Explaining the regional distribution of the Common Agricultural Policy rural development subsidies

Jüri Lillemets[1], Ants-Hannes Viira[1]
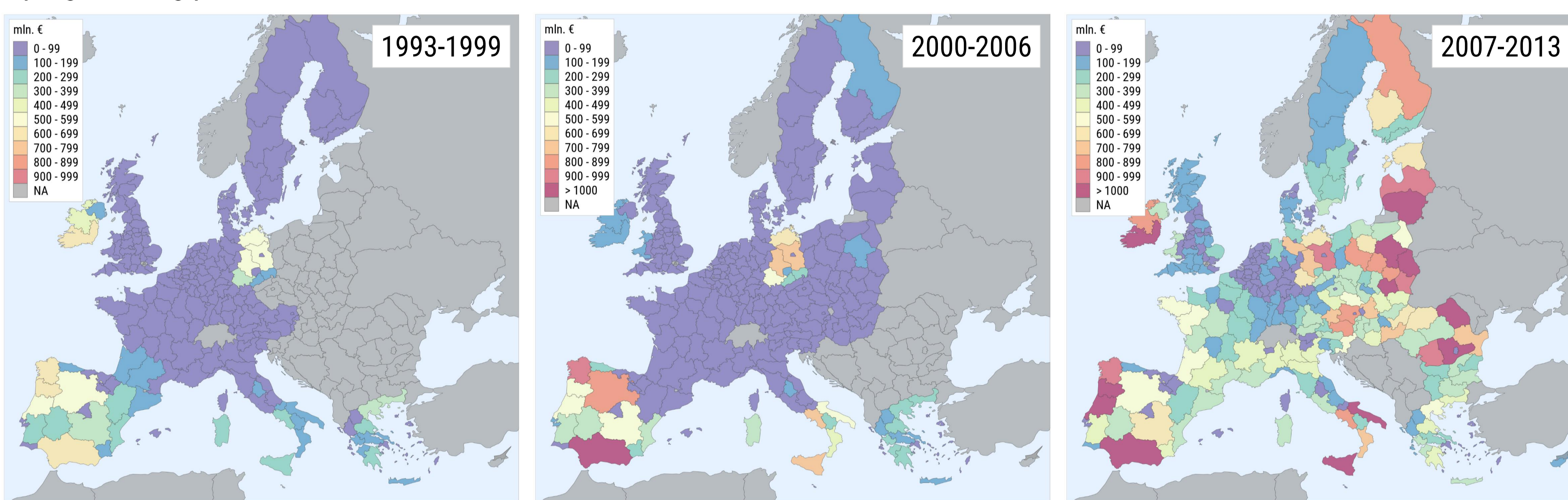[1]Estonian University of Life Sciences

Introduction

Among other EU policies and funds established to support balanced regional development is the Common Agricultural Policy (CAP) with its measures for rural development. Despite that for decades the main aim of the CAP was to ensure sufficient income for farmers and stable supply of food for consumers, goals related to environment and rural communities have become increasingly important. Although some measures of CAP with territorial characteristics can be traced back to 1970's (Dwyer et al 2007), it was not until the establishment of the Pillar 2 in 2000 as part of the CAP that economic cohesion became an explicit goal of the policy (Garzon 2006). Yet, despite a strong territorial agenda, it can be argued that territorial aspects have not been sufficiently considered in the policy design of the CAP nor Pillar 2 in particular (Zasada et al 2018). Due to being based on historical crop yields, payments related to Pillar 1 are inclined to be higher in wealthier regions but there is also no negative correlation between Pillar 2 support and regional income (Esposti 2008). It has also been demonstrated that distribution of funds from other regional policies have stronger association with regional disadvantage compared to Pillar 2 (Crescenzi 2011). The policy changes and related findings validate a further examination of the possible explanations of the distribution of CAP rural development subsidies.

Research aims

The aim of the research is to determine which factors explain the regional distribution of CAP subsidies for rural development. These subsidies are measured as EU funded payments related to rural development from European Agricultural Guidance and Guarantee Fund (EAGGF) and all payments from European Agricultural Fund for Rural Development (EAFRD). Because the rural development measures of Pillar 2 are programmed and implemented in a more targeted way compared to other CAP measures (Uthes and Kelly 2017), the funds are expected to be allocated according to regional development. We thus hypothesize that (H1) more CAP rural development funds have been allocated to regions with lower economic and social development. Agricultural support is likely to slow the reallocation of labor and capital to other sectors (Esposti 2008) and thus be counterproductive to the economic development of rural areas. Therefore we expect that (H2) the distribution of CAP subsidies for rural development is explained by economic development rather than agricultural production. Since 1992, each consecutive reform of the CAP has increased its focus on environment and rural development. Thus, we hypothesize that (H3) the importance of factors related to agriculture in explaining the distribution of CAP rural development subsidies has decreased.

