

AGRICULTURAL INSURANCE ADOPTION IN ALBANIA: EVIDENCE FROM EMPIRICAL ANALYSIS

ADOÇÃO DE SEGUROS AGRÍCOLAS NA ALBÂNIA: EVIDÊNCIAS DE ANÁLISE EMPÍRICA

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Abstract

Agricultural production in transition economies is increasingly exposed to climate-related risks, while the adoption of agricultural insurance remains limited despite its potential to enhance farm resilience and income stability. This study examines the key determinants of agricultural insurance adoption in Albania, a climate-vulnerable transition economy characterized by fragmented farm structures and evolving institutional frameworks. The main objective of the study is to identify the economic, institutional, and behavioral factors influencing farmers' insurance decisions. The analysis is based on primary survey data collected from farmers across multiple regions of Albania and employs a binary logistic regression model to assess the impact of education, institutional trust, premium subsidization, climatic risk exposure, and behavioral perceptions on insurance adoption. The results reveal a significant gap between farmers' willingness to insure and actual insurance uptake. While education and exposure to climatic risk increase awareness and willingness to adopt insurance, institutional trust emerges as the most decisive factor determining actual adoption. Premium subsidization positively influences insurance demand, although its effectiveness depends strongly on trust in insurance providers. Overall, the findings indicate that low insurance penetration reflects rational decision-making under institutional and economic constraints rather than a lack of information. The study concludes by

Resumo

A produção agrícola em economias em transição está cada vez mais exposta a riscos relacionados ao clima, enquanto a adoção de seguros agrícolas permanece limitada, apesar de seu potencial para aumentar a resiliência das propriedades rurais e a estabilidade da renda. Este estudo examina os principais determinantes da adoção de seguros agrícolas na Albânia, uma economia em transição vulnerável às mudanças climáticas, caracterizada por estruturas agrícolas fragmentadas e marcos institucionais em evolução. O principal objetivo do estudo é identificar os fatores econômicos, institucionais e comportamentais que influenciam as decisões dos agricultores em relação aos seguros. A análise baseia-se em dados primários coletados por meio de pesquisa com agricultores em diversas regiões da Albânia e utiliza um modelo de regressão logística binária para avaliar o impacto da educação, da confiança institucional, do subsídio de prêmios, da exposição ao risco climático e das percepções comportamentais sobre a adoção de seguros. Os resultados revelam uma lacuna significativa entre a disposição dos agricultores em contratar seguros e a efetiva adesão ao seguro. Embora a educação e a exposição ao risco climático aumentem a conscientização e a disposição em contratar seguros, a confiança institucional emerge como o fator mais decisivo para a efetiva adesão. O subsídio de prêmios influencia positivamente a demanda por seguros, embora sua eficácia dependa fortemente da confiança



emphasizing the need for integrated policy interventions combining financial education, trust-building measures, and stable subsidy schemes to strengthen agricultural resilience in transition economies.

Keywords: Agricultural Insurance. Climate Risk. Institutional Trust. Premium Subsidization. Behavioral Perceptions.

nas seguradoras. De modo geral, os resultados indicam que a baixa penetração de seguros reflete a tomada de decisões racionais sob restrições institucionais e econômicas, e não a falta de informação. O estudo conclui enfatizando a necessidade de intervenções políticas integradas que combinem educação financeira, medidas de fomento da confiança e esquemas de subsídios estáveis para fortalecer a resiliência agrícola em economias em transição.

Palavras-chave: Seguro Agrícola. Risco Climático. Confiança Institucional. Subsídio de Prêmios. Percepções Comportamentais.

1 INTRODUCTION

Agriculture remains a fundamental pillar of economic activity and rural livelihoods in many developing and transition economies. Despite structural changes and declining contributions to gross domestic product, the sector continues to play a critical role in employment, food security, and social stability. At the same time, agricultural production is inherently exposed to a wide array of risks, including climatic variability, extreme weather events, price volatility, and institutional constraints. In recent decades, climate change has intensified these risks by increasing the frequency and severity of floods, droughts, hailstorms, and temperature extremes, thereby amplifying production uncertainty and threatening the sustainability of agricultural systems worldwide (IPCC, 2022; World Bank, 2015).

Within this evolving risk landscape, agricultural insurance has been increasingly recognized as a central instrument for climate risk management and adaptation. Well-designed insurance schemes can stabilize farm incomes, facilitate access to credit, encourage productive investment, and reduce dependence on ad hoc disaster relief (Hazell *et al.*, 2010; Mahul & Stutley, 2010). Consequently, international organizations and policymakers have promoted agricultural insurance as part of broader strategies for climate resilience and sustainable rural development. However, despite its theoretical advantages, insurance adoption remains limited in many developing and transition economies.

Albania represents a particularly relevant case in this regard. The country is characterized by fragmented farm structures, high dependence on weather-sensitive agricultural activities, and increasing exposure to climate-related risks. At the same time, the penetration of agricultural insurance remains extremely low. This paradox—high objective need combined with low adoption—raises important questions regarding the determinants of farmers' insurance behavior and the effectiveness of existing policy frameworks.

Previous research suggests that the adoption of financial instruments such as insurance cannot be explained solely by income levels or farm size. Instead, it reflects a complex interaction of economic, institutional, informational, and behavioral factors. Studies on financial development and institutional quality demonstrate that weak financial systems and limited institutional trust significantly constrain the diffusion of formal financial products (Trebicka *et al.*, 2024; Beck & Demirgüç-Kunt, 2006). In transition economies, historical experiences with informality and weak governance often reinforce skepticism toward formal institutions, including insurance providers, reflecting broader patterns of informality and institutional skepticism (Trebicka, 2014; Kume & Trebicka, 2016).

From a theoretical standpoint, agricultural insurance adoption can be analyzed through the lens of imperfect markets and bounded rationality. In environments characterized by information asymmetries, enforcement problems, and limited regulatory capacity, farmers may rely more heavily on informal coping mechanisms rather than formal risk transfer instruments (Arrow, 1971; Trebicka, 2014). Such behavior reflects rational adaptation to institutional uncertainty rather than informational failure and is consistent with the literature on imperfect competition and institutional economics, which emphasizes that economic agents do not always behave as fully rational optimizers, particularly under uncertainty.

