



Bundle of Rights Reversed: Anticommons in a Japanese Common Property Forest Due to Legalization

RESEARCH ARTICLE

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ABSTRACT

Commons studies have emphasized the importance of customary rights and informal institutions, arguing that if there is a gap between formal ownership titles and customary rights, then the latter must be respected. However, as customary practices weaken, the influence of state legal systems and registered titles becomes stronger. When the commons is registered under multiple co-owners' names, the commoners come to believe that they hold a normal common property and keep these rights even after they leave the village. This phenomenon, called legalization, leads to the tragedy of the anticommons because the number of rights holders outside the village increases. This paper explains the underuse of Japanese common property forests due to this legalization, especially in terms of two points derived from microdata analysis of the 2000 census. First, in the case of multiple co-owners, the number of ex-villagers who keep their rights is very high. Second, when ex-villagers keep their rights and the registered name includes multiple co-owners, forestry activities are most infrequent. This paper names this situation "Bundle of Rights Reversed," in which those outside the community have strong rights to prevent change in forest use, and propose the application of a different legal rule. This framework would be useful for a comparative study on the formalization of commons tenure rights.

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1. INTRODUCTION

Ostrom (1990) demonstrated that the recognition of the rights of common for the community can solve the tragedy of the commons. However, what property rights must a community possess and how must these rights be registered remain open questions. Because her principles describe the rights of common only as the right to set the rules for the use of common pool resources and does not discuss their relationship with land ownership (Ostrom 1990, p. 101). As Berge and McKean (2015) pointed out, the local community's land ownership status relative to the commons determines how the commons is managed, and this structure varies across countries, periods, and resources.

There are cases in which the complicated ownership status leads to the tragedy of the anticommons. In addition to private property, common property, and state property, Heller (1998) proposed anticommons property as a new category of ownership in which there are too many holders of property rights to a resource. Anticommons property leads to underuse because it is difficult to find a consensus among numerous rights holders. Relying on Heller's anticommons theory but adding legalization theory, this paper aims to explain the situation of the underuse of Japanese common forest and provide a new framework for analyzing the property rights structure when commons and anticommons situations coexist (Dixon 2007; Vasile 2018).

As seen in many industrialized countries (Berge and McKean 2015), most of Japan's rural communities have been abandoning their management of their common property forests. Previous scholarship has emphasized socio-economic causes, such as the sinking economic value of timber, the energy revolution, and population decline (Shimada 2014; Miyanaga and Shimada 2018; Hirahara 2020). However, through a microdata analysis of the 2000 census, this paper demonstrates how legal and institutional factors also cause difficulties in forest use and management.

Previously, when customary practices were active, the registered owner's name was little considered. However, as these practices weaken, even the commoners have become more concerned with formal ownership titles than their autonomous rules. There are cases where the number of co-owners has risen to over 1,000 because the ownership was initially registered under the joint name of all households and the inheritance registrations have not been updated for generations¹ (The Tokyo Foundation 2014). Such a situation makes it difficult to manage the commons because all co-owners' consent would be required to change the use.² This is a typical situation of the tragedy of anticommons that this paper addresses.

In recent years, this issue has been described as the "Unknown Owner Land Problem" in Japan. The Tokyo Foundation (2014) estimated that such "unknown owner" land accounts for 20% of Japan's total area, including all common lands derived from customary rights and most small-scale private forests with a value lower than the cost of inheritance registration. In response to this shocking estimate, the Act for Appropriate Registration and Management of Unknown Owner Land was enacted in 2019 to remedy the problem by converting common lands into public property when the owners cannot be identified. However, since a negative view prevails about the rights of common and about the co-management capability of the community, the implementation of this act could unfairly take the common lands from commoners. Therefore, this view must be modified by an empirical analysis of the interrelation between commons and anticommons situations.

2. LITERATURE REVIEW

2.1 THE THEORY OF ANTICOMMONS AND ITS CLASSIFICATION

Buchanan and Yoon (2000) point out the symmetry between commons and anticommons tragedies. Hardin's (1968) tragedy of the commons deals with the overuse problem that arises when no one can prevent an increase of users for a common pool resource. In contrast, Heller's anticommons theory explains the underuse problem that occurs when the number of veto players who have the right to exclude the use of a resource by other members increases (Heller 1998). As the number of rights holders increases, the transaction costs of obtaining unanimous consent outweigh the utility of the resource use, so everyone drops the idea of the desired use, and use is abandoned. This social dilemma is the tragedy of the anticommons. This theory had a great impact, especially in the field of intellectual property, and Heller's citation count in commons research is the third highest after Hardin and Ostrom (van Laerhoven, Schoon, and Villamayor-Tomas 2020).

With regard to real property, Heller (1998) makes two distinctions: spatial anticommons and legal anticommons. The former refers to a condition in which a piece of land has a single owner but is difficult to use because it is too tiny and scattered (Schlueter 2008). The latter refers to a situation in which there are too many rights holders for a land (Heller 1998; Chang 2012). The commons can also fall into legal anticommons when the registered name is not adequate and the number of rights holders outside the community increases. Dixon (2007) called this situation "mixed commons/anticommons property." This

paper deals with this type of property: Japanese common property forests that are spatially undivided and managed by a village, but also belong to registered property rights holders outside the village.

2.2 SOCIO-LEGAL STUDIES ON JAPANESE COMMON PROPERTY FOREST

In Japan, the study of the commons became popular around 2000 (Inoue and Miyauchi 2001). However, a national survey of commons rights was conducted by legislators toward the end of the nineteenth century when the Meiji government introduced the modern property rights system (National Research Committee for Codes 1893[1956]). Since the government did not provide proper legal status for commons rights, socio-legal scholars had to pursue defending these rights by conducting in-depth fieldwork on customary rights (Suehiro 1924).

In part because of such empirical research, rights to common grasslands and forests were recognized in two articles of the Civil Code of 1898: one is the right of servitude (Art. 294) and the other is the right of co-ownership (Art. 263). However, the Real Property Registration Act of 1899 did not make it possible to register customary servitude as a real property right, and a village³ could not be a registered owner because it was not a legal person. Therefore, as a compromise, diverse names were used to register ownership titles, many of which were often national and local governments and the names of local political bosses. Legal scholars argued that the ownership title recognized by the state law is not important and that the living law, such as customary rights and actual possession, need to be prioritized (Ehrlich 1913; Kaino 1943). This argument was established by court cases where commoners claimed their rights against these authorities.

The legal doctrine of the time explained the collective right of commons as total ownership, *Gesamteigentum*, based on the Germanic jurist Gierke's (1868) legal concept that corresponds to the classical form of commons use where everyone is always actively using common resources and deciding in an assembly how to manage the commons based on the unanimity principle (Kawashima 1983). Under this legal doctrine, being a villager and participating in the running of the community were the most basic conditions of membership. If you leave the village, you lose your rights automatically; we call this rule "Out of village, out of rights."⁴ Certainly, if the rights of the ex-villagers were completely eliminated, including their registered title, there would be no anti-commons problem.

However, as McKean (1992) points out, the classical form of commons use has been gradually disappearing. Japanese common grasslands and forests are moving to abandoned management (Shimada 2014). Parallel to this shift, the rule

of "Out of village, out of rights" has also gradually changed. In 1974, according to a national survey, 14.2% of villages had ex-villagers who retained their property rights to the commons (Kuroki, Kumagai, and Nakao 1975). The scholars who conducted this survey argued that keeping the rights was theoretically unacceptable. However, the attitudes of commoners differed from those of the doctrine. Especially when ex-villagers retain their registered co-ownership titles, serious anti-commons problems will arise later.

2.3 CURRENT SITUATION OF UNDERUSE AND ITS CAUSES

Of course, the anti-commons situation would appear to help prevent the exploitation of forests and preserve unspoiled nature. Thus, we should explain why the underuse is a problem in Japan. A current characteristic of Japan's common forests is that many of them have been turned into planted forests because of planting by commoners. However, artificially planted forests need to be thinned out periodically by large machinery so that sunlight will reach the ground. Otherwise, the health of the forest will decline; lower vegetation and biodiversity will be lost, as will the capacity for holding water. It increases the risk of disaster. However, most villages do not have such machinery and thus have to commission a municipal forest cooperative or a private company. This commission requires agreement from all co-owners if their names are registered. Fukuda and Kawasaki (2015) have shown that prefectural plantation agencies cannot conclude a profit-sharing plantation contract with the common forests of multiple co-owners' title because it is difficult to obtain signed agreements from the ex-villagers who are also holders to the title. Yamashita (2016) illustrates the ultra-high costs of moving from multiple co-owners' title to an authorized community organization, *Ninka Chien Dantai*, a legal person status introduced in 1991 to enable communities to register property in the name of the community.

