



HAL
open science

Farmland tenure and transaction costs: Public and collectively owned land vs conventional coordination mechanisms in France

Christine Léger Léger-Bosch

► **To cite this version:**

Christine Léger Léger-Bosch. Farmland tenure and transaction costs: Public and collectively owned land vs conventional coordination mechanisms in France. *Canadian Journal of Agricultural Economics* / *Revue canadienne d'agroeconomie*, 2019, 67 (3), pp.283-301. 10.1111/cjag.12206 . hal-02573765

HAL Id: hal-02573765

<https://hal.science/hal-02573765>

Submitted on 13 Sep 2022

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Farmland tenure and transaction costs: Public and collectively owned land vs conventional coordination mechanisms in France

Author's version

Publisher's version:

Léger-Bosch, C. (2019). Farmland tenure and transaction costs: Public and collectively owned land vs conventional coordination mechanisms in France. *Canadian Journal of Agricultural Economics/Revue canadienne d'agroéconomie*, 67(3), 283-301. <https://doi.org/10.1111/cjag.12206>

Abstract

To preserve farmland in industrialized countries, public initiatives or initiatives from non-governmental organizations increasingly rely on Long-term and Full Rights Acquisitions of land (LFRAs). The objective of this article is to help assess whether those actions provide profitable access to land use for lessee farms. We compare the economic implications for farms of this mode of access to land use with the two other main modes: conventional lease arrangements and purchasing transactions. The analysis focuses on the transaction costs relative to the cost of exchange, i.e., including purchase/rental price, and to the financial benefits of the transaction. We use original data on costs provided by a survey of farmers within a French region. Our results suggest that the *ex ante* transaction costs incurred by farmers involved in LFRAs, as a percentage of the exchange cost of accessing land use, are lower than those in purchasing transactions and higher than those in conventional lease arrangements. The difference between the two types of lease arrangements is due to negotiation costs, which are doubled in LFRAs. In conclusion, making the involvement of tenant farmers in the construction of LFRAs more effective would allow these initiatives to better achieve their goals.

Introduction

A variety of tools are available for farmland preservation in industrialized countries. In addition to urban planning and economic incentives, such as taxes, tools based on market interventions by Rights Acquisitions¹ (RAs) are developing (Alterman 1997; Dissart 2006). RAs have increased beyond the traditional conservation logic linked to natural spaces; thus,

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

they now concern agricultural areas, notably in France and the US (Dissart 2006). RAs differ depending on their perimeter and temporality. First, they can concern the entire bundle of property rights, i.e., full acquisitions, as in all types of RAs realized in France by NGOs or local authorities². Alternatively, they can concern only a part of these rights, such as land preservation programs established in the US (e.g., Purchase of Development Rights, PDR)³. Second, long-term acquisitions appear when a public or collective legal person uses RAs as a permanent protection. That is the case for acquisitions by NGOs such as “Terre de Liens”⁴ in France or certain land trust⁵ acquisitions in North America. In contrast, short-term acquisitions can constitute an intermediary step along a project or a public intervention in the market (e.g., the SAFER⁶ action in France). They also include PDRs, which are temporary easements. In France, what we will henceforth call Long-term and Full Rights Acquisitions (LFRAs) of farmland by public and collective legal persons are currently increasing.

As Dissart (2006) notes, farmland preservation, which is the expected benefit of LFRAs, depends on farms’ profitability. LFRAs provide farmers another way to access farmland through lease arrangements. There is agreement that the coordination mechanism through which farmers have access to land is determinant. Indeed, land tenure and secure rights in particular affect farms’ 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). Therefore, evaluating the LFRAs’ effectiveness in reaching the goal of preserving farmland from land use change - through urbanization or even simply farming abandonment - requires an economic analysis of the lease arrangements they induce. To date, studies assessing the

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

³ PDRs buy part of the bundle of property rights from an owner (operator or not), whereas LFRAs buy the whole bundle and then rent out the management rights to farmers.

⁴ Created in 2003, the French association Terre de Liens (Land of Connections) aims to contribute to the creation of environmentally responsible rural activities through the collective acquisition of agricultural land and buildings. It also aims to raise awareness of land management concerns among 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: 1) the Terre de Liens Landholding Trust, which is a private savings fund for solidarity investment that is used to acquire agricultural land that is then rented out to farmers, and 2) the Terre de Liens Foundation. Recognized as being of public interest, the latter may accept donations of money and farms, notably from public authorities.

⁵ These are “nonprofit organizations that conserve environmental amenities on private land” (Parker 2004).

⁶ 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. These organizations regulate farmland ownership, notably using preemption rights and farm transfers, and support local authorities in planning policies.

agricultural effects of RAs on preserving farmland have addressed land trusts without analyzing the effects on the agricultural economy (Parker 2004; Dissart 2006). Numerous articles also concern PDRs (Towe, Nickerson, and Bockstael 2008; Liu and Lynch 2011; Schilling et al. 2014; Gottlieb et al. 2015), which are currently neither full nor long-term RAs to preserve farmland. Our article aims at helping fill this gap by providing an economic approach to contracts provided by LFRAs.

