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SOCIAL SUSTAINABILITY IN AGRICULTURAL FARMS WITH SELECTED TYPES OF PRODUCTION IN EUROPEAN UNION COUNTRIES¹

*ZRÓWNOWAŻENIE SPOŁECZNE GOSPODARSTW ROLNYCH WYBRANYCH TYPÓW
PRODUKCYJNYCH W KRAJACH UNII EUROPEJSKIEJ*

Key words: social sustainability, agricultural farms, types of production, the EU countries

Słowa kluczowe: zrównoważenie społeczne, gospodarstwa rolne, typy produkcyjne, kraje UE

JEL codes: Q01, Q56, J43, O13

Abstract. The aim of the paper was to identify different levels of social sustainability in farms of various production types (8 types) in EU countries. The study is based on the Sustainable Value (SV) method, which is value-oriented, measured as the sustainability of agriculture at the microeconomic level (e.g. agricultural farm). To be able to compare farms among themselves, an RTC was calculated. The FADN database for the years 2004-2015 was used in the article, analyzing four types of farms (field-crop, horticulture, milk and granivores). It was indicated that what was most important for social sustainability was the relation between the employed labour input, especially own, family labour input, and the achieved effects in the form of total output value, but first of all, income from the family farm (farm net income).

Introduction

Sustainable development is most often analyzed in its economic, social and environmental aspects [Zegar 2012, Kates et al. 2005]. The social sustainability on which the authors have focused is primarily seen in terms of employment and income. Employment is regarded both in quantitative terms when the employment rate increases, and in qualitative terms when the skills of the workforce are upgraded. Many authors stress the importance of increasing employment in rural areas (supported, among others, by community funds), which is strongly correlated with the decreasing rate of social exclusion, and thus increasing social governance, by reducing depopulation of these areas and improving the quality of life [Chatzinikolaou et al. 2012, Subić et al. 2013, Basiago 1999, Weingaertner, Moberg 2009]. For example, Juan Torres et al. [2016] indicated that running ecological farms improves the situation of the local community and is particularly desirable in areas characterised by relatively high unemployment, thus increasing their social order. Also the quality of employment, i.e. qualifications and education, as well as human and social capital in a broad sense are strongly linked to social sustainability, as they have a direct impact on the income of the agricultural population [Czerna-Grygiel 2010, Wolz et al. 2006, Knapik 2014, Latruffe et al. 2016, Flora, Roesch-McNally 2014]. The income aspect is also raised in a different context – as a result of sustainable farming. Examples from various countries (Argentina, Austria, Bulgaria and other developing countries, including the Third World) show that sustainable agriculture is better than industrial agriculture because it does not have a negative impact on the rural population, impoverishing farmers and thus depriving them of opportunities for development [Gizicki-Neundlinger, Güldner 2017, Bachev 2017, Severi 2016, McKenzie 2004, Berlan 2013, Kwasek et al. 2015]. Others [Bacon et al. 2012, Hediger 2008] note that, inter alia, sustainable agriculture reduces some of the social costs of industrial

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farming, in particular the exposure of workers and rural communities to pesticides, while at the same time leading to an overall improvement in the quality of life in rural areas, maintaining cultural traditions and biodiversity, including through appropriate investment [Bock 2012]. Simultaneously, in a wider context, it is an element of territorial development, which in turn leads to sustainable social development [Hediger 2008, Wilson 2009].

Material and methods

The aim of the paper is to indicate the differentiation of the level of social sustainability in farms of various type of production (8 types) in EU countries. We will use the Sustainable Value (*SV*) method, which is a value-oriented method, developed as a means of measuring agricultural sustainability at a microeconomic level (e.g. agricultural farm). This enables a synthetic assessment of a farm's contribution to farming sustainability, taking into account the efficiency resulting from using economic, social and environmental resources in comparison to the opportunity cost [Figge, Hahn 2005, Illge et al. 2008, Van Passel et al. 2007]. As noted above, the authors pointed to one of the pillars of sustainability – social sustainability. The calculation formula for determining the *SV* of farms in the regions needs to indicate a benchmark farm, which was the average value of variables adopted for the analysis for the analysed EU countries. The calculation formula for determining the *SSV* of the farms is as follows:

$$SSV_i = \frac{1}{m} \sum_{j=1}^m r_{ij} \left(\frac{y_{ij}}{r_{ij}} - \frac{yb_{ij}}{rb_{ij}} \right)$$

SSV_i is the social sustainable value afferent to a farm from country i , r_{ij} and rb_{ij} represent the resource quantity of type j and country i of the analysed farm, i.e. of the farm considered as reference system, y_{ij} and yb_{ij} are the return of resources of the analysed and benchmark farm, $i = 1...n$ is the country and $j = 1...m$ is the type of analysed resource.

