

# Why May Forest Devolution Not Benefit the Rural Poor? Forest Entitlements in Vietnam's Central Highlands

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**Summary.** — This paper examines the effects of forest devolution on the livelihoods of the rural poor. The paper analyzes changes in forest endowments and entitlements among households brought about by “forestland allocation” in two villages of Vietnam’s Central Highlands. Its results indicate that not only the nature of devolved rights but also broader political and economic processes influence the extent and distribution of benefits. Even where devolution generates benefits to local people in poor areas, local power relations and the institutions regulating access to productive resources may constrain the ability of the “poorest of the poor” to take advantage of devolution.

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## 1. INTRODUCTION

Two issues are currently high on the international forestry agenda. The first issue deals with contributions of forests to livelihoods of the rural poor. The focus on poverty is prompted by the target of halving extreme poverty set at the UN Millennium Summit in 2000. The Millennium goals have led to a reorientation of international development assistance, forcing foresters to justify the contributions of their projects to the overarching goal of poverty reduction (Sunderlin *et al.*, 2005). Existing analyses suggest that the actual contributions of forests to rural livelihoods are highly varied (Angelsen & Wunder, 2003; Byron & Arnold, 1999).

The second issue is about the distribution of control over forests. Governments around the world have initiated devolution programs that transfer forest management from centralized state bureaucracies to local actors (White &

Martin, 2002). The programs do not just seek to involve local people in decisions made by outsiders, but imply that local actors themselves make decisions about forest management. In practice, there is a tremendous variation in the designs and outcomes of these programs (Edmunds & Wollenberg, 2003; Ribot, 2004).

This paper connects these two issues by examining the effects of forest devolution on the livelihoods of the rural poor. There are good reasons for combining the inquiry into

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the contributions of forests to the livelihoods of the rural poor with an analysis of devolution. Not only do both issues rank high on the international agenda, but there is also the question of how, if at all, forest policy and programs can devolve forest management and contribute to rural poverty reduction at the same time. Livelihood benefits are a key rationale for many devolution programs (Meinzen-Dick & Knox, 2001). There is also a growing evidence that devolution programs cause changes in local livelihoods, both in positive and negative ways (Edmunds & Wollenberg, 2003; Shackleton & Campbell, 2001).

The emphasis in this paper is on the question of why devolution may or may not benefit the rural poor, in particular the “poorest of the poor.” We seek to uncover underlying processes that differentiate the effects of devolution on the livelihood contributions of forests. We consider our approach complementary to research on patterns in the relations between forests and livelihoods (e.g., Angelsen & Wunder, 2003; Cavendish, 2000) and assessments of devolution impacts (e.g., Jagger, Pender, & Gebremedhin, 2005; Shackleton & Campbell, 2001). These efforts have generated important empirical evidence about the associations between forests and forest devolution, on the one hand, and rural livelihoods, on the other hand. Yet they do not bring to light the processes that create variation in the livelihood contributions of forests.

This paper draws on empirical insights from forest devolution in Vietnam’s Central Highlands. Since 1999, the authorities of Dak Lak province have undertaken “forestland allocation,” which has transferred rights and responsibilities on natural forests to local people in a similar fashion as China’s devolution program (Dachang & Edmunds, 2003). Concern for local livelihoods, in particular those of indigenous ethnic groups, has played an important role in motivating forest devolution in Dak Lak. Forestland allocation in Dak Lak, therefore, offers an opportunity to examine how forest devolution affects rural livelihoods.

The paper is structured as follows: The next section introduces the forest entitlements framework to be used in the analysis of devolution effects. After brief discussions of research methods in Section 3 and background in Section 4, we then turn our attention to the results of the empirical study in Vietnam. We discuss the effects of devolution on the livelihoods of poor households with forest titles in Section 5

and examine the differentiation of endowments and entitlements among local households—title holders or not—in Section 6. The paper concludes with a discussion of key findings and policy implications.

## 2. FOREST ENTITLEMENTS

In an article published in 1999, Leach *et al.* suggest a framework that, appropriately modified, can help examine the effects of forest devolution on the livelihoods of the rural poor. Building on Sen (1981), they propose an “environmental entitlements framework” to exploring social and environmental dynamics in community-based natural resource management. Key concepts in this framework are *endowments*, which are defined as “the rights and resources that social actors have,” and *entitlements*, referring to “alternative sets of utilities derived from environmental goods and services over which social actors have legitimate effective command” (Leach, Mearns, & Scoones, 1999, p. 233).

Environmental entitlements analysis distinguishes between the processes differentiating endowments and those leading to variation in entitlements. The processes by which actors gain endowments and those by which actors transform endowments into entitlements require separate analysis. By implication, endowments may not translate into entitlements, as the latter depend on many factors besides the distribution of endowments (Leach *et al.*, 1999, p. 233).

Endowments reflect the influence of a broad set of institutions lending legitimacy to claims on natural resources, including “the whole range of socially sanctioned, as well as formal–legal institutional mechanisms for resource access and control” (Leach *et al.*, 1999, p. 233). Differences in local people’s forest endowments between localities, therefore, may derive from variation in statutory rights (e.g., Agrawal & Ostrom, 2001) and forest use regulations (e.g., Weyerhäuser, Kahrl, & Su, 2006). They may also result from different customary regulations in forestry (e.g., Wollenberg *et al.*, 2006). Similarly, differences in people’s forest endowments within a locality may originate from state regulations and programs (e.g., Dachang & Edmunds, 2003), local power structures (e.g., Agrawal & Gupta, 2005), and gender relations (e.g., Agarwal, 2001).

Entitlements, in turn, are conditioned by a broad range of institutions regulating access

to and control over productive resources (labor, capital, technology, etc.) and markets. Differences in access to productive resources condition the bargaining power of local communities and logging companies in negotiations over logging contracts (Engel & Palmer, 2006). Variation among local households may also differentiate forest entitlements even where forest endowments are distributed in a relatively egalitarian manner, such as in Nepal's forest user groups (Malla, Neupane, & Branney, 2003). Although all members hold similar forest endowments, wealthier households tend to extract more fodder, trees, and leaf litter from forests than poor households. Wealthier households derive larger entitlements because they possess the means to exploit forests and can make better use of forest resources as inputs into crop cultivation and animal husbandry.

