



Land Fragmentation and Cropland Abandonment in Albania: Implications for the Roles of State and Community in Post-Socialist Land Consolidation

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Summary. — This paper critiques state-led strategies for land consolidation in Central and Eastern Europe. The critique builds on empirical research about the dynamics of land fragmentation and its presumable effects on cropland abandonment in Albania. Research results indicate that cropland abandonment was driven by a massive turn to non-farm opportunities, especially migration. Land fragmentation was not a rigid constraint on production but resulted from producers' strategic risk spreading. The negotiated nature of land tenure questions the emphasis on state initiatives and administrative procedures in post-socialist land consolidation. Central and Eastern European states instead need to support desirable adaptations initiated by local communities.
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1. INTRODUCTION

Just a few years after the momentous land reforms of the early 1990s, Central and Eastern European governments may set out to reshape land tenure arrangements once again. Assisted by the Food and Agriculture Organization of the United Nations (FAO), governments formulate strategies for land consolidation and implement local-level pilots (Riddell & Rembold, 2002; van Dijk & Kopeva, 2006). FAO and governments promote land consolidation as “an essential instrument for rural development” (FAO, 2002, p. 3). It is necessary to overcome “land fragmentation,” that is, the fragmented nature of land ownership and use observed across much of Central and Eastern Europe.¹ Thirteen countries “share the concern that the majority of farms are small (1–2.5 ha), and are frequently divided into many parcels which are often badly shaped for agricultural purposes” (FAO, 2002, p. 1). Fragmentation acts as a constraint on agricultural development, FAO and Central and Eastern European governments reason, preventing agricultural producers from competing in markets and even causing them to “abandon” cropland.²

These calls take place against the background of a long history of state-centered land consolidation programs (cf. King & Burton, 1982). Resonating with key premises of state-led land reform (Sikor and Müller, 2009), these programs presume the state to be the primary actor initiating consolidation and accord centralized land administration agencies a key role in implementing it (Bentley, 1987). A similar emphasis on the state emerges from the strategies and local-level pilots initiated now by the responsible agencies in Central and Eastern Eur-

ope with the assistance of the FAO and World Bank.³ Moreover, the notion of land fragmentation being a negative “side effect” (FAO, 2002, p. 1) of the reforms enacted in the early 1990s reveals an understanding of land tenure solely determined by state legislation and administration. It suggests that many producers find themselves locked in unsuitable land tenure arrangements imposed by the initial distribution/restitution. Inappropriate farm sizes and parcel distributions raise the costs of production, as producers cannot use large machinery and lose time travelling between dispersed parcels. In this way, the land reforms of the early 1990s are portrayed as a primary cause of inefficient farming practices (cf. Vranken, Noev, & Swinnen, 2004). Land fragmentation, therefore, requires renewed intervention by the state to fix the errors of past state action, to improve the efficiency of agricultural production, and to stop cropland abandonment.

This paper critiques the agenda for state-led land consolidation on the basis of empirical research on the socioeconomic dynamics of land fragmentation and its presumable effects on cropland abandonment in Albania. The critique builds on the premise that efforts to modify land tenure arrangements, such as land consolidation, only have a chance of success if they address the forces underlying fragmentation and problems in agriculture. Abandonment of cropland offers a

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suitable lens on the dynamics of land fragmentation and the potentials of consolidation for at least three reasons. First, it indicates the effects of broader dynamics of agricultural production. Second, cropland abandonment has taken place across Central and Eastern Europe since 1990 (Brouwer, Baldock, & la Chapelle, 2001). Finally, cropland abandonment may be described for larger areas and further back in time by way of remote sensing analysis.⁴ Albania, in turn, may not be representative of the political and economic conditions commonly found in Central and Eastern Europe due to its low level of economic development and the political turmoil of the 1990s. Nevertheless, for the specific purpose of this research, the nation shares the feature of highly fragmented land holdings and land use with many other countries (FAO, 2002; van Dijk, 2003). Moreover, studying Albanian agriculture promises special insights, as the individualization of agriculture in Albania is most pronounced (Lerman, 2001), and markets for land rentals and sales there are considered to be the least developed of all countries in Central and Eastern Europe (Deininger, 2003, p. 100). If fragmented ownership and use patterns lead to cropland abandonment anywhere at all, then this causal relationship should be visible in Albania.

Two alternative propositions guide the analysis of land abandonment in this paper, building on competing interpretations of land fragmentation (Bentley, 1987; Blarel, Hazell, Place, & Quiggin, 1992; King & Burton, 1982). The first proposition centers on *land fragmentation* as a major cause of land abandonment. Farmers stop cultivation on some land altogether because fragmented patterns of land ownership and land use reduce the profitability of agricultural production. In Central and Eastern Europe, this combines with the notion that land tenure is largely determined by the initial state distribution/restitution, posing a rigid constraint on farmers' practices. Consequently, efforts to overcome fragmentation require renewed intervention by the state in the form of state-led land consolidation (cf. FAO, 2002). The second, alternative proposition puts the spotlight on *broader socioeconomic dynamics* as driving land abandonment. Producers stop cultivating some parcels because they find it more attractive to allocate their labor and capital to non-farm activities. Moreover, the dispersal of land into several parcels originates from individual and group decisions in reaction to the socioeconomic environment. Informing this proposition is the notion of land tenure as relatively flexible, reflecting actions of the state and producers. Consequently, it has been argued for Central and Eastern Europe that the state has a role to play in processes to consolidate land, but this is a more facilitating one (Sabates-Wheeler, 2002a).

The paper proceeds as follows: Section 2 discusses background on the patterns of land ownership and agricultural dynamics in Albania. Section 3 introduces the three analytical strategies employed in the research (remote imagery interpretation, in-depth village studies, and regression analysis). The following sections summarize the main research results, including those on land use change (Section 4), the socioeconomic dynamics driving cropland abandonment in three villages (Section 5), and the patterns of abandonment in the larger research area (Section 6). Section 7 discusses the results and reflects on the multi-method approach. Section 8 concludes with implications for the roles of state and community in post-socialist land consolidation.

2. LAND OWNERSHIP AND AGRICULTURAL DYNAMICS IN ALBANIA

The Albanian state mandated the distribution of virtually all farmland to the rural population after the dissolution of agri-

cultural collectives and state farms in 1991 (Cungu & Swinnen, 1999). As specified in the Law on Land, all collective farm land was given out to the rural population on an equal *per capita* basis. Land previously managed by state farms was transferred to their workers and private businesses. As a result, practically all agricultural land is under individual use, that is, by small producers and not leased or sold to associations or corporate farms (Lerman, 2001).

The individualization of agriculture is associated with highly fragmented patterns of land ownership and land use. Albania's some 700,000 hectares (ha) of arable land was distributed to around 470,000 households (Kodderitzsch, 1999). By the late 1990s, producers worked tiny land holdings, each measuring a mere 1.2 ha on average.⁵ In addition, more than 90% of the holdings are divided into several parcels, the average holding consisting of between four and five parcels. Albania's 2.3 million parcels measure a tiny 0.3 ha on average (Kodderitzsch, 1999).