Our approach rests upon 1) the examination of alternative mechanisms for access to land and 2) the analysis of their economic impacts. First, we adopt the principle of comparison for the economic analysis of LFRAs' lease arrangements. This permits us to put in relief aspects we would have neglected with a simple analysis. Indeed, a variety of coordination mechanisms frame the exchange of farming land use rights in benefit to farms. On the one hand, there are purchasing transactions. In that case, the farmer becomes the "owner-operator." Though, even if the land purchase option plays a central role in agricultural economics (Allen and Lueck 2000), a majority of farming land tenure studies to date have focused on lease arrangements⁷. On the other hand, there are leases. Those arrangements are variable due to different contracts created by law and to their implementations by contractors; some are considered more secure than others (Myyra et al. 2005). We can expect that in case of LFRAs, the owner translates his specific economic preferences into the arrangement, making its implementation different from conventional leases. Indeed, he is involved in agricultural activity through political or ideological interests; his goal consists of the permanence of any farming use rather than on urbanization or on the establishment of a specific agricultural activity on the land in question.

Second, we analyze the economic effects of these coordination mechanisms on farms through a transactional approach. Evaluating transaction costs (TCs) allows the exploration of the efficiency variability within the whole alternative coordination mechanisms for a given transaction (Coase 1937; Williamson 1985). Indeed, TCs negatively affect transaction efficiency. They include the costs of planning, adapting, and monitoring of task completion incurred by agents during the transaction. Several studies have contributed to identifying TCs' determinants for land use transactions (Murrell 1983; Gray 1994; Polman and Slangen 2009). Additionally, a few studies have explored the relative transactional efficiency of land use

⁷ To our knowledge, Gray (1994) is the only exception.

transactions based on lease arrangements through contract choice models. These studies show that TCs affect farmer choice between cash and share leasing⁸ (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). However, a lack of direct identification and evaluation of real incurred costs remains.

Thus, our study compares the relative transactional efficiency of several different coordination mechanisms for access-to-land from a farms' perspective: land purchases by operators themselves, lease arrangements with individual owners, and lease arrangements with owners involved in LFRAs. This article provides an original empirical analysis resting on a quantitative evaluation of TCs and other economic implications for farms based on data originating from a survey of farmers in a French region. 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 arrangement can generate transaction costs. Section 3 describes the 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

The land use transactions are specific transactions compared to those that are usually mentioned to illustrate the transaction cost economics (TCE). First, according to the enlarged definition of transaction, they consist of "the transfer of rights to use goods and services between technologically separable units" (Ménard 2004, p. 21) rather than the production of that good and services⁹. Thus, in that case the transaction costs are the relative planning, adapting, and monitoring costs of transferring the land rights of agricultural use and usufruct under alternative governance structures (Williamson 1985). Second, while the analysis of the comparative advantage of different governance structures – depending on transaction costs – has also to take into account the role of production costs and revenues related to the transaction (Williamson

⁸ In these transactions, the lessor is paid according to annual agricultural profits and thus shares the risks and profits of the tenant's agricultural holding. These transactions represent a minority of lease arrangements in France.

⁹ The exchange of farmland use rights and the transaction of producing agricultural products by farming are two different transactions, and the article aims at analyzing the first and not the second.

1991), the land use rights exchanges do not induce production costs as such. However, they imply a monetary exchange between the parties that consists of a purchase amount or a rent to compensate the transfer of use rights. As a consequence, applying the TCE to these specific transactions means taking into account the cost of exchange, defined by Benham and Benham as “both the cost of the good itself and the transaction costs incurred by the individual in obtaining the good” (Benham and Benham 2001; Royer 2011). In the case of land use transactions, this includes the direct and indirect purchase/rental costs and benefits in addition to transactions costs.

Given that transaction costs influence market effectiveness, 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 durable, transaction-specific investments are required to realize the lowest supply costs (Williamson 1981, p. 555). Murrell (1983) and Polman and Slangen (2009) characterize land transactions using those 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, pp. 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 to 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 rarer¹⁰ 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 to human asset specificity, as necessary knowledge might be different relative to other transactions on the market regarding climate, prime soil quality, water

¹⁰ Even if a contract must be renewed in the case of leasing.

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, and 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 an owner exchange cost assessment would not highlight. We hypothesize that lease arrangements through LFRAs should more effectively minimize user 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 relative to exchange 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 attributes (uncertainty, frequency, asset specificity) and do not directly evaluate TCs and their components. Second, they use with this aim proxies of those transaction attributes (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 TCs 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 public environmental 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 how to provide a comparative analysis since, as in a wide variety of contracting issues, technology, contractual governance and price are interactive and determined simultaneously. In other words, how to “study contracting in its entirety” (Williamson, 1985, p. 34). The second question is how to treat the selection problem highlighted by Masten et al. (1991), given that most studies rely on 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 et al. (1991) prevent this selection bias¹¹ is relevant for firm integration decisions, where the transaction always occurs. However, concerning the costs of marketed transactions, or voluntary agreements, that do not necessarily occur, the question remains unanswered.

Benham and Benham (2005) designed a complementary approach that does not depend on econometrics to overcome these problems. First, the comparative analysis takes into account the cost of the good itself, as it constitutes with transaction costs the cost of exchange, which they define as an opportunity cost. For instance, they studied the cost of transferring ownership of an apartment, including information costs, taxes and lawyer fees, and its sale price. Second, the price and the transaction costs are compared relative to each other and relative to the eventual benefits 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 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 transaction costs allow for the examination of the cost-effectiveness of a coordination mechanism, we choose this methodology to carry out our study.

¹¹ “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).

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 transaction costs include 1) the search for information about price distribution as well as potential partners and 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 rights exchange

Farmers 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 that 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 rights 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 courts¹².