The fact that these ownership problems could make common forest use difficult was recognized more than 50 years back. In 1966, the Act for Modernization of Common Forest Rights was passed to convert the complex customary rights into the modern ownership of a cooperative that has a legal personality (Takahashi et al. 2019). However, only 25% of villages have since modernized their customary rights. This low percentage has been attributed to socio-economic factors. Due to declining timber prices, future benefits from forestry can often be lower than the burden of being a cooperative; thus, only those villages that owned large forests with high use-value became co-operative (Handa 2010). Nakao (2003) also argues that there was no problem in refusing to become a cooperative because the advantages of the traditional commons would be

maintained. We will examine if the data from the 2000 census supports these explanations.

2.4 REMODELING THE CONCEPT OF A BUNDLE OF RIGHTS FOR THE FRAMEWORK OF THIS STUDY

To portray different types of property rights, the concept of a bundle of rights is useful. This concept was proposed by a critical legal scholar, Hohfeld (1913), who argued that private ownership is not an absolute right but what remains from the rights governed by state laws, local ordinances, private nuisance regulations, and institutions, and has intrinsic constraints. An owner has a set of rights to use, manage, and transfer within these limits, and can assign certain rights to other people.

Schlager and Ostrom (1992) use this concept to show that the property rights to common property resources are not exclusive to a community with homogeneous members but correspond to the coexistence of different rights holders of various positions. Although their main focus was modeling the property rights of fisheries resources, Schlager and Ostrom’s model of bundles of rights has been widely received. CAPRI (2010), a guidebook for land tenure rights reform in developing countries, uses it for two purposes. The first is to justify strong rights of villagers, including exclusion, as proprietors even if the state owns the land. The second is to describe the reality that the right to the commons does not belong to one village community alone; rather, it argues that there are other rights holders outside the community as well: claimants who are involved in collective choice with limited qualifications and authorized users who do not participate in the management but use the resources. The structure of property rights described by the concept of bundle of rights can be modeled as shown in *Table 1*. The French scholars, Cornu, Orsi, and Rochfeld (2017) also rely on this model to argue that when an important landscape of common grassland cannot be managed by local commoners alone, a volunteer association can be involved in its management from the outside and that citizens have the right to access it. However, as point for the later discussion, it is important

to note that rights holders outside the community have weaker rights than members within the community in the Bundle of Rights Model derived from Schlager and Ostrom (1992).

von Benda-Beckmann (1999) uses the concept of a bundle of rights to argue that granting an ownership title to a single community undermines the individuality of commons rights, invites the tyranny of village leaders, and draws an unnatural line between communities (Bromley 2009). However, many studies have adopted the position that the formalization itself is necessary, supporting this process for local commoners (Meinzen-Dick and Mwangi 2009; Larson 2012). CAPRI (2010) proposes that a community register the exclusive formal title to a common land, while in regard to the existing personal rights of the peoples outside of the community, the community may conclude unregistered agreements with them to prevent a future anticommmons.

In the Institutional Analysis and Development (IAD) framework, Ostrom, Cox, and Schlager (2014, p. 285) propose analyzing the evolution of rules through three categories: constitutional, collective choice, and operational rules. However, the influence of registered ownership on the constitutional rules of CPRs, such as the entry and exit rules of the members, the position rule, and the decision-making rule, is not considered. This paper proposes introducing registered ownership into the framework as an independent variable affecting constitutional rules because the influence of state law becomes more powerful when customary practices weaken. Habermas (1986) termed this phenomenon “legalization,” that the state legal system colonizes the living world, and Rokumoto (1986) used this theory to explain the tendency of neighborhood disputes to be brought to courts in Japan, calling it “legalization of social order.”

If ownership is registered under multiple co-owners, with the passage of time, commoners believe that their commons is a normal co-ownership property rather than the object of collective ownership by the village. It then becomes difficult to eliminate the rights of those who leave the village. Although the ex-villagers gradually lose

	COMMUNITY MEMBERS*		OUTSIDE OF COMMUNITY*	
	OWNER	PROPRIETOR	CLAIMANT	AUTHORIZED USER
Access and Withdrawal	○	○	○	○
Management	○	○	○	
Exclusion	○	○		
Alienation	○			

Table 1 Bundle of Rights Model by Schlager & Ostrom (1992).

* These distinctions are not in the table of Schlager & Ostrom (1992, p. 252) but have been added by the authors.

their connection to the village and no longer participate in the management of the commons or use it, their co-ownership will not be extinguished and will automatically be inherited by their descendants (*Table 2*). In some cases, the descendants may not even know that they hold these co-ownerships, or have never been to the village, but since ownership is not time-limited and is strongly protected in Japanese property law, the remaining villagers cannot eliminate these rights through their constitutional rules: the rule of “Out of village, out of rights” becomes ineffective in the face of the strong power of the state’s law registration system. The remaining villagers need to obtain written consent from all co-owners outside of village if they want to change the nature of commons or establish legal relationships on it. The ex-villagers or their descendants are not necessarily opposed to this change, but it is very difficult for the remaining villagers to contact them, which in effect hinders making collective choices about the commons.

Similar problems have been pointed out by studies in other countries. From Romania’s cases, Vasile (2018) points out that if the rights of common were registered as personal inheritable quota-share rights, the villagers cannot eliminate the rights of ex-villagers and end up experiencing difficulty in managing the commons. From Papua’s cases, Dixon (2007) demonstrates the difficulty of local communities in establishing legal relationships with their common lands because there are various rights holders outside of the community. This situation is contrary to Schlager and Ostrom’s model of the bundle of rights where outsiders have weaker rights. Here, those who are farther away from the community have the right to exclude a new use and the most influential power. We call this paradoxical situation “Bundle of Rights Reversed” (*Table 2*) because of the centrifugal allocation of rights and powers, and use it as an analytical model to describe the anticommons situation in Japan. Since this situation varies considerably depending on the type of registered ownership title of the commons, this paper will incorporate this legal factor as an independent variable in our framework. In the following, we present the empirical method we adopted to determine how this legal factor

affects the current situation of underuse of the common forests in Japan.

3. METHOD

3.1 DATA

We analyze microdata in the survey of common property forests from the 2000 census⁵ and partially juxtapose these data with the 1975 national survey of these forests. While the Ministry of Agriculture conducted census surveys of common property forests every ten years from 1960 to 2000, microdata are available only for the year 2000. Subsequent censuses changed the survey method and no longer asked whether forests were derived from customary rights. Even though the survey date is 20 years ago, the 2000 census is valuable because it is an inventory survey on common forests and asks important questions about the registered name, the rules on rights, and forestry activities. Assuming that the anticommons problem due to legalization has existed since that time, we analyze it here.

In contrast, the 1975 survey sampled 1,440 groups of commoners as a continuation of the 1935 survey conducted by the Forestry Agency and asked them about rules on rights, rather than forestry activities. Therefore, we will compare the 1975 and 2000 data to specifically examine how the rules on rights have changed and how ownership titles have affected them. This will reflect the impact of legalization during the quarter century.

Because only forests with more than 10ha (12,071) were surveyed in 2000, the cases analyzed here are commons relatively large in size. In the 1960 census, all cases were surveyed, regardless of area size, and those with more than 10ha were 17.7% (19,422/109,909) of all cases (Ministry of Agriculture 1962).

3.2 CHARACTERISTICS OF THE DATA AND TYPES OF REGISTERED NAMES

The characteristics of the 2000 census data are summarized in *Table 3* and those of the 1975 survey in *Table 4*. Since our explanatory variable is a registered name, we calculated the means of the scale variables by each name.

