

Local Power Structures and Their Effect on Forest Land Allocation in the Buffer Zone of Tam Dao National Park, Vietnam

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Abstract

This article examines how household property claims over forest land used for economic production were established in communes bordering Tam Dao National Park in northern Vietnam under the decentralized implementation of forest land allocation policies. Using data from surveys of households living on the edge of Tam Dao National Park, this study examines “who got what” when household access to forest land used for production was established. This demonstrates the community interests that constitute the local power structures affecting distribution of access to forest land. In this case, household access to forest land used for production is determined greatly through entrepreneurial and institutional factors. If decentralized forest land allocation policies have any hope of circumscribing land use so that it corresponds to the uses laid out in land use plans, we must first understand how local power structures affect household access to forest land.

Keywords

forest land allocation, local power structures, property rights, state–society relationships, Tam Dao National Park buffer zone, Vietnam

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Introduction

An important component of contemporary forest policy in the developing world in recent years has been the decentralization of state control over forests and the allocation of private land use rights to forest users living near areas targeted for conservation and regeneration (Larson, Barry, Ram, & Colfer, 2010). Vietnam has implemented such policies. The Vietnamese government has embraced the idea that household livelihoods can be improved through allocation of production forest land outside of conservation areas and that this will lead to improved conservation within protected areas.¹ Yet much remains to be understood as to how political processes affect land use rights allocation and the resulting implications for bordering areas designated for protection. This article examines the case of the allocation of forest land used for production purposes to households in the buffer zone of Tam Dao National Park in northern Vietnam. All mention of household “forest land” in this study refers specifically to land used for economic production under forestry and agroforestry practices for the planting and harvesting of trees and/or perennial crops such as tea that may or may not be intercropped with other agricultural products. By examining “who got what” when forest land use claims were established by households living on the periphery of Tam Dao National Park, this study analyzes the politics of access to productive forest resources in a community and the factors contributing to household use of land inside the national park for forestry and agroforestry purposes.

This article first introduces the relevant findings of scholars examining implementation of these allocation policies in the case of Vietnam’s forest land then builds a theoretical framework that considers the politics of access under decentralized allocation of private property rights. The next section introduces the specific case of the buffer zone of Tam Dao National Park in northern Vietnam followed by the study method and presentation of results. The article concludes with a discussion of the theoretical implications of this case for the study of forest land allocation programs in developing countries more broadly.

Decentralized Allocation of Forest Land Use Rights in Vietnam

In many ways, Vietnam’s decentralized forest land allocation program has been touted as a success in terms of increasing overall forest cover planted and managed by households. Between 1993 and 1997, approximately 500,000 households across Vietnam were allocated forest land for production or protection. The area allocated covered more than 1.4 million hectares of forest land, amounting to 17.5% of the nation’s forest land (Pham Xuan Phuong, 2000). In addition, deforestation has purportedly decreased significantly under these policies and under the Five Million Hectare Reforestation program. As of 2007, 38% of Vietnam’s national territory was designated as forested or replanted, up from 27.8% in 1990 and approaching the

national goal of 43% forest cover by 2010 (*Vietnam Forestry Development Strategy 2006-2020*).

Nonetheless, biodiversity and forest quality continue to decline. Between 1999 and 2005, forests classified as “rich” and “medium” in terms of biodiversity and forest quality declined at the rates of 10.2% and 13.4%, respectively. Most of the increase in forest cover comes from plantation forests, but this has apparently not stopped the decline of Vietnam’s richest forest resources, most of which fall in protected areas such as national parks (*Vietnam Forestry Development Strategy 2006-2020*).

Furthermore, the results of the forest land allocation programs in terms of poverty alleviation and encouraging community involvement in forest management are mixed. Thomas Sikor (2001) has argued that reforestation in Son La province was not attributable to the land allocation program, because farmers resisted the allocation policies. Rather, reforestation was a result of liberalized agricultural output markets that encouraged farmers to intensify production on existing agricultural land, lessening their need for agricultural expansion into forested land. A 2001 synthesis report on the Five Million Hectare Reforestation Program has noted a number of other problems that have emerged through forest land allocation. These include confusion as to boundaries between different types of forest land and agricultural land, making farmers nervous to accept the unclear rights and responsibilities accordant with being allocated a plot of forest land (Ministry of Agriculture and Rural Development, 2001). The report also found that forest land allocation fell short of its goals of encouraging broad-based community involvement in forestry by maintaining an element of social equity in allocation to households. Rather, the report argued that much of the forest land was allocated to “the police, army, and forest enterprises” (p. 26). Richer households were purportedly given access to better quality forest land and more land area. Furthermore, studies by Sikor and Nguyen (2007) have argued that local political dynamics may keep the poor from gaining the benefits of forest land allocation programs. Finally, Sikor and Tran Ngoc Thanh (2007) found that the “exclusive devolution” advocated by Vietnam’s forest allocation policies that gives exclusive property rights to one designated owner household ignores existing customary rights that allow overlapping claims by multiple claimants on the same piece of land (p. 2). This has led to increasing conflict between claimants and continuing loss of forest land. Thus, despite some noted progress in increased forest cover under Vietnam’s forest land allocation program the question of whether this type of forest policy will contribute to protection of Vietnam’s forests in a sustainable way remains unclear.

Before it is feasible to address questions of whether enhanced property rights can promote poverty reduction and sustainable resource use in developing countries such as Vietnam, we must first understand the politics of who gets access to land, as property rights may not have the expected effects on investment and resource use in cases where political or socioeconomic factors affect the assignment of rights. Who really has access to forest land and how did they get it?

The Politics of Access Under Decentralized Allocation of Property Rights

Scholars studying state-society relations in implementation of decentralized forest land allocation policy would classify the allocation of rights to a scarce resource as a principal-agent problem, wherein the central government depends on local government to fulfill its vision in allocating rights to a resource, but lacks the ability to effectively monitor implementation (McCubbins, Noll, & Weingast, 1987). The factors motivating local officials in their allocation of resources may not, in fact, align with the goals of social equity and forest conservation envisioned by the central level. So, what factors *do* motivate local officials in their implementation of centrally-designed policy? The following section considers scholars' work on this question and groups their explanations into three sets of hypotheses: (a) "discrimination" hypotheses, which argue that the more socioeconomically powerful in a community are able to gain preferential access to resources; (b) "institutional" hypotheses, which argue that local institutions serve as a conduit through which access to resources is distributed; and (c) "entrepreneurial factors" hypotheses, which argue that local officials respond to local economic and entrepreneurial interests.

Discrimination hypotheses. The first set of hypotheses comes from theories of cronyism and local officials' abuse of power in allocating scarce resources (see Huang, 1999; Leach, Mearns, & Scoones, 1999; Mansuri & Rao, 2004; Mood, 2005; Platteau, 2004; Ribot, 2004). Many studies have found that the poor or sociopolitically marginalized in a community tend to benefit less from local distribution of limited resources (see Mansuri & Rao, 2004; Sikor & Nguyen, 2007; Williams, 1996). Rather than targeting marginalized groups, or being distributed equitably, as the policy may have been intended, distribution instead can exacerbate existing networks of patronage that benefit the well-connected.

Along a related vein, a number of studies have argued that the poor and socioeconomically marginalized tend to only gain access to those resources that are considered the least desirable in a community (see Ministry of Agriculture and Rural Development 2001). Barbier (1997) argues that "wealthier households generally take advantage of their superior political and market power to ensure initial access to better quality resources, [. . . whereas . . .] poorer households are confined either to marginal environmental areas where resource rents are limited, or only have access to resources once they are degraded and rents dissipated" (p. 891). Barbier (1997) argues that it is therefore the poor who tend to expand agricultural production into marginal, ecologically sensitive areas, clearing forests to farm because they either have no access to land or only have access to already degraded land. Pierce and Emery (2005) furthermore point out "forests and forest resources provide a safety net for millions around the globe on a daily basis, particularly the poor who are ill-served by the market economy" (p. 251). Therefore, the poor and socioeconomically marginalized, who may lack access to resources such as land for agricultural production, may be more likely

to occupy land that better-off households leave be. This may include land inside protected forest areas, where use is technically illegal and tenure security weaker.

