

What determines the exit from agriculture? Evidence from rural households in Poland

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Summary

European agriculture undergoes the structural changes. A significant decline in the number of farms is one of the most visible signs of this process. The presented paper aims at defining the latest level, patterns and determinants of farm exits in Polish agriculture. In particular, the impact of socio-economic factors on this process is analysed along with changes in a broader institutional context. The study shows that socio-demographic factors associated primarily with both the characteristics of families and farm managers had a significant influence on the leaving from farming in Poland. The impact of micro-economic and spatial factors on farming discontinuation was observed as well. Particularly, the probability of farm exits was relatively lower for agricultural holdings located in the regions with small, semi-subsistence agriculture and at the same time for larger farms with a credit aimed at production development. It was found that the farm exits decisions were also significantly determined by an early retirement programme as well as agricultural land rental. However, the research results indicated different rates of farm exits during the time span investigated. The data on farm exits used in this paper were taken from the comprehensive, longitudinal surveys carried out by the IAFE-NRI in the same 76 villages located across Poland. Unlike the majority of research, this paper is based on information concerning various characteristics of the family farms, which subsequently contributed to farm exits. In order to identify and measure the relevant farm exits' determinants the binary dependent variable logit models were used.

Key words: farm exit, farming family, CAP, socio-demographic and economic determinants

Какво определя излизането от селското стопанство? Доказателства от полските земеделски домакинства

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Резюме

Европейското селско стопанство претърпява структурни промени. Значителното намаление на броя на фермите е един от най-видимите знаци на този процес. Настоящият доклад цели определяне на последните нива, модели и детерминанти за отказването от селскостопанска дейност в полското земеделие. В частност, влиянието на социално-икономическите фактори върху този процес е анализирано, наред с промените в по-широк институционален контекст. Изследването показва, че социално-демографските фактори, свързани най-вече с характеристиките на семействата и ръководителите на ферми, имат голямо значение за изоставянето на фермерската дейност в Полша. Ефектът от микроикономическите и пространствени фактори върху спирането на фермерската дейност също е разгледан. Вероятността за излизане от фермерската дейност е относително по-малка за земеделски ферми, разположени в региони с дребна, полупазарна стопанска дейност, и в същото време, за по-големи ферми, имащи кредит, насочен към развитие на производството. Беше установено, че ре-

шенията за излизане от селскостопанското производство са предизвикани от програма за ранно пенсиониране, както и арендуване на земеделска земя. В крайна сметка резултатите от анализа показват различни проценти на отказване от селскостопанска дейност по време на разгледания времеви период. Данните, използвани в доклада, са взети от детайлни, надлъжни изследвания, проведени от IAFE-NRI в същите 76 села, разположени в цяла Полша. За разлика от повечето изследвания, този доклад е базиран на информация, свързана с различни характеристики на семейните ферми, които са допринесли впоследствие за отказване от селското стопанство. За да се идентифицират и измерят съответните детерминанти за отказване от фермерска дейност, са използвани бинарни променливи логит модели.

Ключови думи: фермерско напускане, фермерски семейства, ОСП, социално-икономически детерминанти

Introduction

European agriculture undergoes structural changes. A decline in the number of farms in most Member States is an evident sign of this process¹. The agricultural economics and rural development literature considers different aspects and effects of this phenomenon (Table 1). Most frequently, farm exits are attributable to general changes in the economy, i.e. the development of services and the industry, and the limitation of contribution of the agricultural sector, in which higher productivity and mechanisation led to a significant outflow of workers, to the global product (Sourisseau et al., 2015). Competition in ag-

¹ According to Eurostat data, the number of farms in the EU decreased in 2005-2013 by 25% (from 14.5 to 10.8 million). This phenomenon was observed in all Member States, except for Ireland. The significant loss of farms in the EU was partially due to a statistical effect and was related to changes in the definition of a farm in particular countries (e.g. in Poland).

