused an increase in the amount of fallow land,⁸⁾ which occupied nearly 30% of the total farmland in S GP in recent years [GOI 2001].

The study village (hereinafter, Si Village) had a total of 134 households when the author conducted a household census in 2008. The residents of the village were mostly Telgu-speaking *Reddiyar* caste people, whose ancestors had migrated from Andra Pradesh.⁹⁾ At the time of the survey they occupied 87% of total households and 92% of farmland,¹⁰⁾ while small numbers of people from other castes such as *Chettiyar* (1 household), *Asari* (8 households), *Wannar* (5 households) and *Ampattar* (1 household)¹¹⁾ owned very small amounts of land.¹²⁾ Si Village has been characterized as a *Reddiyar*-dominant single caste village. The total population of the village was 421, with an average of 3.14 persons per household. The number of people in the labor force was 290 (the labor force participation rate was 66.7% on average), out of which 230 were living in the village. The other 60 usually stayed and worked in urban areas. The percentage of the workforce whose major occupation was in agriculture (both farmers and

March–July is basically an agricultural lean season, except for small areas of land with wells, an assured source for irrigation, where cotton, sugarcane, vegetables, etc. are grown.

⁸⁾ The official definition in land statistics is: land left fallow for more than one year.

⁹⁾ According to Mosse [2003], "The successes of the invading Muslim troops after 1565 resulted in mass migration into the southern Tamil country including Ramnad, bringing low caste (*Pallar*) agricultural laborers and peasant cultivators, *Utaiyar* farmers from the northern Tamil regions, pastoralists, shepherds, accountants, tank diggers, weavers, and other artisans, as well as non-Tamil speakers from Andra" [*ibid*.: 61]. He also mentioned that they migrated mostly in the 17th and 18th century, which brought new pressure on the land and finally caused the construction of many tanks in the area [*loc. cit.*].

¹⁰⁾ Note, however, that after *Reddiyar* people flowed into the area they worked for a long time as attached laborers and tenants for *Brahmins*, who at that time occupied most of the land. From the 1920s or 1930s, however, the *Brahmins* gradually sold their land to *Reddiyar* and other castes and migrated to urban areas [Sato 2011].

¹¹⁾ Reddiyar: one of the dominant agricultural castes in South India, characterized by their active acquisition of farmland [Srinivas 1989]. Chettiyar: a merchant caste. Asari: there were two types found in Si Village, black-smiths (also money lenders) and carpenters. Wannar and Ampattar: untouchable castes, but now classified as Most Backward Castes (MBC) in Tamil Nadu. Traditionally, they were engaged as washermen and barbers, respectively. See Sato [2011] for details.

¹²⁾ Also, there was a *Naidu* caste household which had a large area of farmland. They were also Telgu-speaking people from Andra Pradesh with a custom of mixed marriage with *Reddiyar* caste people.

Class	Landholding	Livelihoods	Education
Upper	Large	Stay outside the village and work as white-collar workers, but after retirement come back to the village and get pension and engage in farming by using agricultural laborers/tenants. Informal village leaders.	More than 10 years for both parents and children.
Upper middle and Middle	Small to medium	Most active farmers among all, with owned and rented land. Also work as white-collar workers and blue-collar workers.	Less than 10 years for parents, but more than 10 years for children.
Lower middle and Lower	Zero or marginal	Work as unskilled laborers or service workers. Work at factories or restaurants in town in the lean season.	About 6 years for parents and less than 10 years for children.

Table 1 General Characteristics of Households Divided by Economic Class in Si Village

Source: Fieldwork by the author in 2007-09.

agricultural laborers) was 78% among the residents, whereas most of the "temporary migrant workers" (as defined in Sato [2010]) were engaged in non-agricultural jobs, except one person who worked as an agricultural laborer.

The total farmland owned by the villagers was 421 acres, of which tank-irrigated field (*nañcai*) amounted to 32 acres and dry land (*puñcai*) 389 acres. Of a total of 134 households, 29 (22%) were totally landless and the average landholding size of the remaining 105 households was 4 acres,¹³ but the distribution of farmland was skewed. Although the study village was a *Reddiyar*-dominant single caste village, land distribution among the *Reddiyar* was also quite unequal.

In order to grasp the class structure of Si Village all the households were classified, by using the wealth ranking method, into five classes; "upper" (15 households), "upper middle" (17), "middle" (37), "lower middle" (39) and "lower" (26).¹⁴⁾ Table 1 summarizes the major characteristics of each class in terms of landholdings, livelihoods and educational background.

Many "upper" class people, after getting a higher education, stayed in urban areas to work as white-collar workers, but they came back to the village after retirement and engaged in agriculture (using laborers or tenants), because they had a large farmland. They also played a role as informal village leaders. The "upper-middle" and the "middle" class people were the most active farmers, often with rented-in/mortgaged-in land in addition to their own land. The younger generation people, however, tended to work outside the village as white-collar or blue-collar workers. The "lower middle" and

¹³⁾ Only 58 households had nañcai while most of the land-owning households (103 households) had puñcai.

The classification was reasonable in view of both asset holdings (land and durable goods) and income level. See Sato [2011] for details.

Sato K.: Goat-Rearing Practices and the Limited Effects of the SHG Program in India

Nome of	No. of		,	Types of Livestoc	k	
Village	HH	Hybrid Cow	Local Cow	Sheep	Goat	Poultry
М	148	190	4	113	355	198
S	140	51	2	50	103	282
V	427	34	34	1,500	727	200
Si	229	74	12	0	622	216
Р	199	22	22	0	253	90
Total	1,143	371	74	1,663	2,060	986

Table 2 Livestock Holding at the Major Villages in S Gram Panchayat

Source: Fieldwork by the author in 2007-10.

Notes: The number of households is obtained from the gram panchayat office in 2007.

But the number of households in Si Village above (229) was totally different from the number (134) that the author got from the census survey conducted in 2008. Data on livestock holding were obtained from the most recent "livestock census" data (obtained from a veterinary doctor in charge of S *Gram Panchayat*).

"lower" class people owned no or only marginal amounts of land. They worked as either service caste workers or unskilled laborers in agriculture, construction and factories. However, some of them have recently started to obtain relatively stable blue-collar jobs. It is also important to note that more than half of the "lower" class households were female-headed households (FHH). During March to July (the major agricultural lean season) many people, especially the poor, sought temporary jobs as unskilled laborers at some textile factories and construction sites near the village or at some restaurants and other shops in urban areas such as Thirumangalam Town. Also, goat rearing provided another valuable source of income for some villagers.

Table 2 shows the number of livestock reared in several major villages in S GP. The table reveals that in Si Village more goats are reared relative to the number of households. Many people in Si Village did not own *nañcai* land, and, even if they did, many of them leased it out to farmers from other villages, because their *nañcai* land was located in marginal areas with respect to the tank so that not enough water was available to them. This explains at least partly why relatively more people were engaged in goat rearing in the study village.

III Goat Rearing Practices in the Study Village

According to my survey in 2008, there were a total of 722 goats reared by 84 households (63%) in the study village, with an average of 8.6 heads per household.¹⁵⁾ Both the local breed (either *kanni adu* or

¹⁵⁾ Compared to goats, the ratio of households keeping cows (16%) and bullocks (7%) was small. Most of the farm households in the study village hired a power tiller to plow farmland. Only land-leveling after plowing was conducted by bullocks.

tellicherry adu) and their cross-breeds were reared in the village.¹⁶⁾ Note that *kanni adu* were dominant and reared only for their meat, whereas there were fewer *tellicherry adu*, but these were reared for both their meat and their milk.

The major concern with rearing goats is what and how to feed them. In the study village, goat feed can be broadly classified into three types; green feed (leaves, grasses and fodder crops), concentrates (oil cakes and coarse grains¹⁷), and crop residues. Details are shown in Appendix Table 2. Crop residues include the straws and husks of various kinds of harvested crops.

Green leaves and grasses, the major feed, are primarily found by taking goats to the nearby fields for grazing, but (stems and leaves of) fodder crops, mainly maize, sorghum (*cholam*) and pearl millet (*cumbu*), can sometimes substitute for green leaves and grasses.

Grazing is undertaken either on village common land along public roads or on private harvested/ fallow land. The care takers,¹⁸⁾ mainly self-employed young women¹⁹⁾ or elderly women, or sometimes hired elderly men/women or school children, take a herd of goats grazing twice a day, from 9:00 to 12:00 and 15:00 to 18:00.²⁰⁾

The seasonality and availability of feed of various types are summarized in Table 3. As already explained, the major rainy season in the study area is from October to December, when there is water in the tanks. In the tank command area (*nañcai*), rice is transplanted in October and harvested by the middle of January. After the harvest of rice, mainly millets, pulses or cotton are grown. These are harvested by March. On dry land (*puñcai*) under rain-fed conditions (without wells), millets, pulses, or cotton are also grown during the rainy season.

The richest season for feeding goats is January–March, when various kinds of crop residues as well as cheap concentrates (the grains of fodder crops) are available. In this season, some farmers, especially large farmers, are too busy to take goats out for grazing. Therefore, they feed the grains of fodder crops and other concentrates to their goats in stalls. However, the severest season (April–June) follows when rainfall is limited and the weather is very hot. Because of a shortage of green grasses and leaves in the field, some farmers, especially poor ones, cannot keep goats until the next breeding season

¹⁶⁾ The color of *kanni adu* goats is black or black with white spots, whereas *tellicherry adu* goats are white. The latter needs more concentrate feed to produce milk. Goat rearing was first introduced to Si Village from the *Valayar* caste people in V Village, who originally migrated from Ramanathapuram District. This may explain why *kanni adu*, originally distributed in Ramanathapuram District, were reared extensively in Si Village [see also Acharya 1982].

¹⁷⁾ Grains from fodder crops are included.

¹⁸⁾ Usually a few care takers go to field together.

¹⁹⁾ In most cases, women who had already finished caring for babies were engaged in grazing goats.

²⁰⁾ When going to pasture, a lead goat leads the entire flock. A goat care taker follows from behind. S/he controls the flock using their own way of whispering.

Sato K.: Goat-Rearing Practices and the Limited Effects of the SHG Program in India

	Gregorian Calend	ar (month))	6	7	8	9	10	11	12	1	2	3	4	5
	Conner						ŀ	Agricu	ltural	sease	on				
	Seasor	1		Dry	· →	ţ		(Rain)	→	(Wi	nter)	t	D	ry
Goat feed		Protein content	Method to obtain feed						Avail	ability	7				
Concentrate	Oil cake	High	Purchase					All	the y	ear ro	und				
feed	Fodder crops ¹⁾	High	Cultivation					(Onl	y duri	ng ha	rvest	time)			
	Green grass	High	Pasturing	Rainy season											
Green feed	Green leaves	High	Agricultural work			A	Agricu	ıltural	sease	on (h	arvest	:)			
	Fodder crops ²⁾	Low	Cultivation/ Pasturing					All	the y	ear ro	ound				
Crop residues	Seed husks/ straw	Low	Agricultural work				Agı	ricultu	ral se	ason	(harv	est)			

Table 3 Seasonality and Feed Availability for Goat

Source: Fieldwork by the author in 2007-09.

Notes: To be precise Tamil calendar should be used for agricultural season.

¹⁾ Use grain parts of fodder crops.

 $^{\scriptscriptstyle 2)}$ Use leaves and stalk parts of fodder crops.

	N	Concentra	ate Feed	Green Feed	Crop Residues
Class	HH ¹⁾	Groundnut Cake (GNC)	Wheat Bran or Rice Bran	Green Leaves	Straws and Husks
Upper	7 (100%)	7 (100%)	7 (100%)	5 (71%)	0 (0%)
U. Middle	11 (100%)	11 (100%)	6 (55%)	9 (82%)	7 (64%)
Middle	26 (100%)	23 (88%)	9 (35%)	10 (38%)	8 (31%)
L. Middle	18 (100%)	17 (94%)	4 (22%)	3 (17%)	3 (17%)
Lower	10 (100%)	10 (100%)	1 (10%)	3 (30%)	4 (40%)
Total	72 (100%)	68 (94%)	27 (38%)	30 (42%)	22 (28%)

Table 4	Types of Feed	Applied to	Goat by Stall	Feeding
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Source: Fieldwork by the author in 2007-09.

Notes: 1) The number of goat rearing households with valid answer for the type of feed.

(August), so they are obliged to sell them in the market. On the other hand, from July to August when the southwest monsoon brings a limited but some amount of rainfall, the green grasses and leaves in the fields revive to some extent.

The type and volume of concentrates is the most important factor in determining the weight and frame of goats, and therefore the unit price and net income from goat sales. Let us therefore look at the actual feeding status of concentrates in the five classes in the village (Table 4). Note here that the table also shows information on feeding green leaves and crop residues to goats in stalls.

As the table shows, groundnut cake was given by almost all the households, regardless of economic

class, but wheat/rice bran were given mainly by "wealthy" households. As already explained, concentrates are more important for goats during the dry season when green feed becomes scarce. However, poor households cannot afford them and instead rely on pasturing in barren fields or are obliged to reduce their number of goats by selling them in the market. Increasing their goats is therefore difficult for poor villagers.

Concentrates are especially important for mother goats in the latter stages of pregnancy and for several weeks after delivery. They are separated from the flock (for grazing) and are given protein-rich concentrates²¹⁾ in stalls, especially by "wealthy" farm households. This feeding practice is also extended to selected superior male goats which are reared for breeding [ICAR 2008; Uttarakrishiprabha 2010]. In practice, some wealthy farmers even buy ration rice²²⁾ in order to give rice bran water as a concentrate to goats (as well as to cows and bullocks), instead of consuming the rice themselves.

In India, the average life expectancy for goats is reported to be 12 years [Shankarnarayan *et al.* 1985]. One-year-old female goats can start bearing 2–3 kids at a time after about a 150-day gestation period. They are very prolific and can deliver kids three times in two years. In the study village, since goats reproduce very quickly, farmers often have to sell their goats because they do not have enough space to keep them all.²³⁾ Villagers usually sell young goats when they are 1 to 2 years old, mostly to goat merchants who regularly visit the village. Goat merchants²⁴⁾ are registered at either of the two public goat markets in a small town nearby. They visit the surrounding villages every morning to buy goats. In the study village, direct sale of goats at the public goat markets by the villagers themselves was rare.²⁵⁾

Depending upon the weight, a mature goat is sold at a price of Rs.3,500–4,000 per head. As the bearing cost is Rs.30–60 per month per head (according to my interview with farmers), this cost reaches Rs.800–1,600 in two years. Therefore, if villagers sell a goat at two years old, it can provide them with a net income of Rs.2,000–3,000. If a female goat bears 4–6 kids a year, the annual income is Rs.10,000–

²¹⁾ According to an agribusiness company, Uttrakrishiprabha, the most highly recommended concentrate is a combination of ground maize, groundnut cake, bran water (rice bran or wheat bran), pellets (fish meal), salt, and a mineral mixture [Uttrakrishiprabha 2010]. Also see ICAR [2008]. The ingredients of this concentrate are mixed in starch water and prepared in a plastic bucket.

²²⁾ Ration rice at fair price shops under the Public Distribution System (PDS) is also available for wealthy households in Tamil Nadu. They can purchase a maximum of 12–20 kg of rice per month at a rate of Rs.1 per kilogram. See Fujita [2011].

²³⁾ In India, approximately 36% of the total goat population is slaughtered every year [Acharya 1982].

²⁴⁾ According to the villagers, there used to be about 10 merchants who regularly came to the village to purchase goats, but by the time of my survey, this number had fallen to 3–5 persons.

²⁵⁾ By contrast, in V Village in the same S GP there is a commuting truck joinly operated by the farmers to transport goats to a goat market on a regular basis.

Sato K.: Goat-Rearing Practices and the Limited Effects of the SHG Program in India

Class	No. of	No. of	Average	
Class	HH	Goat Rearing HH (ratio)	No. of Goats per HH	with Animal Shed (ratio)
Upper	15	7 (47%)	6.9	4 (57%)
U. Middle	17	12 (71%)	8.8	6 (50%)
Middle	37	33 (89%)	9.5	12 (36%)
L. Middle	39	21 (54%)	7.6	5 (25%)
Lower	26	11 (42%)	8.6	1 (9%)
Total	134	84 (63%)	8.6	28 (33%)

Table 5 Differences in Goat Rearing by Economic Class

Source: Fieldwork by the author in 2007-09.

20,000, which is equivalent to 70-140 days' wages for a male unskilled laborer.

Although the price of goat meat has soared in recent years, the number of goat rearing households in the study village was on the decrease, mainly because of: 1) the decrease in green grasses due to less rainfall in recent years, and 2) the lower profitability of goat rearing compared to wage labors due to the recent rise in the wages of unskilled laborers. Given a wage rate of Rs.150 (men for wood chopping) and Rs.60 (women for cotton picking), if we assume 25 days' work per month for 8 months a year, the annual income for an unskilled laborer reaches Rs.30,000 (men) or Rs.12,000 (women) at maximum.

In addition, there is a risk in rearing goats. Goats are easily infected by some bacterial and viral diseases such as *Peste des Petits Ruminants* (PPR),²⁶⁾ which causes pneumonia and clostridia, especially if goats are kept under non-roof conditions during the rainy season (September–December). At night and during the rainy season goats are usually kept either in an animal shed with a tin roof (up to 10 heads) or at the owner's house if the number is small (up to 4–5 heads), but many poor villagers are obliged to keep their goats under non-roof conditions due to shortage of space.

Table 5 shows the distribution of goats among different economic classes in the study village. It indicates that the majority of poor households had no shed for animals. A veterinary doctor visits the village to examine the goats and provide treatment, including injections (Rs.15 per head), germ killer (Rs.3 per head, a monthly application is necessary), and so on. As such, goat deaths are rare.

It should be mentioned here, however, that goat rearing is still important in the study village for the following reasons. Unlike large livestock, such as cows, if the number is small, goats can be kept more easily by women and children for whom the labor market is often underdeveloped or even lacking.

²⁶⁾ PPR is a virus that afflicts small ruminants. It is especially prevalent in herds reared in arid/semi-arid areas [Japan Wildlife Center 2008].

This is especially so when the main male workforce is absent due to their work in non-agricultural jobs as migrant workers. Goat rearing is also important since goats can be sold at times of financial need, such as drought or family crisis (such as the death of husband) or special events (such as a marriage).²⁷⁾

However, as Table 5 clearly indicates, goat rearing is actually not so popular among the poor in the study village. A rather sharp difference among the five economic classes is observed. The "middle" and "upper middle" households recorded the highest figures both in the ratio of households engaged in goat rearing (89% and 71% respectively) and in the average number of goats (9.5 heads and 8.8 heads). By contrast, although the average number of goats was not so small among the "upper," "lower middle" and "lower" classes (6.9, 7.6 and 8.6 heads respectively), only around 50% of these households kept goats (47%, 54% and 42% respectively).

The major question now is why poor households are relatively reluctant to rear goats. Before exploring this question, however, let us examine how the SHG program was introduced to the village and how it functioned there, because this must have had an effect on the villagers' goat rearing, since they were obliged, as SHG members, to buy goats when they obtained their first bank loan through the program.

IV The Self-Help Group Program in the Study Village

The largest micro-finance program in India, at present, is a program through the Self-Help Group (SHG).²⁸⁾ As mentioned earlier, an SHG consists of 10–20 women who gather regularly and save a small amount of money, which is lent back to some members. In this sense, the SHG program is literally "self-help" among rural women. However, if the SHG performs well, members can get bank loans without collateral through responsible NGOs (the "SHG-Bank Linkage Program"). In addition, they can enjoy a government subsidy; 50% of the principal is reimbursed when fully repaid.

At the time of the survey, there were 7 women's SHGs in the study village, organized and monitored by 2 NGOs and 1 semi-governmental organization: 5 groups (79 households) by the People's Association of Rural Development (PARD),²⁹⁾ 1 group (18 households) by the Association for *Sarva Seva* Farms

²⁷⁾ Sacrificing goats as a special meal for functional purposes at home is also important.

²⁸⁾ It is called Sangam in Tamil.

²⁹⁾ PARD is a Madurai-based NGO for rural development. A micro-finance program is one of their activities, through which they support 263 SHGs with total savings of Rs.6.5 million. They also manage a training center for rural women to promote their livelihoods [Squido 2010].

Sato K.: Goat-Rearing Practices and the Limited Effects of the SHG Program in India

(ASSEFA),³⁰⁾ and 1 group (15 households) by the Tamil Nadu Corporation for Development of Women Ltd. (TNCDW).³¹⁾

ASSEFA was the first NGO to organize SHGs in the study village. They organized 2 SHGs in July 1992.³²⁾ In 1999 PARD started to organize SHGs and 6 groups were established by 2004. Finally, TNCDW organized an SHG in February 2006. In 2007, however, one of the two SHGs under ASSEFA and one under PARD stopped due to internal troubles. In 2009, PARD announced that it would withdraw from the SHG program. Then the members of 5 SHGs held a meeting and consulted one of the SHG federations.³³⁾ Finally, they were able to change their NGO from PARD to the Dhan Foundation,³⁴⁾ which accepted all of them. The details of the process of the introduction and development of the SHGs in the study village are described in Fujita and Sato [2011] in this issue.

Monthly savings per member amounted to Rs.50–60. The savings were lent back to some members at an interest rate of 2% per month. When they received a bank loan under the "SHG-Bank Linkage Program" from various national banks such as the State Bank of India, the Canara Bank and the Indian Bank, the interest rate was 1% per month, and they were instructed that the first loan should be used to buy goats. In fact, a veterinary doctor in charge of the region visited the village and tagged the ear of each goat to certify that the goat had been purchased through the program.³⁵⁾ The SHG is instructed to terminate itself 5 years after its establishment (accumulated savings and interest are then distributed equally among the members), but if they want to continue, they can start a new SHG. It should be noted here that all the members of the 5 SHGs under PARD had already received bank loans and

³⁰⁾ ASSEFA was established in 1969 by a disciple of Gandhi as an executive body for a land-distribution program for outcaste people called the "Bhoodan Movement." Since the 1980s, it has started to focus on supporting saving group activities in rural areas [GDRC 2010]. However, it restructured its organization in 2000, and part of it became an independent institution called the Sarvodaya Mutual Benefit Trust (SMBT), which receives financial assistance from the Small Industries Development Bank of India (SIDBI) to promote SHG programs.

³¹⁾ TNCDW had a SHG program called Mahalir Thittam [TNCDW 2010].

³²⁾ The IRDP was introduced to the village in the 1980s, and 167 people received bank loans with a government subsidy (the rate of the subsidy differed from one caste category to another). Most of the loans were used to purchase cows to sell milk through a milk cooperative that was established in the village at that time [Fujita and Sato 2011].

³³⁾ The SHG federations were formed in order to reduce any regional imbalance in the formation of SHGs (there were fewer SHGs in north and northeast India) and also to assist SHGs which have no support from an appropriate NGO. There is an association of powerful NGOs in the SHG program in India. It is a certified body accredited by important financial institutions such as the Reserve Bank of India, the National Bank for Agriculture and Rural Development (NABARD), and the state and federal governments [APMAS 2007].

³⁴⁾ Dhan Foundation, whose head office is located in Madurai City, has a program called "Kalanjiam Development Financial Services" to assist SHG activities in rural areas [Dhan Foundation 2010].

³⁵⁾ According to villagers, some SHG members showed the veterinarian goats that they had already reared. In such cases, the bank loan might have been used for other purposes.

東南アジア研究 49巻1号

Class	No. of HH	No. of HH Participating in One or More SHGs	No. of HH Participating in Two or More SHGs	No. of HH Participating in Three or More SHGs
Upper	15	7 (47%)	3 (20%)	1 (7%)
U. Middle	17	13 (76%)	7 (41%)	1 (6%)
Middle	37	27 (73%)	11 (30%)	6 (16%)
L. Middle	39	21 (54%)	6 (15%)	1 (3%)
Lower	26	11 (42%)	4 (15%)	0 (0%)
Total	134	79 (59%)	31 (23%)	9 (7%)

Table 6 Households Participating in SHGs in Si Village

Source: Fieldwork by the author in 2007-09.

repayments had been completed by the time of the survey in January 2010. Note here that all the members of the 7 SHGs had already received bank loan at least once, so that they must have experienced goat rearing, at least temporarily.

Table 6 shows the number and share of participating households in the 7 SHGs by the five economic classes in the village. The number and share of the participating households in two or more SHGs are also shown in the table. The average participation rate for all the households was nearly 60%, but it was low among the poor and the wealthy (47%, 54% and 42% for "upper," "lower middle" and "lower," respectively). Especially notable here is the fact that the poorest class ("lower") recorded the lowest participation rate, which is an unexpected result from the viewpoint of government policy.³⁶)

V Why Is There Relatively Less Participation among the Rural Poor in Goat Rearing?

Chapter III showed that goat rearing was relatively unpopular among the poor. Although the average number of goats reared by goat rearing households was not small, only around 50% of poor households kept goats. Chapter IV revealed that participation rate in the SHGs was also low among the poor.

Table 7 shows the relationship between goat rearing and SHG participation in the five economic classes. The table indicates that the ratio of households that neither reared goats nor participated in an SHG was highest among the "lower" class (42%), followed by the "upper" (33%) and the "lower middle" classes (26%). Also notable is the fact that the number of households that participated in an SHG but

³⁶⁾ According to Ghatak [1999], the reason for the weak involvement of poor households in SHG activities can be attributed to the barrier arising from being monitored by one's peers when members are selected. Since SHG members have to bear joint liability, households with a low and unstable income may be denied membership. See also Suda [2006] and Dreze [1990] for the same argument.

Sato K.: Goat-Rearing Practices and the Limited Effects of the SHG Program in India

Class	No. of HH	Goat Rearing SHG	Goat Rearing SHG ○ ×	Goat Rearing SHG × ○	Goat Rearing SHG × ×
Upper	15	4 (27%)	3 (20%)	3 (20%)	5 (33%)
U. Middle	17	10 (59%)	2 (12%)	3 (18%)	2 (12%)
Middle	37	25 (68%)	8 (22%)	2 (5%)	2 (5%)
L. Middle	39	13 (33%)	8 (21%)	8 (21%)	10 (26%)
Lower	26	7 (27%)	4 (15%)	4 (15%)	11 (42%)
Total	134	59 (44%)	25 (19%)	20 (15%)	30 (22%)

Table 7 Matrix of Households with Goat Rearing and SHG Participation

Source: Fieldwork by the author in 2007-09.

did not rear goats (indicating that they once reared goats but later stopped for some reason) was also not small. Such households were especially common among the "lower middle" (21%) and "upper" classes (20%). This indicates that non-participation in SHGs can only partly explain why the poor do not rear goats. There must be some other strong reasons.

In order to investigate the reasons why the rural poor are reluctant to rear goats, let me compare the availability of labor and its employment status between households with and without goats (Table 8). Note that workers who usually live outside the village (migrants) are excluded from the table.

The major findings from the table can be summarized as follows:

- With one exception, the average number of workers is largest among the "upper" class, decreasing gradually and reaching its lowest level among the "lower middle" and "lower" classes. Such a tendency is more prominent for the number of male workers. In other words, there is a shortage of male workers among the poorer households.
- 2) If we compare households with and without goats in each economic class, we find that, in most cases, the average number of workers (again, especially male workers) are smaller in households without goats.
- 3) If we compare households with and without goats in the "lower" class, we find that there is a strong tendency for households without goats to be engaged more in labor, and service jobs connected to a caste. In contrast, households with goats are more engaged in farming.
- 4) If we look at the "lower middle" class, there is a tendency for households without goats to be engaged more in labor, in combination with farming.
- 5) If we look at the "upper" class, there is a strong tendency for households with goats to be more engaged in farming, whereas those without goats are categorized as "others," suggesting that they depend more on income from pensions and land rents.