Education and financial literacy are widely recognized as foundational determinants of risk management behavior. Higher levels of education improve farmers' ability to understand insurance contracts, assess probabilities, and evaluate long-term benefits relative to short-term costs (Cole *et al.*, 2013; Giné & Yang, 2009). Empirical evidence from Albania and other developing contexts indicates that education enhances decision-making capacity even in environments with limited institutional support

(Trebicka, 2014; Kullolli *et al.*, 2024). Nevertheless, while education increases awareness and willingness, it does not necessarily translate into actual insurance uptake.

Institutional trust emerges as a particularly critical factor in explaining this gap between willingness and behavior. Insurance is not merely a financial transaction but an institutional relationship that depends on confidence in contract enforcement, transparency, and timely claims settlement. The literature on insurance demand consistently shows that trust deficits significantly reduce participation, especially in low-trust societies (Binswanger-Mkhize, 2012; Cai *et al.*, 2015). Research on governance dynamics further highlights that weak institutional credibility undermines the effectiveness of financial instruments, regardless of their economic attractiveness (Trebicka, 2023; North, 1990).

Recent evidence highlights that institutional trust formation depends not only on policy design but also on the coherence and integration of communication channels used to convey information, especially in contexts characterized by informational asymmetry (Harizi & Trebicka, 2023).

Cost and affordability constitute another major barrier to agricultural insurance adoption. For many smallholder farmers, insurance premiums represent a substantial share of disposable income. International experience demonstrates that premium subsidization can significantly increase insurance uptake, particularly when targeted at vulnerable groups (Mahul & Stutley, 2010; World Bank, 2015). However, subsidies alone are rarely sufficient to ensure sustainable adoption. Behavioral responses to financial incentives are shaped by expectations, past experiences, and perceptions of fairness and reliability (Myftaraj & Trebicka, 2023; Kullolli *et al.*, 2024).

Climatic risk exposure also plays an important role in shaping insurance demand. In theory, farmers operating in high-risk areas should display stronger demand for risk transfer mechanisms. Yet, empirical studies often find that insurance decisions are reactive rather than proactive, driven by recent loss experiences rather than long-term planning (Binswanger-Mkhize, 2012; Carter *et al.*, 2017). This pattern reflects broader behavioral tendencies in risk perception, whereby low-probability, high-impact events are underestimated until they occur (Kahneman, 2011). In Albania, repeated exposure to floods and droughts has increased awareness of climate risk, but this awareness has not consistently translated into preventive insurance behavior.

Perceptual and behavioral factors further complicate the adoption process. Negative perceptions regarding high costs, complex contracts, and unreliable claims settlement can significantly discourage participation in insurance schemes. Studies on consumer behavior and satisfaction emphasize that perceptions often mediate the relationship between objective product characteristics and actual usage (Kullolli *et al.*, 2024). In agricultural communities, informal narratives and shared experiences can amplify skepticism and reinforce resistance to formal insurance mechanisms.

Against this background, the present study aims to empirically analyze the determinants of agricultural insurance adoption in Albania by integrating educational, institutional, economic, perceptual, and environmental dimensions into a unified analytical framework. Unlike studies that focus on single determinants, this research adopts a multidimensional approach that captures the interaction between structural constraints and behavioral responses.

Methodologically, the study combines descriptive analysis with multivariate econometric modeling to distinguish between stated willingness and actual insurance adoption, allowing identification of both informational and institutional constraints.

The study addresses the following research questions: (i) How do education and information influence farmers' willingness to adopt agricultural insurance? (ii) What role does institutional trust play in explaining the gap between willingness and actual insurance use? (iii) To what extent does premium subsidization affect adoption decisions? (iv) How does climatic risk exposure shape insurance behavior? and (v) How do negative perceptions regarding cost and institutional reliability constrain adoption?

By focusing on Albania—a Western Balkan transition economy characterized by high climate vulnerability, persistent informality, and evolving institutional frameworks—this study contributes original empirical evidence to the literature on agricultural insurance and climate risk management. The findings offer policy-relevant insights for designing integrated risk management strategies that combine financial education, institutional trust-building, and targeted subsidies, thereby enhancing agricultural resilience under conditions of increasing climatic uncertainty.

2 LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Education, financial literacy, and insurance adoption

Education and financial literacy are widely recognized as fundamental determinants of farmers' risk management behavior and their adoption of agricultural insurance. Theoretical and empirical studies emphasize that higher levels of education enhance individuals' cognitive ability to process information, assess probabilistic outcomes, and evaluate the costs and benefits of financial instruments under uncertainty. In the context of agriculture, where production risks are complex and often correlated with climatic factors, these skills become particularly important.

Recent empirical evidence consistently shows a positive relationship between education and insurance adoption. Cole *et al.* (2013) demonstrate that financially literate farmers are significantly more likely to understand insurance products and to adopt them when available. Similarly, Giné, Townsend, and Vickery (2018) find that education improves farmers' comprehension of insurance contracts, thereby reducing mistrust and misinterpretation of policy terms. These findings suggest that education not only increases awareness but also reduces cognitive barriers associated with complex financial products.

Financial literacy, often proxied by education level, plays a crucial mediating role between information provision and behavioral outcomes. While information campaigns can increase awareness of insurance products, their effectiveness depends largely on farmers' ability to interpret and internalize such information. Studies from developing and transition economies show that low literacy levels significantly limit the impact of information-based interventions (Karlan *et al.*, 2016; Cai & Song, 2017). In such contexts, education enhances the effectiveness of extension services and risk communication strategies.

Evidence from Southeast Europe and the Western Balkans further supports this relationship. Research focusing on Albania and neighboring countries indicates that higher educational attainment is associated with greater participation in formal financial markets and more rational economic decision-making (Trebicka *et al.*, 2024). In environments characterized by imperfect markets and institutional fragility, education

serves as a critical tool for navigating uncertainty and evaluating contractual arrangements.

However, the literature also highlights important limitations. Several studies find that while education increases willingness to insure, it does not always translate into actual insurance uptake (Binswanger-Mkhize, 2012; Carter *et al.*, 2017). This gap suggests that education is a necessary but not sufficient condition for adoption. Structural constraints—such as affordability, institutional trust, and product design—can prevent educated farmers from acting on their intentions.

Evidence from Albania further suggests that economic decision-making is strongly influenced by institutional context and policy credibility, reinforcing the role of education in shaping rational responses under uncertainty (Trebicka, 2015).

