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FINANCIAL SECURITY OF FARMS IN SELECTED EUROPEAN UNION COUNTRIES IN THE CONTEXT OF ENVIRONMENTAL PROTECTION REQUIREMENTS

Key words: financial security, farms, subsidies, cash flow, cash sufficiency

ABSTRACT. The article deals with the issue of financial security in an average farm in the Czech Republic, Poland, the Netherlands and Germany. The data collected under the FADN in the period 2013-2017 was used in this work. Financial security was measured using a cash adequacy indicator and the variability of family farm income is used. The work also used the subsidy rate, which determined to what degree farmers could feel safe in financial terms without any subsidies or financial support. Research shows that the worst situation from the perspective of the relationship between cash flows and debt servicing occurred on an average Dutch farm, and the highest sufficiency index was shown by a Polish farm. However, these discrepancies are the result of risk aversion in recent uncertain financial times. If additional requirements for outlays related to environmental protection appear, then the most difficult situation will occur on farms in the Czech Republic and Poland due to the fact that, for them, direct payments constitute a significant source of income. In these countries, a lack of compensation for any possible consequences arising from environmental restrictions may cause a feeling of financial insecurity.

INTRODUCTION

Environmental protection has become a priority for almost all governments, not just EU countries, and is also one of their biggest challenges. Requirements for minimizing the adverse impact on the natural environment apply not only to industry, but also to entities operating in agriculture. It is well known that this branch of the national economy directly uses natural resources in production processes (in Poland, 60% of the country's area), with an inevitable environmental impact. It should also be noted that farmers operating in a market economy must produce in accordance with social needs (including climate protection), but, at the same time, in such a way as to achieve their economic goals that will allow them to function efficiently in a competitive market. Meeting these needs translates directly into a sense of financial security, without which no pro-environmental measures will be taken by farmers.

Considering what is mentioned above, the question should be asked as to whether the requirements for agricultural producers will ensure the security of families making a living from agriculture. In Poland, this is a serious problem due to the number of people making

a living from agriculture, however in other European countries the problem is perhaps not so significant. There are doubts as to whether the requirements set for environmental protection will not result in a loss of financial security for families. These concerns are somewhat diminished in the draft of the European Commission document indicating that the common agricultural policy must take into account the need to ensure profitability of agricultural holdings, and thus also a dignified life of farming families, while maintaining the viability of the rural environment with an appropriate level of employment [EKR 2017]. It should be assumed that the above-mentioned document is part of ensuring the economic security of farming families.

The aim of the study is to assess the financial security in an average farm in selected EU countries and the level of subsidization of agriculture with particular emphasis on financial support for pro-environmental programs. Such support may determine the sense of financial security. The hypothesis indicating that a higher level of subsidization translates into an increased risk of losing financial security was formulated. The study was carried out using comparative analysis and cash adequacy indicators and the subsidy rate for selected 4 EU countries with different levels of agricultural development.

FINANCIAL SECURITY AND ENVIRONMENTAL REQUIREMENTS IN AGRICULTURE – AN ACADEMIC LITERATURE APPROACH

The category of financial security (also in relation to a farm) has its basis both in the theory of financial risk as well as the issues of bankruptcy and financial threat [Soliwoda 2014, p. 47]. Farmers, in addition to the types of risk common to most economic activities (such as changes in price relations or the loss of a contractor), have to deal with factors characteristic of agricultural activity resulting from its biological nature. Financial security is a process of continuous reduction and elimination of monetary risk in order to secure capital adequacy that will be tailored to the risk profile and preferences of a given entity. This is all the more so since, as Harlan Platt and Marjorie Platt [2006] claim, the factors determining the improvement of financial security are, among others, cash flow. It is also noted that financial security in relation to households, even those with a very low income, begins to be built only when saving instruments are used [Raczkowski 2014].

It is important that increasing the level of risk is associated with the need to provide/improve economic/financial or social security [Flejterski 2007, p. 58]. Financial security plays a significant role, being in a broad sense a derivative of various categories of risks, directly or indirectly affecting the financial position of an economic entity. Given the so-called European Agricultural Model, the agricultural sector in EU countries is characterized by a smaller unit farm potential than in Canada, the USA, Australia or New Zealand. In addition, a high share of family labour inputs, a low production scale and level of specialization [Kowalczyk, Sobiecki 2011], may cause a sense of threat to farming families making a living from agriculture.

