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CONCENTRATION OF AGRICULTURAL AND RURAL DEVELOPMENT EUROPEAN UNION SUBSIDIES ON REGIONAL LEVEL IN HUNGARY

KONCENTRACJA SUBSYDIÓW UNII EUROPEJSKIEJ DLA ROLNICTWA I OBSZARÓW WIEJSKICH NA POZIOMIE REGIONALNYM MA WĘGRZECH

Abstract. The concentration analysis of the agricultural and rural development subsidies in the Southern Great Plain Region were carried out in two periods, in the budget periods of 2004-2006 and 2007-2013, respectively. There is a difference experienced in the concentration between 2004 and 2006; however, the concentration is more balanced with respect to each year. In the regional values the fact may be realized that the share of farmers from the subsidy is balanced. In the period between 2007 and 2013 even the minimal difference in the concentration disappeared relating to the examined years. The value of the concentration index, that is the share of the three performers getting the highest subsidies of the total, proves the run of Lorenz curves, as the indicator has been reflecting an average value around 10% in the region since 2006 in each year. By evaluating the data relating to the subsidies in the Southern Great Plain Region, the fact may be concluded that the concentration became equalized in the examined area.

Introduction

In the first half of the 20th century the state was primarily expressed through the tax system and the relationship between the different enterprises while from the second half of the century the state subsidies have received a more emphasized role in Hungary. After Hungary's accession to the European Union the system of agricultural and rural development subsidies were regulated by the framework of the Common Agricultural and Rural Policy in which applicants could receive EU, national and co-financed subsidies. Among the certain support forms the direct payments and the support of the regional development programs were significant. On the basis of experiences of the past periods we can state that the direction of funding policy tends to point towards the less market – and trade – distorting subsidies and in terms of funding the Hungarian farmer society the accession has made a positive impact. The following figures show the point; while between 2002-2003 the agricultural and rural development subsidies were 210-220 billion HUF from 2004 on it reached around 400 billion on a national level [Kapronczai 2011].

Research material and methodology

For the examination of the subsidies -distribution we used the funding data of the Agricultural and Rural Development Office (ARDO) between 2004 and 2013. The available database provided different grouping possibilities in terms of subsidies. The demarcations for the subsidies were the following: total subsidies, EU subsidies, national subsidies, European Agricultural Guarantee Fund (EAGF), European Agricultural and Rural Development Funds (EARDF), income supports, investment and rural development subsidies. To measure the regional concentration of the subsidies we chose the Southern Great Plain Region where different concentration measurement methods were

applied. The Lorenz curves were originally used for measuring the income distribution where concentration was depicted in a single-unit square where the cumulated relative value amounts are shown in terms of cumulated relative frequency. If the certain units have the same share in the value amounts then the cumulated relative frequencies and the cumulated relative value amounts match. In this case a lack of concentration is shown and then the curve matches the diagonal of the unit square [Kovács 2011, Elte 2005]. The concentration ratio (CR) both in terms of calculating and data needs is the simplest way to create a concentration metrics. The CR concentration ratio shows how the biggest unit of the plurality gets a share from the whole value amount. If the whole value amount belongs to the chosen unit then it takes up a maximum value, in case of consistent distribution it has a minimum value. In practice the visualization of the 3-5 highest value share of the total value amount is the most well-spread. Another definitive metrics of the concentration is the Hirschman-Herfindahl index. When calculating the index it correlates to the main diagonal of the Lorenz curves that is, it equals the sum of squares of the value amount of the certain units. It takes a maximum value in case of total concentration, in that case the value is 1 or if the share of all units is equal then it takes the minimum value of 1/n. Since the metrics take into account the number of the units therefore the distribution of value amount within 100 units means a lower level of concentration than by examining 10 distributions [Hunyadi, Vita 2008, Kerékgyártóné et al. 2001].

Research results

By comparing the funding data of the Southern Great Plain Region the gradually increasing funding is well-depicted. The earmarked 400 billion HUF for 2004 couldn't be used because the Hungarian institutional system was not prepared enough so on a national level only 156 billion HUF reached the farmers consequently the majority of the Single Area Payment Scheme was transferred to 2005. This unpreparedness is reflected in the comparison of regional data since on the regional level 3,5 billion HUF (Fig. 1). From 2005 on the national payments were between 410 and 430 billion HUF which was about 70 and 80 billion HUF on a regional level. We can generally say that in 2009 the subsidies rose sharply on a national level and it followed a similar method on a regional level with a close to 120 billion HUF payment. Among the primary reasons of the national increase the sustained growth factors did not play a significant role but rather the early payments, the currency profit and the sugar subsidies. This also explains why the 2009 funding level could not be repeated since in 2010 the paid subsidies were decreased by 130 billion HUF. The data tell a different story though in the Southern Great Plain Region since the per capita funding is just slightly less than the 2009-value. Increase can be experienced in 2011 due primarily to the lower Single area payment deposits. The outstanding growth regional level was due to the fact that the majority of Single area payment subsidies of 2012 were paid in that year and the deposits of 2013 were also added to that sum.