Overall, the literature suggests a robust positive association between education, financial literacy, and willingness to adopt agricultural insurance, but also underscores the need to consider complementary factors that convert willingness into behavior. Based on these findings, the first hypothesis is formulated as follows:

H1: Farmers with higher educational attainment are more informed and more willing to adopt agricultural insurance.

2.2 Institutional trust and insurance demand

Institutional trust is increasingly recognized as a decisive determinant of insurance demand, particularly in developing and transition economies where regulatory enforcement and consumer protection mechanisms may be perceived as weak. Insurance contracts involve delayed and contingent benefits, making trust in institutions essential for participation. Without confidence in insurers' ability and willingness to honor claims, farmers may view insurance as an unreliable or even risky investment.

Recent studies emphasize that trust in insurance providers and regulatory institutions significantly influences adoption decisions. Cai *et al.* (2015) show that trust in insurers' claims settlement processes is a key predictor of insurance take-up, even after controlling for income and risk exposure. Similarly, Jensen *et al.* (2018) find that lack of trust undermines the effectiveness of subsidized insurance schemes, as farmers remain skeptical about receiving compensation when losses occur.

In transition economies, historical experiences with weak governance, informality, and contract enforcement failures often exacerbate trust deficits. Research on institutional quality and financial development highlights that low trust environments discourage participation in formal financial markets, including insurance (Beck & Demirgüç-Kunt, 2018; Trebicka *et al.*, 2024). In such contexts, informal coping mechanisms—such as reliance on family networks or state aid—are often preferred over formal insurance.

Trust also interacts with information and education. While educated farmers may better understand insurance products, they may simultaneously be more aware of institutional weaknesses, reinforcing skepticism. Recent behavioral studies suggest that trust acts as a mediating variable between knowledge and action, determining whether informed individuals choose to engage with formal institutions (Dercon *et al.*, 2019).

Empirical evidence from agricultural insurance markets in Africa and Asia indicates that trust-building measures—such as transparent claims processes, farmer participation in scheme design, and involvement of reputable intermediaries—can significantly increase adoption (Carter *et al.*, 2021). These findings underscore that insurance uptake depends not only on economic incentives but also on institutional credibility.

In the Albanian context, low institutional trust is closely linked to informality, weak governance structures, and historical enforcement failures, which discourage engagement with formal financial instruments (Trebicka *et al.*, 2024; Trebicka, 2023).

Accordingly, this study hypothesizes that lack of institutional trust represents a major barrier to agricultural insurance adoption:

H2: Lack of trust in insurance companies represents a major barrier to agricultural insurance adoption.

2.3 Premium cost and subsidization

Premium cost is consistently identified in the as one of the most significant barriers to agricultural insurance adoption. For small-holder farmers with volatile incomes and limited access to credit, insurance premiums can represent a substantial

financial burden. As a result, affordability constraints often prevent adoption, even when farmers recognize the benefits of insurance.

International experience demonstrates that premium subsidization can play a critical role in expanding insurance coverage. Mahul and Stutley (2015) argue that subsidies are often necessary to overcome initial adoption barriers and to address market failures associated with correlated risks and high transaction costs. Empirical studies from Asia and Latin America confirm that subsidized insurance schemes significantly increase participation rates (Cai & Song, 2017; Jensen *et al.*, 2018).

Recent evidence suggests that subsidies not only increase adoption but also shape farmers' perceptions of insurance value. Cole *et al.* (2017) find that subsidization reduces perceived risk associated with purchasing insurance, thereby encouraging trial and learning effects. However, the sustainability of subsidy-driven adoption remains a concern. Studies caution that poorly designed subsidy schemes can lead to dependency or crowd out private market development (World Bank, 2015; Carter *et al.*, 2021).

In transition economies, subsidies may be particularly effective when combined with institutional reforms and communication strategies. Research from the Western Balkans suggests that farmers respond positively to subsidization when it is predictable, transparent, and embedded within broader agricultural support policies (Trebicka *et al.*, 2024).

Behavioral responses to financial incentives are shaped not only by affordability but also by perceived value and institutional credibility, as demonstrated in recent empirical studies using regression-based analysis in Albania (Myftaraj & Trebicka, 2023; Kullolli *et al.*, 2024).

Evidence from pricing and retention studies in Albania indicates that perceived price fairness and cost transparency critically influence long-term engagement decisions, even when objective affordability improves (Trebicka *et al.*, 2023).

Based on this literature, the third hypothesis is formulated as follows:

H3: Subsidization of insurance premiums significantly increases farmers' willingness to adopt and likelihood of adopting agricultural insurance.

2.4 Climatic risk exposure

Climatic risk exposure is a central determinant of agricultural insurance demand. Economic theory predicts that risk-averse farmers facing higher production uncertainty should exhibit stronger demand for risk transfer instruments such as insurance. Empirical studies largely support this prediction, although the relationship is often mediated by experience and perception.

Recent research indicates that farmers exposed to frequent climatic shocks—such as floods, droughts, or extreme temperatures—are more likely to adopt insurance (Binswanger-Mkhize, 2012; Carter *et al.*, 2017). However, adoption decisions are frequently reactive rather than proactive. Farmers often choose to insure only after experiencing significant losses, suggesting that learning from negative events plays a key role in shaping behavior.

Behavioral economics provides important insights into this pattern. Studies show that individuals tend to underestimate low-probability, high-impact risks until they materialize, a phenomenon known as availability bias (Kahneman, 2011). In agricultural contexts, this bias can delay insurance adoption despite high objective risk exposure.

Climate change further complicates this dynamic by increasing uncertainty and altering historical risk patterns. Recent studies emphasize that traditional risk perceptions may no longer accurately reflect future climatic conditions, increasing the importance of formal risk management tools (IPCC, 2022; Carter *et al.*, 2021).

Accordingly, this study hypothesizes:

H4: Farmers operating in high climatic-risk areas are more likely to adopt agricultural insurance.

2.5 Perceptions and behavioral barriers

Beyond structural and institutional factors, behavioral and perceptual barriers play a crucial role in agricultural insurance adoption. Farmers' subjective perceptions of insurance cost, complexity, and reliability often determine whether objective incentives translate into actual behavior.