This observation connects with the reminder by Byron and Arnold (1999) that local people are not uniformly "forest dependent" but use different goods and services supplied by forests in different ways. They may use the goods and services for direct consumption, inputs for agricultural production, and materials for house construction. In addition, the relative significance of forest resources varies in relation to potential substitutes, that is, other sources of food, fodder, agricultural inputs, and construction materials. Also, where forest resources serve as input into agricultural or industrial production, they are in different relationships to complementary inputs and other productive resources required for production. Local people, therefore, are in different positions to turn forest endowments into entitlements, depending on the nature of local production systems and the institutions governing access to productive resources.

For our analysis, we modify the environmental entitlements approach in three significant ways (see Figure 1).<sup>1</sup> First, our analysis places actors at the center. Our focus is on the social differentiation of actors, highlighting how socially differentiated actors possess different capacities to gain endowments and entitlements. Their endowments and entitlements, in turn, affect the resources available to them in the future.

Second, we distinguish the endowments associated with forest from the more general resources commanded by social actors. In our forest entitlements analysis, endowments refer to the rights and responsibilities that social actors have with respect to the multiple goods and services provided by forests. Actors' re-

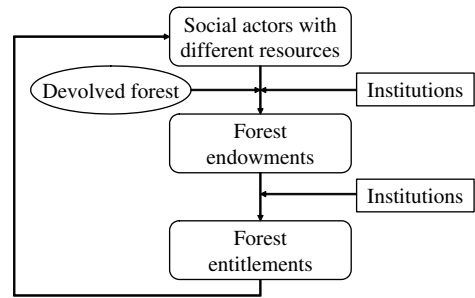


Figure 1. *The forest entitlements framework.*

sources, in contrast, refer to their command over productive resources beyond the forest, that is, labor, capital, agricultural land, skills, etc. We distinguish forest endowments from actors' other resources because of our particular interest in the effects of forest devolution.

Third, we define forest entitlements in more comprehensive terms, including sets of utilities irrespective of whether or not social actors have legitimate command over them. In this, we follow the lead of Ribot and Peluso (2003), who argue for a more comprehensive analysis of the actors' ability to benefit from natural resources. The ability to benefit derives from a variety of rights-based access and relational access mechanisms, including illegal forms. This extension seems particularly appropriate for the analysis of forest entitlements, as access to forest is often gained outside socially sanctioned ways (e.g., de Jong, Ruiz, & Becker, 2006).<sup>2</sup>

Our forest entitlements framework, finally, motivates us to turn the initial question—why devolution may or may not benefit the rural poor—into two interlinked but analytically distinct questions. First, how do the statutory rights accorded in the course of forest devolution create contributions to local livelihoods in poor areas, that is, translate into forest endowments and entitlements for poor title holders? And second, how are forest endowments and entitlements differentiated among local people—title holders or not—with what consequences for the livelihoods of the "poorest of the poor?"

### 3. RESEARCH METHODS

The research employs two analytical strategies, a qualitative and a quantitative one. The

qualitative strategy is intended to generate insights into the concrete processes and practices through which forest devolution affects forest endowments as well as the institutions that influence the translation of forest endowments into entitlements. Special emphasis is given to the analysis of forest endowments, that is, the rights and responsibilities among social actors with respect to the devolved forest, as these are difficult to quantify. The quantitative strategy serves to corroborate the insights from the qualitative analysis by analyzing the distribution of forest entitlements among actors. It quantifies the relationships between actors' resources and their entitlements. In this way, the use of two analytical strategies—which is admittedly unusual—is intended to strengthen the robustness of the research findings.

Fieldwork was conducted in two villages. We selected one village that was located in an area that had experienced rapid rates of economic growth driven by high-value commercial agriculture and high rates of in-migration. The other village was situated in a more remote area, where villagers primarily produced subsistence and low-value commercial crops and migration was low. We selected the villages on the basis of the type of agriculture and incidence of migration because we expected these factors to condition the nature of people's "forest dependence" (in the sense of [Byron & Arnold, 1999](#)) as well as the degree of competition over access to forest. We conducted fieldwork in two villages only for reasons of time. The qualitative strategy, in particular, required extensive stays in the villages, which made the inclusion of further villages impossible. Within the villages, we focused on the comparison of households as the primary social actors. This was motivated by practical reasons (male researchers faced problems to talk to female villagers) and our observation that endowments and entitlements were shared among individual household members on relatively equitable terms.

Four sets of variables are at the core of the research: statutory rights, forest endowments, forest entitlements, and household resources.

- Statutory rights are measured by the possession of a forestland title, the area of devolved forestland (in ha), and the volume of devolved timber (in cubic meters). In the case of user groups, all member households are assumed to hold equal shares in the devolved forest, as stated in Vietnamese legislation.

- Forest endowments are described in qualitative terms only, analyzing the differentiation of different types of rights to forestland and trees among local households.

- Forest entitlements are measured by the area of cultivated land (in ha) and values of agricultural and timber harvests (in Vietnamese Dong, VND) on the devolved forestland, including those sold and consumed at home.<sup>3</sup> The calculation of agricultural harvest value considers all crops grown on devolved forestland. The calculation of timber harvest value includes the primary three species only. Harvest volumes are translated into values by using the price data collected from the local statistical office. The resulting value data may not be absolutely accurate but should, in combination with the area data, be sufficiently reliable to warrant comparisons across households and over time.

- The research considers a broad range of household resources in the qualitative and quantitative analysis (see the [Appendix](#) on the latter). The resources of particular interest are wealth (measured by ownership of major assets using a proxy indicator), labor capacity (measured in labor units equivalent to the number of adult laborers or the weighted labor contributions of all household members, depending on the activity at hand), and political position (using a dummy indicating whether a household member worked in the local state administration or not). These are of particular interest because they help distinguish between more temporary differences among actors (in the case of labor) and more permanent ones (in the case of wealth and political position).

