INTERACTIONS BETWEEN CADASTRE, LAND LEGISLATION AND AGRICULTURAL ECONOMICS: A CASE STUDY OF HOGHILAG COMMUNE, SIBIU COUNTY, ROMANIA

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Abstract

This paper explores the interactions between systematic cadastre, land legislation, and their economic implications for the land market, focusing on a case study of Hoghilag Commune, Sibiu County, Romania.

The research integrates theoretical and empirical perspectives to highlight how cadastral registration and land law frameworks influence agricultural land value and leasing practices. The study is grounded in Romanian national legislation, the methodology of the State Domains Agency (ADS), and statistical data provided by the National Institute of Statistics (INS), complemented by previous research on land leasing and systematic cadastre. Mathematical models are employed to calculate rent values and economic losses, correlated with wheat price quotations and the euro/leu exchange rate.

The findings emphasize the importance of accurate cadastral data and coherent legal mechanisms in ensuring transparency and efficiency in the agricultural land market, as well as in supporting informed decision-making for local and national land management policies.

Key words**: **cadastre, land legislation; rent and land lease; Hoghilag; agricultural economics.

INTRODUCTION

The commune of Hoghilag, located in Sibiu County, Romania, represents a relevant example for analysing the interactions between systematic cadastre, land legislation, and the dynamics of the agricultural land market. In Romania, the legal framework governing land ownership is established by Law no. 18/1991 on the Land Fund and Law no. 7/1996 on Cadastre and Real Estate Publicity, which together form the foundation for implementing the cadastral system and for the functioning of the land market (Păunescu *et* Păunescu, 2021).

The specialized literature highlights the role of land lease as an effective mechanism for the redistribution and consolidation of agricultural land (Butnaru, 2015; Deininger *et al.*, 2002; Deininger, 2005). According to Grigore and Dragomir (2016), the modernization of cadastral systems is essential for ensuring property security, facilitating transactions, and improving agricultural productivity. Furthermore, recent studies shown that cadastral inconsistencies and the lack of coherence between legislation and practical implementation can generate significant economic losses, reduce the efficiency of land use, and limit access to European agricultural subsidies (Sauca, 2019; Kay *et al*., 2015).

This paper integrates both theoretical and empirical aspects, based on national legislation, the methodology of the State Domains Agency (ADS), statistical data from the National Institute of Statistics (INS), and previous research on leasing and systematic cadastre. The case study of

Hoghilag Commune illustrates how cadastral registration, legislative coherence, and market dynamics interact to influence local agricultural economies and the sustainability of rural land management.

The Food and Agriculture Organization (FAO, 2021) emphasizes the necessity of using agricultural resilience indicators to assess both the capacity of land and rural communities to withstand external shocks, whether climatic, economic, or social. The report underlines that mere documentary evidence of land holdings is insufficient and must be continuously correlated with actual field conditions through periodic inspections and integrated updates of agricultural and cadastral databases.

In comparison, the methodology applied by the State Domains Agency (ADS, 2024) predominantly focuses on economic and legal aspects related to the calculation of land rent and the allocation of land through leasing, without systematically incorporating indicators related to agricultural resilience or the phytosanitary status of the land. This results in a narrower approach where economic efficiency is evaluated primarily through revenues derived from land rents.

On the other hand, the National Institute of Statistics (INS, 2024) provides relevant statistical data on land use, cultivated areas, and agricultural production; however, these data are aggregated at national or county levels and do not always capture local specificities, such as those present in Hoghilag Commune, Sibiu County, Romania. Consequently, without correlation with on-site reality, statistical information may not accurately reflect the status of land use categories or cultivation intensity.

MATERIALS AND METHODS

Therefore, the present analysis adopts a mixed approach inspired by the FAO recommendations (2021), correlating the documentary data provided by ADS and INS with field observations. This integrated method enables not only the determination of minimum rent but also a more realistic evaluation of the social and economic implications associated with inefficient use of agricultural lands.

The analysis was grounded on a combination of legislative frameworks, institutional procedures, official statistical data, and specialized literature. The methodological approach followed specific steps related to land and economic expertise in accordance with national and international recommendations (Păunescu *et* Păunescu, 2021; Butnaru, 2015; Matthews, 2017):

1. **Legislative Framework** – The study consulted Law no. 18/1991 on the Land Fund and Law no. 7/1996 on Cadastre and Real Estate Publicity, normative acts establishing the legal regime of lands and regulating their classification into land-use categories.