Recent studies emphasize that negative perceptions can significantly reduce adoption, even when insurance is subsidized and risk exposure is high. Jensen *et al.* (2018) find that farmers who perceive insurance as unfair or unreliable are unlikely to participate, regardless of economic incentives. Similarly, Myftaraj and Trebicka (2023) show that consumer perceptions strongly influence financial product usage in the Albanian context. Recent econometric evidence from Albania confirms that behavioral cues and external influence mechanisms significantly shape consumer decision-making under uncertainty, reinforcing the relevance of perception-driven adoption models beyond traditional economic incentives (Tartaraj *et al.*, 2024).

Perceptions are shaped by social interactions and shared experiences within farming communities. Social learning and peer effects can amplify skepticism or, conversely, facilitate adoption when early adopters report positive outcomes (Cai *et al.*, 2015; Dercon *et al.*, 2019). In low-trust environments, negative narratives tend to dominate, reinforcing resistance to formal insurance.

Behavioral barriers are particularly relevant in transition economies, where historical experiences with institutional failure have lasting effects on attitudes toward formal financial instruments. Research on informality and governance highlights that negative perceptions can persist even when objective conditions improve (Trebicka, 2014; Beck & Demirgüç-Kunt, 2018).

Based on this literature, the final hypothesis is formulated as follows:

H5: Negative perceptions regarding insurance cost and institutional trust significantly reduce the probability of agricultural insurance adoption.

3 METHODOLOGY

3.1 Research design and analytical framework

This study adopts a quantitative empirical research design to examine the determinants of agricultural insurance adoption among farmers in Albania. Given the study's objective to identify and evaluate the relative influence of educational, institutional, economic, climatic, and behavioral factors, a cross-sectional survey

combined with econometric modeling is considered the most appropriate methodological approach.

The analytical framework is grounded in theories of risk management, institutional economics, and behavioral decision-making under uncertainty. Agricultural insurance adoption is treated as a discrete choice outcome influenced by both observable characteristics (such as education level, exposure to climatic risk, and premium cost) and latent factors (such as institutional trust and perceptions). This multidimensional framework allows the study to move beyond purely economic explanations and capture behavioral and institutional constraints that are particularly relevant in transition economies.

3.2 Data collection and sample description

Primary data were collected through a structured questionnaire administered to farmers across multiple agricultural regions in Albania. The survey was conducted during the 2024 agricultural season and targeted farmers engaged in crop and mixed farming activities, which are particularly vulnerable to climatic risks.

A stratified sampling strategy was employed to ensure representation across:

- different geographic regions,
- varying levels of climatic risk exposure,
- farm sizes and production types.

This approach reduces sampling bias and improves the generalizability of the results. After data cleaning and consistency checks, a total of 192 valid questionnaires were retained for empirical analysis, which satisfies minimum sample size requirements for logistic regression analysis and hypothesis testing.

The questionnaire was designed following established survey instruments used in agricultural insurance research and adapted to the Albanian context. Prior to full deployment, the questionnaire was pilot-tested to ensure clarity, internal consistency, and contextual relevance.

3.3 Variable Definition and Measurement

3.3.1 *Dependent variable*

The primary dependent variable is agricultural insurance adoption, measured as a binary variable: 1 if the farmer currently uses agricultural insurance, and 0 otherwise.

This binary specification reflects the discrete nature of the insurance decision and is consistent with prior studies in the field.

In addition, a secondary outcome variable—willingness to adopt agricultural insurance—is used in descriptive and comparative analyses to capture latent demand under improved conditions (e.g., subsidization).

3.3.2 *Independent variables*

The independent variables are grouped into five categories corresponding to the study's hypotheses.

Education and Information (H1):

Educational attainment is measured as an ordinal variable capturing the highest level of formal education completed by the farmer (no schooling, primary, secondary, university). For regression analysis, a binary indicator is constructed to distinguish farmers with secondary education or higher.

Institutional Trust (H2):

Institutional trust is measured using a Likert-scale index capturing farmers' confidence in insurance companies' transparency, reliability, and claims settlement practices. Responses are aggregated and recoded into a binary variable distinguishing low versus high trust.

Premium Cost and Subsidization (H3):

Perceived affordability of insurance premiums and farmers' willingness to adopt insurance under a subsidized premium scenario are measured through scenario-based questions. A binary variable captures whether the farmer would adopt insurance if premiums were partially subsidized.

Climatic Risk Exposure (H4):

Climatic risk exposure is measured based on farmers' self-reported exposure to floods, droughts, frost, hail, or other extreme events over recent years. Farmers operating in high-risk areas are coded as 1, others as 0.

Perceptions and Behavioral Barriers (H5):

Negative perceptions are measured through agreement with statements regarding high cost, contract complexity, and lack of institutional reliability. These items are aggregated into a composite perception index and transformed into a binary variable for regression analysis.

Control variables include age, farm size, income dependence on agriculture, and region, which are commonly used in agricultural insurance studies to account for heterogeneity.

3.4 Econometric model specification

Given the binary nature of the dependent variable, the study employs a binary logistic regression model to estimate the probability of agricultural insurance adoption. Logistic regression is particularly suitable for modeling discrete choice outcomes and allows direct interpretation of coefficients in terms of odds ratios.

The baseline model is specified as follows:

$$P(Y_i = 1) = F(\beta_0 + \beta_1 EDU_i + \beta_2 TRUST_i + \beta_3 SUB_i + \beta_4 RISK_i + \beta_5 PERCEP_i + X_i\gamma) \quad (1)$$

where:

- Y_i denotes insurance adoption,
- EDU_i represents education,
- $TRUST_i$ institutional trust,
- SUB_i premium subsidization,
- $RISK_i$ climatic risk exposure,
- $PERCEP_i$ negative perceptions,
- X_i is a vector of control variables.

Odds ratios (OR) are reported to facilitate interpretation of effect sizes. Statistical significance is assessed at conventional confidence levels (1%, 5%, and 10%).

3.5 Estimation strategy and robustness

The estimation strategy proceeds in several steps. First, descriptive statistics and bivariate analyses are used to explore preliminary relationships between variables. Second, the logistic regression model is estimated to test hypotheses H1–H5 simultaneously while controlling for confounding factors.

Multicollinearity diagnostics are conducted to ensure that explanatory variables do not exhibit excessive correlation. Model goodness-of-fit is evaluated using pseudo- R^2 measures and likelihood ratio tests. Robust standard errors are employed to address potential heteroskedasticity.

Where appropriate, interaction effects were considered, while baseline results are presented for clarity, providing additional insight into joint effects.

