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## A matter of family? An analysis of determinants of farm succession in Polish agriculture

In this paper the impact of selected determinants on farm succession in Poland is analysed. The study shows that socio-demographic factors associated primarily with the characteristics of families, particularly of farm managers, had a significant influence on the family transfers of agricultural holdings. The impact of micro-economic and spatial factors on farm succession was observed as well. However, the research results indicate different scales and characters of succession determinants. Behind this variability was an institutional change linked to Poland's accession to the European Union and changes in the economy. The paper argues that this context, along with conducive social and legal background, reinforced a generational change in the sector. Analysis at the micro level was prepared on the basis of empirical data from the longitudinal IERiGŻ-PIB surveys conducted in 76 villages located across Poland with the use of multinomial dependent variable logit models. A unique feature of the study is an exploration of farm succession as an intra-family and generational phenomenon, relating to the different phases of family life cycle, as well as to kinship relationships. Moreover, unlike the majority of succession studies, the presented research distinguishes three types of succession (inter-generational, intra-generational and reverse inter-generational) and is based on information concerning actual changes in surveyed rural households, not only respondents' declarations about the future.

**Keywords:** farming family, farm manager, socio-economic determinants, accession to the EU

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### Introduction

In the agricultural economics literature, the issue of farm succession has been widely analysed for several decades. The problem has been the subject not only of empirical research, but also of policy and public debate (Lobley and Baker, 2012). The analysis suggested that the pace of generational change in agriculture has slowed considerably in recent years. As a result, in many European countries the population of farmers is aging rapidly (EC, 2012). The reasons for this phenomenon are related to general demographic processes (e.g. increase in life expectancy), the reluctance of young people to take over the farms and the unwillingness of older managers to transfer them (Copus *et al.*, 2006). Generational change in agriculture is also limited by the increasing costs of setting up a business (especially because of the high land prices), weakening the socialisation into agricultural occupations in rural families, as well as a significant income gap between farming and non-farming branches of the economy (EC, 2013a; Fischer and Burton, 2014). Therefore, it is even argued that the farm succession process in Europe is in crisis, and that this could threaten the economic competitiveness of family farming as well as its sustainability, as well as the viability of rural areas in many countries and regions (Burton and Fischer, 2015). In order to foster generational change in the agricultural sector, the European Union (EU) has undertaken policy interventions (Zagata and Sutherland, 2015). For instance, programmes and instruments aiming at encouraging older farmers to hand over their agricultural holdings or exit from farming (the early retirement programme) were implemented in many EU Member States. At the same time, under the Common Agricultural Policy (CAP), young people entering farming receive substantial financial support for setting up a business and an increased rate of direct payments (EC, 2013b).

Contrary to many other EU Member States, the problem of farm succession has not so far concerned the Polish agricultural sector. In the majority of cases this process runs

smoothly. The average age of Polish farmers was among the lowest in the EU and the age structure was considered as balanced<sup>1</sup> (Dudek, 2013). The reasons behind the favourable age structure and efficient transfers could be attributed not only to demographics (entry into the sector of the 1980s baby boom generation) but above all to a conducive socio-economic and institutional context. Thanks to different benefits, older and younger farming family members were usually eager to use appurtenant to them a legally and socially accepted right to hand and take over a patrimony. The majority of agricultural holdings – often very small in economic size – were kept in close family because their residential, security and investment functions (Sikorska, 2013a). For the ex-managers and their successors, farm ownership was a way to gain additional money (e.g. from rent charge, direct payments) or a chance to benefit from a favourable social security and tax system designed for farmers (Wojewodziec, 2013). As a result, owing to limited land resources the existence of a large group of uncompetitive and very small farms in Poland created a barrier to the development of other holdings aimed at commercial production. That is why in the economic debate the necessity of support for further structural changes is highlighted (Kołodziejczyk, 2015). As one way of improvement of land distribution, the activation of a market mechanism in land turnover (i.e. exits from farming) to a much greater extent instead of family transfers is indicated (Sikorska, 2013b).

