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Farmland Tenure and Transaction Costs: Public and Collectively Owned Land vs Conventional Coordination Mechanisms in France.

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Summary

This article explores to what extent farming preservation or development initiatives from public authorities and/or Non-Governmental Organizations (NGOs) resting upon Long-term and Full Rights Acquisitions (LFRA) of land succeed in preserving farmland. The line adopted is to assess whether this mode of access to land use decreases farm profitability. With this aim, we compare ex ante transaction costs and some other costs and benefits incurred by farmers with access to land use, in the case of LFRAs, with the corresponding costs and benefits associated with the two other major coordination mechanisms, namely, conventional lease arrangements and purchasing transactions. The comparison rests on original data on costs obtained in a survey of farmers within a French region. We find that these farmers incur fewer ex ante exchange costs than by purchasing land and higher ex ante exchange costs than by leasing to an individual owner relative to the total cost of accessing land use. This difference is due to negotiation costs, which are nearly twice as high as in conventional lease arrangements. Our results imply that LFRAs would improve their efficiency by limiting the period and the intensity of tenant involvement in their own implementation without reducing their understanding of tenants' expectations.

Keywords: Q15; D23; L3; Q1

JEL codes: Land tenure; Transaction costs; Farmland; Agriculture; Public and collective owners

Introduction

For approximately twenty years, land access has been an issue for farmers in developed countries. Different factors have contributed to this phenomenon. Farms have often had to grow due to competitive constraints (Eastwood, Lipton, and Newell 2010), while urbanization has reduced available farmland (see Prokop et al. 2011 for the EU case). At the same time, the potential for income related to land development has increased private owners' tendency to make unsecured tenancy arrangements (Myyra et al. 2005; Ciaian et al. 2012). Land policies and public authorities have been progressively fitted with tools, not so much to mitigate these side effects upon farmland access but rather to curb urban sprawl. A variety of tools are now available for farmland preservation, including urban planning and zoning, economic incentives such as taxes, and market interventions by Rights Acquisitions¹ (RAs) (Alterman 1997; Dissart 2006). In France, as in the US, RAs have increased beyond the traditional conservatory logic linked to natural spaces and thus concern agricultural areas (Dissart 2006). In France in particular, what we will henceforth call Long-term and Full Rights Acquisitions (LFRAs) of farmland by public and collective legal persons is currently increasing. These initiatives allow farmers to access farmland through lease arrangements from owners involved in agricultural activity through political or ideological interests, i.e., whose economic preferences are based on the permanence of any farming use rather than on urbanization or on the establishment of a specific agricultural activity on the land in question.

Do LFRAs succeed in preserving farmland? For the moment, scholars are focused on other types of RAs rather than LFRAs. RAs differ depending on their temporality and perimeter. First, they can concern either the whole rights of the bundle of property rights, i.e., full acquisitions, as in all types of RA realized in France by NGOs or local authorities², or only a part of these rights, such as land preservation programs settled in the United States (e.g., Purchase of Development Rights, PDR). Second, long-term acquisitions appear when a public or collective legal person consider RAs to be under permanent protection. That is the case for

¹ In reality, RAs sometimes rest on farmland already owned by one of the legal persons involved in the project, e.g., when the farmland mobilized had been purchased for another intended use or project. Even if there is not really an "acquisition" in legal terms, we conserve the term Rights Acquisitions because there is regardless a new appropriation.

² One exception in public urban project management is the possible use of the transfer of right to build.

acquisitions by NGOs such as “Terre de Liens”³ in France or certain land trust⁴ acquisitions in North America. In contrast, short-term acquisitions constitute an intermediary step along a project or a public intervention in the market (e.g., SAFER⁵ action in France) but also include temporary easements such as PDR, which finally place them close to zoning. Studies that assess agricultural effects of RAs to preserve farmland focus on land trusts without analyzing the effects on the agricultural economy (Parker 2004; Dissart 2006) and on PDR; PDR programs are neither full nor long-term RAs to preserve farmland (Towe, Nickerson, and Bockstael 2008; Liu and Lynch 2011; Schilling et al. 2014; Gottlieb et al. 2015).

Farmland preservation and land access are expected benefits of LFRAs. However, as Dissart (2006) notes, beyond the numerous preservation tools, the best way to preserve agricultural land may be to maintain the profitability of farms. Verifying this virtuous effect intuition from the perspective of farms is thus necessary. Indeed, there is agreement that land tenure and notably secure rights affect farm profitability, as they bring investment and access to credit, facilitate reallocation of production factors to maximize allocative efficiency in resource use, and allow for economic diversification and growth (Deininger and Jin 2006; Deininger and Feder 2009)⁶. Land insecurity exists despite the existence of transferable property titles. Indeed, access to land can largely rest upon leases, due to business agriculture and large farms. Certain arrangements are considered more secure than others. Their variability is due to the law that created different contracts and to various implementations by contractors. Myyra et al (2005) empirically verified this by showing that Finnish land tenure insecurity on leased land decreases land improvements with a long pay-back period. Moreover, operator

³ Created in 2003, the French association Terre de Liens (land of connections) aims at contributing to the creation of environmentally responsible rural activities through the collective acquisition of agricultural land and buildings. It also aims to restore land management concerns to the minds of civil society and politicians. Terre de Liens is actually a federation of 15 regional associations of the same name. To implement its action plan, the Terre de Liens movement has created two tools: one for solidarity investment, the Terre de Liens Landholding Trust, which is a private savings fund used to acquire agricultural land that is then rented out to farmers, and the Terre de Liens Foundation. Recognized as being of public interest, this latter may accept donations of money and farms, notably from public authorities.

⁴ Which are “nonprofit organizations that conserve environmental amenities on private land” (Parker 2004).

⁵ SAFER (“Société d’aménagement foncier et d’établissement rural,” or Farming Land Ownership Regulation Societies) are non-profit organizations under the supervision of the Agriculture and Finance Ministries. The organization regulates farmland ownership, notably using preemption rights and farm transfers, and supports local authorities in planning policies.

⁶ Breaking with traditional customary rights frameworks, its political implications (i.e., land registration and property entitlement) are debated (Bromley 2009).

access to land through personal ownership leads to better soil and enhanced productivity. These results confirm (here through opportunity costs) that the transaction having as an object access to land use contains variability in efficiency among different coordination mechanisms. Therefore, verifying virtuous effects of access to farmland from LFRA requires comparing this mechanism to traditional ones, i.e., operator ownership and lease arrangements with an individual private owner.

Transaction costs (TCs), including comparative planning, adapting, and monitoring costs of task completion incurred by agents in alternative governance structures, allow the exploration of this efficiency variability by comparison (Coase 1937; Williamson 1985). By showing that TCs explain emerging (if costs are lower) and declining (if costs are higher) coordination mechanisms for a given transaction, TC economics yields evidence that TC negatively affects transaction efficiency. A few studies have explored the relative transactional efficiency of land use transactions resting upon lease arrangements through contract choice models. They show that TCs affect farmer choice between cash and share leasing⁷ (Datta, O'Hara, and Nugent 1986; Allen and Lueck 1992; Moss et al. 2001; Fukunaga and Huffman 2009) and between gray and regular lease contracts (Polman and Slangen 2009). In the specific case of farmland lease transactions, Murrell (1987) identifies certain contract properties that could generate TCs, and Polman and Slangen (2009) discuss determinants of TCs (uncertainty, frequency, asset specificity). Both discuss the owner's behavior as an influencing factor. Finally, Gray (1994) proposed a comparative analysis grid of alternative forms of land tenure through both determinants and components of TCs. The objective was to evaluate the capacity to maintain a new land trust governance in the planning stage (CBLTs for Community-Based Land Trusts). However, this prospective exercise applied the grid to anecdotal data. Thus, a lack of direct identification and evaluation of real incurred costs remains. Moreover, except for Gray (1994), scholars have focused on lease arrangements; the land purchase option for farmers is less studied despite its central role in agricultural economics (Allen and Lueck 2000).

Our study compares the relative transactional efficiency of access-to-land coordination mechanisms, including lease arrangements with owners involved in LFRAs, lease

⁷ In these transactions, the lessor is paid according to annual agricultural profits and thus shares risks and profits of the tenant's agricultural holding. These transactions represent a minority of lease arrangements in France.

arrangements with individual owners and operator ownership, using original data. We postulate that a public or collective moral person interested in agriculture behaves differently as an owner from an individual private owner, changing the completion of the transaction. A first research step is to identify and characterize the different costs incurred by agricultural operators for access to land use. A second is to empirically evaluate them in order to objectify the comparison, through an original farmer survey in the French region of Auvergne-Rhône-Alpes. The remainder of this paper proceeds as follows: Section 1 describes the theoretical framework and the methodology for TC evaluation. Section 2 identifies the main channels by which each can generate transaction costs. Section 3 describes methods and data. The results are analyzed and discussed in Section 4.