	WITHIN THE COMMUNITY		OUTSIDE THE COMMUNITY	
	OLD VILLAGERS	NEW VILLAGERS	EX-VILLAGERS	DESCENDANTS OF EX-VILLAGERS
Use and Access	○	With Conditions		
Burdens of Management	○	With Conditions	Rarely	
The Right to Exclude	○		○	○
Ownership	○		○	○

Table 2 Bundle of Rights Reversed: The Structure of Property Rights in Japanese Common Property Forests with Multiple Co-owners.

REGISTERED NAME	HOLDING AREA(ha)		PROPORTION OF PLANTED AREA (%)		NUMBER OF COMMONERS		N(%)
	MEAN	SD	MEAN	SD	MEAN	SD	
Multiple co-owners	43.1	82.1	43.5	41.3	53.6	81.2	2684(22.2%)
Shrine & temple	43.6	96.4	44.9	40.5	143.5	253.9	540(4.5%)
Cooperatives	100.7	269.9	58.7	38.7	138.4	503.8	2318(19.2%)
Company	81.2	114.4	38.3	35.8	75.6	94.2	43(0.4%)
Territorial unit	61.3	151	45.3	39.8	96.2	215.8	5216(43.2%)
Property district	218.1	1244	50.1	39.9	455.6	716	1270(10.5%)
Total	80.6	437.2	47.9	40.3	134.7	374.3	12071(100%)

Table 3 Characteristics of the groups that hold common property forests, N = 12,071, 2000 census.

REGISTERED NAME	HOLDING AREA(ha)		NUMBER OF COMMONERS		CASES THAT HAVE PLANTED FORESTS		
	MEAN	SD	MEAN	SD	N	%	N(%)
Multiple co-owners	94.1	142.0	70.7	81.8	469	79.9%	587(40.8%)
Representatives	85.7	158.6	83.6	95.8	168	82.4%	204(14.2%)
Shrine & temple	70.7	122.2	118.3	124.2	19	73.1%	26(1.8%)
Cooperatives	119.0	212.9	153.5	152.2	50	98.0%	51(3.5%)
Company	129.9	124.5	203.0	199.5	29	93.5%	31(2.2%)
Territorial unit	87.8	175.5	115.6	144.8	222	76.8%	289(20.1%)
Property district	275.3	781.7	174.3	177.0	69	83.1%	83(5.8%)
Governments	175.3	281.9	124.3	158.5	115	69.3%	166(11.6%)
Total	112.7	258.5	99.9	125.8	1141	79.4%	1437(100%)

Table 4 Characteristics of the groups that hold common property forests, N = 1,440, 1975 national survey.

There are six types of registered names in the 2000 census.

1) Multiple co-owners

The names of the villagers are registered jointly in this type. In numbers, this group is the largest when we include small-scale commons. There are two different subtypes: when all the heads of households are registered and when influential persons or the chiefs of the small territorial unit, *Kumi*, are registered jointly. As the census does not ask the number of registered persons, we treat them collectively. In the 1975 survey, the chiefs or other influential local people are counted separately as “representatives.” In either subtype, each time a registered person dies, the name must be changed to that of the new head of the household. To extinguish the rights of a person who has left the village, it is necessary to remove his name from the registration based on a joint application by him and the remaining villagers.

2) Shrine & temple

Most rural villages have a shrine and a temple supported by the villagers. There were cases where the shrine or temple received the title of ownership on behalf of the villagers. Most of the shrines and temples have legal person status. There were conflictual cases where shrines and temples had sold the land without consulting the village (Kaino 1943). However, the cases covered by the census are those in which village leaders responded as their holding commons. Therefore, we assume that there is no problem with the fact that the registered name is not that of the village, but that of the shrine or temple.

3) Cooperatives

Most of these are forest-producing cooperatives created through the Act for the Modernization of Common Forest Rights. However, a small percentage of these are agricultural cooperatives and cooperatives of other types. All cooperatives have independent legal status under

private law and well-established bylaws. We assume that they make decisions and create legal relationships with others easily.

4) Company

In a small number of cases, commoners have established for-profit companies to run more active forestry businesses via the Act for Modernization or on their own initiatives.

5) Territorial unit

A territorial unit, *Aza*, is the smallest communal unit today, also called *Buraku* or *Syuraku*. It seemed good that a land certificate could be obtained in such a name, but the government has tried repeatedly to incorporate these lands into the public domain, insisting that they form a part of the municipality.⁶ The legal character of the territorial unit remains ambiguous: because it is not a separate legal entity, the village cannot sell and divide the land as the private property of the villagers. The recent policy framing “Unknown Owner Land Problem” problematizes this point as a non-transferable property and tries to incorporate it into public ownership. In terms of numbers, this type is second to multiple co-owners.

6) Property district

Property district, *Zaisan-Ku*, was also a product of compromise. Because of the strong opposition from the villagers to their commons being transformed into public property, the municipality promised that they could create their own governing body and their rights of use would be guaranteed. While forming part of a municipality, the property district has an independent legal personality and constitutional rules often outlined in municipal ordinances or bylaws.

Based on the statistics in [Tables 3](#) and [4](#), there are differences in the averages of area size, proportion of planted area, and the number of commoners by registered names. Therefore, it is necessary to control these variables

in the data analysis.

3.3 THEORY AND HYPOTHESES

The theoretical framework of this study (as described in [Figure 1](#)) consists of two parts. First, due to legalization, registered names have a stronger impact on the autonomous rule of commoners. Especially in the case of multiple co-owners, there is a higher percentage of cases in which ex-villagers keep their rights compared to those with other names because the form of this registered name creates a sense of normal co-ownership. Second, because of the existence of rights holders outside the community, it becomes difficult to make collective choices about the management of the commons and have a legal relationship with other entities, and necessary forestry activities are abandoned.

This theoretical framework generated the following three working hypotheses and two counter-hypotheses.

Hypothesis 1) Compared to other types of registered names, the category of multiple co-owners has the highest percentage of ex-villagers keeping their rights to the commons.

Hypothesis 2) The category of multiple co-owners has the lowest rates of forestry activities and utilization of others' forces for these activities.

Hypothesis 3) The groups in which ex-villagers keep their rights will have lower rates of forestry activities and utilization of others' forces than the groups that eliminate their rights. The rates will be the lowest for the category of multiple co-owners in which ex-villagers keep their rights.

However, these hypotheses that emphasize legal and institutional factors can be countered by hypotheses that stress socio-economic and physical factors. One argument

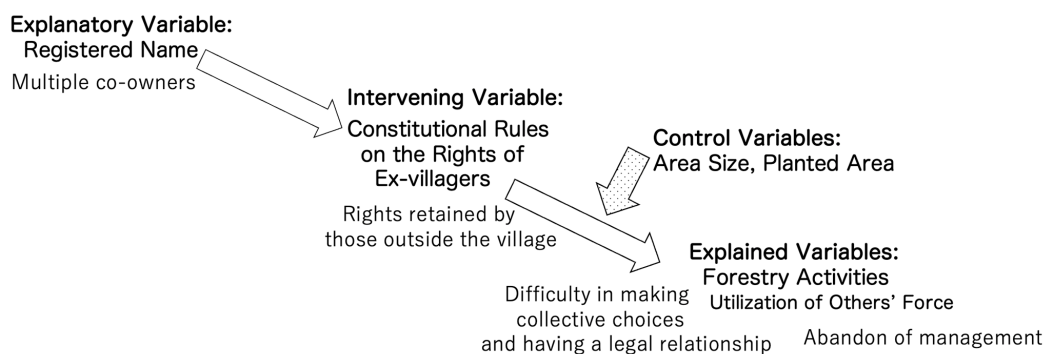


Figure 1 Theoretical framework of the data analysis.

is that ex-villagers who labored to plant trees wanted to keep their rights for future profits from harvests, and thus the rate of rights retention could be explained by the amount of labor invested in planting trees, which can be replaced by the rate of planted area. Another argument is that the category of multiple co-owners held small forests not suitable for artificial planting and had no interest in becoming cooperatives. Thus, in this group, forestry activity rates are lower because of worsening physical conditions. Therefore, we also test the counter-hypotheses as follows.

Counter-hypothesis 1) When ex-villagers keep their rights, there is more labor investment and, as a result, a higher rate of planted area.

Counter-hypothesis 2) Because multiple co-owners' cases have smaller forests and planted areas, their forestry activities are less carried out and they have less reason to be cooperatives.