Table 1 presents some of the principal farm structure characteristics of agricultural holdings in France, in some neighboring European countries, and in the US and Canada. 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 transaction costs and give figures regarding their importance to the total land transactions in the French land use market.

¹² Namely, the land tenure law, SAFER and the Farmland Leasehold Courts.

Table 1

Characteristics of French farmland structure in comparison to other European countries

	France	Germany	United Kingdom	Netherlands	Italy	Spain	US	Canada
Average UAA ^a /farm (ha) ^b	58.7	58.6	93.6	27.4	12.0	24.1	216	332
Owned UAA, % of total UAA ^c	23.6%	38.7%	69.4%	58.8%	64.9%	61.0%	60%	62.8%
Leased UAA ¹³ , % of total UAA ^c	76.5%	61.4%	30.6%	41.2%	35.1%	39%	38%	37.2%
Share-cropping, % of leased UAA ^d	1.5%	2.6%	-	34.2%	16.0%	18.5%	34.8%	7.7%

^a Utilized Agricultural Area^b European data from Eurostat for 2013, US data from USDA NASS for 2012, and Canadian data from Statistics Canada for 2011.^c European data from Eurostat for 2010, US data from USDA NASS for 2012, and Canadian data from Statistics Canada for 2011.^d European data from Eurostat for 2010, US data from US Agriculture Census for 1999 (Sherrick and Barry 2003), and Canadian data from Statistics Canada for 2011.

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 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 land ownership includes the land owned by associates involved in group holdings (Courleux 2011)¹⁴. 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 land ownership is passed down through inheritance. 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

¹³ “Leased UAA” includes conventional lease arrangements and leases of public/collectively owned farmland. However, the latter arrangements represent an infinitesimal portion of the total land leased, which makes this figure most representative of conventional lease arrangements.

¹⁴ European data regarding France and French data differ slightly for 2010 because of the harmonization of calculation methods across European countries.

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 (a semi-public body depending on the Agriculture Ministry) 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 regulatory framework. 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 farmer; 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. Nearly 61.7% of the UAA was farmed under cash leases in France in 2010¹⁵. 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. Rural Law establishes a default contract in which any lease, even unwritten, is qualified as a written contract if the contrary is not clarified (Melot 2014). That default 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 preemption right in case of sale to retain the land use rights. Accordingly, the leasehold is not

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

broken in case of sale but must be completed with the new owner. Finally, the rent is bounded by decree¹⁶. All these specific legal obligations are valid by default, even without a written contract (oral contract) if farming use can be tangibly demonstrated a farming operator cannot easily be deprived of the usage rights. That legal framework was developed in the second part of the 20th century in order to develop and modernize agriculture, with a strong farmland control policy for the administration of use and property rights. Faced with the risk of food shortages, the finality was to limit land that was not in cultivation. That policy implementation is notably based on SAFER and the “Departmental Commissions for Agricultural Orientation” (CDOA)¹⁷. The latter adjudicate the Demands for Prior Approval to Operate that every farmer who intends to sign a farmland lease agreement is required to submit.

This legal framework theoretically secures the land investment. However, difficulties occur when owner preferences change in anticipation of urban land conversion. As seen above, owners have the possibility of making annual contracts in cases where they have sufficiently good knowledge of rural laws to be aware of that possibility¹⁸. In periurban areas, 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 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 through either their own activity or that of a tenant.

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

¹⁶ At a local scale, the government gives an indicative range (not opposable) for rents depending on the area and the quality of land.

¹⁷ Several entities compound them: agricultural professional organizations (unions, farming mutual social funds, and cooperative farming banks), public authorities of local governments of different scales, firms related to agriculture, and experts and NGOs.

¹⁸ These are “precarious occupation agreements” or “short-term leases” (annual).

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 the 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). Given farmland laws, the new owners are not often considered legitimate. They could easily attract contestation, so they often base the selection of farmers on a transparent process that they attempt to make respectful with public policy principles. Therefore, the process often includes calls for a proposal and an application document. Moreover, given the need to legitimize the farming public interest of the acquisition, applicants are often mobilized before the acquisition and even participate in the LFRA implementation. As a result, 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 created 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 additional 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 transaction 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.

Table 2
Costs incurred by farmers in land use transactions

		Exchanges of land use rights...			
		...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	Negotiations	<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 resale</i>	-	<i>In case of SAFER resales 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 rehabilitation	<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.

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 the purchase amount 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 the purchase/rental price and other contractual terms, drawing up the contract, 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 land rehabilitation, such as by vegetation clearing¹⁹, thus becomes necessary and incurs costs²⁰.

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 (at contract renewal, for example) and conflict administration, 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 the 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

¹⁹ One reviewer indicated that these might be considered to be production costs instead of transaction costs.

²⁰ Given that we compare alternative governance structures by analyzing the transaction costs relative to the transaction price, we must pay attention to the fact that these rehabilitation costs may be already taken in account during the purchase/rental price negotiation. In that case, costs count twice and the analysis has to be made in consequence. In this study, we verified that that was not the case.

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 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 the characteristics of their farm holdings. Moreover, one can imagine that a specificity of farms involved in LFRAs exists in comparison with 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. The selected farm holdings 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 the 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).

Table 3

Socioeconomic characteristics of transaction sample

	Total farms (=50)	Total transactions (=74)	Exchanges of land use rights...		
			...as a part of the entire bundle of property rights	...through a conventional lease arrangement from an individual	...through a lease arrangement through LFRAs ³
Average UAA ¹ /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 age ²	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 <i>ex ante</i> 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.