1 Analytical framework

1.1 Transaction cost theory applied to land use transactions

In transaction cost economics (TCE), a transaction is the transfer of rights to use goods and services between technologically separable units (Ménard 2004, p.21). Each transaction induces both production and transaction costs related to the economic organization within which it occurs and to the latter's ability to economize them (Williamson 1985, p.61). Production costs are “the costs of executing the contract,” while transaction costs “consist of the costs of arranging a contract *ex ante* and monitoring and enforcing it *ex post*”⁸ (Matthews 1986, p.906). These costs are also defined as “the comparative cost of planning, adapting, and monitoring task completion under alternative governance structures” (Williamson 1985, p.2). Given that transaction costs influence market effectiveness, coordination mechanisms that minimize such costs are gradually selected. Williamson characterizes transactions according to three attributes that are critical dimensions influencing the transaction cost level: (1) uncertainty, (2) the frequency with which transactions recur, and (3) the degree to which

⁸ “To a large extent transaction costs are costs of relations between people and people, and production costs are costs of relations between people and things, but that is a consequence of their nature rather than a definition (it would not do as a definition - for example, the cost of personal services are production costs, but they do not necessarily involve things)” (Matthews 1986).

durable, transaction-specific investments are required to realize the lowest supply costs (Williamson 1981, p. 555).

Murrell (1983) and Polman and Slangen (2009) applied TCE to farmland use access to characterize land transactions using the three TCE attributes. Farmers face physical uncertainty, first because of complex land use specifications and variable land quality and second, because of asymmetric information favoring the landlord or seller regarding soil quality (Murrell 1983, p.285). They also face behavioral uncertainty due to possibly opportunistic owner behavior in the context of contract incompleteness (Gray 1994; Polman and Slangen 2009, p.278-279). The lessor has authority and potentially promotes insecure land tenure (Murrell 1983). Furthermore, “the tenant perception of security of tenure is crucial for efficient land use” (Murrell 1983, p.284). Therefore, trust and expectations concerning the reputation and trustworthiness of the land owner are directly linked with transaction costs (Polman and Slangen 2009). Transaction costs may also be driven by a relatively low frequency of transactions. Based on the time horizon of a farm, land use transactions are rarer⁹ than purchases of materials, cattle feed or fertilizers (Polman and Slangen 2009, p.279). Finally, asset specificity is summarized by Murrell as “tenant immobility” (Murrell 1983, p.285), which generates an important site specificity. The farmer must find land close to the farm in the interest of profitability, while the owner encounters few potential buyers or tenants with farms close to his available land. This site specificity is linked with human asset specificity, as necessary knowledge might be different relative to other transactions on the market regarding climate, prime soil quality, water congestion, etc. Finally, specific investments such as irrigation or special materials represent a third dimension of asset specificity, as reported by Polman and Slangen (2009).

Our study aims to compare three coordination mechanisms of farmer access to land use: i) farming operator ownership, ii) lease arrangement from an individual owner, iii) lease arrangement resting upon an LFRA. Our position is to assess the relative transactional efficiencies only from the farmers' point of view. Indeed, our study aims to evaluate the influence of LFRAs on farm profitability, which owner exchange cost assessment would not highlight. We hypothesize that lease arrangements through LFRAs should more effectively

⁹ Even if a contract must be renewed in the case of leasing.

minimize producer transaction costs by reducing behavioral and physical uncertainty on the part of farmers. In fact, positive intentions toward agriculture on the part of public or collective owners may be assumed to prevent the potential for opportunistic behavior. Some owner interests may be consistent with those of land users, including continued farming use and, accordingly, the profitability of the agricultural holding. These common interests might reduce information asymmetry and help farmers more fully understand the quality of their land. Furthermore, joint concerns and the (public) reputation of the owner may improve the likelihood of secure land access for the tenant.

1.2 Assessing transaction costs and production costs relative to total costs

Empirical studies that attempt comparative quantitative analysis of alternative governance structures according to the TCE project mostly rest upon a TC evaluation that can be qualified as indirect for two reasons. First, they assess TC determinants (uncertainty, frequency, asset specificity) and do not directly evaluate TCs and their components. Second, they use with this aim proxies of transaction attributes that affect these TC determinants (Wang 2003). This strategy permits a lack of empirical data and avoids difficulties posed by measurement of TCs (McCann et al. 2005). However, proxies used as explanatory variables can bring endogeneity and measure the underlying concepts with error. This problem is made particularly salient concerning TCE by the detail that theory requires (Masten 1996).

Other studies develop empirical comparative analysis resting upon a direct quantitative assessment of TC and econometric regressions. These belong to different strands of the literature, focusing on integration decisions in organizations (Masten, Meehan, and Snyder 1991) or on implementation of environmental public policies (Kuperan et al. 1998; Falconer 2000; McCann and Easter 1999; McCann et al. 2005; Mettepenningen, Verspecht, and Van Huylenbroeck 2009; Widmark et al. 2013; McCann and Claassen 2016).

However, how such approaches address different problems is yet to be clarified. The first question regards intertwining of production and transaction costs (p. 4; Royer, 2011). Indeed, for an economic organization, “the object is not to economize on transaction costs but to economize in both transaction and neoclassical production costs respects” (Williamson, 1985, p.61). The second question is how to treat the selection problem highlighted by Masten and al

(1991), given that most studies rest upon statistical inference through econometric regression: costs cannot be directly observed for organizational forms not chosen, even though these high costs precisely represent the reason why the transaction did not occur (Benham and Benham 2005). The way that Masten and al (1991) prevent this selection bias¹⁰ is relevant for firm integration decisions, where the transaction always occurs. Concerning costs of marketed transactions, or voluntary agreements, that do not necessarily occur, however, the question remains unanswered.

Benham and Benham (2005) designed a complementary approach that does not depend on econometry to overcome these problems. First, the comparative analysis takes into account production and transaction costs in an undifferentiated manner as exchange costs, given their intertwining. For instance, Benham and Benham studied the cost of transferring ownership of an apartment, including taxes and lawyer fees. Second, production and transaction costs are compared relative to the total cost of the transaction. The resulting comparison of relative cost magnitude and structure, rather than cost amount, facilitates overcoming the econometric bias problem explained below. The resulting standardized methodology aims to estimate the sum of transaction and production costs, corresponding to a subset of the total cost of the transaction that they designated the cost of exchange (COE). “The cost of exchange C_{ijkm} is defined as the opportunity cost in total resources – money, time and goods – for an individual with characteristics i to use a given form of exchange j to obtain a good k in an institutional setting m ” (Benham and Benham, 2005, p.370). Given that comparisons based on relative production and transaction costs allow for the examination of the cost-effectiveness of a coordination mechanism, we choose this methodology to carry out our study.

Not evaluating TCs through the attributes of the transaction affecting their determinants means evaluating them by assessing each of their components. When the transaction occurs, farmers may incur time and monetary costs at different steps of the transaction. Costs may arise *ex ante* during information gathering, contract making and implementation. Costs may also occur *ex post* during monitoring and enforcement. Activities resulting in exchange costs include 1) the search for information about price distribution as well as potential partners and

¹⁰ “Even though the costs associated with unchosen institutions cannot be observed for a particular transaction, the full structure of organization costs can be estimated if we know the selection process and if we can obtain data or proxies for the costs of organizational forms that are chosen” (Masten, Meehan, and Snyder 1991).

relevant information about them, 2) negotiating and writing contracts, 3) monitoring partners, and 4) contract enforcement, as well as protection of property rights if necessary (Eggertsson 1990; Furubotn and Richter 2005).

2 Organizational forms of the land use exchange/transaction

Agricultural producers commonly access land through two main different exchange mechanisms in developed countries. One mechanism involves the entire property rights bundle, including the *use* right, when the agricultural operator purchases and owns the land he or she farms. The other involves the lease of land through a tenancy arrangement (Polman and Slangen 2009). A third organizational form has emerged in France with lease arrangements resting upon LFRAs. These three organizational forms of land use exchange occur within identical institutional settings and market structures across the country. They are regulated by the same price controls, contract standards, public interest market interventions, and courts¹¹.

Table 1 presents some of the principal farm structure characteristics of agricultural holdings in France, in some neighboring European countries, and in the USA. These characteristics show that France has the lowest share of operator-owned land. In the following subsections, we describe each coordination mechanism; adopting the point of view of farmers, we identify the main potential channels of exchange costs and give figures regarding their importance to the sum total of land transactions in the French land use market.

2.1 Access to land use as a portion of the full property rights bundle

Access to land use as a portion of the property rights bundle (exchanged when one purchases land) is not a highly constraining organizational form for the user because, except for expropriations for public utilities, which are very rare, the farming operator obtains free access to the land use for an indefinite time. Thus, the land purchaser is exempted from a relationship with any other decision maker, such as the lessor in the case of a lease

¹¹ Namely, the land tenure law, SAFER and the Farmland Leasehold Courts.

arrangement (within legal limits, e.g., on environmental practices, as with any other user). This important incentive to purchase land is counterbalanced, however, by the constraint of freezing a non-negligible amount of capital per acre.

