

Extended Abstract

Paper/Poster Title	How Sustainable is the Adoption of Agri-Environmental-Climate Scheme? The Case of the European Union country
---------------------------	---

Abstract prepared for presentation at the 98th Annual Conference of The Agricultural Economics Society will be held at The University of Edinburgh, UK, 18th - 20th March 2024.

Abstract	<i>200 words max</i>
<p>This study explores the intricate dynamics of farmers' decision-making in the context of the European Union's agri-environmental-climate schemes (AECSs), with a focus on the temporal factors that impact participation and the long-term viability of environmentally friendly practices. The study utilises data from the Slovenian Farm Accountancy Data Network (FADN) spanning from 2014 to 2021. It employs two step approaches including Heckman selection models and discrete-time duration models to examine the complexities of adopting AECS and the length of time they are implemented.</p> <p>The results indicate that 69.8% of Slovenian FADN farms employ AECSs, and 82% of these farms demonstrate ongoing engagement, indicating a dynamic relationship between adoption and maintenance. The study specifically identifies several factors, such as unpaid labour, rented land, total fixed assets, and specific farm types, that have an impact on the length of participation in AECS.</p> <p>The research emphasises the importance of taking into account time-varying factors when analysing farmers' choices regarding the renewal of AECS contracts or opting out of the scheme. The study provides valuable insights into how farmers' participation changes over time, which is important for tailoring AECSs to align with farmers' decision-making patterns. This can lead to more effective and long-lasting environmental benefits. In summary, this study contributes to the growing body of research on the effectiveness and long-term viability of AECS. It provides a comprehensive viewpoint on how these schemes encourage environmentally friendly practices among farmers in Europe.</p>	
Keywords	Agri-environmental-climate programmes, adoption, selection model, duration analysis, Common Agricultural Policy
JEL Code	Q10, Q18
Introduction	<i>100 – 250 words</i>
<p>The European Union (EU) offers voluntary incentive programmes called agri-environmental-climate schemes (AECSs) to encourage the adoption of eco-friendly practices. AECSs have not always had the anticipated adoption rates, despite the fact that these schemes have been in different forms continuously proposed since</p>	

the early 1990s. A plethora of research has now been conducted to demonstrate the scientific validity of the role that institutional components, farmers' motivations and attitudes, and farm structural factors play in determining participation. Recently, there has been discussion on the temporal dynamics of participation, sparked by the increasing availability of participation data and growing concerns about the long-term efficacy of AECSs. It is necessary to evaluate the effects of AECSs over the long term since environmental benefits frequently take a long time to materialise. This means that even after an AECS contract has ended, consideration must be given to the temporal dynamics of farmers' participation. In order to more effectively target and customise AECSs and produce environmental benefits that are more long-lasting, it is helpful to take farmers' decision-making patterns into account when extending an AECS.

The purpose of this paper is to contribute to the emerging research on the adoption and duration of AECSs by examining the influence of the time dimension on farmers' decision-making when they have to choose between renewing their contract and staying in the scheme. More precisely, it aims to expose the effects of time-varying factors influencing the innovation diffusion patterns, such as the farmer's learning process connected to the duration effect, as well as determinants like some static farmer and farm structural characteristics, over the "staying or leaving" option.

Methodology

100 – 250 words

We use the Slovenian Farm Accountancy Data Network (FADN) data for the period 2014-2021. The balanced FADN panel data are used to avoid the unknown reason why farmers exit from the AECS. Due to the nature of unbalanced FADN data the reason for farm exit can be because a farm is not anymore included in the FADN data collection. We use two step approaches. First, we employ Heckman selection models to explain the adoption of AECS and the intensity of AECS. Second, we investigate the drivers of the duration of the AECS. A discrete-time duration model was chosen over continuous-time approaches for two primary rationales: i) the moment a farmer is initially exposed to the risk, specifically when they sign an AECS contract, is inherently discrete due to the fact that calls for contract subscription are not issued annually in a given Rural Development Programme but rather depend on the decisions of policy-makers; ii) the decision to depart from the arrangement demonstrates significant "ties" to the duration, as this option is most commonly exercised after the fact. As is the case with our data, which contains multiple tied-duration times, the continuous-time approach is rendered unreliable.

Results

100 – 250 words

AECS is adopted by 69.8% of Slovenian FADN farms. 82% of AECS farms have one continuous spell, while the rest have two or three. This suggests farms switch between AECS adoption and maintenance. 50% of farms that implemented AECS measures lasted 8 years before the 9-year analysis. AECS was adopted by 25% of farms in a year and 15% for six. Adoption shortens years 2, 3, 4, 5, and 7.

Unpaid labour is positive in the baseline model (1), indicating a higher likelihood of abandoning AECS with payments. Spells, gender, land, subsidy, and labour lower AECS payment abandonment. No other variables matter.

The model controlled with type of farming-fixed effects (2) reinforces most regression coefficients from the baseline model, except for total labour, which became statistically insignificant, and total fixed assets, which became significantly positive. Horticultural farms have lower regression coefficients than dairy, wine, and grazing livestock farms. Significant positive variables increase the likelihood of stopping AECS adoption with payments, while significant negative variables decrease it.

Unpaid labour, rented land, total fixed asset, 2015, and 2016 are positive in the year-fixed effects model (3). This makes payments to stop AECS adoption more likely. CAP subsidy, spells, gender, labour, and land lower AECS payment abandonment.

Rented land, total fixed asset, total output, 2015 and 2016, dairy, other grazing livestock, and wine farms were positive in the model controlled with type of farming- and year-fixed effects (4). They increase the likelihood of stopping AECS adoption with payments. Spells, gender, land, CAP subsidy, and horticultural farms reduce the likelihood of leaving AECS and getting paid.

Discussion and Conclusion

100 – 250 words

This study contributes to examination of the intricate dynamics of farmers' decision-making in the EU's agri-environmental-climate schemes (AECSs), focusing on the temporal factors that impact participation and the sustainability of eco-friendly practices. The research, based on the Slovenian FADN balanced panel dataset from 2014 to 2021, employs a two-step approach, utilizing Heckman selection models and discrete-time duration models.

The findings underscore the significance of considering time-varying factors in understanding farmers' choices between renewing AECS contracts and leaving the scheme. Notably, the study reveals that 69.8% of Slovenian FADN farms utilize AECSs, with 82% displaying continuous involvement. The adoption patterns indicate a fluctuation between AECS adoption and maintenance, with various farms lasting different durations in the program.

Furthermore, the analysis of factors influencing AECS duration highlights the role of unpaid labour, rented land, total fixed assets, and specific farm types. The study emphasizes the importance of tailoring AECSs to farmers' decision-making patterns for more effective and lasting environmental benefits. Overall, the research contributes valuable insights to the ongoing discourse on the efficacy and sustainability of AECSs in promoting eco-friendly practices among European farmers.