

ECONOMIC EXPERIMENTS IN DESIGNING NEW AGRICULTURAL POLICIES AND MEASURES

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Abstract

The agricultural sector in North Macedonia continues to face structural and productivity challenges, compounded by weak market integration and a lack of innovative policy responses. Economic experiments provide a structured framework for understanding behavioral responses to policy interventions, facilitating the development of more effective agricultural policies. This study examines the effectiveness of different policy measures in encouraging youth engagement in farming. A pilot survey was conducted with 77 agricultural university students to assess their responses to three distinct policy scenarios: (1) financial support for business investments, (2) allocation of state-owned land, and (3) a combined land-and-housing incentive. The findings indicate that financial support and structured investment mechanisms are more effective in encouraging agricultural participation than land-based incentives alone. While the student sample was selected for its familiarity with agricultural issues and potential future involvement in the sector, the results may not fully reflect the decision-making behavior of active young farmers. These insights contribute to evidence-based policymaking by offering empirical guidance for designing agricultural policies that better support youth participation in the sector.

Keywords: economic experiments, agricultural policy, young farmers, North Macedonia, policy evaluation.

Introduction

Agricultural, rural development, and food policies play a critical role in shaping the sustainability and resilience of agricultural sectors worldwide. These policies incorporate a wide array of measures, including direct financial assistance, investments in infrastructure, and incentives for sustainable resource management. However, the complexity and heterogeneity of these policy instruments pose significant challenges in terms of defining clear objectives, categorizing policy tools, and establishing effective monitoring and evaluation mechanisms. Policymakers must

ensure that agricultural policies are not only equitably applied but also efficiently implemented to maximize their impact.

Traditionally, agricultural policies have been formulated using evidence-based approaches grounded in structured policy cycles. These cycles encompass problem identification, policy design, implementation, and subsequent monitoring and evaluation. However, agriculture is increasingly influenced by dynamic forces such as technological advancements, climate change, market fluctuations, and demographic shifts. These evolving conditions necessitate the adoption of more flexible and innovative methodologies. Economic experiments offer a promising tool in this regard, providing a controlled framework to assess how farmers respond to various policy incentives and interventions. By simulating real-world decision-making processes, these experiments generate empirical evidence that can enhance the design and implementation of agricultural policies.

This study focuses on the application of economic experiments in agricultural policy formulation, with particular emphasis on supporting young farmers in North Macedonia. Given that the European Union's Common Agricultural Policy (CAP) conducts rigorous impact assessments before implementing new policies, integrating economic experiments into agricultural policy evaluation is crucial. These experiments can help policymakers understand behavioral drivers, test policy alternatives before full-scale implementation, and assess policy effectiveness in ex-post evaluations.

The Critical Role of Economic Experiments in Designing CAP Policies and New Agricultural Measures

Economic experiments are increasingly recognized as a powerful tool in agricultural policy evaluation, particularly in the context of the European Union (Colen et al. 2015). By allowing for the controlled testing of policy measures before implementation, economic experiments help mitigate unintended consequences and refine policy structures. This approach is especially relevant for non-EU countries like North Macedonia, where agricultural policy frameworks need to align with EU standards while also being adapted to local conditions.

Understanding farmer behavior is essential for designing effective agricultural policies, and economic experiments provide valuable empirical insights into how various incentives influence decision-making. In recent years, economic experiments have been increasingly applied in agricultural policy research to assess how farmers respond to financial support, land grants, and other policy interventions (Lefebvre et al. 2021, Rommel et al. 2024). Prior studies have emphasized the role of economic preferences—such as risk tolerance and financial incentives—in shaping agricultural investment decisions. In the context of North Macedonia, where agricultural structures and market conditions differ significantly from those in EU member states, economic experiments offer a critical tool for developing policies tailored to local challenges and realities.

A key strength of economic experiments lies in their ability to isolate specific policy elements and establish causal relationships. Through randomized control designs, these experiments enable precise evaluations of how farmers react to different policy interventions. This approach is particularly relevant in North Macedonia's small and evolving agricultural sector, where policy missteps can have significant economic consequences (Dimitrievski et al. 2016, 2017). By focusing specifically on young farmers, this study contributes to the growing literature on agricultural policy by examining how alternative support measures influence youth engagement in farming. The findings offer new insights into the behavioral factors that shape young farmers' policy preferences, helping to refine future agricultural programs aimed at fostering generational renewal in the sector.