thous. HUF/*tys. HUF*

■ Per capita total subsidies in the Southern Great Plain Region
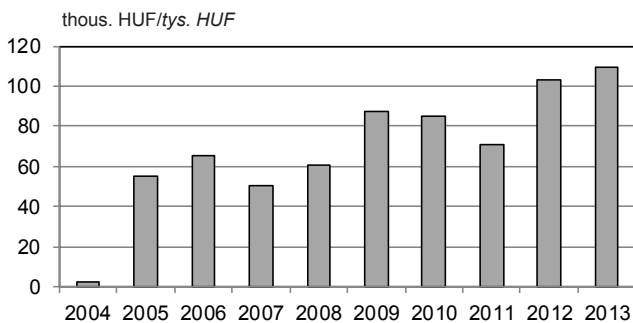*Subsydia wypłacone per capita w regionie Południowej Wielkiej Niziny*

Figure 1. The per capita paid subsidies in the Southern Great Plain Region
Rysunek 1. Subsydia wypłacone per capita w regionie Południowej Wielkiej Niziny
Source: based on own measurements and ARDO data
Źródło: opracowanie własne na podstawie danych ARDO

On the whole we can say that on the basis of the Southern Great Plain Region payment data the level of per capita payments reflects an increasing tendency with smaller fluctuations year by year, which refers to the agricultural type of the region and its dominant role in agriculture. At the same time on a regional level among the population of several cities such as Kecskemét, Szeged, Békéscsaba participation in the industrial and tertiary sector is more characteristic and in their cases the agricultural and rural development subsidies are less prevailing.

To define the concentration of the subsidies we also made comparisons in terms of regional data. To illustrate the development of subsidies concentration after the EU accession we used Lorenz curves. In the analysis we examined two periods, the budget periods of 2004-2006 and 2007-2013 respectively. When comparing each year of the budget period of 2004 and 2006, it may be realized that the concentration of the subsidies is low in 2004, there is an increase experienced in 2005 and 2006. Thus in case of the regional subsidy concentration gradual increase may be detected year by year; however, it may be concluded that the differences between the relative value amounts and the relative frequencies are much more balanced and show the classical concentration distribution (Fig. 2). The period between 2007 and 2013 may be characterized by the fact that there are not any significant differences with respect to the given years, the Lorenz curves of the examined years cover each other (Fig. 3).
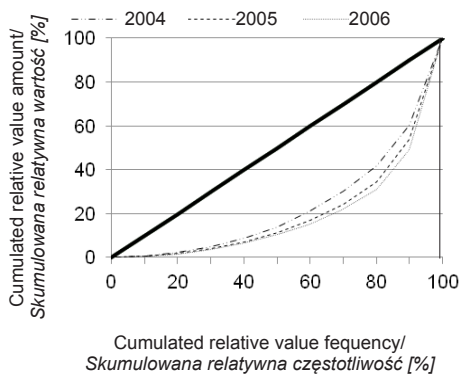

Figure 2. Subsidies concentration in the Southern Great Plain Region between 2004-2006
Rysunek 2. Koncentracja subsydiów regionie Południowej Wielkiej Niziny w latach 2004-2006
Source: own measurements on the basis of ARDO data
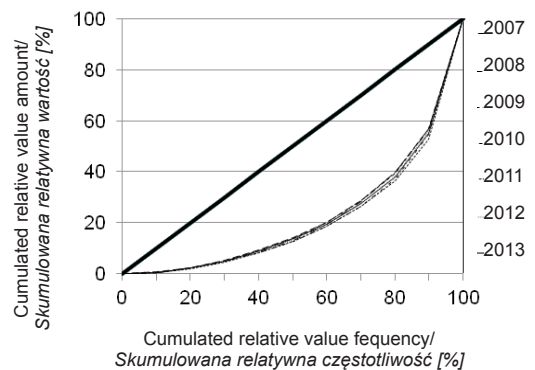*Źródło: opracowanie własne na podstawie danych ARDO*

Figure 3. Subsidies concentration in the Southern Great Plain Region between 2007-2013
Rysunek 3. Koncentracja subsydiów regionie Południowej Wielkiej Niziny w latach 2007-2013
Source: own measurements on the basis of ARDO data
Źródło: opracowanie własne na podstawie danych ARDO