Institutional hypotheses. An alternative view considers the effect that local institutions may have on how households gain access to forest land locally. Local institutions may affect resource allocation even in cases where both democratic institutions are lacking and where there is little oversight from higher levels of government. Lily Tsai (2007) has argued, in the case of China, those informal institutions at the local level, such as kin groups and temples, can exert power over local officials and influence their provision of public goods because the institutions enmesh the officials in norms of accountability. Furthermore, even local branches of state-organized, compulsory mass organizations, given their room for “self-directed participation” and significant local autonomy (Kasza, 1995, p. 61), may establish norms in the community about their role in the implementation of policy and may therefore influence the allocation of resources.

Chen (2004) similarly finds, in the case of China, that even institutional *legacies* have influenced regional development by setting the agenda of choices and costs for local officials and business interests as officials implement reforms locally. This theory follows a logic of “path dependence”² in implementation (Mahoney, 2000, p. 507) and argues that current resource allocation policies must be viewed within the context of last policy implementation and local institutional legacies. Furthermore, in Vietnam, the institutional legacy of socialist policies that emphasize equity may continue to affect the allocation of resources at the local level, even when economic reform policy at the central level has abandoned socialist equity norms.

Institutional legacies could have both positive and negative influences on future resource access. Under the positive logic of influence, citizens who benefited from a previous policy or who participate in local institutions may have established rights within a community and may be granted priority in subsequent resource allocation. At the same time, norms established under earlier policies of socialist equity may continue to affect resource allocation. However, it could also be that these institutional legacies lead to negative implications for future resource access. If, for example, a previous institution becomes defunct, there may be a period of transition in which the population that was formerly served by that institution has no representative institution to serve their needs. An example of this would be citizens who lose access to health care because their employer goes out of business and there are no state-run programs available to serve them.

Entrepreneurial factors hypotheses. Another common explanation as to the factors influencing local distribution of resources is that local officials are more closely tied to local populations’ economic interests (see Sikor, 2004), or to economic interests in the region (Jahiel, 1998; Malesky, 2003) than they are to higher-level political mandates. When these local interests do not coincide with those at the central level, local officials will favor local economic interests over centrally-defined environmental interests because these “horizontal linkages” within the community are stronger than “vertical linkages” to higher levels of government (Sikor, 2004, p. 169). When local economic interests differ substantially from national policy, the fact that politicians

are accountable to their local constituencies may cause them to steer policy implementation away from central-level intentions (De Shazo & Freeman, 2003; Ridenour, 1994).

Most such studies have focused on implementation in democracies, particularly the United States, showing how local environmental agencies can “co-opt” federal resources and policy implementation to meet demands of local constituencies (DeShazo & Freeman, 2003; Scholz & Wang, 2006). However, many scholars have also argued that decentralized processes increase the ability of local populations and interests to influence officials in nondemocratic settings. For example, local economic interests may take the form of private industry, or, even, state-owned industry that is financially managed at the provincial or other local level. These industries, through the financial power that they represent to localities, may hold significant political power over local officials, effectively reconfiguring their preferences to favor local industry over national policy (see Malesky, 2003, for a case in Vietnam; Jahiel, 1998, for a case in China). As Jahiel (1998) explains in her study of environmental policy in China, “economic decentralization has given officials at the provincial level and below the means and incentives to develop their local economies [. . . causing them to . . .] intervene against regulations—such as environmental protection—deemed unfavorable to growth” (p. 757).

However, economic interests need not be at the firm or industry level to represent a form of power that influences local officials. Individuals and households may hold economic power through their control over the productive resources available in a community. Among such possible resources are a household’s labor power and its existing sweat equity investments into productive land. These hypotheses follow a sort of homesteader logic and assume a general lack of regulation over a resource, at least in the period in which access was first established. Rather, access to a resource was first established by the free will and capacity of the household to claim the resource for its own use. The term *sweat equity* evokes the Lockean (1690) sense of a claim to property. Leigh Raymond (2003) explains this view of an “intrinsic” property right: “By mixing the sweat of labor, either directly or through the ‘owned’ labor of servants or slaves, with the object desired, a person becomes the owner of that item. No government action is required, except to respect the ensuing ownership claim” (p. 44). Under the Homestead Act of 1860 in the United States, individuals established private property rights in just this way.

Household entrepreneurial capacity could serve as a local power structure either because local officials fear being sanctioned by the local citizenry if they enact any policy that hurts households’ economic interests or because local officials follow an economic logic in which they view their communities like a firm, and thereby follow policy that supports economic growth in the community. In the case of communities of subsistence-level farmers, local officials may rightly fear the potential for citizens’ collective action against them if they impose policies that are perceived as threatening the economic livelihoods of the local citizenry. For example, Kerkvliet (2005) argues that Vietnam’s decision to dismantle its agricultural collectives was driven greatly by local populations’ “everyday politics” of dragging their feet in collective

work. Such theses use the logic of James Scott (1985) that even groups without an institutionalized political voice can exert political pressure through collective, but unorganized, resistance to policy. This philosophy is often applied in explaining rural policy implementation in Vietnam to argue that local officials are somewhat responsive to, or at least impotent against, the will of the populations they govern (see Kerkvliet, 2006; Sikor, 2004; Sowerwine, 2004).

Under the "Entrepreneurial Factors" explanation of resource allocation, local officials do nothing to initially allocate the resource. Rather, households gain access to resources in a free market, frontier environment in which they self-claim and defend their access to a resource through their own sweat and labor. Local officials later view households who have successfully defended their claims as "deserving" owners, and rubber-stamp their claims by formally recognizing them or by simply not challenging their existence. The extent to which these discrimination, institutional and entrepreneurial factors affected household access to forest land will be tested using survey data from a sample of 301 households living in the buffer zone of Tam Dao National Park in northern Vietnam.

Household access to, and preferences over forest land in the Tam Dao buffer zone. Tam Dao National Park was designed by the central government under the land use planning designation "special use" forest: to serve as a protected conservation area, prohibiting all household agricultural, forestry, agroforestry, and residential use within park boundaries. The buffer zone surrounding the park was designed to have "production" forest for the forest land allocation program, giving households private access to land to use for forestry and agroforestry purposes, so that they will not encroach on the national park.

Tam Dao National Park was established by the Government of Vietnam in 1996 and covers approximately 34,995 hectares³ of land. The park is located 70 km north of Hanoi and encircles the Tam Dao mountain range, with its highest peak reaching 1,529⁴ m above sea level.⁵ Ecologically, Tam Dao National Park is home to a number of endangered plant and animal species. Its natural forests are classified as Asian tropical forest and monsoon tropical forest. The park is home to one of the nation's most diverse populations of insect and bird species, and houses 64 species of threatened plants and 100 species of threatened animals (Schemmel, 2006). Among the park's threatened animal species are three types of globally threatened amphibians.

In addition, Tam Dao National Park is a special case because of its close location to Hanoi, the high density of the population surrounding it (estimated at 209 people/km²), the high numbers of mainly domestic tourists that visit the park (estimated by Bauer, Sofield, Li, & Martin, 2006, to be around 100,000 in 2006), and the general pressure on the park's resources from the surrounding population and outsiders.

The administration of the park and its "special use" forest occurs through a centrally-appointed management board, although the buffer zone communes are managed by the surrounding provincial governments. The spine of the Tam Dao mountain range also serves as the border between the three provinces of Vinh Phuc, Thai Nguyen and Tuyen Quang. Thus the park, which encompasses this mountain range, is split between

these three provinces, encircled by the lower park boundary at the 100-m elevation point. Because the national park is managed by a centrally-appointed management board, the provinces do not play a direct role in the management of the land of the national park even though the land is still technically within the boundaries of these provinces.