A number of factors influencing farm succession have been reported. These concern economic, social, demographic, institutional and territorial determinants at the macro and micro levels. As succession is a complex phenomenon of passing the farm within a group of people linked with special ties (mainly kinship), research focused on its different composition and size, as well as social, demographic and

<sup>1</sup> In 2010 the indicator of age structure in EU agriculture (ratio between percentage of farmers less than 35 years old and percentage of farmers 55 years old or older) reached the highest level for Poland and amounted to 0.52. The average value of this value for the EU-27 was 0.14.

personal characteristics. Particularly, these analyses referred to the features of farm managers (Kimhi and Lopez, 1999; Glauben *et al.*, 2004a). However, much research on succession has been conducted in countries where market-oriented farms dominate. In such cases, special attention was devoted to the features of agricultural holdings, such as economic potential (area of land, number of livestock, size of capital assets), type of farming or the level of on-farm specialisation (Stiglbauer and Weiss, 2000; Kimhi and Nachlieli, 2001; Glauben *et al.*, 2004b; Väre 2007; Mishra *et al.* 2010). It was argued that due to the market competition and constant structural changes in the sector, it was these characteristics that had an impact on continuation or discontinuation of farming activity in subsequent generations. Apart from social and economic determinants, the various rates and timings of succession were explained by territorial location as well as different institutional context. The role of location could be summarised by saying that the family transfer of farms was usually smoother in agricultural regions with favourable environmental, climatic and cultural conditions (Bika, 2007). The relevant institutional system covering legal norms (agricultural and civil law, tax, social insurance) as well as customs and values affected farming families' attitudes to agriculture and defined their role in the economy (Klank, 2006; Calus 2009).

In Poland, despite the communist collectivisation policy before 1989 (which was imposed on a relatively small scale and reflected "a Polish road to socialism" in the Eastern Block) and later market transformation and modernisation of the agri-food sector, family farms remained the dominant organisational unit of agricultural production (Halamska, 2015). However, in the last decade, Polish family farming has undergone significant structural changes. According to official statistics, labour resources<sup>2</sup> decreased by nearly one tenth and the number of holdings<sup>3</sup> by one fifth (from 2.0 to 1.6 million) (Sikorska, 2013a). These decline rates dropped even faster than in the previous decade. Alongside these processes the number of farms decreased in all size groups with the exception of the largest category (units of 30 ha and more), although this process did not translate into a significant change in the size distribution of farms<sup>4</sup>. Moreover, the average size of farm in Poland increased only slightly (from 8.4 to 9.8 ha), and considerable regional differences persisted<sup>5</sup>. As a result, the process of polarisation into two groups of farms – the small and semi-subsistence majority (more than two thirds of the total) and a relatively larger, market-oriented minority (less than one third of the total) has continued.

One of the important reasons behind the preservation of a dual (polarised) structure of family farming was the popularity of transfers of business ownership and managerial control between generations in the two mentioned

<sup>2</sup> The number of people working on family farms (per full-time employed person equivalent) dropped from 2.2 in 2002 to 2.0 million in 2010.

<sup>3</sup> According to the Agricultural Census 2010, 99 per cent (1.6 million) of all agricultural holdings were family farms. They covered 86 per cent of all agricultural land area in Poland. In the text the term 'family farm' is considered as a farm owned by natural persons, with an area of more than 1 ha of agricultural land.

<sup>4</sup> The share of the category of smallest agricultural holdings (up to 5 ha) in total amounted to 55 per cent.

<sup>5</sup> In Poland, the average farm size is higher in the western and northern parts of the country (from 13 to 30 ha of agricultural land) than in its the eastern and southern parts (from 4 to 12 ha).



**Figure 1:** Location of villages and the size of the IERiGŻ-PIB research sample in 2011, in macro-regional distribution.

Source: IERiGŻ-PIB

groups (Sikorska, 2014). In this context, this paper aims to define the latest level, patterns and determinants of succession in Polish agriculture. In particular, the impact of socio-economic factors on family farm transfers is analysed along with changes in a broader context of this process. The accession of Poland to the EU as one of its relevant conditions is considered.

## Methodology

The data on farm succession used in this paper were taken from the comprehensive research carried out by the Institute of Agricultural and Food Economics – National Research Institute, Warszawa (IERiGŻ-PIB) in 2000, 2005 and 2011 in the same 76 villages located across Poland (Sikorska, 2013a). In this survey the sampling of the villages was purposeful so that the area of analysed agricultural holdings reflected the actual area structure of family farms both at the national and macro-regional level.