Data collection took place from March to September 2002. Nguyen stayed in the two villages during this period, conducting numerous informal conversations with villagers, observing villagers' use of the devolved forests, and listening to their discussions about who had what right in the multiple goods provided by the forests. Nguyen also conducted a series of key informant interviews with villagers, officials from the local authorities, and staff from the State Forest Enterprises. He collected data on the distribution of statutory rights, forest areas, and timber volumes from the State Forest Enterprises, which had implemented forest devolution two years before. At the end of each village stay, he executed a household census about their resources, production practices,

statutory rights, and forest uses (giving a total of 95 households in the two villages). He used recall techniques to obtain comparable data for the last year before devolution (1999).<sup>4</sup>

The collected data are analyzed using both qualitative and quantitative techniques. The qualitative strategy starts with local people's own explanations and simple comparisons of forest uses and rights before and after devolution for different types of households. It then proceeds to build explanations about the effects of devolution on endowments and the mechanisms differentiating entitlements, testing those on specific household cases. The quantitative strategy uses correlation analysis to examine the distribution of endowments among households. It employs multivariate Heckman two-stage regression analysis to investigate entitlement patterns. A brief discussion of the Heckman model is presented in the [Appendix](#).<sup>5</sup>

#### 4. FOREST DEVOLUTION IN DAK LAK AND THE STUDY SITES

The Vietnamese government embarked on major reforms in the forest sector in the early 1990s. A key component of the reforms was the devolution of forests to households and local state units by way of forestland allocation. Just as for agricultural land, the 1993 Land Law stipulated that the state should issue renewable long-term land use rights for forestland. Yet much of the allocated forestland was given to local state units, many of which were the State Forest Enterprises that had been in charge of management already before. If households received forestland titles then it was exclusively for barren land.

The national reforms did not have much effect on the distribution of control over forests in the Central Highlands province Dak Lak throughout the 1990s. After reunification in 1975, the central government had promoted State Forest Enterprises to manage the province's ample timber stocks to supply national reconstruction and generate foreign currency earnings. The Enterprises were also intended to bring about economic development among the local population made up mostly of ethnic minority groups. Over the years the Enterprises became powerful political players in Dak Lak, being more influential than the local state authorities at commune and district levels. They were often resented by local people, as the Enterprises sought to terminate local uses

of the forest. Being a source of cultivable land, timber, and other resources, the forest was essential for the livelihood of Dak Lak's indigenous population.

Dak Lak's forests also came under increasing pressure from a rapidly growing number of migrants. Large flows of ethnic Vietnamese migrants reached Dak Lak in search for land in the 1990s, as the previous controls on unregulated migration no longer worked. The migration entered into competition for agricultural land with the indigenous groups, driving a rapid expansion of land under cultivation. Widespread forest clearing caused rising distress on the side of the provincial authorities and even drew the ire of the visiting prime minister in 1998. In addition, concerns mounted that indigenous ethnic groups were increasingly marginalized by economically more successful migrants.

The authorities of Dak Lak took the bold step in this situation to initiate the allocation of standing forest to households belonging to indigenous ethnic groups. In 1998, the provincial Department of Agriculture and Rural Development told selected State Forest Enterprises to allocate small forest blocks to individual households or groups of households. In return for the forestland titles, the recipients had to sign forest protection contracts committing to the sustainable management of the allocated forest and its protection against outside encroachment. The provincial authorities intended forestland allocation to serve two primary objectives: halt deforestation and enhance ethnic minority livelihoods. By the end of 2000, forestland allocation in Dak Lak had been implemented in thirteen ethnic minority villages, transferring approximately 7,100 ha to 339 individual households and 19 household groups consisting of 149 households.

The two study villages Cham B and Diet were among those covered in the first round of forestland allocation. Both villages were classified as poor, as average living standards were below the national poverty line. The villages' population largely consisted of indigenous ethnic groups, 38 Ede households in Cham B and 43 Jarai households in Diet. These were complemented by four and 10 households of ethnic Vietnamese migrants, respectively, giving a total of 278 and 337 people in the two villages. Both villages lived mainly from agriculture, growing some rice for home consumption and various crops for sale. The surrounding forests served villagers as a source of additional land, agricultural inputs, fodder, and food

supplements. Yet the villagers were legally excluded from the forests, which were under the management of State Forest Enterprises. The legal exclusion did not prevent the villagers from cutting trees for subsistence uses, but it effectively obstructed them from clearing agricultural fields in the forests.

The local production systems were somewhat different, however, as Diet was oriented toward the production of high-value crops (coffee and pepper) and Cham B cultivated rice for home consumption and corn for sale primarily. Diet was located on a road connecting Dak Lak to the neighboring province Gia Lai and could be reached by car year-round. Villagers were just in the process of switching from coffee to pepper in the late 1990s after a slump in coffee prices. Their primary interest in the surrounding dipterocarp forest was to extract trees for use as poles in the pepper plantations. In contrast, Cham B was located in a rather remote area, making access to the village difficult during the rainy season. Its inhabitants were primarily interested in the surrounding evergreen forest as a source of land for expanding their corn and rice fields.

The 95 households in the two villages demonstrated marked differences in their access to productive resources. While one household did not include any fully abled laborer, others possessed up to six full laborers and additional supplementary laborers. Twenty-seven households lived in good-quality houses, indicating that they were wealthier than the other villagers. In contrast, other households lived in temporary huts or stayed in their parents' house. Twenty-six owned tractors, which they used to transport agricultural harvests and timber. Twelve of them even owned at least a motorbike, a TV set, and furniture. Twelve households included members holding a position in the local state administration. Thirty-seven asserted cultivation rights on the allocated forestland based on prior use. Correspondingly, production systems were different among households. The size of upland fields ranged from 0.2 to 6.7 ha per household. Forty-eight households had established pepper plantations in Diet, yet only half of them had planted more than 100 poles.

