

*Katarzyna Smędzik-Ambroży, dr hab. prof. PUEB*<sup>1</sup> 

Department of Macroeconomics and Agricultural Economics  
Institute of Economics  
Poznan University of Economics and Business

*Agnieszka Sapa, dr hab. prof. PUEB*<sup>2</sup> 

Department of Macroeconomics and Agricultural Economics  
Institute of Economics  
Poznan University of Economics and Business

## **The impact of agricultural policy on income diversity among farmers in the European Union in 2005–2017<sup>3</sup>**

### INTRODUCTION

Sustainable development is one of the strategic goals of the European Union. In 1997 it became a fundamental challenge for the EU and was included in the Treaty of Amsterdam as a superior objective of EU policy (European Commission, 1997; Smędzik-Ambroży, 2018). The definition of sustainable agriculture is based on three basic dimensions: environmental, economic and social (Stępień et al., 2018; Czyżewski, Stępień, 2017). For the economic dimension, the level of agricultural income is important, because we understand economically sustainable agriculture as agriculture which enables the producer

---

<sup>1</sup> Correspondence address: Department of Macroeconomics and Agricultural Economics, Institute of Economics, Poznań University of Economics and Business, Niepodległości 10, 61-875 Poznań, Poland; tel.: +48 61 854 30 21; e-mail: katarzyna.smedzik-ambozy@ue.poznan.pl. ORCID: 0000-0001-5228-2263.

<sup>2</sup> Correspondence address: Department of Macroeconomics and Agricultural Economics, Institute of Economics, Poznań University of Economics and Business, Niepodległości 10, 61-875 Poznań, Poland; tel.: +48 61 854 30 12; e-mail: agnieszka.sapa@ue.poznan.pl. ORCID: 0000-0003-2963-1175.

<sup>3</sup> The project was funded by the National Science Centre on the basis of the decision number DEC-2012/07/D/HS4/01601.

to earn an income enabling the farmer and his family to have a decent standard of living<sup>4</sup> and to develop their farm (Czyżewski, Smędzik-Ambroży, 2017). The economic aspect of sustainable development can also be identified with the concept of farm viability, i.e. the ability to survive in the long-term under changing market conditions, which is undoubtedly influenced by the value of earned income (Latruffe et al., 2016).

The income situation in agriculture is determined by both exogenous and endogenous factors. At the same time, some factors like seasonality, scale of risk and uncertainty resulting from weather conditions, variable work intensity and cyclicity of production all have destabilising effects both on agricultural income and the profitability of agricultural production (Smędzik-Ambroży, Guth, 2019; Czyżewski, Poczta-Wajda, 2016). Apart from market factors, the EU Common Agricultural Policy (CAP) has a fundamental impact on the level of agricultural income in the EU countries. The financial support for specific activities, resulting from various types of agricultural subsidies, affects the level of sustainability of agriculture in different EU Member States. The CAP is also in line with one of the most important goals of the EU, which is to reduce regional disproportions in the level of development of various economic sectors, including agriculture. This leads to territorial cohesion between different regions of the EU and, as a consequence, fostering the EU's global competitiveness (European Commission, 2019).

In connection with the above, the authors attempted to determine whether the CAP had a positive effect on the level of sustainability of agriculture in the EU through a positive impact on the income situation from agriculture. Thus the main purpose of the study is to answer the question whether the CAP reduces differences in the value of agricultural income among the EU-15 countries (the so-called old members) and the EU-8 countries that joined the EU in 2004 (the so-called new members). It is assumed that subsidies within agricultural policy influence both an increase in agricultural income for individual EU countries and a decrease in differences in their values between the old and new members. Therefore, we assumed a hypothesis that the CAP subsidies reduce the differences in agricultural income between the EU-15 and the EU-8 countries. This would lead to one of the EU's most important objectives, which is to reduce regional disparities in the level of agricultural development and increase territorial cohesion between various EU regions. The time that has elapsed since the largest enlargement of the EU in history, and the related unification of the institutional environment, allows an expectation of agricultural income convergence between farmers from the old and new members. The subjective scope of analysis covered representative

---

<sup>4</sup> It is desirable to have at least a parity ratio between the agricultural income per employee and the average wage per worker in the national economy (Wrzaszcz, 2012; Matuszczak, Smędzik-Ambroży, 2013).

farms in the Farm Accountancy Data Network (FADN)<sup>5</sup> from the EU countries. They represent, depending on the year, between 4,045,300 and 5,295,930 farms in EU countries. The spatial extent covered the EU-15 and the EU-8 countries, while the time frame covered the years 2005–2017. Hence, the scientific added value of this paper is derived from determining whether the CAP, by reducing regional disparities in the level of agricultural development, leads to an increase in territorial cohesion between different EU countries. As already mentioned, it is one of the EU's most important goals. While the statement of this fact is cognitively important, it should be emphasized that the studies cover a long period of up to 13 years and are representative for the EU, which ensures the use of FADN data. These aspects also represent an added value of the surveys.