				Average	No. of Wc	ork Force							Patte	ern of Em	ployment							
				þ	per HH ¹⁾			C	ase of On	e Worker	per HH					C	se of Two	Workers	s per HH			
	No of	No. of HI	н					Farming				Servio Linked to	e Job o Caste		Farmir	g				Labor		
Class	HH	with or wit Goat Rear	ing	Male	Female	Total	Only	with Off-farm Job	with Labor	Off- Job Only	Labor Only	Only (with Dff-farm Job	Only O	with ff-farm J Job	with Labor 1	with ervice Job inked to Caste	Off- farm Job Only	Only (with Dff-farm Job	with Service Job Linked to Caste	Other ²⁰
111	÷	with goat	7	1.0	1.0	2.0								64%	7%	14%		14%				
upper	2	without goat	×	0.8	0.9	1.6								23%		8%		15%				54%
II MEAN	5	with goat	12	0.8	0.8	1.6	2%							32%	21%	37%						
U. Milaale	Ŧ	without goat	2	0.8	0.6	1.4	14%							57%		29%						
Mcdato	20	with goat	33	0.8	6.0	1.7	2%		12%					25%	2%	58%				2%		
INIDADE	31	without goat	4	0.8	1.0	1.8	14%							29%		57%						
T MEAN	06	with goat	21	0.6	6.0	1.5	3%		13%		3%			23%	10%	32%		10%	6%			15%
T. INHOUS	80	without goat	18	0.4	0.7	1.1	10%		25%					5%	5%	40%		20%	10%			
Ionno	26	with goat	11	0.5	1.1	1.5	%9	%9	12%	6%	6%			6%	9%9	12%	12%	6%	12%	%9	%9	
TOWEI	07	without goat	15	0.4	0.7	1.1					47%	6%	12%					18%	18%			
Source: F	eldwork	c hv the auth	or in 5	008																		

Table 8 Differences in Availability of Workers and Their Jobs among Households with/without Goat Rearing

Notes: ¹⁰ Only workers staying in the village. Migrants were excluded. ²⁰ Includes pension-recipients, pure land rent-recipients, etc.

東南アジア研究 49巻1号

In sum, it can be hypothesized that the major reason why many of the poor do not rear goats is, paradoxically, a lack of labor. Apparently, goat rearing does not require a full-time workforce, but it does require several (fragmented) hours of work every day, especially for pasturing goats in the field twice a day. This characteristic of goat rearing is suited to part-time work, in combination with farming more than hired labor or non-agricultural jobs (especially hired non-agricultural jobs in factories near the village). In other words, the rural poor had to allocate their limited amount of labor to full-time hired labor/off-farm jobs in order to earn a higher income, thereby sacrificing goat rearing.³⁷⁾

There were some households that once reared goats but had stopped by the time of the survey. This is especially true among the poor. Sixty seven percent of "lower middle" and 33% of "lower" class households who did not rear goats (a total of 52% in the two classes) were such households (Table 9). The table shows that the major reason for stopping goat rearing among poor households was the loss of their workforce for one reason or another. Especially notable is that when households became female-headed households (FHH)³⁸⁾ after losing a husband, many of them stopped goat rearing. It is also notable that two households among the "lower middle" class households changed their jobs to hired labor in order to obtain a higher income, and for this reason, stopped goat rearing.

Lastly, let me examine how some poor households actually reared goats. There were actually many poor households that reared goats: 54% of "lower middle" and 42% of "lower" class households (see Table 5). Table 8 already showed that they had a disadvantage in terms of their access to labor. However, we should also pay attention to the existence of "group pasturing" practices (Table 10). Group pasturing means that goats are jointly grazed by a group of 3–5 households. Goats are taken to the fields in turn by someone from the group. Supported by such a system, some poor households managed to reduce their disadvantage in labor availability.

VI Concluding Remarks

Based on detailed data in a study village in Madurai District, Tamil Nadu, India, obtained by the author's field surveys during 2007–10, goat rearing practices were investigated by classifying all the 134 house-holds into five economic classes. There were in total 722 goats reared by 84 households (63%), with an average of 8.6 heads per household in 2008. Goat rearing was most popular among the "middle" and

³⁷⁾ Another important reason for the poor to choose hired labor instead of goat rearing is that they need cash immediately after their work.

³⁸⁾ The number of FHH was 35 (26% of the total 134 households) in the study village. However, the ratio of FHH was very high among the "lower" (54%) and "lower middle" (31%) classes. See Table 5 in Sato [2011].

東南アジア研究 49巻1号

Class	No. of HH without Goat Rearing	Mhich Sto	No. of HH opped Goat Ro (ratio)	earing	Reason fo Aged / Loss / Breakup / Separation	or Stopping Goa Change of Jobs to Unskilled Hired Labor	t Rearing Unknown
L. Middle	18	12 (67%)	MHH FHH	5 7	2 5	1 1	2 1
Lower	15	5 (33%)	MHH FHH	3 2	3 2	0 0	0 0

Table 9 Households Which Had Once Practiced Goat Rearing But Stopped

Source: Fieldwork by the author in 2007–09.

Notes: "MHH" stands for male-headed household. "FHH" stands for female-headed households.

Note that "Loss" refers to a family member who passed away. "Breakup" refers to a family member leaving the original family to form a new family, such as marriage. "Separation" refers to a family member leaving the original family to live outside for the sake of employment.

Class	No. c	of HH	No. of Goat Rearing HH	No. of Goat Rearing HH with Group Pasturing
Unnor	MHH	15	7 (47%)	0
Opper	FHH	0	0	0
U Middle	MHH	15	10 (67%)	1 (10%)
U. Middle	FHH	2	2 (100%)	0
Middle	MHH	33	30 (91%)	7 (23%)
Midule	FHH	4	3 (75%)	0
I Middle	MHH	26	16 (62%)	6 (38%)
L. Middle	FHH	13	5 (38%)	2 (40%)
T	MHH	13	6 (46%)	1 (17%)
Lower	FHH	13	5 (38%)	2 (40%)
Total	MHH	102	69 (68%)	15 (22%)
10121	FHH	32	15 (47%)	4 (27%)

Table 10 Goat Rearing Households with "Group Pasturing"

Source: Fieldwork by the author in 2007-09.

Notes: "MHH" stands for male-headed households. "FHH" stands for female-headed households. Notable sets are highlighted; more than 60% of those of goat rearing HH per class, and more than around 40% of those of goat rearing HH with group pasturing per class, respectively.

"upper middle" classes, while it was most unpopular among the two lowest classes. Although the average number of goats reared by goat-rearing households in the two lowest classes was not small, only about 50% of such households reared goats. This contrasted sharply with the high figures in the "middle" (89%) and "upper middle" classes (71%).

This article tried to investigate the reasons why the poor were relatively reluctant to rear goats.

Sato K.: Goat-Rearing Practices and the Limited Effects of the SHG Program in India

It found that, paradoxically, a lack of labor in poor households was the major reason. First, the average number of workers in the two lowest classes was less than 1.5 persons. Moreover, the ratio of female workforce was 60–70% or even more. Actually, female-headed households occupied more than 50% of the "lower" class (33% in the "lower-middle" class). Second, a comparison between households with and without goats in the "lower" class showed that 1) the average number of workers was much smaller in the latter (1.1 persons) than in the former (1.5 persons); 2) there was a sharp contrast in that the latter were more engaged in labor, and service jobs connected to caste, whereas the former were more engaged in farming. Another comparison between households with and without goats in the "lower middle" class also showed that the latter were more engaged in labor, in combination with farming. In sum, it was found that poor households who did not rear goats allocated their limited number of workers (mainly female labor) to full-time hired labor, including agriculture and non-agriculture, so that there was no time to take care of goats.

Government-sponsored micro-finance schemes have been undertaken in India since the late 1970s, when the IRDP started throughout the country. Since the 1990s, the "SHG-Bank Linkage Program" has become the major policy tool for providing small bank loans to the rural poor, especially women. The basic idea of the micro-finance schemes; i.e. providing rural poor women with livestock such as cows and goats, seems to have remained unchanged until today. In other words, the accumulation of non-land assets (livestock) in poor households has been the major strategy to alleviate rural poverty in India.

It may seem reasonable at a glance to think that the rural poor can easily rear small animals such as goats efficiently by relying on their sole resource, unskilled labor (especially female labor), but this, unexpectedly does not actually seem to have been the case. Furthermore, the major reason why the poor were reluctant to rear goats is mainly attributable to the lack of (unskilled) labor among the rural poor. In this sense, other kinds of programs should effectively target the poorest, such as pension schemes for elderly people.³⁹⁾ Of course, we should pay attention to the fact that the data for this article was collected in south India, where the labor market for women is relatively developed in comparison with the rest of the country. In other words, there is a possibility that the poorest female-headed households are also engaged more in goat rearing in rural areas where availability of hired labor jobs is scarce for them.

At the same time, however, it should be remembered that nearly half the rural poor households — although they were not the poorest — could rear goats in the study area. Therefore, it can be claimed

³⁹⁾ Regarding the Old Age Pension scheme, see Fujita [2011] in this special issue.

that they benefit from livestock-oriented micro-finance programs such as the SHG-Bank Linkage Program.

Finally, one more important point should be mentioned. The study village of this paper was characterized by the absence of scheduled castes (SC) people, so that the problems related to goat rearing could be dealt with as a purely economic issue of poorer sectors in a village. However, in many "typical" villages with a substantial number of SC people and where goat rearing has been carried out by them, the problems may not be purely economic but also social, such as those pertaining to access to village common land for pasturing goats [Yanagisawa 2002]. In this sense, the general validity of this paper should not be taken for granted. Further research is necessary in this regard.

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		(111111011)
Year	Sheep	Goat
2000/01	93.5	77.9
2001/02	102.2	86.4
2002/03	115.3	101.3
2003/04	114.1	108.5
2004/05	112.9	136.7
2005/06	157.1	139.4
2006/07	158.2	209.7
2007/08	134.3	216.9

Appendix Table 1 Number of Slaughtered Livestock in Tamil Nadu (million)

Source: Prepared by the author based on data from Department of Economics and Statistics (Tamil Nadu) [2006; 2007a; 2008a].

Notes: The figures shown above were collected from registered abattoirs. (Therefore, those from non-registered abattoirs were excluded from above figures.)

		1:	M					
e.	neral Names	Imi	IName	Nomenclature	Season Available and/or Method	Method of	Nutritional Value	Drice
5		(Tamil Alphabet)	(Pronounciation)	Mainchatan	Used to Obtain Feed	Feeding		11100
	Groundnut cakes (GNC)	புண்ணாக்கு	punakku	Arachis hypogaea				Rs. 35/kg
	Starch water	கஞ்சி	kanji	(general names)	Annihila all the more more at		Protein rich and a source of energy.	
	(ground) maize	மக்காசோளம	makkasolam	Zea Mays	Available all the year round at market.		The best supplementary feed for	Rs. 15/kg
	(ground) pearl millet	கம்பு	kambhu	Pennisetum glaucum			g0ats.	Rs. 10/kg
Concentrate	(ground) wheat	கோதுமை	godhunai	Triticum		atall fooding		Rs. 35/kg
feed	Fodder Crops			(general names)	Fruits of each crop are used during the harvest. Less costly than the feeds listed above.	stan recum	Nutritious and used as a substitute	
	Maize	மக்காசோளம	makkasolam	Zea Mays	February-March		for concentrates during the harvest	
	Sorghum	சோளம	cholam	Chola Natv	January-March			
	Pearl millet	கம்பு	Kambhu	Pennisetum glaucum	November-February			
-	Green grasses	ദേഷ്യന്പിം	koraipul	(general names)	July-September, October- December, and after rain.	pasturing	Nutritious only when flowering after rain.	
	Fodder crops			(general names)	Stems and leaves of all fodder crops are used as feed.		Avsilshle when each cron is heing	
Green feed	Maize	மக்காசோளம	makkasolam	Zea Mays	August-March	stall feeding	cultivated.	
	Sorghum	சோளம	cholam	Chola Natv	January-March		The major feed for goats.	
	Pearl millet	கம்பு	kambhu	Pennisetum glaucum	August-February			
	Green leaves (e.g. neem)	வேப்பங்குளை	vepangulai	Azadirachta indica	Available all the year round. Acacia and Prosophis. Collected through agricultural work.	stall feeding and pasturing	Only feed in dry season, available from fields.	
	Straws or husks	Gunt®	pottu	(general names)	Husks of seed collected during the harvest from fields. Least expensive feed.			
0	Castor seed husks	வட்ட மணிக்குழை	vattamanikulai	Ricinus communis	September			
Urop residues	Maize seed husks	மக்காசோளம	makkasolam	Zea Mays	February–March	stall feeding	Rich in fiber but poor in protein.	
	Paddy straw	நேல்	nel	Oryza Sativa	January			
	Gram / Black gram husks	ച്ചംഞ്ഞ	thuvarai	Vigna mungo and/or vigna radiate	November-February			
	Cotton seed husks	பருத்த	paruthi	Gossypium	November-February and June-July			
Source: Fie	ldwork by the author	in 2007–09, and	1 ICAR [2008].					

Appendix Table 2 Types of Feed Applied to Goat in Si Village

Notes: Information was collected by the author from farmers in the study village and confirmed by veterinary doctors at the two veterinary stations near Si Village.

Sato K.: Goat-Rearing Practices and the Limited Effects of the SHG Program in India

Self-Help Groups and the Rural Financial Market in South India: A Case of a Tamil Nadu Village

FUJITA Koichi* and SATO Keiko**

Abstract

After analyzing the process of development of the Self-Help Groups (SHGs) in a study village located in the Madurai District, Tamil Nadu, we evaluated the impacts of the SHGs and found that they had certain impacts on the alleviation of poverty in the village, although there was an apparent limitation. The major limitation was the small size of loans through the SHGs, either from savings and revolving fund or from the banks, but another major limitation lay in the fact that the poorest people were excluded from the SHGs, especially the poorest women from the female-headed households. On the other hand, there were increasing opportunities to save. Since the mid-1990s, the shift of occupation from agriculture to non-agricultural sectors has accelerated, and the income of rural households started to rise rapidly in rural Tamil Nadu, including in the study village. It was in this context that there emerged a rapid rise of surplus money in the hands of rural residents except for the poorest, which started to be saved in various forms, one of which was the savings in the SHGs.

Keywords: Self-Help Group, saving mobilization, Tamil Nadu, poverty alleviation

Introduction

Micro-finance through organizing Self-Help Groups (SHGs) has come to be the most popular microfinance scheme in India since the early 1990s, and remains so until today. An SHG is a village-based financial intermediary usually composed of between 10 to 20 local women. Members make small regular savings contributions over a few months until there is enough capital in the group to begin lending. Funds may then be lent back to the members for any purpose. The SHGs are thereby totally different from the most popular type of micro-credit in the world, such as the Grameen Bank in Bangladesh, in the sense that they are the real intermediary between those who have surplus money and those who

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have a deficit. The Grameen Bank, by contrast, although it also mobilizes savings, basically re-lends money that is borrowed from international and/or domestic donors. In India, however, SHG members can get bank loans through the "SHG-Bank Linkage Program" if they have shown good performance for several months. In this sense, the SHG in India is the mixed form of informal mutual-financing and recipients of formal bank loans.

According to NABARD [2010], as of March 2010 there were nearly 7.0 million SHGs in India, representing 97 million members, who have taken loans from banks under its linkage program. This does not include SHGs that have not borrowed. The "SHG-Bank Linkage Program" since its inception has been predominant in the south Indian states of Andhra Pradesh, Tamil Nadu, Kerala, and Karnataka. These states accounted for 76% of the SHG credits linked during the financial year 2009–10.¹⁾ Tamil Nadu is one of the most active states for delivering bank loans through the SHGs.

Table 1 illustrates the current status of SHGs with bank linkage in Tamil Nadu. The amount of savings per SHG ranged between Rs.3,000–25,000 depending on banks, and the amount of loan per SHG disbursed in 2009–10 ranged between Rs.19,000–166,000, usually Rs.10,000 per member of the SHG. It was also found that the rate of non-performing loans (NPL) was usually very low, except a few cases with substantially high figures.

SHGs are usually organized by NGOs. Let us here examine the case of the Dhan Foundation, a Madurai-based NGO. The Dhan Foundation, among its diverse activities, has had a micro-finance project through organizing the SHG (*Kalanjiam*) under the name of "*Kalanjiam* Community Banking Programme" (KCBP) since 1990, when a pilot project was initiated. As will be explained later, our study village is located in the Madurai District, the core area of the Dhan Foundation's activities. According to the latest annual report [Dhan Foundation 2010], as of March 2010 KCBP was extended to 12 states and regions (Tamil Nadu, Pondicherry, Andhra Pradesh, Kerala, Karnataka, Orissa, Maharashtra, Madhya Pradesh, Rajasthan, Jharkhand, Bihar, and Assam) and 45 districts, and the number of *Kalanjiam* and their members reached 28,488 and 485,867, respectively, indicating the average number of members per group as 17. The accumulated savings and reserves reached Rs.1,928 million, or nearly Rs.67,700 per group and Rs.4,000 per member. During the fiscal year 2009–10, a total of 17,542 loans were disbursed using their own savings, with Rs.39.26 million or Rs.2,238 per loan. In addition, 12,080 bank loans were disbursed to the groups, with an amount of Rs.1,294 million or Rs.107,120 per group.

If we classify by type of banks, out of Rs.144.5 crores of loan disbursement during 2009–10 in the whole country, 95.6 crores (66.2%) was disbursed by public commercial banks, and 33.3 crores (23.0%), 13.4 crores (9.3%), and 2.2 crores (1.5%) was disbursed by regional rural banks (RRBs), cooperative banks, and private commercial banks, respectively [NABARD 2010].

東南アジア研究 49巻1号

						Loan I du	Disbursed t uring 2009–	o SHG 10	
	No. of SHG	No. of Members	Average No. of Members per SHG	Savings (million Rs.)	Average Savings per SHG (Rs.)	No. of SHG	Loan Amount (million Rs.)	Average Loan Amount per SHG (Rs.)	againt Outstanding Amount
Public Commercial Banks	563,745	8,585,911	15.2	6,739	11,954	171,671	18,939	110,321	3.03
State Bank of India	164,062	2,955,614	18.0	1,558	9,496	32,459	3,749	115,500	7.06
Indian Bank	130,401	1,986,015	15.2	1,760	13,497	64,435	8,336	129,371	0.16
Canara Bank	102,704	1,783,161	17.4	321	3,125	17,109	1,724	100,766	3.05
Indian Overseas Bank	92,629	1,130,074	12.2	2,314	24,981	22,960	3,318	144,512	1.30
Others	73,949	731,047	9.9	786	10,629	34,708	1,812	52,207	NA
Private Commercial Banks	54,882	691,781	12.6	201	3,662	7,886	806	102,206	7.45
Regional Rural Banks	75,202	500,064	6.6	438	5,824	21,816	1,556	71,324	9.74
Pandayan Grama Bank	55,715	203,880	3.7	204	3,661	15,483	504	32,552	20.41
Pallavan Grama Bank	19,487	296,184	15.2	234	12,008	6,333	1,052	166,114	1.74
Cooperative Banks	132,881	NA	NA	1,660	12,492	57,788	4,311	74,600	1.51
Salem DCCB	15,501	206,697	13.3	151	9,741	3,852	331	85,929	1.63
Tiruchirapalli DCCB	13,619	184,170	13.5	194	14,245	5,318	457	85,935	NA
Villurupam DCCB	11,664	221,616	19.0	35	3,001	8,889	531	59,737	0.89
Madurai DCCB	11,409	148,317	13.0	39	3,418	4,929	94	19,071	14.55
Tiruvannamalai DCCB	10,258	NA	NA	58	5,654	3,376	352	104,265	NA
Others	70,430	NA	NA	1,183	16,797	31,424	2,546	81,021	NA
Tamil Nadu total	826,710	NA	NA	9,038	10,932	259,161	25,612	98,827	NA
All India	6,953,250	NA	NA	61,987	8,915	1,586,822	144,533	91,083	2.94

Table 1 SHGs Which Received Bank Loan in Tamil Nadu

Source: NABARD [2010].

Note: DCCB means District Central Cooperative Bank.

The Dhan Foundation conducted a detailed study on the impact of KCBP [Dhan Foundation 2004]. The major points indicated in the report were as follows:

- Since *Kalanjiam* provided its members with credit (95% of members received a minimum amount of Rs.5,000 in cases where they had been with a *Kalanjiam* for more than three years) at a 2% per month interest rate, they could get rid of the usurious debt from moneylenders. A major proportion of loans provided from the *Kalanjiam* were for redeeming the members' debts through informal financing sources (28%), followed by productive and asset creation purposes such as agriculture and livestock (15%), housing (14%), and small economic activity (9%).
- 2) At the same time, all the investigated *Kalanjiams* had received at least one loan from local commercial banks, and all of them gained access to formal credit systems only because of the *Kalanjiams*' existence. The average amount of loans mobilized by the *Kalanjiams* under study from commercial banks was Rs.103,778 per group.

FUJITA K. and SATO K.: Self-Help Groups and the Rural Financial Market in South India

- 3) The intervention of the *Kalanjiams* was observed to have made significant changes in the debt status of the members with informal financing sources. These sources usually provide credit at exorbitant interest rates ranging from 35 to 120% per annum. Slightly more than 81% of members interviewed had debt with these sources when they joined the *Kalanjiam*. Around 51% of the members completely settled the debt they had at the time of joining the *Kalanjiam*. The average amount of such debt repaid by a member was Rs.10,267.
- 4) The percentage of informal loans borrowed at a 60% annual interest rate by the members came down from 36 to 26 after the intervention of *Kalanjiam*. Similarly, the loans borrowed at a 120% interest rate declined from 17% to 8%. The usurious practice of lending at a rate of 275% per year was completely eradicated. The access to credit at an annual interest rate of 24% (or 2% per month) increased from merely 6% to 11%.
- 5) All the *Kalanjiam* members studied had savings in their *Kalanjiam*. On average, a member saved Rs.5,301 in the case of a *Kalanjiam* older than 5 years, which was higher than the savings of Rs.3,590 in the case of a *Kalanjiam* of 3–5 years of age. After the intervention of the *Kalanjiam*, members were able to save Rs.100 per month on average. Around 72% of the members saved Rs.100 per month.
- 6) Around 74% of members were found to have invested in assets after joining the *Kalanjiam*. The assets included productive assets such as agricultural land, livestock, and petty trade and non-productive assets such as jewelry and household durables. Around 24% of the members of a 3–5 year old *Kalanjiams* and 26% of members from the more than 5 year old *Kalanjiams* invested in livestock, worth Rs.8,421 and Rs.13,954, respectively. Similarly, 20% of the members from 3–5 year old *Kalanjiams* and 33% members of the more than 5 year old *Kalanjiams*, respectively, invested in economic activities such as petty shops, tailoring, and hawking.
- 7) There was an increase in the family income after the intervention of the *Kalanjiams*. In the case of the 3–5 year category, the increase in the income was slightly less than 30% from the situation at the time of joining the *Kalanjiam*. The same figure was around 45% in the case of the more than 5 year old *Kalanjiams*.
- 8) Slightly less than 33% of the members interviewed stated that their access to food in terms of frequency/quality/quantity improved after joining the *Kalanjiam*. Around 60% of the members reported that they had sufficient food even before becoming a member. Nearly 55% of the members of the more-than-5-year category reported that their housing condition improved after joining *Kalanjiams*. Around 48% of the members were covered under life insurance schemes in the post *Kalanjiam* situation, while the same figure was merely 4.3% before the

intervention of the Kalanjiam.

9) There was some evidence which showed that after joining the *Kalanjiams* the women members became more empowered. The areas of empowerment included reduced domestic violence, husbands sharing the household work, assets in the name of women, decision making ability, and women's place in the public sphere.

In sum, the impacts of KCBP by the Dhan Foundation were found to be positive and significant in terms of income, savings, freedom from informal usurious financing, asset building, quality of life, food intake, and women's empowerment.

The major objective of this article is to conduct the same type of impact study on SHGs in the study village in the Madurai District, although less rigorously. However, there are some major differences between our study and the Dhan Foundation's. First, we will pay more attention to the issue of who became the members of SHGs, by categorizing all the village households into five economic classes. And we clarify that, unexpectedly, the middle classes are more enthusiastic in joining the SHGs, when compared to richer and poorer classes. Second, we will focus more on the role of SHGs in mobilizing savings rather than in extending credit. After the mid-1990s, the shift of occupation from farming (including agricultural labor) to non-agricultural sectors accelerated and accordingly income levels of rural households started to rise rapidly in rural Tamil Nadu, including our study village. It is in this context that there occurred a rapid rise of surplus money in the hands of rural residents except for the poorest, which started to be saved in various forms, one of which was the savings in SHGs.

The composition of the article is as follows. The first chapter introduces the outline of the study village. The second chapter will explain the process of introduction and development of micro-finance schemes in the study village since the 1980s, including the Integrated Rural Development Program (IRDP) and the SHGs. The third chapter will make an analysis of the impacts of SHGs in the village. Finally, we will make some concluding remarks.

I The Study Village

The study village is Si Village belonging to Sowdarpatti *Gram Panchayat*, Thrimangalam *Taluk*, Madurai District, the same village in the two papers written by Keiko Sato in this special issue. Therefore, we omit the description of the study village here. The survey on the SHGs was conducted in January 2010 by the authors, and we provide a detailed discussion on the role of SHGs in the village, based on household-level data collected by Keiko Sato, one of the authors, in 2008.

II Process of Introduction of SHGs

II-1. Integrated Rural Development Program (IRDP)

Before the introduction of SHGs in 1992 in the study village, the Integrated Rural Development Program (IRDP) was introduced in the early 1980s. Let us first examine the process and significance of the program.

The IRDP is a well-known micro-credit scheme implemented all over rural India, mainly during the 1980s. In the study area, introduction and/or promotion of dairy farms was encouraged through the program. According to our field survey in Si Village in January 2010, the development of dairy farms in the village proceeded as follows.

Under the government policy to promote dairy farms, a village-level "Si Milk Society" was established in 1980. Forty-five members received a calf by a bank loan (Rs.800) from the Canara Bank (one of the public commercial banks in the locality) under the "Calf Rearing Scheme." The interest rate charged was 1% per month and the borrowing period was 6 months. Then in 1982, IRDP was introduced in the village and 15 members received loans (Rs.4,000 each) from the Canara Bank under the same conditions in order to buy buffaloes. Moreover, subsidy (one-third and 50% of the principal for "small farmers" and SC agricultural laborers, respectively) was provided by the government.²⁰ In 1985, 20 members again received bank loans (Rs.12,000 each member) to buy a set of a bullock and a cart. The lending condition was the same as for the earlier loans. Then in 1986, a new 10-year program to introduce hybrid cows was started. A loan of Rs.5,000 was provided from the Canara Bank to a maximum of 10 members each year under the same lending condition. One member could receive the loan a maximum of two times within the project period. The hybrid cows provided were covered by insurance, and a veterinarian was dispatched from the government every Saturday to check the cows.

Since the inception of the society, milk had been sold to the Tamil Nadu Cooperative Milk Producers Federation Limited and farmers were paid every 15 days through a society account at the Madurai District Central Cooperative (MDCC) Bank. The milk collection was carried out twice a day (6 AM and 6 PM) and 80–150 liters of milk was collected each time. However, the activity of the society gradually lessened and finally stopped in 2002.³⁾ Factors responsible for this include an increase in droughts since the mid-1990s and the mobility of male workers who became "temporary migrant

²⁾ Note that in the early 1980s the daily wage rate was Rs.15 for men and Rs.8 for women.

After the year 2000, IRDP itself transformed and remained as SGSY (Swarnjayanti Gram Swarozgar Yojana) and started micro-finance activity in rural India [Department of Rural Development, Ministry of Rural Development, GOI 2009].

東南アジア研究 49巻1号

workers" [Sato 2011] and usually stayed outside the village since the late 1990s onwards. This facilitated the villagers to shift their major livestock from cows to goats/sheep, which can be easily handled by women. Another factor was the introduction of the SHGs as explained below.

II-2. The Self-Help Group (SHG)

Since the early 1990s, a micro-finance program organizing the SHGs was started, and the SHGs have grown rapidly until the present day in India. As the SHG program grew, the IRDP lost its importance and finally vanished. The SHG is totally different from the IRDP in the sense that it mobilized savings from its members and lent them back to members who are in need of credit, instead of just receiving credit from banks. It is basically a mutual help system among the rural poor women, although there is also a system of providing bank loans through the SHGs.