3.4 MEASUREMENTS

Most of the variables used are responses to the questionnaire used in the 2000 census. In this questionnaire, the respondents were asked to document the number of areas in which they had conducted new planting, weeding, thinning, and harvesting. The scale that summed up the areas of these activities becomes the size of the area where forestry activities are carried out, as shown in [Table 5](#). If any activities were performed, the case is categorized as having conducted forestry activities. Since the census is an inventory survey, we will show in the following cross-tabulations the calculated coefficients of *Cramer's V* or ϕ (phi), which indicate the strength of association between variables, rather than the χ^2 test that is conducted for sampling survey. However, because the census survey is conducted every five years, we decided to

show the approximate significance probability of *Cramer's V* or ϕ as *p-values* in the analyses that include variables related to forestry activities and their commissioning. Unlike agriculture, where cultivation occurs every year, forestry activities do not need to be carried out constantly every year; for example, regular thinning needs to be done only once every ten years. Whether the respondents conducted forestry activities depends on the coincidence between the survey year and the year in which activities were conducted. Therefore, in the statistical analyses, we will present *p-values* as approximate significance probabilities.

Since the Census surveys forestry activities, it does not cover the use of forests for recreation and education. However, forestry activities are not only meaningful for their economic functions, but also essential for ensuring biodiversity in the forest and reducing disaster risks, as described in 2.3. Therefore, we measure whether the commons is well managed from the observed variable of these activities.

The questionnaire also asked about the area of the forest contracted out to other entities for long-term management, such as profit-sharing plantation contracts, and whether each forestry activity was commissioned to others. If either a contract or a commission was made, the case is categorized as the one that utilizes others' forces for forest management. This category is then used as a variable to measure whether the group has legal relationships with others, having no legal anticommons problem. Of the cases with forestry activities, 45.4% utilize others' forces. This indicates that in many villages, forestry activities are carried out with the help of other entities.

[Table 6](#) correlates the main-scale variables. The area where the forestry activities were carried out is correlated with the holding area and the proportion of planted area, which indicates that economies of scale are at work. The number of commoners, which is not the number of co-

VARIABLES	MEAN	SD
Area size where forestry activities were carried out (ha)	2.53	8.58
Area size contracted out to others (ha)	4.08	53.47
	NUMBER	%
Cases in which any forestry activities were done	4581	38.0%
Cases that contract out a certain area to others ^a	906	7.5%
Cases in which the commission of forestry activities was done ^b	1878	15.6%
Cases that utilize others' forces for forest management (either ^a or ^b)	2482	20.6%

Table 5 Descriptive statistics for explained variables: the groups that hold common property forest, N = 12,071, 2000 census.

owners on the registration,⁷ also has a positive effect on forestry activities. Thus, it is necessary to control these variables in testing of Hypotheses 2 and 3.

As **Table 5** shows, only 38% of the cases reported forestry activities, and 62% had no activity. Even without the anticommons situation, in many cases forest management would have ceased due to socioeconomic factors such as the decline in timber values. However, whether no forestry activity is significantly higher in the presence of anticommons conditions is still a question to be examined. Because of the large number of cases without forestry activities, the explained variable in the multivariate analysis is the categorical variable of whether any activities were performed, rather than the scale variable of area size where activities are done, since this paper explores the factors underlying the abandonment of management.

4. RESULTS

4.1 HYPOTHESIS 1 AND COUNTERHYPOTHESIS 1: FACTORS FOR EX-VILLAGERS TO RETAIN THEIR RIGHTS

Both the 2000 and 1975 questionnaires asked whether the commoners would continue to keep their rights or lose them when they moved out of the village. To examine the influence of registered names on autonomous rule by villagers, we performed cross-tabulations of the 1975 and 2000 data, as shown in **Figures 2** and **3**.

In both the 1975 survey and the 2000 census, there is a significant influence of the registered names on the rule regarding ex-villagers' rights. The *Cramer's V* coefficient of the 2000 census is larger than that of the 1975 survey, indicating that the state registration system's influence increased as time passed. The rate of rights retention is the highest when the case had multiple co-owners. This rate

	AREA	PLANTED AREA	COMMONERS	CONTRACTED	FORESTRY ACTIVITIES
Area size of holding forest	-				
Rate of planted area	-.050**				
Number of commoners	.111**	.035**			
Area size contracted out to others	.135**	.001	.062**		
Area size where forestry activities were done	.097**	.142**	.172**	.070**	-

** : $p < .001$

Table 6 Correlation coefficients between scale variables, N = 12,071, 2000 census.

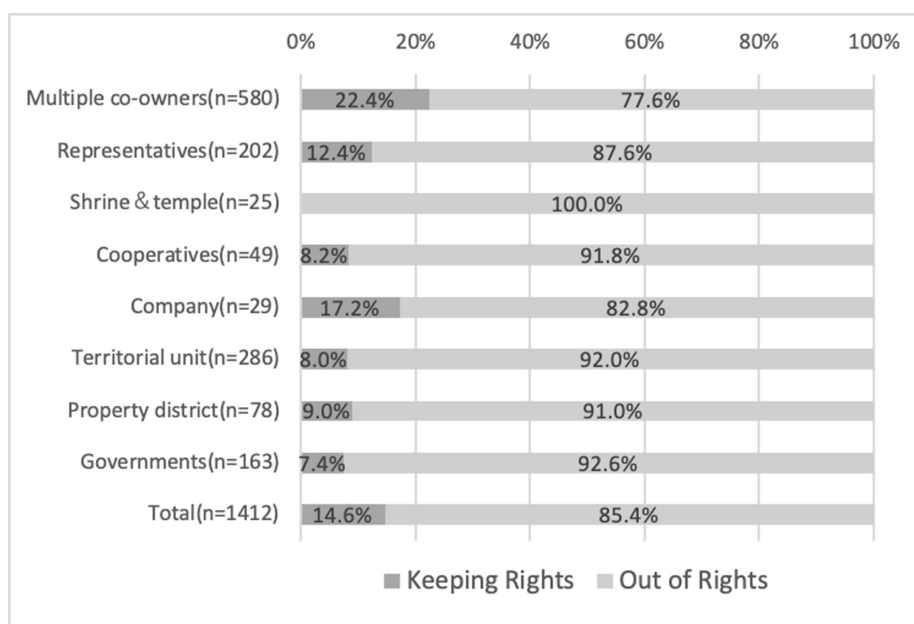


Figure 2 Categories of the rights of ex-villagers by registered names, N = 1,440, 1975 national survey. *Cramer's V* = .196.

is much higher in 2000 than in 1975, and the increase in rights retention in 2000 is also confirmed for other names. However, in the case of multiple co-owners, 57.2% of cases retained their rights in 2000. This indicates that the customary rule of “Out of village, out of rights” is no longer valid there, and the influence of the registration system has become stronger over time.

There is also a relatively high percentage of keeping rights in cooperatives and companies. Because customary rights were converted into capital investment or shares in these categories, they might have proprietary values in their rights and keep them.

Table 7 compares the average rate of planted forests for each category of rules. The category of “Out of rights” has a higher rate, which contradicts counter-hypothesis 1 that the factor underlying rights retention is the amount of labor invested in planting. Therefore, Hypothesis 1 is well confirmed, and counter-hypothesis 1 is rejected.

4.2 HYPOTHESIS 2 AND COUNTER-HYPOTHESIS 2: THE IMPACT OF REGISTERED NAMES ON FORESTRY ACTIVITIES

Next, we examine the influence of registered names on forestry activities and the utilization of others’ forces. Counter-hypothesis 2 assumes that common forests held by multiple co-owners are small and artificial planting is

considerably lesser. **Tables 3** and **4** show that this is partially true; the area of these forests is small, but the planted forest proportion is close to the average proportion. Since the forest area affects the frequency of forestry activities, we performed cross-tabulations for each area size in **Table 8**. As hypothesized, rates of activities and utilization of others for multiple co-owners are lowest for all sizes of forest, and registered names always have a significant impact. Another point to note from **Table 8** is that territorial units show less utilization of others’ forces, although the rate of forestry activities is close to the overall average. This suggests that territorial units may also have difficulty in establishing legal relationships because it is unclear whether the land belongs to the commoners or to the municipality.