This organizational form of access to land use represented almost one-quarter of French utilized agricultural land in 2010, and 37.5% if we consider that farming operator landownership includes land owned by associates involved in group holdings (Courleux 2011)¹². In France, nearly 1.2% of utilized agricultural land is purchased each year (FNSAFER/Agreste 2016). This method of land acquisition does not concern the majority of the market given that the bulk of landownership is passed down through inheritances. The work of Courleux (2011) offers some precision to the 2000-2007 data. Nearly 41% of farm operators who purchase farmland acquire land that they previously leased. They tend to use this organizational form of access to land not by choice but because they are constrained. Actually letting this land be sold to another purchaser means i) losing the use of land that they are not sure to recover and ii) losing the benefits of work habits and eventual investments in the land. Another considerable portion of farming operators' purchases (18%) have SAFER as the seller. That is, most farming operator land purchases occur in a legal context favorable to the farmer, whether through tenant priority rights or through the SAFER regulation frame. Land purchases in which the purchaser is neither the former tenant, related to the seller, nor favored by SAFER arbitration represent less than one-third of total purchases.

2.2 Access to land use through a lease arrangement with an individual owner

The other major organizational form of exchanging land use rights is a conventional lease arrangement from an individual owner. In its classic version, this transaction involves a definite lease period, a tenant, who is the producer, and a lessor, who is a natural person or a strictly private legal entity. In France, most of these arrangements are cash leases as opposed to share leases (only 1.5% of total leased utilized agricultural area (UAA) see Table 1). The land use rights are exchanged against a monetary rent.

¹² European data regarding France and French data differ slightly for 2010 because of the harmonization of calculation methods across European countries.

Nearly 61.7% of the UAA was farmed under cash leases in France in 2010¹³. This type of arrangement involves 69% of total farm holdings, but 87% of middle and large farm holdings, which cover 93% of the French UAA. On average, each of these farms contracted lease holdings with twelve different farmland lessors in 2010 (FNPRR 2010; Agreste 2010). This coordination mechanism, which is not a one-time arrangement as in the case of purchase described above, is framed in French law by a highly regulated agricultural lease status. Legal protection of farmland use rights counterbalances the weight of property rights, written in the constitution as a primary human right. Thus, a lease contract lasts for at least nine years. The only possibility for termination is the owner's right to recover the land use rights, which is possible only after six years if the owner (or descendant) is a farming operator. As we have seen above, the tenant has a pre-emption right in case of sale to retain the land use rights. Accordingly, the leasehold is not broken in case of sale but must be completed with the new owner. Finally, the rent is bounded by prefect decree. All these specific legal obligations are valid by default, even without a written contract (oral contract) if farming use can be tangibly demonstrated (Melot 2014) and if no lawful annual leasehold has been contracted. As a result, according to law, a farming operator cannot easily be deprived of the usage rights. This law theoretically secures the land investment. However, difficulties occur when owner preferences change in anticipation of urban land conversion. In this situation, an increasing number of owners attempt to escape the legal status of the lease (Jarrige, Jouve, and Napoleone 2003; Geniaux and Napoléone 2005) using explicitly precarious lease contracts (with the annual nature of the contract established by convention) or using legal loopholes in land use leases. Finally, certain owners simply avoid leasing land (Ciaian et al. 2012) despite the law on uncultivated land, which requires farmland owners to undertake real farming land use either through their own activity or that of a tenant.

¹³ This excludes group holding lease arrangements and contracts with personal associates (15% of UAA in 2010).

2.3 Access to land use via a lease arrangement through LFRAs

Access to land use via a lease arrangement through LFRAs falls under the status of an agricultural lease, as with all lease arrangements in France. This coordination mechanism is of interest given that the main difference from a classic lease is the nature of the owner. We have seen above the influence of owner preferences on the conditions for land use rights exchanges. These specific (public or collective) owners choose to hold the property to preserve long-term agricultural use. They use ownership as a means of collective action. Their incentives and behaviors are consequently very different from those of individual private owners, whose strategies may be based on contrasting motives, such as preservation of a heritage-related family identity, speculation for land conversion, absentee ownership, etc. First, public/collective owners hold these properties for the long term, which is important for continuity of the land exchange relationship. Second, they consider the economic aspects of agriculture, given that farming is the vocation of the owner role that they assume. In general, these projects require a long implementation period (technical information, legal procedures). Therefore, the process of selecting a farming operator may range from a personal relationship to a call for proposals, which may require a learning process. The contract linking the farmer to the owner is a somewhat formal partnership, in which the land lease contract is only a part. This contract can include specific prescriptions concerning farming products and environmental practices.

This organizational format is unusual and affects a small portion of the UAA that we could not evaluate given the phenomenon's recent development. Without aiming at an exhaustive inventory, we counted 258 hectares of land FRA in the French Auvergne-Rhône-Alpes Region in 2011. This lever for farmland preservation and development receives an increasing interest from local stakeholders. Whether from the local authorities searching for concrete projects to implement their policy, or from NGOs acting on the market to implement their citizen expectations, this observation suggests a future increase in the phenomenon. First, public authorities are confronted with decreasing public means and try to find a solution to avoid strict RAs that are expensive. Thus, we observed above that LFRAs sometimes mobilize already existing farmland reserves formerly constituted for future urban projects that have been abandoned (e.g., roads, housing programs). Many cities have created these reserves

in the past by overestimating future urban development and, as a consequence, land requirements. These public land reserves thus represent a non-negligible portion of farmland in certain regions. Second, the lever that NGO LFRAs use, crowdfunding, currently relays the voice of the citizenship in France. Appendix A provides other background on these initiatives with descriptions of the six studied cases.

3 Methodology and data collection

3.1 An analysis grid of costs in land use exchange mechanisms

We identify and analyze access to land exchange costs, i.e., transaction and production costs, through their characterization among *ex ante* and *ex post* costs, and their translation in concrete terms for the three compared coordination mechanisms. Table 2 presents this analysis grid.

In transactions exchanging access to land use, *ex ante* costs include three cost types: information costs, negotiation costs, and implementation costs. Farmers (lessor or tenant) may incur information costs when gathering information on land markets, potential sellers/lessors and their intent, potential rivals, parcel features, and prices, selling and leasing conditions, and finally when encountering sellers or lessors. Negotiation costs are related to negotiating with the lessor or the seller regarding purchase price or rent, allowable farming uses, and contract duration and break conditions. This process includes eventual selection processes that one partner demands (e.g., applicant's file), negotiations between partners concerning price and other contractual terms, contract redaction, administrative contract registrations, expert services such as a negotiation mediator, and eventual registration fees (e.g., notary fees). Implementation costs result from additional effort made by farmers to access land use. For example, it might be impossible to farm the secured land if it has not been used in years. A reconditioning of land, for example, by vegetation clearing, thus becomes necessary and incurs costs.

Ex post costs in access to land use transactions consist of two types of costs: monitoring costs and enforcement costs. Monitoring costs refer to cases when farmers must watch for owner compliance with the contract terms. For example, farmers particularly must pay attention in the case of a lease to anticipate an owner's eventual contract break strategy when facing an urban real estate opportunity. Farmers may also incur enforcement costs related to renegotiations and conflicts during the contract as well as contract termination costs, such as when the owner fails to meet obligations and the farmer is subjected to costly damages. In the example of an early break of a lease contract, a farmer may have to spend additional time and money to access other land and to obtain compensation for production in progress on leased land.

3.2 Survey and data

We carried out our empirical analysis in the French Auvergne-Rhône-Alpes Region in 2012 and 2013. We identified fifteen LFRAs in progress, and six of them had led to effective lease arrangements (see their locations in Appendix B). Those six initiatives occur in specific areas with varying characteristics in terms of agricultural production and urban pressure, etc. LFRAs have different characteristics for different criteria. In addition, they involved different stakeholder types (local authorities, agricultural professional organizations, associations, SAFER, etc.). They may include one farmer, a few farmers or more than fifteen farmers. The initiatives may lead to the extension of existing farms or to building new farms. They have different origins of funds, their implementations may be quick or may take a long time, and the duration of access to land use is variable (Appendix A).

As a first step, we identify transaction costs and production costs from personal observations and fifty semi-structured interviews with stakeholders involved in LFRAs, farmers, and private owners. A second stage consisted of data collection concerning the resources used during the transactional process determined above. As proposed by Benham and Benham (2005), we surveyed farmers directly involved in the considered exchanges.

The six studied LFRAs totaled 25 lease arrangements with farmers. As parties in the transaction, agricultural operators behave according to incentives that depend on their farmholding's characteristics. Moreover, one can imagine that a specificity of farms involved

in LFRAs exists in comparison to other farms. Constructing comparable samples of conventional lease arrangements and purchases thus requires a relative homogeneity regarding the characteristics of the farms in question. We used the quota method (Denscombe 2014) to obtain subsamples of transactions with a similar distribution of farm characteristics in the six areas. Selected farmholdings have substantially the same socioeconomic characteristics and are situated in the same or neighboring communes as farmers involved in lease arrangements through the six studied LFRAs. Those sampling constraints result in certain agricultural operators being interviewed about more than one coordination mechanism. Table 3 shows how labor force, market gardening share, breeding share, and farmer age present a degree of homogeneity for farms concerned in the three subsamples of transactions (see Table 3). We thus undertook a survey of 50 farmers, enabling us to analyze 74 transactions, including 21 land purchases, 28 lease arrangements to a private owner and 25 lease arrangements through LFRAs. All studied transactions occurred in major urban centers or on their fringes (see Appendix B).