The SHG is organized mainly through assistance from NGOs. An SHG consists of 10–20 poor women. They gather once a month and collect a small fixed amount of savings, which is lent back to members at a low (compared to moneylenders) interest rate. The responsible NGO monitors its activity for a while and, if its performance is judged favorable, the NGO recommends that local banks (including cooperative banks) provide them with loans under concessional terms and conditions (at a low interest rate and without collateral). This system is called the "SHG-Bank Linkage Program." If all the members fully repay the loan, half of the principal is reimbursed as a government subsidy in Tamil Nadu.

According to our field survey in Si Village in January 2010 there were 7 existing SHGs (in addition, 2 SHGs stopped their activities in 2006 and 2007), which are listed in Table 2. The process of introduction and development of the SHGs in the village was as follows.

II-2.(1) ASSEFA

An NGO, the Association of *Sarva Seva* Farm (ASSEFA), first introduced the SHG program in the village in July 1992. They organized 2 SHGs with 20 women members each,⁴⁾ and the members saved Rs.30 (Si West SHG) or Rs.50 (Si East SHG) every month. After 6 months, the ASSEFA provided Rs.13,000 as a "revolving fund" to each SHG, which was added to the SHG's own savings. The SHG members borrowed money at a 3% (Si West SHG) or 2% per month (Si East SHG) interest rate.⁵⁾ Note here that

⁴⁾ There were no particular conditions for joining an SHG, except for the age limitation that members should be below 50 years old.

⁵⁾ At that time, if villagers borrowed money from village moneylenders, they had to pay a 5% per month interest rate. Later (accurate year was unknown), however, the interest rate charged by village moneylenders declined to 2.5–3.0% per month. Accordingly, the SHGs also reduced the lending interest rate among the SHG members to 2% per month.

	ASS	EFA		PARI)/Dhan Found	lation		TNCDW
	West	East	Roja	Anjugam	Kanaki	Omsakti	Athiparasakti	No name
Establishment	July 1992	July 1992	April 1999	March 2001	September 2001	March 2004	March 2004	February 2006
No. of members	20	20	20	20	20	20	20	12
Monthly saving (Rs.)	30	50	50	30	30	50	60	50
Interest rate for lending (% per month)	3	2	2	?	?	2	2	2
Revolving fund (Rs.) From which institution/bank Repayment	13,000 ASSEFA No need to repay	13,000 ASSEFA No need to repay	25,000 MDCC Bank Rs.10,000 repaid	25,000 ? Repaid fully in 4 months	25,000 MDCC Bank Rs.15,000 repaid in 7 monts	; ? ?	? ?	10,000 Dept. of Agriculture No need to repay
Bank loan (1st) Amount (Rs.) From which bank	10,000/15,000 per member Canara	10,000/15,000 per member Canara	200,000 SBI	200,000 MDCC	200,000 MDCC	200,000 SBI	200,000 SBI	-
Interest rate	Bank	Bank		Bank	Bank			
(% per month)	1	1	1	1	1	1	1	-
Disbursement	1993	1993	2001	August	2003	June 2007	March 2005	-
Period (maximum) Period (actual) Restrictions in usage	12 months ? Goat or sheep/ poultry	12 months ? Goat or sheep/ poultry	? 50 months Goat or cow	36 months 20 months Goat or sheep	20 months 12 months ?	? 42 months ?	48 months 12 months Goat	
Subsidy	Yes (33%)	Yes (33%)	?	Yes (50%)	Yes (50%)	No	Yes (50%)	-
Bank loan (2nd) Amount (Rs.) From which bank	10,000 to 15 members Canara	10,000 to 12 members Canara	200,000 ?	200,000 SBI	Total 30,000 (3 members) SBI	_	180,000 SBI	_
Interest rate	Bank	Bank						
(% per month)	1	1	1	1	1	-	1	-
Disbursement	1993	1993	2006	2006	2006	-	November 2006	-
Period (maximum) Period (actual) Restrictions in usage	18 months ? Cow	18 months ? Cow	? 40 months ?	50 months 37 months No (Gov. wanted members to buy goats)	? Pouse renovation		50 months 30 months No	
Subsidy	No	No	?	No	Yes (25%)	-	No	-
Bank loan (3rd) Amount (Rs.)	12,000 per member	?	_	_	200,000	_	-	_
From which bank	Indian Bank	?	-	-	SBI	-	-	-
Interest rate (% per month)	1	?	-	-	1	-	-	_
Disbursement	1996	?	-	-	December 2007	_	-	_
Period (maximum)	36 months	?	-	-	50 months	-	-	-
Restrictions in usage	No	?	_	_	No	_	_	_
Subsidy	Yes (33%)	?	-	-	No	-	-	-

 Table 2
 Profile of SHGs in Si Village

東南アジア研究 49巻1号

	ASS	EFA		PARI)/Dhan Found	lation		TNCDW
	West	East	Roja	Anjugam	Kanaki	Omsakti	Athiparasakti	No name
Bank loan (4th) Amount (Rs.)	50,000– 100,000	100,000– 200,000 to 8–13	_	_	_	-	_	_
From which bank	Canara Bank	members SMBT	-	-	-	-	-	-
Interest rate (% per month)	1	1	-	-	-	-	-	-
Disbursement	every 10 months after 1998	3 years for 2006/07/08	-	-	-	-	-	-
Period (maximum)	?	12 months	-	-	-	-	-	-
Period (actual)	?	12 months	-	-	-	-	-	-
Restrictions in usage	No	Cottage industry/ Small business	-	-	-	-	-	_
Subsidy	No	?	-	-	-	-	-	-
Training								
How many times	1	?	?	2	2	?	?	2
No. of participants	2	?	?	7 and 1	3 and 8	?	?	all members
Kind of traning	Pest management	?	?	Organic farming/ HIV consciousness	Accounting/ Organic farming	?	?	Cotton cultivation/ Milch animals
Remarks	Since 1994 or 95 monthly saving Rs.50; lending interest rate 2%/month	Monthly saving: Rs.100 since August 2008	Transferred to Dhan Foundation	Transferred to Dhan Foundation	Transferred to Dhan Foundation	Transferred to Dhan Foundation	Transferred to Dhan Foundation	Member increased to 15
Remarks	Since 2003 only 13 members	_	_	Monthly saving: Rs.50 since 2002 and Rs.60 since 2005	Monthly saving: Rs.50 since 2003 and Rs.60 since 2006	-	-	_
Remarks	Stopped in 2007	-	_	_	_	_	-	_

 Table 2 – Continued

Source: Prepared by the authors.

the accumulated savings (plus interest) were distributed among members once in 5 years.

For example, in the case of the "Si East SHG," the amount of Rs.1,000 of savings was collected (Rs.50 multiplied by 20 members), which was assumed to be lent back to a member at a 2% per month interest rate for 10 months. In the next meeting, the borrower had to repay Rs.120 (Rs.100 for principal and Rs.20 for interest) in addition to contributing the regular savings of Rs.50. Then, another member could borrow a maximum Rs.1,020 under the same condition. If such cycles are repeated, the total amount of savings (plus interest) became nearly Rs.100,000 within 5 years. According to the instructions, after 5 years the SHG is dissolved and the accumulated money is equally distributed to

the members, at nearly Rs.5,000 per person. Then, they start a new SHG activity again if they wish.

In the meantime, the SHG members could get bank loans. Actually, in 1993, all the members of the 2 SHGs received a loan from the Canara Bank amounting to Rs.10,000 in the case of rearing goats or sheep, and Rs.15,000 in the case of rearing poultry, usually for 1 year (maximum 3 years) at a 1% per month interest rate.⁶⁾ One-third of the principal was reimbursed as a government subsidy when borrowers repaid the loan. Almost at the same time, 27 members (15 from the "Si West SHG" and 12 from the "Si East SHG") obtained a loan from the Canara Bank for cow rearing worth Rs.10,000 per cow. The interest rate was 1% per month and the repayment period was usually one and a half years (maximum 3 years). No subsidy was provided in this case, however. The ASSEFA organized a milk society called the "ASSEFA Milk Society." They collected milk twice a day (3 AM and 3 PM) by visiting the village. However, the society's activity gradually lessened afterwards and finally stopped in 2005.

According to the former President of the "Si West SHG," the next bank loan they received was in 1996 from the Indian Bank. Rs.12,000 was borrowed by each member at a 1% per month interest rate. The repayment period was 3 years, but actually they completed repayment within 15 months. When they fully repaid, one-third (Rs.4,000) of the principal was reimbursed as a subsidy. After that, they continued to receive bank loans from the Canara Bank every 10 months. The loan amount ranged between Rs.50,000–100,000 for the whole group. The interest rate was 1% per month but there was no subsidy. However, when they (the 13 members) got the last loan from the Canara Bank worth Rs.70,000 in early 2007, a problem arose (a member disappeared after getting a loan, but the details were unknown) and finally the SHG discontinued its activity in February 2007. In 2010 there were still overdue worth Rs.5,600 in the Canara Bank.

On the other hand, the other group, named the "Si East SHG," was still active at the time of our survey. According to the President of the group, she remembered only the following three instances of the latest bank loans from the *Sarvodaya* Mutual Benefit Trust (SMBT), a subsidiary organization of the ASSEFA: Rs.100,000 in July 2006 which was distributed to 10 members, Rs.125,000 in 2007 to 8 members, and Rs.200,000 in 2008 to 13 members. The interest rate was 1% per month and the repayment period was 1 year. The "official" purposes of borrowing from SMBT were for promoting cottage industry, small business, etc.⁷⁾ but actually they said they used the loans mainly for agriculture and livestock. Sometimes they even purchased gold or invested in children's education.

⁶⁾ The actual interest payment to banks was 0.8–0.9% per month under the SHG program, but the spread between 1% and 0.8–0.9% was given to NGOs for covering their cost.

⁷⁾ According to our interview at the ASSEFA Thirumangalam Office in January 23, 2010, the SMBT gets loans from the Small Industries Development Bank of India (SIDBI) at a 9% per annum interest rate and they sub-let it to their SHGs at a 12% per annum interest rate.

II-2.(2) PARD

Another NGO, the People's Association of Rural Development (PARD), was the second organizer of SHGs in Si Village. In 1999, they started to organize SHGs and a total of 7 SHGs were established by 2004. The following is the results of the interview conducted in January 2010. Note that an SHG named "Muthalammam," which stopped its activity in 2006 due to some internal conflict, was omitted from the description below.

a) "Roja"

An SHG named "Roja" was established under PARD in April 1999, with 20 women members. They saved monthly Rs.50 per person and the interest rate charged for borrowers in the group was 2% per month. After 6 months, they received a loan of Rs.25,000 from the MDCC Bank to use it as a "revolving fund."

In the meantime, they took bank loans. The first loan was Rs.200,000 to the whole group with free interest from the State Bank of India (SBI) in 2001, which was equally distributed among the members. They repaid the loan within 50 months. Then, in 2006, they again received a loan of Rs.200,000 with a 1% per month interest rate (the name of the bank is unknown). They repaid a total of Rs.6,000 per month (for around 40 months).

b) "Anjugam"

Another SHG named "Anjugam" was established in March 2001 with 20 women members.⁸⁾ The monthly saving was set at Rs.30 per person at first. They were also given a "revolving fund" amounting to Rs.25,000. They received the first bank loan (total Rs.200,000) from the MDCC Bank in August 2002 with a subsidy of 50% of the principal, and later in 2006 they received a bank loan again from the SBI at a 1% per month interest rate without government subsidy.

c) "Kanaki"

Another SHG named "Kanaki" was organized in September 2001 with 20 women members. The amount of monthly savings was set at Rs.30 per person at first.⁹⁾ They also received a loan of Rs.25,000 as a "revolving fund," which was repaid within 7 months, and obtained a subsidy of Rs.10,000. In 2003, they received the first loan from the MDCC Bank amounting to Rs.200,000 with a 1% per month interest rate. They had an obligation to purchase goats with the loan. They had to repay the loan within 20 months, but actually repaid in 12 months. Half of the principal (Rs.100,000) was reimbursed as a sub-

According to the respondent, out of 20 members, 15 members were selected by the PARD, and the remaining 5 members were recruited by the selected president of the group.

⁹⁾ Later they increased the amount to Rs.50 in 2003 and further to Rs.60 in 2006.

sidy. The next loan they received was from the SBI, which provided Rs.10,000 to 3 members for house renovation with a 1% per month interest rate (Rs.2,500 was reimbursed as a subsidy). The third loan (without subsidy) was also from the SBI in December 2007, amounting to Rs.200,000 in total which they could use for any purposes. They had to repay it within 50 months, but actually completed repayment in 20 months.

In addition, they participated in training courses organized by the PARD as follows: 3 members attended a training of accounting in 2001 for 3 days (participants were provided with a daily allowance of Rs.60 per day), and 8 members attended a training of organic farming in 2005 for 7 days (a daily allowance of Rs.70 was provided).

d) "Omsakti"

Another SHG named "Omsakti" was established in March 2004 with 20 women members. They saved Rs.50 per month, and the members could borrow it at a 2% per month interest rate. In June 2007, they received a loan from the SBI at a 1% per month interest rate, but without subsidy. They repaid it in December 2009.

e) "Athiparasakti"

The last SHG, named "Athiparasakti," was established in March 2004 with 20 women members. They saved Rs.60 per month and the members could borrow it at a 2% per month interest rate. They received a loan from the SBI Rs.200,000 at a 1% per month interest rate. Goats had to be purchased with the loan. They had to repay it within 48 months, but actually repaid in 12 months. They were reimbursed a subsidy of 50% of the principal. In November 2006, they again received a loan from the SBI amounting to Rs.180,000 at a 1% per month interest rate (without subsidy). There was no restriction in using the loan. They actually purchased gold, repaid other loans, invested in children's education, or used the money for social ceremonies.

It should be noted here that all the SHGs belonging to PARD decided to be transferred to the Dhan Foundation after the PARD made an announcement to withdraw from the SHG program at the time of our survey in 2010.

II-2.(3) TNCDW

An SHG was organized by the Tamil Nadu Corporation for Development of Women, Ltd. [TNCDW 2010] in February 2006 with 12 women members. They saved Rs.50 per month and the members could borrow it at a 2% per month interest rate. They were provided Rs.10,000 as a "revolving fund" from the Department of Agriculture, Tamil Nadu. All the members also joined a training course of cotton cultivation for 4 days (every Monday for 4 weeks) in January 2009. In addition, 12 members joined a

training course for milch animals for one day in February 2009 at Thirumangalam Town.

II-3. Discussion

To summarize, it can be said that in the study village, the major objective of the micro-finance schemes, including the IRDP and the SHGs, was to encourage rural poor women to keep livestock such as milch animals (buffaloes and hybrid cows) at first and goats/sheep later. It seems that the shift from milch animals to goats/sheep was mainly attributed to 1) the recent change to a drier climate in the study area, represented by more frequent droughts occurring in the 21st century, and 2) the labor shortage, especially shortage of male labor among the rural households.

The "Si Milk Society" was active during the 25 years from 1980 to 2005. In addition, the "ASSEFA Milk Society" was established in the early 1990s and continued its activity also until 2005. It seems that these milch animal projects played an important role in providing the villagers with valuable supplementary income.

On the other hand, provision of goats/sheep to the villagers through the SHGs also seems to play a certain role on the uplift of livelihood among the villagers, but the beneficiaries were not mainly the poor households, as described below.

Finally, Table 3 shows the distribution of the SHG members among the five economic classes in the study village. First, it can be pointed out that despite the government's intention, the SHG women members in Si Village were not only from the poor households; on the contrary the percentage of households joining the SHGs was the highest among "upper middle" and "middle" at more than 70%. By contrast, the percentage of the rest of the three classes was only between 40–55%, much lower than the aforementioned two classes. Second, there were 22 women who participated in two SHGs and 9 women who participated in 3 SHGs. The result of scrutiny was that 12 members out of 15 TNCDW members were also members of other SHGs; 13 members out of 18 ASSEFA East members were also members of the other SHGs; 6 members were the participants of 2 PARD SHGs; and all the members who participated in 3 SHGs were members of TNCDW.

III Rural Financial Market and the Impact of SHGs in the Study Village

Now we proceed to analyze the structure of the financial market in the study village, including the SHGs, by economic class (Table 4). The table shows the outstanding loans borrowed by the village households from informal sources. The informal sources included relatives, neighbors, moneylenders, land mort-gage (*otti*), and the SHG revolving fund.

FUJITA K. and SATO K.: Self-Help Groups and the Rural Financial Market in South India

	No. of	No. of HH	No. of HH	No. of HH			ASSEFA		PARD/	Dhan Fou	indation		
Class	HH	Participating in 1 SHG	Participating in 2 SHGs	Participating in 3 SHGs	Total	Percentage	East	Roja	Anjugam	Kanaki	Omsakti	Athipara- sakti	TNCDW
Upper	15	4	2 ¹⁾	1 ⁶⁾	7	46.7	2	1	2	4	1	0	1
Upper middle	17	6	6 ²⁾	17)	13	76.5	2	1	4	2	2	5	5
Middle	37	17	5 ³⁾	6 ⁸⁾	28	75.7	8	8	5	9	5	3	7
Lower middle	39	15	$5^{(4)}$	1 ⁹⁾	21	53.8	2	4	6	3	4	7	2
Lower	26	7	4 ⁵⁾	0	11	42.3	4	2	3	1	3	2	0
Total	134	49	22	9	80	59.7	18	16	20	19	15	17	15

Table 3 Distribution of SHG Members to Five Economic Classes in the Study Village

Source: Prepared by the authors.

Note: 1) East/Anjugam; Roja/Omsakti

²⁾ East/Roja; Anjugam/Anthiparasakti; Anjugam/TNCDW (2); Kanaki/TNCDW; Anthiparasakti/TNCDW

³⁾ East/Anjugam; East/Kanaki; Roja/Omsakti; Kanaki/Omsakti; Roja/TNCDW

⁴⁾ East/Roja; East/Anjugam; Roja/Anthiparasakti; Anjugam/Anthiparasakti; Roja/TNCDW

⁵⁾ East/Roja; East/Anjugam; East/Omsakti; Roja/Omsakti

⁶⁾ East/Kanaki/TNCDW

7) East/Omsakti/TNCDW

⁸⁾ East/Roja/Kanaki; East/Roja/TNCDW; East/Kanaki/TNCDW (2); East/Anjugam/TNCDW; Anjugam/ Kanaki/TNCDW

9) Roja/Omsakti/TNCDW

Relatives were divided into three categories: one were relatives between parents and children (household already divided), the other were relatives who had migrated from the village, and the last were the other relatives, including in and out-side the village. The latter two types of relatives sometimes play an important role in providing the necessary costs for higher education, as argued in Sato [2011] in this special issue. All the credit transactions among the relatives are made without charging interest, and sometimes even the principal is written off.

On the other hand, neighbors usually provide only a small amount of money without charging interest, which is locally called "*kaimathu*." The term "*kaimathu*" literally means "money returned by labor works" and it had been widely observed between rich-patrons and poor-clients before. Such a practice used to be concentrated among poor women in female-headed households. For instance, if a poor woman borrowed Rs.600 from a patron (farmer) she repaid it by giving her labor for 12 days (given the prevailing wage rate of Rs.50).¹⁰⁾ Repayment by labor works was not confined to farming but extended also to household works such as sweeping. However, at the time of our survey, such a practice between patrons and clients had almost disappeared, and instead small money transactions among the poor households without interest, also called "*kaimathu*," were observed.

¹⁰⁾ As a practice in the study village, interest was charged in the case of borrowing for more than 2 weeks, therefore loans for less than 2 weeks were more commonly observed.

東南アジア研究 49巻1号

								Info	mal Fina	incial Sou	rces					
		TITI			Rela	tives							T.	1	CI	IC
Class	No. of HH	Borrowing from Informal	Paren Relat Separat	t-child ion in ied HHs	Rela Migrat Si Vi	tives ed from illage	Ot Rela	her tives	Neig	hbors	Money	lenders	La Mort (oi	ind igage tti)	Revo Fu	olving and
		Sources	HH	Range of Loan Amount	HH	Range of Loan Amount	HH	Range of Loan Amount	HH	Range of Loan Amount	HH	Range of Loan Amount	HH	Range of Loan Amount	HH	Range of Loan Amount
Upper	15	9											5	5,000– 125,000	7	1,500
U. Middle	17	15	1	NA	1	25,000	2	10,000 - 50,000	1	NA			8	7,000– 15,000	13	600– 5,000
Middle	37	34	2	NA	3	10,000 - 20,000	5	5,000– 45,000	8	500	7	5,000– 45,000	6	5,000– 20,000	27	900– 5,000
L. Middle	39	31	2	NA	4	10,000 - 60,000	1	25,000	4	3,000– 4,000	4	10,000 - 30,000	7	5,000– 12,000	21	$^{1,000-}_{2,700}$
Lower	26	20	1	NA	2	80,000	1	NA	6	100– 1,000	7	8,000– 25,000	1	3,500	11	1,800
Total	134	109	6		10		9		19		18		27		79	

Table 4 Informal Borrowings by Source of Funds

Source: Fieldwork by the author in 2007-09.

Notes: Other relatives include households whose living place is unknown (some may include migrated households).

"Moneylenders" here refers to village moneylenders. There were 10 moneylenders (from 8 households) in the study village, 7 from the "upper," 2 from the "upper middle," and 1 from the "middle" classes respectively. At the time of the survey, households which had borrowed from moneylenders were: 7 "middle," 4 "lower middle," and 7 "lower" households. The interest rates charged by the moneylenders were usually 3% per month, but sometimes 1–2% per month, depending on the relationship between both parties. According to our field survey, the interest rate charged by moneylenders was as high as 5–10% per month until the end of the 1980s, but after the introduction of SHGs, it declined to 1–3% per month. This seems to be one of the most notable impacts of SHGs on the financial market in the village. However, at the same time, it should be noted that, nevertheless, not a few households, especially poorer households, still had to depend on moneylenders. And the amount of money borrowed from moneylenders was found to be large; all the cases exceeded Rs.5,000, and some went up to Rs.45,000. If this is compared to the amount of money borrowed from the SHG's revolving fund, the limitation of SHGs in the village is evident (Table 4).

Finally, borrowing money by mortgaging farmland (*otti*) was also observed widely in the village. Usually Rs.10,000 per acre of farmland should be deposited to those who lent money. One can borrow substantial amounts of money through land mortgage, but of course it is only possible for landowners. It can be discerned from Table 4 that when poor villagers want to borrow the amount which landowning villagers can borrow through land mortgage, they usually have to rely first on relatives, if available, and second on moneylenders, if there are no such relatives.

Let us now turn our attention to the formal credit, mainly from banks (Table 5). It should be noted

FUJITA K. and SATO K.: Self-Help Groups and the Rural Financial Market in South India

		06 (Comr	mercial a	nd Coop	Banks		No. of SHG-Bank Linkage				e	No. of	
		Onice (i	mintary)				Us	age		SHG Members	Usage				HH Borrowing	
Class	No. of HH	нн	Range of Loan Amount	No. of HH	Range of Loan Amount	Agri 1)	House repair	Education	Others 2)	Borrowing from Banks at least once	Agri 1)	House repair	Education	Others 2)	from Banks through SHG Only	Percentage
Upper	15	3	60,000- 100,000	8	15,000 - 350,000	7	1		1	7	4			3	3	42.9%
U. Middle	17			6	8,000– 300,000	3	2	1		13	3	1	2	5	7	53.8%
Middle	37			20	12,000– 75,000	9	6	2	2	27	7	2	1	5	10	37.0%
L. Middle	39			9	10,000 - 25,000	8		1	4	21	5	3		2	18	85.7%
Lower	26			4	2,500– 5,000	1	1		2	11	1	2		5	10	90.9%
Total	134	3		47		28	10	4	9	79	20	8	3	20	48	35.8%

Table 5 Households with Loans from Formal Sources

Source: Field work by the author in 2007-09.

Notes: ¹⁾ Includes money for renting-in land and livestock rearing.

²⁾ Includes consumption and medicine.

here that all the 79 households which participated in SHGs got a bank loan at least once, but at the time of our household survey in 2008 only 3 SHGs, the ASSEFA East, the "Kanaki," and the "Omsakti," had outstanding bank loans. The usage of bank loans through SHGs in the table shows the latest case of bank loans. The major findings from the table are as follows.

First, a loan from the military office was observed only among the "upper" class households. Second, the amounts of bank loans other than through the "SHG-Bank Linkage program" were usually much larger than the bank loans through SHGs, which were usually only Rs.10,000 per member. Third, bank loans through SHGs were used by the borrowers more for consumption, including medical expenses. Fourth, however, most of the borrowers from banks among the poorer households could first borrow from banks after joining the SHGs. For example, out of 14 households with bank loans in the "lower" class household, 10 households (71.4%) received bank loans only through SHGs, and out of 27 households with bank loans in the "lower middle" class, 18 households (66.7%) received bank loans only through the SHGs. In this sense, we can recognize a notable impact of the SHGs. However, it should also be noted that the small amounts that could be borrowed from banks through SHGs had an apparent limitation, if we consider that the poor households sometimes had to depend on moneylenders when they needed an amount of money far exceeding Rs.10,000.

To sum up, the SHGs had had favorable impacts on the financial market in the study village to some extent, although there was an apparent limitation. The major limitation was due to the small size of loans through SHGs, either from its revolving fund or from banks. Another major limitation of the SHGs lay in the fact that the poorest people found it difficult to join SHGs, especially women from the female-

headed households. That is, out of 13 female-headed households in the "lower" class only 3 households (23%) joined SHGs, compared to 42% in the class as a whole, and similarly, out of 13 female-headed households in the "lower middle" class only 6 households (46%) joined SHGs, compared to 54% in the class as a whole. Here again we confirmed the stylized fact that micro-finance tends to bypass the poorest people.¹¹

On the other hand, at the same time we need to emphasize the significance of the SHGs for the non-poor in the study village, because as noted before, the percentage of households joining SHGs was the highest among "upper middle" and "middle," compared to the remaining three classes. That is, out of a total of 17 households in the "upper middle" class, 13 households (76%) joined at least one SHG, and out of the 13 households 7 (54%) joined in more than 2 SHGs. Similarly, out of a total of 37 households in the "middle" class, 28 households (76%) joined at least one SHG, and out of the 28 households (11 (39%) joined more than 2 SHGs. The same figures for the "lower middle" class were 54% and 29%, and for the "lower" class 42% and 36%, respectively. The same figure for the "upper" was also lower; 47% and 43%.

According to our interview with a branch post master in the post office at the study village in January 2010, the number of various long-term deposit accounts such as time deposits, recurrent deposits, and accounts under the "Rural Postal Life Insurance" has been increasing rapidly in recent years. The number of time deposits (1 year, 2 years, 3 years, and 5 years) was 25 in the study village (with 134 households), most of which were for 1 year or 2 years, with an interest rate of 6.6% per year. The average saving amount for time deposit was Rs.5,000–15,000, and the maximum was Rs.60,000.

The number of recurrent deposits was roughly 300, including the two villages adjacent to the study village. Usually villagers saved Rs.50–200 per month (maximum Rs.500), for 3–5 years. They can get an accumulated amount of savings with interest (the interest rate was 7.5% per year). Lastly, the number of accounts under the "Rural Postal Life Insurance" was 42 in the study village. In addition, it was found that there were many villagers who saved in a private life insurance company whose staff came to the village regularly.

In sum, in recent years there have been increasing opportunities to save in various forms for the villagers. It seems that one of the saving opportunities was the SHGs. If one joins an SHG, the monthly saving is Rs.50 and after 5 years she can get roughly Rs.5,000. If she joins 2 SHGs, monthly saving becomes Rs.100 and after 5 years she can get Rs.10,000. Similarly, in the case of joining 3 SHGs, she can get Rs.15,000 after 5 years. Since the mid-1990s, the shift of occupation from agriculture to

¹¹⁾ For instance, see Fujita [2000] on the case of Bangladesh.

non-agricultural sectors has accelerated and the income of rural households started to rise rapidly in rural Tamil Nadu, including our study village [Sato 2011]. It seems that this context accounts for the emergence and rapid rise of surplus money in the hands of rural residents (except for the poorest), which has started to be saved in various forms,¹² one of which was the savings in the SHGs.