Methods

This study employed a pilot survey as a precursor to a larger economic experiment aimed at assessing the effectiveness of various policy measures designed to support young farmers in North Macedonia. The survey was conducted using a structured decision-making framework, where participants were presented with different policy scenarios and asked to make choices that reflected their preferences.

The survey was administered using Qualtrics and involved 77 students from the Faculty of Agricultural Sciences and Food – Skopje. These students were selected based on their familiarity with agricultural issues and their potential future engagement in the sector. Participants were divided into groups and asked to evaluate three distinct policy scenarios:

Table 1 Three policy scenarios included in the survey

Scenario 1	Financial support for a business plan covering 60% of investment costs
Scenario 2	Allocation of 5 hectares of state agricultural land without rent for 15 years
Scenario 3	Allocation of a house and 2 hectares of state-owned land in a rural area

The selection of the three policy measures in this study was guided by an analysis of existing agricultural support programs, policy discussions, and the insights of experts working in agricultural and domestic policy in North Macedonia. These experts, who are directly involved in the development and implementation of support programs, contributed their practical knowledge and experience to ensure that the selected measures reflected real-world challenges and opportunities. Their expertise provided a deeper understanding of the structural barriers young farmers face and the types of incentives that could realistically encourage long-term engagement in agriculture. Financial support for business plan investments was chosen due to its widespread use in the EU's Common Agricultural Policy (CAP) and its effectiveness in fostering agricultural entrepreneurship. Experts emphasized that access to startup capital is often a greater barrier than land availability, making financial support a crucial factor in motivating young people to enter the sector. The allocation of state-owned land was included in response to the well-documented challenge of land access, which remains one of the most significant obstacles for new farmers in North Macedonia. Experts in domestic policy highlighted that while land availability is an

important factor, it is often not enough on its own to sustain agricultural businesses. The combined provision of land and housing was incorporated to explore whether an integrated approach—one that addresses both workspace and living conditions—could offer stronger incentives for young farmers to establish long-term agricultural careers. The measures selected reflect not only theoretical policy options but also the realities of what can be effectively implemented in practice. This approach strengthens the study's contribution to evidence-based policymaking, offering valuable insights into how support programs can be designed to better serve the needs of young farmers and foster generational renewal in agriculture.

Participants were first introduced to the study's objectives and the decision-making framework. After selecting their preferred policy scenario, they provided responses on their likelihood of remaining in agriculture under their chosen policy option. Additionally, a behavioral analysis was incorporated to assess participants' economic preferences, including risk attitudes (risk aversion, prudence, and temperance) and time preferences (patience and impulsivity) (Dohmen et al. 2011, Vischer et al 2013). Regression analysis was performed to determine whether these behavioral factors influenced the selection of a preferred policy measure. The statistical analysis was conducted using STATA software. Participants were asked a follow-up question to determine whether they would realistically engage in agriculture if their preferred policy option were implemented in real life. The responses provided additional insight into the potential impact of these incentives on youth engagement in the agricultural sector.

Limitation

A key limitation of this study is that the participants were university students rather than active farmers. While students in agricultural programs represent a pool of potential future farmers, their decision-making processes may differ from those of individuals already engaged in farming. Unlike real farmers, students may not have direct experience with agricultural risks, market fluctuations, or investment constraints, which could influence their responses to policy incentives. Future research should expand the sample to include young farmers actively working in the sector to validate the findings in a more practical context.

Results

The pilot survey examined the decision-making behavior of 77 student participants when choosing among three incentive-based policy measures designed to support young farmers. Among these participants, 54.55% were female and 45.45% male, indicating a roughly balanced gender representation. Importantly, we found no significant differences in scenario choices between male and female respondents, suggesting that young men and women share similar priorities regarding the incentives that would encourage them to engage in agriculture.

Each participant selected one preferred policy scenario out of three options (a financial support program, a land grant, or a combined land-and-housing offer). The distribution of preferences was as follows:

Scenarios	Participants choice
Financial support through a business plan investment	62.34% (the most popular option)
Provision of a house and 2 hectares of land	23.38%
Allocation of 5 hectares of state land (rent-free for 15 years)	14.29% (the least popular option)

These results demonstrate a strong preference for direct financial support over land-only incentives. While access to land (especially when coupled with housing or infrastructure) is valued by some respondents, simply providing land without any financial backing appears insufficient to attract the majority of young individuals to a long-term career in the agricultural sector. The dominance of the business plan financial support option highlights the importance of financial security and startup capital in motivating young people to consider farming. In contrast, the low selection of the land-only option indicates that land grants alone do not address key barriers (such as initial investment costs or income stability) faced by aspiring young farmers.