## 5. THE BENEFITS OF FORESTLAND ALLOCATION TO RECIPIENTS

Once forestland allocation was finished, a total of 58 households had received new statutory

rights to forest in Cham B and Diet. They included 20 households with individual forestland titles in Diet and 38 households in Cham B, who were given joint titles in five user groups. Taken together, the forestland titles referred to a total area of around 900 ha, roughly 16 ha per household, and a total standing timber volume of approximately 60,000 cubic meter, equivalent to an average of 1,000 cubic meter per households. By way of allocation, the state granted the forest recipients the right to convert a portion of the forestland to agricultural fields.<sup>6</sup> The state also entitled them to exploit the timber on their land if they submitted a management plan for approval to the responsible state agency. In return, forest recipients had to sign unremunerated forest protection contracts, in which they committed to manage the forests in a sustainable fashion and protect them against intrusion by outsiders.

The extension of statutory rights did not translate into analogous changes in endowments. Two years after devolution, endowments remained the object of intense negotiations among local actors. They were contested among local actors because forest recipients' assertion of their new rights was immediately challenged by other actors. Actors who had used forestland and trees together with the forest recipients in the past did not accept the intended exclusion from the allocated forests (Sikor & Tran, 2007).

As for land, people from neighboring indigenous villages immediately challenged the assignment of forestland to villagers from Cham B and Diet only. They referred to customary rights they held on the allocated forests based on prior use. In the past, Cham B had formed a single village with the neighboring village Cham A, and people from both villages had used the allocated forest. Similarly, villagers from the surrounding villages of T'Ly and K'ri did not want to accept their exclusion from forest that they had used together with people from Diet in the past. The same dynamics of exclusion and inclusion also took place within the two villages. In Cham B, many households did not accept their assignment to a particular user group and claimed customary rights to the forest allocated to another group. In Diet, some households contested the assignment of particular forest areas to other households. More importantly, the villagers saw little meaning in the assignment of forest to individual households.

The contestation of tree endowments took similar forms. Indigenous villagers without titles refused to accept their exclusion from the allocated forests. In addition, migrant households living in the two and other neighboring villages objected to the intended exclusion. In the past, they had extracted trees for subsistence use from the forests with approval by the Ede and Jarai. Now, they did not heed demands by Ede and Jarai forest recipients to stop using the forests. It was not difficult for them to cut trees as the forest recipients were not able to monitor forest use. Even where forest recipients detected extractive activities by migrants, their demands for legal prosecution was ignored by the local state administration.

Both land and tree endowments remained under negotiation between the forest recipients and the state. The forest recipients objected to the limitations on forest conversion and timber harvests associated with allocation. Together they claimed customary rights to the allocated forests and refuted the legitimacy of the restrictions imposed by the state. Their claims proved largely successful in the case of the extraction of trees and cultivation of fields for subsistence uses, as neither the Forest Enterprise nor the local state administration had the means to effectively monitor people's activities in the forest. In addition, they were reluctant to confront villagers' subsistence claims considering the stated objective of forestland allocation to improve the livelihoods of indigenous ethnic groups. Villagers could not sell trees, however, because of tight state controls of the transport and trade of timber.

As a result, there was a clear difference between the changes in forest recipients' endowments on land and those on trees brought about by forestland allocation. Forest recipients' endowments on trees did not change much after allocation, as other indigenous people and migrants continued to extract trees from the forests for subsistence uses just as before allocation. In contrast, forest recipients' endowments on land increased significantly. In the past, the state had prohibited forest conversion and enforced the prohibition strictly. Now, allocation prepared the material and moral grounds for forest recipients to claim new land endowments. These endowments gained further value through the nature of local customary claims, as those excluded migrants from cultivation in the forest.

Just as the changes in endowments differed between land and trees, so did the entitlements on land and trees develop differently for the forest recipients. As for land, entitlements increased significantly in a matter of a few years only (see Figure 2). Forest recipients cleared an additional area of 0.7 ha per household during 1999–2002. This was equivalent to more than one-fourth of their total upland fields. Already in 2001, they generated an additional average harvest of 1,100,000 VND (for sale and subsistence, equivalent to 74 USD) on top of the 1999 harvest.<sup>7</sup> Agricultural harvests on the allocated forest thus contributed 13% of households' total income in 2001. Cultivation on the forestland was highly attractive to villagers because its soil was very fertile, land was scarce, and people had access to the

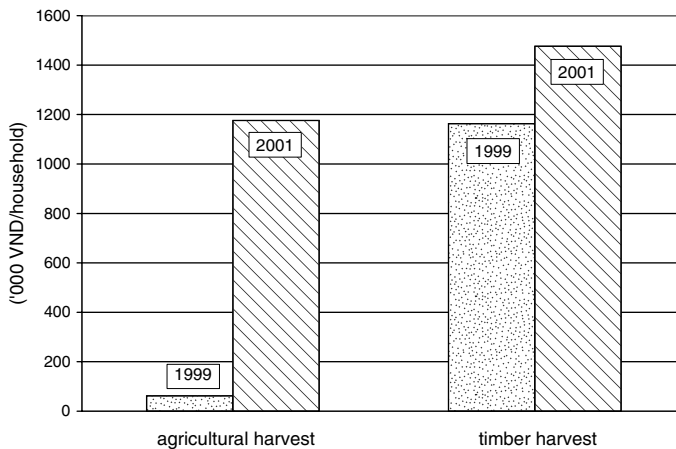


Figure 2. *Agricultural and timber harvests during 1999–2001.*

complementary resources labor and capital (tools and seed). Some forest recipients even took advantage of agricultural expansion to sell some of their fields outside the allocated forest to migrants.

The increase in forest recipients' tree entitlements was more modest than the gains from agricultural expansion (see Figure 2).<sup>8</sup> During 1999–2001, forest recipients increased timber harvest on the allocated forestland, gaining an additional income of 300,000 VND (20 USD) per household on average. They made use of the trees in house construction and the rapidly growing pepper plantations. The trees raised the total contribution of the allocated forestland to almost 20% of household income.

These results suggest an answer to the first question posed above. Forestland allocation enhanced not only forest recipients' statutory rights but also their endowments and entitlements. Devolution, therefore, contributed to the livelihoods of poor forest recipients. At the same time, the influence of devolution was strongly mediated by the political economic context. Forest recipients' endowments were the subject of intense negotiations taking place within local power relations. Their entitlements reflected the role of forestland and trees in local production systems. The influence of the political economic context was also the reason for the different effects of devolution on the endowments and entitlements with respect to land and trees. Land endowments and entitlements increased more because devolution did away with the effective control of forest exercised by the State Forest Enterprises in the past, local customs restricted cultivation rights to indigenous people, and fertile land was a scarce resource.

