

THE CONCENTRATION AND SPECIALIZATION OF EUROPEAN FUNDS FOR AGRICULTURE IN THE COUNTRIES OF CENTRAL AND EASTERN EUROPE

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Abstract

The current European policies for agriculture are characterized by efficiency and economic performance. Their main objective is the stability of the environment. For any European country, European integration represent or must represent stability and economic growth, this two elements being essential to adapt to the current macroeconomic changes. The main objective of this paper is to analyse the evolution of the situation of the countries of Central and Eastern Europe regarding the influence of European funds for agriculture. Being members of the European Union, the countries of Central and Eastern Europe had to adopt the *acquis communautaire* regarding European agricultural policy and must use EU funds for rural development. The aspect that individualizes this paper is the analysis of regional specialization and concentration of European funds for agriculture using the Herfindahl-Hirschman index. The analysis will be based on data from international institutions.

Key words: regional development, rural areas, European funds, Herfindahl-Hirschman index

INTRODUCTION

The Common Agricultural Policy is financed by two funds, part of the EU's general budget: the European Agricultural Guarantee Fund (EAGF) and the European Agricultural Fund for Rural Development (EAFRD). The first fund finances direct payments and market measures to stabilize agricultural markets (public or private storage and export refunds). The second fund finances the rural development programs of the Member States. Within the multiannual financial framework 2007-2013, the EU contributed with 96 million euro to Rural Development Policy, focusing on the competitiveness improvement of farming and forestry, the environment protection of countryside, the improvement of the quality of life and the diversification of the rural economy. For agriculture and rural development the funds allocated were around 312 million. For the period 2014-2020, the multiannual financial framework sustained CAP with 412 million euro [4].



Fig. 1. European budget 2014-2020
Source: European Commission, 2019 [2].

The EAGF pillar support farmers' incomes provided in the form of direct payments and market-support measures [3]. The European Agricultural Fund for Rural Development (EAFRD) has around 100 million euro and the implementation programmes will run until the end of 2023 [3]. This paper develop a methodological framework, trying to analyze and measure the relation between European funds for agriculture and specialization and

concentration of countries using statistical formulas, in particular index.

The specialized literature considers that economic development has a strong connection and has influenced regional specialization and concentration.

In 1991, specialization of countries in certain sectors and concentration of industries in regions have been considered identical by Krugman [10]. He used the data about American and European specialization regions and countries to analyze regional concentration.

Molle [12] in 1996, developed a study for EU15, considered the most extended about regional situation. His study process and analyze information about all 15 European countries.

In 2000, Hallet [9] which considered Molle's study one of the best, developed a system of indicators to measure concentration of clusters by using an index of income based on gross value added and gross domestic product.

Halle was followed by Mora and Carlos [13] in 2001, which developed a study about the evolution of regional specialization and concentration in Spain regarding agriculture regions. They have analyzed the Common Agricultural Policy implementation effect as result of joining the European Union.

Starting from Krugman's model, Rossi-Hansberg in 2003 developed their own model and proved that specialization and concentration go in opposite directions when transport cost change. The specialization is higher and the concentration is lower when transport costs are lower [14].

Cepraz in 2008 [1] used in his analyse Herfindahl index for an absolute measurement and Gini index and the Krugman index for a relative measurement. He considered that specialization and the regional concentration constitute major constraints for the competitiveness and the European integration. According him, specialization of a region is defined by the grouping of the activities of this zone in one or several industries, while geographical concentration measures the geographical distribution of a sector in a territory.

Geographic concentration of economic activity

represent, according to Goschin [7] in 2009, its geographical distribution, while regional specialization represent territorial perspective showing the map of distribution of economic activities at national level.

Regional specialisation expresses the territorial perspective (the distribution of the shares of the economic activities in a certain region), while geographic concentration of a specific economic activity reflects the distribution of its regional shares [8].

According Tluczak [15] in 2015 there is a concentration of agricultural production in the EU and there are the countries specializing in a particular types of agricultural production.

In the Central and Eastern European countries expands specialization in some domain, while in the same areas, the concentration increases in other West European Countries [15].

