THE IMPORTANCE OF LEGAL RISK ON THE FARM ACCORDING TO A REGRESSION ANALYSIS

Agim Ndregjoni, PhD

"Aleksandër Moisiu" University, Durrës (UAMD), Faculty of Business, Albania

agimndregjoni@uamd.edu.al

Abstract

The study aimed to investigate the legal risks associated with vegetable farming by identifying and empirically analysing them. To accomplish this objective, a survey was conducted among 260 farmers. The dependent variable was the legal risk, while the independent variables were the non-implementation of food safety standards, non-implementation of contracts, and violation of the labour code. The findings of the multiple regression analysis revealed that the model was statistically significant, and the R^2 coefficient indicated that these factors accounted for 82% of the legal risk. This information could prove valuable to farmers and policymakers in developing effective strategies for the sustainable growth of vegetable farms.

Keywords: Risk, law, farm, identification, analysis, management, regression, perception

INTRODUCTION

Agriculture is one of the most important economic sectors in Albania, traditionally due to favourable natural conditions (Kapaj et al., 2022; Prendi and Murrja, 2023) and has a significant contribution to the production of the national economy. This sector produces 19.6 of the gross domestic product in the country (INSTAT; Murrja, Kurtaj et al., 2023; Kurtaj et al., 2024; Çerpja and Murrja, 2024). However, like many other sectors, agriculture also faces various challenges and risks that affect its efficiency and stability. One of these risks is the legal risk, which is the focus of the study. But entrepreneurship in agriculture is very risky (Doung et al., 2019; Abdullah et al., 2024).

Researchers recognize legal risk as one of the main components of farm risks, along with production risk, market risk, financial risk and human resource risk (Drollette, 2009; Schaffnit-Chatterjee, 2010; Carne et al., 2013; Harwood et al., 2013; Melyukhina, 2008a; Schaffnit, 2010; Thompson et al., 2016; Murrja, Maloku, 2023). This risk is related not only to non-compliance with agricultural legislation but also to other laws that regulate agricultural activities.

The study was done with the farmers of the Gurit I Zi administrative unit in Cyprus. The "Guri I Ri" area is located in the eastern part of the Shkodra district and is known for agriculture and livestock as the main economic activities. With an area of about 81.7 km^2 and a population of 11,800, the area has a significant number of farms. It is estimated that the number of farming families in this area is between 3,100 and 3,500. The farmers of this area have a long tradition in the cultivation of vegetables and their products contribute 42% of the needs of the Shkodra regional market (Murrja, Kurtaj et al., 2023; Kurtaj et al., 2024; Çerpja and Murrja, 2024).

A key advantage of this study is the lack of similar studies in the field of legal compliance in vegetable farms. The use of the multiple regression method to assess the levels of legal risk in this area is a statistical tool to understand and address the specific problems of this sector regarding the implementation of legal provisions.

The findings of this study hold significance not only for the farmers operating in the study area but also for the ones throughout Albania. Moreover, the study can act as an information resource for the local and central government as well as for researchers involved in the agriculture and agricultural law domain. Additionally, farmers residing in neighbouring countries of Albania, such as Kosovo and North Macedonia, may also benefit from this study as they encounter similar legal challenges in agriculture.

However, focusing the study on the importance of legal risk on farms and raising awareness among farmers for sustainable development solely in an administrative unit like "Guri I Zi" is a study limitation. To achieve a comprehensive and accurate understanding of this topic, it is necessary to have a broader and more diversified approach in our study.

It is crucial to comprehend and manage legal hazards to ensure sustainable and prosperous growth of agriculture. In this regard, the study provides a valuable contribution towards comprehending and addressing legal issues in vegetable farms not only within the study area but also beyond Albania.

LITERATURE REVIEW

Agriculture is one of the most important economic sectors, but at the same time, it is also one of the most exposed to various risks, including legal risks. In the existing literature, we have some facts and insights on this matter.

Carne et al. (2013) point out that many of the daily activities of farmers have legal implications. This includes fulfilling business agreements and contracts, where non-compliance often has a high cost. Among the main factors of these legal risks is legal offence or property damage due to negligence (Sciabarrasi, 2024).