To examine the independent influence of the registered name of multiple co-owners on forestry activities, we performed a logistic regression analysis in Model 2 of **Table 9**, controlling the variables of area size, proportion of planted area, and the number of commoners. The other models in **Table 9** are discussed in the test of Hypothesis 3. The result of Model 2 shows that the registered name of multiple co-owners reduced the rate of forestry activities by about half when the effects of other variables were removed.

Thus, Hypothesis 2 is also confirmed: multiple co-owners’ title is an independent factor that reduces both forestry activities and use of others’ force. Further, contrary

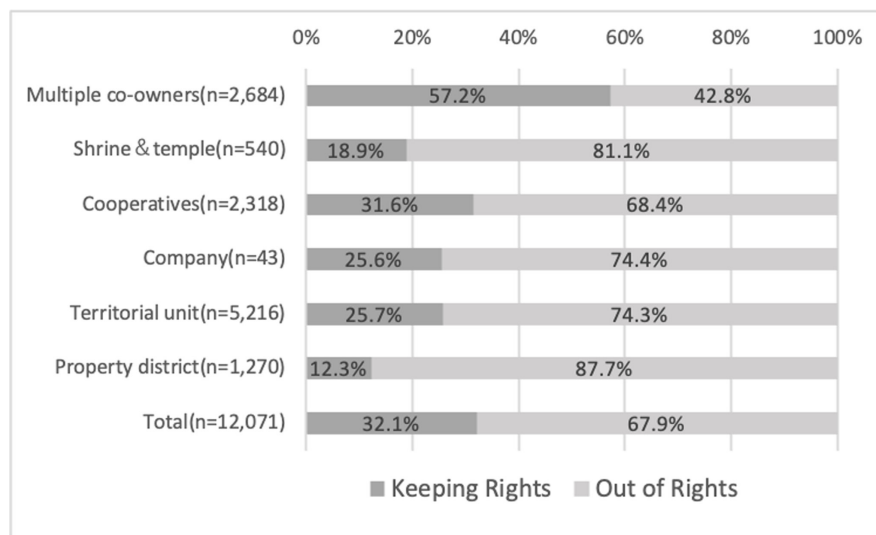


Figure 3 Categories of the rights of ex-villagers by registered names, N = 12,071, 2000 census. Cramer’s V = .308.

RULE	MEAN	MEDIAN	SD
Keeping rights (n = 3,865)	45.6%	37.0%	41.3
Out of rights (n = 8,196)	49.0%	46.4%	39.9

Table 7 Comparison of average proportions of planted area as per the rights of ex-villagers, N = 12,071, 2000 census.

AREA SIZE	REGISTERED NAME	ANY FORESTRY ACTIVITIES			UTILIZATION OF OTHERS' FORCE		
		DONE	NOT DONE	CRAMER'S V & P VALUE	DONE	NOT DONE	CRAMER'S V & P VALUE
10~30ha	Multiple co-owners(n = 1725)	23.0%	77.0%	Cramer's V = .149 p < .001	11.4%	88.6%	Cramer's V = .118 p < .001
	Shrine & temple(n = 378)	32.5%	67.5%		17.2%	82.8%	
	Cooperatives(n = 918)	44.1%	55.9%		21.6%	78.4%	
	Company(n = 15)	53.3%	46.7%		26.7%	73.3%	
	Territorial unit(n = 2758)	29.7%	70.3%		12.3%	87.7%	
	Property district(n = 372)	36.3%	63.7%		22.8%	77.2%	
	Total(n = 6166)	30.6%	69.4%		14.4%	85.6%	
30~100ha	Multiple co-owners(n = 445)	27.2%	72.8%	Cramer's V = .186 p < .001	13.7%	86.3%	Cramer's V = .156 p < .001
	Shrine & temple(n = 76)	32.9%	67.1%		25.0%	75.0%	
	Cooperatives(n = 395)	54.9%	45.1%		27.3%	72.7%	
	Company(n = 8)	50.0%	50.0%		37.5%	62.5%	
	Territorial unit(n = 939)	37.3%	62.7%		14.8%	85.2%	
	Property district(n = 188)	39.3%	60.6%		27.7%	72.3%	
	Total(n = 2051)	38.6%	61.4%		18.6%	81.4%	
100ha~	Multiple co-owners(n = 514)	34.2%	65.8%	Cramer's V = .232, p < .001	19.3%	80.7%	Cramer's V = .207 p < .001
	Shrine & temple(n = 86)	31.4%	68.6%		23.3%	76.7%	
	Cooperatives(n = 1005)	64.5%	35.5%		39.5%	60.5%	
	Company(n = 20)	65.0%	35.0%		60.0%	40.0%	
	Territorial unit(n = 1519)	41.6%	58.4%		24.4%	75.6%	
	Property district(n = 710)	57.5%	42.5%		44.2%	55.8%	
	Total(n = 3854)	49.4%	50.6%		31.4%	68.6%	
All	Multiple co-owners(n = 2684)	25.8%	74.2%	Cramer's V = .213 p < .001	13.3%	86.7%	Cramer's V = .197 p < .001
	Shrine & temple(n = 540)	32.4%	67.6%		19.3%	80.7%	
	Cooperatives(n = 2318)	54.8%	45.2%		30.3%	69.7%	
	Company(n = 43)	58.1%	41.9%		44.2%	55.8%	
	Territorial unit(n = 5216)	34.5%	65.5%		16.3%	83.7%	
	Property district(n = 1270)	48.6%	51.4%		35.5%	64.5%	
	Total(n = 12071)	38.0%	62.0%		20.6%	79.4%	

Table 8 Rates of forestry activities and utilization of others' forces by area size and registered names, N = 12,071, 2000 census.

to counter-hypothesis 2, it was found that the lower rate of activities with multiple co-owners is not because they have smaller areas and fewer planted forests, but because of the nature of the title.

4.3 HYPOTHESIS 3: THE NEGATIVE IMPACT OF RIGHTS HOLDERS OUTSIDE OF THE VILLAGE

Finally, we examine whether the rates of forestry activities and the utilization of others decrease when ex-villagers

keep their rights. **Figures 4** and **5** show that both rates decrease, and that the rule of rights is relevant to these rates.

Figures 6 and **7** show these same rates in the context of registered names. Again, in all categories, both rates of forestry activities and the utilization of others are lower when ex-villagers keep their rights. These rates are lowest when the case of multiple co-owners has the rule of keeping rights. It is interesting to note that even in the cooperative

	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5	MODEL 6
(Intercept)	0.505***	0.576***	0.592***	0.640***	0.632***	0.556***
Area size ^a	1.237***	1.191***	1.221***	1.186***	1.186***	1.201***
Rate of planted forest ^b	1.650***	1.635***	1.641***	1.631***	1.629***	1.627***
Number of commoners	1.211***	1.165***	1.165***	1.138***	1.140***	1.172***
Title: Multiple co-owners		0.532***		0.582***	0.638***	
Rule: Keeping the rights			0.626***	0.692***	0.727***	
Multiple co-owners \wedge Keeping the rights					0.815*	0.437***
AIC	14935.722	14789.889	14829.495	14728.88	14727.193	14786.125
BIC	14972.715	14834.28	14873.886	14780.67	14786.382	14830.516
Log Likelihood	-7462.861	-7388.945	-7408.747	-7357.44	-7355.597	-7387.063
Num. obs.	12071	12071	12071	12071	12071	12071
Num. groups: Prefectures	47	47	47	47	47	47
Var: Prefectures ^c (Intercept)	0.232	0.224	0.21	0.211	0.211	0.22

Table 9 Logistic regression analysis (mixed effects model) with any forestry activities done as the explained variable, N = 12,071, 2000 census. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

^{a, b} We standardized these variables before the regression.

^c We used this variable to measure the impact of prefectural policies on forests.