The survey was conducted through a questionnaire designed to determine the costs incurred by farmers (Appendix C). For a transaction price, the farmers provided the monetary amount. For exchange costs, they quantitatively assessed transaction costs in terms of time, money and kilometers for different transaction stages, represented by information costs, negotiation costs and implementation costs. Ex post costs that are enforcement and monitoring costs were not estimated since some transactions had not yet ended, given the recent emergence of the studied lease arrangements through LFRAs. Finally, they provided quantitative information regarding registration costs such as notary fees, which were included in negotiation costs, or reconditioning costs, which were part of implementation costs.

All farmer exchange costs collected in kilometers or hours were translated into monetary values according to various standards, such as the official kilometer index¹⁴ or the average revenue per hour¹⁵. Then, we calculated the total costs of each transaction type by adding exchange costs and financial costs. Financial costs were calculated in a manner consistent with the example of the French Farm Management Federation (De Sousa 2008). The

¹⁴ Tax authority price scale for a 5-horsepower vehicle in 2012, 0.536€ per km.

¹⁵ Average net revenue in the Auvergne-Rhône-Alpes Region in 2012, 13.8€ per hour (source: INSEE).

federation established a method to assess financial costs and profits of land transactions, whether by leasing or purchasing, to resolve farmer buy-or-lease decisions (Johnson and Lewellen 1972) for the case of farmland. This calculation considered the loan duration necessary if the farmer were to purchase the land asset and the loan rate, the interest rate and the current inflation rate. We thus obtained a financial cost in euros per hectare and added it to exchange costs to obtain the total cost per hectare. Finally, we estimated the financial benefits of all transaction types using the same method (De Sousa 2008). Appendix D displays the principles of calculation for exchange costs, financial costs and financial benefits. Appendix E provides a statistical summary of the variables built and analyzed.

4 Results

4.1 Measurement of exchange costs

Table 4 shows the ex-ante costs, which include information costs, negotiation costs and implementation costs calculated from our survey. Empty boxes indicate that no costs were associated with the specified transaction element.

4.1.1 Information costs

The information step of a purchase transaction costs €5.60 per hectare. The effort is shared between gathering passive information, for instance, in SAFER resale announcements or real estate auctions, as well as information obtained from a third person by word of mouth.

Concerning a conventional lease arrangement from an individual, information costs incurred by the tenant represent €16.96 per hectare. These costs are much less due to passive information but are rather due to direct interactions with the owner (€5.48/ha) or a third person (€9.49/ha). A third person is sometimes sent by the owner as a messenger, for example, to ask the former tenant who ceased activity to propose the tenancy to another trusted farmer.

The information step toward access to land use through a lease arrangement through LFRAs costs a farmer €28.79 per hectare. In this case, word of mouth or third-person information is not very important, as costs are higher due to gathering information from local newspapers, local authority websites and the various media used by associations and citizen networks (€3.28/ha). However, most costs are related to gathering information from the public or collective owner. These exchanges may occur in a collective meeting when the project concerns several farmers. The information gathering creates costs for several reasons: the complexity of the land support setup and the amount of information to be transmitted; the number of parties, given the multi-stakeholder nature of the initiative; and the fact that the farmer applicant is often solicited upstream from the farmland provision and from the entire process of collective action. The expectations and complexity are costly.

4.1.2 Negotiation costs

The negotiation step in access to land use as a part of the entire bundle of property rights, i.e., by purchasing land, is very costly for the farmer from this point of view (Table 4). Notary fees represent €2,381.74 of a total of €2,445.10 per hectare. The remainder of the negotiation costs (€63.36/ha) are principally due to individual negotiating with the owner, which itself represents €43.78 per hectare. As seen above, the seller is often a SAFER. In this case, the farmer will have to submit an application to be selected from among all applicants by a professional committee. Finally, given the importance of the transaction price, the parties will be more likely to solicit expert services (€13.21/ha), notably lawyers or real estate experts, for input on such issues.

The costs incurred by farmers seeking access to land use through a conventional lease arrangement from an individual are only €34.08 per hectare. These costs are mainly due to individual negotiations with the owner (€21.67/ha). Lease contracts are often oral, and the money involved is reduced due to the weakness of rents and because the contractual terms are greatly dictated by law. Therefore, negotiations are brief. Expert services are required much less frequently (€2.11/ha). Nevertheless, non-negligible costs are incurred during the lease contract registration process, either with organizations directing land structure control policies

(CDOA), from which tenants theoretically¹⁶ must request a farming use authorization (€8.49/ha), or with an agricultural social security mutual fund (€1.69/ha).

Farmers accessing land use through LFRAs incur costs of €211.95 per hectare during the negotiation step or €172.55 per hectare if notary fees (€39.40/ha) are excluded. These notary fees are on average substantial, even if they may be linked with the motivation of collective or public owners to secure tenant use rights and to respect the law. One also finds this paradoxical negative effect of owner support of the tenant in the case of the selection process of applicant farmers. Indeed, their number often exceeds the availability of public/collectively owned farmland. To place applicants into a fair competition, LFRA leaders build a long and complex selection process based on applicant files and auditions. This process involves numerous stakeholders in a collegial final decision and seeks to evaluate candidates on agricultural technical and economic grounds, which remains difficult. This process is costly for farmers, who incur €44.93 per hectare (in addition to €4.49 on average because a SAFER is often involved in the selection process). The negotiation occurring after selection may be collective and is also costly (€71.81/ha). First, farmland sometimes has to be shared between the selected farmers, which induces disagreements. Second, tenant demands may be discussed and debated collectively, for instance on contractual terms or concerning farmland collective equipment (e.g., irrigation, buildings). Finally, individual negotiation with the owner is also costly (€51.32/ha). One reason for this cost is the complexity of these contracts, which are more than a simple agreement about access to land use against a rent. These contracts often include additional contractual terms such as use specifications (e.g., organic farming, marketing in short and local food chains, specific environmental practices, etc.). Another reason is the long duration of project setup, which as with information costs, contributes to increased costs by lengthening the time needed for each step.

4.1.3 Implementation costs

Implementation costs due to reconditioning land are shown in Table 4. In purchase transactions, interviewed farmers incurred high implementation costs (€532.4/ha). These costs are moderate in the case of conventional lease arrangements, with an average of €45.31 per

¹⁶ Not all tenants follow this rule; registration costs evaluated here are mainly due to particular registration difficulties.

hectare, and with LFRA lease arrangements, where they represent €33.90 per hectare. Several different elements illuminate these results. First, not all of the land sold is free of use rights. A major portion of them are under lease arrangement. In case of sale, the tenant has priority as a buyer. Consequently, few farmers venture to purchase occupied farmland. The lease-free lands that are being sold have therefore exited the farming use market for different reasons (e.g., owners taking back land but with no real farming use, farmland awaiting urban conversion, etc.). The older this exit, the more the land requires reconditioning work. One must also note the difference between conventional lease arrangements and those through LFRAs. Lands delivered by the LFRA can be in better condition because of the good maintenance of the owner who is interested in agricultural use. Another reason might be that the farmers receive in-kind assistance for this work, which reduces their costs.

4.2 Comparative analysis

As suggested by Benham and Benham (2005), comparative analysis of estimated exchange costs is possible when keeping in mind that non-realized transactions, with very likely high exchange costs, cannot be studied. One may compare the structure of exchange costs and the way they are counterbalanced or not by other costs and benefits. That is, the total exchange costs may be compared to total costs, i.e., the sum of exchange costs and the transaction price, or to the resulting gains. One may also compare the share of different transaction cost components across coordination mechanisms (Royer 2011). In this section, we present the results of these two comparison methods in Table 5.

4.2.1 Do LFRAs facilitate access to land use for farmers?

We first present the results for the two other coordination mechanisms being examined for comparison purposes. Exchange costs represent a major portion of total costs of purchase transactions (70%). The purchase amount to be delivered at one time for unlimited use is ultimately not the most prohibitive cost of the transaction. The exchange costs fully constrain the transaction result of access to land use, amounting to only 69€ per hectare, whereas the two other coordination mechanisms result in more than 400€ per hectare.

By comparison, accessing land use through a conventional lease arrangement with an individual induces far fewer exchange costs for the farmer. When broken down from total costs, exchange costs represent only 7%, ten times less than in purchase transactions. Exchange costs do not substantially affect the financial benefits (2,805€), which remain solid despite the total costs (1,478€).

Finally, the share of total costs that exchange costs represent in the case of farmers leasing land through LFRAs are intermediate to the two situations described above. Exchange costs (13%) represent almost twice those of conventional lease arrangements, which shows how costly these collective processes are for applicant farmers, mostly because of negotiation (10%). Although the lessor's intentions converge in part with the farmer's economic interests, these transactions are costly. This can prove to be prohibitive for farmers seeking access to new farmland. Moreover, the financial costs (1,922€ per ha), i.e., the rent, are on average higher than in the case of conventional leasing (1,382€ per ha).

As a result, compared to a conventional lease, access to land use is made more costly not only indirectly through exchange costs but also directly via rent. This non-intuitive result should be kept in perspective, however, since exchange costs remain compensated for by the financial benefits, which allow for substantial transaction results (€487) even though they are less than half those of conventional leasing arrangements (€1,327). These benefits make the transaction attractive, at least compared to a purchase.