2. **Institutional Procedures** – The rent calculation methodology was adopted from the official procedures of the State Domains Agency (ADS, 2024), which defines the minimum rent level for agricultural lands as well as correction coefficients based on quality, location, accessibility, and area (Sauca, 2021).

3. **Statistical and Economic Data** – Data for the analysed period were obtained from the National Institute of Statistics (INS, 2024), daily exchange rate series provided by the National Bank of Romania (BNR, 2025), and international wheat

quotations available on the Euronext platform (2025).

4. **Calculation Formulas** – The final rent value was calculated based on the minimum rent imposed by ADS (2024) using the formula:

$$R_{\text{final}} = R_{\min} + R_{\min} \times (C_f + C_l + A_t + T_r + S_a)$$

where:

$R_{\min} = 756$ kg/ha/year,

$C_f = 0.005$,

$C_l = 0.02$,

$A_t = 0.04$,

$T_r = 0.015$,

$S_a = 0.05$ (Sauca, 2021).

5. **Determination of Economic Loss** – The economic value of non-use was calculated according to the formula:

$$P = \frac{R_{\text{final}}}{1000} \times S \times C_g \times C_v \times \frac{N}{365}$$

where:

S= affected surface area (ha),

C_g= wheat quotation (€/t),

C_v= exchange rate leu/euro,

N= number of days of non-use (Butnaru, 2015; Matthews, 2017).

This methodology correlates the legal dimension (documentary land classification), technical dimension (land use category and quality), and economic dimension (losses resulting from lack of land use), providing an integrated evaluation framework applicable to other similar localities in Romania.

RESULTS AND DISCUSSIONS

By applying the methodology, for the period from April 1 to November 1, 2022, the final rent value (R_{final}) was calculated at 854.28 kg/ha/year, and the estimated economic loss amounted to approximately 12,581 RON for a land area of 15.96 hectares (INS, 2025; Euronext, 2024). For the subsequent period, from November 2, 2022, to April 3, 2023, the economic loss was estimated at 7,037 RON for a land area of 25.99 hectares. These results are presented on Table 1. These findings confirm the direct impact of wheat price quotations and exchange rate fluctuations on the economic value associated with land non-utilization (Matthews, 2017).

Table 1. The calculated losses for the analysed periods (data processed based on INS, 2025; Euronext, 2024; BNR, 2025).

Period	Area (ha)	Wheat price (€/t)	Euro/RON exchange rate	Economic loss (RON)
Apr. 1, 2022 – Nov. 1, 2022	15.96	319	4.9137	12,581
Nov. 2, 2022 – Apr. 3, 2023	25.99	153	4.9419	7,037

In addition to these quantitative determinations, field analysis revealed discrepancies between the recorded land status and the actual land use. According to cadastral documents, a significant portion of agricultural areas is classified as pasture or hayfields, although they are currently cultivated as arable land. This discrepancy, also noted by Sauca (2021), leads to bottlenecks in leasing procedures: considerable areas cannot be legally allocated, thereby reducing the effective utilization of agricultural land resources.

The FAO report (2021) highlights that land inconsistencies and administrative ambiguities cause similar structural losses in other countries, not only in Romania.

The analysis of lands in Hoghilag Commune identified several mismatches between cadastral data and the real situation on the ground. For example, cadastral registers classify a significant part of the area under the category "vineyard class III," although there are no longer any vineyards or related

infrastructure (such as trellises or support systems) present.

Following field verifications, the following observations were made:

- Areas registered as vineyards are currently used as arable land.
- Lack of cadastral updates hinders the legal leasing of land.
- Some parcels remain unused, leading to the growth of weeds and soil-specific diseases.
- Local representatives confirmed difficulties in organizing auctions for land allocation due to unclear legal status.

These findings highlight the gap between documentary regulations and actual land use, an issue that requires interpretation within the legislative and economic context.