Burdening agriculture with many risk factors translates into high volatility in terms of both production and economic results, and, consequently, the uncertainty of achieving the expected income effects by agricultural producers [Hardaker 2000]. This problem is not

new, however, in recent years it has become increasingly important, which is manifested in increased variability of results (both production and economic) in agriculture [Vrolijk et al. 2009, EC 2008, 2011]. European Commission calculations show that $\frac{1}{4}$ of farms from EU-15 countries in the period between 1998 and 2003 experienced a decrease in income of above 30%. Other documents [EC 2011] indicate that around 20% of European farmers have experienced losses resulting in a decrease in income of above 30% of the average from previous years [Sulewski, Czekaj 2015, p. 74]. In addition, political decision-makers co-responsible for the shape of the CAP also note a significant problem of agricultural income stability, which is becoming a complex socio-economic issue. The agricultural sector (compared to e.g. high-tech industry), due to its characteristic features, such as a long production period, slower return on invested capital, as well as low mobility of factors of production, has no mechanism to adapt the volume and structure of production to a turbulent, competitive environment [Czyżewski 2006]. This justifies the need to identify the determinants of financial security for farms, including the role of CAP instruments.

At the same time, the evolution of the CAP is the strongest sign of moving away from the industrial agriculture paradigm in favour of its sustainability [OECD 2011, 2014]. The most demand for sustainable farming is manifested in the changes that occurred in the CAP between 2014–2020, where, for the first time, a specific part of payments was transferred to farmers for delivering specific public goods. According to Andrzej Czyżewski [2015], this may be a step towards establishing a universal environmental tax, from which funds will be allocated to the payment of environmental non-market goods produced by agriculture. This would mean a worsening of the financial situation of families, and thus a decrease in the sense of financial security as a result of the new financial burden.

From the perspective of the way CAP functions, farmers can receive support when very poor production results are generated [Hill 2012, p. 213]. Already during Health Check CAP 2007–2013, it was found that a safety net can be seen in direct payments, decoupled from farmers' production decisions and not affecting their market orientation. Direct payments should, first and foremost, ensure a stabilized level of income in the event of rapid changes in the market, and above all in the event of natural disasters. The basic type of subsidy addressed to farmers is, therefore, to be a factor counteracting depopulation of the village and the abandonment of agricultural land (land abandonment). As a result, the supply of public goods related to natural space managed by farmers will be ensured at an appropriate level [EC 2009].

An increase in production intensity is seen as an answer to these challenges, but strictly in accordance with the new rules, i.e. the principle of sustainable intensification. It seems that, in such circumstances, it is necessary to increase the rate of agricultural production efficiency, but this must be done by methods integrating economic and environmental goals. This must lead to an increase in the level of innovation in agriculture. The owners of the largest farms should come to terms with increasing restrictions in the future in terms of the further intensification of production with currently used production technologies.

To sum up, it will be increasingly difficult to function in a changing world, because every business in this farm is part of a set of connected vessels, which must function well to achieve set goals. Therefore, the issues under consideration should take the spectrum of various determinants into account, only a part of which is under limited control of the CAP

or agricultural policy at a national level. Regardless of the ideas for organizing agriculture (family/agricultural holdings), for it to operate in an environmentally-friendly manner, its individual units – farms – must be provided with financial security, thanks to which it is possible to implement ideas to ensure food and environmental security.

RESEARCH MATERIAL AND METHODS

The research covered the period 2014-2017, and the data was collected under FADN. According to Justyna Góral [2015], this data set is a very good source of information, because they are all collected on the basis of the same guidelines, which makes them a verified and unified source of data. Data from selected countries with different levels of agricultural development and its different intensity were used. The studies covered Germany, the Netherlands, the Czech Republic and Poland. The factors that will be examined will be changes in production volume, gross value added in size. Wojciech Józwiak [2017, p. 22] believes that this category is a good measure of economic performance and, in a way, one can agree with this view, although the support received is still doubtful from the outside, which is not strictly agricultural activity). To determine the size of farm dependence on subsidies, the subsidy rate, slightly modified in relation to those proposed by Jacek Kulawik and Renata Płonka [2013, p. 27], will be deducted according to formula (1) and (2):

$$\text{Subsidy rate I} = \text{SE605} / \text{SE131} \quad (1)$$

$$\text{Subsidy rate II} = \text{SE605} / \text{SE420} \quad (2)$$

where: SE605 – operating subsidies (no investment subsidies), SE131 – total production value, SE420 – income from a family farm.