ricultural markets, efficiency-oriented changes in their environment and an increase in demand for appropriately large quantity of agricultural products with quality standards and supplied on time, place significant economic pressure on farmers (Van der Ploeg, 2006). Many of them thus fail to compete for recipients of agricultural products and often cease farming. Such decisions are also fostered by unforeseen environmental events (e.g.: droughts, floods, plant and animal diseases) as well as rapid economic and political phenomena (agricultural, fiscal, trade policy changes) (Pawłowska-Tyszko, 2009). As a result of difficult operating conditions determined by the accumulation of various risks, the necessity to increase the scale and specialisation of production or to find a market niche, the number of farmers, who are able to respond to these challenges, is falling. Moreover, the motives behind farm exit decisions are often lack of sufficient amount

Table 1. Selected drivers of farm exits at macro and micro level

Exogenous factors	Endogenous factors
Decreasing share of agriculture in GDP	No capital
Increasing competition between agricultural producers	Insufficient information, knowledge and skills
Increasing demands of recipients and consumers of agricultural products	No successor
Rapid environmental, economic and political changes	Manager's advanced age
Non-agricultural job creation	Type of farming, level of on-farm diversification/specialisation

Source: Own elaboration based on (Boehlje, 1973; Glauben et al., 2006; Van der Ploeg, 2006; Mishra et al., 2010; Sourisseau et al., 2015).

of capital, agricultural land or information and skills (Table 1).

The decreasing profitability of agricultural production often leads to lower involvement in running the business (labour input and disinvestment), on-farm diversification or starting other parallel gainful activity (Wojewodzic, 2010). In these situations, the farm becomes a source of supplemental income, subsistence food, a place to live or a way to ensure and secure financial situation for the future. Structural changes in the agricultural sector and the economy also contribute to weakening the intergenerational continuity of family farming (Sikorska, 2014a). In many cases, the young generation is not willing to work on farms and chooses another relatively more attractive job (Gale, 2003). The young generation's attachment to the family farm is weakening (Fischer and Burton, 2014). Consequently, the assets are often transferred to successors late when current users are old and successors – mature. Farm transfers are then often formal and frequently precede decisions of current owners' successors on selling the assets outside the family (Wojewodzic, 2010).

Farm exits are accompanied by the concentration of resources, as well as the industrialisation and specialisation of production. These processes are often associated with the emergence of negative externalities on the environment, animal welfare and food consumers (Zegar, 2012). At the same time, disagrarianisation may contribute to accelerating the disappearance of agricultural and rural communities, thus leading to spatial disparities in socio-economic development and the emergence of new social problems (Lyson and Welch, 2005). On the other hand, the literature stresses the existence of numerous adaptive mechanisms associated with the operation of farms, including primarily family entities, which support current users in running their activity in the long term and the preservation of agrarian structures by reducing an excessive concentration of production factors (Calus and Van Huylenbroeck, 2010). Among these factors are unfavourable conditions to capital penetration, low labour costs and transaction costs, organisational flexibility, accumulated human

capital, as well as a significant public intervention and regulation (Mann and Dickinson, 1978, Friedmann, 1981, OECD, 2006). An example of the institutional context that support the operation of farms could be the EU policy, but also the policies of most Member States² (Bartolini and Viaggi, 2013, Lichorowicz, 2014). These policies cover the legal, financial and training support instruments (direct payments, environmental payments, investment grants, advisory services) especially.