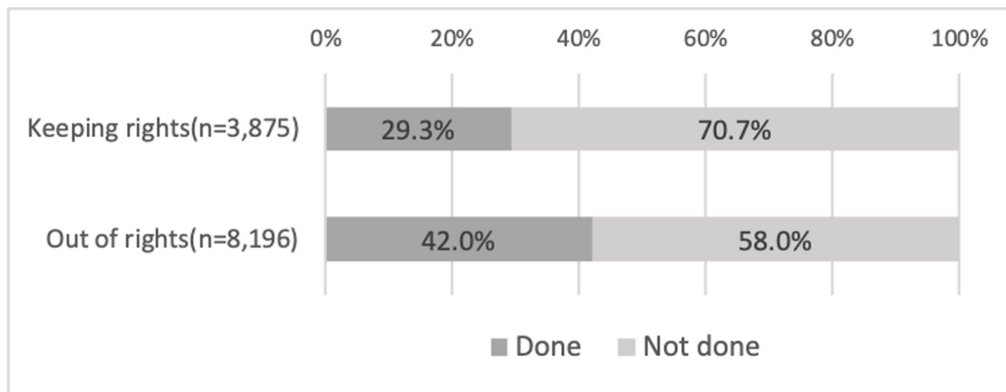


Figure 4 The rate of forestry activities done with ex-villagers keeping rights, N = 12,041, 2000 census. $\varphi = .122, p < .001$.

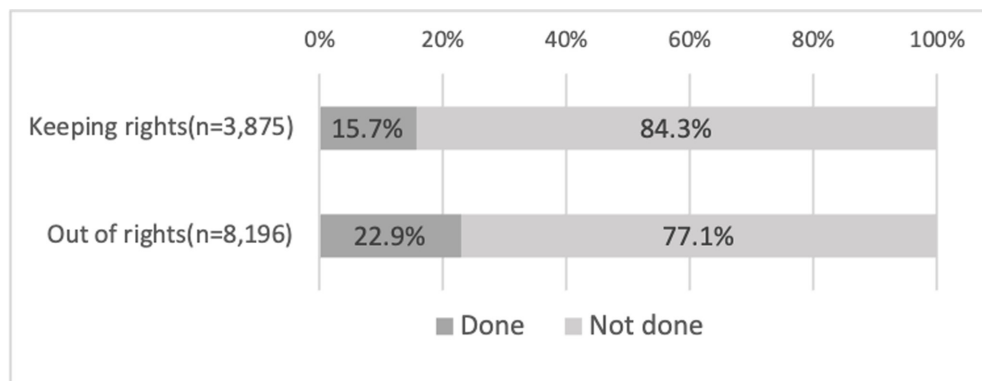


Figure 5 The rate of utilization of others' forces with ex-villagers keeping their rights, N = 12,041, 2000 census. $\varphi = .083, p < .001$.

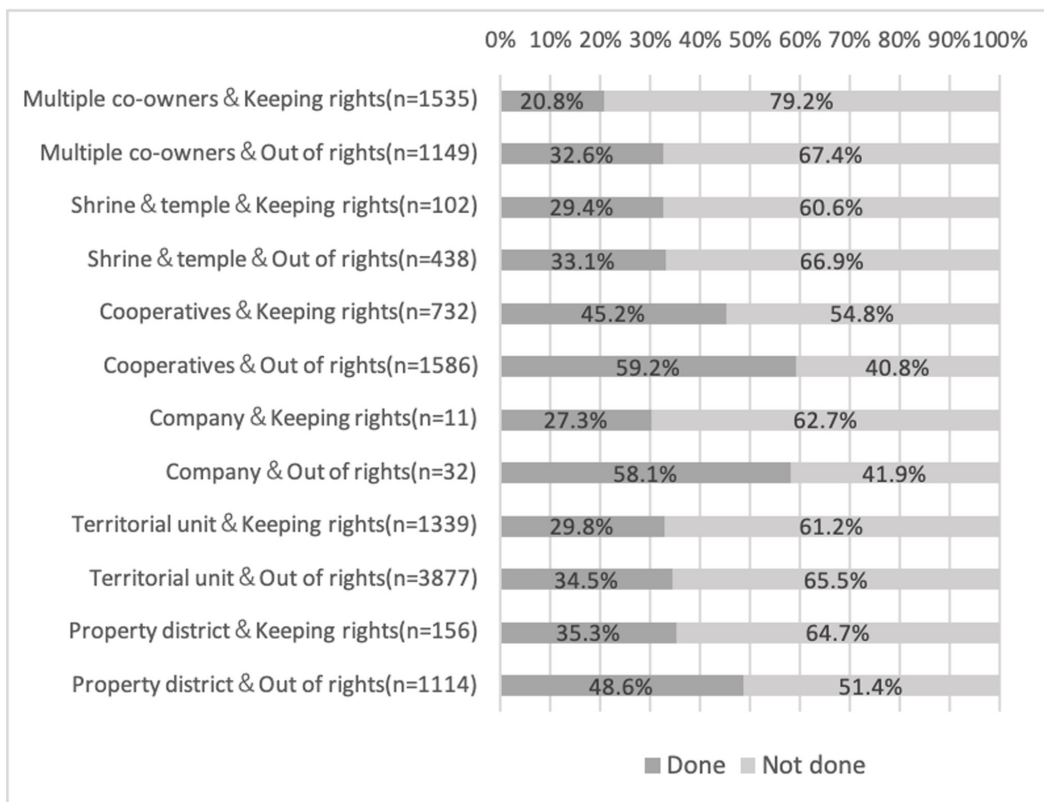


Figure 6 The rate of forestry activities done with registered names and ex-villagers keeping their rights, N = 12,041, 2000 census. Cramer's V = .235, $p < .001$.

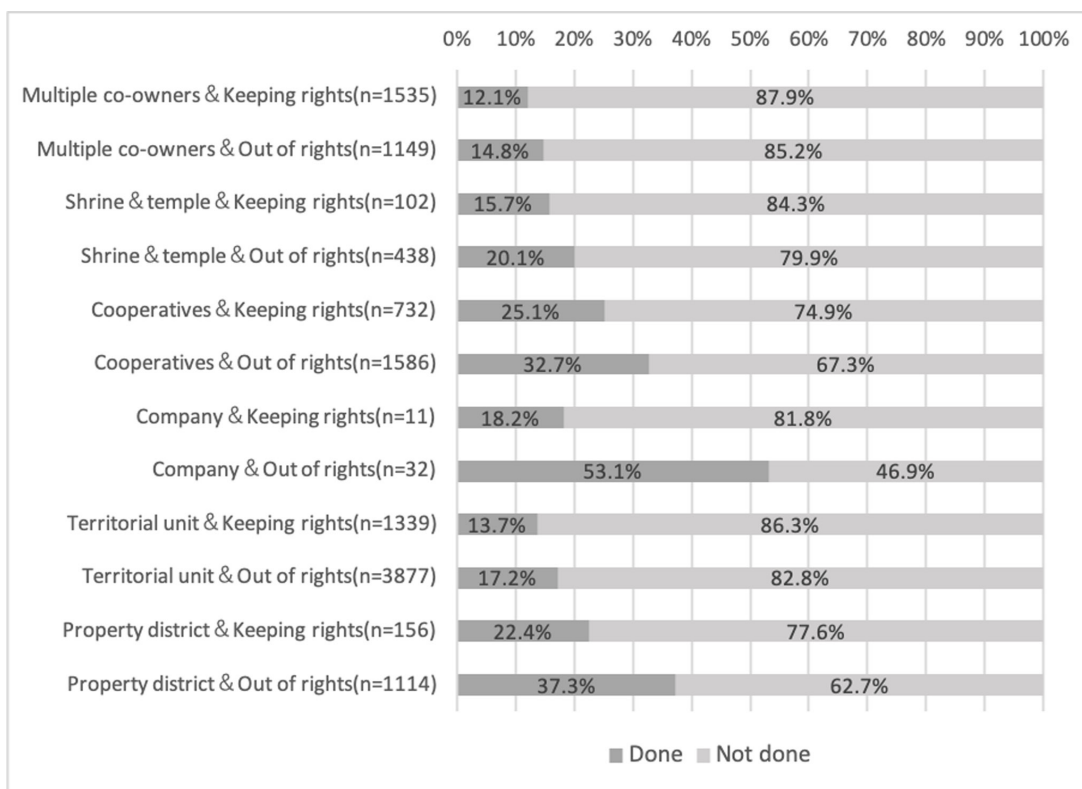


Figure 7 The rate of utilization of others' forces done with registered names and ex-villagers keeping their rights, N = 12,041, 2000 census. Cramer's V = .208, $p < .001$.

and company cases with independent legal personality, there is a drop in the rates of activities and utilization of others' force when ex-villagers keep their rights.