Albanian experts and foreign advisors alike have portrayed the fragmentation of land ownership and land use as a key problem in Albania's agriculture, connecting it with the egalitarian distribution of parcels mandated by the state. Pata and Osmani, professor for agricultural economics and Vice-Minister of Agriculture, respectively, note that "[f]ragmentation of land is another worrying problem resulting from land apportionment" (1994, p. 99). Lemel and Dubali (2000, p. 109) conclude that Albania has a "land fragmentation problem" affecting two-thirds of the land holdings. They, as well as Lusho and Papa (1998), suggest that this fragmentation may not just reduce the efficiency of agricultural production but actually discourage use of cropland. The fragmented patterns of land ownership and use may be a cause underlying the widespread abandonment of cropland observed throughout the nation.

Nevertheless, cropland abandonment may also happen for other reasons, such as the drastic decline in the conditions for agriculture in post-socialist Albania (De Soto, Gordon, Gedeshi, & Sinoimeri, 2002; Kodderitzsch, 1999). Agricultural producers encounter difficulties in accessing the necessary machinery, obtaining agricultural credit, receiving extension advice and purchasing inputs. Many irrigation systems were destroyed in the violence accompanying political turmoil in 1991 and 1997. In addition, Albanian producers have problems of physical access to market outlets and encounter product markets controlled by a few traders and urban speculators (Mathijs & Noev, 2004).

The drastic decline in the conditions for agriculture has contributed to unprecedented migration in Albania since 1990. As the turn away from socialism put an end to the tight controls on internal migration, many people moved within the nation (King, 2005). In addition, Albania has experienced a dramatic exodus of around 20% of its population since 1991 (King, 2005). The migrants have to a large degree originated from the poor areas of the nation, where they could no longer make a living from agriculture (Zezza, Carletto, & Davis, 2005). In these areas, the share of out-migrants reaches 40 % and more of the original population in 1990. Many of them are young men and women between 18 and 35 years of age (King, 2005). They leave behind their elderly parents, who may be unable to work the land distributed to their households without the help from their children. As a result, migration may have been a driver of cropland abandonment in Albania, as suggested by de Soto *et al.* (2002) and King (2005).

The literature on Albania, therefore, offers support for both propositions defined in the introduction. In concordance with the first proposition, Albanian experts and foreign advisors

argue that the fragmented patterns of land ownership and land use act as an exogenous constraint on agricultural production, reducing its efficiency and leading to cropland abandonment. They connect the perceived inappropriateness of land tenure with the egalitarian distribution initiated by the Albanian state in 1991. In this way, their argument lends support to the land consolidation pilots initiated by the agricultural ministry and the World Bank. The second proposition finds support in analyses stressing the negative effects of broader social and economic changes on the profitability of agriculture in relation to other economic sectors and, above all, migration opportunities. These analyses question the primacy given to state distribution as the cause of fragmentation and abandonment and the presumable need for renewed state intervention to enact consolidation.

3. METHOD

The research employs three analytical strategies to analyze the dynamics underlying cropland abandonment: remote sensing analysis, a comparative case study of three villages, and regression analysis of a large village sample.

The remote sensing analysis derives land use data from the analysis of time series of satellite images by way of visual on-screen interpretation. The analysis yields several land use categories, which are condensed into two major ones: *forest, shrub, and grassland* comprising areas covered by coniferous, deciduous, and mixed forests, Mediterranean Maccia and copice, open vegetation with sparse trees and shrubs, and grasslands; and *cropland* including intensive agriculture, temporary cropland, and permanent cultivation of crops such as fruits and olives. Images for the research area are interpreted for the years 1988 (Landsat Thematic Mapper or TM), 1996 (TM), and 2003 (TM and Terra ASTER). Image interpretation results in one land use map for each of the three years. Overlays of three land use maps allow for the calculation of land use changes that indicate both the extent as well as the location of cropland abandonment in both periods.⁶

The village comparison draws on three in-depth village studies on the socioeconomic dynamics underlying land use changes. The villages located in the Pogradec region were selected purposively to cover differences in biophysical conditions and market access. The studies were carried out during eight months in 2004, including semi-structured interviews, direct observation, and participatory mapping of land use in 1990 and 2004. The collected data are analyzed by way of explanation building and with time-ordered matrices. The analysis investigates the processes leading to cropland abandonment and seeks to identify the factors differentiating cropland abandonment among the villages.

Household interviews formed an important part of the village studies. Households were selected randomly, including 74 households in total. The topics covered in the interviews were household demography, access to different forms of capital endowments, property rights and practices, and outputs from land use. For each of household's parcels, respondents were asked to identify and explain the changes since 1990 (i.e., one year before the dissolution of the cooperatives) in size, ownership status, irrigation status, and type of harvested crops.

The regression analysis uses the results of the remote sensing analysis, the spatial data available in Albania,⁷ and data collected through a village survey carried out by the authors. Remote sensing results are aggregated by calculating the area of cropland within each village. Cropland abandonment in each

period is defined as the percentage change in cropland from the amount of cropland at the start of the period (hereafter referred to as "cropland abandonment"). This definition considers the relative importance of change in cropland for each village. A positive value stands for cropland abandonment and a negative value for cropland expansion. The spatial data are aggregated by averaging the spatially explicit variables rainfall and terrain roughness (measured by slope curvature) within village boundaries.⁸

The village survey was carried out in 100 rural villages during fall 2004. All villages in the research area were stratified into two equally sized groups according to the estimated transportation costs from each village to the nearest city. Using proportional random sampling, 50 villages were selected from both subgroups proportional to their representation in the entire population (they turned out not to include the three villages studied in-depth). The survey used recall techniques for collecting data on variables assumed to influence land use for the years 1991, 1996, and 2004.⁹ Interviews used structured questionnaires with small groups of villagers, typically including the village mayor, a number of elderly villagers, and women. At the end, two villages were dropped from the sample due to missing data, giving 98 observations.

The regression analysis uses cropland abandonment, as defined above, as the dependent variable in one model estimated for the period 1988–96 and another for 1996–2003. Cropland abandonment is regressed against a number of covariates hypothesized to influence cropland abandonment. These include the average number of parcels distributed to a household in 1991 as a measure of land fragmentation.¹⁰ They also contain the percentage of departed households and the percentage of households relying on remittances as their major source of income as measures for migration. The direction and significance of their coefficients are expected to illuminate the plausibility of the two propositions defined above.