According to the research there are several motives behind farm exits. They are related to the economic, social, demographic, institutional and territorial conditions at micro- and macro-economic level (Boehlje, 1973, Pietola, Vare and Lansink, 2003, Mishra et al., 2010, Olper et al., 2014). Given that farm exits are a complex phenomenon and involve disposing of the farm by its sale or rental outside the immediate family, analyses to date have focused on its composition and size (family life cycle, availability of successors), and socio-demographic characteristics of specific persons, in particular characteristics of farm managers (such as age, education level or non-agricultural professional activity) (Pietola, Vare and Lansink, 2003, Glauben et al., 2006, Mishra et al., 2010). Studies on farm exits was often conducted in countries dominated by farms large in size which were mostly oriented towards commercial production. In such cases, particular attention was devoted to characteristics such as economic potential, type of farming, the level of specialisation or farm value (Goetz and Debertain, 2001, Glauben et al., 2006, Breustedt and Glauben, 2007). In accordance with the research, the farm exits were less probable in the case of large farms, as they allowed for earning stable and satisfactory income (Kimhi and Bollman, 1999, Mishra et al., 2010). In turn, as indicated by analyses carried out at regional level, the

² That is legislation which aims at protecting the distinguished group of farms (most frequently, family farms) and providing these entities with conducive development conditions. Instruments in this regard include: the establishment of specialised institutions, the legal restriction of farm divisions or excessive land concentration, protection from financial burden, the possibility of an earlier generational change in farms, the purchase right and the preemption right (Lichorowicz, 2014).

farm exits were relatively more frequent for areas dominated by small specialised crop farms and offering limited opportunities for earning additional non-agricultural income, (Glauben et al., 2006, Breustedt and Glauben, 2007).

Like in the most EU Member States, the agricultural sector in Poland undergoes structural changes. As a matter of fact, the trend of farm exits in that sector has been observed for many years³. Conditions and the pace of this process in particular periods were different. On the one hand, rapid economic growth usually fostered a decrease in the agricultural labour force and production entities⁴ (Kowalski, 2012). At the same time, historically shaped ownership structures proved to be sustainable and transformations of production resources progressed slowly (Halamka, 2015). It was due to the shape of the institutional system under which it was favourable to own an agricultural property, whether or not being active in the market, in order to enjoy tax, insurance (health, pension insurance) and financial advantages (CAP support) (Przygodzka, 2016). It should be stressed at the same time that farming families usually treated land as a place to live and as a good investment, and that they considered its disposal in exceptional family situations (Sikorska, 2013). In this context, the presented paper aims at determining the current level of farm exits in Poland, characterising this process and indicating its main micro-economic determinants. However, as far as the issues analysed are concerned, the study also highlights the importance of changes in the environment of farms, particularly consequences of changes resulted from covering the Polish agricultural sector by the EU CAP.

Material and methods

Data on farm exits used in the paper were taken from surveys conducted by the Institute of Agricultural and Food Economics-National Research Institute (IAFE-NRI) in 2000, 2005 and

³ In Poland, the number of farms with an area of over 1 ha decreased in 2002-2014 by 574 thousand (29%) (Barnawrocka and Poczta, 2016).

⁴ A severe loss of small farms and the related outflow of labour force take place primarily in periods of high agricultural commodity prices and farm income.

2011 in 76 villages located across Poland. In this survey, the sampling was purposeful, i.e. the farm sample size was to reflect basic agricultural structures at national and macro-regional level, including in particular the area structure. IAFE-NRI research distinguishes five macro-regions (Figure 1): Central-Western, Central-Eastern, South-Eastern, South-Western and Northern.

This division reflects long-term features of Polish agriculture and basic socio-demographic characteristics of the rural population. In the survey periods, household samples always covered all rural families with farms (with an agricultural land area of at least 1 ha) in the surveyed villages, i.e. 3 927 in 2000, 3 705 in 2005 and 3 331 in 2011. At national and macro-regional level, the samples covered approximately one five-hundredth of the actual number of farms in Poland. The large sample size and a wide range of gathered information in the panel IAFE-NRI studies enable trends and changes in family agriculture, including the farm exit process, to be determined.