The provinces and their district and commune-level People's Committees do, however, manage the buffer zone, the "production forest" that surrounds the boundary of the national park and the people within it. The buffer zone has a total population of approximately 184,000 people, living in 25 communes and two district-level towns, spread over eight districts inside the three provinces. This population of subsistence-level farmers is ethnically diverse, consisting of Kinh (ethnic Vietnamese), Sán Diu, Dao,⁶ Tày, Nùng, and Hoa (ethnic Chinese) people. The Kinh population represents the most recent migrants to the area, with most having arrived between the 1950s and 1980s during the socialist state's New Economic Zone agricultural expansion program, or with the establishment of State Forest Enterprises (SFEs) in the area in the 1960s.

As was the case in all designated forest areas throughout the country, the communes surrounding Tam Dao National Park were in charge of implementing the country's forest land allocation policies in the buffer zone. Land designated as "production" forest land outside of the national park was to be distributed by commune governments (with district-level approval) to households under 50-year, renewable use rights so that households could plant trees that could eventually be harvested and sold. Households' use rights are documented in a long-term use rights registration certificate, known as a "Red Book," also issued by the district government and distributed by the commune government.⁷ The intention of these policies is to engender sustainable forestry that would give households equitable access to forest land outside of the national park although ensuring protection of forest inside the park.

However, this research shows evidence of a more complicated pattern of household forest land use based on both formally allocated rights as well as *de facto* claims both outside and inside the conservation area of the national park. Despite the prohibitions on all land use within the national park, many households living on the edge of Tam Dao National Park continue to use land inside the park for forestry and agroforestry purposes. For example, in My Yen commune, Thai Nguyen province, which borders the park on its eastern side, an estimated 47% of the commune's land that falls within the protected ecological regeneration zone of the national park serves as household tea plantations that are actively cultivated by the commune's inhabitants (Tuan, 2006). GIS data collected by GTZ, the German development agency that helps fund conservation efforts in the park, reveal that approximately 14% of the land inside the park's "ecological regeneration" zone is planted with the kinds of crops and trees (such as acacia, eucalyptus and tea shrubs) typically managed by households for economic production (Tuan, 2006).

Thus, households living in the buffer zone communes have a variety of claims over forest land that they use for economic production purposes: land that has been formally allocated to them through a Red Book (*de jure* rights), and *de facto* claims both

outside and inside the national park. This leads to the following questions: How were households' forest land use claims established both outside and inside Tam Dao National Park? How do the characteristics of households that have been formally allocated Red Books (de jure land users) line up with the characteristics of households using forest land for production purposes in general (de facto users)? and How do these compare to the households that are using land inside the conservation area of the national park? We can approach these questions by examining who has access to forest land in general, who has title to their land, and who is using land inside the national park.

De facto versus de jure access and household preferences for forest land. To understand the complicated reality of household access to forest land in this case, this analysis considers de facto, or actual household use of forest land, as well as de jure rights, or legally documented access. Schlager and Ostrom (1992) define "de facto property rights" as rights that may "originate among resource users," and that "are not recognized by government authorities" (p. 254). Schlager and Ostrom (1992) note that de facto property rights holders "act as if they have de jure rights by enforcing these rights among themselves," but that these rights are generally "less secure than de jure rights" (p. 254). However, Schlager and Ostrom (1992) furthermore note that "only if de facto rights are challenged do the differences between the two classes [i.e. lower tenure security] become apparent" (p. 254, footnote). Thus, de facto rights may be a strong form of local property right, especially if they are unchallenged.

Although Schlager and Ostrom define de facto rights as being recognized by community, but not by government, this analysis takes Schlager and Ostrom's point one step further and argues that de facto rights *may* be recognized by *local* officials, who are most aware of the specific circumstances of their communities. These local officials also have some autonomy in their isolated implementation of centrally designed regulations in their communities. In some cases, households do not hold Red Books for their forest land simply because the local government has not yet completed the process of issuing them or for some other reason that is perceived as legitimate in the eyes of local officials. For instance, local officials may recognize that some households do not have de jure rights simply because they are in some sort of administrative limbo (such as being a locally-based employee of a now-defunct State Forest Enterprise (SFE) who is not officially registered as a commune inhabitant and is therefore ineligible for allocation of an official Red Book by commune officials). The author's field research revealed that local commune officials often use their administrative discretion in a way that demonstrates that they accept some households' de facto use of forest land as legitimate. For example, local officials are often aware of the buying and selling of land without title, and in some cases, they even provided government compensation to de facto landholders when the government was required to seize the household's land under eminent domain for public purposes (such as for the building of a road). Commune officials may use their limited autonomous, administrative power to protect the economic or social interests of their community, and may recognize some de facto land claims. Because these de facto claims are unchallenged by

government (Schlager & Ostrom, 1992), and even, sometimes legitimated by local government, the holders of *de facto* rights may feel as secure in their tenure as do Red Book holders. Thus, for the purposes of examining “who got what” under forest land allocation, the *de facto* forest landholdings of households must also be considered.

However, there is a likely difference in the tenure security and legitimacy of the two types of *de facto* forest land use considered in this study. It is likely that *de facto* use of forest land inside the national park is less secure and less legitimate than *de facto* use outside of national park boundaries. Land inside the national park is officially designated as “special use” forest land, and Vietnam’s Law on Forest Protection and Development explicitly prohibits use of special use forest land for any purposes other than protection and natural forest regeneration. Therefore, use of national park land for economic forestry and agroforestry production purposes is illegal under central-level policy and this may be enforced by the centrally appointed national park Management Board, which has administrative jurisdiction over this land. Because of this, land users may fear that this land will be forcibly seized from them and thus have lower tenure security. Nonetheless, local commune officials may still not challenge households’ land claims inside the national park because they are not in charge of directly monitoring and punishing land use violations within the national park. The important point is that all three forms of land claims (*de jure* claims, and *de facto* claims both outside and inside the national park) may be recognized as legitimate by community members and local officials.

However, households likely prefer certain situations over others. Based on survey respondents generally-stated preferences, detailed below, this analysis makes the following assumptions: Households prefer having access to some forest land over no access, households prefer having title to one’s forest land over no title, and households prefer having access to forest land outside of the national park to having forest land claims inside the park. The author bases these views on households’ survey responses about their desire for forest land, their comfort level in using land inside the national park and their desire for title to their land.⁸

Data, Sampling, and Econometric Concerns

The data for the empirical analysis come from surveys conducted directly by the author in Vietnamese with a sample of 301 households living in villages bordering Tam Dao National Park, in the park’s “buffer zone.” The author surveyed these households directly in their homes by method of personal, face-to-face interview between 2006 and 2007. The author was assisted by a field guide from the Vietnam Research Institute of Land Administration (ViRILA) under the Ministry of Natural Resources and Environment (MoNRE). In cases of misunderstanding or language difficulty, the field guide would assist with furthermore explanation to the household.⁹

Although the author did her best to construct the survey questions and the survey environment in such a way as to obtain the truest picture of the household possible,

there are likely some biases in the data from survey respondent error, lack of comprehension of a question, inability to recall, or respondent unwillingness to reveal true information. Although the surveys were anonymous and confidential in the sense that nothing recorded on paper could be traced directly to the household interviewed, the author and her field guide were frequently accompanied by local officials and curious passersby who sat in on household interviews. Nonetheless, most households seemed comfortable with the presence of others, which validated that the author had permission to be in the village. Although most households responded very positively to the invitation to interview, a few seemed uncomfortable sharing answers. Only two of the households approached declined to participate completely. Indeed, in conducting her research, the author found that some respondents would not elaborate or respond to certain questions, particularly regarding their behavior in relation to rules and regulations inside the national park. Households using land inside the national park who are aware that this may be prohibited according to national park regulations may have been nervous to tell the truth. This could introduce bias into the survey results, underestimating the actual amount of land use that is going on inside national park boundaries. It may furthermore introduce bias if certain types of households are more likely to hide the truth than others. However, the author notes that most households and even, commune officials, appeared very comfortable openly discussing the issue of land use within the national park. Although the estimates of household land use inside the national park may be biased, the great number of respondents that did share information about their land use in the park (61 households) helps to ameliorate this problem. The fact that nearly a third of households with forest land in the survey stated openly that their land is inside the national park provides a substantial amount of data that can be fruitfully analyzed and speaks to the point that this issue is far from secret within these communities.