## LITERATURE REVIEW

Ensuring an adequate agricultural income is one of the main objectives of the CAP. It was based upon the assumption of a disparity in income for agriculture in relation to other sectors. The achievement of parity income is to be served by intervention activities supporting agricultural income. It should be noted that over the years, the form of supporting agricultural income under the CAP has changed from price support to direct support (Josling, Anderson, 2017). However, this did not exclude income disparity in agriculture, although the farmers' income increased (Stępień et al., 2018). At the same time, agricultural income and the problem of income parity are still a sensitive area of agricultural policy.

Supporting agricultural income as part of agricultural policy has its opponents and advocates. Support for agricultural income is criticised on the basis of the neoliberal theory. According to its representatives, state interventionism in the agricultural sector is unjustified and expensive (Rembisz, 2010; Chang, 2009; Stoeckel, 2000). On the other hand, advocates of agricultural policy emphasise the special features of agricultural activities and the land factor, which imply ineffective allocation of production factors. They point out that the pressure of competitiveness causes, among other things, negative external effects in the natural environment and limits the provision of public goods (Czyżewski, Stępień, 2017). In addition, the market mechanism leads to farms undergoing a relative income deprivation (Czyżewski, Poczta-Wajda, 2016; Dow, Reed, 2013). Long-term trends in the supply of agricultural products and the demand for them imply pressure to reduce agricultural income. However, real agricultural incomes in the EU in recent decades have increased, which was undoubtedly affected by the CAP (Zawalińska et al., 2015).

---

<sup>5</sup> FADN is the only source of microeconomic data and is based on harmonised accounting principles. It is based on national surveys and covers only farms in the EU countries. It is an instrument for evaluating the income of agricultural holdings and the impacts of the CAP (EUFADN, 2019).

The development of agricultural incomes and the problem of their support are the subject of many research works. In particular, there are numerous publications on the issue of agricultural income in EU countries. Some of them cover comparative analyses of agricultural income between individual EU member states (Chmielewska, 2018; Zawalińska et al., 2015; Baer-Nawrocka, 2013). The results of the comparative analyses indicate that the importance of the CAP support in the new member states was larger than in the old ones (Guth et al., 2020). Some researchers focus on the assessment of farm income disparity in relation to the income of non-agricultural sector households. For example Stępień *et al.* (2018) demonstrated that, thanks to the CAP support, the average income of farm households was approaching the average income of non-agricultural sectors. The impact of the CAP on farm income in the context of sustainable development has also been examined. The influence of CAP subsidies on the economic sustainability of farms of different economic sizes for the EU-15 and EU-8 countries was assessed. It was confirmed that the greater the disproportions between the income spreads with and without subsidies, the more important the role of CAP subsidies in shaping the economic result (Guth et al., 2020; Stępień et al., 2018). The area of dispute in the context of supporting agricultural income is the issue of interception of payments by large farms and the desirability of supporting small farms. The analyses indicate that large farms are favoured in the distribution process of support (Guth et al., 2020), which may make the income situation dependent on politics.

The analyses devoted to agricultural income concern the following areas: comparison of agricultural income in individual EU countries, assessment of agricultural income in relation to other sectors, the impact of agricultural income support on the sustainable development of agriculture and the distribution of agricultural income support among farms with different scales of production. The existing literature on agricultural income does not embrace the impact of the CAP on reducing the differences in the value of agricultural income between the EU-15 and EU new members after 2004. Only very few studies address the issue of agricultural income diversification and changes in this respect in the old and new EU members countries in relation to labour input. For example, Chmielewska (2018), based on Eurostat data, concentrated on the convergence of agricultural incomes in the EU countries per unit of hired labour. Hill and Bradley (2015) conducted extensive research on the differences in agricultural incomes in relation to labour inputs expressed in various units in individual EU countries, taking into account the division of holdings by type of specialisation and scale of production. These authors' deliberations focus on the relation of agricultural income to labour input rather than determining the impact of the CAP support on average agricultural income, which is the aim of the present paper. Therefore, this paper bridges an existing research gap. In addition, it should be noted that other analyses cover a shorter time frame than that of our analysis. This also constitutes an added value of our study.

## MATERIAL AND METHODS

In our research, the value of agricultural income per representative farm from individual EU countries was used for each of the years covered by the analysis. The main goal of the research was achieved by calculating the spread between the average value of income per farm in the EU-15 and the EU-8 countries. At this point it should be added that the commonly used measure of diversity for a given variable among countries (or groups of countries) is sigma convergence. The occurrence of this type of convergence means that the differences between the various countries (regions) for the variables in question decrease over time<sup>6</sup>. However, a commonly accepted measure of dispersion within a group of countries is the standard deviation of the natural logarithms of the wealth measures at a certain time point. In this context, the sigma convergence is identified when the standard deviation of the natural logarithms of the adopted wealth measure in a given group of countries shows a decreasing tendency (Malaga, 2004). However, due to the losses (negative income) achieved by farmers in some EU countries, it was not possible to calculate  $\sigma$ -convergence coefficients. Therefore, instead of the sigma convergence coefficients, the spans between the average agricultural income per farm in the EU-15 and EU-8 countries were calculated.