3.6 Ethical considerations and limitations

Participation in the survey was voluntary, and respondents were informed about the purpose of the study and the confidentiality of their responses. No personally identifiable information was collected.

While the cross-sectional design allows identification of significant associations, it does not permit causal inference. Self-reported measures may also be subject to recall bias or subjective interpretation. Nevertheless, the use of multiple indicators and consistency with international empirical findings enhances the credibility of the results.

3.7 Summary of methodological approach

In summary, this study employs a rigorous quantitative methodology combining primary survey data with logistic regression analysis to investigate agricultural insurance adoption in Albania. The methodological design is explicitly aligned with the study's hypotheses and provides a robust empirical basis for analyzing the interplay between

education, institutional trust, economic incentives, climatic risk, and behavioral perceptions.

4 RESULTS

This chapter presents the empirical results of the study, combining descriptive statistics, comparative analysis, graphical evidence, and multivariate regression estimates. The findings are structured in line with the five research hypotheses (H1–H5) to ensure analytical coherence and transparency.

4.1 Descriptive Statistics

Table 1 reports descriptive statistics for the sample of 192 farmers. The results reveal that only 20.8% of the surveyed farmers currently use agricultural insurance, confirming the limited penetration of insurance in the Albanian agricultural sector. In contrast, 56.3% of respondents express willingness to insure under improved conditions, indicating a substantial gap between intention and actual adoption.

Approximately 48.4% of farmers have completed secondary or university education, while 42.7% report a high level of institutional trust in insurance companies. Nearly half of the sample (46.9%) operates in areas characterized by high climatic risk exposure.

Table 1

Descriptive statistics of key variables (N = 192)

Variable	Value
Insurance adoption (%)	20.8
Willingness to insure (%)	56.3
Secondary education or higher (%)	48.4
High institutional trust (%)	42.7
High climatic risk exposure (%)	46.9

These results suggest that although awareness, willingness, and objective need are relatively high, significant barriers prevent widespread insurance adoption.

4.2 Education and willingness to adopt insurance (H1)

The relationship between educational attainment and willingness to insure is examined through comparative analysis and illustrated in Table 2 and Figure 1. The findings show a strong positive association between education level and willingness to adopt agricultural insurance.

Willingness to insure is analyzed separately from actual adoption, as it captures latent demand rather than realized insurance behavior.

Farmers with no formal education report very low willingness to insure (18%). Willingness increases to 41% among farmers with primary education, 69% among those with secondary education, and reaches 76% among university-educated farmers.

Table 2

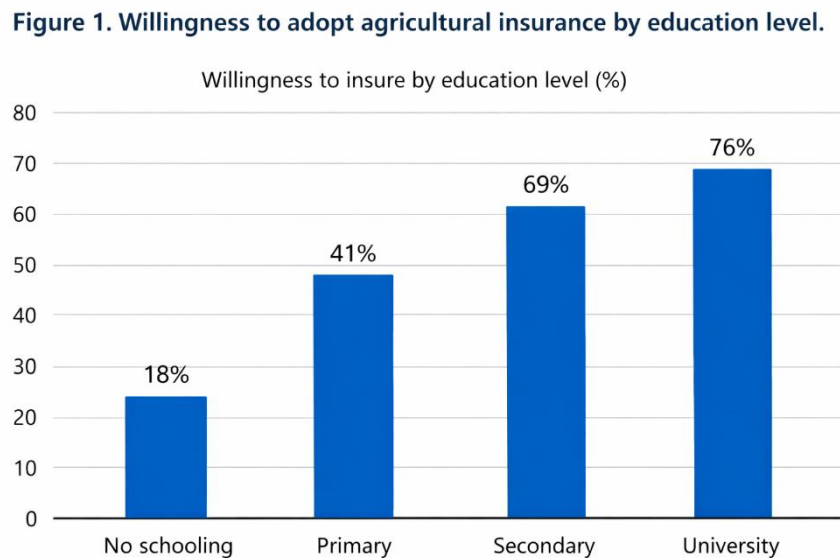
Willingness to insure by education level

Education level	Willingness to insure (%)
No schooling	18
Primary	41
Secondary	69
University	76

This trend is visually confirmed in Figure 1, which illustrates a clear monotonic increase in willingness with higher educational attainment.

Figure 1

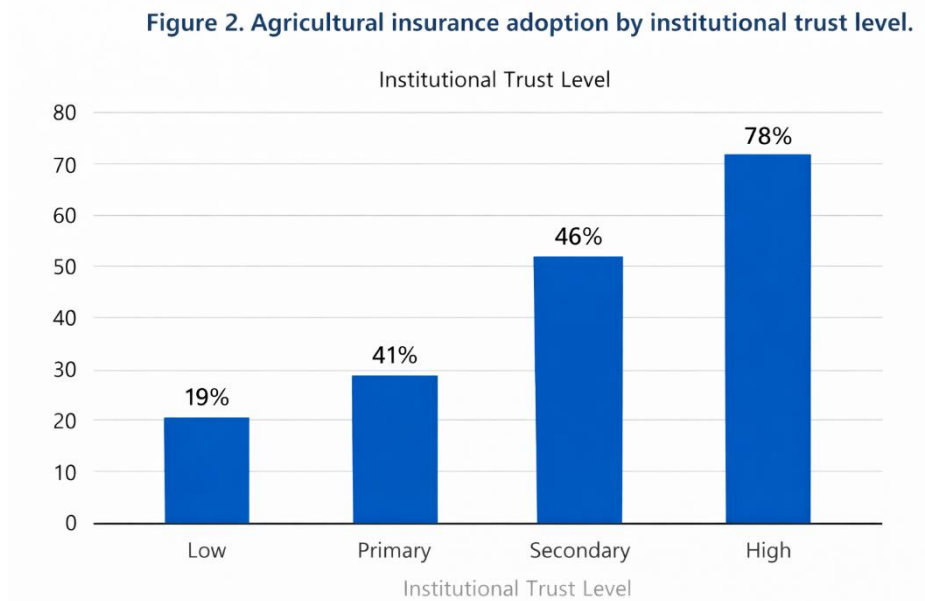
Willingness to adopt agricultural insurance by education level.



These results provide strong empirical support for H1, indicating that education enhances farmers' understanding of insurance and increases their openness to formal risk management instruments. However, comparison with actual adoption rates reveals that education alone is insufficient to ensure insurance uptake.