The covariates also include a number of biophysical and socioeconomic factors and fixed effects for major administrative areas. Adverse biophysical conditions, that is, higher elevation, less rainfall, and rougher terrain, are *a priori* expected to influence the amount of cropland abandonment positively in both periods. Unfavorable socioeconomic characteristics, such as small areas of cropland per household and a high population density, may be associated with less abandonment because cropland is scarcer than in other villages. Higher input levels, as captured by the share of irrigated cropland and tractor density, may lead to less abandonment because cultivation is more profitable. Better access to roads and commune centers (measured as the travel time in minutes) may also increase the profitability of agricultural production and, therefore, render abandonment less likely. Finally, district dummies are included to capture unobserved factors including district-specific policy decisions (e.g., investment in agricultural extension), socioeconomic factors (e.g., producers' skills and visions), and agro-ecological conditions (e.g., soil fertility).

Regressions are estimated for each of the two periods by ordinary least squares (OLS). The values of the independent variables are included from the year preceding the period of cropland abandonment to reduce potential endogeneity bias.

4. LAND USE CHANGE IN THE STUDY AREA

The study area includes the four districts Elbasan, Gramsh, Librazhd, and Pogradec in Southeastern Albania, covering 3,800 km² (see Figure 1). The area contains a range of agro-ecological zones with drier plains in the west and east and

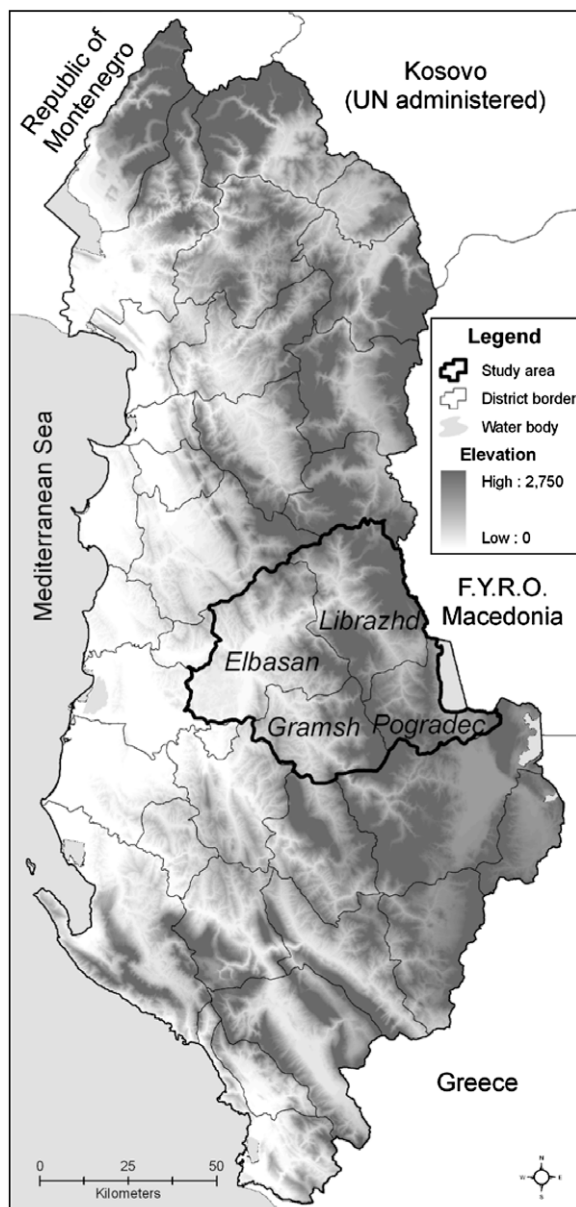


Figure 1. The study area in Albania. Source: Müller and Sikor (2006).

more humid hilly uplands in the northern, southern, and central parts. The plains in the west are intensively used for agricultural production, including the third largest Albanian city Elbasan. Pogradec in the east is another major market center attracting a large number of migrants from the surrounding rural areas. Poverty is widespread in Gramsh and Librazhd districts, where 37% and 35% of households, respectively, report income below the national poverty line of 405 USD *per capita* (World Bank, 2003). Migration is in the medium range of the rates observed across the nation (Zeza *et al.*, 2005).

Land use changed dramatically in the study area during 1988–2003 (see Figure 2). Cropland declined from 26% of total land in 1988 to 19% in 2003, shrinking from 940 km² to 680 km² in just 15 years. Moreover, four-fifths of the abandonment occurred in the first period. The land use data, therefore, demonstrate a dramatic shift from cropland to forest, shrub, and grassland over the 15 years.

The reduction in cropland will be the focus of the following socioeconomic analysis. The analysis begins by looking at land use changes in three villages.

5. LAND USE DYNAMICS IN THREE VILLAGES

Kodra, Bagëtia, and Dardha are three villages in southeastern Albania.¹¹ The 1,050 people living in 312 households make Kodra the most populous of the three. Bagëtia consists of only 99 people in 25 households. Dardha comprises 81 households and 381 people. The three villages also differ in biophysical conditions and market access. Kodra lies in a fertile valley suitable for growing a diversity of crops. Bagëtia is located much higher up amidst immense old-growth forests and mountain pastures. In Dardha, a high degree of water scarcity on karstic underground has constrained agriculture since the irrigation system constructed under socialism was destroyed in 1991. In terms of market access, Kodra again emerges as the most favored village, as it is located close to the Tirana–Korça road. In stark contrast, the gravel road connecting Bagëtia to the lowlands of Pogradec and Korça has become impassable since 1991 due to lack of maintenance. Dardha lies next to the Macedonian border, three hours away from the nearest Albanian market.

A third factor of difference is ethnicity. While Kodra's inhabitants are ethnic Albanians, the people of Bagëtia and Dardha are members of the Vlach and Macedonian ethnic groups, respectively. Traditionally transhumant shepherds, there are about 200,000 Vlachs in all Albania (Schwandner-Sievers, 1999). There are only about 7,500 people with Macedonian ethnicity living in Albania (Lastarria-Cornhiel & Wheeler, 1998). Most of them reside in nine villages between Korça and the border to Macedonia.

(a) Land use change

Land use became more extensive after the collapse of socialism, yet extensification took different forms in the three villages.¹² In Kodra, extensification occurred at the village fringes but was accompanied by agricultural intensification at the village center. In the area closest to the village center, grain production was replaced by intensive vegetable production (mainly onion). In a second ring around the village center, corn and alfalfa filled in for the cooperative's wheat and corn rotation. Finally, up the valley slopes cropping gave way to extensive pasture. These processes of extensification/intensification led to the abandonment of 20% of Kodra's total agricultural area in 1990 (see Figure 3).

In Bagëtia crop production declined dramatically, leading to the abandonment of cultivation on about 84% of what was cropland in 1990. Under socialism, the cooperative had tried to keep even the most remote mountain pastures under corn and wheat cultivation. By 2004, crop production had almost entirely ceased in Bagëtia, giving way to natural pastures interspersed with some alfalfa fields (7 ha) and surviving apple and wild plum trees.

Agricultural extensification in Dardha did not take the form of large-scale cropland abandonment as in Bagëtia. Instead, villagers kept almost three-quarters of the original fields under cultivation but reduced the amount of labor and capital invested in the land. They continued to rotate wheat and corn, achieving yields that were much lower than under the cooperative. Wheat yields declined from 25 quintals per ha in 1990 to 23 quintals per ha in 2004, and corn yields declined from 35 quintals per ha in 1990 to 13 quintals per ha in 2004.