The author used a multistage, purposive sampling method to determine the villages within which to conduct her surveys, to capture a spatially broad snapshot of household access to forest land around the circumference of the park. Within each of the villages chosen, approximately 10 households were randomly selected for survey. The first stage of the multistage process of sampling sought to include all five districts in the three provinces in which the national park lies, to capture any variation in administrative practice among different districts or different provinces. In the second stage, within these five districts, the author used purposive sampling to choose ten communes that are fairly evenly spread around the circumference of the mountain range making up the national park, including those with the most land inside national park boundaries. Finally, within each commune, the author chose three villages with great amounts of land inside the national park and that were spread out over the entire commune, for a total of 30 villages in the sample. Finally, the last layer of sampling involved the author randomly choosing approximately ten households to visit in each village, by walking through the village with her field assistant and randomly approaching households spread throughout the village. This method resulted in 301 household surveys, spread evenly around the entire buffer zone of the national park (see Figure 1).

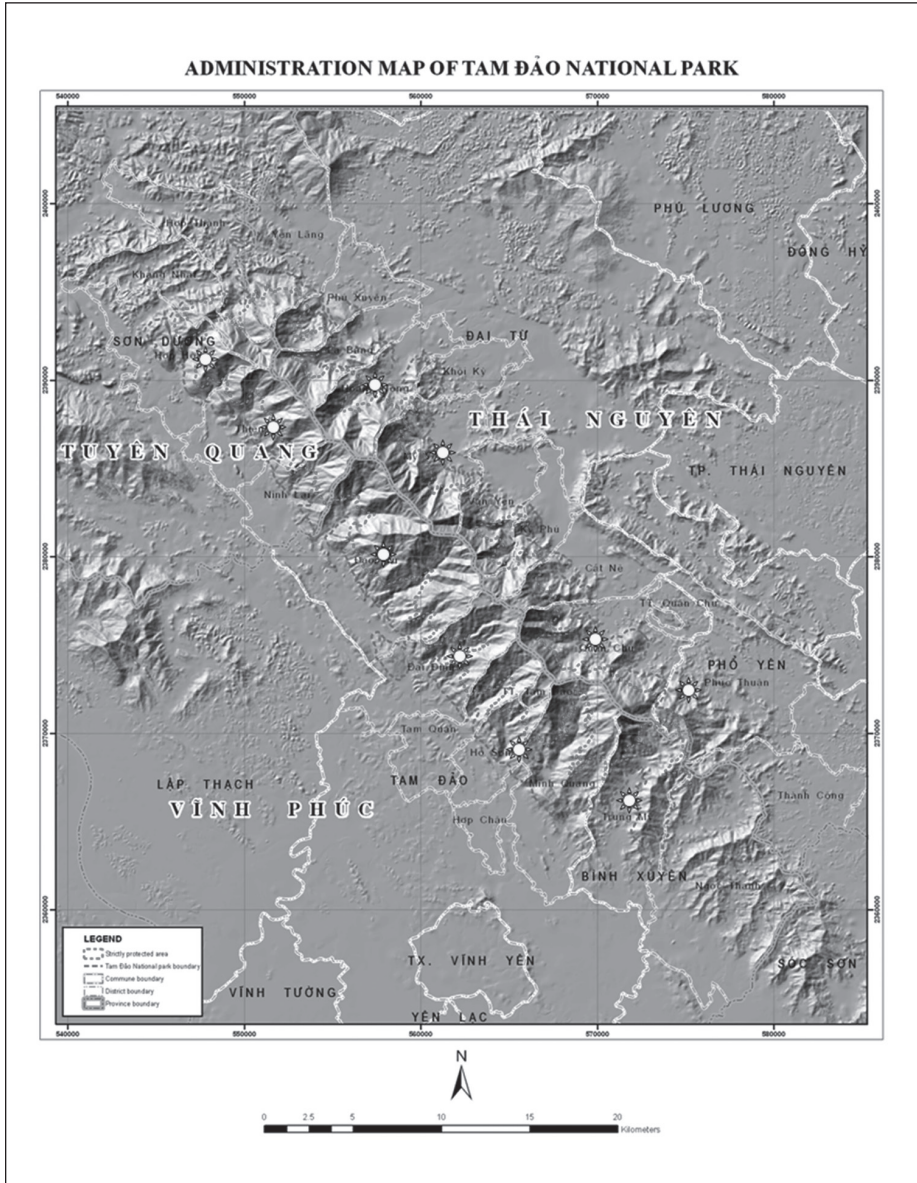


Figure 1. Map of locations of surveyed communes (surveyed communes marked by circles) Source: GTZ (2007).

Note: The stars indicate the locations of surveyed communes.

Imperfections in the sample that come from the multistage purposive sampling method explained above could bias the results of the regressions performed on the sample and complicate the ability to make inferences from these results to the greater

reference population of buffer zone inhabitants. To correct this problem, the author has computed sampling weights for each observation. The base weight for each household observation is the reciprocal of that household's overall probability of selection, considering each stage of sampling. The overall probability of selection is the product of the probability that the household's commune was selected within its district (all five districts are represented), the probability that the household's village was selected within the commune, and the probability that the household was selected out of all the households within that village. All regressions performed below employ these sampling weights.

A further econometric concern arises out of the sampling method used to collect data. Because one of the goals in collecting the household-level survey data was to gain information about households with protection contracts over land inside the national park (explored in other research), and because there were very few of these households, the author employed choice-based sampling and purposely oversampled the population of households with these protection contracts. To control the selection effect present in the sample, the analysis includes "protection contracts" as an independent variable in each of the regressions. This variable is a dummy variable designated as "one" for sampled households that have protection contracts. This method of stratifying on an independent variable fixes the global constant in the cases where the selection variable (protection contracts) is not the dependent variable.

Dependent Variables: Three Measures of Household Forest Land¹⁰ Access

This statistical analysis uses logistic regression to examine how the characteristics of households living in the buffer zone of Tam Dao National Park are associated with three different binary dependent variables: (a) household access to forest land in general (de facto access), (b) household access to title (a Red Book) over forest land (de jure access), and (c) household use of land inside the national park.¹¹ These regressions will be referred to as Logistic Regressions 1, 2, and 3, respectively. Although Regression 1 uses all 301 household observations, Regressions 2 and 3 are limited to only those households that have forest land, thus decreasing the sample size to 238. By statistically examining "who has what" in terms of access to forest land, the logistic regressions serve as a method of measuring the community interests that determine the politics of household access to forest land around Tam Dao National Park.

Independent Variables: Measuring Discrimination, Institutional Factors, and Entrepreneurial Factors

This analysis uses a number of independent variables that measure the characteristics of the households surveyed to test whether access to forest land is determined by discrimination factors, institutional factors, or entrepreneurial factors in accordance with the theories of state–society scholars discussed above.

Discrimination variables. To measure whether discrimination is at play in household access to forest land and land title in the buffer zone of Tam Dao National Park, and whether it explains something about use of forest land inside the national park, this analysis considers the following characteristics as independent variables in the logistic regressions: Whether the household has members who identify as ethnic minorities; the education level of the most highly educated member in the household; whether anyone in the household works as a state employee; the estimated living standard of the household (see below), and the number of years that the household has lived in the community. These variables test the implicit hypotheses that ethnic minorities, those with lower living standards, the less educated, and “outsiders” to the community (recent arrivals) might have been discriminated against when access to forest land and forest land title was determined.