To indicate the impact of the CAP on agricultural income, the analysis was carried out in two variants. In the first one, the spreads for the value of agricultural income excluding the CAP subsidies per farm were calculated. In the second one, the value of agricultural income covering all CAP subsidies were estimated (i.e. single area payments, set-aside payments and agri-environmental payments, support for farms from less-favoured areas, other payments under rural areas support programs, subsidies for plant and animal production, subsidies for investments). To achieve the research objective, a comparative analysis of the ranges of income per farm for these two variants was made, assuming that reducing the spread meant narrowing the differences in the value of average agricultural income between the EU-15 and EU-8. Decreasing these spans would therefore argue in favour of adopting the hypothesis of the study.

The research was carried out for the 2005–2017 period. This first year was chosen as the first complete year of EU membership for all the countries covered in the survey. Those countries that joined the EU after 2004 (Bulgaria, Croatia

---

<sup>6</sup> Beta-convergence is also commonly used in the literature. In contrast to sigma-convergence, it focuses on the whole process, not including dynamics. But the dynamic approach is a great advantage of  $\sigma$ -convergence in relation to  $\beta$ -convergence.  $\beta$ -convergence is criticised for the fact that its occurrence only shows that poor regions are developing faster than rich ones, while  $\sigma$ -convergence shows changes decreasing or deepening of inequalities between the selected objects over the analysed period (Sala-i-Martin, 1996; Malaga, 2004; Kusideł, 2013). There is also the concept of gamma-convergence ( $\gamma$ ), which occurs when areas with initially lower rank values overtake areas of initially higher rank values (Boyle, McCarthy, 1997).

and Romania) were excluded. It was assumed that a too short impact of the CAP on the income situation of the farmers in these countries might be inadequate to achieve income convergence with farmers from the EU-15 countries. Malta and Cyprus were also removed from the analysis because of the incomparable nature of the rural areas to other EU countries, manifested by a lower share of agriculture in the structure of production, for example. As a consequence, two groups of countries were examined. The first one, defined as the EU-15 countries, comprises Belgium, the Netherlands, Luxembourg, France, Germany, Italy, the United Kingdom, Denmark, Ireland, Greece, Spain, Portugal, Finland, Austria and Sweden. The second one, defined as the EU-8 countries, comprises the Czech Republic, Poland, Slovakia, Lithuania, Latvia, Estonia, Hungary and Slovenia.

The data came from the EU Farm Accountancy Data Network (FADN). This is a system of collecting farm accountancy data in the EU for monitoring and decision-making on the CAP (EU-FADN, 2019). FADN was established in 1965 with the specific objective of obtaining data enabling income changes in the various classes of agricultural holding to be properly monitored (Commission of the European Communities, 1982). FADN is not a single survey but an amalgamation of national surveys carried out by EU countries (Hill, Bradley, 2015). The data concerned the value of average income per representative agricultural farm from particular EU countries in each of the years 2005–2017. Depending on the year, these farms represent between 4,045,300 and 5,295,930 farms, of all the farms in the EU countries. The selection of farms for research takes place in accordance with the guidelines of the selection plan. This ensures that the results obtained are representative. The selection plan is currently prepared using the Standard Production (SO)<sup>7</sup> parameter. The FADN database contains data in the form of average values for a given group of farms (FADN, 2020). It should be remembered that the FADN methodology only takes agricultural income into account, which to a limited extent reflects the actual income situation of agricultural families. It should also be borne in mind that different methodological approaches and practices within FADN in individual countries make it difficult to assess farmers' incomes between countries in an objective way<sup>8</sup>. Despite these restrictions, FADN is the most common and comparable source of data on the income situation of agriculture in individual EU countries, which was a premise for using FADN data in this study.

---

<sup>7</sup> SO (standard output) is the average value over 5 reference years of plant and livestock production obtained from 1 ha or from 1 animal, in conditions average for a specific region (Guth et al., 2020).

<sup>8</sup> For example, in Denmark, labour costs include the labour costs of family members, except for the farmer. In Poland, the cost of work of family members is not included in labour costs (Runowski, 2017).

RESEARCH RESULTS

The data in Table 1 present how much influence the CAP has on agricultural income. However, a significantly higher positive impact of the CAP on the income situation of FADN farmers is visible in the case of the EU-8 than of the EU-15 countries. On average, in 2005–2017, farmers in the EU-8 received negative income from their agricultural activities. It was only when the value of the CAP subsidies was taken into account in this income that they amounted to EUR 12,259.48 per FADN farm (see Table 1).

**Table 1. The average agricultural income with and without the CAP subsidies per FADN farm in the EU-15 and EU-8 in 2005–2017 (EUR)**