## 6. DIFFERENTIATION OF ENTITLEMENTS AMONG VILLAGERS

This section now turns to the second question identified at the beginning: how are endowments and entitlements differentiated among local people, with what consequences for the livelihoods of the "poorest of the poor?" We examine this question first by way of qualitative analysis, looking at the dynamics of entitlement differentiation. We investigate the dynamics around land in Cham B, because land was the primary forest resource there, and the dynamics around trees in Diet, where trees were the primary resource.<sup>9</sup> Our analysis now includes

both the 58 forest recipients as well as the 37 households that did not get any forestland titles.

### (a) *Differentiation of land entitlements in Cham B*

When the State Forest Enterprise staff announced the plan to allocate the forest block of 570 ha, they found the villagers from Cham B very interested in receiving the forest. The staff consecutively declared that all Ede households would be eligible to receive forestland, excluding the four ethnic Vietnamese migrant households residing in Cham B at that time. The focus was on the Ede in the village because they had presumably been attached to that forest for generations and depended more on the forest than the migrants. The Enterprise furthermore decided to allocate the forest to five user groups including all Ede households from Cham B. The blocks were of relatively similar size, but they varied by the suitability of the land for cultivation and density of trees.

As allocation proceeded, a virtual rush on the forest set in. Members of the five user groups claimed the right to clear part of the allocated forest as stipulated in the allocation documents. Other villagers invoked their customary rights to open up fields on land that they had cultivated in the past, even if that was now located on a parcel given to another group. As also households from the neighboring Cham A asserted customary rights of prior use (see above), a dramatic rush on the forest developed within short time. Villagers from Cham A and Cham B sought to secure their rights by clearing land, justifying their actions with reference to customary rights and state regulations. These justifications were flexible enough to provide all Ede villagers with endowments to use the allocated forest for cultivation. The rush to clear a plot of forestland came about because physical occupation was the only way to effectively assert one's right. The endowments did not include the right to keep others out nor rent forestland to others.

Despite this relatively egalitarian distribution of endowments, only 29 out of the 42 households opened up fields. The fields of these 29 had highly variable sizes and produced a wide range of corn and rice harvests. The causes of this variation in entitlements were rooted in the technology of upland production and the nature of institutions regulating access to productive resources in Cham B. The cultivation



of corn and rice, as practiced in Cham B, demanded high labor inputs. Field sizes were largely determined by how much labor was available to clear forest within a relatively short period suitable for land preparation. The conversion of one ha of forest into an agricultural field took about 25–35 labor days, depending on the density of the forest. Most of the required labor had to come from the household itself, in particular the adults living in the household, as more regularized forms of labor hire were uncommon in Cham B.

Labor was short in Cham B's households. Many households already worked large upland fields outside the allocated forestland, demanding all labor available. The common practice of labor exchange did not alleviate the labor constraint on field sizes because labor inputs gained from relatives and neighbors usually demanded an equivalent effort in return. Only better-off households were able to achieve a net gain in labor, as they could offer the use of a water buffalo or tractor in return for labor inputs on terms favorable to them. They were also able to replace some labor by the use of more advanced technology in land preparation, particularly chains saws for the removal of larger trees.

As a result, labor capacity and wealth were crucial determinants for a household's ability to work agricultural fields in the allocated forest (see Figure 3). The more labor households contained the larger amounts they were likely to harvest from fields located in the forest. Similarly, households considered medium and wealthy by local standards harvested larger

amounts than very poor and poor ones.<sup>10</sup> This allowed better-off households to benefit significantly from forestland allocation. Nevertheless, the entitlements of the poorer strata also increased, although to a lesser degree than the better-off.

(b) *Differentiation of tree entitlements in Diet*

Diet was among the first villages to be included in forestland allocation in Dak Lak. Just as in Cham B, the staff of Ea H'leo State Forest Enterprise declared at the beginning that only Jarai households were eligible to receive part of the forest of 330 ha. In contrast to Cham B, they furthermore decided that only 20 households would be able to receive forest and that they would be allocated their parcels individually. They largely left the selection of households to the leadership of Diet. As a result, only 20 out of 53 households in Diet ended up receiving forestland titles during allocation. They included four households with members serving in the state administration, one household with a retired state official, and 11 households with close kinship relations to these.

Despite its unequal nature, allocation had no effect on the distribution of endowments among villagers. Access to the forest allocated to the 20 households remained open to all people from Diet and neighboring villages regardless of the regulations. The 20 new forest holders accepted the right to extract trees claimed by their fellow Jarai villagers in Diet. They did not approve of extraction by ethnic Vietnamese from Diet and other villages, as by Jarai from neighboring vil-

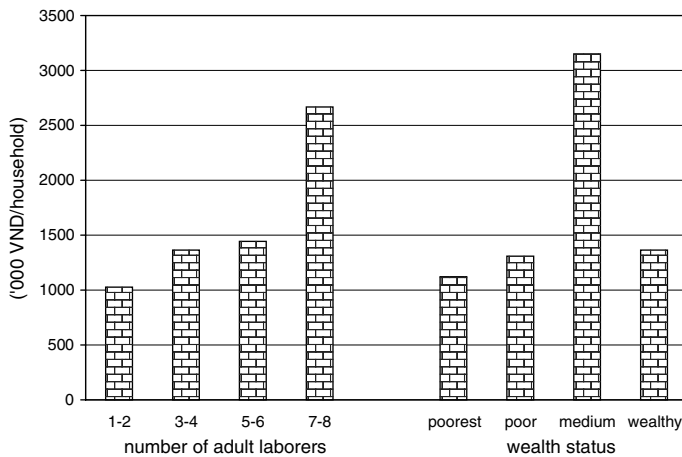


Figure 3. *The distribution of agricultural harvest in Cham B.*

lages. Yet they could do nothing in practice to effectively contest the claims made by those on the allocated forest. Access to the forest, therefore, was unregulated, giving all households from Diet and beyond similar rights to trees.<sup>11</sup>

Nevertheless, just as in Cham B, the relatively egalitarian distribution of endowments did not yield a similar distribution of entitlements. The technology of timber extraction and the nature of institutions which regulated access to productive resources in Diet differentiated household entitlements. The production of timber required capital inputs in the form of chain saws and tractors. Loggers also required capital to hire workers with specialized skills, who were readily available but demanded a premium wage. Furthermore, capital-rich households also had a higher demand for trees as they needed those in their pepper plantations. Only households with significant capital could invest in pepper, as the plantations required significant start-up investments and took at least three years until the first harvest. The ability and interest of a household to engage in tree cutting therefore depended on its access to capital. Access to capital, in turn, was dependant on the generation of surplus within the household, because access to other sources of capital outside the household was very limited.