Returning to the logistic regression analysis of [Table 9](#), we examine hypothesis 3, controlling the forest's physical conditions. As demonstrated by Model 3, the rate of activities falls severely with an odds ratio of 0.437 when the title is multiple co-owners and ex-villagers also keep their rights. The effect of the interaction of these two conditions is shown in greater detail in Model 5: the odds ratio is 0.815, and the *p-value* is less than 10%. Thus, the interaction effect was statistically confirmed, but the effect was not as strong as expected. This is because, as mentioned earlier, when ex-villagers keep their rights, multiple co-owners and other names decrease the activities rate.

Therefore, hypothesis 3 is confirmed, and we find that other types of names also show the anticommons problem when they include rights holders outside of the village.

4.4 KEY FINDINGS FROM THE RESULTS

Hypotheses 1, 2, and 3 are all confirmed: registered names affect the autonomous rule of villagers, and when the name is multiple co-owners, the rate at which ex-villagers keep their rights is much higher. Together, the registered name of multiple co-owners and the keeping of rights by ex-villagers reduce the rates of forestry activities and legal relationships with others to ask for assistance with forest management. The combination of both conditions results in the lowest rates.

Counter-hypothesis 1 was rejected: labor investment in planting is not a factor in the retention of rights. Although counter-hypothesis 2 explains the characteristics of multiple co-owner forests, it is only partially true because the title of multiple co-owners decreases the rate of activities significantly, even when we control for the size of forest, proportion of planted area, and the number of commoners.

However, the two points differ from our predictions. First, not only in the category of multiple co-owners but also in cooperatives and companies, the rate of ex-villagers keeping their rights was high. Their retention of rights uniformly resulted in a decrease in rates of forestry activities and utilization of others' labor. Second, there was less utilization of others in territorial units, possibly because the ambiguity of their legal status created difficulties in establishing legal relationships on their land.

5. DISCUSSION

While previous studies have explained the underuse of Japanese common forests via socio-economic factors, this

study newly demonstrates the importance of legal and institutional factors. The influence of registered names on the institutional rule of commoners shows that, unlike the theoretical assumptions of Ostrom and Japanese legal doctrines, the villagers' rule is not fully autonomous, but instead influenced by the state's legal system because legalization makes progress with the weakening of customary rights.

Dixon (2007) and Vasile (2018) have already pointed out that the existence of rights holders outside the community makes the management and establishment of legal relationships difficult. This paper demonstrates their argument with quantitative data and attempts to theorize this situation, remodeling the bundle of rights model. In Schlager and Ostrom's model ([Table 1](#)), those outside the community had weaker rights, but here ex-villagers and even their descendants can exclude a new use, having strong property rights ([Table 2](#)). Of course, very rarely do they invoke the veto right; their descendants are often not even be aware of these rights. For the remaining villagers, however, there is a fear of ex-villagers who are rights holders. Not knowing who they are, how many they are, and where they are increases the psychological anxiety toward unknown persons and the transaction costs of collective choices. If the villagers cannot contact even one of them, it will be impossible to make any changes to the way the commons is managed or to establish any legal relationships with others on their common land. This dilemma is termed as the "Bundle of Rights Reversed" because there is a centrifugal allocation of rights and veto power: the farther from the village, the stronger the influence of the rights without sharing the burden of management.

The following points indicate the limitations of this paper. First, the 2000 census does not survey the number of registered co-owners and rights holders outside the village and their attitudes toward these rights. Thus, it is necessary to carry out future research on these points in order to understand why ex-villagers bring their co-ownership title, how this creates an increase in the number of co-heirs who are unaware of the existence of their rights, and how this legal anticommons situation influences the village's decision-making. Second, even in cases that did not have legal anticommons conditions, a high percentage did not perform forestry activities. Therefore, the impact of declining timber values cannot be denied. However, if timber prices recover but the problem of the anticommons becomes more serious over time, there will be no choice but to abandon the commons because the transaction costs of resolving the anticommons will be much higher than the profits from forestry activities. In recent years, emerging countries such as China and India have begun to buy imported timber at higher prices, which has led to

increased demand for domestic timber. Since this paper's data are from 2000 and the survey was limited to the groups holding more than 10ha of forest, it is necessary to conduct a new national survey including small-scale common forests that have spatial and legal anticommons problems simultaneously. Finally, it has not been possible to cover the increased establishment of an authorized community organization, *Ninka Chien*, which can register a property in the community's name, as this trend began in 2000. Future studies should seek to incorporate this type of organization alongside the categories of ownership considered here.

6. CONCLUSIONS

As one of the commons of developed industrialized countries, the Japanese common forest is experiencing underuse. However, because the influences of the registered title have already been pointed out by scholars on developing countries, we should advance a comparative study with all countries of commons rights focusing on the registration system and the structure of property rights using a new model, the "Bundle of Rights Reversed." This will open up the possibility of socio-legal studies of the mixed commons/anticommons property (Dixon 2007).

A characteristic of the Japanese legal system is that because it was not possible to register customary rights as a real property right of servitude on others' land, compromises were made in registering land ownership. Of course, ownership has the advantage of strong protection against state power, but it has the downside of being difficult to solve if there are complicated rights relationships. Under current Japanese property law, even a very small share of co-ownership is protected like a normal individual property right: all owners must agree on any changes to common property and rights of co-ownership cannot be removed, even if a co-owner does not participate in management and has no sense of ownership.

Tenure rights, on the other hand, are flexible in content and easier to adapt to subsequent changes, such as setting a time for their expiration and renewing them. If a comparative study focusing on this point is advanced, it will provide valuable knowledge for land titling of the commons and suggest a balance between the protection of property rights and the sustainability of resources management.

Instead of the recent Japanese policy frame "Unknown Owner Land Problem," which attempts to consolidate common lands into the public domain, two legal reforms emerge from our findings. One is to distinguish normal common property, where the number of co-owners is small, and abnormal anticommons property,

where the number of co-owners is so large that it is difficult for them to communicate with each other. Different decision-making rules could then be applied to each type of situation. Another legal reform is to create a clear distinction between changes in the nature of the common property and necessary management of affairs so that the latter is possible through the decisions of those involved in management.

This paper termed the situation in which people outside a community have a strong right to block decisions about common property as "the Bundle of Rights Reversed." However, there are cases where ex-villagers often return and participate in management (Yamashita 2012) and cases where urban volunteers are involved in management (Inoue and Miyauchi 2001). To promote such good practices, we may propose legal and institutional reform using the bundle of rights model. For example, land ownership could be placed in the hands of a community legal person, ex-villagers could keep only the right to share profits from future harvests, and those who contributed to management could be given the right to participate in decision-making in proportion to their labor (Inoue 2013). If a community can successfully coordinate the bundles of diverse members' rights, the ideal state described by Schlager and Ostrom (1992) can be realized. The model of bundles of rights, of which this paper extended the scope, will be useful both in resolving anticommons situations and in promoting the involvement of new members in governing the commons.

NOTES

- ¹ Under Japanese law, registration is not a requirement for the transfer of rights, but only creates the effect of preferential protection for the registered person (Art. 177 of Japanese Civil Code).
- ² Art. 251 of Japanese Civil Code.
- ³ In this paper, the term "village" will be used in the sense of an early modern village. During the Edo period, there were 60,000 villages with an average population of about 400 people. Each village had a representative, co-managed various commons, and was collectively responsible for tax payment as the smallest unit of the administrative organization. The municipalities established after the Meiji period were much larger than early modern villages, and the villages became informal governing units called *Buraku*.
- ⁴ This rule is also recognized in court precedents. However, the right that is lost here is a right within the group, not co-ownership title on the registration. Thus, eliminating a name from the register is not automatic and requires a procedure by the person leaving the village.
- ⁵ The microdata were provided by the Bureau of Statistics, Ministry of Agriculture, Forestry and Fisheries.
- ⁶ Municipalities in Japan are large in size and distant from the villagers because of the many mergers that have taken place. Therefore, when the commons is owned by the municipality, it cannot be managed autonomously by the villagers.
- ⁷ The item regarding the number of commoners in the census question asks for the number of members of the commons group, not the number of title holders of co-ownership on the registration. Therefore, for example, in the case of a property district where

the ownership title belongs to a single legal entity, all inhabitants of the property district are counted as commoners. In property districts, individual inhabitants are often regarded as the rights holder unit, instead of households. Therefore, we did not use the number of commoners as a variable to measure the severity of the anticommons.