Concluding Remarks

In this article, we analyzed the process of introduction and development of the SHGs in a study village, which was located in the Madurai District. Then, we tried to evaluate the impacts of the SHGs on poverty alleviation in the village. We found that the SHGs had certain impacts on poverty alleviation through the decline of interest rates in the informal financial market, although there was an apparent limitation. The major limitation arose from the small size of loans through the SHGs, either from its revolving fund or from banks, but another major limitation of the SHGs lay in the fact that the poorest people found it difficult to join the SHGs, especially the poorest women from the female-headed house-holds. On the other hand, in recent years, there were increasing opportunities for village people to save in various forms. Since the mid-1990s, the shift of occupation from agriculture to non-agricultural sectors has accelerated and the income of rural households started to rise rapidly in rural Tamil Nadu, including our study village. And the increased income allowed many villagers to save SHG provided the villagers with one of such saving opportunities, along with banks, post offices and life insurance companies, etc.

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¹²⁾ Besides post office and life insurance companies, we observed that a special form of chit fund, which stemmed from the word "chitty" in Tamil (indicating a written piece of paper used for allotment), was used in Si Village before. According to a village informant, the neighborhood women used to get together regularly to pool some money to create a fund, which was then used to prepare sweets for the *Deepavali* festival. The sweets were distributed to all the members. But today this practice has already disappeared.

東南アジア研究 49巻1号

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Deterioration of the Informal Tank Institution in Tamil Nadu: Caste-based Rural Society and Rapid Economic Development in India

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Abstract

The informal tank institution seems to have functioned relatively well in Tamil Nadu, India, at least until the early 1970s. The institution had been supported by three layers of irrigation functionaries at village level. Especially important was the role of the lower irrigation functionaries such as the water-turner (*Neerkatti*), who had been conducting important tasks such as sluice operation, field water management and others. Based on the authors' recent field survey in seven tank-benefitted villages in Madurai District of Tamil Nadu, especially interviews with 31 *Neerkatti* families, after discussing physical and socio-economic factors which caused the deterioration of tank irrigation and the village-level informal tank institution, the paper focuses on the current status of institution, including how rules and regulations, and the sanction system on violators and related systems are functioning, and analyzes the current socio-economic status and perceptions of the *Neerkattis*. It emphasizes the contradiction between the traditional caste-based society, which governs the informal tank institution, and the recent rapid economic development in India.

Keywords: informal tank institution, Neerkatti, caste, economic development, Tamil Nadu

Introduction

The interruption of the southwest monsoon by the Western Ghats Mountains makes the climate of south India semi-arid, except Maravar coasts. Tanks (water reservoirs) for irrigating paddy field, therefore, are a common feature of the south Indian cultural landscape. In Tamil Nadu, for instance, there are more than 39 thousand tanks at present, many of which were built in the 18th and 19th centuries by kings and *zamindars*, and even by British rulers [Palanisami and Easter 2000: 9]. With some exceptions such as the Kaveri River Delta, irrigated paddy production came to be possible only by constructing tanks, replacing the hitherto long-fallow slash and burn combined with pastoralism and forest-based

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livelihoods [Mosse 2003: 61]. In the case of southern Tamil Nadu, before the British rule, expanding tank irrigation and the interlinking of isolated tanks (and villages) through new channels or diversions brought socially diverse settlers into hydrological, economic, and political units at higher levels under the authority of Maravar warrior chiefs [Breckenridge 1985: 45]. The prosperity level and the size of the villages in semi-arid regions of south India were directly proportional to the size and performance of irrigation tanks [Someshwar 1999].

Tanks, as common property, were inextricably linked to the social web of rural life and have been predominantly managed by informal institution with local customs and norms. The institution has long been practiced by the people continuously to address inherent uncertainties of the common resources. However, tank irrigation has been reducing its importance after the independence of India, especially since the 1960s, when groundwater irrigation through the installation of wells started to grow rapidly. During the 1950s, nearly 40% of net irrigated area in Tamil Nadu were irrigated by tanks, but presently this figure has decreased to less than 20%, while the share of wells increased from around 25% to nearly 50% [Palanisami and Ester 2000: 28]. Along with this, although the informal tank institution seems to have functioned relatively well at least until the early 1970s, it started to malfunction thereafter, and its deterioration seems to have accelerated after the mid-1990s, when influences of urbanization began to be felt more directly and intensively in rural areas.¹

One of the major factors which caused the deterioration of informal tank institution was the introduction of private wells, because it enabled farmers to reduce their dependency on tanks [Kajisa *et al.* 2007]. The influence of urbanization, on the other hand, increased especially since the mid-1990s, and caused 1) the shift of occupational structure from farming (including agricultural labor) to off-farm activities, with increased migration to urban areas and increased wage rate in agriculture, and 2) the accelerated encroachment of tank foreshore by factories, public buildings, residences for sub-urban

¹⁾ However, we need to be reminded that "in purely physical terms tanks are not stable structures and require constant re-building.... And unlike river irrigation, investment in tanks was always risky, carrying uncertain returns.... At any historical point, therefore, a significant proportion of tanks would have been in disrepair or abandoned" [Mosse 2003: 83]. Early 19th century surveys by the British, for instance, classified up to 30% of tanks as "unusable" [*ibid*.: 82]. Therefore, if we consider that tank systems started to deteriorate only recently, it is totally contrary to the historical facts. Another major illusion widely shared is the image of autonomous villages and the stable resource management of tanks by such village communities. "Dealing with the uncertainties of tank-irrigated agriculture ... has always involved institutions well beyond the village. From medieval times, this form of agriculture has involved risks—the devastation of floods or warfare, the risk of drought or shortage from a neglect of tanks—and has demanded investment (in maintenance and repairs) which are beyond the capacity of communities of cultivators" [*ibid*.: 5]. "The pre-colonial state was redistributive in the sense that through gifting villages and tanks, tax-free land grants and a share revenue system, a significant proportion of the surplus notionally extracted by the state was fed back into irrigation maintenance and agricultural production" [*ibid*.: 80].

M. JEGADEESAN and FUJITA K.: Deterioration of the Informal Tank Institution in Tamil Nadu

people, or others. The informal tank institution has come under tremendous pressure because of state and market intervention, person-oriented political patronage and political encouragement of encroachment [Nadkarni 2000].

The major objective of this paper, based on recent field survey in seven tank irrigated villages in southwestern part of Madurai District of Tamil Nadu, is to delineate the current status of tank irrigation and the informal tank institution, and to clarify in detail the factors which caused the deterioration of tank systems. Special emphasis will be made on the changing role of the water-turners, *Neerkattis*, key persons in such an informal tank institution; they have been playing vital roles such as distributing water equitably through sluice operation, mediating disputes among farmers, facilitating water supply to tanks, organizing and coordinating mobilized labor for tank maintenance and lobbying the government for better tank management [Palanisami and Balasubramanian 1998]. They are the specialists in water management, having rules to allocate water in times of scarcity, on the basis of detailed knowledge of the needs of individual wetland fields, thus mitigating usual tension between head and tail-enders [Mosse 2006]. The discussion on *Neerkattis* is critical, considering the services they render to informal tank institution.

However, *Neerkattis* have been hired from some particular scheduled caste (SC) families with a hereditary system. The informal tank institution has been a caste-based hierarchical system, governed by upper caste people but actually implemented by SC people. The traditional system often functions as an institution of upper caste dominance and a vestige of a much wider set of caste-based privileges and rights over village resources [Mosse 1997]. Therefore, the informal institution has often been criticized on account of its being invented and manipulated, its gender bias and caste orientation, and its abuse of power in the changing socio-economic scenario. The increasing tension and conflict among upper and lower castes in recent years is one of the most important reasons for the recent deterioration of informal tank institution, as Mosse [2006] described in detail in one of his study villages, Vayalur, located in the upper part of Saruganj minor basin where water was (and had been until very recently, i.e., the mid-1990s) controlled, through sophisticated water rationing systems.²

Our study area (southwestern part of Madurai District) belongs to the same type of area as that to which the Vayalur Village belongs, where tanks have been functioning relatively well until very recently. We will describe and analyze how the informal tank institution deteriorated even in such an area,

²⁾ In 56 out of the 57 villages surveyed in the upper part of the catchment, water was controlled [Mosse 2006]. "By contrast, in the management of every one of the 22 tanks surveyed in the lower part of the catchment such institutions were today (in the mid-1990s) wholly absent" [Mosse 2003: 219]. Mosse made an interesting argument regarding the reasons for the difference between the two regions. See chapter 7 of Mosse [2003] for details.

focusing on the resistance and challenge posed by the hitherto subordinated untouchables (SC people) against the hierarchical caste-based management system of tanks, just as Mosse [2006] did in his study village. However, the major differences between Mosse's work and ours are: 1) our analysis of the factors behind the deterioration of the informal tank institution as well as its current status will be much more in detail and comprehensive than that provided by Mosse; and 2) whereas Mosse dealt with the period until the mid-1990s, we will extend the period up to the late-2000s, considering that after the mid-1990s urbanization started to be felt more directly in rural Tamil Nadu, which seemed to have accelerated the deterioration of informal tank institution. Our focus of analysis will not only be confined to inter-caste conflicts but also extended to various other factors, including economic and sociopolitical ones.

The composition of the paper is as follows. The next chapter identifies the factors and mechanisms behind the recent deterioration of the informal tank institution. The second chapter presents an outline of the study villages and tanks. The third chapter delineates the current status of the informal tank institution in the study villages. The fourth chapter discusses the determinants of the performance of the informal tank institution. The fifth chapter shows the current status and perceptions of the *Neerkattis* in the study village. And finally, we conclude.

I Factors and Mechanisms behind the Deterioration of Tank Irrigation

A tank is a water reservoir, which is constructed by building a crescent-shaped bund along the contour line. The channel(s) to collect rainfall water and/or stream water from the upper basin is called a supply channel. Each tank has a sluice (often more than one), from which stored water is taken out and, through field channels, distributed to paddy field located in the lower side of the tank. Tanks usually have no water in the lean season, but after the northeast monsoon starts, they collect water from the upstream area and the water level gradually rises. Once a tank is full, the sluice is opened (but remains closed during the night and the rainy days) and the paddy field is irrigated. Even after utilizing the entire water in the tank, if the tank stores water in another round, farmers can use it for additional cropping. The sluice operation and the filed water management and distribution, the most important tasks in tank irrigation, were carried out by *Neerkattis*, traditionally selected from a particular SC in a hereditary system. They were paid in kind (paddy) by farmers according to the irrigated area. Tanks have surplus weirs, through which excess water flows to the downstream, thereby protecting the tank bunds from breaching. The tanks and small streams in a river basin are complexly interconnected and the surplus water of one tank goes to the other downstream-located tank or to the stream again.

M. JEGADEESAN and FUJITA K.: Deterioration of the Informal Tank Institution in Tamil Nadu

At present, in Tamil Nadu, there are many open wells in the command area (*ayacut*) of tanks as well as in dry land. The wells were usually dug long before, and groundwater used to be lifted by bullock power. However, since the 1970s (in the case of Madurai District), with the introduction of electrified motor, the groundwater level went down rapidly, and well owners were obliged to dig deeper and deeper open wells, before bore-wells were finally introduced, in which tubes were inserted from the bottom of open wells to a deeper site (sometimes horizontally) to get deeper groundwater. Thus groundwater could be lifted much more efficiently, although well owners had to drill wells deeper and deeper to compensate for the declining groundwater level. Such developments in groundwater irrigation reduced the reliance of farmers on tank water. However, even well owners continued to use tank water when it is available, and more fundamentally, since groundwater is basically recharged by tanks, tanks cannot be totally neglected.

Given the basic technical information on tank irrigation aforementioned, let us now explain the major points of Fig. 1,³⁾ which summarized the factors and mechanism behind the recent deterioration of the informal tank institution, based on literature review as well as our own research experiences.

I-1. Frequent Monsoon Failures in the First Half of the 2000s

In the study area, in 3–5 years out of every 10, tanks fail (with no water at all) and in 2 years tanks under-perform (with insufficient water for irrigating all the command area). In other words, only once in 3 to 5 years do tanks perform well. The effects of the severe droughts experienced in the study area during the first half of the 2000s⁴ cannot be overlooked, because many farmers became so disappointed that they finally decided to abandon their farmland (including land in command area) and leave it fallow, resulting in the intrusion of a thorny shrub called *Prosopis juliflora*. And since the removal of this shrub was very difficult, many farmers were obliged to let the tree grow and cut it once in 2 to 3 years to sell it. Severe droughts accelerated the already progressive exit from agriculture by farmers in the area, following the rapid development of non-agricultural sectors. Needless to say, the accelerated job shift of the irrigation functionaries such as *Neerkattis* also greatly damaged the informal tank institution.

I-2. Consequences of Diffusion of Energized Wells

The diffusion of energized (electrified) wells led to the declining importance of tanks for farmers (even though there is an aforementioned connectivity between tank water and well water). The energized

³⁾ Caste discrimination and the resulting conflict among different caste group, one of the important factors, will be discussed later in the article.

⁴⁾ See Fujita [2011] in this issue.

東南アジア研究 49巻1号



Fig. 1 Factors and Mechanism of Deterioration of the Informal Tank Institution

wells enabled well owners to reduce their reliance on tank water, thereby making them reluctant to participate in common work for tank maintenance (such as cleaning supply channels, field channels and strengthening tank bund before starting the tank season) and even pay remuneration to *Neerkattis* and other irrigation functionaries. The declining trend of common work for tank maintenance caused the deterioration of tank structures and reduced water storage in the tank, which again resulted in decreased reliance of farmers on tank water (and more on well water) on the one hand, and an accelerated exit from agriculture, which increased fallow land and, in a vicious cycle, reduced the number of farmers who participate in common work, on the other hand. Reluctance to pay remuneration to *Neerkattis* contributed directly to the deterioration of the informal tank institution.

I-3. Encroachment of Tank Foreshore and Siltation of Tanks

Encroachment of tank foreshore has progressed for various reasons. One was the reclamation of foreshore land for cultivation purpose. Another reason was the development of factories, residential areas and others for non-agricultural purposes. A third reason was the development of infrastructure such as road and check-dams. The impact of the encroachment of tank foreshore seems to be very large, because it sometimes induced a sharp reduction in the amount of stored water in the tanks. Moreover, the capacity of tanks to store water is reduced as well by gradual siltation. Note that dredging soil to use it for manuring farmland is not attractive because only the surface soil is fertile. About 10–20% of water storage area has been encroached on average, and tanks lost about 30% of their storage capacity [Palanisami and Easter 2000: 12]. Therefore, even though rainfall is good enough to provide necessary water, tanks are usually not in a position to store enough water, which further aggravates the uncertainty of water storage in tanks.

I-4. Development of Non-agricultural Sectors and Migration to Urban Areas

The most fundamental factor behind the deterioration of the informal tank institution in recent years was the overall economic development in the study area, especially the development of non-agricultural sectors, which precipitated the declining importance of agriculture as a source of income, the increasing shift to non-agricultural jobs, and migration to urban areas. The occupational shift is most prominent among the younger generations. An inevitable result is reduced labor participation in common work for tank maintenance, especially what requires large-scale labor mobilization. The sanction system against violators of rules and regulations also weakened. Reduced common work, in addition to the encroachment of tank foreshore, caused the drastic reduction of water storage in tanks, which lowered the profitability of paddy cultivation and thus accelerated farmers' exit from agriculture. Such a shift to non-agricultural jobs again reduced farmers' incentives to participate in common works, thereby creating a vicious circle.

Under such circumstances, especially the reduced storage capacity of tanks, it was quite natural that villagers such as *Neerkattis* who had been earning their livelihood on tank-related work became increasingly reluctant to continue their works because their income depended on the performance of tank irrigation (and moreover, they did not even have any income when tank failed during severe drought). More importantly, under rapid economic development and the resulting wage surge in India (including the study area), *Neerkattis* and other irrigation functionaries who belong to SC can now more easily find alternative jobs in factories or construction sites, or others that offer more attractive and stable remuneration. In addition, through their accumulated wage income, they started to mortgage-in or even purchase farmland and operate the land by themselves.

I-5. Negative Effects of the Government Program

Sometimes the deterioration of informal tank institution is, ironically, caused by the efforts of government programs to improve/modernize tank structures. In the study area, especially, tank modernization program financed by the European Economic Community (EEC) was carried out during the first half of the 1990s. The first phase was from 1989 to 1991 and the second phase from 1993 to 1995. Since the establishment of the formal Water Users' Association (WUA) was mandatory for this program, problems arose because in some villages the officials from the Public Works Department (PWD), responsible for large-scale tanks with more than 100 acres of command area (*ayacut*), formed a totally new WUA without considering the existing informal institution. This lead to the deterioration of both formal and informal institutions, owing to the neglect of the WUA by the PWD after the project was over (as argued later in this paper).

II Outline of the Study Area and the Tanks

Now let us move to the empirical study. Seven villages from Peraiyur *Taluk* of Madurai District, approximately 60 km southwest from Madurai City (Fig. 2), were selected for study. The Peraiyur *Taluk* is located in the western-most part of the Madurai District, just at the foot of the Western Ghats Mountains; i.e. the rain shadow region with an average rainfall of only 700 mm (the same figure in Madurai District ranges from 700 to 1,150 mm). However, it should also be noted that the study villages are located in the uppermost part of the river basin and their tanks thereby benefit from the water directly, or nearly directly, flowing from the Western Ghats Mountains.

As Fig. 2 illustrates, the 7 villages are concentrated in a narrow geographical area in the southeastern part of the *Taluk* and belong to 5 *gram panchayats* (GP, hereinafter): 2 villages belong to a GP and the other 2 villages belong to another GP, while the remaining 3 villages belong to the other different GP respectively (Table 1). The relation between GP, villages and tanks is sometimes complex and in the case of our study area, the tank in Koovalapuram Village benefits other 2 villages under the same GP. The tank in Silaimalaipatti Village also benefits another village under the same GP, whereas Jariusilampatti Village is benefited by two tanks, which are, however, managed by the same informal tank institution in the village.

Table 2 shows the basic population characteristics of the 7 study villages. As the table shows, Meenachipuram and Jariusilampatti are typical cases of single-caste (*jati*) villages,⁵⁾ whereas Koovalapuram, Kadaneri, Silaimalaipatti and Sittuloti are multi-caste villages.⁶⁾ The informal village governing system in multi-caste villages is complicated compared to single-caste ones. In Koovalapuram, for instance, there were seven caste groups, and the five caste groups except *Vannan* and *Sakkiyar* had

⁵⁾ Single-caste villages include not only purely single-caste villages, but also villages with a dominant caste group and several very minor groups.

⁶⁾ In the village Kadaneri, however, the SC people (194 households out of total 387 households) live in a part of the village that is called Keela Karaderi and distinguished from the other parts of the village called Mela Kadaneri. But geographically these two "villages" are not separated.



Fig. 2 Map of the Study Area

Name of the Village	Name of the gram panchayat	No. of Villages in the <i>gram</i> <i>panchayat</i>	No. of the Tanks in the gram panchayat	No. of Tank Selected from the Village	No. of Villages Benefitted from the Selected Tank
Koovalapuram	Koovalapuram	4 (Koovlapuram, Meenachipuram, K. Pudupatti and Chinnayapuram)	2	1	3 (Koovlapuram, Chinnayapuram and K. Pudupatti)
Meenachipuram	Koovalapuram	Same as above	2	1	1
Kadaneri	Kadaneri	1	1	1	1
Silaimalaipatti	Silaimalaipatti	4 (Silaimalaipatti, Pappureddipatti, Colony and Pokklapatti)	1	1	2 (Silaimalaipatti and Pokklapatti)
A. Paraipatti	Sithilothi	5 (Periaya sithilothi, China sithilothi, A. Paraipatti, Kavetnayakkan patti and Jariusilampatti)	5 (each village has one tank expect Jariusilampatti which has 2 tanks)	1	1
Jariusilampatti	Sithilothi	Same as above	Same as above	2	1
Sittuloti	Sittulotti	1	1	1	1

 Table 1
 The Study Villages and Tanks

Source: Field survey in June 2008.

Name of the Village	No. of Households	Population	No. of Caste	Name of Caste (No. of Households)
Koovalapuram	133	520	5	Reddiyar (56), Asari (4), Pandaram (6); Devar (5); Pallar (57), Vannan (3), Sakkiyar (2)
Meenachipuram	110	440	2	Yadava (95); Sakkiliyar (8), Vannar (7)
Kadaneri	387	2,234	9	Pillai (4); Gounder (50), Naidu (60), Yadava (35), Muthaliyar (35), Asari (5), Chettiyar (4); Pallar (174), Parayar (5), Sakkiyar (5), Vannar (5), Arunthatiyar (5)
Silaimalaipatti	285	1,885	8	Chettiyar (78), Asari (55), Yadava (75), Naidu (10); Devar (1); Paraiyar (6), Sakkiliyar (60)
A. Paraipatti	183	710	3	Iyer (10); Naidu (20); Moopar (15); Pallar (138)
Jariusilampatti	112	445	2	Pallar (110), Sakkiliyar (2)
Sittuloti	130	510	3	Yadava (53); Devar (40); Pallar (37)

Table 2 Population Characteristics of the Study Villages

Source: Field survey in June 2008.

Note: The official category of each caste group listed in the table is as follows. FC (Forward Caste)- *Iyer, Pillai*; BC (Backward Caste)- *Reddiyar, Asari, Pandaram, Gounder, Naidu, Yadava, Muthaliyar* and *Chettiyar*; MBC (Most Backward Caste)- *Devar* and *Moopar*; SC (Scheduled Caste)- *Pallar, Paraiyar Sakkiyar, Sakkiliyar, Vannan, Arunthatiyar, Ambataiyan* and *Vettiyan*.

their own caste *panchayat*. The caste *panchayat*'s power range is limited to its caste boundary but it performs a wide range of collective activities such as dispute resolution, organizing religious ceremony, development of common resource base and social welfare. If problems common to the entire village arise, usually two leaders from every caste group meet at a common place to discuss over the issues.

M. JEGADEESAN and FUJITA K.: Deterioration of the Informal Tank Institution in Tamil Nadu

Name of the Village	Name of the Tank	Ayacut (acre) (A)	Cultivated Area in 2007 (acre) (B)	Ratio (%) (B)/(A)	No. of Sluices	No. of <i>Neerkatti</i> Families
Koovalapuram	Periya kanmoi	155	108	69.6	2	5
Meenachipuram	Akka kulam	35	10	28.6	1	3*
Kadaneri	Periya kanmoi	104	75	72.1	1	3
Silaimalaipatti	Oorkavalan kanmoi	70	31	44.3	2	3*
A. Paraipatti	Veppankulam	87.5	80	91.4	2	5
Jariusilampatti	Vagai kulam &Thankal kulam	85	53	62.3	2	4
Sittuloti	Periya kanmoi	109	95	87.2	2	8

Table 3 Basic Information of Tanks in the Study Villages

Source: Field survey in June 2008 and Village Revenue Register from the Village Administrative Officer (VAO) in the locality.

Note: * *Neerkatti* families hailed from adjacent villages because there were no *Pallar* caste people in their own villages; in the case of Meenachipuram and Silaimalaipatti, they hailed from a nearby village named K. Pudupatti and Thummanayakkan, respectively.

An informal tank institution is usually organized in each tank, except for such cases as Jariusilampatti Village where 2 tanks are managed by the same institution. Besides, only villagers who own and/or manage farmland located in the *ayacut* of tank are the members of the institution. But if an informal tank institution is organized in a multi-caste village, the management of the institution usually becomes more difficult, as compared to a single-caste village. And if the tank water is shared among more than one village, as in the case of Koovalapuram and Silaimalaipatti, the problem becomes even more complex and difficult.

Table 3 provides basic information on the tanks in each study village. Among the 8 tanks (including 2 tanks in Jariusilampatti), 3 with more than 100 acre of *ayacut* are managed by the Public Works Department (PWD), whereas the remaining 4 with less than 100 acre are managed by the *Panchayat Union* (PU).⁷⁾ However, as already noted in the previous chapter, due to the deterioration of both the physical condition of the tanks and the performance of informal tank institutions attached to them, the tank-irrigated agriculture is facing serious problems in recent years in south India in general, including our study area. One evidence of such deterioration is the percentage of actual cultivated area in the total *ayacut* of each tank, as shown in Table 3; the percentage of land which has remained uncultivated ranged from 8.6 to 71.4%, with an average of 35%. Once such fallow land is infested by the *Prosopis juliflora*, and the removal of the thorny shrub is so difficult that many farmers are obliged to let the tree grow and cut it once in 2 to 3 years for sale to such industries as charcoal making and brick making.

Note here that a Neerkatti, a hereditary position traditionally selected from the Pallar caste (one

⁷⁾ The panchayat system in Tamil Nadu has three tiered structure; gram panchayat, panchayat union and district panchayat. Note here that the term "gram" literally means village.

of the most dominant SCs in the study area) families, is responsible for a sluice gate in a tank, conducting various important tasks such as sluice operation, field water management and distribution, and checking conditions of supply channel and tank bund, etc. Therefore, if a tank has two sluices, two *Neerkattis* work during the tank season, usually from mid-September to January in the study area. Table 3 shows the number of such *Neerkatti* families in each tank (Detailed discussion of the *Neerkattis* will be presented later in this article).⁸⁾ Paddy cultivation is predominantly practiced during the tank season in the area, which is followed by rain-fed millets, pulses or cotton cultivation. However, in recent years, due to 1) the physical deterioration of tanks, 2) the weakening of the informal tank institution, and 3) the harsh experience of severe droughts for 3 to 4 years in the first half of the 2000s, it is becoming difficult for farmers to follow the regular paddy-pulses/millets/cotton cropping patterns and farmers are losing livelihood opportunities in agriculture. In response, many farmers have abandoned the land and started migrating to the cities to seek job opportunities.⁹⁾

III Functioning of Informal Tank Institution in the Study Villages

Although formal tank institutions called Water Users' Associations (WUAs) were found in some villages, no tank in the 7 study villages had a formal system to manage. But in actuality, according to our field survey in June 2008, all the villages had an informal institution to govern their resources in one form or another. Their working style, leadership selection and resource mobilization behavior varied from village to village and even from caste to caste within a village. There were largely three layers of irrigation functionaries. At the top there were persons who make decisions and enforce rules and regulations for tank issues and at the bottom there were those who execute the actual manual work such as sluice operation and field water management, and lastly in between the two were those responsible for administration works such as record keeping, account maintenance and negotiation (Table 4).

The table shows that *Maniyam* in Koovalapuram and *Nattamai* in other villages acted as upper level irrigation functionaries.¹⁰⁾ Their basic roles were decision-making and enforcement of rules and regulations. They were responsible not only for the tank issues but also all the other important village

Usually the number of *Neerkatti* families exceeds the number of sluices, and for this reason, the *Neerkattis* usually work on a rotational basis.

⁹⁾ In the last 10 years, 0.35 million people have emigrated from Madurai District alone in search of jobs in cities such as Coimbatore, Tirupur and Chennai, and even as far as north India [Vikatan 2009]. Of course, tank failure was not the only reason for such migration.

¹⁰⁾ Maniyam and Nattamai had the same roles, the difference being only in the local name, as Koovalapuram Village was dominated by Reddiyar caste people who migrated long ago from the state of Andra Pradesh.