Figure 1

Distribution of EAGGF and EAFRD funds in NUTS2 regions before the implementation of Pillar 2 in 2000 and during the programming periods of 2000-2006 and 2007-2013.

Table 1

OLS regression estimates explaining the EAFRD payments in selected NUTS2 regions. Calculations are based on 2013-2015 average values.

	EAFRD payments (mln. €)			
	All variables	Production	Agriculture	Economy
Harvested cereal (thous. t)	-0.006 (0.004)	0.012*** (0.003)		
Bovine animals (thous.)	-0.004 (0.015)	0.020* (0.011)		
UAA (thous. ha)	0.015** (0.007)		0.010** (0.005)	
Agricultural holdings (thous.)	0.095*** (0.028)		0.101*** (0.029)	
Investments into agriculture (€)	0.043*** (0.014)		0.032*** (0.007)	
Employment in agriculture (%)	0.816** (0.332)		1.025*** (0.304)	
GDP (mln. €)	0.00004* (0.00002)			0.0001 (0.0001)
Average income (€)	-0.001*** (0.0004)			-0.003*** (0.001)
Unemployment, ages 15-74 (%)	-0.178 (0.277)			-0.125 (0.525)
Constant	21.074** (9.307)	14.142*** (3.487)	1.318 (2.136)	65.856*** (12.989)
Observations	145	145	145	145
R^2	0.595	0.226	0.566	0.210
Adjusted R^2	0.568	0.216	0.554	0.193
F Statistic	22.055*** (df = 9; 135)	20.782*** (df = 2; 142)	45.634*** (df = 4; 140)	12.474*** (df = 3; 141)

Note: *p<0.1; **p<0.05; ***p<0.01
Robust standard errors in parenthesis.

Data and methods

The data on CAP rural development subsidies was obtained from the data on European structural and investment funds publicized by the European Commission. It contains the amount of payments to each NUTS2 region between 1993-2015 from EAGGF and EAFRD. Data on explanatory variables was acquired from Eurostat. The effect of different variables on the amount of CAP rural development subsidies was assessed via OLS regression models where each observation represented a NUTS2 region.

Table 2

OLS regression estimates explaining the amount of EAFRD payments in NUTS2 regions. Calculations are based on average values of given years. Due to missing data only the following countries are included: Greece, Spain, Finland, Italy, Luxembourg and Sweden.

	EAGGF/EAFRD payments (mln. €)		
	1992-2000	2001-2006	2007-2013
UAA (thous. ha)	0.007*** (0.002)	0.014*** (0.004)	0.004 (0.004)
Agricultural holdings (thous.)	0.162*** (0.042)	0.412*** (0.062)	0.679*** (0.093)
Investments into agriculture (€)	-0.016 (0.010)	-0.021** (0.009)	0.033** (0.015)
Constant	4.850*** (1.769)	-1.514 (3.112)	0.793 (5.203)
Observations	53	53	53
R^2	0.626	0.728	0.807
Adjusted R^2	0.603	0.711	0.795

Note: *p<0.1; **p<0.05; ***p<0.01
Robust standard errors in parenthesis.

Results

CAP subsidies related to rural development tend to be higher in regions that are peripheral relative to EU and changes to CAP have further diversified the amounts of subsidies received by regions (Figure 1). The results of OLS regression (Table 1) indicate that the included variables explain more than half of the variation in regional CAP rural development subsidies in 2013-15, but this is mostly due to variables related to agriculture. Total size of UAA, number of agricultural holdings, investments into agriculture and agricultural employment are all positively correlated to the subsidies at regional level. Although payments are higher in wealthier regions in terms of absolute GDP, average income has a negative effect while correlation with unemployment is not significant (H1). Variables characterizing economic development are significantly related to the subsidies as opposed to agricultural production (H2). The variation in CAP rural development subsidies that can be explained by agricultural variables (Table 2) has not decreased over time but substantially increased in selected countries (H3). The number of agricultural holdings appears to be the most important predictor of the amount of subsides and between 1992-2013 its importance has increased.

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Further analysis

Because longitudinal panel data was used, panel data analysis methods such as fixed or mixed effects models may be implemented in the future due to being potentially more robust than OLS. Spatial dependencies of the subsidies can also be evaluated by calculating the Moran's I (e.g. Dall'erba and Le Gallo 2005, Crescenzi et al 2011), including spatial lags to regression models or implementing other spatial methods. In the future, FADN data may also be included to the analysis due to being more consistent and complete than data used in the current analysis.

Corresponding author: Jüri Lillemets, jyri.lillemets@emu.ee