4.2.2 What transaction cost components underlie these results?

These differences in exchange costs across the three coordination mechanisms may be understood by looking at cost components. Broken down in accordance with total costs and financial benefits, information costs remain reasonable, fluctuating from zero to one point. Word of mouth, watching the local press and web searches are not very costly compared to the overall costs and gains from accessing farmland use. Even encounters with owners resulting from LFRAs turn out to be relatively simple.

Negotiation costs are a far greater determinant, at least in purchase transactions and leases through LFRAs. They include notary fees and costs of negotiating with other contractors.

Notary fees dramatically increase exchange costs in the case of purchase transactions, as seen above. These fees represent 56% of the total costs of the land transaction. In France, notary fees include important state taxes, amounting to nearly 38% of the fees, for instance, in a land sale for €10,000¹⁷. However, 62% remains dedicated to fees for registration work provided by notaries. Therefore, accessing land use as a part of the entire bundle of property rights is very costly for farmers exactly because the exchange concerns not only use rights but also and mainly alienation rights. Indeed, this alienation rights exchange requires registrations that are not necessary for exchanges concerning only use rights. We have shown above how adhering to land structure policy control and the mutuality social fund weighs on negotiation rights in conventional lease arrangements but in a way that cannot be compared.

Negotiating with other contractors also dramatically explains the important difference in the magnitude of exchange costs across the two coordination mechanisms of access to land use through lease arrangements. As seen above, these costs are those that make lease arrangements through LFRAs costlier to access for farmers than those on privately owned land. The reason is the longer setup process due to the often many involved stakeholders and farmers as well as the selection process from among applicant files.

Finally, the implementation costs, such as the land reconditioning costs, including vegetation clearing, are more important for purchase transactions (13% of total costs) and for conventional lease arrangements (3% of total costs) than for land lease arrangements through LFRAs (2% of total costs).

4.3 Discussion

Our results confirm some of the points made by Gray (1994) about CBLTs and contradict others. Gray's results do not allow for classifying the costs between cash lease and CBLTs. Gray advances only the hypothesis that CBLTs, as new institutions requiring legal work to establish, will induce large costs at least in the first versions. In some ways, our results thus confirm this contention. However, in terms of the ex-ante exchange costs that Gray calls "cost of negotiating a contract", our results belie his assumption that the purchase transaction cost is

¹⁷ Source: French Superior Notaries Council, 2017.

null in contrast to lease-based transactions (cash lease and CBLT). According to Gray, the only criterion that could make purchase transactions costly is the case where the owner-operator borrows the capital. Our results strongly contradict this assertion, which suggests that this distinction is proving to be minor. Moreover, we took into account borrowing costs through financial cost calculations.

Thus, we have demonstrated how analyzing TCs directly by identifying their components rather than discussing them indirectly via their determinants permits a more precise understanding of land use arrangements by exploring contract characteristics that induce exchange costs. Nevertheless, the latter approach allows for assessing even indirectly *ex post* costs beyond characterizing them as done by Gray (1994). Indeed, although our second methodological choice of measuring exchange costs rather than qualitatively discussing them has permitted the comparison of tangible figures, it has led us to a problem of availability of data. Consequently, one possible shortcoming of this study is that we assume a comparison of these three coordination mechanisms based on exchange costs incurred "until access". Therefore, the results could be misleading since the discriminant alignment hypothesis suggests that an apprenticeship effect exists. Schematically, a coordination mechanism is excluded if one of its previous transactions shows higher costs than another mechanism. In that case, the entire transaction matters.

In that view, further work is thus required over several years. Some of the lease arrangements through LFRAs would have ended so that an *ex post* evaluation of monitoring costs (supervision of contractual terms execution by the lessor) and enforcement costs (renegotiation, conflicts and contract termination with the lessor) would be possible. We could thus test on LFRAs the strong assumption that Gray (1994) has issued about the *ex post* cost of CBLTs, according to which community control ensures that the monitoring costs are low. Moreover, *ex post* costs show a strong disparity that is difficult to analyze with transaction cost measurements. As Royer (2011) noted for milk marketing contracts, contract litigation, which may generate very high *ex post* exchange costs, involves only a few farmers. An evaluation of farmer *ex post* costs in accessing land would allow two questions to be answered. First, do these *ex post* costs compensate the relative superiority of *ex ante* costs incurred by farmers in leasing through LFRAs in comparison to conventional leasing? Some hypotheses already exist on this subject. Indeed, among other things, TCs are determined by

uncertainty, and as noted by Murrell (1983), the “tenant’s perception of security of tenure is crucial for efficient land use”, for example by encouraging him or her “to invest in the optimal stock of machinery required to operate the land” (Gray 1994). LFRAs may place farmers in a less uncertain context than conventional leasing. Polman and Slangen (2009) found that lease arrangement contracts where public organizations are involved are more complete and expose farmers to less opportunism. Gray (1994) predicts that CBLTs, by giving long-term perspectives to tenants with lifetime leases, increase their security of tenure. That statement is consistent with the survey data we gathered. Indeed, during the interviews, we assessed how farmers perceived their likelihood of continued access to land use over the short and medium term. It was apparent that the evaluated confidence was almost as high for lease arrangements through LFRAs as for purchase, while conventional lease arrangements showed far lower results. We could thus hypothesize that *ex post* exchange costs are higher in conventional lease arrangements than in LFRAs, which would better explain the interest of farmers in accessing land by lease arrangements through LFRAs.

Second, do these *ex post* costs partially explain farmer preferences towards purchase? Indeed, such an evaluation would surely result in more or less null values for *ex post* costs for farmers who accessed land through purchase, as Gray hypothesizes regarding CBLTs (1994), and in non-null values for leasing through LFRAs and conventional leasing. If the latter values are dramatically high, that would counterbalance the very high negotiation costs revealed for purchase transactions. Obviously, other incentives linked with the *abusus* right may also lead to purchase transactions, such as the motivation to invest or changes in land use, identity, culture, or patrimonial interests.

However, the *ex-ante* costs incurred during this first transaction step and that we measure in this study are those that may reveal prohibitive for transactions that did not occur (Masten, Meehan, and Snyder 1991). In that case, there is no possible apprenticeship, and the land market may remain inaccessible for certain contractors, for example those who do not have family connections with farming, which disadvantages them (Ingram and Kirwan 2011). They may encounter more difficulties than others in obtaining information, meeting owners and gaining their confidence. As access-to-farmland demand currently experiences an increasing of such a profile among applicants, it would be interesting to further study the effect of this familial relationship character on the level of TCs incurred.

Finally, Benham and Benham's (2005) methodology used in our study requires measurement of the total costs of the concerned transaction to allow a relative comparison. In case of transactions exchanging access to land, it includes the price of the transaction. In previous studies measuring farmer transaction costs, Royer (2011) does not state the transaction price in the case of milk marketing, probably due to its negligible value. The transaction price is also null for farmers engaged in voluntary agreements in a context of environmental conservation policy (Falconer 2000; Rorstad, Vatn, and Kvakkestad 2007; Mettepenningen, Verspecht, and Van Huylenbroeck 2009). In this context, farmers would rather incur compensation payment. In our study, we evaluated a comparable transaction price between lease arrangements and purchase transactions through an application to access to farmland of the buy-or-lease problem (Jonshon and Lewellen, 1972). With this goal, we use a methodology designed by the French Farm Management Federation, whose vocation is to advise farmers on their management decisions (De Sousa 2008).

Conclusion

Based on data from a survey of farmers within a French region, this study shows that leasing through LFRAs carries fewer *ex ante* exchange costs than purchasing land and higher *ex ante* exchange costs than leasing to an individual owner relative to the total cost. This difference is due to negotiation costs, which are nearly twice as high as in conventional lease arrangements. The fact that land reconditioning costs are lower for land accessed through LFRAs than for conventionally leased land is not sufficient to counterbalance the higher negotiation costs of the former. Moreover, the superiority of exchange costs compared to conventional leasing is slightly accentuated by other costs, specifically the rent. These results must be interpreted with caution, given that they are only related to *ex ante* costs incurred by farmers until effective land use begins.

LFRAs aim to provide secure access to land use for farmers and, notably, for new entrants with agricultural projects. Nevertheless, this study shows that these initiatives impose on farmers important exchange costs and unexpected delays, which may result in economic difficulties, especially for incipient farm holdings. LFRAs would benefit from simplifying and shortening farmer involvement in the process. Thus, these initiatives would best reach their own goal of maintaining and developing farming.

However, the ability of these initiatives to facilitate land access for farmers could also be more widely examined. Beyond the costs, the advantages could be considered. To a certain degree, these initiatives could match the willingness of some farmers to pay to engage in processes about which they are personally sensitive (organic farming, local farming). In addition, these initiatives might help overcome locked-in situations in which farmers are unable to access land. An example is the great difficulty faced by farmers who have no family connection with farming, which is the most common way to find land and is often an indispensable prerequisite.