To measure the hypothesis that poorer families are less likely to have access to forest land, the author includes a variable that attempts to approximate a household’s standard of living. Because many respondent households found it difficult to quantify their household income levels, or were uncomfortable providing that information directly, the author instead asked a series of questions about whether the household owned the following basic, popular consumer goods that could be easily observed within the household: a rice cooker, a telephone, a television, a motorcycle, a gas cooking stove, and a computer. The total number of “yes” responses was calculated for each household, creating a variable that ranges from 0 to 6 depending on how many of the goods the household owns. Households with a higher total of consumer goods are assumed to have a higher living standard.¹²

One criticism of including a living standard variable in the regressions is that there is a potentially endogenous relationship between measures of economic wealth and access to forest land. For example, consider the hypothetical result of a positive relationship between household living standard and forest land access. Rather than gaining access to forest land because of its higher economic status, it could be that a richer household’s living standards increased because it was able to harvest trees on its forest land and sell the harvest. Although this is indeed a possibility, it is unlikely to be a great factor in this sample of households, as most households’ tree plantations had not yet reached maturity and had therefore not yet ever been harvested.

Institutional variables. To test the hypothesis that local institutions or institutional legacies affect how households gain access to forest land resources, the author considers the following household characteristics as independent variables: Whether the household benefited from Program 327, Vietnam’s first official forest land allocation program, begun in 1992;¹³ whether anyone in the household is a member of the Veteran’s Organization or Elderly Citizens’ Organization;¹⁴ whether anyone in the household is considered an employee of a SFE; and whether a household has land inside the national park (Regression 2 only). If a relationship between access to forest land and membership in either the Veteran’s Organization or Elderly Organization is found, this would indicate that these local branches of mass organizations were either given some responsibilities in implementation of allocation policies, or were targeted

specifically for allocation by local authorities. For example, in Thai Nguyen province, a number of respondents who are members of the Veteran's Organization noted that the organization had been allocated tree-planting duties by the commune authorities under Program 327.

However, and perhaps contrary to what one might expect, a household's association with a SFE is hypothesized to have a *negative* effect on its access to forest land and forest land title. Under Vietnam's socialist system whereby all citizens were classified by labor type (i.e., "farmer," "industrial worker," "teacher," etc.), SFE employees were classified as industrial workers and were not traditionally part of the commune administrative unit, which represented farmers. Therefore, they are less likely to have benefitted from commune-administered policies, such as forest land allocation and issuance of Red Books. Finally, the variable on household use of land inside the national park, included only in Regression 2, serves as an institutional legacy factor because we would expect that having land inside the conservation area of the national park would negatively affect a household's ability to gain title to this land.

It is important to also note that the philosophical line between what counts as an "institution" at the local level and what is simply inequitable discrimination is not entirely clear-cut. For example one could arguably consider the hypothesized negative institutional effect of being an SFE employee as indicative of discrimination against these people within their communities. The author does not contest this argument. Nonetheless, the institutional variables attempt to focus on the formal government institutions or institutional legacies (such as establishment of the national park) that might affect household access to forest land.

Entrepreneurial factors variables. A final set of variables measures the extent to which a household's own entrepreneurial behavior and endowments influence its de facto and de jure access to forest land. To test the hypothesis that households' ability to gain access to forest land was limited only by their entrepreneurial ability to do so, the analysis considers the following two variables: the household labor ratio and a household's history of "sweat equity" investment. The household labor ratio is the proportion of laborers relative to total members in a household. If forest land access was obtained simply out of households' independent effort and ability to claim the land (because they have more labor), rather than an antecedent policy of calculation and allocation enforced by local officials, this is support for the entrepreneurial factors hypothesis.

The second entrepreneurial factor variable that may have affected household access to forest land today is a household's history of "sweat equity" investment into the land. It is possible that households who privately expanded their agricultural production up into the hillside during the period in which stagnating productivity in Vietnam's socialist rice collectives was resulting in food shortages (the mid-1980s) are more likely to have access today. The longer ago a household first planted swidden crops¹⁵ such as maize and cassava on hillside forest land, the more likely it may be to have forest land claims now. It is also possible that local officials honored these claims and then granted Red Books to those households that had established access through sweat

Table 1. Summary Statistics for Variables.

Variable	Summary statistics of key variables					
	Minimum value	Maximum value	Median/ mode	Frequency (x = 1, for 1/0 variables)	1st quartile value (for continuous variables)	3rd quartile value (for continuous variables)
Has de facto forest land (1/0)	0	1	1	238	—	—
Has title to forest land (1/0)	0	1	1	120	—	—
Has land inside national park (1/0)	0	1	0	61	—	—
Ethnic minority (1/0)	0	1	1	177	—	—
Education level	0	17	11	—	9	12
State employee (1/0)	0	1	1	147	—	—
Living standard	0	6	2	—	2	3
Years in community	3	76	42	—	31	49
Program 327 beneficiary (1/0)	0	1	0	82	—	—
Veterans' organization (1/0)	0	1	0	54	—	—
Elderly organization (1/0)	0	1	0	79	—	—
SFE employee (1/0)	0	1	0	21	—	—
Labor ratio	0	1	0.44	—	0.33	0.60
Years since first sweat equity investment	0	100	18.2	—	0	27
Forest protection contract (1/0)	0	1	0	41	—	—

equity, or that they simply do not challenge these existing de facto claims. This variable is measured as the number of years prior to 2007 (when the survey was conducted) that a household first “broke ground” up on the hillside, regardless of whether it still has land today.¹⁶ For a detailed explanation of how each variable is measured (see Appendix A). Table 1, below shows summary statistics for each of the variables:

Results

Regression 1 results: De facto access to forest land. Because the coefficients produced from logistic regression are not easily interpretable in their raw form, the author has computed a variety of quantities of interest to demonstrate the marginal effect of individual variables on the probability that a household has access to forest land today.

Table 2. First Differences of Significant Independent Variables.

Expected marginal effect of significant independent variables on household access to forest land		De facto access to forest land	De jure access to title over forest land	Use of forest land inside national park
Expected total probability (all variables set at medians and modes)		67.9%	52.2%	26.7%
Variable	Change	Expected change in probability of having forest land	Expected change in probability of having title to forest land	Expected change in probability of having forest land in national park
Ethnic minority		—	—	—
Education level		—	—	—
State employee		—	—	—
Living standard	1st to 3rd quartile	—	—	-5.01*
Years in community	1st to 3rd quartile	-16.05***	—	—
Program 327 beneficiary	0 to 1	22.28***	—	—
Veterans' organization		—	—	—
Elderly organization	0 to 1	15.06*	24.31****	—
SFE employee	0 to 1	—	-34.75**	—
Land inside national park		NA	—	NA
Labor ratio	1st to 3rd quartile	8.56*	—	5.80*
Years since first sweat equity investment	1st to 3rd quartile	16.76**	—	15.81**
Forest protection contract	0 to 1	-35.70****	-27.51***	—
N		301	238	238

Note: All regressions performed using sampling weights and robust standard errors, clustered at the village level.

*= 90% confidence, ** = 95% confidence, *** = 99% confidence, **** = 99.9% confidence.

These calculations are presented in Table 2, above. The untransformed results from the logistic regressions appear in Appendix B. With all continuous variables set at their medians and dichotomous variables set at their modes, Table 2 shows the “absolute risk,” or the expected probability that the median household¹⁷ has access to forest land, as well as the expected marginal effect of the significant independent variables. Given the characteristics of the median household, the expected probability that this household has access to forest land that they use for economic purposes is 67.9%. The expected probability that the median household has title to their forest land in the form

of a “Red Book” is 52.2%, and the expected probability that the median household in the sample is using land inside the national park is 26.7%.