Table 1. The changes of CR concentration in each year
Tabela 1. Zmiany wartości wskaźnika koncentracji w latach

Southern Great Plain Region/ *Region Południowej Wielkiej Niziny*	The changes of CR concentration/ *Zmiany wartości wskaźnika koncentracji w latach [%]*									
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
CR1	3.53	5.75	7.39	6.22	4.60	6.08	5.02	4.93	5.49	4.71
CR2	3.43	4.28	5.15	3.27	2.92	3.35	3.18	3.83	3.32	3.55
CR3	2.50	3.47	3.14	3.12	2.77	2.98	2.93	3.31	3.06	3.21

Source: own measurements on the basis of ARDO data
Źródło: opracowanie własne na podstawie danych ARDO

The concentration differences on regional level are perceptible the simplest way by the CR concentration ratio. In our research we matched the share of the total subsidies of the three biggest regional players (Tab. 1). The data of the table depicts that the share from the total subsidies of the three biggest funded players confirm the results of the Lorenz curves. On a regional level we experience that the amount of concentration ratio after the years of 2006, when the increase stopped continuously moves around 10%.

In terms of the Hirschman-Herfindal index (HH index) or in another name the concentration index, the table shows how the value of the index changed in each year. The change can be clearly traced though in the yearly values, as it reflects the increase between the years 2004 and 2006, then the equalization between 2007 and 2013 (Tab. 2).

Table 2. The development of Hirschmann-Herfindal index in each year in terms of subsidies utilisation
Tabela 2. Wartości wskaźnika Hirschmanna-Herfindala w latach w odniesieniu do wykorzystanych subsydiów

Southern Great Plain Region/*Region Południowej Wielkiej Niziny*	The development of Hirschmann-Herfindal index/ *Wartości wskaźnika Hirschmanna-Herfindala*									
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
	0.0101	0.0141	0.0174	0.0130	0.0115	0.0135	0.0119	0.0135	0.0127	0.0124

Source: own measurements on the basis of ARDO data
Źródło: opracowanie własne na podstawie danych ARDO

We chose 2006 as a reference year (Fig. 4) since in 2004 extremely few subsidies were paid while in 2005 extremely lot as they compensated for the lost amounts of 2004. In terms of 2006 we can talk about a balanced year so that is why this is the first year which is suitable for the comparison.

On the basis of the HH index changes the result of the Lorenz curves are better outlined. Between 2004-2006 the regional concentration indexes continually rose. In the 2007-2013 budget period the regional HH indexes show almost identical changes.
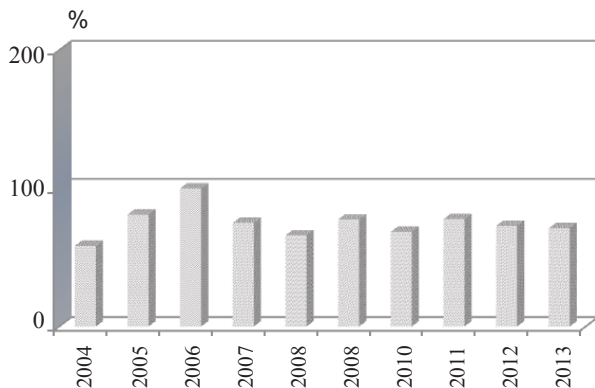

Figure 4. The extent of regional concentration change on the basis of HH index (2006=100%)
Rysunek 4. Zmiany koncentracji na podstawie wskaźnika Hirschmanna-Herfindala (2006=100%)
Source: own measurements on the basis of ARDO data
Źródło: opracowanie własne na podstawie danych ARDO

Conclusions

The regional subsidy concentration data reflect classical concentration distribution on the basis of the diagonal of the unit square and the run of the Lorenz curves. By 2006 the concentration of the subsidies in the Southern Great Plain Region became balanced and from this time similar subsidy values may be realized in each year. This tendency is similar in the case of three performers getting the highest subsidies, as their share from the subsidy is around 10% in each year. All in all, it may be concluded that the dispersion and distribution of EU subsidies may be considered as successful among the regional performers.

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Streszczenie

Celem artykułu jest ocena koncentracji subsydiów Unii Europejskiej dla rolnictwa i obszarów wiejskich na Węgrzech. Badanie przeprowadzono w ujęciu regionalnym w regionie Południowa Wielka Nizina. Wykorzystano dane dla okresów 2004-2006 i 2007-2013. W latach 2004-2006 zaobserwowano różnicę w koncentracji w poszczególnych latach, a w drugim analizowanym okresie koncentracja była bardziej zrównoważona.

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