Wealthier households therefore benefited more from the trees in the allocated forest than poorer ones (see Figure 4). The better-off households were the higher values of timber they tended to extract from the forest. Forestland allocation failed to enhance the tree entitlements of the poorer strata.

### (c) *The patterns of differentiation in entitlements*

We now compare these insights from the qualitative analyses with the results of the statistical analysis. The descriptive statistics highlight that forestland allocation resulted in a highly skewed distribution of entitlements among households in 2001 in the two villages (see Figure 5). Some households harvested agricultural output worth up to six million VND (400 USD) from the allocated forest. At the same time, almost two-thirds of all households did not generate any agricultural produce on the land. As for timber, more than two-thirds of all households did not cut any trees in the allocated forest. The remaining one third extracted trees worth between 0.1 and 16 million VND (7–1,100 USD). The descriptive statistics, therefore, underline the insight from the qualitative analyses that there were marked differences in forest entitlements among local households.

The results of Heckman two-stage estimation show that whether or not households derived any benefit from allocation in the form of agricultural harvest was associated with their possession of a forestland title and cultivation of a field on the allocated forestland (see Table 1). Whether or not they worked a field on the allocated land, in turn, was influenced by their possession of a forestland title and the size of their existing upland fields outside the allocated forest. The value of agricultural output was positively and significantly influenced by the size of cultivated land. In addition, villagers in Cham B were more likely to open up fields in the allocated forest than those in Diet. The size of the

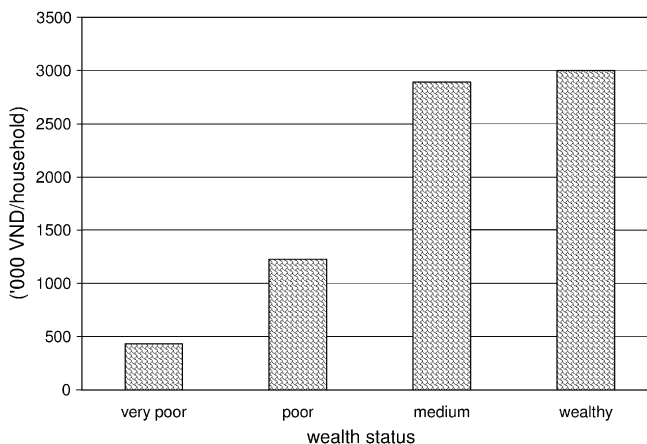


Figure 4. *The distribution of timber harvest in Diet.*

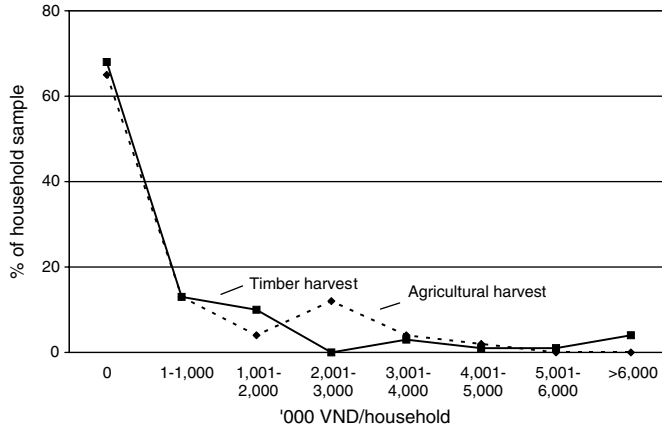


Figure 5. Distribution of agricultural and timber harvests.

Table 1. Summary of Heckman two-stage regression results

	Estimation models		
	Agricultural harvest	Agricultural land	Timber harvest
<i>Selection equation (first stage)</i>			
Household wealth	-0.7305	0.5194	-0.4258
Political position	-0.0147	0.1003	0.7380*
Possession of forestland title	1.5350***	2.2588***	n/a
Number of adult laborers	n/a	-0.0185	n/a
Total number of laborers	0.0634	n/a	n/a
Customary claims on forest	-0.4623	0.3922	0.2437
Cham B village (location)	0.1659	n/a	-0.6221*
Upland outside devolved forest	n/a	-0.3724*	n/a
Agricultural land in devolved forest	1.5112***	n/a	n/a
Tractor ownership	n/a	n/a	0.9097**
Constant	-1.6623	-1.4303***	-1.7925***
Lambda (expected error term)	0.3640	-0.5103**	1059.24
<i>Main equation (second stage)</i>			
Household wealth	0.4266	0.9899***	6938.92***
Political position	0.0772	0.1653	2411.51
Possession of forestland title	n/a	n/a	376.60
Number of adult laborers	n/a	0.1701*	-621.28
Total number of laborers	-0.0785	n/a	n/a
Customary claims on forest	n/a	0.2723	n/a
Cham B village (location)	0.7769***	0.7048***	-3330.88
Upland outside devolved forest	n/a	-0.1917	n/a
Agricultural land in devolved forest	1.2597***	n/a	n/a
Constant	7.2929***	-1.0696***	-4336.71
R-squared	0.4955	0.5862	0.4587
Adjusted R-squared	0.3791	0.4896	0.3175

Source: Nguyen (2005).