In this paper, the farm exit is defined as a transfer of agricultural production assets (primarily agricultural land) to persons other than relatives who are not members of current farm users' household. In practice, the phenomenon analysed in the study usually concerned the sale or long-term rental of agricultural land. Such cases were associated with the spatial mobility of the family, the death of its members or a change in the socio-economic status involving the transfer of ownership (abandonment) of over 1 ha of agricultural land. All these situations meant *de facto* that the farming family (household) ceases to function as it used to. Furthermore, the paper addresses the issue of new entrants. These situations concerned persons who were included in the analysed sample as a result of the purchase, rental of agricultural land or who set up a new farming family as a result of the division of their agricultural production assets.

In agricultural economics, the farm exits are often analysed based on econometric methods (Kimhi and Bollman, 1999, Mishra et al., 2010). This process is considered by using non-linear models. However, due to organisational difficulties and financial constraints (cross-sectional



Fig. 1. Location of villages and the size of the IAFE-NRI research sample in 2011, in macro-regional distribution*

*The individual macro-regions correspond to the following descriptions and voivodeships: Central-Western (I) – Kujawsko-Pomorskie and Wielkopolskie, Central-Eastern (II) – Mazowieckie, Lubelskie, Łódzkie and Podlaskie, South-Eastern (III) – Małopolskie, Podkarpackie, Śląskie and Świętokrzyskie, South-Western (IV) – Dolnośląskie, Lubuskie and Opolskie, Northern (V) – Pomorskie, Warmińsko-Mazurskie and Zachodniopomorskie. Source: IAFE-NRI surveys.

studies) most of the analyses take into account one moment in time⁵. Farm exit, however, is often not a one-off event but a complex process, which depend on a series of determinants and stages. Therefore, taking into account the data from panel surveys seems to relatively better describes this phenomenon.

⁵ In such cases, information concerns potential farm exits and is based on the respondents' declarations.

It is worth noting here that this paper analyses data on both liquidated family farms and their users, and other households included in the samples in at least two survey periods. The paper analyses three multiannual periods: 2000–2005 (period 1), 2005–2011 (period 2) and 2011–2016 (period 3). In the period 1 and 2 the actual changes in households were analysed. The last period, however, concerned the plans of farm managers for the fu-

Table 2. Definition and description of variables used in the logit models of farm exits

Variable	Variants
Characteristics of farming family and farm manager	
Manager's age	In years
Manager's sex	1 – woman; 0 – man
Manager's marital status	1 – free; 0 – married
Manager's level of education	1 – higher; 0 – else
Manager's agricultural education	1 – yes; 0 – no
Manager's off-farm employment	1 – yes; 0 – no
Manager's work at farm	1 – full-time; 0 – else
Use of early retirement*	1 – yes; 0 – no
Number of children in the family (according to kinship)	Number of children
Type of family (single household)	1 – single household; 0 – else
Characteristics of farm	
Located in Central-Western macro-region**	1 – CW; 0 – else
Located in South-Eastern macro-region	1 – SE; 0 – else
Located in South-Western macro-region**	1 – SW; 0 – else
Located in Northern macro-region**	1 – N; 0 – else
Distance to nearest town	In kilometres
Size of farm	In ha of agricultural land
Land rent out	In ha of agricultural land
Uncultivated land	In ha of agricultural land
Value of commercial agricultural production	In thousand pln
Contract sales of commercial production	1 – yes; 0 – no
Number of livestock	In large units
High level of machinery equipment	1 – yes; 0 – no
Possibilities of development***	1 – yes; 0 – no
Value of agricultural investments	In thousand pln
Agricultural credit	1 – yes; 0 – no
Production specialisation	Herfindahl-hirschman index
Specialisation: wheat	1 – yes; 0 – else
Specialisation: dairy cattle	1 – yes; 0 – else
Specialisation: fruit	1 – yes; 0 – else
Specialisation: industrial plants	1 – yes; 0 – else
Specialisation: pigs	1 – yes; 0 – else

*not referred to the period 1 and 3; **not referred to the period 3; ***not referred to the period 1 and 2.