Another important aspect of legal risk is environmental liability. Farmers must fulfil legal obligations regarding the payment of taxes, workers' wages, pension insurance, health insurance and occupational safety requirements. Manufacturing practices must comply with environmental laws, and non-compliance can result in significant penalties (Reynolds-Allie et al., 2013; Sciabarrasi, 2024).

Helamo (2018), Duong et al. (2019) and USDA-ERS emphasize that one of the main problems of legal risk is institutional risk. This risk is related to uncertainties about government policies and unfavourable changes that may affect agriculture.

In Albania, the lack of detailed studies in the field of agriculture is significant. However, the studies conducted by Murrja et al. (2023), Kurtaj et al. (2024), and Çerpja and Murrja (2024) have analyzed production risk, financial risk and market risk in vegetable farms in the "Guri I Zi" administrative unit in Shkodër. Studies have also been done in Kosovo a country similar and comparable to Albania and have analyzed the five main legal risks, identifying factors such as negligence or failure to pay fiscal obligations as very high-risk factors (Murrja et al., 2022; Murrja et al., 2023; Ndregjoni et al., 2023).

Consequently, the following hypothesis is put forward in our study:

H_1: *Events such as non-implementation of food safety standards, non-implementation of contracts and violation of the labour code have serious impacts on legal risk.*

Legal risk

Legal risks are related to compliance with several legal requirements. Manufacturing practices must comply with laws. Many marketing and finance decisions are subject to contract law, and failure to meet the terms of any agreement can have serious legal implications. Farmers are also required to meet legal obligations regarding tax reporting and payment, labour and wage laws, food safety requirements and others (Drollette, 2009; Carne et al., 2013; Reynolds-Allie et al., 2013; Duong et al., 2020; Murrja, Maloku, 2023).

By analyzing the existing literature and consolidating data from previous studies, a conceptual framework has been formulated that reflects the concepts and variables under study. This framework is adapted and integrated with previous knowledge to provide a clear and structured overview of the research objectives, methodology and expected results (Murrja,

Ndreca, Maloku, Sadiku, 2023; Murrja, Ndregjoni, Maloku, Prendi, 2022; Murrja and Ndregjoni, 2022; Ndregjoni et al., 2023).
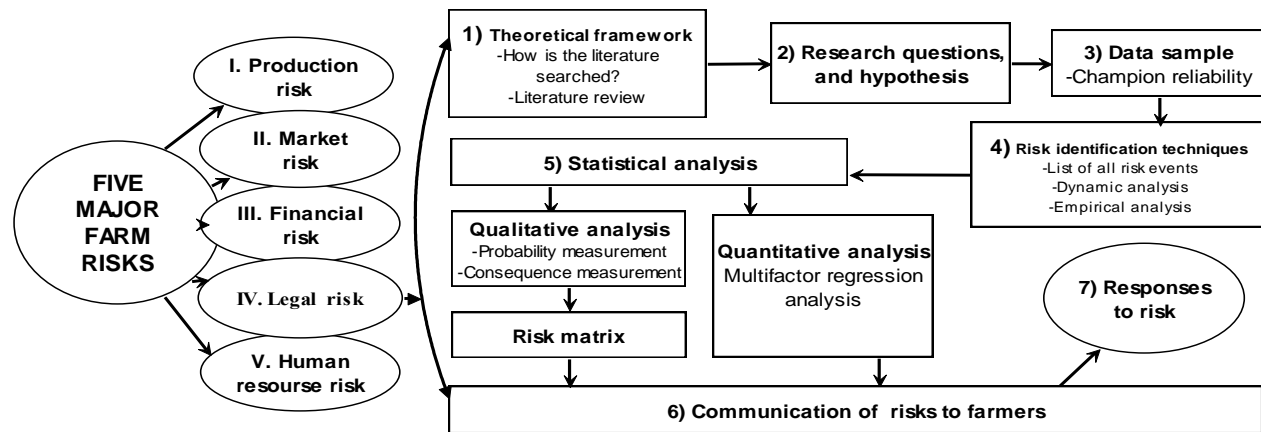

Figure 1. Conceptual framework of the study

Source: Murrja et al. (2022, 2023); Murrja (2023); Ndregjoni et al. (2023)

The issue of legal risk in agriculture is a complex and multifaceted one, according to a review of the literature. Legal responsibility in farming is closely linked to fulfilling business agreements and contracts, adhering to environmental regulations, bearing institutional responsibility, and adhering to government policies, as well as a lack of information and consultation with experts in the industry. Previous research has, however, established a strong foundation for understanding and addressing these legal risks in agriculture, to develop better and more appropriate management practices.