The survey was conducted through a questionnaire designed to determine the costs incurred by farmers (Appendix C). For the rent or the purchase amount, the farmers provided the figures in euros. For transaction costs, we asked them to assess mobilized total time, to provide the locations of meetings and registrations in order to include travel time and costs, and to register other specific costs, such as information charges, equipment purchases or leases, fees and inputs. The costs were thus translated 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.

All farmer transaction costs collected in kilometers or hours were translated into monetary values according to various standards, such as the official kilometer index²¹ or the average revenue per hour²². For each type of transaction cost, we calculated values not only per transaction but also per hectare according to a previous evaluation of TCs incurred by farmers (Mettepenningen, Verspecht, and Van Huylenbroeck 2009). Indeed, TCs include both some fixed costs and variable ones, which are difficult to distinguish (Falconer 2000; Ducos, Dupraz, and Bonnioux 2009; Espinosa-Goded, Barreiro-Hurlé, and Dupraz 2013). In our case, the information and negotiation costs are partly fixed; we only knew that notary fees are variable

²¹ Tax authority price scale for a 5-horsepower vehicle in 2012, 0.536€ per km.²² Average net revenue in the Auvergne-Rhône-Alpes Region in 2012, 13.8€ per hour (source: INSEE).

depending on the surface area. The implementation costs, which refer to hours of work, are also correlated with the parcel size.

Then, we calculated the exchange costs of each transaction type by adding the transaction costs and purchase/rental costs. These latter costs correspond to the purchase amount and the loan interest charges when the farmer is the owner-operator and to the sum of all paid rents when the farmer is the tenant. They were calculated in a manner consistent with the example of the French Farm Management Federation (De Sousa 2008). The federation established a method to assess the financial costs and profits of land transactions, whether by leasing or purchasing, to resolve farmer buy-or-lease decisions (Johnson and Lewellen 1972) in 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. Notably, the calculation allows comparing those two types of transactions, which are fundamentally different because of the manner in which their financial consequences are spread over time²³. We thus obtained the purchase/rental costs in euros per hectare – given that costs vary according to the exchanged surface – and added them to the transaction costs to obtain the exchange cost per hectare. Finally, we estimated the financial benefits of all transaction types. We defined financial benefits²⁴ as the increase in land value when the farmer is the owner-operator and the capital gains from invested savings (saved from land investment) when the farmer is the tenant²⁵. We used the same method used for financial costs²⁶ (De Sousa 2008). Appendix D displays the principles of calculation for transaction costs, purchase/rental costs and financial benefits. Appendix E provides a statistical summary of the variables built and analyzed.

²³ The calculations for the two transaction types are spread over a common arbitrary duration (15 years) chosen based on the average duration of loans for farmland purchases (Johnson and Lewellen 1972; De Sousa 2008).

²⁴ Of the exchange of farmland use rights and not the transaction of producing agricultural products by farming.

²⁵ Financial benefits are calculated per hectare of agricultural land, and for an arbitrary period of fifteen years at the end of which we assume that the lease is broken and the land sold. In the case of a purchase, they correspond to the increase in the value of the land capital. In the case of leasing, they correspond to the interest on the savings that the amount of the purchase and the difference between the annual instalments of the loan and the rent represent.

²⁶ In the case of a purchase, the financial costs include the purchase amount as well as the total cost of the interest on the loan. In the case of a lease, they include over the same period the sum of the rents, calculated from an initial amount with an annual increase.

4 Results

4.1 Measurement of transaction costs

Table 4 shows the *ex ante* transaction 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 €3.60 per transaction and €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 €21.01 per transaction and €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 €69.44 per transaction and €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.

Table 4

Ex ante transaction costs faced by farmers in access to land use transactions in France

Transaction 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*	
			Per hectare	Per transaction	Per hectare	Per transaction	Per hectare	Per transaction
Information costs	Information search	Information gathering (C _{inf1})	€2.19	€1.41	€0.19	€0.23	€3.28	€7.92
		Contact with a third person (C _{inf2})	€2.32	€1.49	€9.49	€11.76	€4.30	€10.36
	Contact with seller/lessor	Individual discussion (C _{inf3})	€1.10	€0.71	€5.68	€7.03	€14.33	€34.56
		Collective meeting (C _{inf4})	-	-	€1.61	€1.99	€6.88	€16.60
	Total		€5.60	€3.60	€16.96	€21.01	€28.79	€69.44
Negotiation costs	Negotiations	Individual negotiating with owner (C _{neg1})	€43.78	€33.41	€21.67	€40.74	€51.32	€131.75
		Collective negotiating (C _{neg2})	-	-	-	-	€71.81	€184.35
	Applicant's file toward...	...owner collective/public organization (C _{neg3})	-	-	-	-	€44.93	€115.33
		...SAFER (C _{neg4})	€6.16	€4.70	€0.11	€0.21	€4.49	€11.54
	Registrations	Land structure control policies (CDOA/DAPE) (C _{neg5})	€0.22	€0.17	€8.49	€15.95	-	-
		Agricultural social-security mutual fund (Mutualité sociale agricole) (C _{neg6})	-	-	€1.69	€3.18	-	-
	Expert support	Real estate expert, lawyer (C _{neg7})	€13.21	€10.08	€2.11	€3.97	-	-
	Registration fees	Notary fees (C _{neg8})	€2,381.74	€1,203.38	-	-	€39.40	€55.16
	Total		€2,445.10	€1,251.73	€34.08	€64.06	€211.95	€498.11
		<i>Total without notary fees</i>		€63.36		€34.08		€172.55
Implementation costs	Rehabilitation costs	Vegetation clearing (C _{imp})	€532.54	€331.92	€45.31	€118.95	€33.90	€108.32

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 (€48.35/transaction and €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 monetary exchange of the transaction, 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 €64.06 per transaction and €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 theoretically²⁷ 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 €498.11 per transaction and €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

²⁷ Not all tenants follow this rule; the registration costs evaluated here are mainly due to particular registration difficulties.