Who has de facto access to forest land? The results for Regression 1 show that households who participated in Program 327 and who established sweat equity-based claims furthermore back in time are more likely to have de facto forest land access today. With less statistical certainty (90%), membership in the Elderly Organization and higher labor capacity also positively contribute to a household’s access to forest land. Specifically calculating the expected marginal effect of these variables, households that received tree planting subsidies under the forest land allocation policies of Program 327 are an expected 22.28% more likely to have forest land today. Thus, a household, which differs from the median household above only by dint of having previously participated in Program 327, has an expected total probability of having forest land of approximately 93%. Changing the sweat equity variable (the number of years ago that a household first cleared forest land for swidden cultivation) from the first quartile of its distribution (0 years ago) to the third quartile (27 years ago) increases the probability that a household has forest land today by 16.76%. Those with membership in the Elderly Organization increase their probability of having forest land by 15.06%. Similarly, as a household’s number of laborers relative to household members increases from 33% to 60%, its expected likelihood of having forest land increases 8.56%.

The results of Regression 1 also show that the years-in-community variable is negatively associated with de facto forest land access, *after controlling for* a household’s sweat equity investments and the other variables. Households with longer histories of sweat equity investment also have been members of the community longer. If one were to not include the years-in-community variable, the sweat equity variable could be simply proxying for the length of time the household has been in the community. It would also complicate interpretation of the Elderly Organization variable, as that too, could simply be a proxy for households that have been in the community a long time (and are, therefore, elderly). Thus, including the years-in-community variable allows one to isolate the expected marginal effect of sweat equity investments and participation in the Elderly Organization on access to forest land from the length of time the household has been living there. What the negative coefficient for the years-in-community variable shows is that after arriving in the community, the sooner a household made sweat equity investments in hillside swidden agriculture the more likely it is to have (what is now designated as) forest land in that same spot today. For households in the 75th percentile both in terms of years in the community (39 years) and sweat equity investments (27 years), the expected positive marginal effect of the sweat equity variable (+16.76%) is nearly cancelled out by the negative marginal effect (−16.05%) of the years-in-community variable. However, for households in the 50th percentile in terms of years living in the community (42 years), the expected marginal effect of this variable decreases to −9%. Thus, a household who has only been in the community for 42 years (50th percentile), but who had claimed hillside land through sweat equity investments 27 years ago (75th percentile) increases its probability of

having forest land today by more than 7%. This shows that simply living in a community for a long time and making sweat equity claims to hillside land at the same rate as other households is not enough to gain access to forest land today. Rather, those who made land claims through sweat equity investments into the land earlier than other households who arrived at the same time are more likely to have forest land today. Longtime members of the community who did not make any sweat equity-based claims are much less likely to have forest land today.

Finally, the global constant, "protection contracts," is negatively associated with household access to forest land. Recall that this variable is included to control for the sample of households allocated paid protection contracts by the Tam Dao National Park management board to guard national park land. The specific characteristics of these households is examined in other research, but the negative coefficient suggests that the allocation process for these contracts targeted households who otherwise lacked access to forest land to use for economic production purposes.

Regression 2 results: De jure access to title over forest land. Who has access to a Red Book for their forest land? The median household has an expected 52.2% probability of having title over its forest land. In terms of the marginal affect of individual variables, the main factor contributing to the likelihood that a household has title to its forest land is membership in the Elderly Organization. Households with an elderly member who is therefore part of the Elderly Organization have a 24.31% higher expected probability of having title to their forest land than the median household. Again, it is not the fact that this elderly person may have lived in the community a long time (as the years-in-community variable is not significant), but what matters is that this person is considered "elderly" and therefore represented by the Elderly Organization. Households with members who were former employees of SFEs are an estimated 34.75% less likely to have Red Books for their forest land. This is in accordance with the hypothesis that SFE employees were less likely to benefit from commune-administered policies, such as issuance of land title, because they were not formally considered commune resident farmers.

In addition, although one might expect a significant negative relationship between household use of land inside national park boundaries and access to forest land title this does not appear to be the case. In other words, households with land inside park boundaries are no more *or less* likely to have title to their forest land than others. In some cases, it is possible that this is because title to land was issued before the establishment of the national park in 1996, as some households noted receiving their forest Red Books as early as 1993. However, most communes did not begin issuing forest land title until 1997, 2000, or 2007, and a few communes had not yet begun issuing forest title at all. In one case in Thai Nguyen province, a household head showed the author his Red Book, issued in 2000, for land that is clearly demarcated *inside* the national park boundaries. Thus, despite the fact that centrally-mandated land use planning only allows allocation of title to land managed by communes outside of national park boundaries, some communes still issued title over national park land that is not within their jurisdiction.

Regression 3 results: Household use of forest land inside Tam Dao National Park. Given this, who is using land inside national park boundaries? The median household has a 26.7% expected probability of having land claims inside the national park. The factor of sweat equity investment and, with less statistical certainty, the variables of higher labor capacity and lower living standards are the individual factors that increase a household's expected likelihood of using land inside the national park. A sweat equity investment that occurred 27 years ago (the third quartile of the sample) increases the expected probability that a household has forest land inside the national park by 15.81%. Similarly, as the labor ratio increases from the first to the third quartile of the sample (moving from a ratio of 33% to 60% of a household's members), the likelihood that a household has forest land inside the national park increases by 5.8% (with 90% statistical significance). Because land inside park boundaries is typically furthermore away from household residences and on more steeply sloping land, households that have a higher labor capacity were perhaps more able to claim this national park land to use for economic production than other households. Finally, households in the third quartile of the living standard variable (households with three out of the six consumer goods used to measure living standard (see Appendix A) are 5.01% less likely to be using land inside the park than households with only two of the consumer goods on the living standard scale (with 90% statistical significance). This perhaps reflects the fact that this land is less desirable because of the precarious status of one's land use rights over this land where economic forestry and agroforestry use is prohibited according to centrally mandated regulations. Those with greater economic status are able to appropriate the forest land outside of park boundaries for which tenure security is likely greater. None of the other household characteristics affect whether a household has land inside the national park. Ethnic minorities, the more educated, state employees, SFE employees, and members of the Elderly Organization and Veteran's Organization are no more *or less* likely to have land in the national park than others. Furthermore, longtime community members are no more or less likely to have land inside park boundaries. Finally, implementation of Program 327 also did not contribute to current use inside the national park.

Conclusion: Theorizing about how local power structures affect household forest land access. Previous scholars' work on state-society relations in Vietnam (see Kerkvliet, 2006; Sikor, 2004; Sowerwine, 2004) has pointed repeatedly to the finding that local officials are more responsive to "horizontal linkages" within their communities than to "vertical linkages" to higher levels of government (Sikor, 2004, p. 169). This study has sought to examine these "horizontal linkages" in one case, by exploring "who got what" when household forest land use claims were established under decentralized allocation policies in the buffer zone of Tam Dao National Park. The method of examining "who got what" disaggregates the concept of community and allows us to see the competing interests that may exist there. It serves as a way of measuring the community and household interests that excelled in securing access to forest resources used for economic production.

This portrait reveals a complicated mosaic of community-recognized household forest land use rights that are stable, regardless of whether they are *de jure* rights or *de*

facto rights. The long-term stability of these de facto claims lends support to Schlager and Ostrom's (1992) argument that de facto claims to property may constitute a form of property right at the local level, which claimants feel is relatively secure, especially when these claims are unchallenged by authorities. The median household with de facto forest land claims outside the national park established its claims to this land in 1992. In terms of de facto land claims inside the national park, the median household established these claims through sweat equity investments in 1985, long before the national park came into existence in 1996, and long before formal forest land allocation policies were created beginning in 1992. De facto claims inside the park arguably have lower tenure security than de facto claims outside the park because they are technically in violation of national park land use planning and could be subject to enforcement measures by national park Forest Protection officers. Nonetheless, these land claims are also quite stable, as demonstrated through the length of their establishment and the fact that local commune officials generally leave these claims be (because this is outside their jurisdiction of enforcement).