4.3 Institutional trust and insurance adoption (H2)

Institutional trust plays a decisive role in explaining actual insurance use. As illustrated in Figure 2, insurance adoption rates vary substantially across trust levels. Only 19% of farmers with low institutional trust use agricultural insurance, compared to 46% among those with medium trust and 78% among farmers reporting high trust in insurance providers.

Figure 2*Agricultural insurance adoption by institutional trust level.*

Chi-square tests confirm that this association is statistically significant. Importantly, no statistically significant relationship is found between information level alone and actual insurance adoption, underscoring that trust—rather than awareness—is the binding constraint.

These findings strongly support H2, demonstrating that lack of trust in insurance companies represents a major barrier to agricultural insurance adoption.

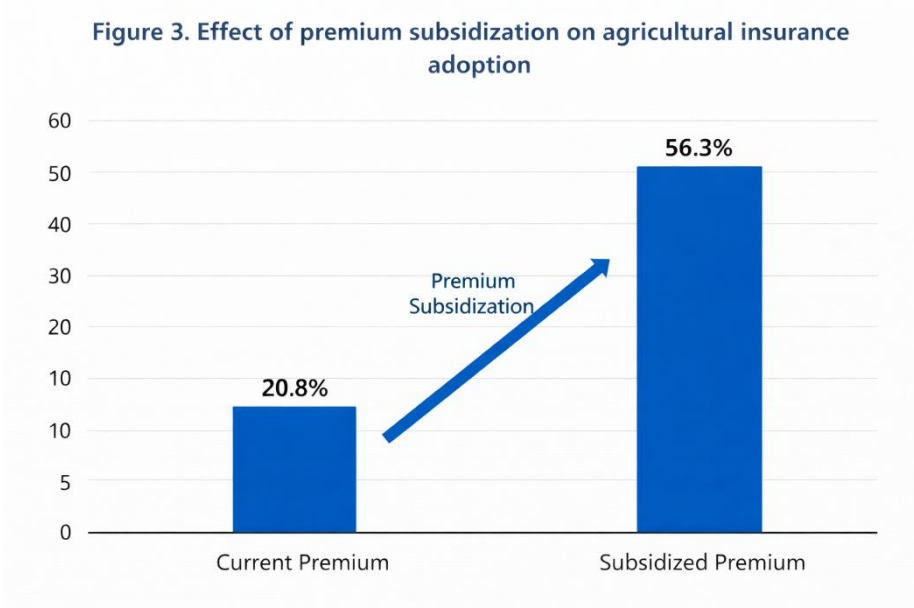
4.4 Premium cost and subsidization (H3)

The effect of premium cost and subsidization is assessed through a hypothetical policy scenario. Figure 3 illustrates the expected impact of premium subsidization on insurance adoption.

Under current conditions, only 20.8% of farmers report using agricultural insurance. When a partial premium subsidy is introduced, the share of farmers willing to adopt insurance increases to 56.3%, representing a near threefold increase.

Figure 3

Effect of premium subsidization on agricultural insurance adoption



This result provides strong support for H3, confirming that premium cost constitutes the main economic barrier to insurance uptake. However, further analysis indicates that subsidization is most effective among farmers with moderate to high institutional trust, suggesting that economic incentives alone may not overcome trust deficits.

4.5 Climatic risk exposure and insurance use (H4)

Climatic risk exposure is positively associated with insurance adoption. Farmers operating in high-risk areas exhibit significantly higher adoption rates compared to those in low-risk zones. This finding supports theoretical expectations that greater exposure to climatic shocks increases demand for risk transfer mechanisms.

However, qualitative interpretation of survey responses indicates that adoption decisions are often reactive, triggered by previous experiences with floods, droughts, or other extreme events. This suggests that experiential learning plays a key role in shaping insurance behavior, while preventive risk management remains limited.

Although climatic risk exposure is self-reported, responses are consistent with documented regional patterns of floods and droughts in Albania.

These findings support H4, while also highlighting a behavioral limitation in insurance uptake.

4.6 Logistic regression results (H1–H5)

To empirically test hypotheses H1–H5 simultaneously and control for confounding factors, a binary logistic regression model was estimated, as specified in Section 3.4. The model evaluates the probability of agricultural insurance adoption as a function of education, institutional trust, premium subsidization, climatic risk exposure, and behavioral perceptions. Odds ratios are reported to facilitate interpretation of effect sizes.

All estimated effects are interpreted as *ceteris paribus*, reflecting the independent contribution of each determinant to insurance adoption.

Table 3 presents the results of the binary logistic regression model estimating the probability of agricultural insurance adoption.

Table 3

Logistic regression results for insurance adoption

Variable	Odds Ratio (OR)	p-value
Secondary education or higher	6.3	<0.01
High institutional trust	4.8	<0.05
Premium subsidization	5.4	<0.001
High climatic risk	2.9	<0.05
Negative perceptions	0.22	<0.01

Control variables (age, farm size, income dependence on agriculture, and region) were included in the model but are not reported for brevity.

The results show that education, institutional trust, premium subsidization, and climatic risk exposure significantly increase the likelihood of insurance adoption. In contrast, negative perceptions regarding insurance cost and institutional reliability significantly reduce adoption probability. Specifically, negative perceptions reduce the

odds of adoption by approximately 78%, representing the strongest deterrent effect among all variables.

These findings confirm hypotheses H1–H5 and demonstrate that agricultural insurance adoption is driven by a combination of structural and behavioral factors.

4.6.1 Robustness and interaction effects

As a robustness check, interaction effects between premium subsidization and institutional trust were examined. The results indicate that subsidization has a significantly stronger effect among farmers with moderate to high institutional trust, confirming that economic incentives are conditional on institutional credibility. Inclusion of interaction terms does not alter the direction or significance of the main effects reported above.

4.7 Summary of results

Overall, the empirical evidence indicates that agricultural insurance adoption in Albania is constrained not by lack of awareness, but by institutional trust deficits, affordability concerns, and negative perceptions. Education increases willingness, trust enables action, subsidization reduces economic barriers, climatic risk raises awareness, and perceptions ultimately shape final decisions.

This multifaceted pattern underscores the need for integrated policy interventions, which are further discussed in the following chapter.

5 DISCUSSION

This study provides strong empirical evidence that agricultural insurance adoption in Albania is shaped by a complex interaction of educational, institutional, economic, climatic, and behavioral factors. The findings confirm that low insurance penetration is not the result of a single constraint, but rather the outcome of multiple reinforcing barriers that jointly influence farmers' decision-making processes.