Country	Agricultural income		CAP subsidies
	without CAP subsidies	with CAP subsidies	
Belgium	29 076.00	54 329.69	25 253.69
Czech Republic	-43 925.46	35 379.38	79 304.85
Denmark	-21 228.15	14 915.54	36 143.69
Germany	2 981.31	37 849.62	34 868.31
Estonia	-9 038.77	15 715.69	24 754.46
Ireland	1 700.31	22 030.69	20 330.38
Greece	5 930.08	12 658.85	6 728.77
Spain	15 332.15	25 270.31	9 938.15
France	4 178.92	35 540.31	31 361.38
Italy	18 794.85	25 870.23	7 075.38
Latvia	-3 421.31	12 133.85	15 555.15
Lithuania	2 015.77	12 838.23	10 822.46
Luxembourg	-16 008.23	43 982.31	59 990.54
Hungary	79.46	15 575.69	15 496.23
Netherlands	35 509.46	54 001.77	18 492.31
Austria	5 892.46	25 849.15	19 956.69
Poland	3 407.92	8 755.15	5 347.23
Portugal	5 334.46	12 854.46	7 520.00
Slovenia	-126 388.69	5 558.08	131 946.77
Slovakia	-39 369.23	-7 880.23	31 489.00
Finland	-30 034.69	19 521.38	49 556.08
Sweden	-20 751.00	16 634.54	37 385.54
United Kingdom	961.54	43 528.08	42 566.54
EU-15	2 511.30	29 655.79	27 144.5
EU-8	-27 080.04	12 259.48	39 339.52
EU	-12 284.37	20 957.64	33 242.01

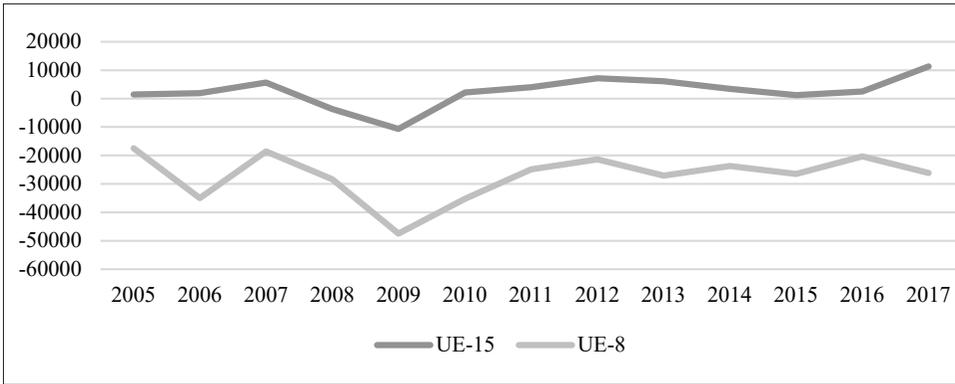
Source: own calculation based on EUFADN.

Guth and Smędzik-Ambroży (2019) confirmed such results in studies conducted for the EU divided into two groups of countries, i.e. EU-15 and EU-12. It has been proved that in the EU-12 countries the average costs of agricultural production were higher than revenues in 2004–2015. Although Malta, Cyprus and the countries that joined the EU after 2004 were excluded from our analysis, we can assume that such a situation probably will continue in the following years as well. In 2016 and 2017 the average income per FADN farm in the EU-8 was also negative at EUR -20,285.30 and EUR -26,188.30 respectively. It was only Slovakia where despite taking the CAP subsidies into account the agricultural income was still negative. The results of the analysis (Table 1) also confirm the outcomes of the study by Hill and Bradley (2015), who observed that, by comparing countries different in terms of agriculture, large gaps in agricultural income are also obtained. In the EU, these differentiations result from differences in farm size or type of production in individual countries. They also stated that comparing the incomes of farms of the same size and type from different EU countries results in much smaller differences in their income. Also, the incomes obtained by farmers in the EU-15 are higher than in the EU new members after 2004. Due to large differences in the structure of farms, the agricultural incomes among regions within countries are significant, which was especially visible in France and Germany (Hill, Bradley, 2015).

The results of the analysis reflect the view that the CAP is essential in reducing income deprivation of the agricultural sector. This deprivation is an intrinsic feature of the market mechanism and results from the peculiarities of the agricultural sector. It is also confirmed by research covering groups of countries at different levels of development, which was conducted by Poczta-Wajda (2017). It was proved that agricultural policy is of fundamental importance for reducing the relative income deprivation of the agricultural sector. Such an impact is also identified in the case of the CAP, as our study confirmed. The outcomes of the research by Stępień *et al.* (2018) show that taking the value of CAP subsidies into account meant that the average agricultural income in 2005–2015 represents 62% of the average income in economies of the EU countries. This relation was higher by 14 p.p. in the EU-15 than in the EU-8 countries. While these results advocate the beneficial effects of the CAP on the sustainability of European agriculture in the economic dimension, they also underline the income deprivation of EU agriculture relative to non-agricultural sectors. It should be added here, following the study by Swinnen (2015), that in some of the EU-8 countries (mainly the Baltic States) these income relations of agriculture to non-agricultural sectors will improve in subsequent years, because their governments successfully lobbied for a fairer distribution of direct subsidies after 2013.