This has implications beyond Vietnam for the study of decentralized forest land allocation in the developing world more broadly. It points first to the fact that different types of property claims, including de facto claims, may be recognized as legitimate within a community, being stably managed by households and generally unchallenged by local authorities. Therefore, these claims should be examined alongside de jure claims. The second implication is that the communities charged with managing household forest land access under decentralized approaches likely function according to their own logic because of complex histories, politics, and the social relations within those communities. These individual logics form the politics that determine the distribution of resources in a community. This article has attempted to lay down a preliminary theoretical framework that could be tested in other cases, and proposes that discriminatory, institutional, and entrepreneurial factors may influence the allocation of resources in a community.

However, the degree to which these factors influence the distribution of forest land access will vary from case to case depending on the specific histories and socioeconomic dynamics in each instance. In the case examined here, the buffer zone of Tam Dao National Park, household de facto forest land access in general is associated with the following institutional and entrepreneurial factors: Participation in Program 327's reforestation policies, membership in the Elderly Organization, sweat equity investments, and the household's labor capacity. Households who had been in the community a long time but did not participate in these institutions or make entrepreneurial sweat equity-based claims early on failed to gain access to forest land. Household land claims inside the park were greatly established again through entrepreneurial factors sweat equity and to some degree, household labor capacity. Finally, to some extent, households with a lower living standard are more likely to be using this land inside the national park. This adds some support for the claim presented earlier that the land with higher tenure security outside of park boundaries may be claimed by households with higher market power (Barbier, 1997). Household access to de jure rights, or Red Books, was greatly determined by institutional factors. The likelihood that a

household has a Red Book for its forest land is much higher in those homes that have an elderly member who is part of the Elderly Organization. It may be that the Elderly Organization was targeted by commune authorities as a distribution gateway for allocating Red Books under a sort of distribution campaign. However, access to *de jure* rights was greatly decreased for households who were considered employees of now defunct SFEs. Former SFE employees are viewed as outsiders in the commune administrative structure and are therefore marginalized in the distribution of resources at the local level.

Although there is limited evidence of discrimination against the poor in this case, by and large, discrimination factors are not the main determinants of forest land access in the buffer zone of Tam Dao National Park. Rather, the picture of household access to forest land demonstrates a general use of institutions within the commune administrative structure such as the Elderly Organization, combined perhaps with a respect for cultural norms of deference to elders. There is also a general respect for household entrepreneurial might and lasting claims based on the institutional legacy of previous allocation policies.

These findings are likely specific to the buffer zone of Tam Dao National Park and may not apply in the same way to other cases in the developing world, or even to other cases in Vietnam. In other cases, different types of discrimination variables may be at play, entrepreneurial factors may or may not influence access, and local institutions may affect allocation in different ways. This case is specific in that the population of subsistence farmers living in the buffer zone, although ethnically diverse, shares a high degree of homogeneity in their living standards and the length of time that they have been conducting sedentary agriculture in the region (with the first sedentary agriculture beginning generally in the late 1950s or 1960s). Discrimination factors may be harder to detect in this case than in cases where population dynamics are more varied. The case is also located in northern Vietnam, where collective agriculture was applied under the socialist planned economy and failed. This may have engendered a local respect for household entrepreneurial might that helped communities get by when times were tough under failing collective agriculture. Cases with different economic histories might not result in the same respect for household entrepreneurialism and sweat equity investments. Finally, these communities are located in the heart of northern Vietnam's rural areas where historical support for the Viet Minh and the socialist revolution was generally strong. This may influence local respect for branch government institutions under the Socialist Republic at the commune level. In regions where the population generally does not feel enfranchised under the current governmental institutional structure, resource access may not be determined by participation in these local branches. Nonetheless, the theoretical framework used in this study could be extended to other cases and the influence of discrimination, institutional, and entrepreneurial factors tested.

Given the pattern of actual land use that shows *de facto* rights to be generally stable and long-term and that shows official land use planning designations to have little effect on actual land use behavior, we see the importance of understanding local power

structures and how they affect access to land under decentralized administration of forest land allocation policies. Although the nature of what these local power structures are will vary from case to case, and the local regard for land use planning will also vary, under decentralized administration, the forest land allocation will likely reflect these structures. Land use planning that does not consider this may run into the problem of land use restrictions being violated.

Appendix A

Detailed Explanation of Dependent and Explanatory Variables

	Variable	Type	Explanation
	de facto access to forest land	Y	Household responded that it has land that it uses for forestry, tea plantation or swidden agriculture
	de facto access to forest land: inside national park	Y,X	Household responded that it has land that it uses for forestry, tea plantation or swidden agriculture that lies inside the boundaries of Tam Dao National Park
	de jure access to forest land: title	Y	Household responded that it has been granted a "Red Book" (long-term use rights registration certificate) to its forest land
Discrimination variables	Ethnic minority	X	At least one of the heads of household considers themselves an ethnic minority (non-Kinh)
	Education	X	The last grade completed by the most educated member of the household
	State employee	X	At least one member of the household has (had) an official government appointment, or receives (received) salary from a government office (excluding State Forest Enterprises)
	SFE employee	X	At least one member of the household receives or once received salary from a State Forest Enterprise
	Years in community	X	The number of years that the household has lived in the community. If the household head was born there, the age of the household head.
	Living standard	X	The total number of the following household goods that a household owns, on a scale of 0 to 6: rice cooker, telephone, television, motorcycle, gas stove, computer. Those with more goods are assumed to have higher living standards.
	Institutional variables	Program 327	X

(continued)

Appendix A (continued)

	Variable	Type	Explanation
Entrepreneurial factors variables	Veteran's organization	X	A member of the household is a member of the Veteran's organization
	Elderly organization	X	A member of the household is a member of the Elderly organization
	Labor ratio	X	The ratio of the number of household members classified as capable of contributing labor to household agricultural activities (excludes students, young children, and the elderly) to the number of mouths to feed in the household
	Sweat equity	X	Number of years prior to 2007 that a household first cleared hillside land for swidden cultivation, regardless of whether it still has access to this land. Households that never cleared land for swidden cultivation are classified as "0"

Appendix B

Untransformed Logistic Regression Results

	Variable	de facto access to forest land	de jure access to title over forest land	Use of forest land inside national park
Discrimination variables	Ethnic minority	-0.626 (0.512)	0.074 (0.444)	0.270 (0.579)
	Education level	0.097 (0.076)	0.022 (0.089)	-0.037 (0.050)
	State employee	0.664 (0.429)	0.078 (0.402)	0.223 (0.330)
	Living standard	-0.023 (0.106)	0.019 (0.156)	-0.296 (0.176)*
	Years in community	-0.045 (0.016)***	-0.010 (0.015)	0.009 (0.013)
Institutional variables	Program 327 beneficiary	1.557 (0.695)***	0.563 (0.377)	0.373 (0.424)
	Veterans' organization	-0.236 (0.520)	0.231 (0.406)	0.275 (0.425)
	Elderly organization	0.874 (0.567)*	1.122 (0.342)***	0.277 (0.282)
	SFE employee	-0.368 (0.768)	-1.878 (0.768)**	0.727 (0.609)
	Land inside national park	NA	0.103 (0.438)	NA

(continued)

Appendix B (continued)

	Variable	de facto access to forest land	de jure access to title over forest land	Use of forest land inside national park
Entrepreneurial factors variables	Labor ratio	1.523 (0.897)*	0.421 (0.721)	1.133 (0.672)*
	Years since first sweat equity investment	0.033 (0.015)**	0.009 (0.011)	0.034 (0.014)**
	Forest protection contract	-1.546 (0.551)****	-1.264 (0.479)***	0.056 (0.456)
	Constant	1.000 (0.728)	-0.277 (1.110)	-2.038 (0.984)**
N		301	238	238

Note: Robust standard errors, clustered at the village level, in parentheses; all regressions performed using sampling weights.