The results obtained confirm the specialized literature showing that the land market in Romania is strongly influenced by cadastral uncertainties and the volatility of the cereal market (Butnaru, 2015; Păunescu *et* Păunescu, 2021).

A key issue highlighted in the case of Hoghilag Commune is the discrepancy between the recorded land status and the reality on the ground. Significant areas appear in the cadastral registers as pasture or hayfields, although they are effectively used as arable land. This situation generates administrative blockages, as the lands cannot be legally leased according to current legislation (ADS, 2024).

This problem has multiple implications:

- **Legal** – non-compliance with the provisions of Law no. 18/1991, art. 77, regarding the obligation to exploit agricultural lands according to their land-use category, leads to conflicts between owners, lessees, and authorities. Additionally, subsequent legislation (Law no. 165/2013; Law no. 17/2014) reinforces the public interest character of land cultivation, highlighting the severity of improper land use.
- **Economic** – the lack of allocation of significant areas results in direct losses of income from rent, a decrease in the utilization rate of land resources, and reduces the commune's capacity to attract European funds (Matthews, 2017).
- **Social** – this situation exacerbates rural depopulation, as young farmers do not have access to land free of legal burdens and clearly defined cadastral status (Sauca, 2021).

Thus, the analysis shows that the problems in Hoghilag Commune are not limited to the local level but reflect structural difficulties faced by many rural communities in Romania. The correlation between systematic cadastre and land legislation becomes essential to prevent economic losses and ensure sustainable rural development.

This phenomenon, also described in the FAO report (2021), demonstrates that cadastral discrepancies and underutilization of agricultural lands affect not only productivity but also social cohesion.

Recent evaluations indicate that without periodic correlation of cadastral data with in-situ observations, persistent errors appear in land-use categories, delaying systematic registration and affecting land leasing operations and local public policies (Păunescu *et al*., 2022; Cienciała *et al*., 2021).

FAO (2021) emphasizes that the resilience of agri-food systems depends on the capacity of institutions to adapt the legal framework to field realities. According to the World Bank's *Enabling the Business of Agriculture* report (2019), a clear and updated legislative framework for property rights and land access is essential for economic efficiency and attracting

investments in rural areas; its absence leads to blockages similar to those identified in Hoghilag Commune.

Moreover, at the European level, studies by Kay et al. (2015) and FAO (2021) highlight the importance of transparency in agricultural land management and proper use of land resources. The Hoghilag case confirms the need to adapt national policies to international best practices, where updated cadastre, transparent land leasing, and compliance with cultivation obligations are key tools for economic efficiency and social cohesion.

CONCLUSIONS

The case study conducted in Hoghilag Commune, Sibiu County, Romania demonstrated that discrepancies between the recorded cadastral situation and the actual use of agricultural land directly affect the functioning of local economic and social mechanisms. The lack of cadastral updates has led to the inability to legally assign significant land areas through leasing, resulting in financial losses for the State Domains Agency and the community, as well as negative social effects by limiting local farmers' access to land resources.

From a legislative perspective, non-compliance with the provisions of Law no. 18/1991 and related regulations regarding the obligation to cultivate agricultural land has created an imbalance between property rights and the public interest in maintaining agricultural productivity. At the same time, the absence of effective mechanisms to correlate systematic cadastre with leasing procedures has intensified administrative difficulties.

Economically, the study confirms that the use of the royalty calculation formula and the integration of correction factors allow for setting minimum reference values, but their efficiency depends on application within a clear and transparent legal framework. The international context (volatility of cereal market prices, exchange rate fluctuations) amplifies system vulnerabilities, calling for adapted and coherent public policies.

Socially, the results show that land-use blockages can contribute to the marginalization of rural communities and reduce agriculture's appeal for young farmers.

In conclusion, the Hoghilag case is not isolated but reflects structural problems in land administration in Romania. Necessary solutions include continuous updating of the cadastre and correlating it with field reality, adapting the legislative framework to facilitate rapid allocation of agricultural land, encouraging transparent leasing as a mechanism to improve land use efficiency, integrating European best practices and recommendations from international institutions (FAO, World Bank, European Commission).

Thus, this research highlights the importance of an integrated approach where cadastre, land legislation, and agricultural economics must be correlated to ensure both economic sustainability and social cohesion in rural areas.

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