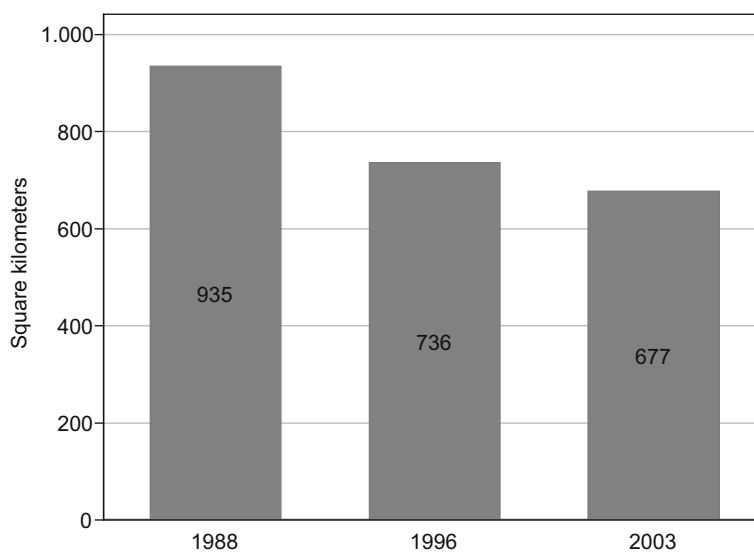


Figure 2. Cropland abandonment in the study area. Source: Calculated from results of satellite image interpretation by the authors.

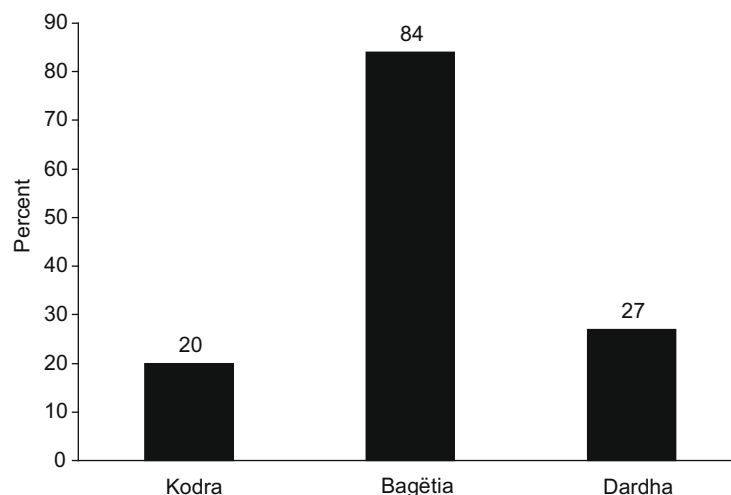


Figure 3. Cropland abandonment in the three villages. Source: Participatory mapping exercises facilitated by the authors.

(b) Agricultural dynamics

The distribution of agricultural land prompted virtually all households in the three villages to explore the benefits of individual farming in the early 1990s. They set out to plant the distributed parcels with wheat and corn, the crops they had planted under the cooperative. The results were disappointing; yields were much lower than during cooperative times due to low fertilizer use and the destruction of drainage canals. At the same time, prices for agricultural produce dropped as cheap foreign products entered the Albanian market. Decreasing profitability provided a powerful motive for many farmers to search for other non-farm livelihood opportunities, which in turn resulted in the abandonment of cultivation on less fertile and accessible parcels.

At the same time, as Albania ended its isolation from the rest of the world, many households looked for new opportunities beyond the national border. They quickly found out that job markets in Greece, Macedonia, and Italy offered chances for employment. As a result, many young people left the villages in search for work and a better life abroad. Yet after

the initial exodus, access to job markets abroad differed among the three villages. The Vlachs of Bagëtia and Macedonians of Dardha faced significantly fewer problems in getting visas and work permits than the Albanians in Kodra. The Greek government granted Vlachs three-year working visas because it considers them of Greek origin (Konidaris, 2005; Schwandner-Sievers, 1999). The villagers of Dardha, in turn, did not encounter any problems crossing the border between Albania and Macedonia as both governments considered them citizens of their respective countries. Unlike Vlachs and Macedonians, the ethnic Albanians of Kodra faced much stronger impediments to migration because of restrictive immigration policies. The policies did not stop some from gaining (illegal) entry into neighboring countries, but made international migration more risky and less profitable.

Differential access to labor markets abroad led to significant variation in migration among the three villages (see Figure 4). Villagers from Bagëtia emigrated *en masse* to Greece, involving the departure of almost two-thirds of the 70 households living in the village in 1990. Most of the households remaining in 2004 were the “orphaned pensioners” alluded to by the

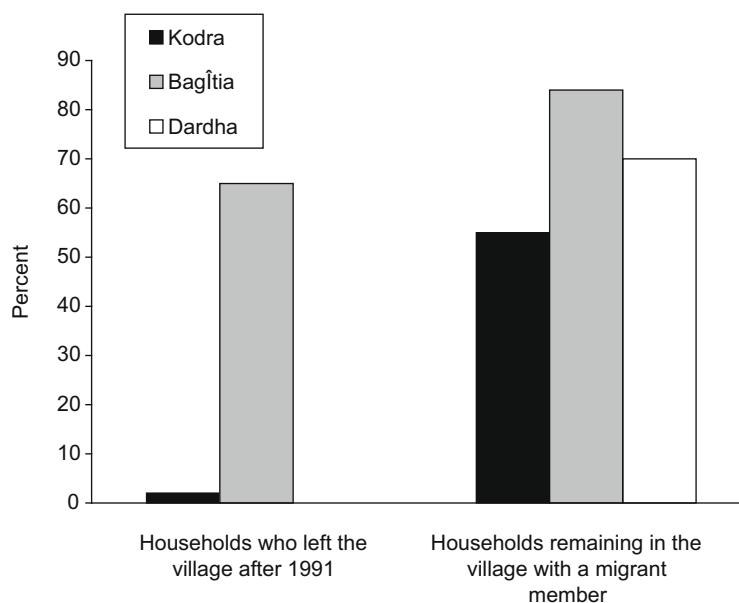


Figure 4. Migration by village. Source: Household survey.

Albanian expert cited in de Soto *et al.* (2002, p. 46). In Dardha, seven out of ten households sent a member to work across the border on a seasonal basis but continued to reside in the village. Migration was lowest in Kodra, whose population—unlike many other villages in rural Albania—remained stable during 1990–2004.

Kodra's villagers reacted to the constraints to migration by turning to non-farm activities. Some sought employment in the nearby urban centers of Pogradec and Korça. A comparatively large number of employment opportunities became available in the building sector, as many households invested remittances in the construction of family homes. Others developed small-scale businesses such as small stores or bars in the village, worked in the local service sector, or processed agricultural products. All this together implied that, by 2004, agriculture accounted for only 17% of total village cash income, in comparison to 69% from non-farm activities and 8% from remittances.