Note: \*, \*\* and \*\*\* represent significance levels of 10%, 5%, and 1%, respectively. "n/a" refers to variable estimates that are not appropriate for the model (see Appendix).

cultivated land, in turn, reflected the influence of wealth, location, and to a lesser extent, labor.

The results of the regression analysis, therefore, indicate that land entitlements depended on multiple factors: wealth, the size of upland fields outside the allocated forest, the possession of a forestland title, labor capacity, and village location. They lend support to the effects of labor and wealth on land entitlements highlighted by the qualitative analysis, the influence of labor also being implicit to the observed effect of field sizes outside the allocated forest. The results also attest to the observed difference in the significance of land entitlements between the two villages. The effect of forestland titles is unexpected, however, suggesting a larger influence on households' decisions to open up fields in the allocated forestland than found in the qualitative analysis of entitlements in Cham.

Timber harvests again demonstrate the influence of multiple factors in the Heckman estimation: political position, tractor ownership, village location, and wealth (see Table 1). Whether or not a household harvested any timber from the allocated forest depended on the position of a household member in the local state administration, tractor ownership, and village location. The value of timber harvest, in contrast, was positively and significantly influenced by household wealth only. Labor did not show any significant influence on timber harvests. In this way the estimation results lend support to the strong connection between tree entitlements, on the one hand, and household wealth (and indirectly tractor ownership) diagnosed in the qualitative analysis on the other hand. The effect of political position is unexpected but also relatively weak in comparison to wealth.

At this point, it is interesting to compare the distribution of tree entitlements to the distribution of statutory rights. The distribution of forestland titles among households was correlated with the household's political position, customary rights, and labor capacity.<sup>12</sup> It was not correlated with the variation in household wealth and possession of capital assets, such as a tractor. In contrast, household wealth and ownership of a tractor exerted significant influence on the distribution of tree entitlements among households. This simple comparison lends further strength to the results of the qualitative analyses that the processes differentiating entitlements were relatively independent from the distribution of statutory rights among households.

In sum, the regression analysis supports the overall finding of the qualitative analysis that there were different dynamics of differentiation at work. The dynamics differentiating land entitlements among households were different from those differentiating tree entitlements. Land entitlements reflected the influence of factors, primarily labor, which were likely to offset the differentiating influence of wealth. Household labor and wealth emerged as the most significant influences on household entitlements because of the particular technology of upland agriculture and institutions regulating access to labor. In contrast, timber entitlements showed the influence of wealth, which was distributed unequally among households and had the potential to create enduring differences among households. Household wealth was the key factor differentiating household tree entitlements because of the technology of timber extraction and the institutions regulating access to capital and labor. A corollary of these results is that the variation in entitlements was different from the distribution of statutory rights and endowments among households. Forest entitlements depended on many factors beyond these two.

## 7. CONCLUSIONS

The insights from the two villages in Vietnam's Central Highlands carry important implications for devolution programs worldwide. The dynamics observed in Cham B and Diet highlight the workings of broader processes that differentiate the effects of devolution on the livelihoods of the rural poor. The concrete nature and effects of the processes, of course, vary depending on the particular political economic setting in which they take place. For example, the more egalitarian distribution of land entitlements observed in our cases is due to the particular nature of local production systems and access relations to complementary productive resources in the two villages. Under other conditions, for example, where land preparation is undertaken with heavy machinery, devolution is unlikely to increase the land entitlements of the poor. Similarly, the long-term effects of "forestland allocation" in the villages may be different from the ones observed in the short term, for example if a labor market develops in agriculture. Nevertheless, we believe that the more general processes unearthed in our forest entitlements analysis are of broader relevance to devolution programs.

Our findings lend support to the claim that devolution possesses the potential to enhance the contributions of forests to local livelihoods (Meinzen-Dick & Knox, 2001). The changes in statutory rights associated with devolution may improve local people's endowments. The changes in endowments, in turn, may bring about entitlements for local people, as forests provide a variety of goods and services. Forest devolution, therefore, holds the potential to benefit local people by enhancing their endowments and entitlements. Where local people are poor, devolution therefore may contribute to poverty alleviation.

At the same time, our results also indicate why forest devolution may not benefit the rural poor. Obviously, the design of devolution programs may restrict the statutory rights accorded to people and impose heavy responsibilities onto them (cf. Edmunds & Wollenberg, 2003; Ribot, 2004). But even in cases where programs provide extensive rights to the poor devolution may not be beneficial to them. The reason is that changes in statutory rights do not automatically translate into analogous changes in endowments and entitlements. The latter depend on the political economic setting in which devolution takes place. As a result, devolution generates highly varied effects on the livelihoods of the rural poor because differences in power relations, production systems, and institutions condition their ability to translate statutory rights into endowments and entitlements.

For the same reason, devolution may not benefit all people in a particular locality equally. Just as political economic contexts influence the nature of endowments and entitlements gained by local people collectively, they also shape their distribution among them. Power relations, production systems, and institutions regulating access to productive resources frame the processes mapping endowments and entitlements onto local people. In addition, the processes mapping endowments may be different from those mapping entitlements in the same locality, reflecting the influence of different factors. Political factors may have stronger effects on endowments than entitlements, while economic factors have more bearing on entitlements than endowments.

These findings suggest why forest devolution may not generate significant benefits to the poorer strata of rural society. Devolution does not create a level playing field for local people, even where its implementers distribute statutory rights in an egalitarian manner. Instead, devolu-

tion happens in settings characterized by unequal distributions of economic, political, and cultural resources. Local actors are differently positioned in pre-existing power relations and enjoy different access to productive resources, reflecting the operation of a large range of institutions located at the intersection of local-level processes and larger economic and political forces. Devolution is only one among those larger forces, one that seeks to modify access to only one productive resource: forest. In other words, devolution is "embedded" in broader processes of agrarian change (cf. Sikor, 2006). Actors' abilities to take advantage of the new opportunities arising from devolution depend on their economic, political, and cultural resources. Those already disadvantaged, that is, the poorer strata, are likely to find themselves in an unfavorable position to benefit from devolution on equal terms. In the worst case, they may end up empty-handed even where devolution has created new forest entitlements for the local population as a whole. Alternatively, they may benefit from devolution in indirect ways only, capturing the "trickle-down" effects of devolution.