In addition, relations will be provided regarding the share of payments related to environmental protection (UOS) to the amount of the total value of operating subsidies in accordance with formula (3):

$$\text{UOS} = \text{SE624} / \text{SE605} \quad (3)$$

where: SE624 – general support for rural development including environmental payments, LFA payments and payments for improving the quality of agricultural products, for afforestation and protection of the forest environment, SE605 – as above.

For the assessment of financial security, the variability (standard deviation) of family farm income was used as a risk measure and the cash adequacy index (WWG) calculated in accordance with formula (4):

$$\text{WWG} = \text{SE526} / (\text{SE495} + \text{SE490} + \text{SE380}) \quad (4)$$

where: SE526 – operating cash flow, SE495 – short-term debt, SE490 – long-term debt, SE380 – interest on external financing.

RESEARCH RESULTS

Table 1 summarizes the data on changes in the value of total production achieved and gross value added (previous year = 100%). An analysis of figures presented in Table 1 show that there were very large differences in the value of production in the countries studied. The highest value was found in the Netherlands, which was almost twice as high as that obtained by the Czech Republic and Germany and almost 17 times more than that of Poland. This indicates a very high level of production intensity of Dutch farms.

Table 1. Production value and gross value added in the years 2013-2017

Country	Production value [EUR]	Changes in value of production [previous year = 100%]			
	2013	2014	2015	2016	2017
Czech Republic	293,428	104.1	99.3	101.4	105.1
Germany	274,721	92.3	94.0	103.7	105.2
Netherlands	508,181	96.2	98.3	101.4	107.4
Poland	30,203	96.4	96.8	93.1	110.9
Country	Gross value added [EUR]	Change in value of gross value added [previous year = 100%]			
Czech Republic	152,876	105.9	93.3	105.0	105.1
Germany	131,447	90.5	94.0	109.6	108.8
Netherlands	209,194	90.7	102.4	105.2	111.2
Poland	16,685	93.7	95.1	98.2	115.5

Source: own calculations based on [FADN]

Taking into account the average farm size in each of these countries, it turns out that production volume per 1 ha in the Netherlands is 6 times higher than in Germany and over 8 times larger than in Poland and the Czech Republic. At the same time, this result indicates that Dutch farmers are more oriented towards production than on supporting instruments. Whether this was the case will be verified by the subsidy rate, which will be calculated later in the study. When it comes to changes in the value of production, it can be seen that they have followed very similar trends, unfavourable changes concerning 2015 (Poland until 2016), followed by a shift of direction. This was the result of positive changes in agricultural prices rather than production volumes. Regarding gross value added, it should be stated that, in all countries, the level of costs related to agricultural activity was similar. However, the pace of their changes did not always correspond to changes in the value of production. This indicates the volatility of means of production prices. The dynamics of changes in the value of gross value added was higher, which was probably related to changes in the amount of support (direct payments).

How important the support flowing under the CAP for farmers is and whether it can determine the sense of security of agricultural families is shown in the figures in Table 2.

Table 2. Subsidy rate (I and II) in the surveyed countries in 2013-2017

Country	Subsidy rate [%]				
	2013	2014	2015	2016	2017
	Rate I				
Czech Republic	28.3	27.3	27.6	29.5	28.2
Germany	12.9	14.2	14.8	14.2	14.0
Netherlands	3.6	3.3	3.7	3.8	3.1
Poland	19.7	20.0	18.4	21.4	20.2
Country	Rate II				
Czech Republic	54.5	51.2	55.4	57.4	54.7
Germany	27.0	30.2	31.4	28.9	27.4
Netherlands	8.7	8.6	9.0	9.1	7.2
Poland	35.7	37.2	34.9	38.5	35.0

Source: see Table 1

From the data compiled in Table 2, it appears that the level of subsidization of agriculture in relation to production volume was small, although very diverse. Dutch farmers received relatively least support, with only about 3% of the value of production. This confirms that the production intensity is very high there, which resulted in such a small share. In the Czech Republic, on the other hand, the share of subsidies in relation to agricultural production accounted for around 30%, which means that farmers in this country are significantly dependent on financial support under the CAP. In the case of Poland, this share is slightly smaller, but also indicates a rather high involvement of external sources of financing for agricultural activities.