Source: own elaboration based on IAFE-NRI surveys.

ture (i.e. potential farm exit). In order to measure the impact of the selected determinants on exits from farming in three periods, the logit models were used (Long, 1997). The farm exit has been operationalised as a nominal and dichotomous dependent variable. The independent variables analysed in the study are listed in Table 2.

Results

In 2000–2016, the farm exit rate varied between 7 and 14% (Table 3). It was accompanied by a relatively stable and much lower farm entry rate, i.e. between 2 and 4%. As a result, in

the surveyed sample the disagrarisation trend has been prevailed over the analysed years. The frequency of farm exits was relatively the highest in 2005–2011 and amounted to 14% of total sample. In 2011–2016, the farm exit level it is expected to be relatively the lowest, covering 7% of total.

The research results have documented the various impacts of different determinants on farm exits (Table 4). In all analysed time periods, the socio-demographic characteristics of farmers and their families, particularly referred to the manager's age, family composition and size, had a statistically significant impact on this phenomenon.

Table 3. Farm exit and entry rate* in Polish agriculture, 2000–2016

Specification	1996–2000	2000–2005	2005–2011	2011–2016**
Number of farms (in total)	4,122	3,927	3,705	3,331
Farm exit rate (in %)	9.6	9.7	13.6	7.3
Farm entry rate (in %)	3.4	3.6	2.7	1.6

*The percentages were calculated with the reference to previous period except for the years 2011–2016.

**Forecast based on the respondents' declarations.

Source: Own calculations based on IAFE-NRI 2000, 2005, 2011 surveys.

Table 4. The statistical influence of endogenous determinants of farm exit in Poland, 2000–2016

Period 1 (2000–2005)		Period 2 (2005–2011)		Period 3 (2011–2016)	
Variable	Influence	Variable	Influence	Variable	Influence
Manager's age	+	Manager's age	+	Manager's age	+
Number of children in the family	-	Number of children in the family	-	Number of children in the family	-
Type of family (single household)	+	Type of family (single household)	+	Type of family (single household)	+
Located in SE Macro-region	-	Use of early retirement	+	Manager's agricultural education	+
Located in SW Macro-region	+	Located in SE Macro-region	-	Land rent out	+
Agricultural credit	-	Agricultural credit	-	Size of farm	-
Land rent out	+	Size of farm	-	Possibilities Of development	-
		Distance to nearest town	+	Specialisation: cereals	+
		Number of livestock	-		

Source: own elaboration based on logit models of farm exit (see table 5) and the data from IAFE-NRI surveys 2000, 2005, 2011.

Regardless of the time span, the manager's age positively influenced farm exit. For a farm a one-year increase in manager's age raised the probability of farm exits, *ceteris paribus*, from 1 to 7% (Table 5). It means that farm exits usually concerned older farmers at the pre- or retirement age. At the same time, the respondents' decisions on disposing of their agricultural property were fostered by a specific family situation, in particular in case of single households. Such cases increased the probability of farm exit in different periods, *ceteris paribus*, from 63 to 202% (Table 5). On the other hand, the farm exits were not likely to happen when managers lived with other persons to whom it was possible to hand over the production assets. Particularly, this situation referred to the children of farmers. The number of children had a statistically significant and negative impact on the farm exit (the likelihood of it decreased, *ceteris paribus*, from 18 to 38% per each additional child).

According to IAFE-NRI data, in addition to socio-demographic features of farming families, the farm exits in Poland were determined by economic characteristics of farms and factors concerning location of agricultural holdings in particular macro-region (Table 4). However, these impacts were not noted in all time spans. The probability of farm exits was lower for farms with credit for business purposes (*ceteris paribus*, by 21% in 2000–2005 and 39% in 2005–2011) and for holdings with the greater area of land (1 ha raise in the area decreased the likelihood of exit, *ceteris paribus*, by 2% in 2005–2011 and by 3% in 2011–2016) in at least two periods. Moreover, the farm exits were fostered by renting owned agricultural land (one ha of rented land increased the probability of farm exits, *ceteris paribus*, by 15% in 2000–2005 and by 17% in 2011–2016). Furthermore, the research results show that farm exits in period 1 and 2 were limited in the south-eastern Poland. In 2000–2005 and 2005–2011, the location of the agricultural holding in this area reduced the probability of exit, *ceteris paribus*, by 30 and 36% respectively. The farm exits were determined also by several variables but only in the one analysed period. In 2000–2005, the location in the south-western part of Poland had a positive