Appendix A
Presentation of the six studied cases

1 - Management of natural periurban areas through pastoralism (20 to 40 ha)

Agricultural and Urban Planning Context

- Abandoned farmland
- Sensitive natural area (ENS): orchids, etc.
- Recreation area for Riom City
- Conservatory: already owned spaces (20 ha)
- Beginning urbanization of the neighboring countryside

Historical

- 490 ha of hill space recognized as ENS (Department Council Policy)
- First management plan on 20 ha, second on 40 ha
- Use of a grant by the community of communes for the acquisition of 20 ha

Actors involved

Community of communes, Conservatory of Natural Areas, Department Council

Outcome and legal form

Pasture agreement with two breeders

2 - Market gardening project to feed city schools (2.5 ha)

Agricultural and Urban Planning Context

- Plains, crops
- Wetlands and water catchment
- Large urbanization near Bourgoin-Jallieu (hospital, HSL...)
- Compensation for wetland loss by taking farmland
- 400 hectares of state land reserve under precarious leases (initially dedicated to a new town policy and unused)

Historical

- Municipal market gardening project to feed the central kitchen
- Land reserved but already leased
- Opportunity: sale of agricultural lands denounced by SAFER
- Amicable acquisition of the commune (buildings + dwelling house) and of Terre de Liens ONG (agricultural land), SAFER's farming use specifications and emphyteutic building leases
- Co-financing agreement (regional council, community of communes)

Actors involved

Commune, Community of communes, Regional Council, SAFER, "Terre de liens" NGO

Outcome and legal form

- Agricultural leases with two market gardeners

3 - SAFER's pre-emption in an auction sale and retrocession to a community of communes (130 ha)

Agricultural and Urban Planning Context

- Constraints linked to the relief: corridor between mountains
- Ecological corridor issues
- Diversified agriculture (crops, livestock, arboriculture)
- Urban pressure, close to Grenoble City
- An active community of communes on agricultural issues
- Many short supply chains, high demand

Historical

- Auction sale of 140 ha of agricultural land
- Pre-emption of SAFER and call for applicants to retrocession
- Retrocession to the community of communes, assistance from the regional council
- Litigation with pre-empted buyers
- Steering committee for land allocation, joint between agricultural profession representatives and local elected

4 - A departmental conservatory of farmland in Haute-Savoie (43 ha)

Agricultural and Urban Planning Context

- Agriculture as a pillar of identity of a mountain territory
- Valuation of products (cheeses under quality labeling)
- Grassland system => "environmentally friendly"
- Structured and influential agricultural profession, collective tools
- Landscape amenities and tourism (pasture, relief)
- Urban pressure, speculation (Geneva, ski resorts)
- Awareness of the need to preserve spaces

Historical

- 2000: creation of the Conservatoire of Agro-Pastoral Lands (CAPL): summits, summer pastures...
- Charter for landscape development and management
- Convention between SAFER and Department Council
- Conservatory of farmland on the model of CAPL

Actors involved

representatives

Actors involved

Municipalities, Community of communes, Department Council, Regional Council, Chamber of Agriculture and local federations, SAFER

Outcome and legal form

- 7 new farmers with agricultural leases (30% of land)
- 70% of the land in litigation and therefore used through precarious leases

5 - A community of communes creates a farm in the name of green and local development policy (15 ha)

Agricultural and Urban Planning Context

- A dense city (Grenoble) surrounded by mountains
- Need for recreational and breathing space
- Ecological corridor issues, landscape “close off” issues
- Air quality issues
- A high demand for links to environment, food, and agriculture
- An active local policy toward organic farming, environmental education and short food supply chains

Historical

- Farmland market monitoring by SAFER on behalf of the community of communes
- Sale of 15 ha of agricultural land
- Amicable acquisition by the SAFER and retrocession to the community of communes
- Call for projects from farmer applicants answering issues of: organic farming, educational activities, marketing of production through short food supply chains, product transformation at the farm

Actors involved

Communes, Community of communes, Department Council, Regional Council, State, Chamber of Agriculture, ONG of local agricultural development, SAFER

Outcome and legal form

Agricultural lease with environmental clauses with 2 farmers in a group holding, dairy goats and cheese processing

Department council, Chamber of Agriculture, SAFER, communes

Outcome and legal form

- Call for proposals toward communes
- Instruction and funding by Department Council (TDENS)
- SAFER's monitoring and specifications
- Agreement Department Council/Commune (inconstructibility, inalienability, zoning and lease with environmental clauses for 40 years)
- 18 farmers with agricultural leases: milk production and market gardening

6 - A joint organization involving public authorities contributes to several agricultural holdings (10 ha)

Agricultural and Urban Planning Context

- A territory with reliefs near a big city (Lyon)
- Need for recreational and breathing space
- Ecological corridor issues, farming maintenance issues
- A high demand for links to environment, food, agriculture
- A joint organization between public authorities for landscapes, environment and agriculture preservation and for environmental education
- An active local policy to sustain settings for agricultural holdings

Historical

- Reflections of the joint organization on questions of preservation of agricultural land and of virtuous urban planning
- Monitoring of land market and sensitization toward communes regarding their land reserves
- Mobilization of existing land reserves and acquisitions

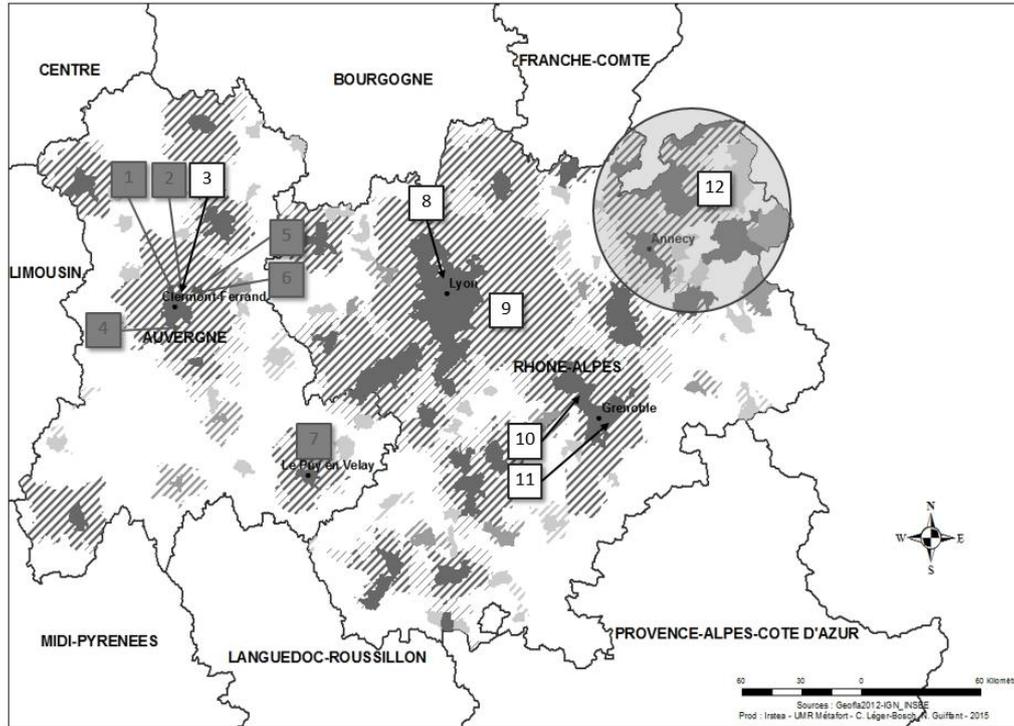
Actors involved

Communes, Joint Organization (Syndicat Mixte des Monts d'Or), Urban community, Department Council, Chamber of Agriculture, SAFER

Outcome and legal form

In total, approximately 10 hectares were made available by agricultural leases to 10 farmers in three group holdings of organic farming: a dairy goat farm with cheese processing, a market gardening holding, a vineyard and bread cereal holding

Appendix B
Urban areas in the Auvergne-Rhône-Alpes French region and the locations of studied cases



Urban area classification (Insee, 2010)

	Large urban area		Region (French local government)
	Periphery of large urban area		LFRA that has not ever led to effective lease arrangement(s)
	Multipolarized municipalities		Case study location
	Average area		
	Periphery of an average area		
	Small area		
	Periphery of a small area		

« Urban area:

An urban area or a "large urban area" is a group of adjacent municipalities without pockets of clear land, encompassing an urban center (urban unit) providing at least 10,000 jobs, and by rural districts or an urban unit (urban periphery) among which at least 40 % of the employed resident population works in the center or in the municipalities attracted by this center.