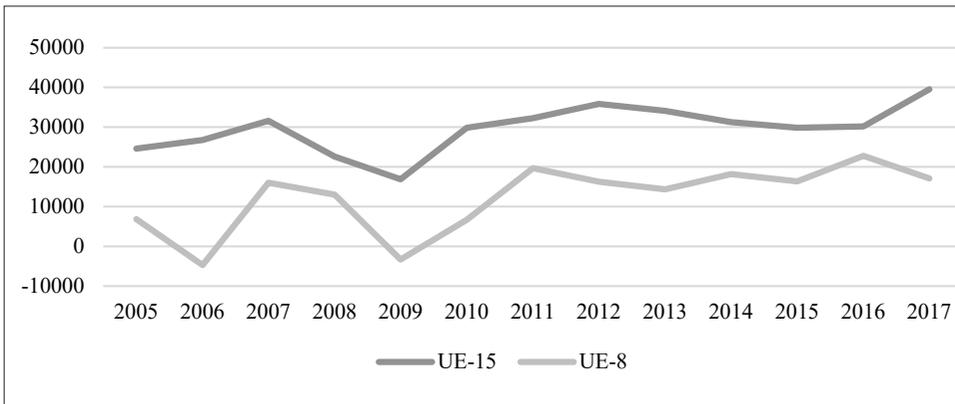
In the EU-15, only in four countries (Denmark, Luxembourg, Finland and Sweden) was the average agricultural income without the CAP subsidies per FADN farm negative in 2005–2017. In the EU-8 countries there were as many as five countries with an adequate situation (the Czech Republic, Estonia, Latvia,

Slovenia and Slovakia). This reveals that the CAP subsidies have greater beneficial effects on the income situation of farmers in the EU-8 in comparison to the EU-15. This is partly caused by the nearly 45% higher value of the CAP subsidies per farm in the EU-8 than the EU-15 (Table 1). However, is this impact great enough for the EU-8 countries compared to the EU-15 to enable convergence of agricultural income levels between these groups of countries?



**Figure 1. Agricultural income without the CAP subsidies per farmer in the EU-15 and EU-8 countries in 2005–2017 (EUR)**

Source: own calculation based on EUFADN.



**Figure 2. Agricultural income with the CAP subsidies per farmer in the EU-15 and EU-8 countries in 2005–2017 (EUR)**

Source: own calculation based on EUFADN.

To verify this, in the first step, plots of the average agricultural incomes in the EU-15 and EU-8 for 2005–2017 were created in two variants, i.e. with

and without the CAP subsidies. Comparing these plots, it can be seen that their shape is almost identical regardless of the chosen variant. This shows that the dynamics of agricultural income in the EU, regardless of whether they are members of the EU-15 or EU-8, is similar irrespective of whether these incomes include the CAP subsidies or not. In the EU-15 and EU-8 countries the largest decrease in agricultural income, both with and without the CAP subsidies, occurred in 2009. The comparative analysis of these two plots indicate also that the income gap between farmers from the EU-15 and EU-8 is narrowing. This is particularly evident within the period of 2010–2016. These plots confirm the results of the Smędzik-Ambroży and Guth study (2019). They demonstrated that in 2005–2015 the average agricultural income without CAP subsidies per farm was definitely higher in the EU-15 than the EU-8 countries. In both groups, agricultural subsidies from the CAP significantly increased the profitability of agricultural production. In the EU-15, they resulted in an increase in income per farm by as much as 679%. In the EU-12 countries this gain was even higher (Smędzik-Ambroży, Guth, 2019).

**Table 2. Agricultural income disparities with and without the CAP subsidies between the EU-15 and EU-8 countries in 2005–2017 (EUR)**

Year	Without subsidies	With subsidies
2005	18 902.31	17 759.94
2006	36 978.88	31 457.73
2007	24 245.12	15 564.77
2008	24 589.18	9 553.71
2009	36 822.30	20 198.68
2010	37 354.63	23 152.43
2011	28 814.67	12 592.97
2012	28 479.87	19 632.67
2013	33 196.33	19 779.24
2014	27 204.99	13 111.59
2015	27 788.00	13 515.08
2016	22 798.85	7 401.86
2017	37 512.25	22 431.43
Average values for selected periods		
2005–2008	26 178.87	18 584.04
2009–2011	34 330.53	18 648.02
2012–2014	29 627.06	17 507.83
2015–2017	29 366.37	14 449.46
2005–2017	29 875.71	17 297.34

Source: own calculation based on EUFADN.

The above results were also confirmed by the data presented in Table 2. It contains the differences in agricultural income with or without the CAP subsidies between the EU-15 and EU-8 countries in 2005–2017. It shows that, regardless of the year, the disparities between agricultural incomes are smaller in the case of agricultural incomes with the CAP subsidies in comparison to agricultural incomes without such support. On average, throughout the entire research period, due to the impact of the CAP, disparity of agricultural income without support was as much as 72% higher in comparison to differentiation of agricultural income with the CAP subsidies. This allows us to positively verify the hypothesis that: subsidies from the CAP cause a decrease in the differences between average agricultural income per farmer between the EU-15 and the EU-8 countries. The analyses also make it possible to state that, thanks to the CAP, agriculture in the EU-15 and EU-8 is on the path toward income convergence, thereby reducing income inequalities between farmers from these countries. These results are in line with Zawalińska *et al.* (2015). They found that since 2004 Poland and other new EU members began to catch up and then exceed the dynamics of agricultural income in the EU-15 countries. These results are also confirmed by Chmielewska (2018), who stated that in the EU after 2004 there was a convergence process of real agricultural income per full-time employee. Despite periodic fluctuations, the values of this category were levelled, especially between the EU-15 and EU-13 countries (13 new EU members after 2004).