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 land rehabilitation, are shown in Table 4. In purchase transactions, the 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 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 rehabilitation. 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) , a comparative analysis of the estimated transaction costs is possible when keeping in mind that non-realized transactions, with very likely high transaction costs, cannot be studied. One may compare the structure of transaction costs and the way they are counterbalanced (or not) by other costs and benefits. That is, the *ex ante* transaction costs may be compared to exchange costs, i.e., the sum of *ex ante* transaction costs and purchase/rental costs, or to the financial benefits of the transaction. One may also compare the shares 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. Transaction costs represent a major portion of the exchange 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 transaction costs fully constrain the result of the land use access transaction (i.e. financial benefits minus exchange costs), amounting to only €69 per hectare, whereas the two other coordination mechanisms result in more than €400 per hectare.

Table 5

Exchange costs incurred by farmers in the three coordination mechanisms for better 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%
Notary fees	€2,381.74	56%	€0.00	0%	€39.40	2%
Implementation (Cimp)	€532.54	13%	€45.31	3%	€33.90	2%
Ex ante transaction costs	€2,983.25	70%	€96.35	7%	€274.64	13%
Purchase/rental costs	€1,254.13	30%	€1,381.80	93%	€1,921.53	87%
Exchange 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 – exchange 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.

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

Finally, the share of exchange costs that transaction costs represent in the case of farmers leasing land through LFRAs are intermediate to the two situations described above. Transaction 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/ha), i.e., the rent, are on average higher than in the case of conventional leasing (€1,382/ha).

As a result, compared to a conventional lease, access to land use is made more costly not only indirectly through transaction costs but also directly via rent. This non-intuitive result should be kept in perspective, however, since transaction 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 transaction costs across the three coordination mechanisms may be understood by looking at cost components. Broken down in accordance with exchange 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 transaction costs in the case of purchase transactions, as seen above. These fees represent 56% of the exchange 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 €10,000²⁸. 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 the 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.

It should be noted that without being reduced to exchange costs, and with the exception of notary fees, negotiation costs are classified differently for purchasing transactions and conventional leases for per transaction values and per hectare values (Table 4). Thus, compared

²⁸ Source: French Superior Notaries Council, 2017.

to purchase transactions, negotiation costs are lower for conventional leases if we consider that these costs are mostly variable depending on the area and are higher if they are considered mainly fixed.

Therefore, negotiating with other contractors as well as the process of selection from among applicant files dramatically explains the substantial difference in the magnitude of transaction costs across the two coordination mechanisms of access to land use. These costs not only make lease arrangements through LFRAs costlier to access for farmers than those on privately owned land but also reduce their attractiveness in comparison to purchasing transactions. The reason is the longer setup process due to the many stakeholders and farmers who are often involved.

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

4.3 Discussion

One other study compared the TCs induced by LFRAs with different other coordination mechanisms for the exchange of agricultural use rights (Gray 1994). The objective was to evaluate the capacity of a new land trust governance (Community-Based Land Trusts, CBLTs) in the planning stage to be adopted in the marketplace in Saskatchewan. Among others, that study's comparisons included leases with CBLTs, purchasing transactions, and cash leases as opposed to sharecropping leases. The province of Saskatchewan in Canada offers a very different context from the French from two points of view. First, Canadian farms are 332 hectares on average with large parcel sizes, whereas French farms are 59 hectares on average (Table 1). While farming parcel sizes have increased with agricultural modernization, cadastral parcel sizes have rather tended to decrease due to the successive inheritances despite public policies for land regrouping. Consequently, land transactions on the market concern very small parcels of whatever transaction type, approximately 1 or 2 hectares on average²⁹. Second, the

²⁹ One farming parcel often corresponds to several titles and, thus, several contracts. In the Region called "Pays de la Loire," the average size of cadastral farmland parcels is 1.4 ha (Agreste 2014). The sample data of this article are representative of national data concerning parcel size.

Saskatchewan institutional context favors the owner-operator situation for supporting agricultural development. One observes two major differences: Saskatchewan cash leases are uncertain contracts, and for all leases, the owner's benefit is directly and annually correlative with the operator's income³⁰.

Gray made different scientific choices from ours³¹, but the two studies remain comparable. Their results prove to be inconsistent regarding two points. First, for Gray, the *ex ante* transaction costs of cash leases are as high as those of the CBLT model. The reasons are the necessity of annually negotiating the rent amount in a bidding process for cash leases and the high cost of establishing the CBLT. The first discrepancy could be due to the difference between the two institutional contexts, as French and Saskatchewan cash leases differ in terms of duration and tenure security. Second, Gray assessed *ex ante* transaction costs as null or very small for purchasing transactions. Here the institutional context could not explain the difference because even without notary fees, purchasing transactions in France show *ex ante* transaction costs of the same order of magnitude as conventional leases.