M. JEGADEESAN and FUJITA K.: Deterioration of the Informal Tank Institution in Tamil Nadu

	Local Name of th	e Irrigation Function	aries (upper line) and the Caste	Groups (lower line)
Name of the Village	Upper Level	Middle Level	1 st Category	Lower Leve 2 nd Category	el 3 rd Category
Koovalapuram	Maniyam	Kanakku pillai	Madaiyan	Thotti	-
	Reddiyar	Reddiyar	Pallar	Pallar	-
Meenachipuram	Nattamai	-	Neerkatti	Thotti	-
	Yadava	-	Sakkiliyar	Sakkiliyar	-
Kadaneri	Nattamai	Kanakku	Neerkatti	Thotti	Kaval*
	Gounder, Pallar	Pillai, Muthaliyar	Pallar	Sakiliyar	Pallar
Silaimalaipatti	Nattamai	Pokkistari	Neerkatti	Thotti	Kulathu kaval*
	Chettiyar, Asari	Yadava	Pallar	Sakkiliyar	Pallar
A. Paraipatti	Nattamai	Kaladi, Variyar	Neerkatti	Thotti	-
	Moopar, Pallar	Pallar	Pallar	Pallar	-
Jariusilampatti	Nattamai	Kaladi	Neerkatti	Thotti	Kulathu kaval*
	Pallar	Pallar	Pallar	Sakkiliyar	Pallar
Sittuloti	Nattamai	Kankani	Neerkatti	Neerpachi	Kanmoi kudumban*
	Yadava	Devar	Pallar	Pallar	Pallar

Table 4 Three Levels of Irrigation Functionaries in the Study Villages

Source: Field survey in June 2008.

Note: The roles and tasks of each level functionary are as follows:

Upper level: Decision-making and enforcement of rules and regulations.

Middle level: Record keeping, account maintenance and negotiation.

Lower level: Sluice operation, field water management and other manual work. The third category responsible for watching and guarding tank assets marked by * is not employed at present and *Neerkattis* are expected to do the guard work.

matters such as the celebration of festivals. They actually undertook tank-related works as one of the tasks of informal village leaders. In the middle level there were *Kanakku (pillai)*, *Pokkistari, Kankani, Kaladi* or *Vaiyar*, who worked as administrators in all the village matters, and were sometimes employed as middle level irrigation functionaries if the budget of village-level common fund allowed it. They assisted the village leaders in accounting, record keeping and negotiation.¹¹⁾ Relatively educated and well-informed persons were selected. Finally, at the lower level, there were *Neerkattis* (or *Madaiyans*)¹²⁾ in the first category; *Thotti* and *Neerpachi* in the second category; *Kulathu kudumban, Kaval* and *Kulathu kaval* in the third category. *Neerkatti* played the most important role in the tank system such as sluice operation and field level water distribution and management. Without *Neerkatti*, it is very difficult to

¹¹⁾ Except *Kankani* (it literally means "supervise") in Sittuloti, who supervise lower-level workers, all of the middle-level irrigation functionaries played the same roles, the difference being in local names only, as with the upper level functionaries.

¹²⁾ Neerkatti, who traditionally worked for water distribution, can be found in various parts of India. In Andhra Pradesh, Tamil Nadu and Karnataka they are called Neerkatti; Kollau, Chowkidars and Thekedars in Uttranchal and Bihar; Havaldar, Jagliyas and Patkaris in Maharashtra; Chudpun in Ladakh, Kashmir. About details, see Down to Earth [2003], Sengupta [1985], and Narayanamoorthy and Deshpande [2004].

maintain the tank system. *Neerpachi* usually assists *Neerkatti* for water distribution to farmers' field, but if *Neerpachi* is not available, the *Neerkatti* is expected to do the work. *Thotti* is another lower-level worker who assists *Neerkatti* in water distribution, but in addition, works as a scavenger, announcer and attendant of village cremation yard. *Kulathu kudumban, Kaval* and *Kulathu kaval* used to be responsible for watching over and guarding tank assets such as trees (tamarind, jamun, palmyra and others with economic value) and fish, a task which, however, gradually came to be carried out by the *Neerkattis* (but as explained later, even *Neerkattis* already stopped this work in the study villages).¹³⁾

It is evident from Table 4 that whereas the top layer of administration is vested with upper-caste people who are mostly large farmers, lower-level work which requires hard labor is given to the people of lower caste, especially SCs, who are usually laborers or marginal farmers. Note here that the *Pallars* (traditionally selected as *Neerkattis*) belong to SC but they are relatively in a better position in terms of asset and landholding compared to the other SCs such as *Sakkiliyar* and *Paraiyar*.

The norms and regulations in each stage of paddy cultivation in tank season observed in the study villages are presented in Table 5. Below is a more detailed description.

<u>Before onset of monsoon</u>: During August and September, after taking note of the initial rainfall, the village informal leaders request the *Neerkattis* to roam around the supply channel(s) to check its condition. The conditions of the tank bund and field channels are also checked. If there is a need for repair, the leaders ask the *Neerkattis* to announce to all the farmers who have farmland in the *ayacut* to gather in a stipulated date. In the meeting, they are requested to contribute labor for the necessary common repair work,¹⁴ which is usually allocated according to the size of landholding.¹⁵ Then all the farmers and nominated labors (hired by some famers, especially large farmers) assemble in a common place in the early morning of a predetermined date and proceed to work together. They usually clean the bushes and thorns and repair some breached parts in the supply channels. They also repair field channels and tank bund if necessary. The middle-level functionaries are responsible for arranging tea and snacks. The *Neerkattis* are responsible for noting down the names of farmers who are absent and conveying the information to the leaders. Absent farmers are subject to sanctions (as argued later).

¹³⁾ The Neerkattis used to get 10% of the total revenue from tank assets. If some farmers were interested to lease tank assets, they used to approach the Neerkatti since he had a priority.

¹⁴⁾ Such communal labor for tank maintenance is generally referred to as *kudimarāmat*. In the colonial era, it was widely held that local irrigation structures had always been maintained through the operation of *kudimarāmat* institutions and beginning with the Madras Compulsory Labor Act (1858), the government took a series of steps to enforce community maintenance of tanks and customary labor by law [Mosse 2003: 251].

¹⁵⁾ In some cases, one (or more) male laborer is allocated to each farm household.
M. JEGADEESAN and FUJITA K.: Deterioration of the Informal Tank Institution in Tamil Nadu

Period	Regulation Arrangement at Tank Level	Arrangement in the Study Villages
Before onset of monsoon (Aug.–Sept.)	 Assessing condition of supply channel and tank structure by <i>Neerkatti</i> Report to the village leaders and arrange <i>ayacut</i> farmers' meeting (if needed) Fix the date for common work by mobilized labor (if needed) 	All except for Koovalapuram, Meenachipuram and Silaimalaipatti
After starting monsoon but before crop cultivation (Sept.)	 Monitoring and assessing the quantity of water received by the tank Celebration of <i>Madai Pongal</i> Open sluices and start cultivation 	All except for Koovalapuram, Meenachipuram and Silaimalaipatti
Crop growing period (SeptDec.)	 Open sluices at 6 a.m. and close at 6 p.m. Prohibition of irrigation at night time Rotational system of irrigation 	All except for Koovlapuram and Silaimalaipatti
During tank water shortage	 Oru Madai Patchal (open only one sluice and closed the remaining, and irrigated directly by Neerkatti/Neerpachi/Thotti) Restriction of water allocation to a limited area The Pangu system of irrigation 	 1–2. All except for Koovlapuram, Meenachipuram and Silaimalaipatti 3. Only in Kadaneri and A. Paraipatti
After harvesting (Jan.)	 Payment of remuneration to irrigation functionaries Celebration of <i>Kathiraruppu Pongal</i> (harvest festival) Leasing out tank bed for cultivation 	All the villages

 Table 5
 Norms and Regulations in Informal Tank Institution

Source: Field survey in June 2008.

<u>Before crop cultivation in the field</u>: The *Neerkattis* keep watch over the water level of the tank. Once it crosses half of the full level (each tank has some identification mark such as a pillar or a standing tree), the leaders fix the date for a festival called *Madai Pongal*. It is the custom to offer prayer (such as goats) to the god located in the tank bund¹⁶ before opening the sluices. The *Neerkattis* are responsible for its arrangement. After prayer, the *Neerkattis* open the sluices and farmers start rice cultivation. It should be noted that the key¹⁷ to operate the sluice rests with the *Neerkatti*. One *Neerkatti* is appointed in each sluice and if the tank has more than one, the sluice for which each *Neerkatti* is responsible is rotationally¹⁸ changed every year because the sluice located in the lower and deeper site can supply water for longer days, thereby accruing a larger income to the *Neerkatti* (since his income depends on

¹⁶⁾ See Palanisami and Easter [1983: 61] for details.

¹⁷⁾ Before the Tank Modernization Program by European Economic Commission (EEC) started in 1989, almost all the sluices in the tanks in Tamil Nadu were traditional types made of wood without sluice keys. The operation of traditional sluices needed special skills and was dangerous because *Neerkattis* had to dive into the deep water. There were many different types of traditional sluices existed such as *Pulikkan madai* (sluice opening just like eyes of tiger), etc. For details see Shanmugam and Gurunathan [2007].

¹⁸⁾ In some cases, lottery is carried out to decide the responsible sluices.

東南アジア研究 49巻1号

the irrigated area) compared to the counterpart who is responsible for another sluice which is located in the upper site, thus resulting in an inequality of income among the *Neerkattis*.

<u>Crop growing period</u>: The sluices remain closed when irrigation is unnecessary such as on rainy days. Otherwise, the sluices are usually opened at 6 a.m. and closed at 6 p.m., which means irrigation at night time is prohibited. In addition, in order to secure equality among the fields in upper, middle and lower part of the *ayacut*, a rotational system of irrigation is practiced in many villages, especially for the second time irrigation after the first-filled water is exhausted. For example, if farmers in the head-end irrigate first in a year, then in the next year the tail-end farmers irrigate first. To guard the crops in the *ayacut* against grazing by livestock such as cow, sheep and goat is the *Neerkatti*'s duty.

During tank water shortage: The role of the tank institution becomes crucial when the tank receives less water than usual. Rules are carefully designed so that farmers understand how their contributions are related to their individual interest as well as the well-being of others. The Neerkattis are asked to regulate the distribution of water uniformly among the farmers. He usually adopts the following three methods to regulate water supply.¹⁹⁾ The first is called the Oru Madai Patchal, in which the Neerkattis keep the lowest sluice open and close the remaining sluices when the tank has more than one sluice. By taking water from one sluice, he can easily irrigate the farmers' fields uniformly. The second method is to restrict the irrigated area within the *ayacut*. There are several ways to restrict the irrigated area. Usually, a uniform area per household is fixed, which ranges from 1 to 2.5 acres, in a block relatively close to the head reach, thus benefitting all the farmers (in Kadaneri). In some cases, however, water sharing is based on the number of household members, instead of in proportion to the land owned by each household in which allocation of 0.5 acre per capita is made, but with a maximum of 2.5 acre per household (in Kadaneri and A. Paraipatti).²⁰⁾ The tank system often exerts control over what crops should be grown as well as the area, to match water availability, which is not merely a way to distribute scarce water among all but a prudent way of ensuring social justice.²¹⁾ The third method is called the Murai Pasanam or Pangu system, in which the Neerkatti divides ayacut area into 4-10 pangus (share). One pangu is approximately 63 acre. Water is rotated among these pangus by the Neerkattis. They also restrict the number of irrigation according to the rules decided

¹⁹⁾ In some villages in the study area, informal leaders request well-owners not to use tank water and to provide well water to nearby fields if they have surplus, although such a custom was not found in our study villages.

²⁰⁾ Note that a similar practice is also reported by Narayanamoorthy and Deshpande [2004] in Maharashtra.

²¹⁾ See also Sakthivadivel et al. [2004].

M. JEGADEESAN and FUJITA K.: Deterioration of the Informal Tank Institution in Tamil Nadu

Village	Violence	Sanctions
Koovalapuram	 No-participation in common work Pilfering water from fellow farmers' field or tank 	No sanctions No sanctions
Meenachipuram	 as above as above Grazing goat and/or sheep in the paddy field 	Fine up to Rs.300–500 Bear cost of electricity for the temple for one year Fine up to Rs.300–500
Kadaneri	1) as above 2) as above	Pay double labor cost Fine up to Rs.500
Silaimalaipatti	 as above as above Breaking surplus weir 	Pay labor cost plus Rs.50 Bear expenses of the <i>Oor Kavalan</i> temple celebration One-year ban for cultivation
A. Paraipatti	 as above as above 	Contribute more labor in the next year's common work Fine up to Rs.1,000
Jariusilampatti	1) as above 2) as above	Pay double labor cost he failed to contribute Fine up to Rs.500–1,000
Sittuloti	1) as above 2) as above	Fine up to Rs.1,000 Bear oil expenses for the temples

Table 6 Sanctions in the Informal Tank Institution

Source: Field survey in June 2008

collectively by farmers. The *Neerkattis* have a very good knowledge of individual farmers' fields in terms of water absorption and retention capacity, so that they give water once in ten days, for example, to the field which has higher water retention capacity, and shorten the interval for the poor water-retention field.

<u>After harvesting</u>: After harvesting, the *Neerkattis* approach the beneficiary farmers immediately to claim their remuneration in kind. The *Neerkattis*, along with landless laborers involved in the harvest, celebrate a festival called the *Kathiraruppu Pongal* to thank their god for providing livelihood opportunities. When the tank becomes empty, the tank bed is leased out to some villagers for cultivation but priority is given to the *Neerkattis*.

There is a sanction system when farmers violate the norms and regulations, except in Koovalapuram (Table 6). Usually the village informal leaders, after receiving complaints from the concerned person, establish a committee for inquiry and appoint a separate committee composed of three persons to decide the punishment. The punishment depends on various factors such as the severity and the nature of the offence, the condition of the victim, the economic status of the offender, the previous offense history of the offender, the attitude of the offender towards the informal leaders, and so on. Offenders are

sometime requested to kneel before the committee as a form of public apology. In the most severe cases, the offender may receive the severest punishment such as ex-communication, social opprobrium and social ostracism,²²⁾ in which villagers cut off all contact and even refuse to offer assistance for funeral and cremation. It should be noted here, however, that the effectiveness of ostracism as a weapon against severe violation depends on the degree of physical immobility of the concerned offender. At present, since mobility is much higher than before, the effectiveness of such sanctions has been significantly reduced.²³⁾

According to Table 6, failure to contribute labor for common work and pilferage of water is commonly observed as the major violence. In the former case, the offender has to pay a fine that is larger than the labor cost (Rs.100 per day), up to Rs.1,000, but the punishment varies depending on the conditions. Pilfering water happens mainly if farmers open the sluice at night to irrigate their fields or if they break field bunds to obtain water from fellow farmers' fields. The violators are fined up to Rs.1,000, but in Meenachipuram they are asked to bear the electricity cost for the temple for a year and in Silaimalaipatti the cost of the *Oor Kavalan* (god to protect the village) temple celebration or the *Madai Pongal*. In Silaimalaipatti, in addition, if farmers who encroached on land in the tank foreshore damage the surplus weir to release water from the tank in order to save their crops from submergence in water, they get a penalty of prohibition of cultivation for one year.²⁴⁾ Cutting trees in the tank bund and unauthorized grazing in paddy fields are also penalized. The *Neerkatti* is empowered to catch straying animals and bring them to the village common place. The owner of the animal has to pay compensation or fine, and only after that is he allowed to take his animals back.²⁵⁾

²²⁾ By contrast, the government-managed system has no effective sanction system mainly because of the lack of field level staff responsible for constant monitoring. PWD has field staff called *laskar*, but they never come to the tank except in case of emergencies such as breaching of tank bund. In our study villages, three tanks are managed by PWD but the villagers did not know about *laskar* at all. In the case of PU tanks, there is no position at the field level. In any case, the government officers and staff have no incentive to keep an eye on monitoring tank resources because their salary does not depend on the performance of tank irrigation.

²³⁾ It should be noted, however, that the informal leaders, mostly upper-caste people with a hereditary system, sometimes favor their relatives and friends and harass their rivals. As actually happened in Kadaneri in the past, even though the *Neerkatti* reported a case of upper-caste landlord's pilfering of water, the inquiry committee's conclusion was that the *Neerkatti* was drunk while on his monitoring job, as claimed by the landlord. Also, upper-caste large farmers who violate the rules sometimes ask their permanent labor to take the fall for the crime in order that they themselves may escape the sanction. Since large farmers often have diversified resources and do not depend merely on tanks, even if they receive the severest punishment such as excommunication or social ostracism, it had relatively little effect on them. Such problems have often damaged the reliability of the tank institution. Mosse [2006] also reported that the *Neerkatti* was not allowed to report complaints against upper-caste landlords when the latter was at fault and caught by the *Neerkatti*.

²⁴⁾ Nowadays, however, damaging the surplus weir in order to avoid submergence of the field in the foreshore is not strictly monitored and sanctioned as before.

²⁵⁾ Sometimes the gram panchayat asks the violator to pay the fine to the panchayat.

M. JEGADEESAN and FUJITA K.: Deterioration of the Informal Tank Institution in Tamil Nadu

Position	Remuneration
Nattamai/Maniyam/Ambalam	No
Kaladi/Kanakkupillai/Pokkistari	Rs.250–500 per year
Neerkatti/Kaval/Kudumban	8 <i>padis</i> or 4 <i>marakkals</i> of paddy per acre per season Preference in lease-in temple land and tank bed
Thotti	4 <i>padis</i> or 2 <i>marakkals</i> of paddy per acre per season Free meal during work

 Table 7
 Remuneration for Informal Irrigation Functionaries in the Study Villages

Source: Field survey in June 2008.

Note: 1padi = 1.25 kg; 1marakkal = 4.5 kg, the farm gate price of paddy was Rs.710 per bag (73 kg) in June 2008.

The existing remuneration for the irrigation functionaries in the study villages is presented in Table 7. The remuneration for the service of *Neerkatti* was 10–18 kg of paddy per acre per season, which was equivalent to Rs.3,000–5,300 (if he irrigated 30 acre) or Rs.4,900–8,800 (50 acre).²⁶⁾ Since the working period was approximately 3 months in a season, *Neerkattis* were paid more or less equal to the prevailing wage rate (Rs.100 per day). Apart from the remuneration, *Neerkattis* were given preference in leasing the temple lands for cultivation. They also used to enjoy the benefits from the fisheries and trees in the tank bund, but by the time of our survey, such a custom had totally disappeared in the study villages.²⁷⁾ The wage rate for *Thotti* was half of the remuneration for *Neerkatti*. They are, however, provided with free meals during work. The other two upper- and middle-level irrigation functionaries received no salary, although they were eligible for travel allowance for the public cause.

Table 8 is a summary of gross revenue, production cost and net profit of paddy production in S *Gram Panchayat*, Thrimangalam *Taluk*, Madurai District, for the year 2006. A total of 27 paddy-producing farmers in the tank *ayacut* (*nañcai*) area were interviewed by the authors, but reasonable answers were collected from only 22 farmers. They were divided into three categories: farmers who irrigated by tank water only,²⁸⁾ those who irrigated by tank water and purchased well water, and those who irrigated by tank water and owned well water. The table shows that the farmers who used only tank water obtained

²⁶⁾ If the entire command area in the all the study villages (644 acre in total) are cultivated, one *Neerkatti* would have the opportunity to work for an average of 54 acre.

²⁷⁾ One of the *Neerkattis* in Kadaneri Village mentioned that earlier, there was a custom to lease out trees in the tank bund and the informal leaders gave priority to him, but at present the custom is not practiced since rights to trees, fishes and other tank related resources have been almost neglected. One of the reasons behind this is that revenues from the tank assets are shrinking over the years due to mismanagement, and the *Neerkattis* have lost their incentive to guard the assets. Another reason is the tendency to see the tank irrigation system from a narrow viewpoint, merely providing water for field crops rather than recognizing many different uses of it [Bakker *et al.* 1999]. It should be mentioned, however, that appointment of guards is still quite common in the tank system in India, compared to the canal irrigated areas [Bardhan 2000].

²⁸⁾ One farmer who purchased well water for the nursery is included.

東南アジア研究 49巻1号

	Or Tank	ıly Water	Tank+P Well	urchased Water	Tank+ Well	Owned Water	То	tal
No. of sample		7		9		6	22	
No. of well owners		2		0		6		8
Yield (bag/acre)		31		31		29		31
Gross revenue (Rs./acre)								
Paddy	12,	362	12,	503	11,	718	12,2	244
Straw		86	:	200		150		150
Total	12,4	448	12,	703	11,	868	12,	394
Cost (Rs./acre)								
Current input								
Seed/Seedling	!	589		768	(661	(582
Fertilizer	2,2	218	2,2	203	1,	869	2,	117
Chemical	4	442	244		157		284	
Sub-total	3,249		3,215		2,687		3,083	
	9,199		9,488		9,181		9,311	
Value-added								
Animals and machineries								
Power tiller	1,0	007	1,	146	1,2	288	1,	141
Bullock	1	253	305		311		290	
Well irrigation		71	1,935		N	I.A.	1,	120
Combine harvester	1,410	0	1,300	0	1,856	0	1,743	0
Sub-total	2,741	1,331	4,686	3,386	3,455	1,599	4,294	2,551
Human labor								
Nursery		55		80		31		58
Land preparation	1,'	787	2,	102	2,0	009	1,9	976
Transplanting	1,	154	1,	195	1,2	258	1,	199
Fertilizing		101		141		133		126
Weeding	4	489	9	940	:	885	,	782
Harvesting and Threshing	0	1,072	0	1,795	0	2,087	0	1,502
Sub-total	3,586	4,658	4,458	6,253	4,316	6,403	4,141	5,643
Net profit (Rs./acre)	2,872	3,210	344	-151	1,410	1,179	876	1,117
% of net profit to gross revenue	23.1	25.8	2.7	-1.2	11.9	9.9	7.1	9.0

Table 8 Cost and Return of Rice Production

Source: Prepared by the authors, based on survey in S Gram Panchayat in June/July 2007.

a fairly good profit (around 23–26% of gross revenue on average), but the other farmers who used tank and well water got almost no profit,²⁹⁾ although those who used owned well water got a small profit if the cost of well irrigation is considered zero.³⁰⁾ What should be mentioned here is that payment to a

²⁹⁾ At first glance, it might seem contradictory that the farmers who used only tank water obtained much higher profit than those who used both tank and well water, but it can be surmised that the former farmers' paddy fields were located in a better position in the *ayacut*, and could thereby use tank water sufficiently and in a more timely manner.

³⁰⁾ Electricity charge for well irrigation is free in Tamil Nadu, but the capital cost and labor cost necessary for well irrigation are not factored in.

M. JEGADEESAN and FUJITA K.: Deterioration of the Informal Tank Institution in Tamil Nadu

Roles	Koovala- puram	Meenachi- puram	Kada- neri	Silaimalai- patti	A. Parai- patti	Jariusilam- patti	Sittuloti
Mobilizing labor for common works			Yes		Yes		Yes
Sluice operation			Yes		Yes	Yes	Yes
Water management					Yes	Yes	Yes
Dispute moderation between farmers			Yes		Yes	Yes	Yes
Informing emergency	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Irrigation during water scarcity			Yes		Yes	Yes	Yes
Maintenance of tank bund			Yes		Yes	Yes	Yes
Collection of common fund			Yes		Yes	Yes	Yes
Sluice maintenance							
Watch and guard tank assets							
Announcer					Yes	Yes	Yes
Organizing religious ceremony	Yes		Yes	Yes	Yes	Yes	Yes

Table 9 Execution of Works by the Neerkattis in the Study Villages

Source: Prepared by the authors.

Neerkatti and a *Thotti* is 12 *padis* or 6 *marakkals* in total per acre per season, which is equivalent to only Rs.83–150 per acre.³¹⁾ From the farmers' viewpoint, payment to the lower irrigation functionaries is very marginal, if we compare it to the price of well water (Rs.50 per hour).

IV Determinants of Performance and Causes of Deterioration of Informal Tank Institution in the Study Villages

First, we made an attempt to assess the performance of informal tank institution in each study village, by the actual working status of *Neerkattis* (Table 9). If we make a judgment on the performance,³²⁾ we find that it was relatively good in Kadaneri, A. Paraipatti, Jariusilampatti and Sittuloti, but not so good in Koovalapuram, Meenachipuram and Silaimalaipatti.

As the table shows, even in the three villages with malfunctioning tank institution, the *Neerkattis* were still working in emergencies (such as breaching of tank bund) and in the religious ceremony (because it is prestigious for them).³³⁾ On the other hand, even in the remaining four villages with

³¹⁾ The farm gate price of paddy at the harvesting time (January 2007) was around Rs.400 per bag, much lower than the price (Rs.710) in June 2008 as mentioned in the note in Table 7. One of the reasons is the seasonal fluctuation of rice price, which usually registers the lowest just after the harvesting and gradually rises thereafter.

³²⁾ Among the 12 roles in Table 9, those villages where *Neerkattis* executed at least 7 roles are classified as relatively well-functioned and others are non-functioning.

³³⁾ After the celebration the *Neerkattis* are also eligible to get coconut, fruits and other edibles that are offered to the god.

relatively well-functioning institution, sluice maintenance and caring tank assets were not carried out in any villages, and even mobilization of labor for common work was not undertaken in Jariusilampatti. Let us now explore the reasons why the tank institution is malfunctioning in comparison to some other particular villages.

The *Neerkattis* have been playing a key role in the informal tank institution. Traditionally, however, they were selected from the *Pallar* caste, one of the most dominant SCs in the study area, and the position was basically hereditary.³⁴⁾ As a result, if there were no *Pallar* caste families in the village, *Neerkattis* were recruited from nearby villages, such as the case of Meenachipuram and Silaimalaipatti (as indicated in Table 3). Withdrawal of *Neerkattis* from their job responsibility, if it happens, therefore, becomes a decisive factor in the deterioration of the informal tank institution. It can happen more easily in villages without a *Pallar* community.

In the case of Silaimalaipatti, the Neerkattis had been employed from a nearby village for a long time, but after the 1970s the Pallar community from the village started to hesitate to work as the Neerkattis and finally stopped working, since they had purchased land in the foreshore area of the tank and began farming themselves by utilizing their own wells. In the meantime, the supply channel of the tank was blocked by the construction of check dams, which drastically reduced water supply to the tank. In the absence of the *Neerkattis*, the challenge of sharing limited water equally among the *ayacut* farmers created conflict, which ultimately led to the dismantling of the tank institution. The reduction of water supply to the tank deprived the farmers of their motivation to come together for common work, and such a situation was aggravated by the absence of Neerkattis. In Meenachipuram as well, the Neerkattis had been employed from an adjacent village (K. Pudupatti) where the Pallar community was dominant. Meenachipuram was dominated by a community called Yadava (Konar), a backward caste (BC), but they enjoyed upper social status compared to the Pallar. The Pallar farmers in K. Pudupatti Village had land in the foreshore of the Meenachipuram tank. During the 1990s the Meenachipuram farmers filed a complaint to the revenue office that the K. Pudupatti farmers had encroached on the catchment area and supply channel. However, finally, as a countermeasure, the Pallar community in K. Pudupatti requested the Neerkattis to withdraw from the Meenchipuram tank, which led to the rapid deterioration of the tank institution. Under such circumstances, an "innovation" was made in the method of selecting Neerkattis in Silaimalaipatti and Meenachipuram since 1996. They decided to select Neerkatiis from

³⁴⁾ According to the *Neerkatti* from Jariusilampatti Village, when he arranged the marriage of his daughter with a local groom, he was demanded dowry by custom in the form of money or kind (gold and household utensils), but since he could not fulfill the aspirations of the groom, he decided to give his *Neerkatti* status to him. This narration would give us an idea that once the *Neerkatti* profession was considered as a valuable asset.

willing households in each village, although the reluctance to become *Neerkattis* and the lack of knowledge on norms and practices often made it difficult to find appropriate persons. The selected *Neerkattis*, however, do nothing other than dealing with emergencies and organizing the religious ceremony, as shown in Table 9.³⁵ Such an "innovation" despite such a problem, is bound to pave the way to reduce caste-based selection of *Neerkattis* and the concomitant discrimination.

Recently, however, even in the villages with *Pallar* community, there have been increased conflicts between *Pallar* and the other dominant castes, which led to the deterioration of the tank system. In some villages, even if the dominant *Pallar* community selected their leaders, the other upper-caste people often did not accept their leadership as in the case of Koovalapuram and Kadaneri (*Reddiyar* in Koovalpuram and *Gounder* in Kadaneri refuse to accept *Pallar*'s leaders).³⁶⁾ Apparently this was an important factor in the malfunctioning of the tank system in Koovalapuram; although farmers could have received enough water since the tank is located in the head of the chain, they actually failed to do so because even though the *Pallar* caste occupied 50% of the households, they refuse to do the *Neerkatti*'s work, owing to the poor understanding and status *in quo* between the two competing caste groups.