Figure 1 Gender Distribution of Study Participants

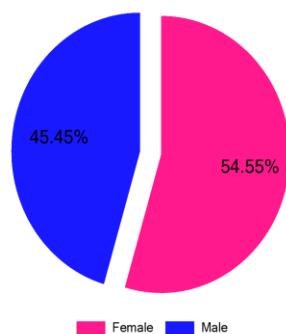


Figure 2 Preferred Policy Options for Retaining Young People in Agriculture

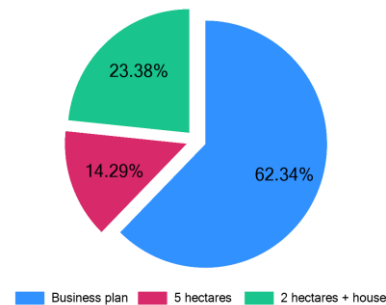


Figure 3 Opinion on other Students' Preferred Options

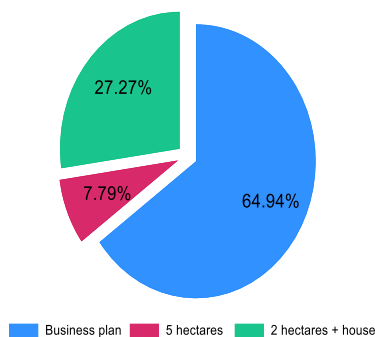
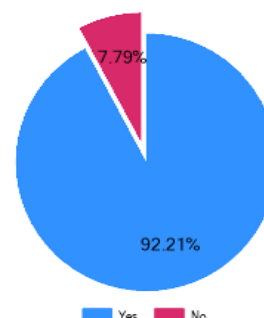


Figure 4 Likelihood of Staying in Agriculture if Preferred Policy Option is Implemented



The survey also revealed that majority (92.21%) of participants indicated they would remain in or take up agriculture if their preferred policy option were implemented. This high affirmative response underscores that well-designed incentive measures can significantly increase young people’s willingness to pursue agriculture as a long-term career. Conversely, the small fraction of respondents who would not stay in agriculture even if they received their preferred support suggests that other external factors influence their decision. These factors could include personal career aspirations outside of farming, perceptions of the profitability and risks of agriculture, or uncertainties such as market volatility and climate challenges. These finding signals that, beyond providing financial and material incentives, a holistic policy approach is needed – one that also addresses broader issues like market stability, access to technology, and the long-term viability of farming – to fully encourage youth engagement in the agricultural sector.

Analysis of Economic Preferences: To explore whether individual traits affected these choices, we analyzed participants’ self-reported economic preferences – including risk attitudes (risk aversion, prudence, temperance) and time preferences (patience and impulsivity) – and tested their influence on policy selection. The regression analysis showed that none of these behavioral factors were strong predictors of the chosen policy scenario. In statistical terms, the coefficients for risk-related measures did not reach significance in explaining whether a participant chose the financial support, land-only, or land-and-house option. Similarly, time preference measures (such as patience or impulsivity) had no significant impact on the choice of incentive. In other words, participants with different risk tolerance or time horizon attitudes did not systematically prefer different policy options in this sample. One minor exception was a coefficient for the “temperance” trait, which was statistically significant (at the 5% level) for the least-preferred scenario (the 5-hectare land grant); however, this isolated effect does not alter the overall conclusion that inherent risk and time preferences were not major drivers of decision-making in this context. Instead, the nature of the incentive itself – particularly the presence of substantial financial support – was the dominant factor guiding choices, as evidenced by the majority gravitating toward the business plan funding scenario regardless of their personal risk profiles. It is worth noting that the limited sample size and relatively homogeneous composition (all being university students in agricultural sciences) may have constrained our ability to detect subtle relationships between behavioral traits and policy preferences. With a larger and more diverse pool of participants, small influences of risk aversion or patience might emerge more clearly. Therefore, expanding the study to include more respondents – especially young people already engaged in farming or from varied backgrounds – could provide deeper insights into how individual economic preferences might interact with policy-choice decisions. Such an expansion would help determine if our current findings hold broadly and would inform the design of more finely targeted agricultural support programs.