Five macro-regions are distinguished in the IERiGŻ-PIB studies (Figure 1): (I) Central-Western, (II) Central-Eastern, (III) South-Eastern, (IV) South-Western and (V) Northern (Figure 1)<sup>6</sup>. This territorial division reflects the historically embedded economic characteristics of domestic agriculture and the basic socio-demographic features of the rural population. The samples covered all rural households with the user of agricultural holding in the analysed locations, namely 3,927 farming families in 2000, 3,705 in 2005 and 3,331 in 2011. The samples both in terms of the whole and within each macro-region covered approximately one five

<sup>6</sup> The individual macro-regions correspond to the following descriptions and voivodeships (NUTS 2 level): (I) Central-Western: Kujawsko-Pomorskie and Wielkopolskie; (II) Central-Eastern: Mazowieckie, Lubelskie, Łódzkie and Podlaskie; (III) South-Eastern: Małopolskie, Podkarpackie, Śląskie and Świętokrzyskie; (IV) South-Western: Dolnośląskie, Lubuskie and Opolskie; (V) Northern: Pomorskie, Warmińsko-Mazurskie and Zachodniopomorskie.

hundredth of the actual number of agricultural holdings in Poland<sup>7</sup>. The large sample size and a wide range of gathered information in the panel IERiGŻ-PIB studies enable trends and changes in family agriculture, including the succession processes to be determined.

In this paper, succession was defined as both a transfer of legal farm ownership and management power related to the agricultural production assets that occurred within the family (household) (Gasson and Errington, 1993). The basic criterion for this categorisation was a change of agricultural holding's manager and owner, as well as its generational aspect. Owing to the specificity of Polish agriculture which plays a role of 'social buffer' in the economy, multiple forms of transfer take place. Apart from traditional inter-generational successions where parents hand over the farm to a younger family member (child), other types of transfers are observed, namely: intra-generational and reverse inter-generational succession. The former refers to a situation when a farm succession occurred within the same generation of the family (e.g. between a spouses in order to obtain a pension<sup>8</sup>). The latter concerns farm transfers from the younger to the older generation (for instance when a son leaves a village to work in an urban area). Moreover, this classification includes both the different phases of the development of farming families and the links between their members according to the rule of descent.

In agricultural economics, the succession of agricultural holdings has most often been analysed based on econometric methods (Mann, 2007). The ways of modelling this phenomenon usually take the form of non-linear models. However, the clear majority of studies on this phenomenon are cross-sectional, taking into account one moment of time (Hennesy and Rehmann, 2007). The succession is not, however, a one-off event but usually extends for many years. The conditions, course and consequences of this process apply to the longer period of time. Hence, for analysing this issue the data from panel studies are far more adequate. Owing to the limited availability of such information and high costs its gathering, cross-sectional surveys have been widespread so far. In such studies a potential succession, taking into account only the plans (declarations) of farmers or their successors, are considered (Viira *et al.*, 2014). The personal changes in both management and ownership (i.e. actual succession) was possible in this study because of the availability of the IERiGŻ-PIB panel data from the same farms covering two periods (2000-2005 and 2005-2011). Another original feature of the approach towards succession used here is consideration of its generational and intra-family dimensions. The analysis of the determinants of succession considered the demographic characteristics of the respondents and the family ties between them. This has allowed three types of succession to be distinguished, reflecting various phases of the development of the agricultural family. Therefore, the succession has been opera-

tionalised as the multinomial unordered dependant variable (Gruszczyński, 2002). In order to measure the impact of the selected determinants on succession in two periods, multinomial dependent variable logit models were used. The variables analysed in the study are listed in Table 1.

## Results

### The level and determinants of farm succession in Poland

The total succession rate varied from 15 to 7 per cent of all surveyed farms (Table 2). The frequency of each succession type was also different. Nevertheless, the most common was inter-generational succession, covering from two thirds to three quarter of all family transfers in the sample. The share of intra-generational successions was stable but relatively low, amounting to 2 per cent of the total sample of farms. The frequency of reverse inter-generational successions was marginal. What is important is that the data indicated that the total level of succession was inversely

**Table 1:** Definition and description of variables used in the logit models of farm succession.

Variable	Variants
<i>Characteristics of the farming family and farm manager</i>	
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
use of social public support	1 – yes; 0 – no
<i>Characteristics of the farm</i>	
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
lease land	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
plan of liquidation	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

Source: own elaboration

<sup>7</sup> In the total sample, 595 farms were transferred within a family in the period 2000-2005. They covered 4,828 ha of agricultural land (14.5 per cent of the total). At the same time, 383 farms (covering 1,984 ha, i.e. 5.9 per cent of the total) were liquidated. In turn, in 2005-2011 the succession referred to 240 agricultural holdings with an area of 1,955 ha of land (5.7 per cent of the total), while 505 farms (with an area of 3,023 ha – 8.8 per cent of the total) were liquidated.