The SC people, including *Pallar*, have become more empowered and independent than before. However, caste discrimination continued to exist in India (especially in south India), including our study villages, and conflicts between caste communities happen more frequently nowadays. Since "exit" options are available to the SC people, such conflicts can more easily result in the withdrawal from work of lower irrigation functionaries such as *Neekattis*. This is simply because the numerical strength and strengthened economic status of SC help to free them from atrocities but fail to lead to the improvement of their social status.³⁷⁾ The upper-caste people still adopt an authoritarian attitude over lower caste and lower-caste people are constantly trying to keep away from the armpits of the upper-caste. Thus they complain of each other without recognizing their common benefit; this is usually the starting point of disaggregation of the informal tank institution. Despite a remarkable continuity of economic and

³⁵⁾ But they are provided with monthly salary of Rs.1,500 for 3 to 6 months till the end of the tank season.

³⁶⁾ Sakthivadivel et al. [2004] also documented that a gram panchayat in Sivagangai district had representation from all the caste groups except SC, and SC people were not allowed to participate in decision-making in tank-related issues. Especially notable is that it was selected as the best panchayat and received the Nirmal Puraskar Award in 2008 from the President of India. Until the government treats the caste discrimination issue more seriously, the upper caste's actions against SC will not terminate (http://nirmalgrampuraskar.nic.in/nirmalgrampuraskar/index.jsp).

³⁷⁾ While the law states that all the citizens have equal status, status is actually determined by the caste group he/she belongs in rural India. Discrimination and injustice against SC people are being practiced in various forms. For example, in September 2008, a Vice President of a gram panchayat of Madurai District was murdered simply because he tried to open the sluice and irrigate his field before the upper-caste farmer's field. See also Rajangam [2008], Venkadesan [2008], Ramasamy [2008] and Ramaiah [2000].

political dominance of upper-caste people, many are now facing challenges from the SC people, who have been subordinated for a long time.³⁸⁾

Another important reason behind the deterioration of the informal tank institution is mismanagement by the government, especially PWD, which adds another explanation of why the informal tank institution in Koovalapuram Village malfunctioned. The Koovalapuram tank was one of the tanks selected for the tank modernization program of European Economic Community (EEC) in the second phase during 1989–95. It was implemented in two phases. In the first phase (1989–91), major repair works were conducted to improve existing tank structures. In the second phase (1993–95), tank sluices were modernized and distribution channels were partially lined. Since establishment of formal Water Users' Association (WUA) was mandatory for this program, officials from PWD formed a totally new WUA without considering the existing informal institution. During implementation of the program, PWD gave importance to the WUA while the informal authorities did not cooperate with the newly elected WUA. Once the program was completed, however, PWD ceased to show any interest in maintaining the WUA and over the period, both the informal and formal systems disintegrated. At the time of our survey, although five families of *Madaiyan (Neerkatti*) lived in the village, they were not doing their work since there was no guarantee of remuneration.

When *Neerkattis* withdraw their services, operation of sluices becomes everybody's business and nobody's responsibility. Farmers tend to assert *de facto* individual control over water and leave the sluice always open, which often results in serious problems such as inequalities among farmers and acute water shortage in the later stage of crop season (resulting in serious crop losses),³⁹⁾ as Mosse [2006] also pointed out. They do not even follow the simple procedure of closing the sluices during the rainy days or at night.⁴⁰⁾ The *Neerkattis* still play a major role particularly when the tank receives below-

³⁸⁾ We note a new tendency in the study area. In some villages, the upper-caste landlords and farmers are gradually changing their attitudes and trying to cooperate with SC communities, acknowledging the latter's importance under the changing social norms and values. Oppression of the lower caste by the upper-caste is actually loosening after some interventions by the government. With the help of government reservation policy and other programs, lower-caste people acquired education in the cities and slowly built up their assets. This development has gradually reduced the dependency of lower-caste people on upper-caste landlords for obtaining employment opportunities. The abolition of *Zamindar* (1957) and land distribution to the landless by the government in the 1960s also had an impact. However, the upper-caste people view this process as an empowerment of lower caste at the cost of embarrassing the upper-caste.

³⁹⁾ Damage estimates are provided by some studies. For example, it was estimated that rice yield was reduced by 60% due to inadequate and unequal water distribution in tank irrigation [Palanisami 2000]. Sakthivadivel *et al.* [1982] also estimated that water use efficiency in south Indian tank system is lower by 25–36% mainly due to inadequate maintenance and lack of control over the sluices.

⁴⁰⁾ In the remaining four study villages, night irrigation is prohibited and the sluices are opened at 6 a.m. and closed at 6 p.m. If night irrigation is practiced, water often overflows and is wasted because farmers usually direct water to their fields but do not monitor the progress of irrigation.

normal rainfall. They work as a water manager in tank irrigation. Even though they have no scientific knowledge, they can judge available tank water, and the timing and amount of water which should be released from the sluice very well. In water shortage years, they are asked to provide direct irrigation in order to assure equal water distribution. In general, a successful local tank system adopts various ways to augment water supplies to the tanks, as already explained in this article.

Lastly, let us mention some observable effects of energized wells in our study villages. Well owners can usually start rice cultivation earlier than the non-owner farmers, particularly by starting to raise the nursery earlier through the use of groundwater. This means that they are ready for transplantation when the sluice is opened. If farmers without wells have to wait until the sluice is opened they have to start raising the nursery at the same time, which leads to labor shortage in every paddy cultivation stage thereafter. So as to avoid such problems, at present, in all the study villages, the sluices are opened before the *Madai Pongal* to enable non-well-owner farmers to start raising the nursery earlier. However, although the symbolic meaning of the *Pongal* has vanished, it is still practiced in every village.⁴¹⁾ Another minor effect of the diffusion of energized wells is a tendency for the rotational system of irrigation not to be practiced as before in many cases, since most of the tail-end farmers have already left the land fallow (because of water shortage) and few of them claim their rights, since they are afraid to do so. Since irrigation wells are usually owned by large farmers and their fields are also usually located in the head-end, if tail-end farmers do claim, the large farmers will refuse to provide supplementary water to save their crop by using wells when the tank fails in the later season.⁴²⁾

V Current Status and Perceptions of Neerkattis in the Study Villages

Table 10 provides summary data on the present occupational position and (rough) income estimates of 31 *Neerkattis* interviewed in the study villages. The table confirmed that practicing as *Neerkattis* alone would not be feasible and hence these *Neerkattis* have already diversified their income sources to land cultivation and/or agricultural and non-agricultural labor. Moreover, more than one third of the *Neerkattis* (39%) were not doing *Neerkatti* work at all, and they earned a higher income than their counterparts who opted for a combination of *Neerkatti* work and other work.

⁴¹⁾ In addition, the recent rapid diffusion of combine harvesters in the study area due basically to the hike of agricultural wages caused the decline in the custom of celebrating the *Kathiraruppu Pongal*, since the opportunity for the laborers has been lost due to the technological innovation.

⁴²⁾ However, in reality, while well-owner farmers can save their crop by well water, due to the low density of wells in the *ayacut* (usually only one well for 30 acres) most of the non-well owner farmers cannot save their crop. Such a problem drastically reduces the yield of rice and thereby the remuneration for the *Neerkattis*.

Occupational Pattern	No. of the Neerkatti	Share (%)	Income as <i>Neerkatti</i> (Rs.)	Income from Land Cultivation (Rs.)	Income from Agricultural Labor (Rs.)	Income from Non- Agricultural Labor (Rs.)	Total Income (Rs.)
Only Neerkatti	0	0	_	-	-	-	-
<i>Neerkatti</i> + Cultivate own land	6	19.4	6,500	5,980	-	—	12,480
<i>Neerkatti</i> + Leased-in land for cultivation	4	13.0	6,500	3,610	-	-	10,110
Neerkatti + Agricultural labor	9	29.0	6,500	-	6,615	-	13,115
Agricultural labor + Non-agricultural labor (Not doing <i>Neerkatti</i> 's work)	12	38.7	_	-	6,615	7,935	14,550
Total	31	100					

Table 10 Occupations and Rough Income Estimates of the Neerkattis in the Study Villages

Source: Field Survey in June 2008.

There were 31 *Neerkatti* families in the seven study villages for operating 12 sluices and thereby every family gets the opportunity to work as *Neerkatti* once in three years on average. Almost all of them opined that the annual remuneration of around Rs.10,000 would suffice if tanks perform well and farmers are willing to pay their due without fail. However, recently the *Neerkattis* are always in danger of losing their income completely in the case of droughts (monsoon failure).⁴³⁾ Tanks often perform poorly and most of the farmers leave their land fallow and some farmers, especially the well-owner farmers, hesitate to pay the remuneration to *Neerkattis*.

In some villages, on the other hand, the *Neerkattis* are paid some amount of cash even when the crop fails. The payment is not enough to compensate for their wages but it would provide the *Neerkattis* with some hope. It also provides security and a sense of satisfaction for the *Neerkattis*, who can take pride in their jobs, as reported also by Seenivasan [2003]. Through interviews, we found that the *Neerkattis* were not satisfied with their job, not only because of reduced remuneration but more importantly because of the reduced respect they received from the fellow farming community. They felt that nowadays the masters are many and everyone wants to rule them, but nobody is ready to take responsibility for paying them. They are also often involved in quarrels with farmers about their work performance.

Finally, we summarize the Neerkattis' perceived incentives and disincentives to do work as

⁴³⁾ In the study villages, nearly 30% of land was left fallow and actual area cultivated was about 450 acre against total command area of 644.5 acre. Hence the *Neerkatti* would only have an opportunity to operate an average of 37.5 acre and as a consequence he earned only 9.24 bag of grain, worth of Rs.6,560. So the revenue loss would be about Rs.3,380 (approximately 34%).

M. JEGADEESAN and FUJITA K.: Deterioration of the Informal Tank Institution in Tamil Nadu

Incentives	Disincentives
Assured employment opportunities for 3-6 months	Undignified treatment received from upper-caste farmers
Preferences for leasing temple land	Difficulty in collecting remuneration from farmers
Priority in leasing tank assets	Exploitation of labor
Honor during religious ceremony	Uncertain employment due to uncertain tank filling
Exempted from contributing to common fund*	Violation of rules by fellow farmers
	Day and night work

Table 11 Incentives and Disincentives of the Neerkattis in the Study Villages

Source: Field survey in June 2008.

Note: * No need to pay water user fee even if he has land in ayacut and also exempted from festival fee.

Neerkattis (Table 11). The table shows that in addition to the problem of their low and unstable income such as "uncertain employment due to uncertain tank filling" and "difficulty in collecting remuneration from farmers," the problem of their low social status such as "undignified treatment received from upper-caste farmers" and "exploitation of labor" is an important disincentive.

Concluding Remarks

After presenting our basic idea regarding the factors and mechanism behind the recent deterioration of the village-level informal tank institutions in Tamil Nadu, India (Fig. 1), based on data and information from our field survey in seven tank-benefitted villages in Madurai District in 2008, the actual situation of tank irrigation and tank institution at present were presented in this article in a detailed and comprehensive way. One of the most important factors is related to the physical deterioration of tanks such as encroachment of tank foreshore, malfunctioning supply channel and siltation of tank bed, all of which led to reduced water supply and storage in tanks. Another important factor was reduced dependence on tanks for irrigation because of the emergence and development of energized well irrigation. Because of this, farmers with wells were reluctant to participate in common work for tank maintenance and to pay *Neerkattis* for their services. However, it can be concluded that the most fundamental reason was the overall economic development and urbanization in rural Tamil Nadu, especially after the mid-1990s. With the accelerated shift of labor forces from agriculture to non-agriculture (as shown in Sato [2011] in this special issue) and the associated surge in wage rates in rural areas, interest is rapidly shifting from agriculture to non-agriculture in general and tank management in particular. In other words, the present phase of economic development in Tamil Nadu can be characterized as a transition from a labor surplus to labor shortage economy, which has profound implications for the hitherto basic structure of rural India.

In this context, special emphasis was placed in this article on the contradiction between the traditional caste-based governing system of tanks and the recent rapid socio-economic development and urbanization, and the resulting upward mobility in economic status of low-caste people. Therefore, the current status and the perceptions of *Neerkattis*, the key persons in informal tank institutions who have been selected from scheduled caste families in a hereditary system, were investigated in detail based on information obtained through interview with 31 *Neerkattis* in the study villages.

Reduced remuneration and unfair treatment received by the *Neerkattis* based on their caste provided enough reason to show their reluctance towards their traditional profession. And, in the absence of *Neerkattis* the field-level tank water management became very difficult since all the *ayacut* (tank command area) farmers tended to operate the sluices by themselves whenever they needed water. Sluices often remain open even in rainy days or at night, thereby leading to severe water wastage and resulting in an increase in fallow land due to the water shortage as well as reduced rice yield in the cultivated field.

The situation was better in the villages where *Neerkattis* were still working, but it was found that the effectiveness of the monitoring and sanction system in informal tank institutions has diminished over time. We observed increased disputes among farmers as well as between farmers and *Neerkattis*. Participation of farmers in common works to maintain tank structures such as cleaning supply channels was also reduced. An increased reluctance to pay remuneration to the *Neerkattis* among farmers, especially those who owned irrigation wells, was also observed. All of these unfavorable situations deprived the concerned SC families of incentives to work as *Neerkattis*. As a result, more than one-third of the 31 *Neerkatti* families in the study villages already quit their traditional job, and no *Neerkatti* family depended entirely on their traditional profession.

Apart from problems of low and unstable income of *Neerkattis*, problems also arise from the continuing low social status of the *Neerkattis*. Their low caste has become less tolerable for *Neerkattis* than ever before. Behind this, there are of course the recent rapid socio-economic changes experienced in contemporary India. Tank irrigation is thus facing a big challenge from the fundamental contradiction between the rapid economic development and transition to a modern industrialized society in India, on the one hand, and the traditional hierarchical tank governing system, which has been based on caste in India for a long period, on the other hand.

Whither the tanks in south India, including our study area in Tamil Nadu? A strong tendency is that more and more tanks are going to be abandoned and used only for recharging groundwater as percolation ponds, serving well irrigation [Palamisami *et al.* 2010], although there is a serious problem of inequity between farmers with and without wells. One possible solution may be the increased role

of the government in tank management, including maintenance of tank structure⁴⁴⁾ by using labor through the National Rural Employment Guarantee Scheme (NREGA) and employment of *Neerkattis* by the government. The latter issue of employment of *Neerkattis* by the government may not be easy at all, but we can recognize at least that the community based resource management system cannot be accepted in India any more if it depends on the continuous subordination of lower-caste people, especially SC people.

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⁴⁴⁾ Therefore, "so far, programs to turnover tank irrigation systems to farmers in Tamil Nadu have been undertaken only on an *ad hoc* basis, often through NGOs" [Mosse 2003: 268]. Regarding the investment to tank repairs and maintenance, on the other hand, due to budget constraints in both the PWD and the PU, "during the 1980s and 1990s major investments in Tamil Nadu tanks were made under the EEC (European Economic Commission)-funded program of tank development" [*ibid.* 276], although its impact seemed to be insignificant [Palanisami *et al.* 2008].

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The Effects of Expansion of Private Wells on Rural Livelihood in Tank Intensive Watersheds: A Case Study in Upper Gundar River Basin, Tamil Nadu

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Abstract

This article aims to investigate the effects of the expansion of private wells on rural livelihood (income) in a tank-intensive watershed in the upper Gundar River Basin in southern Tamil Nadu, India, based on data obtained by recent field surveys, government statistics and meteorological records. For the entire upper river basin, we show spatial differences at the village (*gram panchayat*) level and track the changes over the last two decades. The major finding is that although traditional crop production, mainly composed of paddy, millets and pulses, was dominant at least until the mid-1990s, the expansion of private wells enabled farmers to introduce cash crops, especially in the upper part of the basin. By contrast, fallow land increased sharply in the lower part of the basin due mainly to the disappointing performance of the wells. The different performance of wells finally resulted in a significant income gap between the upper and the lower river basin.

Keywords: tank irrigation, private well, commercial agriculture, farm income

I Introduction

Based on tank (water reservoir) irrigation system, traditional rice-based agriculture has long been practiced in many parts of Tamil Nadu, India. Nowadays there are still 39,202 tanks in the state [Palanisami *et al.* 2008], which were constructed across the slope of valleys to catch and store water. These tanks have existed since "time immemorial" [Palanisami 2000]; one of the tanks in Madurai District, for instance, was constructed either in the later Pandiyas (1300AD–1600AD) or the Nayakas (1600AD–1800AD) period, deducing from its sluice structure and mortar [Ford Foundation and Anna University 2001]. Ludden [1979] argued that the civilization in Tamil Nadu matured amidst irrigated paddy fields which benefited from tank irrigation.

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It is well-known that minor irrigation, especially well irrigation, has played a critical role in agricultural development in India since independence (e.g., Esho [2008]; Sivasubramaniyan [2006]). This is also true for the tank-irrigated areas in south India, including Tamil Nadu. Expansion of private wells that were constructed in the command area of tanks for supplementary irrigation and also in the dry land for introducing irrigation have been leading agricultural development in such a region as well, primarily through increased yield per unit of land for traditional crops, mainly rice (through the "Green Revolution"). In recent years, the demand for rice in India has been approaching saturation point, enabling the country to start exporting rice to the world market. However, because of the relatively low productivity of rice in tank-irrigated areas (compared to Punjab, for instance), economic development through rice exports cannot be expected in such areas.

Given that almost half of the working population is still engaged in agriculture in Tamil Nadu [GOTN 2006a]¹⁾ and agricultural development is still one of the key issues for economic development, increased production of high-valued crops such as fruit and vegetables is essential in tank-irrigated areas. High-valued crops are mainly for urban population; their number has been rapidly increasing, especially after the early 1990s when India started full economic liberalization and thereby accelerated the development of industrial and service sectors (on Tamil Nadu, see Kajisa and Palanichamy [2006]). Considering that more ample and timely irrigation is indispensable for growing fruit and vegetables or other high-valued crops, the importance of private wells is also expected to grow. Tank water is stored only during the rainy season, and the water volume is highly affected by climate conditions as well as by tank management. By contrast, well water is available throughout the year; unless the well dries up. The expansion of private wells after independence, especially since the 1960s, significantly contributed to the "Green Revolution." In Tamil Nadu, the "Green Revolution" spread mainly in the 1980s up to the mid-1990s (Fujita [2011] in this issue). It is also reported that groundwater irrigation started to expand again after the 1990s in the state mainly due to the decline in the price of pumps and the cost of drilling wells [Kajisa *et al.* 2007].

There are already a number of studies focusing on the expansion of private wells and its impact in Tamil Nadu (e.g., Janakarajan [1993]; Palanisami *et al.* [2008]). The important role played by private wells in agricultural development has been argued clearly but much attention has not been paid to the salience of geographical location of their study site, because their analyses were largely confined to individual villages or at most to some blocks (an administrative unit; see footnote 2)). For more sustainable

¹⁾ But the primary industry contributes less than 20% of net state domestic product in Tamil Nadu [GOTN 2006a], thus indicating the widening income disparity between urban and rural areas.

rural development, watershed development programs have become a key strategy in India [GOTN 2010; Shah 2000; Vaidyanathan 2006]. This means that when we deal with the expansion of private wells, analyzing the issue within a wider geographical context such as at a river basin level is essential.

This article focuses on the entire upper part of the Gundar River Basin in southern Tamil Nadu, which is one of the tank-intensive watersheds in the state. The major objective of the article is to investigate the effect of the expansion of private wells by examining the changes in crop choice by farmers during the last two decades from subsistence food crops (rice, millets and others) to cash crops. In other words, based on data obtained from government statistics and recent field surveys, we attempt to show how the expansion of private wells affected crop choice by farmers and their livelihood (income) in the entire upper Gundar Basin. Although we offer detailed analysis of only two study villages from the upper and the lower part of the basin, we illustrate the spatial variation at the village (*gram panchayat*) level by showing several GIS (geography information system) maps.

The next chapter of this article provides an overview of the research site, namely, the upper Gundar River Basin and the two study villages for an in-depth analysis. Then, the process of the expansion of private wells in the study area is illustrated in Chapter III. After brief explanations on crop cultivation in the studied four blocks in Chapter IV, we discuss the changes in crop choice and their impact on rural livelihood (income) in Chapters V and VI. Before the conclusion, we discuss some major points raised in this article in Chapter VII.

II Overview of the Research Site

II.1. Outline of the Upper Gundar River Basin

There are a total of 17 major river basins in Tamil Nadu, one of which is the Gundar River Basin (Fig. 1). It has a total area of 5,647 km², extending to 5 districts [Gowtham and Lawrence 2010]. The upper part of the basin covers 3 blocks (Sedapatti, Tirumangalam and Kallikudi) of Madurai District and 1 block (Kariapatti) of Virudhunagar District (Fig. 2).²⁾ In the interest of simplicity, Sedapatti, Tirumangalam, Kallikudi and Kariapatti blocks will be renamed according to their position in the basin as Blocks A, B, C and D, respectively. The upper Gundar River Basin is composed of the two major tributaries, i.e., Goundanathi and Thekkar. The Goundanathi River starts from the two villages of Saptur and Elumalai in Block A [GOTN 2008a]. The Goundanathi and Thekkar Rivers join at the P. Pudupatti Village in Block D, from where the river is called the Gundar [*ibid.*].

²⁾ The "block" is an administrative unit in India introduced for the purpose of development after independence.

SATO T. and Periyar Ramasamy DURAIYAPPAN: The Effect of Expansion of Private Wells



Fig. 1 Location of the Study Area

As illustrated in Fig. 2b, the four blocks under study are located south to west of Madurai, the second largest city in Tamil Nadu. National highways extend radially from Madurai City, and state highways are arranged to connect to these national highways. There are four wholesale markets near the study area; Madurai, Tirumangalam, Usilampatti, and Virudhunagar [GOTN 2004]. The Madurai Wholesale Market is the biggest, reflecting the largest population size of the city.

Table 1 presents the general characteristics of the four blocks. The total geographical area is 1,578 km². The population density in Blocks A and D was lower than the other two, but the low density in Block A was mainly due to the existence of a large reserved forest. Since agricultural workers (including cultivators and agricultural laborers) occupied more than half of the total workforce, the agricultural sector still played a major role in the study area in general. However, out of the four blocks Block D was an exception, with more than half of non-agricultural workers.

Fig. 3 shows the average monthly rainfall, in comparison with the reference evapotranspiration (ET_{o}) measured at Madurai AC & RI.³ The value of ET_{o} is generally treated as potential evapotranspiration, which is the amount of water that could be evaporated or transpirated if sufficient soil

³⁾ The monthly reference evapotranspiration (ET_a) was calculated by the methodology of Allen *et al.* [1998].



(a) Topographic Features of Study Area



(b) Road Connections in Study Area

Fig. 2 Maps of the Study Area

water was available. The figure shows that the ET_{o} exceeds the rainfall almost all the year round except during the three months from September to November, when the northeast monsoon brings relatively plentiful rainfall in the area. River flow can only be observed a few times in this rainy season (September–November) when it rained intensively. There is little river flow in the dry season (December and January–August) because most of the rainfall in this season has evaporated. The average rainfall of the whole study area in the 2005–06 agricultural year (June–May) was 913 mm,

	Area Nur (km²) Vi	Number of	Toto1	Population	T-+-1	Share of Total Workers (%)		
		Revenue Villages	Revenue Villages Population		Workers	Cultivators	Agricultural Laborers	Other Workers
Block A	600.70*	37	89,320	148.7	48,297	23.3	41.2	35.5
Block B	319.25	53	84,748	265.5	45,098	18.4	40.2	41.4
Block C	256.82	47	68,263	265.8	40,831	22.3	45.4	32.3
Block D	401.56	108	91,598	228.1	48,044	21.4	27.1	51.5
Total	1,578.33	245	333,929	211.6	182,270	21.4	38.1	40.5

Table 1 General Characteristics of the Studied Blocks

Data source: GOTN [2006b; 2006d; 2006f; 2006h].

Note: * Block A contains 242.23 km2 of reserved forest.

whereas Fig. 4⁴⁾ shows the spatial distribution of it in the entire upper Gundar Basin.⁵⁾ The northern part of Block A recorded the highest level, with an average of more than 1,200 mm. The rainfall gradually decreased towards the lower part of the basin and reached less than 800 mm in the southeastern part of Block D. The block-wise average rainfall in 2005–06 was 1,222 mm, 1,132 mm, 1,056 mm, and 856 mm in Blocks A, B, C, and D, respectively. Note that the rainfall amount in the year 2005–06 was slightly higher than the normal year, deducing from its record in Tirumangalam Town. The average annual rainfall from 1980–01 to 2005–06 was 913.2 mm, compared to 1,084 mm in 2005–06.

Similar to the other areas in Tamil Nadu, tank irrigation system has long been developed in the study area to conserve available water for irrigation. According to the official record there were a total of 2,302 tanks in the entire Gundar River Basin [GOTN 2008a], 219 of which were located in the study area (the upper part of the basin). The number of tanks was 30, 47, 36, and 106 in the four blocks (Blocks A, B, C, and D), respectively (Fig. 2a). The density of tanks was highest in Block D because, as shown in the figure, the lower part of the basin had more tanks. In general, there are two water sources for tank irrigation systems: one is the water flowing from a channel connected to a river, and the other one is the runoff water from the catchment area. Out of a total of 219 tanks in the study area, 118 tanks are connected to a river [GOTN 2009a; 2009b]. Out of these 118 tanks, 45 tanks are connected to the

⁴⁾ All geographical figures presented in this paper were made by *ArcGIS*. Location of the cities, river flows, and tanks were visually interpreted according to the field survey using *Google Earth Pro*.

⁵⁾ The daily rainfall data from April 1979 to August 2008 was collected from the Public Works Department (PWD) office, Virudhunagar District office, Peraiyur *Taluk* office, Thirmangalam *Taluk* office, Usilampatti *Taluk* office, and Madurai Agricultural Collage and Research Institute (Madurai AC & RI) of Tamil Nadu Agricultural University (TNAU). For estimating the spatial distribution of annual rainfall in the study area, the data of 10 rainfall stations, namely, Aruppukottai (9°31'N, 78°06'E), Madurai AC & RI (9°54'N, 78°80'E), Madurai Airport (9°50'N, 78°05'E), Peraiyur (9°44'N, 77°47'E), Peranai (10°06'N, 77°48'E), Tiruchuli (9°32'N, 78°12'E), Tirumangalam (9°49'N, 77°59'E), Usilampatti (9°54'N, 78°80'E), Vaigai Dam (10°03'N, 77°35'E), Watrap (9°38'N, 77°38'E), were used. The spline interpolation method was applied to these data using *ArcGIS* and *Spatial Analyst*.



Fig. 3 Monthly Rainfall and Reference Evaporation (*ETo*) in Madurai (averaged of 1980–2006) Data source: Weather data at Madurai AC&RI, Tamil Nadu Agricultural University Note: Vertical bars denote standard error.



Fig. 4 Spatial Distribution of Annual Rainfall in 2005–06 Agricultural Year (unit: mm/year) Data source: Rainfall data at 10 rainfall stations (See text)

Vaigai River which flows outside the Gundar River Basin. They are located in the northern part of Blocks B and D. A continuous river flow throughout the year can be expected in the Vaigai River because of the existence of the two large reservoirs [Sivasubramaniyan and Vaidyanathan 2001], so that the period when water is stored in these 45 tanks is much longer; interview with farmers revealed that water is normally stored from mid-October to the end of March (5.5 months). The remaining 73 system tanks benefit from the Goundanathi or Thekkar River, and the tank water is normally stored only for three months. Finally, the remaining 101 tanks are completely rain-fed; runoff water from the catchment area is the only source of water. They are the most unstable tanks.