The 2010 zoning of urban areas also distinguishes:

- The "average areas", a group of municipalities without pockets of clear land, constituted by a center of 5,000 to 10,000 jobs, and by rural districts or urban units among which at least 40 % of the employed resident population works in the center or in the municipalities attracted by this center.
- - The "small areas", a group of municipalities without pockets of clear land, constituted by a center of 1,500 to 5,000 jobs, and by rural districts or urban units among which at least 40 % of the employed resident population works in the center or in the municipalities attracted by this center. »

Source: Insee, 2010

Appendix C

Survey questionnaire to farmers involved in transactions of access to land use

1. What is your UAA? (in ha)

2. How large is your labor force? (in units of human labor)

3. What are your crops? Please indicate your crop rotation, in hectares:

- | | |
|---|--|
| <input type="checkbox"/> Annual crops for sale, number of hectares: ... | <input type="checkbox"/> Vineyard, number of hectares: ... |
| <input type="checkbox"/> Forage annual crops (corn...), number of hectares: ... | <input type="checkbox"/> Orchards, number of hectares: ... |
| <input type="checkbox"/> Grass (permanent and temporary), number of hectares: ... | <input type="checkbox"/> Market gardening, number of hectares: ... |
| | <input type="checkbox"/> Other, specify: ... |

4. Do you breed livestock? Please indicate your herd, in the number of mothers:

- | | |
|---|---|
| <input type="checkbox"/> Bovine dairy cattle, number of reproductive females: ... | <input type="checkbox"/> Meat sheep, number of reproductive females: ... |
| <input type="checkbox"/> Bovine meat cattle, number of reproductive females: ... | <input type="checkbox"/> Dairy goats, number of reproductive females: ... |
| | <input type="checkbox"/> Other, specify: ... |

5. Can you, for each of your farmland parcels, describe its surface, the owner and conditions of access to the land?

Parcel No.	Area (in ha)	Owner type						Rent	Agreement		
		Yourselves	Member of your immediate family	Member of your extended family	Owner from and living on this territory	Owner is living in the territory	A public carrier, collective		Notary contract	Private writing	Oral
1	...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
							Yes <input type="checkbox"/> No				
2	...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
							Yes <input type="checkbox"/> No				

6. How many cadastral parcels do you farm? ...

7. Gender and age of farm-holding operator and eventual associates:

	Farming operator	Partner 1	
Gender	<input type="checkbox"/> Male <input type="checkbox"/> Female	<input type="checkbox"/> Male <input type="checkbox"/> Female	
Birth date	

8. When did you meet the parcel owner for the first time? (month/year) (.../...)

9. When did you definitely know you would have this plot? (month/year) (.../...)

10. Area of the land plots exchanged:

	No. 1	No. 2	No. 3	Lot no. 4	Lot no. 5
Surface (ha)

11. What is the amount of the annual rent/what was the purchase amount (in €)? ... €

12. How did you know that this parcel would be available?

The following questions aim to measure your personal engagement and the costs incurred in order to obtain information on the parcel to purchase / to lease from an individual owner / to lease through LFRA.

	Mobilized total time (hours)	Travel (location of eventual meetings, registrations...) translated into km and hours	Purchase of newspapers, or other fees (€)
<input type="checkbox"/> Dissemination of your land search			
<input type="checkbox"/> Discussion/visit to third party/ies with knowledge of the land plot availability			
<input type="checkbox"/> Information obtained by chance during a conversation with third party/ies			
<input type="checkbox"/> Reading of advertisements in the local press			
<input type="checkbox"/> Information or call for applications from TdL, municipalities, land structure control policies (CDOA/DAPE), SAFER, etc.			
<input type="checkbox"/> Participation in meetings organizing LFRAs			
<input type="checkbox"/> Spotting of and visit to the land plot			
<input type="checkbox"/> Getting information about the soil vocation in official urban planning documents			
<input type="checkbox"/> Meeting with a stakeholder of the LFRA			
<input type="checkbox"/> Visit to the owner			
<input type="checkbox"/> Visit to the current user (farmer)			
<input type="checkbox"/> Proposal of the current user			
<input type="checkbox"/> Proposal of the owner			
<input type="checkbox"/> Other, specify: ...			

13. How did negotiations take place with the owner/ the stakeholders involved in the LFRA?

The following table aims to measure your personal engagement and the costs incurred during the negotiations of the transaction.

	Mobilized total time (hours, days)	Location of meetings and registrations	Other specific costs (notary and registration fees, etc....)
<input type="checkbox"/> Direct negotiations, requests to the owner/ the LFRA group /the current farmer			
<input type="checkbox"/> Answering the call (writing an application)			
<input type="checkbox"/> Call to a third party and lobbying to convince the individual owner to rent/sell his or her parcel (ex: Union, other farmers, family)			
<input type="checkbox"/> Passage by the legal bodies of the farming profession for the plot (CDOA, SAFER) arbitration			
<input type="checkbox"/> Legal registrations (notary agreement and registration, land structure control policies, agricultural social-security mutual fund)			
<input type="checkbox"/> Preparation of reciprocal commitments of the LFRA (work on a charter, a convention, a specification, etc....)			
<input type="checkbox"/> Expert support (real estate expert, lawyer, etc....)			

Other, specify: ...

14. Was use of the land immediately possible after the purchase/lease agreement?

The following table aims to measure your personal engagement and fees incurred for land reconditioning allowing for “normal” farming use.

	Mobilized total time (hours, days)	Location of meetings and registrations	Other specific costs (equipment purchase or leasing)
<input type="checkbox"/> Vegetation clearing			
<input type="checkbox"/> Grubbing up trees			
<input type="checkbox"/> Tillage and specific amendments			
<input type="checkbox"/> Other, specify: ...			

15. Have you continued to make efforts in order to maintain your rights during farmland use?

The following table aims to measure your personal engagement and fees incurred during the land use.

	Mobilized total time (hours, days)	Location of meetings and registrations	Other specific costs
<input type="checkbox"/> Satisfying eventual owner requirements in terms of farming use (maintenance of hedges, limitation of weed overgrowth, etc....)			
<input type="checkbox"/> Renegotiation with the owner(s) (rental amount, contract terms, farming practices, etc....)			
<input type="checkbox"/> Information, follow-up about land decision-making (urban projects or LFRA stakeholder projects that may affect the land plot; owner intentions to sell, recovering of usage rights, etc....)			
<input type="checkbox"/> Lobbying to reverse a threat to land plots (urban planning organizations, farming professional networks, other farmers involved in LFRAs through leases, etc....)			
<input type="checkbox"/> Other, specify:...			

16. What difficulties have you encountered during land use cessation?

The following table aims to measure your personal engagement and the costs incurred during the cessation of your access to land.

	Mobilized total time (hours, days)	Location of meetings and registrations	Other specific costs specify (lawyer fees...)
<input type="checkbox"/> Efforts to reverse the cessation or reach compensation (negotiation with the owner, rural leasehold court, discussion with a lawyer, with experts, lobbying, etc....)			
<input type="checkbox"/> Farm production losses (loss of culture in place, purchase of fodder for compensation...)			
<input type="checkbox"/> Other, specify: ...			

Appendix D
**Calculation details for exchange costs, financial costs and benefits
 incurred by farmers in land use exchanges**

The calculation of exchange costs incurred by farmers (C) follows the principle below.

Let the exchange cost be C of a given type i ,
 t_i the spent time in hours,
 f_i the expense in euros,
 d_i the travelled distance in kilometers,
 A the area of the land whose use is exchanged,
 L the cost of farmer labor in theory in euros per hour,
 and I the kilometer expense in euros per kilometer.
 Then, the exchange cost in euro per hectare is:

$$C_i = \frac{t_i \times L + f_i + d_i \times I}{A}$$

As follows, the principle of arbitration for financial costs and benefits is (Sousa 2008, p.6):

“The farmer has two choices: buy or rent the land, reasoning the worth for a hectare of land.

The point of view of the owner:

- *Buy a land parcel at % self-financing, and he borrows the difference, at a rate of % for years*
- *The repayment annuities of the loan are calculated according to the principle of constant annuities*
- *Its valuation is x% / year - depending on the department and the soil considered - throughout the duration of borrowing*

The tenant's point of view:

- *He or she pays the rent (rent)*
- *Rent is valued at x% / year - depending on the department and the nature of culture considered - throughout the duration of placement*
- *It places its savings (equal to the amount of the contributing staff) at the 10-year OAT risk free rate*
- *It also places the differential that exists between the refund of the loan (the owner's case) and the rent he or she pays.”*

Let A be the area of land exchanged,

P the real purchase price in case of purchase,

V_P the average annual valuation of land capital (from our calculations, based on data from the Ministry of Agriculture (Agreste, 2016): “Average price of cropland and grassland, for Departments and Small Agricultural Areas, evolution from 2000 to 2015”),

R the annual rent of the lease arrangement,

V_R the average annual rate of rent evolution (from our calculations, based on compilation of departmental prefectural decrees fixing each year per department an index for rents linked with rural leaseholds),

T the risk-free investment rate “OAT 10 years”, 3.81% (Banque de France, December 2006),

i the borrowing rate for land acquisition by farmers, 4.14% (Crédit agricole, 2006),

j the farmer’s average borrowed share of the purchase price, 0.40% (Caisse des Dépôts, 2008),

n the duration of maturities, or average loan term: 15 years (Sousa 2008),

and P_T the theoretical purchase price per hectare in case of lease (from our calculations, based on data from the Ministry of Agriculture (Agreste 2016): “Average price of cropland and grassland, per Small Agricultural Areas from 2000 to 2015”, and the area of the land exchanged).