influence on farm exits (*ceteris paribus*, by 75%). In subsequent time spans, the probability of exits were higher for farms covered by early retirement scheme (*ceteris paribus*, by 49%) and situated at a particular distance from the nearest urban centre (the likelihood of exit increased, *ceteris paribus*, by 1% per each additional kilometre). An opposite impact on exit from agriculture concerned the size of livestock. For an agricultural holding with a considerable size of livestock, the likelihood of exit was found to be significantly lower (the probability of it decreased, *ceteris paribus*, by 3% per each additional livestock unit). In 2011–2016, the plan to exit from agriculture was relatively common in the group of managers with agricultural education and among producers specialising in the cereals production. In such cases, the probability of exits was positive and higher, *ceteris paribus*, by 64 and 72% respectively. In 2011–2016, farm exits were limited by declarations of farm managers concerning agricultural holding's development opportunities (*ceteris paribus*, by 62%).

Summary and discussion

In all analysed periods, the farm exit rate was higher than the farm entry rate. These results indicate the continuation of structural changes in the Polish agricultural sector, which is observed also in many other EU Member States. Nevertheless, the scale of decrease in the group of farming families in surveyed villages varied. It reached its peak in 2005–2011 and covered nearly one seventh of total households what should be attributed not only to the impact of various endogenous factors, but also to the influence of important exogenous conditions. The latter includes primarily an economic recovery and considerable support directed to the agricultural sector and rural areas, which was one of the result of Poland's accession to the EU (Sikorska, 2013). Namely, the introduction of the CAP and structural policy contributed to the acceleration of rural urbanisation and infrastructure investments as well as the development of the group of economically strong and competitive agricultural holdings. As a consequence, the demand for agricultural land in-

Table 5. Parameters of the logit models describing the factors statistically influencing the probability of farm exit in Poland in 2000–2016

Period 3 (2011–2016)					
Variable	Coefficient	Stad. Error	T stat	Significance	Odds ratio
<i>Characteristics of farm manager and farming family</i>					
Manager's age	0.069	0.009	7.395	0.000	7.1
Manager's agricultural education	0.494	0.215	2.296	0.022	64.0
Number of children in the family	-0.475	0.107	-4.447	0.000	-37.8
Type of family (single household)	0.735	0.301	2.445	0.014	108.7
<i>Characteristics of farm</i>					
Land rent out	0.158	0.059	2.695	0.007	17.1
Size of farm	-0.035	0.015	-2.265	0.024	-3.4
Possibilities of development	-0.978	0.315	-3.106	0.002	-62.4
Specialisation: cereals	0.541	0.234	2.316	0.021	71.9
Period 2 (2005–2011)					
Variable	Coefficient	Stad. Error	T stat	Significance	Odds ratio
<i>Characteristics of farm manager and farming family</i>					
Manager's age	0.011	0.005	2.322	0.020	1.1
Use of early retirement	0.395	0.189	2.088	0.037	48.5
Number of children in the family	-0.199	0.052	-3.851	0.000	-18.0
Type of family (single household)	1.104	0.166	6.655	0.000	201.8
<i>Characteristics of farm</i>					
Located in SE macro-region	-0.440	0.142	-3.106	0.002	-35.6
Agricultural credit	-0.488	0.155	-3.149	0.002	-38.6
Size of farm	-0.020	0.009	-2.146	0.032	-1.9
Distance to nearest town	0.014	0.007	1.965	0.049	1.4
Number of livestock	-0.028	0.009	-2.952	0.003	-2.7
Period 1 (2000–2005)					
Variable	Coefficient	Stad. Error	T stat	Significance	Odds ratio
<i>Characteristics of farm manager and farming family</i>					
Manager's age	0.022	0.004	5.004	0.000	2.3
Number of children in the family	-0.238	0.058	-4.124	0.000	-21.2
Type of family (single household)	0.490	0.187	2.618	0.009	63.2
<i>Characteristics of farm</i>					
Located in SE macro-region	-0.355	0.151	-2.341	0.019	-29.9
Located in SW macro-region	0.562	0.189	2.973	0.003	75.4
Agricultural credit	-0.239	0.121	-1.986	0.047	-21.3
Land rent out	0.141	0.047	2.972	0.003	15.2