A central contribution of this research is the identification of a clear intention–behavior gap in agricultural insurance adoption. While education significantly increases farmers’ willingness to insure, it does not automatically translate into actual insurance use. This finding is consistent with previous studies showing that financial literacy improves awareness and attitudes toward insurance but does not necessarily overcome structural and institutional obstacles (Cole *et al.*, 2017; Römer *et al.*, 2022). In the Albanian context, education appears to enhance cognitive understanding of insurance without fully addressing concerns related to trust, affordability, and perceived reliability.

Institutional trust emerges as the most decisive factor explaining this gap. The results demonstrate that trust in insurance companies significantly increases the probability of adoption, whereas information alone has no direct effect on actual use. This finding aligns with institutional economics and behavioral finance literature emphasizing that insurance contracts depend critically on credibility, transparency, and enforcement (Cai *et al.*, 2015; Beck & Demirgüç-Kunt, 2018). In environments characterized by weak regulatory enforcement and historical reliance on informal arrangements, farmers may rationally avoid formal insurance even when they understand its theoretical benefits.

The strong role of institutional trust also helps explain why premium subsidization, although highly effective, is not sufficient on its own. Subsidies substantially increase willingness to insure by reducing financial barriers, confirming findings from international experience in developing and transition economies (Mahul & Stutley, 2015; Carter *et al.*, 2021). However, farmers with low institutional trust or strong negative perceptions remain reluctant to adopt insurance even under subsidized conditions. This interaction effect supports recent critiques suggesting that subsidies must be embedded within broader institutional reforms to generate sustainable insurance markets (Jensen *et al.*, 2018).

Climatic risk exposure positively influences insurance adoption, supporting theoretical expectations that higher exposure to uncertainty increases demand for risk transfer instruments. Nevertheless, the evidence suggests that insurance decisions are often reactive, driven by prior loss experiences rather than proactive risk management. This behavioral pattern is consistent with findings from climate risk literature indicating that farmers tend to underestimate low-probability risks until they materialize (Binswanger-Mkhize, 2012; Kahneman, 2011). As climate change increases the

frequency and severity of extreme events, reliance on experiential learning may exacerbate vulnerability rather than reduce it.

Behavioral perceptions play a particularly powerful role in shaping insurance outcomes. The regression results indicate that negative perceptions regarding cost, complexity, and institutional reliability significantly reduce the likelihood of adoption, even when objective conditions favor insurance. This finding reinforces recent behavioral studies showing that perceptions often mediate the relationship between economic incentives and actual behavior (Römer *et al.*, 2022; Jensen *et al.*, 2018). In agricultural communities, negative narratives and peer experiences may spread more rapidly than positive ones, reinforcing skepticism toward formal insurance mechanisms.

Overall, the findings contribute to the literature by demonstrating that agricultural insurance adoption in a transition economy is best understood as a systemic phenomenon, shaped by institutional context and behavioral responses rather than purely economic rationality. The Albanian case illustrates that low uptake of insurance reflects rational decision-making under perceived institutional and economic constraints, rather than lack of awareness or farmer irrationality.

6 POLICY IMPLICATIONS AND CONCLUSIONS

6.1 Policy implications

The empirical findings of this study have important implications for agricultural and climate risk policy in Albania and similar transition economies. First, the strong effect of education on willingness to insure highlights the importance of integrating insurance-related financial literacy into agricultural extension services. However, information campaigns alone are insufficient; they must be designed to address institutional concerns and behavioral barriers simultaneously (Dercon *et al.*, 2019).

Second, the dominant role of institutional trust suggests that strengthening regulatory oversight and transparency in the insurance sector should be a policy priority. Governments should establish clear claims settlement standards, enforce compliance, and promote public disclosure of insurer performance. Trust-building measures are likely to

yield higher returns in insurance uptake than isolated awareness campaigns (Beck & Demirgüç-Kunt, 2018).

Third, premium subsidization emerges as an effective but conditional policy instrument. Stable, transparent, and well-targeted subsidies can significantly expand insurance coverage, particularly among smallholders exposed to high climatic risk. However, subsidies should be designed as transitional tools, embedded within long-term institutional development strategies to avoid dependency and market distortion (Mahul & Stutley, 2015; Jensen *et al.*, 2018).

Fourth, the reactive nature of insurance adoption in high-risk areas underscores the need to integrate insurance into broader climate adaptation frameworks. Linking insurance participation to access to credit, climate-resilient technologies, or public support programs could encourage proactive risk management and reduce reliance on ex post disaster assistance (Carter *et al.*, 2021; IPCC, 2022).

Finally, addressing negative perceptions requires sustained engagement with farming communities. Simplifying insurance products, improving communication, and leveraging peer learning mechanisms can help shift attitudes and enhance behavioral acceptance over time (Römer *et al.*, 2022).

6.2 Conclusions

This study provides comprehensive empirical evidence on the determinants of agricultural insurance adoption in Albania. By integrating educational, institutional, economic, climatic, and behavioral factors, the research offers a nuanced understanding of why insurance uptake remains low despite high exposure to risk.

The findings confirm that education increases willingness but not necessarily adoption, institutional trust enables behavioral change, subsidization reduces financial barriers, climatic risk raises awareness, and negative perceptions significantly deter insurance use. These insights contribute to the growing literature on agricultural insurance in transition economies and highlight the need for integrated policy approaches.

In conclusion, agricultural insurance can play a critical role in enhancing resilience and supporting sustainable agricultural development in Albania. Realizing this

potential requires coordinated policy action that strengthens institutions, improves affordability, and addresses behavioral constraints simultaneously.