Then, financial costs and benefits are such that:

I. Financial costs (FC):

A. For lease arrangements

$$FC = \left(\frac{R}{A} \times n \right) (1 + V_R)$$

B. For purchases

$$FC = \left(\frac{P}{A} \times j \right) \left\{ \left(\frac{i \times n}{1 - (1 + i)^{-n}} \right) - 1 \right\}$$

II. Financial benefits (FB):

A. For lease arrangements

$$FB = \{ (1 + T)^{10} - 1 \} \times \left\{ (P_T \times (1 - j)) + \left(n \left(\frac{i \times P_T \times j}{1 - (1 + i)^{-n}} - \frac{R}{A} (1 + V_R) \right) \right) \right\}$$

B. For purchases

$$FB = \frac{P}{A} \times n \times V_P$$

Appendix E - Statistical summary

<i>Variable</i>	<i>Description</i>	<i>Not available for</i>	<i>Source</i>
<i>e</i>			
C_{inf1}	Information costs relative to	Information gathering	Calculation according to Appendix D from <i>t</i> , <i>f</i> , <i>d</i> and A (farmers survey); and <i>T</i> (Insee, 2012) and <i>I</i> (Tax office, 2012)
C_{inf2}		Contact with a third person	
C_{inf3}		Individual discussion	
C_{inf4}		Collective meeting	
C_{neg1}	Negotiation costs relative to	Individual negotiating with owner	
C_{neg2}		Collective negotiating	
C_{neg3}		Applicant's file toward owner collective/public organization	
C_{neg4}		Applicant's file toward SAFER	
C_{neg5}		Land structure control policies (CDOA/DAPE)	
C_{neg6}		Agricultural social-security mutual fund (Mutualité sociale agricole)	
C_{neg7}		Real estate expert, lawyer	
C_{neg8}		Notary fees	
C_{imp1}	Implementation costs relative to	Land reconditioning	
C_{inf}	Total information costs		Calculation by sum of C_{inf1} , C_{inf2} , C_{inf3} and C_{inf4}
C_{neg}	Total negotiation costs		Calculation by sum of C_{neg1} , C_{neg2} , C_{neg3} , C_{neg4} , C_{neg5} , C_{neg6} , C_{neg7} and C_{neg8}
C_{imp}	Total implementation costs		Equal to C_{imp1}
<i>FC</i>	Financial costs incurred by farmers in land use exchanges		Calculation according to Appendix D with data from farmers survey and Agreste (2016), Banque de France (2006), Crédit agricole (2006) and Caisse des Dépôts (2008)
<i>FB</i>	Financial benefits incurred by farmers in land use exchanges		

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Table 1

Characteristics of French farmland structure in comparison to other European countries

	France	Germany	United Kingdom	Netherlands	Belgium	Italy	Spain	USA
Average UAA ^a /farm (ha) ^b	58.7	58.6	93.6	27.4	34.6	12.0	24.1	216
Owned UAA, % of total UAA ^c	23.6%	38.7%	69.4%	58.8%	32.9%	64.9%	61.0%	60%
Leased UAA ¹⁸ , % of total UAA ^c	76.5%	61.4%	30.6%	41.2%	67.1%	35.1%	39%	38%
Share-cropping, % of leased UAA ^d	1.5%	2.6%	-	34.2%	1.6%	16.0%	18.5%	34.8%

^a Utilized Agricultural Area^b European data from Eurostat for 2013 and US data from USDA NASS for 2012.^c European data from Eurostat for 2010 and US data from USDA NASS for 2012.^d European data from Eurostat for 2010 and US data from US Agriculture Census for 1999 (Sherrick and Barry 2003).

Table 2

Costs incurred by farmers in access to land use transactions

		Transactions of access to land use...			
		...as a part of the entire bundle of property rights	...through a conventional lease arrangement from an individual	...through a lease arrangement through LFRAs*	
<i>Ex ante</i> costs	Information costs	Information search	<i>Word of mouth, newspapers, SAFER announcements</i>	<i>Word of mouth, SAFER announcements</i>	<i>Call for projects, agricultural, NGO and rural development networks, newspapers, word of mouth, SAFER announcements</i>
		Contact with seller/lessor	<i>Phone, third person, mail, individual or collective meetings</i>		
		Negotiation costs	<i>Through discussions in meetings</i>		<i>Individual or collective meetings with owner collective/public organization</i>
		Applicant's file	<i>In case of SAFER retrocession</i>	-	<i>In case of SAFER retrocessions and calls for projects</i>
		Registrations	<i>As a user, to land structure control policies (CDOA/DAPE) and agricultural social-security mutual fund (Mutualité sociale agricole)</i>		
		Expert support	<i>Real estate expert, lawyer</i>		
		Registration fees	<i>Compulsory notary fees</i>	<i>Notary fees in case of notarized lease (parties' choice)</i>	
	Implementation costs	Land reconditioning	<i>Vegetation clearing</i>		
<i>Ex post</i> costs	Monitoring costs	Supervision of contractual terms	-	<i>Monitoring of the lessor</i>	
	Enforcement costs	Renegotiation, conflicts and contract termination	-	<i>All methods used to conduct periodic renegotiations, manage any conflicts, terminate the contract and recover any inherent losses</i>	

*LFRAs are Long-term and Full Rights Acquisitions of farmland by public and collective legal persons, who are involved in agricultural activity through political or ideological interests and use ownership as a lever.

¹⁸ "Leased UAA" includes conventional lease arrangements and leases of public/collectively owned farmland. However, the latter arrangements represent an infinitesimal portion of total land leased, which makes this figure most representative of conventional lease arrangements.

Table 3

Socioeconomic characteristics of transaction sample

	Total farms (=50)	Total transactions (=74)	Transactions of access to land use...		
			...as a part of the entire bundle of property rights	...through a conventional lease arrangement from an individual	...through a lease arrangement through LFRAs³
Average UAA¹/farm (ha)	52.4	53.8	62.2	53.4	47.0
Average labor force	2.1	2.2	2.3	2.2	2.0
Breeding share	52%	54%	57%	54%	52%
Market gardening share	30%	27%	19%	29%	32%
Average farmer age²	43	44	45	44	41
Average studied transaction surface (ha)	-	-	1.0	3.7	4.1
Average transaction date	-	-	2007	2007	2011
Average duration of transaction ex ante step (in months)	-	-	8.2	5.0	8.6

¹Utilized Agricultural Area²In 2012, age of the interviewed farmer in case of agricultural group holdings involving other associates.³LFRAs are Long-term and Full Rights Acquisitions of farmland by public and collective legal persons, who are involved in agricultural activity through political or ideological interests and use ownership as a lever.

Table 4

Ex ante exchange costs faced by farmers in access to land use transactions in France, per hectare

	Exchange cost	Description	Access to land use...		
			...as a part of the entire bundle of property rights	...through a conventional lease arrangement from an individual	...through a lease arrangement through LFRAs*
Information costs	Information search	Information gathering (C _{inf1})	€2.19	€0.19	€3.28
		Contact with a third person (C _{inf2})	€2.32	€9.49	€4.30
	Contact with seller/lessor	Individual discussion (C _{inf3})	€1.10	€5.68	€14.33
		Collective meeting (C _{inf4})	-	€1.61	€6.88
	Total		€5.60	€16.96	€28.79
Negotiation costs	Negotiations	Individual negotiating with owner (C _{neg1})	€43.78	€21.67	€51.32
		Collective negotiating (C _{neg2})	-	-	€71.81
	Applicant's file toward...	...owner	-	-	€44.93
		...collective/public organization (C _{neg3})	-	-	-
	Registrations	...SAFER (C _{neg4})	€6.16	€0.11	€4.49
		Land structure control policies (CDOA/DAPE) (C _{neg5})	€0.22	€8.49	-
	Expert support	Agricultural social-security mutual fund (Mutualité sociale agricole) (C _{neg6})	-	€1.69	-
		Real estate expert, lawyer (C _{neg7})	€13.21	€2.11	-
	Registration fees	Notary fees (C _{neg8})	€2,381.74	-	€39.40
	Total		€2,445.10	€34.08	€211.95
	<i>Total without production notary fees</i>	<i>€63.36</i>	<i>€34.08</i>	<i>€172.55</i>	
Implementation costs	Land reconditioning	Vegetation clearing (C _{imp})	€532.54	€45.31	€33.90

Source: Our 2012 survey and our calculations

*LFRAs are Long-term and Full Rights Acquisitions of farmland by public and collective legal persons, who are involved in agricultural activity through political or ideological interests and use ownership as a lever.

Table 5

Ex ante exchange costs incurred by farmers in the three coordination mechanisms for access to farmland use in France, per hectare

Type of costs	Access to land use...					
	...as a part of the entire bundle of property rights		...through a conventional lease arrangement from an individual		...through a lease arrangement through LFRAs*	
Information (Cinf)	€5.60	0%	€16.96	1%	€28.79	1%
Negotiation (Cneg)	€2,445.10	58%	€34.08	2%	€211.95	10%
<i>Notary fees</i>	<i>€2,381.74</i>	<i>56%</i>	<i>€0.00</i>	<i>0%</i>	<i>€39.40</i>	<i>2%</i>
Implementation (Cimp)	€532.54	13%	€45.31	3%	€33.90	2%
Total ex ante exchange costs	€2,983.25	70%	€96.35	7%	€274.64	13%
Financial costs (FC)	€1,254.13	30%	€1,381.80	93%	€1,921.53	87%
Total costs	€4,237.38	100%	€1,478.16	100%	€2,196.17	100%
Financial benefits (FB)	€4,305.95		€2805.30		€2,683.40	
Transaction result = Financial benefits – total costs	€68.58		€1,327.14		€487.23	

Source: Our calculations

*LFRAs are Long-term and Full Rights Acquisitions of farmland by public and collective legal persons, who are involved in agricultural activity through political or ideological interests and use ownership as a lever.