MATERIALS AND METHODS

The present study is based on primary statistical data and aims to evaluate the perception of farmers regarding the suggested sources of risk they face. A total of 260 farmers were surveyed, and their perception was measured using a psychometric assessment of the Likert scale, ranging from 1 to 5. The survey instrument utilized in the study sought farmers' perceptions of various sources of risk. Table 1 presents the evaluation method employed in this study.

Interviewing farmers directly and randomly has provided detailed and real information on the perception of vegetable producers. This method of interviewing has allowed for a direct exchange of ideas and experiences between interviewees and farmers, opening the way for deeper insights into the challenges and opportunities they face. Beyond a list of questions, the

interview has enabled an open dialogue and a dynamic exchange of information, making it possible to identify the needs and possible solutions in vegetable production by farmers.

Table 1. Psychometric assessment according to the Likert scale

Rating according to the Likert scale with:		Evaluation segments
Points	Word	
(1)	Very little important	[1-260]
(2)	Little important	[261-520]
(3)	Moderately important	[521-780]
(4)	Important	[781-1040]
(5)	Very important	[1041-1300]

Source: Murrja et al. (2022, 2023); Murrja (2023); Ndregjoni et al. (2023)

The study involved 3500 farmers from the area. The inability to survey all farmers led to the selection of a sample as follows (Kurtaj et al., 2024; Çerpja and Murrja, 2024; Okoye et al., 2022; Israel, 1992; Cochran, 1977).

$$n_0 = \frac{Z^2 pq}{e^2} \qquad (1)$$

Where Z = 1.96; p =0.5; q = 0.5 and e = 0.05, n_0 is calculated:

$$n_0 = \frac{1.96^2 * 0.5 * 0.5}{0.05^2} = 385 \, farmers \qquad (2)$$

In our case, the population consists of 3,500 farmers and we can slightly reduce it (Kurtaj et al., 2024; Çerpjan and Murrja, 2024; Okoye et al., 2022; Cochran, 1977)

$$n = \frac{n_0}{1 + \frac{(n_0-1)}{N}} \qquad (3)$$

Where n is the sample size and N is the population size equal to 3,500.
The sample size of the study is:

$$n = \frac{385}{1 + \frac{(385-1)}{3500}} = 260 \, farmers \qquad (4)$$

Multifactorial linear regression was used to prove the relationship between the variables. This model has also been used by other researchers (Sulewski and Kłoczko-Gajewska, 2014; Murrja et al., 2023; Kurtaj et al., 2024; Çerpja and Murrja, 2024). The multifactorial linear regression equation is:

Y= a+bx₁+cx₂+...nxₙ *(5)*

To verify the hypotheses, we tested the results through the Student's test and the Fisher test. First, we compared the P value with the coefficient α. If P < α, the hypothesis will be accepted, which means that the independent variables are important, that is, they affect the dependent variable. Then we compared the actual Fisher test with the critical Fisher where: if the actual Fisher > the critical Fisher then the hypothesis will be accepted, which means that the model as a whole is significant.

RESULTS AND DISCUSSIONS

Descriptive statistics

First, we present the farmers' perception of the five farm risks. Table 2 and Figure 2 present the responses of farmers for production risk, market risk, financial risk, legal risk and human resources risk. Farmers feel more threatened by production risk and market risk, they feel threatened by financial risk and human resource risk, while they feel threatened by legal risk on average (Murrja et al., 2023; Kurtaj et al., 2024; Çerpja and Murrja 2024).