MATERIALS AND METHODS

The main objective of this paper is to analyse regional specialization and concentration of European fund for agriculture in ten countries of Central and Eastern Europe: Romania, Poland, Bulgaria, Hungary, Czech Republic, Estonia, Latvia, Lithuania, Slovenia and Slovakia. The data were collected using officials European sites, such as European Commission website and EUROSTAT statistics. The period considered was 2007-2018, a period that cover almost two multiannual financial frameworks for central and eastern European countries.

The level of absorbtion of European Common Agricultural Policy funds is different in each Central and Eastern European countries.

In all the Central and Eastern countries there is an increase in the concentration of production, although the pace of this process is different [13].

In our paper, concentration and specialization have the following meanings.

Concentration means that the funds from a particular pillar are concentrated in few countries. It means that the funds are used or not by all countries equally or not.

The specialization refers to the fact that some countries focuses on the use of certain pillar of the funds.

Herfindahl-Hirschman index has absolute values and 1 is the maximum value that can be achieved.

“The Herfindahl-Hirschman index value is increasing when the level of concentration and specialization is increasing.

When the maximum value of the index is 1, that means country is specialized in a single economic activity and the economic activity is concentrated in country j.

The concentration is minimum when $1/j$ has the same value for all funds. In this case the fund j have the same share in all countries.

The specialization is minimum when $1/i$ has the same value for all countries. In this case the funds have equal percentages in country i” [11].

Herfindahl-Hirschman index measures Regional specialization (H_i^S) and regional concentration (H_i^C).

HHI for regional specialization

$$H_i^S = \sum_{j=1}^m (g_{ij}^S)^2$$

where:

i represent country;

j represent fund;

g_{ij}^S represent the percentage of fund j on total amount allocated for country i.

HHI for regional concentration:

$$H_j^C = \sum_{i=1}^n (g_{ij}^C)^2$$

$$g_{ij}^C = \frac{X_{ij}}{\sum_{i=1}^n X_{ij}} = \frac{X_{ij}}{X_j}$$

$$g_{ij}^S = \frac{X_{ij}}{\sum_{j=1}^m X_{ij}} = \frac{X_{ij}}{X_i}$$

where:

i represent country;

j represent fund;

g_{ij}^C represent the percentage of country i on total amount allocated for fund j.

RESULTS AND DISCUSSIONS

The Common Agricultural Policy is part of Sustainable growth and natural resources, which represent 420 billion euro, almost 38,7% of European budget. The share of the expenditure of the Common Agricultural Policy (CAP) over the years in EU budget has decreased, from 73% in 1985 to 37.2% in 2018. The reason is represented by the EU enlargements, CAP reforms and the growing share of other EU policies [5].

Table 1. CAP Absorption rate (% of EAFDR payments) 2007-2013 and 2014-2028

	CAP Absorption rate 2004-2018 (%)	CAP Absorption rate 2007-2013 (%)
Poland PL	31	99,9
Romania RO	48	95
Latvia LV	60	99,9
Estonia EE	48	99,9
Bulgaria BG	28	90
Lithuania LT	49	99,9
Hungary HU	31	97,6
Czech Rep. CZ	47	99,9
Slovenia SI	43	97
Slovakia SK	41	99,3
UE	42	97,6

Source: European Commission, 2019 [6].

For the period 2007-2013 the funds for market related expenditure and direct aids are at a higher level, which shows that these activities have a higher level of concentration, compared to the other categories of expenditure included in the study.

We can be observe from Fig. 2 that the degree of concentration is accentuated in 2007, especially for market related expenditure and direct aids, because this kind of funds were drawn in particular by two countries Germany and Poland.

Romania, which had just entered the EU in 2007, was not prepared for the specific regulations and methodologies for attracting these funds, which led to the attracting of very few CAP funds.