Furthermore, Kodra's households adapted their agricultural strategies to changing economic opportunities. While they abandoned parcels at the village fringes, they intensified production around the village center. They increased the number of harvests on the irrigated land from one to two, expanding the production of vegetables. They raised the production of onions and grapes, using high amounts of input in the form of labor, fertilizers, and pesticides, expanding the area of onions from less than 1 ha in 1990 to 20 ha in 2004 and rejuvenating the old grapevine stock with new varieties. Moreover, Kodra's households enlarged their livestock herds, introducing more productive breeds of cows, sheep, and goats. Associated with the increase in livestock was a shift from grain production to cultivation of fodder crops. In addition, much of the abandoned cropland at the village fringes served as permanent pasture for sheep and cattle.

Agricultural dynamics were different in the other villages. In Bagëtia, many households entirely left the village. The remaining households lived off the remittances sent from abroad, which accounted for 31% of their total income. They also engaged in subsistence production, which contributed another 26% to their income. The households grew vegetables around

their houses in small gardens, raised some livestock and planted alfalfa and corn to be used as winterfeed.

In Dardha, villagers abandoned a much smaller area of cropland than their peers in Bagëtia, despite the drain on labor by migration. The villagers of Dardha largely continued to grow wheat and corn because water scarcity inhibited the cultivation of more profitable crops such as vegetables. Wheat and corn production yielded acceptable results even without the use of urea and superphosphate fertilizers and provided straw and forage to feed the villagers' livestock in winter. Overall, wheat and corn outputs declined by 15% and 50%, respectively, during 1990–2004.

The variation in agricultural dynamics between the three villages is illustrated by changes in livestock herd sizes (see Figure 5). The number of cattle, sheep, and goats in Kodra increased notably after 1990. In Bagëtia, livestock numbers declined across the board. The decline was more moderate in Dardha.

(c) Land tenure

Village commissions set out to distribute the cooperative fields in Kodra, Bagëtia, and Dardha in 1991. They sought to make sure that every household received a share of each type of land existing in the village. In this way, the commission sought to achieve an equitable distribution among households. As a result, decollectivization led to highly fragmented patterns of land ownership and land use (see Table 1).

Despite the state-sanctioned distribution, land tenure remained very flexible—or “fuzzy” in the terms of Verdery (1996)—in the three villages. In Kodra, rentals between villagers were frequent even if sales of agricultural land did not generally occur. More than one-third of all households were involved in rentals of agricultural land, either by renting land in (21%) or out (14%). In many instances, households rented parcels from another household that had insufficient labor to work all its land due to the permanent migration of a member, and paid a small amount of agricultural produce as rental fee. The involved households rarely documented the rental agreement in writing and agreed that both sides could terminate it

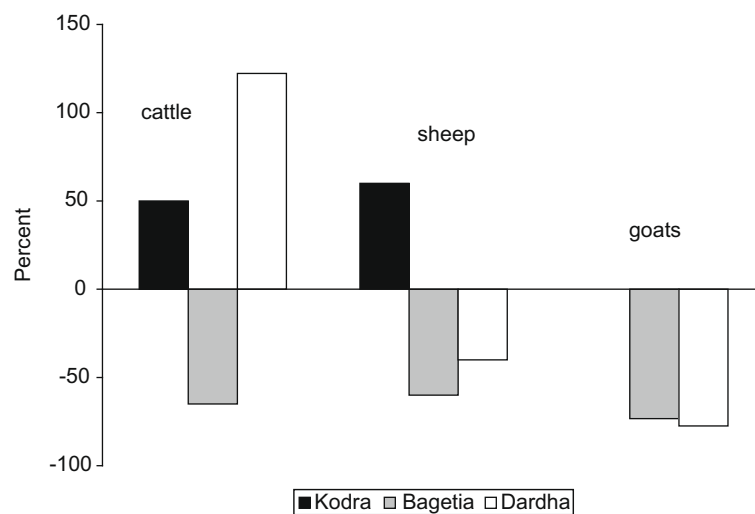


Figure 5. Changes in livestock by village, 1990–2004. Source: Expert estimations and household survey. Note: The number of cattle increased in Dardha because the collective cattle herd was kept in the neighboring village until 1990. There is no information on goats in Kodra because there were no goats in Kodra's cooperative before 1990.

Table 1. Land fragmentation in the three villages

	Kodra	Bagëtia	Dardha
<i>1991:</i>			
Total agricultural surface (ha)	160	162	92
Number of households	312	70	79
Type of land reform	Distribution	Restitution	Distribution
Average number of parcels given to households	4.9	—	5.7
<i>2004:</i>			
Average number of parcels in use per household	3.8	2.6	4.4
Average parcel size (m ²)	1,300	1,900	1,300
Average area in use per household (ha)	0.5	0.5	0.6
Largest farm size (ha)	1.4	1.3	1.1
Smallest farm size (ha)	0.2	0.1	0.1

Source: Expert estimations and household survey.

at the end of each harvesting season, even if it was expected to last for several seasons. As a result of these flexible arrangements, none of the fertile and valuable parcels at the village center ever lay idle.

In Bagëtia, villagers returned the cooperative farmland to its historical owners and their heirs in 1991–92. Restitution took place because some villagers did not want to distribute fields equally on a *per capita* basis, preferring them returned to their historical owners. The permanent departure of entire households facilitated this process because many were no longer present or envisioned a future outside the village. The households pushing for restitution, therefore, faced no significant opposition when they began to occupy the fields that they had worked before socialism. As a result, restitution served the consolidation of agricultural fields, leading to a higher average field size in Bagëtia than in the other two villages (see Table 1).

Villagers in Dardha developed a different strategy to deal with the fragmented patterns of land ownership and land use resulting from land distribution. They did not rent land as in Kodra nor restore fields to their historical owners as in Bagëtia. Instead, they cooperated in the cultivation of wheat and corn fields to facilitate the use of large machinery. Together they hired two or three tractors at the beginning of each

planting season to plow all the fields. The tractors plowed entire blocks containing up to 50 individual parcels at once. During the harvesting season this pattern was repeated with combine harvesters.

Evidence from the three villages thus indicates that agricultural land ownership and land use were highly fragmented, and that villagers terminated cultivation on significant shares of the original cropland after 1991. At the same time, it also reveals that, in line with the second proposition, the decline in area under cultivation was due to broader socioeconomic processes particularly the declining competitiveness of agriculture in comparison to non-farm and migration opportunities. In reaction to changes in economic opportunities, farmers moved labor and capital out of agriculture, from less to more profitable crops, and from cultivation into livestock husbandry. Similarly, land tenure arrangements did not pose a rigid constraint, as suggested by the first proposition, but remained very flexible over time. Villagers adjusted the initial distribution of agricultural parcels and forms of land use to socioeconomic changes (cf. Stahl & Sikor, 2009). As a result, differences in cropland abandonment among the villages were largely due to broader socioeconomic dynamics, reflecting variation in migration, biophysical conditions, and market access.