<sup>8</sup> In Poland one of the condition of getting a full agricultural pension is to leave farming.



associated with the scale of farm liquidation<sup>9</sup>. When the frequency of the former was relatively high, the rate of the latter was low (period 1). In turn, the opposite relationship was observed in period 2.

The research results have documented the various impacts of different determinants on farm succession (Table 3). In the years characterised by a high rate of total farm family transfers, eight statistically significant determinants supporting this process were noted. When the succession scale was relatively lower (period 2), the factors hampering that phenomenon became particularly important (nine had negative and statistically significant impacts).

Regardless of the time span, the strongest and statistically negative influence on succession was linked with the situation of family, in particular in case of single households. Such cases limited the probability of inter-generational family transfers, *ceteris paribus*, from 86 to 94 per cent (Tables 4 and 5). On the other hand, the inter-generational successions of agricultural holdings were 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 but only to the period when total succession rate was relatively low. At that time the number of children had a statistically significant and positive impact on the inter-generational succession (the likelihood of it increased, *ceteris paribus*, by 15 per cent for each additional child). The succession of agricultural holdings was linked with the age of the farmer. The older he/she was, the higher was the likelihood of inter-generational and intra-generational succession. For a farm a one-year increase in manager's age raised the probability of this type of transfer, *ceteris paribus*, from 9 to 12 per cent and from 3 to 4 per cent respectively. Another statistically significant determinant of inter-generational farm succession was the sex of the manager. A statistically significant impact of this factor, however, was observed only in the first analysed period. At that time, taking over the agricultural holding by a younger person from a female manager happened relatively often. For a female farm manager, the likelihood of inter-generational was found to be significantly higher, namely, *ceteris paribus*, by 38 per cent.

The changes in the surveyed group of farmers had also a regional aspect. The situation of agricultural holdings in a specific part of the country either fostered or hindered their family transfers. The increased and statistically positive likelihood of inter-generational succession concerned the South-Eastern macro-region but only in the years of high rate of family transfers (Table 4). The location of farms in rural areas of that area increased the likelihood of this process, *ceteris paribus*, by 42 per cent. According to statistical analysis for the succession process the distance from the farm to urban areas was also of importance. The relatively longer spatial distance of farms to towns positively affected

<sup>9</sup> According to IERiGŻ-PIB study methodology, farm liquidation takes place when a farming family exits from agriculture through disposing of the agricultural land by selling or renting it outside the immediate family. In other words, farm liquidation means that household changes its socio-economic status from farming to non-farming. Two main reasons for such shifts are the abandonment of farming and taking-up non-agricultural activities by the rural population, and discontinuation of production upon retirement (Sikorska and Chmieliński, 2007).

**Table 2:** The rate of farm succession and liquidation in Poland, 2000-2011 (per cent).

	Period 1 (2000-2005)		Period 2 (2005-2011)	
Succession rate – total	15.2	Succession rate – total	6.5	
Inter-generational	12.8	Inter-generational	4.7	
Intra-generational	2.1	Intra-generational	1.6	
Reverse inter-generational	0.3	Reverse inter-generational	0.2	
Farm liquidation rate	9.7	Farm liquidation rate	13.6	

The percentages were calculated from 2000 for period 1 and 2005 for period 2  
Data source: IERiGŻ-PIB surveys 2000, 2005, 2011

**Table 3:** The statistical influence of endogenous determinants of farm succession in Poland, 2000-2011.

Period 1 (2000-2005)		Period 2 (2005-2011)	
Type of succession	Influence	Type of succession	Influence
Inter-generational		Inter-generational	
Farmer's age	+	Farmer's age	+
Farmer's sex	+	Type of family	-
Type of family	-	Number of children	+
SE macro-region	+	SE macro-region	-
Distance to town	+	CW macro-region	-
Size of farm	+	N macro-region	-
Contract production	+	SW macro-region	-
Intra-generational		Intra-generational	
Farmer's age	+	Farmer's age	+
Distance to town	+	Farmer's education	-
		SE macro-region	-
		Credit	-
Reverse inter-generational		Reverse inter-generational	
Farmer's age	-	Number of children	-

Source: own elaboration based on logit models (MNL) of farm succession (see Tables 4 and 5) and the data from IERiGŻ-PIB surveys 2000, 2005, 2011

**Table 4:** Parameters of the multi-nominal logit model describing the factors statistically influencing the probability of farm succession in Poland in 2000-2005.