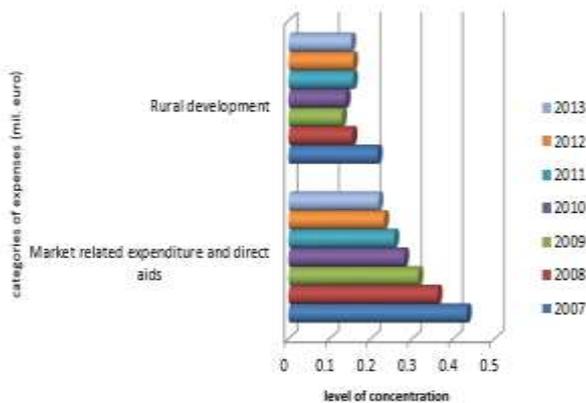


Fig. 2. Herfindal-Hirschman concentration index - category of expenses calculated for Central and Eastern European countries (CEE 12)
 Source: Own calculation.

According to the results, Germany has the largest concentration of 0.37729 for market related expenditure and direct aids and 0.180 for rural development.

In 2013, the concentration decreased compared to 2007 because the discrepancies between the volume of funds attracted by each country narrowed.

The results from Table 2 show that in 2007 Romania has a high specialization on a certain category of expenses, the values of the indicator being very close to the maximum limit - 0.99972, followed by Bulgaria and Germany.

Table 2. Concentration for the period 2007-2013

HCj country (concentration)	2007	2008	2009	2010	2011	2012	2013
Market related expenditure and direct aids	0.431994	0.360979	0.314584	0.280174	0.256135	0.231618	0.217869568
Rural development	0.215779	0.154689	0.129446	0.138582	0.156128	0.156606	0.151803419

Source: Own calculation.

Table 3. Herfindal-Hirschman specialization index of countries calculated for Central and Eastern European countries (CEE 12)

HSi countries (specialization)	2007	2008	2009	2010	2011	2012	2013
Bulgaria	0.99785	0.51100	0.54027	0.50044	0.59579	0.513754	0.51251932
Czech Republic	0.50003	0.52948	0.51172	0.51359	0.51906	0.543743	0.574930121
Germany	0.71357	0.76996	0.75875	0.71821	0.69503	0.687772	0.6930334
Estonia	0.54048	0.50450	0.53515	0.51844	0.51232	0.511704	0.508069072
Latvia	0.55621	0.54811	0.50878	0.53703	0.51782	0.528874	0.504216387
Lithuania	0.54240	0.58321	0.50261	0.50004	0.50197	0.515176	0.515889625
Hungary	0.50000	0.63808	0.51518	0.56346	0.58733	0.599022	0.598687856
Austria	0.55820	0.52551	0.51201	0.50707	0.50980	0.513462	0.512969257
Poland	0.52393	0.51094	0.53088	0.50946	0.51006	0.515496	0.53806191
Romania	0.99972	0.50304	0.50044	0.50181	0.50171	0.500635	0.500033245
Slovenia	0.59778	0.55137	0.52045	0.50509	0.50007	0.50009	0.557207803
Slovakia	0.51262	0.50184	0.50914	0.51629	0.50270	0.503612	0.545887002

Source: Own calculation.

The first two are highly specialized, absorbing funds especially in market related expenditure and direct aids and almost zero funds on rural development.

We can say, however, that the other countries have started to attract more and more funds.

For the second period of multiannual financial framework 2014-2018, concentration of funds for market related expenditure and direct aids is decreasing, compared to the period 2007-

2013, although Germany and Poland remain leaders in attracting these funds.

According to the data in Table 2, Germany, Hungary and Poland have a high degree of specialization, preferring to attract funds from Market related expenditure and direct payments, while Romania does not specialize in a particular fund, preferring to draw approximately equally from both sources.

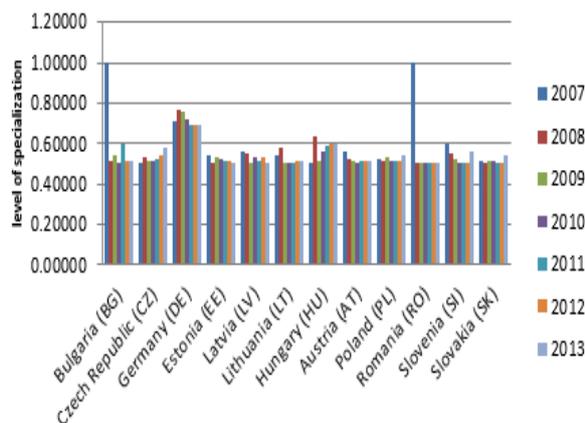


Fig. 3. Herfindal-Hirschman specialization index of countries calculated for Central and Eastern European countries (CEE 12)
 Source: Own calculations.