6. LAND USE DYNAMICS IN THE STUDY AREA

The regression analysis suggests similar dynamics. Table 2 provides a summary of the descriptive statistics for the regression models of both periods. As indicated by the standard deviations, there was a large variation in biophysical and socioeconomic factors across the sample villages. The number of distributed parcels per household varied between one and ten, most villages lying in the range from three to six. The average, 4.4 parcels per household, corresponds to the national average (Kodderitzsch, 1999).

The regression results suggest that most biophysical and socioeconomic factors are not associated with systematic differences in cropland abandonment among villages in both periods (see Table 3). The coefficients for cropland per household, household density, and net out-migration are insignificant, as are those for tractor density and distance from commune center and asphalt road. In contrast, many of the district dummies are significant. They indicate that cropland abandonment varied systematically among districts in both periods, which was not captured by the included variables. Abandonment was higher in the villages of Librazhd than in the reference district of Elbasan during the first period. It was lower in villages located in the poorer districts of Librazhd and Gramsh than in villages of Elbasan in the second period.

In the first period, cropland abandonment was more likely in villages located at lower elevations and with a smaller number of parcels distributed to households. This means that villages with more fragmented land holdings tended to have less abandonment, not more as implied by the first proposition. Higher rates of cropland abandonment were more likely to be found in villages with a lower degree of land fragmentation.

In the second period, cropland abandonment tended to be higher in villages with more undulating terrain and a higher income from remittances. Villagers were more likely to abandon cropland where steep terrain made cultivation harder and less profitable. Agricultural producers were also more likely to abandon cropland in villages where a larger share of households counted on remittances as their main source of income. That the other variable related to migration is not significant can be explained by the fact that it captures one particular form of migration only—the departure of whole households—not capturing seasonal migration and that undertaken by single household members.

The regression results also indicate that the analysis can explain a relatively limited part of the variation in cropland abandonment among villages in the study area. There are at least three indications for this limited explanatory power. First, the statistical goodness-of-fit is low, as the analysis explains only 22% and 32% of the variation in the first and second periods, respectively, judged by the coefficient of determination (R^2). Second, the highly significant constants in both periods point to structural differences not captured by the independent variables. There may be other factors not included among the covariates that influence abandonment. Third, the significant and large coefficients of the fixed district-level effects attest to missing structural indicators such as district-specific policy decisions, socioeconomic factors, or agro-ecological conditions that affect the use of cropland.

Despite the low explanatory power, the results are robust in the sense that they hold across various specifications of the dependent variable. Other definitions of cropland abandonment, such as the absolute area of abandoned cropland or abandoned cropland as a share in total village area, generate results similar to those for the influence of the biophysical

Table 2. Descriptive statistics for village sample

Label	Obs	Mean	Std. dev.	Min	Max
Change in cropland, 1988–96 (as% of 1988)	98	7.96	45.35	−208.99	84.23
Change in cropland, 1996–2003 (as% of 1996)	98	0.38	38.03	−135.56	75.15
Village area (km ²)	98	9.85	6.93	1.98	34.86
Elevation of village location (m)	98	569.33	305.10	24	1173
Average terrain roughness	98	6.30	1.59	2.36	12.25
Average rainfall (mm)	98	1310.76	310.90	770.87	2313.55
Cropland per household (ha), 1996	98	0.88	0.51	0.03	2.4
Cropland per household (ha), 1991	98	0.95	0.56	0.02	2.73
Household density (hh/km ²), 1996	98	21.80	23.27	2.20	151.98
Household density (hh/km ²), 1991	98	21.09	19.91	2.20	121.58
Net out-migration (% of households), 1996–2004	98	13.77	17.96	−21.35	77.14
Net out-migration (% of households), 1991–1996	98	10.97	14.21	−25.63	60.63
Most income from remittances (% of hh), 1996	98	49.79	23.69	1	95
Most income from remittances (% of hh), 1991	98	7.17	15.06	0	90
Irrigated cropland (%), 1996	98	45.92	49.64	0	272.73
Irrigated cropland (%), 1991	98	60.38	54.19	0	400
Tractors per km ² agricultural land, 1996	98	0.98	1.37	0	6.25
Tractors per km ² agricultural land, 1991	98	2.50	6.43	0	40
Time to commune center (min)	98	51.17	48.56	0	195
Time to asphalt road (min)	98	67.09	59.87	0	240
Distributed plots/household (number)	98	4.37	1.33	1	10
Gramsh	98	0.21	0.41	0	1
Librazhd	98	0.27	0.44	0	1
Pogradec	98	0.12	0.33	0	1

Source: Albania village survey 2004, remote sensing analysis and topographic maps.

Table 3. *Regression results*

	1988–96		1996–2003	
	Coefficient	P-Value	Coefficient	P-Value
Village area (km ²)	0.398	–0.63	–0.267	–0.694
Elevation of village location (m)	–0.068**	–0.012	0.028	–0.17
Average terrain roughness	–2.406	–0.561	7.472**	–0.027
Average rainfall (mm)	–0.012	–0.635	0.019	–0.358
Cropland per household (ha), 1991/1996	–6.336	–0.512	–4.869	–0.556
Household density (hh/km ²), 1991/1996	–0.17	–0.595	0.183	–0.415
Net out-migration (% of households), 1991–96/1996–2004	0.182	–0.667	0.267	–0.412
Most income from remittances (% of hh), 1991–96/1996–2004	–0.184	–0.581	0.298*	–0.075
Irrigated cropland (%), 1991/1996	–0.146	–0.162	0.098	–0.295
Tractors per km ² agricultural land, 1991/1996	–0.664	–0.383	3.029	–0.309
Time to commune center (min)	–0.102	–0.466	0	–0.998
Time to asphalt road (min)	0.099	–0.44	–0.002	–0.986
Distributed plots/household (no)	–7.797**	–0.031	3.524	–0.227
District: Gramsh	33.457	–0.12	–60.184***	–0.001
District: Librazhd	42.491***	–0.006	–32.555***	–0.009
District: Pogradec	36.755	–0.186	–21.039	–0.311
Constant	103.489**	–0.037	–101.288**	–0.013
R ²	0.221		0.323	
N	98		98	

Note: Significant coefficients in bold.

Source: Own calculations.

* $p < 0.10$.

** $p < 0.05$.

*** $p < 0.01$.

variables, for the fragmentation proxy, and for the district dummies.

7. DISCUSSION

This section reviews the results derived from the three analytical strategies. After a brief discussion of changes in land use, it relates the results of the village studies and regression analysis to the two propositions defined in the introduction. It concludes with a brief reflection on the multi-method approach employed in the research.