Table 2. Farmers' perception of the five main risks on the farm

Segment	The five main risks		Perception
[1041-1300]	Production risk	1 220	(i) Very important
[1041-1300]	Market risk	1 080	(ii) Very important
[781-1040]	Financial risk	995	(iii) Important
[781-1040]	Human resources risk	850	(v) Important
[521-780]	Legal risk	670	(iv) Significant mean

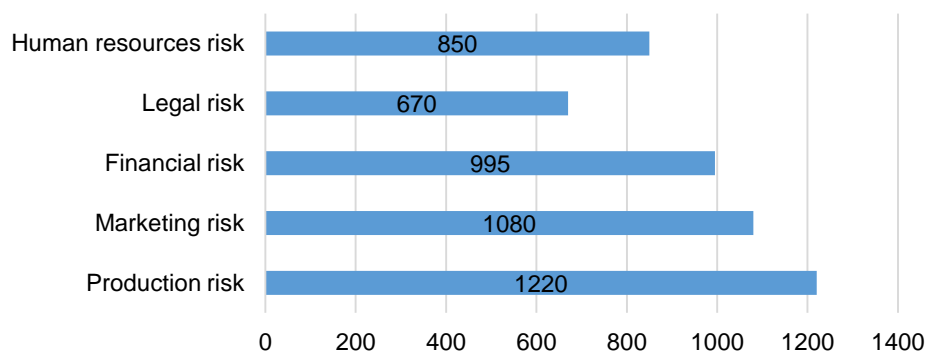Source: Murrja, Kurtaj, Ndregjoni, Prendi, 2023; Kurtaj et al., 2024; Çerpja and Murrja 2024

Figure 2. Farmers' perception of the five main risks

Source: Murrja, Kurtaj, Ndregjoni, Prendi, 2023; Kurtaj et al., 2024; Çerpja and Murrja 2024

The following section presents the findings of the study about farmers' perceptions of the four variables related to legal risk. The responses of the farmers are presented in Table 3 and Figure 3. The results indicate that food safety is considered of high importance to the farmers, while non-compliance with the labour code and contracts is rated as moderately important.

Table 3. Importance of legal risk variables

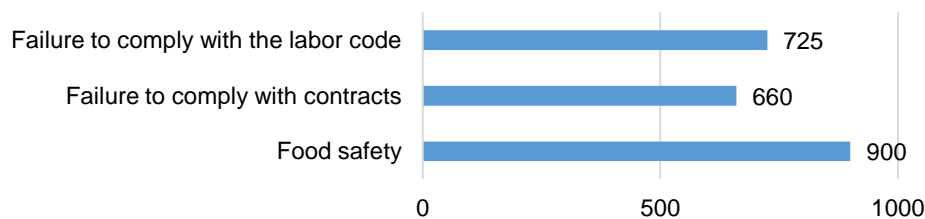| Segment	Source of legal risk	Perception	
[781-1040]	Food safety	900	(i) Important
[521-780]	Failure to comply with the labor code	725	(ii) Moderately important
[521-780]	Failure to comply with contracts	660	(iii) Moderately important

Source: Author's elaboration

Figure 3. Importance of legal risk variables

Source: Author's elaboration

Multifactorial regression analysis

Agricultural producers' subjective perceptions of risk often do not align with actual trends. To verify this discrepancy, a multifactorial regression analysis was conducted. Legal risk serves as the dependent variable, while the independent variables include non-compliance with food safety regulations, non-compliance with contractual obligations, and violation of labour laws. The findings of the multifactorial regression analysis are presented in Table 4.

Table 4. Results of multifactorial regression analysis

	Coefficient	Std. Error	t-ratio	p-value
Const	-0.290289	0.430608	-0.6741	0.5062
Food safety	0.4800006	0.244377	1.964	0.0603*
Contracts	0.115693	0.155848	0.7423	0.4645
Work code	0.611012	0.130237	40.692	7.59e-05***
R-squared	0.825689	Adjusted R-squared		0.805579
F	410.5282	P-Value		5.25e-10

Source: Author's elaboration

Discussion

From the descriptive statistical analysis of the five main risks of the farm, we found that production risk and market risk are perceived as very important by farmers. Financial risk and human resources risk are perceived as important, while legal risk is moderately important (Murrja, Kurtaj, Ndregjoni, Prendi, 2023; Kurtaj et al., 2024; Çerpja and Murrja, 2024).