* = 90% confidence, ** = 95% confidence, *** = 99% confidence, **** = 99.9% confidence.

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Notes

1. For an illustrative example of this perspective, see the article from the *People's Newspaper*, electronic version (*Nhân Dân* điện tử) titled "Protecting and Developing Tam Dao National

- Forest,” July 7, 2011, which states, “The Tam Dao National Park management board, in concertation with local authorities, supports economic development for the people of the buffer zone, creating stable livelihoods and implementing forest land allocation to households; [They work] with the rural population to find ways to develop the forest while developing family incomes.” (Translated from the Vietnamese, “Ban quản lý Vườn quốc gia Tam Đảo phối hợp chính quyền địa phương hỗ trợ phát triển kinh tế cho người dân vùng đệm, tạo công ăn việc làm ổn định, thực hiện việc giao đất giao rừng cho họ; cùng với nông dân tìm cách phát triển rừng gắn với phát triển kinh tế gia đình”; Dung Minh, 2011)
2. Mahoney (2000) defines *path dependence* as “those historical sequences in which contingent events set into motion institutional patterns or event chains that have deterministic properties” (p. 507).
 3. 86,475 acres, or 135 square miles.
 4. 5,016 feet.
 5. The word *tam đảo* translates roughly to “the three peaks of Paradise.” There is also the town of Tam Dao, which lies at the top of the mountain range. This town was established by French colonialists as a hill station and summer retreat in the early 1900s. In the 1950s, the Viet Minh destroyed nearly all of the French buildings. Today, Tam Dao town serves as a Vietnamese tourist resort.
 6. There are many different groups of Dao people. Those living in the Tam Dao region distinguish themselves by referring to themselves as the “tight-pants” Dao (Dao quần chẹt), because their traditional trousers are wrapped tight around the ankles.
 7. Under the 1993 Land Law, households can be granted long-term private land use rights (50 years in the case of forest land or other perennial crop land and 20 years in the case of rice land or other annual crop land) that can be renewed, bought, sold, mortgaged, inherited, and traded. The recent 2003 Land Law and the 2004 Forest Protection and Development Law further define household rights and responsibilities and different authorities’ spheres of administrative control over forest land. If the government seizes a household’s land under claims of eminent domain, the land use rights holder is entitled to government compensation. Given that these use rights are, in theory, repeatedly renewable as long as the land user follows zoning restrictions, private land use rights in Vietnam represent a reasonably strong property right and the Red Book could be seen as a form of title. The question of whether these use rights are in practice, a strong form of property right remains an open and debatable question. The answer would depend in part on the actual tenure security of the land user over time and the ability of the land user to enforce his/her legal rights through a court of law. Nonetheless, the theoretical bundle of rights (and limitations on those rights) assigned to a Red Book holder in Vietnam resembles that of rights holders in other private property rights regimes.
 8. When households that have no access to forest land (63 households) were asked whether they would like to have forest land if they could get access to it, nearly all respondents (56 households) stated that they would like to have forest land, but that all the land has been taken (only seven households stated that they had no demand for forest land). Second, when households were asked whether having title to their land meant anything to them, nearly all (298 households) responded that they felt having title was useful. Most respondents

(212 households) cited enhanced tenure security as the main reason for wanting title to their land, however, others cited access to credit (76 households) and ease in buying/selling (three households) as the main reason for wanting title. Finally, those households who stated that they were using land that lies inside the boundaries of the national park (61 households) generally expressed less security in their use rights than those with forest land outside of park boundaries. Although households with land inside the park felt somewhat secure that their land would not be seized before they harvest their trees on it, they nonetheless recognized the potential that their land could be seized by the national park. These households employ a variety of tactics to maintain their use rights over this land, such as selectively harvesting only a few trees. This is because they were told by local authorities that as long as their trees are standing they can use the land. From this, the author conjectures that households still view having forest land inside national park boundaries as less secure than having land outside of park boundaries.

9. Permission to interview households was granted by MoNRE under ViRILA's sponsorship, followed by letters of permission from the Tam Dao National Park management board, then the Provincial People's Committee of each province where research was conducted, followed by a letter of permission from the District-level People's Committee, and then permission from the Commune-level People's Committee in each case. Finally, on entering a commune, a commune official would accompany the author and her field guide to the village head in each village surveyed to receive permission from this customary authority before approaching households directly.
10. This analysis measures "forest" land broadly by recording it as all land that households claim to use for the purposes of planting agroforestry trees, tea, and swidden crops, because this is the land that was designated by the Vietnamese government for reforestation. All of these crops are planted on sloping land and are seldom interchanged with rice land. Thus, the designation of forest land in this way creates a dichotomy between rice land and "other" land that households use privately, excluding residential gardens. This designation matches well with original designations of "forest" land used during Vietnam's "re-greening the barren land and bald hills and mountains" campaign of Program 327, in which all sloping land was to be designated for the planting of trees. In this way, the analysis approximately measures households' current use of land on the slopes that were originally intended for reforestation under Vietnam's reforestation campaigns. Therefore, the analysis uses the term "forest" land, however, this land may or may not currently be planted with trees. Rather, it may be planted with tea or swidden crops or it may be bare but still held by a household.
11. Regression 1: Household has forest land = 1, Household does not have forest land = 0; Regression 2: Household has a Red Book for its forest land = 1, Household does not have a Red Book for its forest land = 0; Regression 3: Household is using some forest land inside the national park = 1, Household is not using any forest land within the national park = 0.
12. It is important to note that this measure could be a problem in regions where cultural differences between ethnic groups and their living habits affect their consumer preferences. For example, some ethnic minority groups may continue to use wood stoves for cooking even though they can (perhaps) afford gas stoves. However, in the region where the author

- conducted her research, the ethnic minority groups and the Kinh (ethnic Vietnamese) had been living intermixed since the 1960s and their lifestyles in terms of dress, language, and apparent consumer preferences were greatly indistinguishable. There were, of course, exceptions, and the author acknowledges the imperfections of this measure. However, she argues that it is the best observable option available to approximate a household's living standard.
13. Household participants in Program 327 were officially allocated forest land, and given free tree seedlings and were encouraged to plant them on their hillside land. The World Food Program joined into this effort and offered free rice to households who planted and cared for the tree seedlings.
 14. These are two of Vietnam's mass organizations with conscripted membership. There is also the Women's Union, Farmer's Union, and Youth Organization. Nearly every household in the author's sample had members who were part of the Women's Union, Farmer's Union or Youth Organization, however, only some households had members of the Veteran's Organization or the Elderly Organization. This limited membership creates variation across households that allows the author to test the hypothesis that membership has benefits in terms of securing forest land access for these households. The Elderly Organization is often not listed as one of the official mass organizations, though it functions in the same way. It was first established in 1994 under Decision 523/TTg.
 15. Crops planted on formerly forested hillsides using slash-and-burn agriculture.
 16. The data for this variable come from the question in the survey, which asked the household, "Did your household ever 'go break ground' ('đi khai hoang') up on the hillside? If so, what year did you first plant swidden crops on the hillside?"
 17. The median household in the sample of 301 households first cleared forest land for swidden agriculture 17 years ago, has a household member who completed 11th grade, has no members in either the Veteran's Organization or the Elderly Organization, has no household members who are state employees or SFE employees, has just less than half (44%) of its members contributing to farm labor, is an ethnic minority household, has a living standard of "2" (owns two out of the six consumer goods considered), did not benefit from Program 327, and has lived in the community for more than 42 years.

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