In addition to his ranking results, Gray's choices and theoretical considerations in the case of CBLTs allow a discussion of our results concerning LFRA. 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 the contract characteristics that induce transaction 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 transaction 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 transaction costs incurred "until access." 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

³⁰ Via the crop produced as rental payment for the sharecropping leases and via the annual reassessment of cash rental as a function of the agricultural products market price for the cash leases and CBLT model.

³¹ First, he assessed costs through a qualitative evaluation based on anecdotal information instead of empirically testing them. Second, he evaluated both determinants and components of TCs. Third, he assessed complete TCs of transactions, i.e., including those incurred by owners. Fourth, he also evaluated *ex post* costs. We can consider what he calls the "costs of negotiating a contract" equivalent to what we term "*ex ante* transaction costs".

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 of Gray (1994) 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* transaction 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 for 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* transaction 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.

Further work is also required over several years, not to assess the continuation of existing transactions but to evaluate new transactions. Indeed, LFRAs are still new and rare transactions. Frequency is considered the second most important factor that determines TCs (Williamson 1985; Rørstad, Vatn, and Kvakkestad 2007). Limited market information exists on LFRAs, which are much less common coordination mechanisms than conventional lease arrangements to transfer farming use rights. The multiplication of LFRAs could lead to a decrease in their transaction costs in the future (Rørstad, Vatn, and Kvakkestad 2007), as predicted by Gray in the case of CBLTs (Gray 1994). Finally, interest in LFRAs could outpace interest in the other coordination mechanisms from the farms' perspective and, thus, in terms of farmland preservation.

As we have seen, the *ex ante* costs measured in this study are those that may be revealed as prohibitive and that explain why certain transactions do not occur (Masten, Meehan, and Snyder 1991). On that point, it would be interesting to compare the characteristics of successful applicants for holding farming use rights against the characteristics of those whose rights remain inaccessible. Indeed, there is agreement that land use transactions are difficult for new entrants who do not have family connections with farming, which disadvantages them (Ingram and Kirwan 2011). Moreover, access-to-farmland demand is currently experiencing an increase in this type of profile among applicants. They may encounter more difficulties than others in obtaining information, meeting owners and gaining their confidence. That low capital social even has an impact on farmland sale prices, which are lower for friendly neighbors and relatives (Robison, Myers, and Siles 2002). Another perspective could be to compare all costs and benefits of access to farmland use between that type of farmer and other farmers.

Finally, Benham and Benham's (2005) methodology used in our study requires measurement of the exchange costs of the concerned transaction to allow a relative comparison. In case of transactions exchanging land use rights, the exchange costs include the purchase/rental price of the transaction. In a previous study measuring farmer transaction costs, Royer (2011) did not report the milk price in the case of milk marketing, probably due to the difficulties of making comparable values, but rather reported the dairy farms' average annual

revenues. In certain studies on voluntary agreements in the context of environmental conservation policy, public transaction costs may be expressed as the percentage of the total costs incurred by public agencies (McCann and Easter 2000), i.e., as relative to the cost of exchange, or as the percentage of the payments (Falconer, Dupraz, and Whitby 2001; Falconer and Saunders 2002), i.e., as relative to the transaction price from the public administration viewpoint. Moreover, farmers' TCs may be expressed as a percentage of the payment they receive (Rørstad, Vatn, and Kvakkestad 2007), resulting in a type of cost-benefit analysis comparable to our approach. Even if those few studies do not deeply discuss that approach from a theoretical perspective, the fact that it is common to them allows comparisons from one to another in this field of research. In our field of land studies, with this comparative aim, we provide a method for evaluating a comparable monetary exchange between lease arrangements and purchase transactions through an application to access to farmland of the buy-or-lease problem (Johnson and Lewellen 1972). With this goal, we used 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* transaction costs than purchasing land and higher *ex ante* transaction costs than leasing to an individual owner relative to the exchange cost. This difference is due to negotiation costs, which are nearly twice as high as in conventional lease arrangements. The fact that rehabilitation 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 transaction 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 transaction costs and unexpected delays, which may result in economic difficulties, especially for incipient farm holdings. These high costs can be attributed to the low

frequency of LFRAAs (Williamson 1985). The multiplication of these initiatives could reduce transaction costs in the future (Rørstad, Vatn, and Kvakkestad 2007). Other than increasing their frequency, LFRAAs 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 (e.g., organic farming, local farming). In addition, these initiatives might help overcome locked-in situations in which farmers are unable to access land. One 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.