(a) *The extent and patterns of abandonment*

Agricultural producers terminated cultivation on 28% of the original farmland in the research area during 1988–2003. This rate appears high given the short time period. It is higher than the 10% and 17% reported from Romania (Rusu, Florian, Popa, Popescu, & Pamfil, 2002) and Lithuania (Prosterman & Rolfes, 2000), respectively, higher than the 21% in Arges County, Romania (Küemmerle, Müller, Griffiths, & Rusu, 2009), and much lower than in the Latvian Vidzeme Uplands, where cultivation terminated on more than half of the original cropland after 1990 (Nikodemus, Bell, Grine, & Liepins, 2005).

(b) *The dynamics of abandonment*

Both the in-depth village comparison and the regression analysis indicate that the first proposition runs counter to the dynamic nature of land tenure arrangements in the villages and observed variation in cropland abandonment among villages. The rate of cropland abandonment was highest in Bagëtia (see Figure 3), that is, the village with the lowest fragmentation (see Table 1). In addition, evidence from the

three villages suggests that local land tenure arrangements did not present a rigid constraint to agricultural production, and transactions were much more common than that reported in Deininger (2003, p. 100). In Kodra, villagers leased parcels in and out, preventing the abandonment of fertile land. In Bagëtia, villagers restored the land to its historical owners and their heirs, a practice observed in numerous Albanian villages (de Waal, 2004). In Dardha, households coordinated land management to overcome the constraints of small parcel size, similar to their peers in other Albanian villages (Lusho & Papa, 1998). Similarly, the regression analysis does not detect a positive effect of the number of distributed parcels per household on the rate of cropland abandonment. On the contrary, it reveals that villages with more fragmented land holdings tended to have lower abandonment rates in the 1988–96 period.

The results instead offer strong support for the second proposition. Insights from the in-depth village studies reveal the dynamics underlying the dispersal of agricultural holdings into several parcels. Villagers wanted to have a diverse set of agricultural parcels as that was more advantageous in the unstable socioeconomic environment. They initially supported an equitable distribution of land because agriculture remained an important source of subsistence and income, just as it did for their counterparts in many other Albanian villages (de Soto *et al.*, 2002, p. 22). They also wanted a share in each type of land, as diversification was a strategy to reduce the risks of individual farming (cf. Lusho & Papa, 1998). Later on they wanted to maintain diversified production systems to meet their own subsistence requirements and to spread the risks encountered in Albania's unstable markets (cf. de Soto *et al.*, 2002).

These dynamics may explain why the regression analysis reveals that villages with a larger number of distributed plots per household show a lower rate of abandonment in the initial years after land distribution. The negative effect on

abandonment may be due to associated differences in the diversity of local farming systems. Producers in more diversified systems received a larger number of parcels during the initial land distribution than those in more homogeneous systems, as land commissions sought to transfer a share of each land use type to all households. Consequently, villages that reported a higher number of distributed parcels may have kept more land under cultivation because their diversified land use systems were more advantageous in the unstable socioeconomic environment.

At the same time, the variation in cropland abandonment was systematically related to differences in migration among villages, as indicated by both the village study and the regression analysis. Migration was highest in Bagëtia, which also showed the highest rate of cropland abandonment. Abandonment was lowest in Kodra, where migration was also lowest. This pattern also emerges from the regression analysis, as it shows a significant positive effect of remittances on the rate of cropland abandonment during 1996–2003. Villages with many households reporting remittances as their major source of income were more likely to abandon more cropland. The positive effect of remittances reflects the lack of labor in these villages, as young men and women left in search of jobs abroad.¹³ Agriculture no longer offered competitive opportunities, as indicated by the village studies and reported from other Albanian villages (de Soto *et al.*, 2002; de Waal, 1995).

Biophysical conditions contributed to different rates of cropland abandonment in villages after 1996. Steep terrain and frost motivated producers in Bagëtia to focus on livestock production. Water scarcity made their peers in Dardha abandon some cropland and reduce production intensity. Kodra's good soils, in contrast, encouraged the villagers to maintain production on much of the land and even intensify it on some land. Similarly, the regression analysis indicates that villages on steep terrain tended to abandon a larger share of their cropland in the 1996–2003 period. This result suggests that Albanian producers gradually adjusted crop cultivation to the new conditions.

These results show that the outflow of labor from agriculture into migration and non-farm activities underlay the abandonment, as agriculture was no longer profitable. As indicated by the in-depth studies, many young men and women left the villages to seek employment in labor markets elsewhere, mirroring general trends in Albania (King, 2005). In addition, many villagers from Kodra took on non-farm jobs around the village or started up small non-farm and processing activities in the village. As their labor was no longer available for agriculture, households stopped cultivating some of their fields. Abandonment, therefore, was driven by broader socioeconomic dynamics, as suggested by the second proposition.

(c) *Reflections on method*

The results presented here demonstrate the value of using multiple analytical strategies, as these tend to generate complementary insights. On the one hand, the remote sensing and regression analyses allow scaling up of the findings from the in-depth village studies.¹⁴ The results of the remote imagery interpretation help to generalize the results from the village studies with regard to the extent and geographical pattern of cropland abandonment in a much larger area. The regression analysis contributes insights into larger-scale associations, providing an important check on the generalizability of the socioeconomic dynamics unearthed in the in-depth studies. Moreover, it reveals the significance of district-level influences, which cannot emerge from the village studies. The advantages

of scaling-up are illustrated by Bagëtia, which turns out to be a special case. The village is exceptional in the particular ethnicity of its inhabitants, which afforded them unusual access to migration opportunities.

On the other hand, the in-depth village studies enable the researchers to link the results of the remote sensing and regression analyses to concrete dynamics on the ground. They facilitate insights into the dynamics driving cropland abandonment (revealed by remote sensing) and their linkages with particular factors (shown by the regressions). In other words, the village studies generated explanations of the *processes* producing the *patterns* uncovered in remote sensing and regression analyses. They produced insights into the dynamics of agricultural production underlying the observed changes in land use, in particular cropland abandonment. Most specifically, they suggest an explanation for why and how land fragmentation did not cause cropland abandonment and even had a positive effect in the first period. They also provide insights into the linkages between migration and abandonment, indicating how labor was the dominant flow in villages' productive systems and why migration was the key influence on labor and thus abandonment. This combination of in-depth studies and regression analysis proves particularly powerful in situations such as in this research where the latter identifies few factors showing a significant effect.

Nevertheless, the use of multiple methods may also reveal the need for further research. Some results may not be complementary, and differences among them may not be reconciled easily. In this research, the village studies indicate a possible contribution of market access to variations in abandonment, as Kodra may have abandoned less cropland than Dardha because of its proximity to urban product and labor markets. The regression analysis, in contrast, does not support any significant effect of distance to markets or roads on abandonment for the entire study area. The discrepancy between the two analyses allows various interpretations, none of which can be ruled out given the available data. Understood this way, discrepancies in results present another advantage of multi-method approaches over single-method studies.