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COMPETING INTERESTS

The authors have no competing interests to declare.

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REFERENCES

- Berge, E., & McKean, M.** (2015). On the commons of developed industrialized countries. *International Journal of the Commons*, 9(2), 469–485. DOI: <https://doi.org/10.18352/ijc.650>
- Bromley, D. W.** (2009). Formalising property relations in the developing world: The wrong prescription for the wrong malady. *Land use policy*, 26(1), 20–27. DOI: <https://doi.org/10.1016/j.landusepol.2008.02.003>
- Buchanan, J. M., & Yoon, Y. J.** (2000). Symmetric tragedies: Commons and anticommons. *The Journal of Law and Economics*, 43(1), 1–14. DOI: <https://doi.org/10.1086/467445>
- CAPRI.** (2010). *Resources, Rights and Cooperation: A Sourcebook on Property Rights and Collective Action for Sustainable Development*.
- Chang, Y. C.** (2012). Tenancy in “anticommons”? A theoretical and empirical analysis of co-ownership. *Journal of Legal Analysis*, 4(2), 515–553. DOI: <https://doi.org/10.1093/jla/las011>
- Cornu, M., Orsi, F., & Rochfeld, J.** (ed.) (2017). *Dictionnaire des biens communs*. PUF.
- Dixon, K.** (2007). Working with mixed commons/anticommons property: Mobilizing customary land in Papua New Guinea the Melanesian way. *Harv. Envtl. L. Rev.*, 31, 219–278.
- Ehrlich, E.** (1913). *Grundlegung der Soziologie des Rechts*. Duncker and Humblot.
- Fukuda, J., & Kawasaki, H.** (2015). A survey of the profit-sharing plantation contracts with many landowners by the prefectural plantation agencies and the possible solutions for the revision of such contracts. *Ringyo-keizai Kenkyu*, 61(3), 12–23 (in Japanese).
- Gierke, O. V.** (1868). *Das deutsche Genossenschaftsrecht Bd.1*, Weidmann.
- Habermas, J.** (1986). Law as medium and law as institution. *Dilemmas of law in the welfare state*, 203–220. DOI: <https://doi.org/10.1515/9783110921526.203>
- Handa, R.** (2010). The historical root of the modernization of common property forests. *Iriai Rinya Kenkyu*, 30, 24–31 (in Japanese).
- Hardin, G.** (1968). The tragedy of the commons. *Science*, 162(3859), 1243–1248. DOI: <https://doi.org/10.1126/science.162.3859.1243>
- Heller, M. A.** (1998). The tragedy of the anticommons: Property in the transition from Marx to markets. *Harvard law review*, 621–688. DOI: <https://doi.org/10.2307/1342203>
- Hirahara, S.** (2020). Regeneration of Underused Natural Resources by Collaboration Between Urban and Rural Residents: A Case Study in Fujiwara District, Japan. *International Journal of the Commons*, 14(1), 173–190. DOI: <https://doi.org/10.5334/ijc.977>
- Hohfeld, W. N.** (1913). Some fundamental legal conceptions as applied in judicial reasoning. *Yale Lj*, 23, 16–59. DOI: <https://doi.org/10.2307/785533>
- Inoue, M.** (2013). Eclectic collaborative commons as an integration of closure and openness. *Local commons and democratic environmental governance*, 19–39.
- Inoue, M., & Miyauchi, T.** (ed.) (2001). *Sociology of the Commons*, Shinyosha (in Japanese).
- Kaino, M.** (1943). *The Study of Japanese Commons/Iriai*, Nihonhyoronsha (in Japanese).
- Kawashima, T.** (1983). *Rights of Customary Law-Kawashima Takeyoshi's Writings Vol. 8*. Iwanamishoten (in Japanese).
- Kuroki, S., Kumagai, K., & Nakao, H.** (1975). *National Survey on Common Property Forests*. Seikosha (in Japanese).

- Larson, A. M.** (2012). *Tenure rights and access to forests: A training manual for research*. Bogor: Center for International Forestry Research.
- McKean, M. A.** (1992). Management of traditional common lands (Iriaichi) in Japan. *Making the commons work: Theory, practice, and policy*, 63–98.
- Meinzen-Dick, R., & Mwangi, E.** (2009). Cutting the web of interests: Pitfalls of formalizing property rights. *Land use policy*, 26(1), 36–43. DOI: <https://doi.org/10.1016/j.landusepol.2007.06.003>
- Ministry of Agriculture, Forestry and Fisheries.** (1962). *1960 National Census Report on Forestry-Customary Forests* (in Japanese).
- Miyanaga, K., & Shimada, D.** (2018). 'The tragedy of the commons' by underuse: Toward a conceptual framework based on ecosystem services and satoyama perspective. *International Journal of the Commons*, 12(1), 332–351. DOI: <https://doi.org/10.18352/ijc.817>
- Nakao, H.** (2003). *Legal issues of common property forests*. Keiso shobo (in Japanese).
- National Research Committee for Codes.** (1893[1956]). *National Survey on Customary Forests and Grasslands*. Reprinted by Minpou Seiritsukatei Kenkyukai (in Japanese).
- Ostrom, E.** (1990). *Governing the commons: The evolution of institutions for collective action*. Cambridge university press. DOI: <https://doi.org/10.1017/CBO9780511807763>
- Ostrom, E., Cox, M., & Schlager, E.** (2014). An Assessment of the Institutional Analysis and Development Framework and Introduction of the Social-Ecological Systems Framework. *Theories of the Policy Process*, 267–306.
- Rokumoto, K.** (1986). *Sociology of Law*. Yuhikaku (in Japanese).
- Schlager, E., & Ostrom, E.** (1992). Property-rights regimes and natural resources: a conceptual analysis. *Land economics*, 249–262. DOI: <https://doi.org/10.2307/3146375>
- Schlueter, A.** (2008). Small-scale European forestry, an anticommunity? *International Journal of the Commons*, 2(2), 248–268. DOI: <https://doi.org/10.18352/ijc.42>
- Shimada, D.** (2014). External impacts on traditional commons and present-day changes: a case study of iriai forests in Yamaguni district, Kyoto, Japan. *International Journal of the Commons*, 8(1), 207–235. DOI: <https://doi.org/10.18352/ijc.348>
- Suehiro, I.** (1924). *Legal issues in rural areas*. Kaizosha (in Japanese).
- Takahashi, T., Matsushita, K., Yoshida, Y., & Senda, T.** (2019). Impacts of 150 years of modernization policies on the management of common forests in Japan: a statistical analysis of micro census data. *International Journal of the Commons*, 13(2), 1021–1034. DOI: <https://doi.org/10.5334/ijc.936>
- The Tokyo Foundation.** (2014). *Unclear Ownership on Japanese Land and Crisis of Dead Land* (in Japanese).
- van Laerhoven, F., Schoon, M., & Villamayor-Tomas, S.** (2020). Celebrating the 30th anniversary of Ostrom's *Governing the Commons*: Traditions and trends in the study of the commons, revisited. *International Journal of the Commons*, 14(1), 208–224. DOI: <https://doi.org/10.5334/ijc.1030>
- Vasile, M.** (2018). Formalizing commons, registering rights: The making of the forest and pasture commons in the Romanian Carpathians from the 19th century to post-socialism. *International Journal of the Commons*, 12(1), 170–201. DOI: <https://doi.org/10.18352/ijc.805>
- von Benda-Beckmann, F., et als. (Eds.).** (1999). *Property rights and economic development: land and natural resources in Southeast Asia and Oceania*. Routledge.
- Yamashita, U.** (2016). Current situations of multiple co-owner' common forest and the institution of authorized community organization. *Toshimondai*, 107(11), 81–90 (in Japanese).
- Yamashita, Y.** (2012). *The reality of disappearing villages*. Chikuma Shoten (in Japanese).

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