

Extended Abstract

Paper/Poster Title	The impact of agricultural subsidies on environmental pollution in the European Union
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Abstract prepared for presentation at the 96th Annual Conference of the Agricultural Economics Society, K U Leuven, Belgium

4th – 6th April 2022

Abstract	200 words max
<p>EU agricultural production accounted for 40 % of the total land area of the European Union Member States, providing farming opportunities for 9.7 million workers. In the EU, agriculture also is responsible for a significant share of greenhouse gas emissions. The research investigates how the evaluation of agricultural subsidies under the Common Agricultural Policy (CAP) can contribute to agricultural sustainability in the European Union. The research question addresses the implementation of climate agreements into CAP regulations and the influence of agricultural subsidies on greenhouse gas emissions. Panel data econometrics is employed to analyse the effectiveness of EU subsidies on diminishing agricultural emissions between 2004 and 2019. The results suggest that some agri-environmental measures included in the Common Agricultural Policy served to cut GHG emissions by increasing the area of organic farming. The expansion of organic farming and CAP payments on rural development contributed significantly to CO₂ emissions reduction in the EU. On the other hand, CAP direct payments rather stimulated GHG emissions. The results draw attention to the need for action to curb EU agricultural emissions by reforming or restructuring the system of direct agricultural subsidies.</p>	
Keywords	Sustainable agriculture, environmental pollution, CAP
JEL Code	Q14, Q53, Q18 see: www.aeaweb.org/jel/guide/jel.php?class=Q)
Introduction	100 – 250 words
<p>The European Union has set a target to achieve carbon neutrality by 2050, which may become a reality in accordance with the member states commitments. EU agricultural production accounted for 40 % of the Member States' total land area, providing farming opportunities for nearly 9.7 million workers. In the European Union, agriculture is responsible for long-lived greenhouse gas emissions such as 53% of methane and 74% of nitrogen dioxide. In the EU, 42% of agricultural emissions are derived from the enteric fermentation of animals, 38% from soil management, 16% from manure management and 4% from other sources (Barrett et al. 2010). The research examines how direct and indirect agricultural subsidies under Common Agricultural Policy can contribute to agricultural sustainability in the European Union, where the primary sector has a long tradition in most of the Member States. The research question addresses how the implementation of climate agreements into CAP regulations may influence</p>	

greenhouse gas emissions. What are the results achieved and things to do in the future?

Methodology

100 – 250 words

Panel data econometrics is used to analyse the effectiveness of EU agricultural subsidies on the agricultural CO₂ emissions between 2004 and 2019.

In this research, the CAP-related determinants of CO₂ emission are investigated for the 27 EU member states. The dependent variable captures the EU agricultural GHG emissions (emissions CO₂ equivalent, IPCC AR5, expressed in kilotons). The applied explanatory variables consist of organic farming, the total payments of Common Agricultural Policy (CAP), including the CAP direct payments and the Total support for rural development in Euro.

The data are collected from the Food and Agriculture Organization Statistical Database (FAOSTAT), EUROSTAT FADN Public Database (SO), and the Research Institute of Organic Agriculture FiBL database. Standard and cointegrated panel regression estimations are applied.

Results

100 – 250 words

Due to the unequal geographical distribution of CAP subsidies, the reduction of agricultural greenhouse gases varies across the EU Member States.

The agri-environmental measures included in the Common Agricultural Policy helped to increase the area of organic farming, which have stimulated the reduction of GHG emissions. CAP reforms have encouraged farmers to set up organic farms by introducing green components and allocating a high percentage of subsidies for sustainable production. The organic farmlands increased by 214% in 2018 compared to 2000.

Of the variables examined, the expansion of organic farming and total payments on rural development contributed significantly to EU CO₂ emissions reduction. In turn, direct CAP payments increased GHG emissions.

Discussion and Conclusion

100 – 250 words

The recent CAP reforms have increased the share of agri-environmental subsidies, creating supporting elements that encourage greening and more sustainable agricultural production.

In contrast, the analysis of the CAP agri-environmental measures has highlighted its weaknesses in mitigation and potential for improvement. In the future, specific targets and raising support for sustainable organic farming could be a solution for policymakers.

Moreover, from environmental aspects, it might be advantageous to consider extending green financial supports as it would create an additional stimulus for agriculture, providing resources for sustainable production and incentives for emission

cuts in the sector. The results draw attention to the need for action to curb EU agricultural emissions by reforming the system of direct payments (single area payment, farm payments) and agricultural subsidies as a whole.

Several policies are designed to achieve sustainability in the EU, such as Farm to Fork strategy, ecosystems and biodiversity etc. Sustainability can have incorporated into EU policy through the pursuit of green finance and investment, the greening of budgets, research and innovation, education and training.