References

- Agreste. 2010. Les principaux chiffres du recensement agricole. Available at <http://agreste.agriculture.gouv.fr/recensement-agricole-2010/>, accessed May 2017.
- . 2014. Près de sept propriétaires par exploitation agricole. Available at http://draaf.pays-de-la-loire.agriculture.gouv.fr/IMG/pdf/Agreste_01_2014_Foncier_3_cle0ecc63.pdf, accessed July 2018.
- Allen, D. and D. Lueck. 1992. Contract Choice in Modern Agriculture: Cash Rent versus Cropshare. *The Journal of Law & Economics* **35:397-426**.
- Allen, D.W. and D. Lueck. 2000. A transaction cost primer on farm organization. *Canadian Journal of Agricultural Economics/Revue canadienne d'agroeconomie* **48:643-652**.
- Alterman, R. 1997. The challenge of farmland preservation: lessons from a six-nation comparison. *Journal of the American Planning Association* **63:220-243**.
- Benham, A. and L. Benham. 2001. The costs of exchange. *Working Paper Series*.
- . 2005. Measuring the costs of exchange. In *Institutions, contracts and organizations: perspectives from new institutional economics*, ed. C. Ménard, 367-375: Edward Elgar Publishing.
- Canada/Statistics. 2018. Tenure of land owned, leased, rented, crop-shared, used through other arrangements or used by others. Available at <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3210040701>, accessed July 19th 2018.
- Ciaian, P.; d.A. Kancs; J. Swinnen; K. Van Herck; and L. Vranken. 2012. Institutional Factors Affecting Agricultural Land Markets. In *Factor Markets, Working paper*. Brussels, Belgium: Centre for European Policy Studies.
- Coase, R.H. 1937. The Nature of the Firm. *Economica* **4:386-405**.
- Courleux, F. 2011. Augmentation de la part des terres agricoles en location : échec ou réussite de la politique foncière ? *Economie et statistique*:**39-53**.
- Datta, S.K.; D.J. O'Hara; and J.B. Nugent. 1986. Choice of Agricultural Tenancy in the Presence of Transaction Costs. *Land Economics* **62:145-158**.
- De Sousa, M. 2008. Est-il préférable d'acheter plutôt que de louer la terre ? In *Info Agricole*, 5-9: Fédération des Centres de Gestion Agréés Agricoles.
- Deininger, K. and G. Feder. 2009. Land registration, governance, and development: Evidence and implications for policy. *The World Bank Research Observer* **24:233-266**.
- Deininger, K. and S. Jin. 2006. Tenure security and land-related investment: Evidence from Ethiopia. *European Economic Review* **50:1245-1277**.
- Denscombe, M. 2014. *The good research guide: for small-scale social research projects*. McGraw-Hill Education (UK).
- Dissart, J.-C. 2006. Protection des espaces agricoles et naturels: une analyse des outils américains et français. *Economie rurale. Agricultures, alimentations, territoires* **291:p.6-25**.
- Ducos, G.; P. Dupraz; and F. Bonnioux. 2009. Agri-environment contract adoption under fixed and variable compliance costs. *Journal of environmental planning and management* **52:669-687**.
- Eggertsson, T. 1990. The role of transaction costs and property rights in economic analysis. *European Economic Review* **34:450-457**.
- Espinosa-Goded, M.; J. Barreiro-Hurlé; and P. Dupraz. 2013. Identifying additional barriers in the adoption of agri-environmental schemes: The role of fixed costs. *Land Use Policy* **31:526-535**.
- EU. 2010. Agricultural census, ed. Eurostat. Available at http://ec.europa.eu/eurostat/statistics-explained/index.php/Agricultural_census, accessed May 2017.
- . 2013. Farm structure survey, ed. Eurostat. Available at http://ec.europa.eu/eurostat/statistics-explained/index.php?title=Farm_structure_survey_2013_-_main_results, accessed May 2017.
- Falconer, K. 2000. Farm-level constraints on agri-environmental scheme participation: a transactional perspective. *Journal of Rural Studies* **16:379-394**.

- Falconer, K.; P. Dupraz; and M. Whitby. 2001. An investigation of policy administrative costs using panel data for the English environmentally sensitive areas. *Journal of Agricultural Economics* **52:83-103**.
- Falconer, K. and C. Saunders. 2002. Transaction costs for SSSIs and policy design. *Land Use Policy* **19:157-166**.
- FNPRR. 2010. Les chiffres de la propriété privée rurale. Available at <http://www.propriete-rurale.com/>, accessed October 2016.
- FNSAFER/Agreste. 2016. L'essentiel des marchés fonciers ruraux en 2015, 12. Available at http://www.safer.fr/iso_album/3-syntheseptd2015-bd.pdf, accessed May 2017.
- Fukunaga, K. and W.E. Huffman. 2009. The role of risk and transaction costs in contract design: evidence from farmland lease contracts in US agriculture. *American Journal of Agricultural Economics* **91:237-249**.
- Furubotn, E.G. and R. Richter. 2005. *Institutions and economic theory: The contribution of the new institutional economics*. Ann Arbor, MI: University of Michigan Press.
- Geniaux, G. and C. Napoléone. 2005. Rente foncière et anticipations dans le périurbain. *Economie & prévision:77-95*.
- Gottlieb, P.D.; B.J. Schilling; K. Sullivan; J.D. Esseks; L. Lynch; and J.M. Duke. 2015. Are preserved farms actively engaged in agriculture and conservation? *Land Use Policy* **45:103-116**.
- Gray, R. 1994. Transactions costs and new institutions: will CBLTs have a role in the Saskatchewan land market? *Canadian Journal of Agricultural Economics/Revue canadienne d'agroeconomie* **42:501-509**.
- Ingram, J. and J. Kirwan. 2011. Matching new entrants and retiring farmers through farm joint ventures: Insights from the Fresh Start Initiative in Cornwall, UK. *Land Use Policy* **28:917-927**.
- Jarrige, F.; A.-M. Jouve; and C. Napoleone. 2003. Et si le capitalisme patrimonial foncier changeait nos paysages quotidiens? *Le Courrier de l'environnement de l'INRA* **49:13-28**.
- Johnson, R.W. and W.G. Lewellen. 1972. Analysis of the Lease-Or-Buy Decision. *The Journal of Finance* **27:815-823**.
- Kuperan, K.; N. Mustafa; R. Abdullah; R.S. Pomeroy; E. Genio; and A.M. Salamanca. 1998. Measuring transaction costs in fisheries co-management. In *Cross boundaries, the 7th biennial Conference of the International Association for the Study of Common Property*. Vancouver, BC, Canada: Digital Library of the Commons, Indiana University.
- Liu, X. and L. Lynch. 2011. Do Agricultural Land Preservation Programs Reduce Farmland Loss? Evidence from a Propensity Score Matching Estimator. *Land Economics* **87:183-201**.
- Masten, S.E. 1996. Empirical research in transaction cost economics: challenges, progress, directions. *Transaction cost economics and beyond:43-64*.
- Masten, S.E.; J.W. Meehan; and E.A. Snyder. 1991. The Costs of Organization. *Journal of Law, Economics, & Organization* **7:1-25**.
- McCann, L. and R. Claassen. 2016. Farmer Transaction Costs of Participating in Federal Conservation Programs: Magnitudes and Determinants. *Land Economics* **92:256-272**.
- McCann, L.; B. Colby; K.W. Easter; A. Kasterine; and K.V. Kuperan. 2005. Transaction cost measurement for evaluating environmental policies. *Ecological Economics* **52:527-542**.
- McCann, L. and K.W. Easter. 1999. Transaction Costs of Policies to Reduce Agricultural Phosphorous Pollution in the Minnesota River. *Land Economics* **75:402-414**.
- . 2000. Estimates of public sector transaction costs in NRCS programs. *Journal of Agricultural and Applied Economics* **32:555-563**.
- Melot, R. 2014. Droits de propriété et d'usage sur la terre. Une étude statistique des recours contentieux en matière de fermage. *Économie rurale:69-85*.
- Ménard, C. 2004. *L'économie des organisations*. La découverte.
- Mettepenningen, E.; A. Verspecht; and G. Van Huylenbroeck. 2009. Measuring private transaction costs of European agri-environmental schemes. *Journal of Environmental Planning and Management* **52:649-667**.