Source: own calculations.

creased, especially on the part of market-oriented farms, but also of non-agricultural enterprises (infrastructure development). In other words, non-family land turnover intensified significantly, which was postponed, *inter alia*, due to low prices in the pre-accession period (Sikorska, 2014b). An increase in land prices resulted in the situation that the farming families were relatively more willing to sell agricultural property rather than to transfer it to the successors. These decisions concerned mainly the owners of agricultural holdings with low economic potential, aimed at social and subsistence functions. In 2011–2016, the number of farming families is expected to further follow the downward trend while the scale of farm exits is forecast to be limited.

The survey results indicate that the change in the economic and institutional context (Poland's accession to the EU and the introduction of CAP instruments) was reflected in the situation of a significant part of farming families and contributed to farm exit decisions. This process was evident in relation to the impact of early retirement scheme especially. From the model analyses reported here, this instrument positively and significantly influenced the sale of farms outside the family in 2005–2011. Moreover, farm exits in Poland were strongly affected by socio-demographic determinants that indicate the importance of the family life cycle, as well as the significance of the household's composition and size in this process. As was shown by Kimhi and Bollmann (1999), Goetz and Debertain (2001), Mishra et al. (2010) and Dudek (2010) the likelihood of exit increased with the age of the farmer. In some cases, households ceased to exist due to the death of all older users. Nevertheless, advanced age was usually a motive behind selling or renting the land owned. The modelling results confirmed that it was especially the case of farmers living alone or persons with no successors. The farm exit took often place when there were no persons to take over a farm in household (lack of children or they off-farm residence). The same pattern was also observed in other studies (Glauben et al., 2006, Mishra et al., 2010). It should be noted that in Poland farming was perceived in rural families often as unattractive place to work. Production as-

sets of most surveyed agricultural holdings were small, thus limiting the possibility of earning as much as in other sectors of the economy. Therefore, persons with a small agricultural estate often decided to sell or rent it. These situations were mostly the case for the respondents who did not accept rural areas as a place to live, did not want to spend their future there and those who had the chance to start off-farm work. Furthermore, the respondents, who did not want their children to spend their future in rural areas, relatively more frequently decided to sell their farms⁶. On the other hand, the respondents, who believed that living in rural areas offers favourable prospects to their children, relatively less often stopped to run their farms⁷.

It follows from the research results that the farm exits have been most common among families with agricultural holdings weakly linked to the markets⁸, who did not invest in the development of agricultural activity and who did not use external sources of financing (such as credits). It should be emphasised that decisions to exit from agriculture were made by families who ran poorly equipped farms with a small area of land and livestock size⁹. Farm exits were fostered by land rental as well. It was most evident in 2000–2005 and 2011–2016. The larger the rented land area was, the higher was the probability of farm exit. It may be assumed here that the decision to rent some part of the land relatively often preceded the sale of agricultural production assets (progressive exit strategy) at that time (Mishra et al. 2010). Given the survey results, it should be stated that micro-economic determinants had a measurable influence on the farm exit process. However, their impact was not that evident as in oth-

⁶ In 2005-2011, more than one in seven such persons exiting from farming.