Through its contents, *SSV* indicates the absolute size of the value created in a sustainable manner by the agricultural farms of various countries of the EU in each production types. To take into account the production types and to make comparisons between farms of various countries, we can calculate the indicator *RTC_i* (Return to cost ratio). This one shows the relative contribution of farms from various countries to the sustainable performance compared to the benchmark:

$$RTC_i = \frac{y_i}{y_i - SSV_i}$$

where y_i represents the created value (farm net income), SSV_i – social sustainable value of the average agricultural farm of country i .

The FADN database for the years 2004-2015 was used, analyzing farms following types more deeply: field-crop, horticulture, milk and granivores. As an input indicator we used the following variables: unpaid labour input (SE015), paid labour input (SE020), wages paid (SE370) and as an output: farm net income (SE420).

Results

The analyses carried out for individual types of production of average EU farms allow for their delimitation to those where the *RTC* (calculated on the basis of *SSV*) is relatively high, above 1 for all types – these are only Italian, Spanish, Irish and Luxemburg farms. The situation is also relatively good on Austrian and Belgian farms. These countries can therefore be considered as making a positive contribution to social sustainability from their farms. This means that the ratio of the allocated outlays and effects is higher than the average in the EU-27. A relatively

worst situation is observed in Bulgarian, Cypriot, Danish, Estonian, Latvian, Polish, Slovak, Romanian and Slovenian farms, where the *RTC* indicator for the selected research period in all production types is relatively low, below 1.

It should be noted that the calculations for *SSV* and *RTC* were carried out horizontally, i.e. within each production type separately, so, for example, the social sustainability of field-crop farms was considered between EU countries in 2014-2015, where they were located, with Belgian farms (3.85) being the best, and Slovak farms the lowest (0.02) (cf. tab. 1).

This was due to the fact that the involvement of family labour resources in both countries in this type of farms was similar (approx. 1.3 FWU), but already in Slovakia the majority of employees were employed (more than forty times their involvement than in Belgium, i.e. as

Table 1. Average *RTC* value for agricultural farms of the EU-27 in 2004-2015

Type	Austria	Belgium	Bulgaria	Cypr	Czech Republic	Denmark	Estonia	Finland	France
Field-crop	2.73	3.85	-	0.35	0.37	0.72	0.92	1.55	1.46
Horticulture	-	1.70	0.18	0.38	0.98	0.38	0.61	0.78	0.93
Wine	1.33	-	0.01	0.37	0.59	-	-	-	0.94
Other permanent crops	0.89	0.67	0.14	0.42	0.50	0.61	-	-	0.35
Milk	2.42	4.97	0.16	-	0.09	0.08	0.13	1.37	1.72
Other grazing livestock	2.14	4.58	0.18	0.63	0.26	0	0.56	0.86	1.43
Granivores	2.69	4.11	0.22	0.08	0.05	0	0.18	1.42	1.05
Mixed	5.55	9.23	0.54	-	0.16	0	0.50	2.59	2.91
Type	Germany	Greece	Hungary	Ireland	Italy	Lithuania	Luxembourg	Latvia	Malta
Field-crop	0.87	1.21	0.71	2.77	1.3	1.39	3.15	0.51	0.99
Horticulture	0.92	1.58	1.12	-	3.03	1.23	-	0.05	1.41
Wine	1.34	1.17	0.32	-	1.28	-	1.4	-	-
Other permanent crops	0.61	1.24	0.28	-	1.25	1.12	-	-	-
Milk	0.91	0.81	0.18	2.05	2.22	0	2.52	0.32	1.4
Other grazing livestock	0.64	1.29	0.54	1.95	1.81	1.23	1.42	0.55	0.98
Granivores	0.97	1.52	0.36	-	3.39	0.40	-	0.20	0.70
Mixed	0.60	3.13	0.46	3.31	3.08	0.80	3.63	0.70	1.22
Type	Poland	Portugal	Romania	Slovakia	Slovenia	Sweden	Spain	The Netherlands	United Kingdom
Field-crop	0.66	0.81	0.66	0.02	0.80	0.65	1.67	1.45	1.04
Horticulture	0.97	0.9	-	-	-	1.04	1.64	0.89	0.62
Wine	-	0.55	0.24	-	-	-	1.01	-	-
Other permanent crops	0.46	0.77	0.46	-	0.47	-	1.21	0.59	0.18
Milk	0.98	1.14	-	0	0.99	0.48	2.64	2.3	0.78
Other grazing livestock	0.50	0.89	0.51	0.03	0.38	0.55	1.66	0.53	0.93
Granivores	0.96	0.87	0.40	-	1.51	0.27	2.39	0.69	0.71
Mixed	1.01	1.49	0.80	0	0.81	0.21	4.15	2.56	1.18

Source: own study based on [FADN 2004-2015]

much as 6.89 AWU), which resulted in relatively high costs of hired labour. At the same time, the average value of total production in Slovak farms was twice as high as in Belgium, but unfortunately this was not reflected in the income from the family farm, which in the analysed period was on average more than six times higher annually in Belgium, which has a significant negative impact on social sustainability.