Table 2 Students’ Economic Preferences

Variable	Coefficient	Std. Error
Risk		
5 hectares	-0.286	0.709
2 hectares + house	0.063	0.586

Constant	8.104***	0.306
Prudence		
5 hectares	-0.894	0.903
2 hectares + house	-0.333	0.746
Constant	6.167***	0.39
Temperance		
5 hectares	-1.581**	0.663
2 hectares + house	0.09	0.548
Constant	8.854***	0.286
Patience		
5 hectares	0.008	0.804
2 hectares + house	0.417	0.664
Constant	8.083***	0.347
Impulsivity		
5 hectares	0.803	0.913
2 hectares + house	0.944	0.755
Constant	5.833***	0.394

Significance levels: ***p < 0.01, **p < 0.05, *p < 0.1.

Discussion

The findings from this pilot study provide clear evidence that financial incentives play a more decisive role than land-based measures in attracting young individuals to agriculture, aligning with previous research that highlights the primacy of monetary support over land grants for youth engagement (Lefebvre *et al.*, 2021). In our pilot survey, the option of receiving structured financial support (covering a portion of a business plan's investment costs) overwhelmingly outshone the alternatives, indicating that young prospective farmers perceive initial capital and financial security as critical prerequisites for entering and sustaining a farming career. Notably, this strong preference for financial support was consistent across genders in our sample, suggesting a broadly shared view among young men and women about what support they find most compelling. The results also speak to the role of individual behavioural traits in policy responses. While one might expect factors such as risk tolerance or patience to shape how young people respond to different incentives, in this study these traits did not emerge as primary determinants of choice. This outcome resonates with some studies that acknowledge risk and time preferences can influence farmer decision-making but suggest they are not the sole drivers of policy effectiveness (Rommel *et al.*, 2024). In fact, despite measuring a range of economic preference variables, we found that the attractiveness of the policy options was largely uniform across participants with varying risk profiles. One interpretation is that the appeal of the financial support option was so strong that it overshadowed any differences in individual risk aversion or time preference. Another possibility is that our relatively uniform group of students had similar attitudes, meaning there was limited variation in risk/patience to begin with. It is important to note, however, that this does not invalidate the importance of understanding farmers' risk preferences in general. For instance,

Nainggolan and Rommel (2023) emphasize that accounting for risk attitudes is crucial when designing policies to encourage new entrants into farming. Our findings suggest that in a controlled choice scenario, immediate financial incentives may outweigh nuanced personal differences, but in real-world settings, extremely risk-averse individuals or those with short planning horizons might still respond differently to certain policy structures. This nuance points to the value of further research on how and when behavioural traits interact with policy uptake. Crucially, the high proportion of participants (over 92%) who indicated they would stay in agriculture if their preferred policy were enacted underscores the potential impact of well-targeted support measures. This empirical evidence supports the idea that policy design should be grounded in the actual preferences and needs of young farmers, rather than on assumptions about their behaviour or one-size-fits-all solutions. In practical terms, our study suggests that initiatives focusing solely on land provision are unlikely to be sufficient. Land-based incentives, while still important, should be complemented by financial assistance and other support mechanisms to lower the barriers to entry for new farmers. Young people appear to respond most positively to policies that reduce their financial risk and provide a path to profitability, which in turn boosts their confidence in farming as a viable long-term profession. By incorporating such insights, policymakers can design interventions that more effectively motivate the next generation of farmers.

Conclusions

This study underscores the importance of economic experiments in developing effective agricultural policies. The findings show that financial support, particularly business plan investment assistance, is the most effective measure in encouraging young people to pursue farming, while land-based incentives alone are insufficient. Financial security, startup capital, and access to infrastructure play a decisive role in shaping career decisions in agriculture. The high percentage of participants willing to engage in farming if their preferred policy measure were implemented highlights the need for targeted incentives. The study also reveals that while economic preferences such as risk tolerance and time preference were considered, the type of support offered had a greater influence on decision-making. Future research should expand the participant pool to include young farmers actively engaged in agriculture to gain a more comprehensive understanding of their needs. Additionally, real-world economic experiments testing policy implementation would provide valuable insights into long-term effectiveness. Policymakers should integrate economic experiments into agricultural policy design, prioritizing financial support alongside complementary measures such as infrastructure, training, and market access. Aligning policies with the actual preferences of young farmers can foster a more resilient agricultural sector, ensuring sustainable rural development and long-term engagement in farming.

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