In terms of income, the situation was even less favourable in the Czech Republic, since the subsidy rate increased to over 50%, which means that the source of income on farms is half external funds, which means that farmers in this country were dependent on received support. The situation on the average Polish farm looked slightly better, but also in this case the level of payments in relation to income was high (about 38%), so the income situation of farmers was dependent on the support received. Maybe farmers should increase the share of productive activity in generating income. However, will it be possible in a situation where a Polish farm does not have sufficient capital for innovative activities, and the increase in intensity by increasing the standards of chemical consumption is not in line with environmental priorities? The smallest contribution (around 9%) to farm income was found in the Netherlands. It can be stated that, in their case, the main source is agricultural activity, which can probably determine security, provided that there are no problems with the sale of products (which in the current state of pandemic may occur).

In addition to information about the amount of subsidies, it is important to recognize the support structure, with particular emphasis on payments that relate to environmental issues. The relevant figures are summarized in Table 3.

Table 3. Share of payments for environmental measures in the total amount of support for operational activities

Country	Share of payments [%]				
	2013	2014	2015	2016	2017
Czech Republic	20.8	18.8	17.8	17.2	19.0
Germany	13.4	12.8	14.3	15.1	15.6
Netherlands	13.8	10.1	9.0	15.1	6.3
Poland	17.5	16.7	8.3	13.0	11.6

Source: see Table 1

The share of subsidies related to activities favouring the environment was insignificant in all of the analysed countries. This is not surprising, since it is well known that single area payment is the basic source of support. Nevertheless, it should be pointed out that the average Czech farm received significant subsidies. Some fluctuations can be observed in other countries. In Poland, the share of this type of payment was the highest in the first two years, but gradually decreased. This could indicate a low interest of farmers in environmentally friendly activities, and farmers were rather uninterested in the implementation of additional pro-environmental measures, which do not bring additional financial benefits, but constitute a return on investment. The situation in the Netherlands was interesting, where only 6% of the value of support were these payments. Does this mean that the farmers from this country fail to favour a pro environmental approach?

Profit or income form the basis for assessing the situation of a business. Table 4 indicates the value of income in 2013 (in euros) and changes in its level during the period considered.

Table 4. Value of family farm income and its changes in 2013-2017

Country	Value of family farm income (previous year = 100%)					Standard deviation
	2013 [EUR]	2014	2015	2016	2017	
Czech Republic	47,887	118.0	70.6	93.3	112.6	21.47
Germany	51,177	76.1	80.6	128.9	120.5	27.03
Netherlands	70,878	77.8	117.2	109.4	127.0	21.29
Poland	9,867	88.2	89.7	98.9	124.6	16.85

Source: see Table 1

Multidirectional fluctuations in the amount of income of a family farm can be observed in the period 2013-2017. In Poland, unfavourable changes can be seen until 2016, however, in 2017 a positive rate of change can be seen, amounting to almost 25%. However, it should be noted that the income of an average Polish farm was at a very low level. It was also significant that the standard deviation in this case was the smallest, which indicates the least variability over the period considered. This comes as no surprise, because the

values of income achieved were, as mentioned before, at a very low level. In the other cases, no one-way change could be observed. However, the situation for the average farm in the Netherlands is observed as most favourable because, despite fluctuations, from 2014 there was a gradual increase in the value of income compared to the previous year, and in 2017 its value increased by 27%. The volatility of this category was slightly higher than seen in Poland but almost identical to those in the Czech Republic. The highest income variability concerned the German farm, which indicates that despite quite significant increases in income, farmers must expect significant fluctuations, and this may lead to a sense of income instability.