From the descriptive statistical analysis of the three variables of legal risk, the perception of farmers is important for food safety, and non-compliance with the labour code and non-compliance with contracts are moderately important.

As we pointed out above, the perception does not match the real trend. This discrepancy is verified by multifactorial regression analysis. Based on the data in Table 4, we see that "violation of the labour code" and "food safety" are perceived as more important sources. "Non-compliance with contracts" does not seem to be a very important source in the causality of legal risk for farmers, mainly due to the lack of these contracts. In conclusion, hypothesis H1 is accepted for the variables "food security", and "work code" and rejected for the variable "contract".

In addition to the importance of the variables, we also look at the importance of the model as a whole: Actual = 41.05. Critical F = F (α; k-1; n-k) = F (0.05; 4-1; 30-4) = F (0.05; 3; 26) = 2.98. So we have Factual > Fcritical and hypothesis H4 is accepted. It turns out that the model is significant, and specifically, it is Legal risk = - 0.29 + 0.48 Food safety + 0.61 Labor code. The coefficient R^2 shows that 82% of the legal risk is determined by the above factors.

CONCLUSIONS

From previous studies, it has been established that farmers perceive production risk as a greater threat, especially about floods (Murrja, Kurtaj, Ndregjoni, and Prendi, 2023). This shows that the impact of environmental conditions and climate change are the main factors that influence the perception of farmers' risks.

In terms of importance, marketing risk is ranked second. In this respect, the biggest fear of farmers is related to price fluctuations and high competition in the market (Cerpja and Murrja). This shows that market stability and price certainty are key elements for farm success and sustainability.

One step lower in the ranking of importance is financial risk. Farmers are worried about their profits, debts and interest they have to pay (Kurtaj et al., 2024). This factor shows that financial management and financial stability are important issues for farmers.

In the detailed analysis of the legal risk, the two variables that negatively affect the most are "food safety" and "labour code".

RECOMMENDATIONS

The effective management of legal risks on farms is a crucial component of ensuring that agricultural operations remain sustainable and profitable in an ever-changing legal environment. In this study, we aim to present some of the key strategies for managing legal risks in farming.

One of the most important tools for protecting farms from unexpected losses is farm insurance policies. A thorough review of insurance policies can help identify inconsistencies and improve risk coverage. Additionally, developing and maintaining good relationships with neighbours is vital. Open and conscientious communication with neighbours can prevent conflicts and potential legal concerns from arising.

To mitigate or prevent the effect of adverse risk events, farmers should apply good agricultural practices. Such practices can help minimize risks and enhance the sustainability of agricultural operations. Understanding contracts and agreements is also essential to prevent disputes and ensure that legal benefits are fully realized.

Protecting the environment is crucial not only for legal compliance but also for public image and the long-term sustainability of farms. Therefore, farmers should use the best agricultural practices to safeguard the environment. Additionally, knowledge and correct application of legal provisions are essential to avoid violations and possible legal consequences.

Cooperative and cluster memberships offer opportunities that can benefit farms. Cooperatives enable farmers to profit from selling their products, buying inputs in bulk, and accessing loans with favourable interest rates. Clusters, on the other hand, provide economic, managerial, and political advantages. Horizontal coordination and integration in the value chain help deal with risk and improve efficiency (Joffrea et al., 2019).

However, it is important to note that the study is limited in its focus on a specific administrative unit such as "Guri i Zi". To achieve a broader and more accurate understanding of the legal risk issues in agriculture, a more comprehensive and inclusive approach in our study is necessary, involving more areas and agricultural contexts.

In conclusion, managing legal risks is a key aspect to ensure the sustainable and prosperous development of agriculture. The study you described provides a significant contribution in this regard, offering a detailed analysis and recommendations to address the legal challenges faced by the agricultural sector in Albania.

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