II.2. Outline of the Study Villages⁶⁾

For an in-depth study we selected two villages from the study area: one from the upper part of the basin and the other from the lower part of it. The former village named Saptur Village is located in the western part, belonging to Sedapatti Block (Block A) of Madurai District (Fig. 2b). It is located 7.5 km away from Peraiyur Town, where the *taluk* office is located.⁷⁷ The total population of the village was 7,767 [GOTN 2006b], and almost 80% of the population lived in Saptur Hamlet, the biggest hamlet among the six hamlets in the village. More than 70% of the workforce was engaged in agriculture and related activities [*ibid*.]. The village is very close to the Western Ghats Mountains, and sits in the uppermost part of the Gundar Basin (Figs. 2b and 5a). There are two tanks in the village that irrigate the wet land in the tank command area (*nañcai* in Tamil) located in the northeastern part of the village. However, most of the agricultural land owned by the villagers is categorized as dry land (*puñcai* in Tamil), falling outside of the tank command area. A number of small rivers originating from the Western Ghats flow through the *puñcai*, and some farmers who owned land adjacent to the small rivers may take the water into their land for irrigation. The rainfall was recorded at 1,238 mm in Periyar Town in 2005–06.

The other study village named P. Pudupatti (the official name is Perunjaripudupatti) Village is located in the southeastern part of the study area, belonging to Kariapatti Block (Block D) of Virudhunagar District. It is located 11.2 km from Tiruchuli Town, where the *taluk* office is located. The total population of the village was 1,150 [GOTN 2006h], and almost 90% of the population lived in Pudupatti Hamlet (The other small hamlet is called Perunjari Hamlet). More than 60% of the workforce was engaged in agriculture and related activities [*ibid*.]. As mentioned earlier, the two tributaries of the Gundar River

⁶⁾ In this paper a village means an administrative unit officially called *gram panchayat*. A *gram panchayat* is usually composed of several hamlets (natural villages).

⁷⁾ The *taluk* is an administrative unit introduced mainly for revenue collection in the British colonial era. Generally, a *taluk* covers a wider area than a block in Tamil Nadu.

東南アジア研究 49巻1号



(a) Saptur Village



⁽b) P. Pudupatti Village

Fig. 5 Maps of the Study Villages

(Thekkar and Goundanathi) join at this village (Figs. 2a and 5b). There is only one tank, which is connected to the Thekkar River. The tank irrigates *nañcai* land located in the south. *Puñcai* land extends widely to the southwestern side of the Thekkar/Gundar Rivers. The rainfall was recorded 720 mm in Tiruchuli Town in 2005–06. SATO T. and Periyar Ramasamy DURAIYAPPAN: The Effect of Expansion of Private Wells

III Process of Expansion of Wells in the Study Area

The spatial distribution of the density of dug wells in the entire study area is shown in Fig. 6. The density of dug wells was highest in Block A, whereas in the two blocks located in the middle reach of the basin (Blocks B and C), villages with high and low densities of dug wells form a mosaic. The density of wells was apparently low in Block D.

Now, in order to investigate the inter-temporal process of the expansion of private wells in the study area, two kinds of data are presented here. One is the data from the government statistics (confined to Madurai District) and the other is from the authors' field surveys in the two study villages.

Fig. 7 shows the change in the number of wells, including dug wells and bore wells⁸⁾ in Madurai District during the last two decades. The figure shows that the number of both dug and bore wells showed a slow increase until the end of the 1990s, but the speed of the increment suddenly accelerated in the early 2000s. However, a sharp decline in the number of dug wells was observed from the mid-2000s, which might reflect the abandonment of existing wells.

Next, let us examine the experiences in the two study villages regarding the change in the number of private wells. Table 2 shows the trend in Saptur Village. It is found that in *nañcai*, the number as a whole did not change, but dug wells were rapidly converted to dug-cum-bore wells after the mid-1990s. By contrast, the number of wells in *puñcai* increased rapidly from the late-1990s due to the increase of both dug-cum-bore wells and bore wells. On the whole, the total number of private wells in the village showed an increase from 1998, and the depth of wells became deeper due to the conversion of dug wells to dug-cum-bore wells. Regarding P. Pudupatti Village, a land registration map in 2008 suggested that there existed 43 wells within the village boundary, but according to our field survey in 2008, in *nañcai* there were only 10 active dug wells in 1998. Five were newly installed by 2008, but none of these was in use in 2008. The reasons for the abandonment of wells were due to both a shortage of groundwater and a problem with its salinity.⁹⁾ It should be mentioned here that one farmer installed a bore well down to around 350 feet from the soil surface in 1998, but could not obtain any water. On the other hand, in *puñcai* there were only 2 dug wells in use in 2008; and the rest of the wells were also abandoned.

We observed a strong tendency toward the decrease of the density of wells from the upper to the lower basin in accordance with the river flow (Figs. 2a and 6), which might correspond to the different

See Appendix, regarding the definition of wells. Data on dug-cum-bore well was also presented in the statistical data, but we did not present it because of its apparent inaccuracy.

⁹⁾ We observed salinity problems of groundwater in the lower part of the basin, including P. Pudupatti Village, even though the village is not close to the sea.

東南アジア研究 49巻1号



Fig. 6 Spatial Distribution of the Density of Dug Wells Data source: GOTN [2006c; 2006e; 2006g; 2006i]



Fig. 7 Inter-temporal Changes in the Number of Private Wells in Madurai District* Data source: Season and Crop Report of Tamil Nadu [various issues] Note: * Number of wells in Madurai and Theni Districts were aggregated because Theni District was separated from the original Marudai District in 1996.

SATO T. and Periyar Ramasamy DURAIYAPPAN: The Effect of Expansion of Private Wells

Land Type	Well Type	1988	1993	1998	2003	2008
	Dug well	22	21	20	17	16
nañcai	Dug-cum-bore well	1	2	5	8	9
	Bore well	0	1	1	1	1
	Total	23	24	26	26	26
	Dug well	29	25	23	22	20
puñcai	Dug-cum-bore well	4	8	13	17	21
-	Bore well	0	0	1	4	6
	Total	33	33	37	43	47
	Dug well	51	46	43	39	36
Total	Dug-cum-bore well	5	10	18	25	30
	Bore well	0	1	2	5	7
	Total	56	57	63	69	73

Table 2 Inter-temporal Changes in Private Wells in Saptur Village (Number of samples=58)

Data source: Author's field survey (December, 2008)



Fig. 8 Type of Wells

performance of wells. According to data on groundwater level surveyed in May 2006 [GOTN 2007a; 2007b], which is expected to be the lowest in the whole year because of the pre-monsoon season, the groundwater level was 2 to 5 meters in the three blocks located in the upper basin (Blocks A, B, and C), and 5 to 10 meters in Block D. Given the fact that, as shown in Fig. 8, the permeable layers and impermeable layers are alternately stratified under the soil surface, these figures seemed to be the groundwater level just under the soil surface, from which dug wells can be recharged. The lower groundwater level in Block D suggested above, therefore, indicates that farmers in Block D had to dig dug wells deeper, just in order to get the same amount of water, compared to the other three Blocks. On

東南アジア研究 49巻1号

Block	Total Agricultral Area (ha)	Gross Cultivated Area (ha)	Cropping Intensity (%)	Gross Irrigated Area (ha)	Irrigation Ratio (%)
А	23,352	14,353	61.5	7,421	51.7
В	22,737	13,699	60.2	5,438	39.7
С	15,518	13,907	89.6	5,358	38.5
D	33,305	13,998	42.0	9,146	65.3
Total	94,912	55,908	58.9	27,393	49.0

Table 3 Summary of Cropping in the Studied Blocks (2005–06 Agricultural Year)

Data source: GOTN [2006c; 2006e; 2006g; 2006i]

the other hand, bore wells capture groundwater from the deep permeable layer. We have already introduced above the story of a farmer in P. Pudupatti Village who failed to get water from the depth of around 350 feet (=107 meter), which implies that farmers in the lower basin generally faced difficulties to get groundwater from the deep layer as well. Such difficulties faced by farmers in the lower basin made them hesitate to install new wells, and resulted in the spatial deviation of wells as shown in Fig. 6.

IV Spatial Differences in Cropping System within the River Basin

Table 3 is a summary of cropping in the four Blocks in the 2005–06 agricultural year. We found that even though there was a total of 94,912 hectares of agricultural land, the gross cultivated area was only 55,908 hectares, with a cropping intensity of 58.9%; and the share of land lying fallow was large. Cropping intensity was the highest in Block C (89.6%) and the lowest in Block D (42.0%). The average irrigation ratio was 49.0%, whereas it was relatively high in Block D (65.3%) and A (51.7%).

Fig. 9 shows the spatial distribution of the "cultivation share" for subsistence food crops such as paddy, millets,¹⁰⁾ and pulses. The spatial distribution of the cultivation share for cash crops such as fibers, oil crops, sugarcane, and fruit/vegetables is presented in Fig. 10. Note here that, given the fact that tanks were concentrated in the northern side of the Thekkar River (Fig. 2a), the dashed lines in Figs. 9 and 10 separate the study area by the density of tanks. In the following part of this chapter, let us refer to the area above and below the line as the "Tank-zone" and the "Rain-fed-zone," respectively.

Now the major question is what kind of factors determined the crop choice by farmers, which was quite different in each geographical unit, as shown in Figs. 9 and 10. The hypothesis here is that water availability in each unit vis-à-vis water requirement for different crops was the major determinant. Let us now examine this issue in depth.

¹⁰⁾ Major millets in the study area include sorghum (*cholam* in Tamil), pearl millet (*cumbu*), finger millet (*ragi*), and maize.



SATO T. and Periyar Ramasamy DURAIYAPPAN: The Effect of Expansion of Private Wells

Fig. 9 Spatial Distribution of Cultivation Share* of Subsistence Food Crops (2005–06 Agricultural year) Data source: GOTN [2006c; 2006e; 2006g; 2006i] Note: * Cultivation share = (Area under each crop) / (Total cultivated area)

Generally speaking, almost all the farmers in the study area grow paddy during the rainy season in *nañcai*, but some farmers with well-functioning wells grow paddy in *puñcai*, and in *nañcai* during the dry season, as well. In Fig. 9, a high cultivation share of paddy was mainly observed in the Tank-zone, but a relatively higher cultivation share (of paddy) was also noted in Block A. Millets were the traditional crops during the rainy season in *puñcai*, but many farmers now grow them in the dry season as well. Millets are usually grown under rain-fed conditions, but farmers with wells give supplementary irrigation. According to our interview with farmers the gruel made from millets was commonly used as a staple food until 20 to 30 years ago. Currently, they mainly use millets for feeding cattle. Higher cultivation share of millets was observed in the Rain-fed-zone, especially in Blocks A, B and C. Pulses such as red gram and black gram are common food crops in the study area, and also used for making *saanbar* (South Indian vegetable curry sauce), etc. We also observed a higher cultivation share of pulses in the Rain-fed-zone, especially in Blocks B, C and D.

In Fig. 10, a higher cultivation share of fibers (mainly cotton) was evident in the Rain-fed-zone (Blocks B, C and D), similar to pulses. By contrast, we observed a higher cultivation share of oil crops



Fig. 10 Spatial Distribution of Cultivation Share* of Cash Crops (2005–06 Agricultural year) Data source: GOTN [2006c, 2006e, 2006g, 2006i] Note: * Cultivation share = (Area under each crop) / (Total cultivated area)

(mainly groundnut) in the Tank-zone. Fibers and oil crops were usually cultivated during the dry season under irrigation when well water is available. Relatively minor cash crops such as sugarcane and fruit/vegetables displayed a unique spatial distribution. A high cultivation share of sugarcane can be seen in the upper part of the river basin. Sugarcane farmers in the study area had wells without exception, because it was one of the necessary conditions for making a contract with sugarcane factories. The growing period of sugarcane is two years (newly planted and ratoon). For fruit/vegetables, we observed a high cultivation share only in the villages at the northeastern edge of the Tank-zone. Vegetables were grown during the dry season under well irrigation because of the necessity for ample and timely irrigation.

Table 4 shows the estimated standard water requirement (ETc) (maximum amount of water use under favorable soil water conditions) for the major crops in the study area.¹¹⁾ The *ETc* is mainly

¹¹⁾ For estimating the *ETc*, a monthly summary of weather data (rainfall amount, maximum and minimum temperature, relative humidity, sunshine hours or radiation, and wind velocity) during 1980–2005 (the data for 2001 were not available) measured at Madurai AC & RI, TNAU was used. The growing period of crops were obtained from our interviews with farmers as explained above, on a monthly basis. Crop evapotranspiration was estimated using single crop coefficient (*k_c*) [Allen *et al.* 1998] and presented as the standard water requirement. Estimated values were the averages during 1980–2005.

SATO T. and Periyar Ramasamy DURAIYAPPAN: The Effect of Expansion of Private Wells

Subsistence Food Crops / Cash Crops	Category	Kind of Crop	Major Growing Period	Standard Water Requirement (mm)
	Paddy	Paddy	Oct–Jan	1200.6 ± 239.9
Subsistence Food Crops	Millets	Sorghum	Apr-Jul	441.8 ± 119.3
	Pulses	Green gram	Mar–May	291.0 ± 80.6
	Fibers	Cotton	Mar–Aug	811.5 ± 213.5
	Oil crops	Groundnut	Jan–Apr	495.9 ± 131.4
Cost Cours	Sugar crops	Sugarcane	Apr–Mar	1813.2 ± 423.8
Cash Crops		Banana	Apr–Mar	1657.8 ± 387.4
	Fruits and vegetables	Fruit trees	_	1157.0 ± 270.4
		Vegetables	Jun–Aug	438.4 ± 119.1

Table 4 Standard Water Requirement for Major Crops in the Study Area

Note: The values were calculated using the weather data at Madurai AC & RI, Tamil Nadu Agricultural University following Allen *et al.* [1998].

Average numbers from 1980 to 2005 were presented.

Numbers after "±" indicate standard error.

Shading values in table indicate popular growing period in the study area.

determined by the length of growing period and the dryness of the air during the growing period. The crop-wise orders (from high to low) of the estimated *ETc* were paddy > millets > pulses for the subsistence food crops, and sugarcane > fruit tree > fiber > oil seed > vegetables for the cash crops. The crops with high *ETc* such as paddy, sugarcane and fruit/vegetables will naturally require irrigation, either from tanks or wells.

To sum up the argument, firstly, the spatial distribution of crops in the study area was primarily determined by the availability of tanks, because the cultivation share of paddy and oil crops was relatively high in the Tank-zone, whereas that of millets, pulses and fibers was relatively high in the Rain-fed-zone. However, secondly, differences in the cropping system within the same zone (either in the Tank-zone or the Rain-fed-zone) were also evident. Fruit and vegetables, which require ample and timely irrigation, for instance, were introduced only in the villages located at the northeastern edge of the Tank-zone, because the tanks in these villages kept water for longer periods due to their connection to the large-scale reservoirs, as explained earlier in Chapter II, although the vicinity to market (Madurai City) was another major reason. In the Rain-fed-zone, paddy and sugarcane, which required more water (Table 4), were introduced only in the uppermost part of the basin (Block A), because many farmers in Block A had wells, which might enable them to supply enough water to the crops with high water requirement. Also notable is the fact that the crops selected in Blocks B, C and D were similar (such as millet, pulses and fibers), but the irrigation ratio of these crops in Block B was apparently

Block	Millets	Pulses	Fibers	Oil Crops	Total
А	79.0%	66.9%	26.5%	36.6%	57.2%
В	52.8%	99%	81.3%	63.6%	71.4%
С	3.2%	0.1%	2.0%	20.1%	5.3%
D	10.7%	20.1%	2.9%	12.1%	10.3%
Total	26.6%	24.1%	10.6%	25.5%	21.3%

Table 5 Irrigation Ratio of Selected Crops in the Studied Blocks (2005–06 Agricultural Year)

Data source: GOTN [2006c; 2006e; 2006g; 2006i]

higher than in Blocks C and D (Table 5), because the wells in Block B might provide more water than those in Blocks C and D. The cropping intensity was apparently higher in Block C than Block D (Table 3), which implied that water used for crop cultivation was larger in Block C than in Block D because of the different well density between Blocks B and C. Therefore, the spatial differences in the cropping system presented in Figs. 9 and 10 can be understood mainly by the factor of water. Water availability was originally determined by tanks, but the availability of wells also became a major determinant of crop choice in the study area.

V Differences in the Crop Composition between Upper and Lower Basin¹²⁾

The changes in the crop composition in the two study villages during the last two decades are shown in Figs. 11 and 12, by using data obtained from the sample farmers (58 and 22 from Satpur and P. Pudupatti Villages, respectively) on area of crops cultivated, which were added up and presented as a share of crops in each village. Here, crops are categorized into two (subsistence food crops and cash crops) and the share of fallow land is also shown. Now let us present the major findings for each village, and by the category of land (*nañcai* and *puñcai*).

(1) Saptur Village

1) Nañcai

In the rainy season, the cultivation of subsistence food crops continued to be highly dominant, but a

¹²⁾ The authors visited the study villages (Saptur and P. Pudupatti) in September and December, 2008, to collect detailed household-level data. The sample size of the households surveyed was 58 and 45 each. Details on cropping system, private wells, and household income for the year of 2007–08 were obtained through interviews and questionnaire surveys. The size of land holding and the area under each crop (including leased-in land and mortgaged-in land) during the last 20 years were also investigated. Because of the time limitation, however, the number of samples for this question was limited to 22 (out of 45) in P. Pudupatti Village.



SATO T. and Periyar Ramasamy DURAIYAPPAN: The Effect of Expansion of Private Wells

Fig. 11 Inter-temporal Changes in Crop Choice in Saptur Village

Data source: Author's field survey (December, 2008)

Note: Lines between the bar graphs illustrate the inter-temporal change of the share of the three crop categories (Subsistence food crops, Cash crops and Fallow) presented in Figs. 9 and 10.

gradual decrease in the area under paddy can be observed from 1998, as farmers shifted to cash crops (mainly banana). Banana cultivation increased its share until 2008. On the other hand, in the dry season, millet cultivation was originally dominant, but a remarkable change occurred from 1998, when almost half of the area under millets was converted to cash crops (fibers and fruit/vegetables). In 2008, however, cash crops (oil crops and fibers) declined and shifted back to millets, while fruit/vegetables remained the same. The ratio of fallow land decreased constantly until 2003, but increased sharply thereafter and reached nearly 18% in 2008.

2) Puñcai

In the rainy season, paddy, millets and oil crops were originally dominant. A noticeable change was observed with the introduction of sugarcane in 2003, which mainly replaced paddy and millets. However, sugarcane area decreased in 2008 and farmers converted back to paddy. In the dry season, nearly 50% of land remained fallow in 1988, but the cropping ratio increased continuously until 2008. Fallow

東南アジア研究 49巻1号



Fig. 12 Inter-temporal Changes in Crop Choice in P. Pudupatti Village

Data source: Author's field survey (September, 2008)

Note: Lines between the bar graphs illustrate the inter-temporal change of the share of the three crop categories (Subsistence crops, Cash crops, and Fallow) presented in Figs. 9 and 10.

land was converted mainly to cash crops (fibers, oil crops and sugarcane). Millets were originally dominant, but as of 1993, some of them were also converted to oil crops and fibers.

(2) P. Pudupatti Village

1) Nañcai

During the rainy season paddy cultivation was highly dominant in 1988, which covered more than 80% of the total area. The rest of the area was occupied by millets and there was no fallow land in 1988. After that, however, paddy cultivation declined continuously and especially sharply since 2003. Some of the areas under paddy were converted to fibers, millets and others, but more than 60% of land remained fallow in 2008, even in the rainy season. In the dry season, on the other hand, fibers (cotton) was extensively grown in 1988, occupying more than 40% of gross area. However, it also decreased sharply in 2008 and even though some areas under cotton were converted to oil crops and others, fallow land increased to nearly 85% in 2008.
2) Puñcai

A sharp decline in cultivation was also observed in *puñcai* land. Originally, millets, fibers and oil crops occupied nearly 50% of the cultivable land in the rainy season. However, from 2003, these crops were gradually abandoned and declined sharply, with land remaining fallow. The fallow land occupied 77% and 96% of *puñcai* land in the rainy and dry seasons, respectively, in 2008.

To sum up, from 1998, in Saptur Village, remarkable changes in crop choice occurred. First, millets cultivation during the dry season in *nañcai* shifted to fibers. Then, in 2003, sugarcane was introduced in *puñcai*. In both cases, the kind of crops introduced required more water than the originally cultivated crops (Table 4). The timing of the introduction of new crops coincided with that of the expansion of wells in the village (Table 2). Considering such correlations, we think it highly plausible that the change in the cropping system in the village became possible through the introduction of new wells or upgrading of existing wells. On the other hand, crop cultivation in P. Pudupatti Village continuously declined. The first decline occurred in *nañcai* during the rainy season in 1993, which continued until 2008. This decline might correspond to the decline in water storage capacity of the tank in the village from 1993 onward. After that, the second decline occurred in *puñcai* during the rainy season in 2003, followed by the decline in *nañcai* during the dry season. Finally, most of the cultivable land was left fallow. It seems that after 2003, such a decline was caused by the disappointing performance of wells in the village, as we discussed in Chapter III.

VI Differences in Farm Income between Upper and Lower Basin¹³⁾

In the previous chapter, we illustrated the different patterns of agricultural transformation between the upper and the lower basin, and suggested that it might be caused by differences in the performance of wells, depending upon the geographical location within the basin. In this chapter, we investigate the

¹³⁾ Estimates of household income were undertaken as follows. Income sources were divided into three: farm income, off-farm income and non-farm income. Each income was estimated separately in the rainy season (October–December) and the dry season (January–September). For estimating farm income, data on the size of cropped areas, yield, and farm gate prices were obtained for each crop grown in both *nañcai* and *puñcai*. Since we could not estimate the cost of production, we assumed the ratio of net income to gross revenue to be 60% uniformly, regardless of crops. The value of crops consumed by farmers was included in the farm income. Off-farm income was composed of income from agricultural wage labor and animal husbandry, and the latter was composed of income from sales of animals (sheep and goats) and milk from cows. We assumed that three kids are born to an adult female sheep/goat in two years, and annual increment of value per head was assumed to be Rs.3,000. Therefore, income from sale of animals is estimated from the number of livestock holding multiplied by the prevailing unit price (Rs.4,500 per head). There were some farmers engaging in goat/sheep tenancy, called *pangu-varam* in Tamil. In this contract, owners and tenants share 50% of income from selling sheep/goats. In estimating income, cash money provided by owners was treated as an income of tenants.

東南アジア研究 49巻1号

	Ammuel In come	Component of Annual Income		
Village Name	$(10^3 \mathrm{Rs.})$	On-farm Activities (10 ³ Rs.)	Off-farm Activities ¹⁾ (10^3 Rs.)	Non-farm Activities (10 ³ Rs.)
Saptur (n=58)	100.8 ± 13.4 **	66.5 ± 11.1 **	16.2 ± 2.8	18.0 ± 4.4
P. Pudupatti (n=45)	59.1 ± 6.1	12.9 ± 3.0	$27.8 \pm 3.7*$	17.0 ± 5.4

 Table 6
 Annual Income and Its Components in the Two Study Villages

Data source: Author's field survey (September and December, 2008) Note: Numbers after "±" indicate standard error.

¹⁾ Off-farm activities indicate agricultural wage labor works and works related to animal husbandry,

* Indicates significant difference at 5% level.

** Indicates significant difference at 1% level.

effect of such differences in the crop choice on farmers' income. The estimated annual income and its breakdown into farm income, off-farm income (income from agricultural wage labor and animal husbandry) and non-farm income in the two study villages (for the 58 and 45 sample farmers in each village) are shown in Table 6 and the details of farm income are also shown in Table 7.

The tables show that 1) the income of Saptur Village was significantly higher than that of P. Pudupatti Village, which is mainly attributed to the large difference in farm income and; 2) farm income both in *nañcai* and *puñcai* and both in the rainy and the dry seasons was much higher in Saptur Village. Such a large gap in farm income was created by the difference in crop choice (Figs. 11 and 12). However, it should be noted that the major reason why off-farm income in P. Pudupatti Village was significantly higher than in Saptur Village lies in the fact that the invader trees called *Prosopis juliflora* grew densely in the fallow land and could be cut every 2–3 years for sale as charcoal or firewood. Our interview with farmers in 2008 revealed that since the price of the wood increased 5 times during the last 5 years, landowners with fallow land received Rs.2,000–15,000/acre (Rs.5,000–37,500/hectare) without any major cost. This wild tree also provided the villagers with opportunities for work during the dry season. The fact that non-farm income in P. Pudupatti Village was not larger than in Saptur Village suggests the reluctance of farmers in the lower river basin to seek other income sources, and their being "satisfied" with the low income.

Fig. 13 shows the relationship between the volume of well water used for irrigation and the income from crops.¹⁴ The sample size was 22. The figure shows that 1) there was a significant positive linear

¹⁴⁾ To investigate the relationship between well irrigation and income from production of crops in the study area, in addition to the two study villages, the authors also visited five selected villages located in the same river basin in September 2008. Detailed data on the cropping calendar, irrigation frequency, and hours irrigated per time both in the rainy and the dry seasons were obtained from interview surveys. Based on information and data collected, the irrigated hours for each crop during the whole growing period were estimated. In estimating the actual amount of irrigation, irrigation hours were uniformly multiplied by 26.4 m³/hour, which was estimated by the authors through a direct measurement in a selected well from the study area.

				Nañcai					Puñcai		
Village Name	Total	Land Holding (Ha)	Sub Total (10 ³ Rs.)	Rainy Season (10 ³ Rs.)	${ m Dry} { m Season} (10^3 { m Rs.})$	Annual Crops (10 ³ Rs.)	Land Holding (Ha)	Sub Total (10 ³ Rs.)	Rainy Season (10 ³ Rs.)	Dry Season (10 ³ Rs.)	Annual Crops (10 ³ Rs.)
Saptur (n=58)	$66.5 \pm 11.1^{**}$	0.38 ± 0.08	$16.6 \pm 3.4 *$	11.2 ± 2.3	$4.6 \pm 1.1^{**}$	0.8 ± 0.7	1.38 ± 0.20	50.0 ± 10.3 **	26.1 ± 4.2 **	$13.7\pm2.5**$	10.5 ± 6.9
P. Pudupatti (n=45)	12.9 ± 3.0	0.81 ± 0.34	8.9 ± 2.9	5.1 ± 2.2	0.8 ± 0.3	1.5 ± 1.0	1.54 ± 0.40	5.5 ± 1.4	1.3 ± 4.8	0	4.2 ± 1.4
Data source: At	uthor's field sur	rvey (Septem	ber and Decer	nber, 2008)							

Table 7Farm Income in the Two Study Villages

Note: Numbers after "±" indicate standard error. * Indicates significant difference at 5% level. ** Indicates significant difference at 1% level.



Well irrigation water amount (mm)

Fig. 13 Relationship between Volume of Well Water and Income from Crops

Data source: Author's field survey (September, 2008)

Note: Colors painted over the markers indicate the range of standard water requirement:

 $< 500 \,\mathrm{mm}$ $= 500-1,000 \,\mathrm{mm}$ $= > 1,000 \,\mathrm{mm}$

Equation in the figure indicates the simple linear regression line.

relationship between the volume of well water consumed and the income from crop cultivation, and 2) crops which require more water could produce more value-added. Note that the volume of well water shown in the figure was much higher than the standard water requirement (See Table 4). This might be due to the loss of water when conveyed from the well to the field because most of the irrigation channels in the study area were not lined with concrete or other low-permeable materials. The figure simply shows the fact that "more water creates more money." Such economic incentives for farmers accelerated the introduction and renovation of wells in the upper basin, as shown in Fig. 7 and Table 2.

Note here that electricity supply is essential for pumping groundwater from wells. Electricity for agricultural purposes is highly subsidized in Tamil Nadu. A flat rate system was introduced in 1984 (Rs.125/HP/year), but later electricity for agricultural purposes became totally free and remains so even now, except for a brief period in 2003, when a flat rate system was briefly re-introduced (Rs.250 /HP/year) [Palanisami *et al.* 2008]. Such highly subsidized electricity, along with the declining cost of

installation of wells, encouraged farmers to introduce or update wells.