Income does not always reflect the actual amount of cash, because it is often calculated on an accrual basis. Therefore, one of the important elements of business evaluation (especially in terms of financial security) is cash flow. Information on the entity's core activities is particularly important. Table 5 summarizes the data which provide an answer to the question of what extent the operating cash generated was able to cover the needs arising from the settlement of debt.

Table 5. Cash sufficiency rate in 2013-2017

Country	Cash sufficiency rate [times]				
	2013	2014	2015	2016	2017
Czech Republic	0.41	0.39	0.36	0.30	0.32
Germany	0.43	0.34	0.30	0.33	0.37
Netherlands	0.14	0.14	0.13	0.15	0.18
Poland	1.40	1.36	1.28	1.30	1.41

Source: see Table 1

When assessing the figures in Table 5, it should be noted that the highest ratio value occurred in Poland, which indicates a strong relation of cash flows in operating activities to the size of debt. Of course, it should be unequivocally emphasized that this is a consequence of the aversion of Polish farmers to becoming indebted, and not very high values of surplus revenues over expenditure. Similar results can be observed in the Czech Republic and Germany, and they indicate that from the generated cash flow from operating activities over 30% of the debt value can be realized. The achieved result can be assessed as adequate, despite a lack of amounts deemed as appropriate in academic literature. The smallest values of the indicator occurred in the Netherlands (14-18%), but an increase can be observed. Such a low rate indicates that the average Dutch farm benefited significantly from external sources of financing. Of course, this increases the risk associated with either a loss of liquidity or a sense of threat to a loss of financial security, but does not prejudice the occurrence of negative effects of this situation.

SUMMARY

Agriculture faces huge challenges ahead with regard to pro-environmental measures. This is not an easy task, because many changes are required in the approach to running a farm and producing food. However, the new hurdles cannot be overcome in a situation where farmers will not be able to provide their families with a dignified life and a sense of financial security. Given the transparent research, it should be noted that rich countries, i.e. Germany or the Netherlands, can feel safe in terms of the amount of income they generate, whose main source is production. Nonetheless, some threats regarding lower cash adequacy can be observed.

Central and Eastern European countries base their income more on the support they received under the common agricultural policy. In the event of a change in the conditions for providing such support, this may constitute a sense of loss of financial security. Therefore, when introducing new requirements, the conditions for implementing pro-environmental measures should be well developed.

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BEZPIECZEŃSTWO FINANSOWE GOSPODARSTW ROLNYCH WYBRANYCH KRAJÓW UNII EUROPEJSKIEJ W KONTEKŚCIE WYMAGAŃ OCHRONY ŚRODOWISKA

Słowa kluczowe: bezpieczeństwo finansowe, gospodarstwa, subsydiowanie, przepływy pieniężne

ABSTRAKT

W artykule poruszono problematykę bezpieczeństwa finansowego w przeciętnym gospodarstwie rolnym w Czechach, Polsce, Niemczech i w Holandii. W pracy posłużono się danymi zbieranymi w ramach FADN w okresie 2013-2017. Do pomiaru bezpieczeństwa finansowego użyto wskaźnika wystarczalności gotówkowej oraz zmienności dochodu z rodzinnego gospodarstwa rolnego. W pracy wykorzystano także stopę subsydiowania, dzięki której ustalono, na ile rolnicy mogą czuć się bezpiecznie pod względem finansowym bez dopłat i wsparcia finansowego. Z badań wynika, że najgorsza sytuacja z perspektywy relacji przepływów pieniężnych do obsługi zadłużenia wystąpiła w przeciętnym gospodarstwie niemieckim, a najwyższą wartość wskaźnika wystarczalności odnotowano w gospodarstwie polskim. Rozbieżności te jednak wynikały z awersji do ryzyka w polskich gospodarstwach, a nie z bardzo dobrej sytuacji finansowej. Jeżeli pojawiają się dodatkowe wymagania dotyczące nakładów związanych z ochroną środowiska, to w najtrudniejszej sytuacji będą gospodarstwa w Czechach i w Polsce, ponieważ w nich bardzo poważnym źródłem dochodu były dopłaty bezpośrednie. W krajach tych, bez rekompensat za ewentualne skutki wynikające z ograniczeń środowiskowych, może wystąpić zagrożenie poczucia bezpieczeństwa finansowego.

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