⁷ Nearly one in ten such respondents decided to do so.

⁸ This phenomenon was relatively common among categories of farms with no agricultural commodity production (20% in 2005-2011, 13% in 2000-2005 and 10% in 2011-2016) and with very low-scale agricultural commodity production (16, 15 and 10% respectively).

⁹ It is evidenced by the fact that the highest share of liquidated farms was recorded among the smallest units with 2 ha (15% in 2000-2005, 18% in 2005-2011 and 9% in 2011-2016) and 2-5 ha of agricultural land (12, 14 and 10% respectively).

er countries and, at the same time, it was related to institutional and market transformations. Regardless of the period considered, the probability of exit from farming for the medium and large agricultural holdings in Poland was lower because of the possibility of production development and chances of earning satisfactory income. The survey results indicate that the probability of liquidating farms with high economic potential (expressed e.g. in the size of agricultural land, livestock) and those developing (with credits) was low.

Apart from the important role of economic conditions, including primarily the size and quality of production resources, in shaping long-term chances of farms' economic survival, it should be stressed that the operation of numerous small and uncompetitive entities was fostered in all the survey periods by the shape of tax law, social and health insurance and public subsidy regulations as well (Przygodzka, 2016). Due to such solutions, it was relatively favourable to owners of small agricultural properties to own them. They often used their agricultural holdings to generate additional profits while their main source of income was off-farm employment.

The analyses confirmed that the scale of farm exits varied geographically. In 2000–2011, the farm exits were relatively least common in south-eastern Poland. Due to agrarian fragmentation, proximity to non-agricultural jobs and diversification of local labour markets, this macro-region was traditionally characterised by the advanced farming population's dual occupation. Therefore, farms located there were relatively rarely sold outside the family, as also confirmed by other studies on the situation in many EU similar regions (Breustedt and Glau-ben, 2007). A statistically significant impact of spatial conditions on farm exits was evident in south-western Poland as well. In 2000–2005, farm exits among farming population resulted from structural changes and polarisation trends in the group of local agricultural holdings.

The empirical material gathered in the study allows for determining the scale of farm exits until 2016. In contrast to the previous sur-

vey periods (2000–2011), this phenomenon was measured in 2011–2016 based on declarations of farm managers. Despite the fact that information analysed in the compared time spans was of different nature (declarations vs real changes in households), determinants of farm exits were similar (i.e. the manager's age, household type, the number of children, the area of agricultural land, the area of rented land). This demonstrates the fact that abovementioned factors contributed to the process of continuing/discontinuing agricultural activity in many families and that actual changes recorded in the previous surveys are relatively convergent with future processes. However, the planned farm exits in 2011–2016 were related to the impact of unobvious conditions as well. The exit decisions were relatively more frequently made by farm managers with agricultural education and farmers specialising in cereal production. In addition to the specificity of measuring the phenomenon based on respondents' declarations, the relatively higher propensity of managers with agricultural education to exit agriculture should be attributed to the fact that, under Polish conditions, professional school education in farming was particularly prevalent among older people who were usually more likely to sell or rent their agricultural holdings. In turn, the increased rate of farm exits in agricultural holdings specialised in cereal production might be an effect of unfavourable conditions and market prospects that emerged for this type of farming at the time of the survey. It is also worth noting that those, who positively assessed the development potential of their business, were, of course, unlikely to sell or rent their farm in the future.

When considering the phenomenon of farm exits, a number of its possible negative consequences for the viability of agriculture and rural areas, as well as the environment need to be taken into account. However, under conditions of Polish agriculture characterised by, *inter alia*, agrarian fragmentation, overemployment and still relatively young labour force, further structural changes towards the concentration and modernisation of production resources are needed. An important requirement of these changes is to in-

roduce policy instruments supporting non-family farm transfers, primarily for the households not encouraged in agricultural production.

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