Variable	Coef- ficient	Std. error	T stat	Signif- icance	Odds ratio
<i>Determinants of inter-generational succession</i>					
Characteristics of farm manager					
Age	0.116	0.006	20.376	0.000	12.3
Sex (women)	0.320	0.146	2.196	0.028	37.8
Characteristics of farming family					
Type of family (single household)	-1.949	0.293	-6.649	0.000	-85.8
Characteristics of farm					
SE macro-region	0.349	0.139	2.516	0.012	41.8
Distance to nearest town	0.043	0.007	5.994	0.000	4.4
Size of farm	0.018	0.008	2.223	0.026	1.8
Contract sales of commercial production	0.449	0.140	3.199	0.001	56.7
Constant	-9.182	0.430	-21.371	0.000	-100.0
<i>Determinants of intra-generational succession</i>					
Characteristics of farm manager					
Age	0.035	0.010	3.432	0.001	3.6
Characteristics of farm					
Distance to nearest town	0.028	0.015	1.919	0.055	2.8
Constant	-5.887	0.711	-8.281	0.000	-99.7
<i>Determinants of reverse inter-generational succession</i>					
Characteristics of farm manager					
Age	-0.107	0.036	-2.996	0.003	-10.2
Constant	1.836	1.841	-0.997	0.319	-84.1

Source: own calculations

**Table 5:** Parameters of the multi-nominal logit model describing the factors statistically influencing the probability of farm succession in Poland in 2005-2011.

Variable	Coef- ficient	Std. error	T stat	Signif- icance	Odds ratio
<i>Determinants of inter-generational succession</i>					
Characteristics of farm manager					
Age	0.089	0.008	10.869	0.000	9.3
Characteristics of farming family					
Number of children	0.141	0.062	2.282	0.022	15.1
Type of family (single household)	-2.758	0.742	-3.717	0.000	-93.7
Characteristics of farm					
SE macro-region	-0.544	0.212	-2.571	0.010	-42.0
CW macro-region	-1.697	0.449	-3.782	0.000	-81.7
N macro-region	-1.005	0.446	-2.246	0.024	-63.3
SW macro-region	-0.784	0.348	-2.252	0.024	-54.4
Constant	-4.745	0.802	-5.918	0.000	-99.1
<i>Determinants of intra-generational succession</i>					
Characteristics of farm manager					
Age	0.034	0.011	2.956	0.003	3.4
Agricultural education	-1.064	0.450	-2.363	0.018	-65.5
Characteristics of farm					
Agricultural credit	-0.757	0.366	-2.070	0.038	-53.1
Constant	-4.745	0.802	-5.918	0.000	-99.1
<i>Determinants of reverse inter-generational succession</i>					
Characteristics of farm manager					
Number of children	-1.518	0.762	-1.991	0.046	-78.1
Constant	-4.745	0.802	-5.919	0.000	93.3

Source: own calculations

the inter-generational succession (a 1 km increase in distance increased the likelihood of succession, *ceteris paribus*, by 4 and 3 per cent respectively). In turn, when the farm transfers took place on a limited scale, the location of farms was statistically significant in most macro-regions, except the Central-Eastern macro-region, and hampered those processes. To the relatively greatest extent, this applied to the Central-Western macro-region. The location of the agricultural holding in this area reduced the probability of the inter-generational farm succession, *ceteris paribus*, by 82 per cent (Table 5).

According to IERiGŻ-PIB data, farm succession in Poland was primarily determined by the socio-demographic characteristics of farming families and factors concerning location of agricultural holdings. However, in both analysed periods, the impact of micro-economic determinants on the described phenomenon was noted. In the first period it was positive. The probability of inter-generational family transfer was higher for farms with commercial agricultural production sold under contracting agreements (*ceteris paribus*, by 57 per cent), as well as for agricultural holdings with the greater area of agricultural land (a 1 ha increase in the area increased the likelihood of succession, *ceteris paribus*, by 2 per cent). On the other hand, in the second period the impact on succession of economic factors was negative. It referred only to the intra-generational transfer of farms with agricultural credit (a decrease in the chances of succession, *ceteris paribus*, by 53 per cent) and the manager with completed agricultural education (a decrease in the likelihood of transfer, *ceteris paribus*, by 66 per cent).