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REFERENCES

- Arrow, K. J. (1971). *Essays in the theory of risk-bearing*. Markham Publishing Company.
- Beck, T., & Demirgüç-Kunt, A. (2006). Small and medium-size enterprises: Access to finance as a growth constraint. *Journal of Banking & Finance*, 30(11), 2931–2943. <https://doi.org/10.1016/j.jbankfin.2006.05.009>
- Beck, T., & Demirgüç-Kunt, A. (2018). Financial inclusion and stability: A roadmap for policy. *World Development*, 101, 1–15. <https://doi.org/10.1016/j.worlddev.2017.08.003>
- Binswanger-Mkhize, H. P. (2012). Is there too much hype about index-based agricultural insurance? *Journal of Development Studies*, 48(2), 187–200. <https://doi.org/10.1080/00220388.2011.625411>
- Cai, J., & Song, C. (2017). Insurance take-up in rural China. *Journal of Development Economics*, 129, 1–15. <https://doi.org/10.1016/j.jdeveco.2017.08.006>
- Cai, J., de Janvry, A., & Sadoulet, E. (2015). Social networks and insurance take-up. *American Economic Journal: Applied Economics*, 7(2), 81–114. <https://doi.org/10.1257/app.20130442>
- Carter, M. R., Cheng, L., & Sarris, A. (2017). Where and how index insurance can boost resilience. *World Development*, 93, 1–15. <https://doi.org/10.1016/j.worlddev.2016.12.007>
- Carter, M. R., Janzen, S. A., & Barrett, C. B. (2021). Climate risk and insurance demand. *World Development*, 140, 105259. <https://doi.org/10.1016/j.worlddev.2020.105259>
- Cole, S., Giné, X., & Vickery, J. (2013). How does risk management influence production decisions? Evidence from a field experiment. *Review of Financial Studies*, 26(1), 11–44. <https://doi.org/10.1093/rfs/hhs095>
- Cole, S., Stein, D., & Tobacman, J. (2017). Dynamics of demand for index insurance: Evidence from a long-run field experiment. *American Economic Review*, 107(5),

282–286.

<https://doi.org/10.1257/aer.p20171055>

Dercon, S., Hill, R., Clarke, D., Outes-Leon, I., & Taffesse, A. S. (2019). Offering insurance to the poor: Evidence from Ethiopia. *World Bank Economic Review*, 33(1), 1–20.

<https://doi.org/10.1093/wber/lhw039>

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method* (4th ed.). Wiley.

Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). Sage.

Giné, X., & Yang, D. (2009). Insurance, credit, and technology adoption: Field experimental evidence. *Journal of Development Economics*, 89(1), 1–11.

<https://doi.org/10.1016/j.jdeveco.2008.09.007>

Greene, W. H. (2018). *Econometric analysis* (8th ed.). Pearson.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage.

Harizi, A., & Trebicka, B. (2023). The integration of social media in integrated marketing communication: A systematic review and theoretical framework. *Academic Journal of Interdisciplinary Studies*, 12(6), 159–171. <https://doi.org/10.36941/ajis-2023-0146>

Hazell, P., Pomareda, C., & Valdés, A. (2010). *Crop insurance for agricultural development: Issues and experience*. Johns Hopkins University Press.

Hosmer, D. W., Lemeshow, S., & Sturdivant, R. X. (2013). *Applied logistic regression* (3rd ed.). Wiley.

IPCC. (2022). *Sixth Assessment Report: Impacts, adaptation and vulnerability*. Intergovernmental Panel on Climate Change.

Jensen, N., Barrett, C. B., & Mude, A. G. (2018). Cash transfers and index insurance: A comparative impact analysis. *Journal of Development Economics*, 134, 1–15. <https://doi.org/10.1016/j.jdeveco.2018.04.004>

Kahneman, D. (2011). *Thinking, fast and slow*. Farrar, Straus and Giroux.

Karlan, D., Ratan, A. L., & Zinman, J. (2016). Savings by and for the poor: A research review and agenda. *Review of Income and Wealth*, 62(4), 759–780. <https://doi.org/10.1111/roiw.12228>

Kullolli, T., Trebicka, B., & Fortuzi, S. (2024). Understanding customer satisfaction factors: A logistic regression analysis. *Journal of Educational and Social Research*,

14(2), 218–231.
<https://doi.org/10.36941/jesr-2024-0038>.

- Kume, E., & Trebicka, B. (2016). Is there any connection between poverty and informality? *International Journal of Economics, Commerce and Management*, 4(2), 732–740.
<http://ijecm.co.uk/>
- Lohr, S. L. (2022). *Sampling: Design and analysis* (3rd ed.). Chapman & Hall/CRC.
- Mahul, O., & Stutley, C. J. (2015). *Government support to agricultural insurance: Challenges and options for developing countries*. World Bank.
- Myftaraj, E., & Trebicka, B. (2023). Analyzing the impact of loyalty card programs on customer behavior: Insights from the Albanian market. *F1000Research*, 12, 1028.
<https://doi.org/10.12688/f1000research.137190.1>
- North, D. C. (1990). *Institutions, institutional change and economic performance*. Cambridge University Press.
- Römer, U., Mußhoff, O., & Odening, M. (2022). Behavioral determinants of agricultural insurance demand. *European Review of Agricultural Economics*, 49(2), 371–402.
<https://doi.org/10.1093/erae/jbab031>
- Tartaraj, A., Avdyli, D., & Trebicka, B. (2024). Accessing the TikTok influencer marketing on consumer behavior: An econometric examination. *Journal of Educational and Social Research*, 14(2), 346–360. <https://doi.org/10.36941/jesr-2024-0068>
- Trebicka, B. (2014). The size of underground economy in Albania. *Academic Journal of Interdisciplinary Studies*, 3(4), 503–510. <https://doi.org/10.5901/ajis.2014.v3n4p503>
- Trebicka, B. (2015). Does fiscal policy matter for economic growth? Empirical study of Albanian situation. *Interdisciplinary Journal of Research and Development*, 2(2), 9–12.
- Trebicka, B. (2023). Understanding governance dynamics and success factors in family-owned businesses: A focus on corporate governance in family firms. In M. Tutino, V. Santolamazza, & A. Kostyuk (Eds.), *New outlooks for the scholarly research in corporate governance* (pp. 99–104). Virtus Interpress. <https://doi.org/10.22495/nosrcgp19>
- Trebicka, B., Harizi, A., Krasniqi, M., Kalaja, R., & Tartaraj, A. (2024). Financial development and economic growth: Exploring the impact of financial systems, stability, and institutional quality on economic performance. *Risk Governance & Control: Financial Markets & Institutions*, 14(3), 76–85. <https://doi.org/10.22495/rgcv14i3p8>

Wooldridge, J. M. (2020). *Introductory econometrics: A modern approach* (7th ed.). Cengage.

World Bank. (2015). *Agricultural insurance development in transition economies*. World Bank Group.

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All authors contributed equally to the development of this article.

Data availability

All datasets relevant to this study's findings are fully available within the article.

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