## CONCLUSIONS

The research carried out allows us to conclude that in the investigated countries the agricultural income of FADN farms differs significantly. It is important to note that in 2005–2017 the average agricultural income without subsidies in the EU-15 was positive, while it was negative in the EU-8. Thanks to the financial support of the CAP, the average value of agricultural incomes increased, which allowed a positive agricultural income to be achieved in the EU-8. The added value of the analysis is primarily the statement that the CAP subsidies reduce the differences in agricultural income between the EU-15 and EU-8. In the process of economic integration, and as a result of the implementation of the CAP in the EU-8, income disparities between farmers in the EU-15 and EU-8 decreased. At the same time the reduction in income disparities, in the case of agricultural income including CAP subsidies, was relatively greater. Therefore, it can be concluded that the CAP contributes to increasing the economic sustainability of the EU agricultural sector and the territorial cohesion of agriculture in the analysed EU countries.

It is worth emphasising that our research also incorporated a broader debate connected with problems of agricultural protectionism in developed and developing

countries. The negative impact of agricultural protection in rich countries on developing countries is analysed, while the positive role of agricultural policy in the development of poor countries is still indicated (Chang, 2009; Timmer, 2009; World Bank, 2008; Hayami, Ruttan, 1985). The need to support agriculture is also debated considering new challenges connected with climate change, for example (Stępień, Czyżewski, 2019).

Diversification of income and direct payments among farmers in individual EU countries caused a demand for compensation for direct payments. Such a measure would be aimed at improving the competitiveness of agriculture. However, as Hamulczuk and Rembisz (2009) point out, while the income disparity in the relation between agriculture and other sectors was a premise for agricultural interventionism, the income disparity in the relation between agricultural income in one country and agricultural income in another country is not such a motive. These international differences in income may even be a theoretical premise for the agricultural development processes (Ghatak, Ingersent, 1984; Hayami, Ruttan, 1985), and the level of direct payments should depend on the effectiveness of the labour factor (Hamulczuk, Rembisz, 2009).

In the surveyed farms, the share of the CAP subsidies in the average income of agricultural holdings was relatively meaningful. This significance or even farm dependence on the CAP support is an area of controversy among economists and politicians. Farmers' dependence on EU payments may negatively affect productivity and the competitiveness of farmers, and make the income situation of farms dependent on the political situation (Zawalińska et al., 2015; Hamulczuk, Rembisz 2009). Moreover, the current method of granting the CAP payments results in their uneven distribution. So the question arises as to how much the CAP payments contribute to the economic and social sustainability of farms in the microeconomic level within particular branches or regions. In this context, it is pointed out that the development of agricultural policy should not be based on one-size-fits-all solutions, but should be more related to the regional context. However, as a side effect, this can lead to making the agricultural policy more complex rather than achieving its simplification. Given the above issues, and despite the long history of the CAP, agricultural incomes remain a subject of discussion, and therefore the advantages and disadvantages of supporting the farm income need more in-depth research.

## BIBLIOGRAPHY

- Baer-Nawrocka, A. (2013). Wpływ Wspólnej Polityki Rolnej na efekty dochodowe w rolnictwie nowych krajów członkowskich Unii Europejskiej. *Zeszyty Naukowe Szkoły Głównej Gospodarstwa Wiejskiego w Warszawie. Polityki Europejskie, Finanse i Marketing*, 9(58), 34–44.