8. CONCLUSION: STATE AND COMMUNITY IN POST-SOCIALIST LAND CONSOLIDATION

Our findings support an explanation of cropland abandonment that highlights broader socioeconomic dynamics as underlying causes and emphasizes the dynamic nature of land tenure arrangements in line with the second proposition. The strategic dispersal of land may be an integral aspect of small producers' strategies in unstable post-socialist environments. Producers may prefer to initially claim and later maintain a diversified set of parcels spread across different agro-ecological zones in order to minimize risk (cf. Blarel *et al.*, 1992). Lacking access to capital, labor, technical advice, and product markets, they react by retaining a mixed portfolio of parcels to cover their own subsistence needs and generate income. For the same reasons, they hold on to agricultural parcels even though they may actually not work them as they pursue non-farm opportunities. Cropland abandonment and dispersal of land, therefore, may both be consequences of the same underlying dynamic: strategic risk spreading by agricultural producers. They may not be due to rigid constraints on land tenure imposed by the land reforms of the 1990s, as stated in the first proposition.

These findings are likely to apply to many areas in Central and Eastern Europe. Agricultural terms of trade have declined

throughout the region (Macours & Swinnen, 2000). Agriculture also remains an important safety net for rural people (Deininger, 2003; Mathijs & Noev, 2004). Not only in Albania but also in other countries, agricultural landowners may decide to allocate their labor to activities outside agriculture, even if migration opportunities are more restricted than in Albania. At the same time, they may strategically hold on to their land and disperse parcels to minimize risk, leading to the fragmentation and abandonment observed in many countries.

What do these insights suggest about the roles of state and community in post-socialist land reforms and emergent land tenure arrangements? Above all, they attest to the agency of villagers in shaping land relations on the ground. In the early 1990s, villagers staffed many of the land commissions set up by land laws to implement land reform (Verdery, 1996). Some even took matters into their own hands, allocating land before or in contradiction to legislative acts enacted by national governments (de Waal, 2004). Later on, villagers demonstrated significant agency by modifying land tenure arrangements over time. Their modifications sometimes took the forms ratified in national legislation, such as land sales registered with the newly established land administration agencies. Yet in many cases, villagers changed land tenure in ways not foreseen in land laws or noticed by land administration agencies, such as unregistered leasing agreements, the formation of small farming groups, and coordination in land management (Sabates-Wheeler, 2002a, 2002b; Verdery, 2003).

These insights about the negotiated nature of post-socialist land tenure contain important implications for suitable future roles of state and community in post-socialist land consolidation. Programs centered on legal and administrative interventions by the state are unlikely to achieve their stated objectives,

as they fail to take account of broader socioeconomic dynamics affecting agriculture and villagers' agency in shaping land tenure (Sabates-Wheeler, 2002a; van Dijk, 2007). Land policy instead needs to support desirable adaptations by local communities, such as those mentioned above, through appropriate mechanisms, such as decentralized approaches to land banking (van Dijk & Kopeva, 2006). Post-socialist states also need to develop suitable procedures for integrating currently unregistered leases into officially recognized land rental markets (Vranken & Swinnen, 2006). Supportive policy interventions along these lines are likely to help small producers and landowners to respond to broader improvements in the conditions of agriculture, their evolving practices eventually effecting changes in the structure and size of agricultural land holdings (cf. van Dijk, 2003).

More broadly, these insights indicate suitable roles for the state in community-led strategies of land reform (cf. Sikor and Müller, 2009). A shift in emphasis from state toward community—in the sense and with the qualifications discussed by Sikor and Müller—does not imply that states no longer assume an important role in land reforms. Instead, states move away from the emphasis on the top-down initiatives and belief in bureaucratic implementation characterizing state-led efforts. Under community-led strategies, states take on a more supportive role as facilitators of desirable adaptations by agricultural producers at the local level. Initiatives for land consolidation emerge from villagers' practices on the ground (cf. Bouquet, 2009) and find support from state agencies through flexible implementation modalities and decentralized land administration (cf. Bruce and Knox, 2009). In the process, land administrators become more accountable to their largest group of clients: small landowners and producers (cf. Stahl, Sikor, & Dorondel, 2009).

NOTES

1. The term "land fragmentation" carries problematic connotations. This paper uses the term to refer to the spread of farm holdings across non-contiguous parcels (cf. Bentley, 1987). Using the term does not imply any normative evaluation of the phenomenon.

2. "Abandonment" is another problematic term, often being associated with negative connotations. This paper uses the term to describe a change in land use from cultivation to some other use without implying any normative judgments about the desirability of the change.

3. For an overview of initiatives see Riddell and Rembold (2002). FAO (2003) synthesizes practical guidelines.

4. The use of remote sensing greatly expands the opportunities available for the study of land abandonment by offering the possibility of scaling up the analysis to larger regions and facilitating the use of reliable data from past years. One significant drawback is that remote sensing does not generate data on agricultural intensity or output.

5. The numbers do not add up because the average farm size does not include the about 130,000 ha that households returned to the state.

6. See Müller and Munroe (2008) for a more detailed discussion of the method.

7. Data sources with sufficient spatial detail include rainfall stations and topographic maps. Rainfall data from 24 rainfall stations are translated into a continuous rainfall surface. The 1:50,000 topographic maps were

used by the Albanian National Forest Inventory to determine elevation and proxy terrain roughness by way of a digital elevation model (DEM). The maps also indicate the location of major roads, which was verified using ground truth data collected with Global Positioning Systems (GPS).

8. Village boundaries are derived from a digital data set based on the digital cadastral maps available for residential and agricultural land. The accuracy of these boundaries has not been verified statistically, but field checks in ten villages suggest that the data set is sufficiently accurate for the agricultural areas, which are the focus of this paper.

9. The choice of the two years – 1991 and 1996 – was intended to overcome some of the problems associated with recall. The two years included salient events of prime importance for villagers' lives, suggesting that their choice may help generate relatively accurate responses (Groves, 1989). 1991 was the last year in which people worked the land in the collective and socialism unraveled. 1996 was another year of turmoil, caused by the rapid expansion of pyramid investment schemes and their eventual collapse in early 1997. In addition, the enumerators were trained to facilitate thorough discussion and consensus building before reporting villagers' responses about past events.

10. This study uses a rather simple measure of land fragmentation for reasons of data availability. See King and Burton (1982) for a discussion of other measures commonly used to measure land fragmentation.

11. The names are pseudonyms.

12. Extensification refers in this paper to a shift in land use where the amount of capital and/or labor applied per unit of land decreases. Intensification means increases in the amounts of capital and/or labor applied per unit of land.

13. The outflow of labor was the dominant effect of migration on agriculture because few remittances were invested in agriculture (cf. de Soto et al., 2002; King, 2005).

14. This is not to deny the limitations associated with the specific methods employed in this research for scaling up, in particular the use of remote sensing and village surveys (the latter as opposed to household surveys). Both methods imply that the research did not use household production data to analyze cropland abandonment.

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