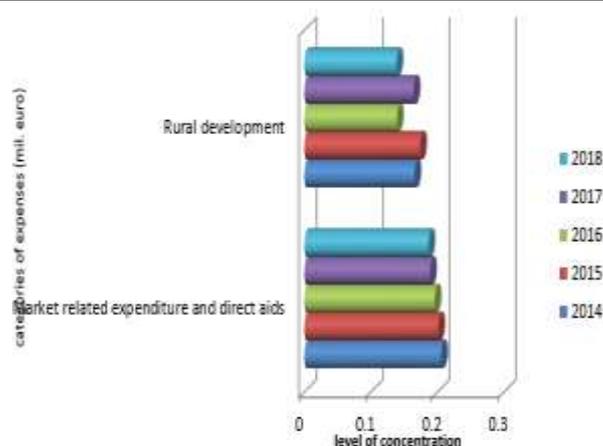


Fig. 4. Herfindal-Hirschman concentration index - category of expenses calculated for Central and Eastern European countries (CEE 12)
 Source: Own calculation.

Table 4. Herfindal-Hirschman specialization index of countries calculated for Central and Eastern European countries (CEE 12)

HSi countries (specialization)	2014	2015	2016	2017	2018
Bulgaria	0.52194	0.52829	0.61752	0.68825	0.67865
Czech Republic	0.63441	0.67207	0.59203	0.64509	0.60050
Germany	0.74133	0.78708	0.70179	0.73330	0.70113
Estonia	0.52789	0.59323	0.50063	0.50628	0.50003
Latvia	0.59302	0.57336	0.50113	0.51093	0.50536
Lithuania	0.53033	0.67411	0.52630	0.53843	0.57340
Hungary	0.58650	0.62237	0.67260	0.77344	0.64999
Austria	0.59240	0.53259	0.50186	0.52028	0.51334
Poland	0.54694	0.59891	0.64157	0.75717	0.66165
Romania	0.52816	0.50009	0.51248	0.50532	0.52538
Slovenia	0.50280	0.62231	0.50233	0.54096	0.51029
Slovakia	0.59638	0.65917	0.64984	0.60184	0.57318

Source: own calculation.

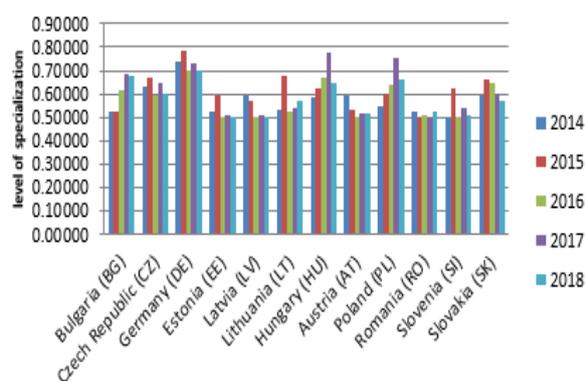


Fig. 5. Herfindal-Hirschman specialization index of countries calculated for Central and Eastern European countries (CEE 12)
 Source: Own calculation.

CONCLUSIONS

Countries have to specialize in certain domains, and should attract and use EU

funds in areas that offer the greatest advantages. The Common Agricultural Policy will continue to be an important element in supporting the countries of Central and Eastern Europe, taking into account the fact that some of them, such as Romania and Bulgaria, have large agricultural areas. More than that the percentage of population working in agriculture is higher than the European average.

The real problem is that in some countries the productivity is lower than the European average. Therefore, those countries could specialize in attracting direct aids funds, being able to increase the ability of farmers to produce more, using modern techniques.

Regarding rural development, Romania and Bulgaria are far behind the other 10 European countries. They should specialize in attracting

rural development funds to support sustainable development.

The decision of some less developed countries to specialize on all funds is understandable, but for the future, they must choose those directions that will bring them competitive advantages, at national and international level. Despite the large heterogeneity, it is found that the new member states of the European Union are becoming closer to the economic profile of the old European states.

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