- Boyle, G. E., McCarthy, T. G. (1997). A Simple Measure of  $\beta$ -convergence. *Oxford Bulletin of Economics and Statistics*, 59(2), 257–264. DOI: 10.1111/1468-0084.00063.
- Chang, H.-J. (2009). Rethinking public policy in agriculture: lessons from distant and recent. *Policy Assistance Series*, 7, Rome: FAO.
- Chmielewska, B. (2018). Zmiany zróżnicowania dochodów rolniczych w państwach członkowskich Unii Europejskiej. *Zagadnienia Ekonomiki Rolnej*, 2(355), 61–75. DOI: 10.30858/zer/92062.
- Commission of the European Communities (1982). Indicators of Farm Income. Working document of the Services of the Commission, VI/308/82 EN (0082d), Brussels.
- Czyżewski, A., Stępień, S. (2017). Nowe uwarunkowania ekonomiczne wspólnej polityki rolnej (WPR) Unii Europejskiej. *Ekonomista*, 6, 675–697.
- Czyżewski, B., Poczta-Wajda, A. (2016). Effects of Policy and Market on Relative Income Deprivation of Agricultural Labour. Presentation for conference 160th EAAE Seminar “Rural Jobs and the CAP”, Warsaw, December 1–2.
- Czyżewski, B., Smędzik-Ambroży, K. (2017). The regional structure of the CAP subsidies and the factor productivity in agriculture in the EU–28. *Agricultural Economics – Czech*, 63, 149–163. DOI: 3001.0012.2937.
- Dow, G. K., Reed, C. G. (2013). The Origins of Inequality: Insiders, Outsiders, Elites, and Commoners. *Journal of Political Economy*, 121(3), 609–641. DOI: 10.1086/670741.
- EUFADN (2019). Retrieved from: [https://ec.europa.eu/agriculture/rica/concept\\_en.cfm](https://ec.europa.eu/agriculture/rica/concept_en.cfm) (2019.09.16).
- FADN (2020). Retrieved from: <https://fadn.pl/metodyka/zbieranie-danych/formularze-danych-do-doboru-arozpro/> (2020.02.13).
- Ghatak, S., Ingersent, K. (1984). *Agriculture and Economic Development*. Baltimore: The Johns Hopkins University Press.
- Guth, M., Smędzik-Ambroży, K., Czyżewski, B., Stępień, S. (2020). The Economic Sustainability of Farms under Common Agricultural Policy in the European Union Countries. *Agriculture*, 10(2), 1–20. DOI: 10.3390/agriculture10020034.
- Hamulczuk, M., Rembisz, W. (2009). Kwestie wyrównania dopłat bezpośrednich producentom rolnym w Unii Europejskiej. *Zeszyty Naukowe Szkoły Głównej Gospodarstwa Wiejskiego w Warszawie. Problemy Rolnictwa Światowego*, 9, 35–45.
- Hayami, Y., Ruttan, V. W. (1985). *Agricultural Development: An International Perspective*. Baltimore: John Hopkins University Press.
- Hill, B., Bradley, D. (2015). *Comparison of Farmers’ Incomes in the EU Member States*. Study for the European Parliament’s Committee on Agriculture and Rural Development. Brussels: European Parliament.
- Josling, T., Anderson, K. (2017). *The EU’s Common Agricultural Policy at Fifty: an Outside View*. Hague: Dutch Ministry of Agriculture.
- European Commission (1997). European Union Treaty of Amsterdam, Amsterdam. Retrieved from: [http://europa.eu/eulaw/decisionmaking/treaties/pdf/treaty\\_of\\_amsterdam/treaty\\_of\\_amsterdam\\_en.pdf](http://europa.eu/eulaw/decisionmaking/treaties/pdf/treaty_of_amsterdam/treaty_of_amsterdam_en.pdf) (2015.11.16).
- European Commission (2019). An introduction to EU Cohesion Policy 2014–2020. Retrieved from: [https://ec.europa.eu/regional\\_policy/sources/docgener/informat/basic/basic\\_2014\\_en.pdf](https://ec.europa.eu/regional_policy/sources/docgener/informat/basic/basic_2014_en.pdf) (2019.09.11).
- Kusideł, E. (2013). *Konwergencja gospodarcza w Polsce i jej znaczenie w osiągnięciu celów polityki spójności*. Łódź: Wydawnictwo Uniwersytetu Łódzkiego.

- Latruffe, L., Diazabakana, A., Bockstaller, Ch., Desjeux, Y., Finn, J., Kelly, E., Ryan, M., Uthes, S. (2016). Measurement of sustainability in agriculture: a review of indicators. *Studies in Agricultural Economics*, 118, 123–130. DOI: 10.7896/j.1624.
- Malaga, K. (2004). *Konwergencja gospodarcza w krajach OECD w świetle zagregowanych modeli wzrostu*. Poznań: Wydawnictwo Akademii Ekonomicznej w Poznaniu.
- Matuszczak, A., Smędzik-Ambroży, K. (2013). Próba ocen współzależności pomiędzy zrównoważeniem środowiskowym a wynikami ekonomicznymi gospodarstw rolnych na przykładzie regionu Wielkopolska i Śląsk. In: J. S. Zegar (Ed.), *Z badań nad rolnictwem społecznie zrównoważonym*, 19 (pp. 128–161). Warszawa: IERIGŻ.
- Poczta-Wajda, A. (2017). *Polityka wspierania rolnictwa a problem deprywacji dochodowej rolników w krajach o różnym poziomie rozwoju*. Warszawa: PWN.
- Rembisz, W. (2010). The Critical Analysis of the Intervention Basis and Evolution in Agriculture. *Współczesna Ekonomia*, 4(4), 7–15.
- Runowski, H. (2017). Problem oceny poziomu dochodów rolniczych w Unii Europejskiej. *Roczniki Naukowe SERiA*, XIX(5), 185–190. DOI: 10.5604/01.3001.0010.6233.
- Sala-i-Martin, X. (1996). The classical approach to convergence analysis. *The Economic Journal*, 106(437), 1019–1036. DOI: 10.2307/2235375.
- Smędzik-Ambroży, K. (2018). *Zasoby a zrównoważony rozwój rolnictwa w Polsce po akcesji do Unii Europejskiej*. Warszawa: PWN.
- Smędzik-Ambroży, K., Guth, M. (2019). Subsidies from the Common Agricultural Policy of the EU versus Agricultural Incomes in the European Union Countries in 2005–2015. *Hradec Economic Days*, 9(2), 307–316.
- Stępień, S., Czyżewski, A. (2019). Quo vadis Common Agricultural Policy of the European Union?. *Management*, 23(2), 295–309. DOI: 10.2478/manment-2019-0032.
- Stępień, S., Guth, M., Smędzik-Ambroży, K. (2018). Rola Wspólnej Polityki Rolnej w kreowaniu dochodów gospodarstw rolnych w Unii Europejskiej w kontekście zrównoważenia ekonomiczno-społecznego. *Zeszyty Naukowe SGGW w Warszawie; Problemy Rolnictwa Światowego*, 18(3), 295–305. DOI: 10.22630/PRS.2018.18.3.87.
- Stoeckel, A. (2000). *Solving the Problem – The Political Economy of Agricultural Reform*. Barton: Rural Industries Research and Development Corporation – Centre for International Economics.
- Swinnen, J. (2015). *The Political Economy of the 2014–2020 Common Agricultural Policy. An Imperfect Storm*. London: Centre for European Policy Studies – Brussels: Rowman and Littlefield International.
- Timmer, C. P. (2009). *A world without agriculture. The structural transformation in historical perspective*. Washington DC: The American Enterprise Institute for Public Policy Research.
- World Bank (2008). *World Development Report, 2008: Agriculture for development*. Washington: World Bank, DC, USA.
- Wrzaszcz, W. (2012). Czynniki kształtujące zrównoważenie gospodarstw rolnych. *Journal of Agribusiness and Rural Development*, 2(24), 285–296.
- Zawalińska, K., Majewski, E., Wąs, A. (2015). Long-Term Changes in the Incomes of the Polish Agriculture Compared to the European Union Countries. *Roczniki Naukowe SERiA*, XVII(6), 346–354.