VII Discussion

India embarked on full-scale economic liberalization in 1991, and since then, the development of the industrial and service sectors has accelerated. Such a change in economic structure created an increased demand for cash crops, especially among urban populations, and spurred the agricultural transformation from food crops to cash crops in rural Tamil Nadu, including the study area. Since cash crops were usually grown in the dry season, they required additional irrigation water. Therefore, demand for the groundwater irrigation rapidly expanded. Several factors, including the decline in pumping machine prices, the cost of well drilling, and the existence of highly subsidized electricity [Kajisa *et al.* 2007; Palanisami *et al.* 2008], encouraged farmers to install private wells.

In the upper Gundar River Basin, introduction of and deepening of wells, represented by the conversion from dug wells to dug-cum-bore wells, accelerated from the end of the 1990s. Such a rapid expansion of wells enabled more farmers to secure groundwater, which enhanced the introduction of cash crops. Given the positive correlation observed between the volume of well water used and income from crop production, farmers with good access to groundwater could gain higher income than before. However, the introduction of cash crops did not occur uniformly within the basin, but was confined to the upper part. The crop choice in the middle and the lower basin therefore remained the same, mainly concentrated in subsistence food crops. In the lowermost part of the basin, much of the cultivable land was even abandoned and left fallow. This must be due to the disappointing performance of wells in the area. As a result, a significant gap in farm income was created between the upper and the lower part of the same river basin.

The performance of wells is highly affected by the surface water and cropping conditions close to the well [Palanisami and Easter 1991; Srivastrava *et al.* 2009]. If water is properly stored in the tanks, sufficient groundwater recharge, not only the direct one from tank water spread areas but also from the tank command area, can be expected [Srivastava *et al.* 2009]. In Saptur Village, the share of area under paddy in *nañcai* did not drop below 60% during the last two decades (Fig. 11), whereas the same figure in P. Pudupatti Village was less than 20% in 2008 (Fig. 12). Such a difference in the crop choice between the two villages was created by the difference in tank performance, which might further result in the varying performance of wells. Therefore, as a whole, the difference in tank performance might be the major reason for the difference in the crop choice within the river basin.

As argued above, tanks have been functioning as an important source of groundwater recharge.

However, the performance of tanks has been declining mainly due to their inadequate operation and maintenance [Palanisami and Easter 1991; Palanisami and Balasubramanian 1998; Sakthivadivel *et al.* 2004; Sivasubramaniyan 2006]. The expansion of wells was regarded as one of the biggest reasons for its decline, because once farmers secured well water, they began to lose their interest and motivation for getting involved in tank management [Janakarajan 2003]. In recent years, a variety of efforts have been undertaken by the State Government of Tamil Nadu to improve the performance of tanks, but they were not always effective. Restoring the physical condition of tanks through rehabilitation is indispensable, but equally crucial is finding ways to keep the rehabilitated tanks in good condition [Sakthivadivel *et al.* 2004]. In this sense, to seek an appropriate institutional framework for promoting people's participation in tank management would be a more important issue for mitigating the income gap found within the river basin.

VIII Conclusion

In this article, we investigated the effects of the expansion of private wells on rural livelihood (income) in a tank-intensive watershed in the upper Gundar Basin in southern Tamil Nadu, focusing mainly on the effects of wells on crop choice. Due to the high density of tanks in the study area, subsistence food crops such as paddy, millets and pulses were planted at least until the mid-1990s in the entire basin, including the two study villages. After the late-1990s, however, the construction/installation of wells accelerated, especially in the upper part of the basin. This enabled farmers to shift their crop choice from subsistence food crops to cash crops, because the latter requires more water. However, such a shift in crop choice did not occur in the lower part of the basin, which can be attributed to the disappointing performance of wells in the area. Because of the disappointing performance, farmers did not dare to try to install/update their wells. Finally, such a difference in the expansion of wells resulted in a significant income gap within the same river basin. For rural development in disadvantaged areas such as the lower part of the basin, various governmental support such as the National Rural Employment Guarantee Act (NREGA) may be essential.

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Appendix: Type of Wells

The definition of various types of wells is as follows (PSS Borewell Services [2010]; Fig. 8).

- 1. Dug well: A dug well is constructed by digging the soil or blasting the underground rock.
- 2. Bore well: A bore well is a well of 4 1/2" to 12" in diameter drilled into the earth for retrieving water. It is cased in the region of loose subsoil strata and opened in hard rock or in crystalline rock. High grade PVC pipes are used for casing in bore wells. The depth of a bore well can vary from 150 feet to 1,500 feet.
- 3. Dug-cum-bore well: A dug-cum-bore well is constructed by inserting a pipe from the bottom of a dug well vertically (sometimes horizontally) deeper underground to lift up groundwater either by an electric motor or a diesel engine.

John Kleinan and Manon Osseweijer, eds. *Pirates, Ports, and Coasts in Asia: Historical and Contemporary Perspectives.* Leiden: IIAS; Singapore: ISEAS, 2010, 299 p.

Pirates, Ports, and Coasts in Asia is an important new contribution to the literature on piracy in Asian seas. As the title suggests, the authors were looking to go beyond an examination of piracy wholly on its own, and sought instead to link predation on the high seas to the maritime littoral in general, and to sea-based cities in particular, in their analysis. The thirteen chapters in the book are united in keeping the focus of attention on sea-strand relations, and one never seems to be too far from the other in the three hundred pages that make up this book. This in itself is an innovation of sorts, as many earlier attempts to deal with piracy in Asia have dwelt too much on the high seas and not enough (perhaps) on the coasts that supply people, ships, and material to make piracy possible in the adjacent waterways. Kleinan and Osseweijer likely had a discussion with their authors ahead of time on this theme, and the book holds together nicely in that the authors seem to have taken this duality seriously, each in their own work. We don't see much of the sea here without feeling a breeze from land, too, and this is important overall.

The book is organized into three asymmetrical parts. In Part I, consisting of an introductory essay by the authors and a useful article by Michael Pearson on the definition of piracy in Asian waters, some of the main lines of the volume are laid out. Kleinan and Osseweijer lay out the circumstances of the construction of the book, which had its origins in a conference in Shanghai in 2005. They talk a bit about the socialscientific directions of the book, before providing summaries of the essays in the volume themselves, each of which is described in more or less a paragraph of text. Pearson's initial essay complements this overview of the book by getting at some of the definitions of piracy in these waters going back to Early Modern times. His contribution is useful in that it situates the bulk of the study to come with some conceptual questions which are then explored in the book. It might have been useful here to have asked a third, non-Asia-focused specialist to weigh in on how piracy in Asia might differ from versions of this activity elsewhere in the world (off the Horn of Africa, perhaps, or in the Caribbean, two other hot-spots of global piracy). I could not help wondering if someone like Markus Reddiker, for example, whose books on piracy and sea-board life in the Atlantic, might not have had something useful to say about these articles as a collective, even if his own expertise is derived from analogous activities on the other side of the world.

Part II then delves into the history of piracy in East Asia in four essays. Robert Antony starts out nicely by looking at a maritime border-town between China and Vietnam (Giang Binh, in the Tay-son era around the turn of the nineteenth century), before Hoang Anh Tuan provides an exegesis (somewhat derived from his excellent book Silk for Silver: Dutch-Vietnamese Relations) on Tonkin's role in the piratical and trade currents of the seventeenth century. Two other essays, by Paola Calanca and John Kleinan, then square the narrative more centrally on East Asian seas, as they examine the coasts of Fujian and the story of a single ship (the S.S. Namoa, pirated off the coast of Guangdong in 1890), respectively. These are all interesting essays, filled with a wealth of primary-source detail (and some very good broader theoretical musings by Kleinan in particular), but it seems slightly "off" to call this section "East Asia." Fully half of the narrative here takes place in Vietnamese waters, which may indeed be a maritime frontier zone of sorts between East and Southeast Asia but which seems slightly ghettoized by placement into only one of these designations here. This organizing rubric for the book might have been usefully deconstructed a bit further, with perhaps a different reference point rather than "East" and "Southeast" Asia serving to bundle the assembled essays. The sea, after all (and obviously) is fluid - such land-based monikers seem somehow strangely out of place here.

Part III, the last section of the book, then brings up the rear with fully seven essays on "Southeast Asia." All of this literature concentrates on the island world of Southeast Asia, and there is almost nothing here on the long outstretched coasts of Burma, Siam, and Cambodia, for example, and also little on the Malay Peninsula. This is a lacuna which should have been filled, likely, so the book might have had better balance. While it's true that there is less literature on these coasts, and that piracy may have been practiced less here, too, than in the Insular world of Southeast Asia, this lack of material gives the book a feeling of slightly skewed orientation. I should be clear that the essays that are indeed here are very good ones; these are the main authors in the field, and the work that they exhibit here is nuanced and complex. Adri Lapian talks about piracy in Indonesian waters generally in his piece, and then Gerrit Knaap, Esther Velthoen, and Carolin Liss all discuss variations of piracy across several time periods in Papua. Sulawesi. and Sabah respectively. All are accomplished essays, which provide a very good balance between hard data and conception on the how's and why's of piracy working in these far-flung locales. Three other essays then problematize these ideas even further, as James Warren, Stefan Eklof Amirell, and Ikuya Tokoro all examine different avatars of the subject in one place, the Sulu Basin at the southern end of the Philippines. These essays too are accomplished, each and every one, with much that is new on display, as the Sulu Sea is dissected vis-à-vis its maritime dynamics from colonial to post-colonial to "ethnographic" time, and across the centuries. It is very helpful to have these three essays together here, in fact, because one can see how various methodologies can be used to describe the same place, and how piracy looks different according to the tools being used in one's own study.

Pirates, Ports, and Coasts in Asia is a good book, and more than this it is a useful compendium which repays a serious reading and careful consideration of its contents. Many of the world's academic experts on Asian piracy, both historical and contemporary, are on

view here, and these are all serious scholars who have thought about these issues for a long time (and in some cases, for a very long time, including pioneers of the field in Warren and Lapian's cases). The book is however slightly uneven, as I have described above, with perhaps too much attention paid to Insular Southeast Asia, and too little paid to Japanese and Korean waters (where are the *wako*, for example?), and the long outstretched coasts of the Southeast Asian mainland. Presumably to fit into the book's title, some attention should have been paid to Indian Ocean piracy as well, of which there was plenty, and which still (of course) exists even now, though on a smaller scale than in previous centuries. I would recommend this book to anyone who wants to see strong, solid scholarship on the notion of piracy in Asian waters, and a number of the essays really do fit very well together in sets (on Sulu; on the Outer Islands of Indonesia; and on the Sino-Vietnamese frontier, for example). The book - already useful - might have been still stronger, however, had it aimed a bit more for geographic inclusion in its contributions, so that more territory could have been covered. This would make an already-utilitarian volume, impressive in many ways in its own right, even more of a contribution to a field that only seems to be growing year after year.

(Eric Tagliacozzo · Cornell University)

Duncan McCargo. *Tearing Apart the Land: Islam and Legitimacy in Southern Thailand*. Ithaca: Cornell University Press, 2008, 264 p.

This well-written and researched book provides a much-needed detailed analysis of the violent conflicts in three Malay-Muslim provinces of southern Thailand — Pattani, Yala, and Narathiwat. The author, one of the most prolific scholars of Thai politics, challenges two commonly evoked explanations that attribute the conflicts to primordial ethno-religious differences and to region-wide or global terrorist "Jihad" networks. McCargo argues, instead, that the violence is fundamentally a

評

political problem that stems from the fact that the Malay-Muslim population has never accepted the legitimacy — the moral right to rule — of the Bangkokbased Buddhist–majority state.

Specifically, McCargo analyzes the illegitimacy of the Thai state from three angles: religion, politics, and security. First, he argues that the state has made conscious efforts to neutralize or fragment the authority of local Islamic leaders. These leaders, who are supposed to champion Malay-Muslims' interests, have been coopted into the state in return for material inducements. At the same time, traditional Islamic schools (pondok) have been placed under the control of the state in exchange for government subsidies. Consequently, ordinary Malay-Muslims have lost the "moral and spiritual center" in their communities (p. 52). Second. the Thai state has made similar moves to "coopt and control" the local Malay-Muslim political elites (p. 183). Several elites, such as Den Tohmeena and Wan Muhammad Nor Matha, have attained key cabinet positions since the 1980s, but this is, according to McCargo, a cosmetic measure taken by the state to appease the otherwise discontented Malay-Muslim population. Far from serving as vital links between the local and the center, those politicians have spent most of their time in Bangkok or have enriched themselves by collaborating with Bangkok-based political elites. As a result, the political (as well as religious) authority in Malay-Muslim communities has been weakened and divided by the state. Finally, Thai security forces have consistently displayed "a lamentable catalogue of criminal blunders, negligence, incompetence, lack of coordination, and sheer misdirection" (p. 133), as exemplified by the tragedies of Kru-Ze and Tak Bai. The post-Thaksin military-led government apologized for the past atrocities or repression, but failed to bring the security personnel involved to justice.

Under these circumstances that render the central state illegitimate, militant leaders, such as Ustadz Soh, have found ample room for maneuver in exploiting the Malay-Muslims' pent-up anti-state grievances for their political ends. Here McCargo provides an important insight that Islam itself is not the cause of violent conflicts; rather, Islam constitutes a convenient rhetorical resource that a handful of hatemongering militant leaders have tapped or manipulated to mobilize local youths behind their violent cause. McCargo bases all these arguments on a wealth of previously untapped materials (e.g., militants' confessions, leaflets circulated by militants, numerous interviews). This book makes a valuable contribution to the existing literature that only scratches the surface of the violent conflict in southern Thailand.

With this contribution duly acknowledged, however, the book leaves several things to be desired. First, McCargo's explanation lacks sufficient historical depth, focusing preponderantly on the Thaksin era, especially on the period after January 2004. This temporal focus is puzzling, given McCargo's contention that the conflict has deep roots in "historical and political grievances" (p. 188, emphasis mine). He bases his whole argument on the assumption that the Thai state's rule over the Malay-Muslim provinces "has long lacked legitimacy" (p. 183), but this assumption is asserted, rather than well demonstrated through a longitudinal analysis of various events, state policies, and politicians (both national- and local-level) that have been involved in the region over the century. Characteristic of McCargo's ahistorical analysis is his cursory discussion of the Prem Tinsulanond's administration (1980-88). Prem, according to McCargo, only offered conciliatory policies without granting Malay-Muslims full participatory rule. The "carrot" helped contain the insurgency, but local discontent kept simmering underneath the surface, which erupted in violence after Thaksin attained power. The reader is not told how ordinary Muslims perceived Prem's various policies (e.g., the "New Hope" initiative taken in the 1980s to develop the Malay-Muslim provinces) or how their negative views of the state were stoked and sustained by local-level political or religious elites. Another important neglected issue is the Bangkok-based prostitution rings that thrived in border areas - notably in Sungai Kolok of Narathiwat - in the 1980s-90s and proved highly unpopular with MalayMuslims for undermining the morality of their communities. Short on a deeply historical analysis of these (and other) issues, the book may give the false impression that Thaksin's "regime" (as opposed to the "state" — McCargo tends to conflate the two concepts) is largely to blame for the upsurge in violence.

Contrary to its claims, the book also takes a rather simplistic view of state "legitimacy." Every state enjoys varying degrees of legitimacy in different policy areas and at different points in time. In McCargo's formulation, however, Malay-Muslims seem to have viewed the Thai state as illegitimate across board and across time. On issues of security, religious education, and political recruitment, the state may be illegitimate (as McCargo claims), but what about other schemes, such as social welfare, infrastructure development, and scholarships, from which a sizeable number of Malay-Muslims have benefited, albeit to varying degrees, over the years? These issues are not explored in the book.

The book, moreover, tends to make a jump from state illegitimacy to the occurrence and persistence of violent conflicts. According to McCargo, the militant movement has now found many active and passive sympathizers in the Malay-Muslim population. In some areas, they "constitute more than half or two-thirds of the population" (p. 186). But it is unclear why these people support or condone the violent movement, given the fact that it has attacked innocent civilian Muslims in recent years. Seeing the state as illegitimate is one thing, but supporting the use of violence is another. If many Malay-Muslims view the state as illegitimate, they should view the violent movement as equally illegitimate. My educated guess (based on my brief stay in the three border provinces) is that most ordinary Malay-Muslims are willing, if not totally happy, to be part of the Thai nation-state. They remain neutral between the state and violent conflicts; they support neither side. They may oppose some types of "regimes" (e.g., Thaksin), but they do not necessarily shun the "state" altogether.

Finally, the book provides little theoretical and comparative analysis. What little theoretical discussion

it provides draws primarily on Mohammed Hafez's work without addressing the voluminous literature on insurgency and communal violence. How does the Thai case illuminate this literature? Similarly, McCargo unfortunately fails to cast the Thai case in comparative perspective. The existing literature, he laments, is "highly case specific" without offering "systematic comparative perspectives" (p. 10). This critique can be turned against him, too. Is the Thai case similar to, or different from, other cases of insurgency movements or communal conflicts in countries like India, Indonesia, and the Philippines? It is a pity that he does not address these cases, for he presents an unparalleled amount of empirical materials.

These comments notwithstanding, McCargo has produced just another "must" book for anybody interested in Thai politics. The way he situates the violent conflicts in the nature of interaction between the center and periphery is particularly illuminating. This book sets the bar high for those currently working on the important topic of Muslim insurgency in southern Thailand.

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津田浩司. 『「華人性」の民族誌――体制転換 期インドネシアの地方都市のフィールドか ら』世界思想社, 2011, 373p.

本書は、現代インドネシアにおいて華人が「華 人である」ということ、すなわち一つのエスニシ ティとしての「華人性」が人々に意識され、社会的 に立ち現れる諸局面について、スハルト体制の終 焉(1998年)をはさむ約10年間に中部ジャワ北岸 の町ルンバン周辺で起きた出来事の聴き取りと参 与観察をもとに叙述・分析した研究である。著者 津田氏が2002年から2年間ルンバンを拠点に行っ た臨地調査を基礎とし、2008年東京大学大学院総 合文化研究科に提出された博士論文がもとになっ ている。なお、本書にいう華人とは国籍の別など にかかわらず広く中国系住民を指す総称である。

評

本書は全4部17章と「むすび」から成る。第1 部は序論,第2部から第4部までが三つのトピッ クを扱った本体である。ここではまず,各部の概 要をみてゆこう。

序論では著者の問題意識と狙いが示される。い わく、インドネシアに限らず従来の華人研究では、 華人が華人としての何らかの核(儒教精神や家族 主義,関係 guanxi や 信用 xinyong など) や,中華 文明を担うものとしてのアイデンティティを「あ らかじめ」持っているかのような本質主義的議論 が横行してきた。ある人が「華人であること」の 論拠として抽象的に語られる「華人性」とは何か, それは本当に「常に/すでに」存在するものなの か?かかる問いから出発した著者は、「華人性」を 抽象的にでなく、個別具体的に捉えることに徹す る、と宣言する (p.2-3)。およそ400世帯から成 るルンバンの「華人コミュニティ」を足場に、「当 人らが『華人』であるための核、ないしアイデン ティティの拠り所となるような『華人性』をあら かじめ措定するのではなく、逆に『華人性』なる ものがそれら人々の生活の場で立ち現れ、また意 識化されていく過程を微細に描き出すこと」が狙 いとされる (p.5)。またそのように「諸々の文脈 を丁寧に追っていくことで、現象としての『華人 性』を取り巻く様々な社会関係や制度をも照らし 返していくことができる」(同)、というのが著者 の見通しである。

第2部では、ルンバンにある二つの寺廟, 慈恵 宮と福徳廟の法的地位をめぐって生じた事象がと りあげられる。スハルト体制期,「同化政策」下に 置かれた華人は宗教の領域でも公の場で「中国ら しさ」を表出することが著しく制限された。他方 では全ての国民が国家公認宗教(イスラーム,カ トリック,プロテスタント,ヒンドゥー,仏教) の一つを奉じることが求められた。この結果,イン ドネシア各地の中国式寺廟(クレンテン)の多く は、公認宗教の一つである仏教の傘下に入ること により,安定的な地位の保全を図るのが大勢だっ た。ところが,ルンバンの二寺廟は1995年,それ までの「仏教施設」としての地位を捨て,あえて 「中国の伝統的慣習に基づく施設」すなわちクレン テンを名乗るようになる。スハルト体制期には異 例といえるこの地位変更がなぜどのように起きた のか,著者は関係する人々の様々な思惑や社会的 関係,「仏教施設」化ゆえに生じた軋轢とその解決 のための合議・交渉過程を詳細に調べ,彼らがあ えて寺廟の「華人性」を主張するようになった謎 を明らかにしてゆく。同時に,ルンバンの華人た ちがスハルト体制下の対華人政策や宗教政策への 対応を繰り返す中で,町の「華人コミュニティ」の まとまりが具体的に「寺廟を支える人々の集まり」 として近似的に意識化されていったさまを描く。

第3部では、スハルト体制崩壊前夜、全国的に 広がった反華人暴動の波がルンバン周辺にも及ん でくる中で,「狙われる者=華人」としての自覚を 否応なく迫られた華人商店主たちが、水面下で独 自の自衛組織を作りあげてゆく過程を追う。この インフォーマルな「影の組織」が、やがてルンバン の「華人コミュニティ」全体を包摂するものへと 一元化されてゆくのみならず,近隣の町々の華人 たちとの連絡体制を模索してゆく中で、広域的な 「ネットワーク」が構築されるさま、さらに情勢の 安定に伴い、「影の組織」やネットワークが消滅す るまでが丹念に跡付けられる。その企図は「日常 的な対面関係の連なりを一歩も二歩も超え出るよ うな関係性の成立と破綻という一連の過程を見て いくこと」(p.58) であり、それを通じて読者は著 者と共に「改めて日頃この地方小都市に暮らす華 人たちが抱いている『コミュニティ』のあり方. そしてその想像世界の広がりを具体的に捉え返し ていく」(同)ことになる。

第4部では、ポスト・スハルト期、首都を中心 に結成された全国規模の華人団体主導のもと、華 人もジャワ人やスンダ人と同様この国を構成する 重要なエスニック集団の一つであることを主張す る動きの一環として、ルンバンや近郊の町ラセム の寺廟で祀られていた18世紀半ばの対オランダ反 乱の伝説的指導者、陳・黄姓を持つ両人物(以下、 神格化された名である陳黄弐先生)を、インドネ シア政府の認定する(華人初の)「国家英雄」に推 挙する試みの顛末が詳しく追究される。陳黄弐先 生に関する民間伝承史料の「再発見」、その史料が ジャカルタの華人団体関係者や地元の華人有力者 の手を経る中で、陳黄弐先生こそ「華人対プリブ ミ」や「華人対ムスリム」という二項的対立を乗 り越える理想的人物だとみなされてゆく過程,さ らにインドネシア華人全体の地位向上を狙ったこ の「華人の国家英雄」推戴運動が,中央と地方の やり取りの中でいかなる結末をたどったかが語ら れる。本件を通じ浮かび上がるのは,体制転換直 後のインドネシアで「華人性」が高らかに主張さ れる一般情勢の中,「その主張の母体となるべき 『華人』の広がりというものがどのように捉えられ ているのか,中央の華人団体,および地元の有力 者とそれを取り巻く一般の生活者それぞれの間に ある感覚の違い」(p.59-60)である。

以上のように僅かな字数で要約することにため らいと困難を感じるほど、本書は内容豊かな民族 誌である。当初の目的であった「『華人性』が人々 の生活の場で立ち現れ、また意識化されていく過 程を微細に描き出すこと」、および「『華人性』を 取り巻く様々な社会関係や制度をも照らし返して いくこと」は十分に達成されている。標題にも表 れている通り、本書は第一義的に「華人性」の民 族誌的叙述を目指したものだが、その「華人性」の民 族誌的叙述を目指したものだが、その「華人性」 の立ち現れ方の描写を通じ、元々は分析の足場と して仮措定された「華人コミュニティ」の動態的 な諸相を把握・叙述することにも、結果的に成功 していると思う。

その成功因はいくつも考えられるが、何より「華 人性|の表れや取り扱われ方を何らかの出来事. つまり「事件史」の中に見出した手法にあるだろ う。三つの事件はいずれもジャカルタを中心にし た政治史からは見えてこない、しかしローカルな 現場の華人たちにとっては一大事の出来事である。 私事ながら評者は著者にやや先立つスハルト体制 末期、同じ中部ジャワのスマラン市で、著者と同 じく草の根の社会における 「華人性」の表れ方を 把握することを目指し調査をした経験がある。だ が、人々と日常の時空間を共にすればするほど、 彼らの「華人性」は自明のことと感じられるよう になってしまい. 本書ほどうまく論を組み立てる には至らなかった。日常と非日常の臨界面に生じ る「事件」に際してこそ, 華人社会の内外で「華 人性」(より一般的にはエスニシティ)をめぐる応 酬が露わとなり、ひいては観察・記述可能になる ことを本書に教えられた。

良く読めばわかるように、取りあげられた三つ の事件のうち、最初の二つは実は著者がフィール ドに入るより数年前に起きた出来事なのである。 そのことを忘れてしまうほど、いずれも意外な方 向に展開する事件の叙述は臨場感にあふれている。 一見些細とさえ思える事柄に潜んだ問題の広がり を直感し掘り下げていった嗅覚(特に第2部)反 華人暴動の生々しいディテールや微妙な人間関係。 裏金の流れなど相当センシティブな事柄まで人々 に胸襟を開いて語らせた信頼関係の醸成(特に第 3部),多層的・多元的な「歴史」の生成について の深い洞察(特に第4部)などの賜物であろう。 著者にとってこれが初めての本格的なフィールド ワークであったことを思えば 「天賦の才」を感じ させるが、人々とやりとりを重ねる中でここぞと いう勘所を捉え、時間をかけて粘り強く聴き取り を行った努力が推し測れる。僅かな糸口から、「華 人性 | をめぐって展開する豊かな事象を再構成し. 「読んで面白い」物語にまで仕立て上げた表現力 (演出に富んだ構成力,論理的で正確な文章力)に も感嘆する。評者はたまたま本書の成る数年前か ら著者の草稿を読む機会に恵まれたが、人類学で いう「分厚い記述」とはこのことか、と脱帽する ばかりだった。その後補足調査を重ね、満を持し て刊行された本書では、「分厚さ」にいっそう磨き がかかり、かつ論点が無駄なく整理し直され、読 みやすくなっている。

本書が傑作であるだけに,惜しまれる点がない わけではない。一つは、中心主題である「華人性」 の定義がやや曖昧なことである。私見では、「華人 性」(ひいてはエスニシティー般)には、ある人が 「華人である」という帰属性と、華人という集団カ テゴリーに付与される特性(ステレオタイプを含 む)の少なくとも二つの次元があると思われるが、 本書ではそれらが明確に区別されぬままこの言葉 が使われているきらいがある。また、考察の出発 点となる問題意識の説明箇所で筆者の指摘するほ ど、近年の華人研究においてなお本質主義的議論 が横行していると言えるか、少し疑問を感じた。 インドネシア人自身によるインドネシア華人研究

評

書

に限っても, Hamzah 編著書 [1998] やWibowo 編 著書 [1999; 2000] に収められたいくつかの論考や Heryanto [1998] などは,ニュアンスの違いはあ れ,構築主義的な立場から「華人性」を捉えよう としている。序論では,これら「本質主義的では ない」諸研究の達成した地平と本書との関係も 語って欲しかった。もう一つ、参与観察・聴き取 り調査の対象や叙述の重心が寺廟に集まる中高年 層に置かれ,ルンバン華人コミュニティの相当部 分(p.269の註18によれば65.8%)を占めるキリ スト教徒,特にプロテスタント信者(同29.5%) や若年層の記述が薄い。後者の人々にとっての「華 人性」がいかなるものなのか,今後探究されるべ き課題の一つに挙げられるだろう。

いずれにせよ本書は、骨太にして緻密な、完成 度の高い作品である。このような世界的にも水準 の高い華人研究がわが国の東南アジア学界から生 みだされたことは喜ばしい。単に華僑華人研究者 のみならず、インドネシア、東南アジア社会、あ るいはエスニシティやマイノリティの問題に関心 のある読者に広く深く読まれる価値がある。

(貞好康志・神戸大学大学院国際文化学研究科)

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