Our findings carry direct implications for efforts to improve the contributions of forest devolution to the livelihoods of the rural poor, in particular the "poorest of the poor." There are three levers of intervention available for enhancing these contributions. First, policy-makers can strengthen the statutory rights accorded to the rural poor in devolution laws and regulations and take special precautions to enhance the rights of the poorer strata. Second, devolution policy can seek to enhance the forest endowments of the poor by tilting local power relations in favor of poor forest recipients. For example, more effective enforcement of the statutory rights can strengthen the position of poor forest recipients against more powerful actors. Third, devolution policy can enact additional measures to increase the entitlements derived by the rural poor from devolved forests. Such measures would not be concerned directly with the forest, but they would seek to enhance the access of the rural poor to productive resources that are necessary for the derivation of forest entitlements, such as small savings and credit schemes. The measures would specifically enhance the entitlements of the poorer strata if they are designed to address their specific needs. Of course, the latter two levers of intervention go much beyond the current "rights-based approach" to devolution (cf. Johnson & Forsyth, 2002). Yet devolution

policy may need to expand in scope if it aims to achieve an increase in the contributions of forests to the livelihoods of the rural poor, in particular the “poorest of the poor.”

## NOTES

1. Another less significant modification is our lack of attention to capabilities. We feel encouraged to do so by the emphasis given to endowment and entitlement mapping in both Sen (1981) and Leach *et al.* (1999). At the same time, our analysis could easily be extended to include attention to capabilities, thus making the transition from benefits to well-being.
2. We also want to point out explicitly that “forest entitlements” may include benefits derived from agricultural activities in forests.
3. Fieldwork included attention to non-timber forest products and other entitlements. The analysis performed in this paper focuses on agricultural and timber harvests only because those constituted the most significant entitlements not only to the two villages but also all households.
4. We acknowledge the general problem of using recall data. At the same time, we surmise that the use of recall may be justifiable in our case. Local people reported average harvests for the years 1999 and 2001. More importantly, people themselves liked to compare the situation before forestland allocation with their current situation, as allocation implied a significant change in their lives.
5. For reasons of space, we discuss the regression model in abbreviated form only and would like to refer readers to Nguyen (2005, 2006) for detailed discussions of the model.
6. The exact portion was not specified in the land certificates and protection contracts. In our conversation, villagers and forest officers often mentioned a limit of 5%.
7. These numbers are adjusted for inflation by the use of the relevant sectoral GDP deflator and converted to USDs on the basis of the mid-year exchange rate (1 USD = 14,842 VND in 2001).
8. The increase was not statistically significant, as indicated by the *t*-test of difference (*t* value = 0.72,  $PR \geq |t| = 0.47$ ).
9. We investigate the dynamics of differentiation around one type of entitlements in one village only for the sake of clarity. The dynamics around land and trees can be found in both villages.
10. On average, wealthy households harvested smaller amounts on the allocated forestland because of two reasons. First, the wealthy included a few migrant households that did not engage in upland farming but focused on services and off-farm employment. Second, some wealthy households including local government officials refrained from clearing large fields because they feared negative repercussions.
11. This situation also precluded the theoretical possibility that forest recipients sold their tree rights to third parties.
12. The correlation coefficients are 0.32, 0.29, and 0.28, respectively, and all significant at a level of 1%.

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#### APPENDIX. THE HECKMAN TWO-STAGE REGRESSION MODEL

Heckman's two-step estimation model is commonly employed to eliminate the risk of a selection bias that results from self-selection by individuals for either this or that group (Greene, 2000; Heckman, 1979). In our survey, many households reported zero entitlements, for example, no timber harvests in the devolved forest. Heckman's model, therefore, allows us to deal with the potential sample selection bias.

Heckman's model involves estimation in two stages. The first stage uses a probit model to estimate the equation that determines the sample selection, for example, the choice of a household to harvest timber or not. Based on the regression results, the expected error term

(the Inverse Mills Ratio or lambda) can be calculated. The second stage uses Ordinary Least Squares (OLS) to estimate the equation describing the relationship between the quantity of a forest entitlement, such as the volume of timber harvested by a household, and influencing factors. The expected error term (lambda) calculated in the first stage is included in the regression as an independent variable. In this way the part of the error that is correlated with explanatory variables can be removed, producing consistent results in the estimation.

We use three estimation models for the entitlements (agricultural land, agricultural harvest, and timber harvest). The area of agricultural land, the value of agricultural harvest and the value of timber harvest are the dependent variables of the OLS function in the second stage. Three dummies representing the probabilities of a household to have the three entitlements (=1 if the household has the entitlement and =0 otherwise) are the dependent variables of the probit functions in the first stage. Based on literature review, a set of independent variables including three types of household resources (wealth, labor, political position) and possession of statutory rights are used in estimation models. In addition, a number of factors at household and village levels that were identified during fieldwork to have potential influence on specific entitlements are also included in the respective models.

To be more specific, the estimation model for agricultural land uses wealth, political position, possession of forestland title, number of adult laborers, customary claims on forest, location,

and upland fields outside the devolved forest as independent variables. It includes attention to existing fields outside the devolved forest because these were expected to influence households' choices whether or not to open up new fields on the devolved forest and, if so, their decisions about the area of the new field. Location is dropped from the first-stage equation and possession of forestland title from the second-stage equation to increase the overall significance of the model.

The estimation model for agricultural harvest uses wealth, political position, possession of forestland title, total number of laborers, customary claims on forest, location, and agricultural land in devolved forest as independent variables. The variables include the area of agricultural land cleared in the devolved forest because it was expected a key determinant of harvest. Possession of title and customary claims are dropped from the second-stage equation to improve the overall significance of the model.

The estimation model for timber harvest uses wealth, political position, possession of forestland title, number of adult laborers, customary claims on forest, location, and tractor ownership as independent variables. The first-stage equation includes tractor ownership because tractors are used to transport logs. Possession of title and number of adult laborers are excluded from the first-stage equation and customary claims from the second-stage equation to improve overall model significance.

See Nguyen (2005, 2006) for more detailed discussions of models and results.