- Moss, L.E.; P.J. Barry; G.D. Schnitkey; and R.E. Westgren. 2001. A transaction cost economics and property rights theory approach to farmland lease preferences. In *Annual meeting*, ed. A.A.E. Association, 29. Chicago, IL.
- Murrell, P. 1983. The Economics of Sharing: A Transactions Cost Analysis of Contractual Choice in Farming. *The Bell Journal of Economics* **14:283-293**.
- Myyra, S.; E. Ketoja; M. Yli-Halla; and K. Pietola. 2005. Land Improvements under Land Tenure Insecurity: The Case of pH and Phosphate in Finland. *Land Economics* **81:557-569**.
- Parker, D.P. 2004. Land trusts and the choice to conserve land with full ownership or conservation easements. *Natural Resources Journal* **44, Spring 2004:483-518**.
- Polman, N.B.P. and L.H.G. Slangen. 2009. An Institutional Economics Analysis of Land Use Contracting: The Case of the Netherlands. In *Institutions and Sustainability: Political Economy of Agriculture and the Environment - Essays in Honour of Konrad Hagedorn*, ed. V. Beckmann and M. Padmanabhan, 267-290. Dordrecht: Springer Netherlands.
- Robison, L.J.; R.J. Myers; and M.E. Siles. 2002. Social capital and the terms of trade for farmland. *Review of Agricultural Economics* **24:44-58**.
- Rørstad, P.K.; A. Vatn; and V. Kvakkestad. 2007. Why do transaction costs of agricultural policies vary? *Agricultural economics* **36:1-11**.
- Royer, A. 2011. Transaction costs in milk marketing: a comparison between Canada and Great Britain. *Agricultural economics* **42:171-182**.
- Schilling, B.J.; W. Attavanich; K.P. Sullivan; and L.J. Marxen. 2014. Measuring the effect of farmland preservation on farm profitability. *Land Use Policy* **41:84-96**.
- Sherrick, B.J. and P.J. Barry. 2003. Farmland markets: historical perspectives and contemporary issues. In *Government policy and farmland markets. The maintenance of farmer wealth*, ed. C.B.M.A. Schmitz, 27-49. Ames, Iowa: Iowa State Press.
- Towe, C.A.; C.J. Nickerson; and N. Bockstael. 2008. An Empirical Examination of the Timing of Land Conversions in the Presence of Farmland Preservation Programs. *American Journal of Agricultural Economics* **90:613-626**.
- USA. 2012. Farms and Farmland, ed. USDA/NASS. available at https://www.agcensus.usda.gov/Publications/2012/Online_Resources/Highlights/Farms_and_Farmland/Highlights_Farms_and_Farmland.pdf, accessed May 2017.
- Wang, N. 2003. Measuring transaction costs: an incomplete survey. *Ronald Coase Institute Working Paper* **2:14**.
- Widmark, C.; G. Bostedt; M. Andersson; and C. Sandström. 2013. Measuring transaction costs incurred by landowners in multiple land-use situations. *Land Use Policy* **30:677-684**.
- Williamson, O.E. 1981. The Economics of Organization: The Transaction Cost Approach. *American Journal of Sociology* **87:548-577**.
- Williamson, O.E. 1985. *The economic institutions of capitalism : firms, markets, relational contracting*. New York: Free Press.
- Williamson, O.E. 1991. Comparative economic organization: The analysis of discrete structural alternatives. *Administrative science quarterly* **36:269-296**.