### *Summary*

The aim of paper is to answer to the question whether the EU's Common Agricultural Policy reduces the differences in the average agricultural income between the EU-15 countries and those that joined the EU in 2004. The hypothesis was assumed that the CAP subsidies reduce the differences in agricultural income between these two groups of countries. Spreads between average income of farmers from the old and new members were calculated. The analysis is carried out in two variants. In the first one, the agricultural income does not include the CAP support, in the second one the agricultural income covers all CAP subsidies. The spatial scope of research involves two groups of countries: EU-15 (Belgium, the Netherlands, Luxembourg, France, Germany, Italy, the United Kingdom, Denmark, Ireland, Greece, Spain, Portugal, Finland, Austria and Sweden) and EU-8 (the Czech Republic, Poland, Slovakia, Lithuania, Latvia, Estonia, Hungary and Slovenia). The subjective scope of the survey covers representative farms from the EU countries (representing 4,045,300–5,295,930 farms in the EU countries, depending on the investigated year). The time frame of the analyses concerns the years 2005–2017. The data from the Farm Accountancy Data Network (FADN) are used. The study positively verifies the hypothesis that: subsidies from the CAP cause a decrease in the differences in average agricultural income between the EU-15 and the EU-8 countries. This contributes to an increase in economic sustainability and in the territorial cohesion of agriculture for the EU countries.

*Keywords:* agricultural income, income disparities, the European Union, the Common Agricultural Policy.

## **Wpływ polityki rolnej na zróżnicowanie dochodów rolników w Unii Europejskiej w latach 2005–2017**

### *Streszczenie*

Celem artykułu była odpowiedź na pytanie, czy polityka rolna UE powoduje zmniejszanie różnic w wartości dochodów rolniczych pomiędzy krajami UE-15 i krajami, które przystąpiły do UE w 2004 roku (UE-8). W artykule postawiono hipotezę, że subwencje ze wspólnej polityki rolnej (WPR) powodują zmniejszanie różnic w dochodach rolniczych pomiędzy tymi grupami krajów. Obliczono rozpiętości pomiędzy średnimi dochodami rolników z krajów UE-15 i UE-8 (tj. bez Malty i Cypru). Analizę zrealizowano w dwóch wariantach. W pierwszym, dochód rolników nie obejmował wsparcia WPR, w drugim wariantcie, dochody rolników uwzględniały różne subwencje WPR. Zakres przestrzenny analiz obejmował kraje UE-15 (tzw. stare kraje), czyli: Belgię, Niderlandy, Luksemburg, Francję, Niemcy, Włochy, Wielką Brytanię, Danię, Irlandię, Grecję, Hiszpanię, Portugalię, Finlandię, Austrię i Szwecję oraz kraje UE-8 (tzw. nowe kraje), czyli: Czechy, Estonię, Litwę, Łotwę, Polskę, Słowację, Słowenię i Węgry. Zakres podmiotowy obejmował reprezentatywne gospodarstwa rolne z tych krajów (reprezentowały one w zależności od roku od 4 045 300 gospodarstw do 5 295 930 gospodarstw rolnych w krajach UE). Analizy obejmowały lata 2005–2017. Dane pochodziły z europejskiego FADN (*Farm Accountancy Data Network*). W wyniku analiz pozytywnie zweryfikowano hipotezę, że subwencje z WPR powodują zmniejszanie różnic w dochodach rolniczych pomiędzy UE-15 i grupą krajów, które przystąpiły do UE w 2004 roku. Przyczynia się to do zwiększenia zrównoważenia ekonomicznego oraz powoduje zwiększenie spójności terytorialnej rolnictwa z krajów UE.

*Słowa kluczowe:* dochody rolnicze, nierówności dochodowe, Unia Europejska, wspólna polityka rolna.

JEL: F02, F49, H29.