In another plant type, by far one of the most labour-intensive – horticulture – the highest social sustainability was observed in Italian farms (3.03), while the lowest in Latvia (0.05) and Bulgaria (0.18) (cf. tab. 1). Looking at the values of the variables that determined size of *SSV*, and thus the *RTC*, it should be noted that on the expenditure side the commitment of own labour resources in the analysed period was slightly higher in Italian households (by about 25%), however the use of paid labour in them was nearly five times lower than in Latvian households. On the effects side, we notice that the total value of production in the case of Italian horticultures is about 20% higher than in the case of Latvian, while the income from the family farm is as much as eleven times higher, which undoubtedly increases the level of social sustainability.

Two types of livestock farms were also analysed in more detail. The first are the milk production farms. The relatively highest level of social sustainability was achieved by such farms in Belgium (4.97) and the lowest in Lithuania and Slovakia (0). Belgian milk farms were characterised by a relatively high (1.68 FWU) own labour input, compared to twice as high in Slovak farms. On the other hand, the paid labour input differed much more radically, which in Belgium amounted to only 0.05 AWU per year on average in the analysed period, and in Slovakia to as much as 29.5 AWU, which entailed relatively high costs of this external factor. It should be added that the total value of production on Slovakian farms is four and a half times higher than on Belgian farms, but the income of the Belgian farms is already disproportionately high, as Slovak milk farms have a negative value (-82.9 thousand euro on average per year in the period 2004-2015). Lithuanian farms differ from Belgian in terms of social sustainability because, despite almost identical labour input in agricultural production, they achieve relatively low results – almost eight times lower total production value and over five times lower income.

This is also the case for granivores, where Belgian farms were again the most socially sustainable (4.11) and Danish farms the lowest (0). In the first period, the total annual labour input amounted to 1.5 AWU, of which as much as 1.5 FWU is own, family labour input. In Denmark, the situation was different – twice as high total labour input (of which 2/3 was paid labour) resulted in twice as high annual average production value (956 thousand euro), but unfortunately the average annual family income was negative (-15 thousand euro), with a relatively high income from Belgian granivore farms (63.4 thousand euro), which made them relatively socially sustainable.

As mentioned above, the analyses did not refer to vertical comparisons - between types of agricultural production. Therefore this article does not present which farms, whether they are producing crops or animals, are more socially sustainable. It can be assumed that this is largely due to the fact that different types of farms were organised differently, that they were mechanised and, at the same time, that the scale of their activities was different. Hence two general conclusions may be made:

- the agriculture in many New Member States (i.e. Bulgarian, Cypriot, Danish, Estonian, Latvian, Polish, Slovak, Romanian and Slovenian farms) requires institutional support that would allow for the improvement of qualifications, education and investment, which could have a positive impact on the efficiency of the labour factor,
- the main driver for the social-economic sustainability is maximization of the labor productivity rather than a land productivity which goes in the line with neoclassical assumptions.

Summary

The analyses made it possible to identify countries in which various types of farms contribute to social sustainability (like Italian, Spanish, Irish and Luxemburg farms) and those where relation between the employed labour input, and total output value is not satisfactory. The success of the first group of farms is due to the fact that they had comparatively low labour input (especially paid labour) and achieved relatively high results, particularly the value of family farm income. The analysis of selected 4 production types confirms the above observations.

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Streszczenie

Celem artykułu jest identyfikacja zróżnicowanego poziomu zrównoważenia społecznego w gospodarstwach poszczególnych typów produkcyjnych (8 typów) w krajach UE. Badanie oparto na metodzie Sustainable Value (SV), która jest zorientowana na wartość i mierzona jako zrównoważony rozwój rolnictwa na poziomie mikroekonomicznym (np. gospodarstwo rolne). Aby móc porównać gospodarstwa między sobą, obliczono wskaźnik RTC. Wykorzystano bazę danych FADN za lata 2004-2015, analizując bardziej szczegółowo cztery typy gospodarstw (polowe, ogrodnicze, mleczne i zajmujące się chowem i hodowlą zwierząt ziarnożernych). Wskazano, że dla zrównoważonego rozwoju społecznego najważniejsza jest relacja pomiędzy nakładem pracy, zwłaszcza własnej, rodzinnej, a osiągniętymi efektami w postaci wartości produkcji ogółem, ale przede wszystkim dochodem z gospodarstwa rodzinnego (dochód netto gospodarstwa).

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