## Discussion

In the first analysed period the succession rate was particularly high and covered 15 per cent of all surveyed agricultural holdings. This high succession rate resulted from the situation in the overall economy as well as future considerable changes agricultural policy. The economic downturn along with the labour market imbalances translated into the instability of the living conditions of the farming population (Kaliński, 2009). That context contributed to the retention in families of the production assets (i.e. to keeping the agricultural land), even when those assets did not constitute a significant source of income. Secondly, the high rate of succession was an effect of preparation for EU accession. At that time many farming families resolved formal issues concerning land ownership, especially in the areas characterised by agrarian fragmentation and semi-subsistence farming (south-eastern part of the country) (Sikorska, 2005). However, the importance of policy context for farm transfers indicated that before Poland's accession to the EU and in the first years of membership the successions applied to many agricultural holdings regardless of their size and function. The upcoming transformations in the agri-food sector related to the implementation of the CAP resulted in the situation that farming families were relatively more willing to transfer the property rather than to sell it.

The change in economic conditions affecting the scale and direction of the transfer of agricultural holdings took place after Poland's accession to the EU (the second analysed period). The CAP instruments stabilised the situation in the agricultural markets and allowed investments to be implemented on a large scale (Czyżewski and Matuszczak, 2011). The demand for agricultural land increased as well, especially on the part of market-oriented farms, but also of non-agricultural enterprises (infrastructure development, urbanisation of villages). As a consequence, the succession frequency decreased substantially to 7 per cent of the total surveyed agricultural holdings. This level of farm succession was determined by the increased rate of market (non-familial) transactions of purchasing and selling of agricultural holdings which had been postponed due to relatively low land prices in the pre-accession period (Sikorska, 2012). As a result, in period 2 many families decided to sell their farms and the level of farm liquidation was relatively high, covering 14 per cent of the total sample.

The research results presented here show that the economic and policy context translated into the situation at the farming family level. Nevertheless, the succession of agricultural holdings in Poland was 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 Lopez (1999) and Glauben *et al.* (2004b), the likelihood of succession increased with the age of the farmer. Reaching the retirement age or an age close to it prompted a decision on transferring or selling the production assets. The presented analysis showed that succession of agricultural holding was possible when there are other persons to take over a farm in the household. It refers to the younger generation especially. However, it should be emphasised that in

some cases the number of persons in the household, particularly children, limited the chances of succession (Burton and Walford, 2005). This was especially true when the subjects of the transfer are usually big and market-oriented farms. The potential successors of such entities often compete for taking over the property. Regardless of the competition for the rights to the patrimony, having children makes it necessary to choose the right person to run agricultural production, which may be very difficult for the managers. In turn, in Poland, where the vast majority of farms are very small and often non-market oriented, transfers often take place late, when members of the younger generation have other gainful employment (they work mainly outside the farm before succession) and take over the holding to keep its ownership in the family. In this regard, the transfer patterns observed in the surveyed group fit the historically embedded and dominant succession model, reflected *inter alia* in the inter-generational transfer of the agricultural production assets in multi-person families.

It follows from the research results that the succession of agricultural holdings also determined the micro-economic determinants. However, their impact became not as visible as in other countries (Gasson and Errington, 2003; Mishra *et al.*, 2004; Calus *et al.*, 2008) and demonstrated at the time of important institutional and market changes related to the preparation for EU accession and economic instability (period 1). In Poland, owing to the possibilities of developing the agricultural activity, as well as prospects of receiving satisfactory remuneration, the tendency to take over medium and large size farms within a family was high at that time. Nevertheless, this situation applied to a small proportion of farming families running professional agricultural businesses. From the model analyses reported here it is evident that the chances of farm transfer to the young generation of successors increased when the production assets covered a significant area of land and contacts with agricultural market were intense and formalised in the legal contracts. In period 2 the impact on succession of two determinants was observed but it was negative and concerned only, occurred relatively rarely, intra-generational transfers.

The analysis also confirmed the importance of the location in a specific macro-region of the country on the probability of family succession of agricultural holdings. Relatively the highest rate of successions was observed in the eastern part of the country. In the first analysed period it referred the South-Eastern macro-region and covered 19 per cent of agricultural holdings located in that area. The high rate of succession there was associated with resolving the legal issues concerning the land use and ownership before Poland's accession to the EU. Regardless of this process, the practice of transferring the patrimony within the close family members was strongly rooted in the tradition of that macro-region (Sikorska, 2005). Many farms located in the south-eastern part of the country played residential and lifestyle roles and there was a strong tradition of property division between all children. Moreover, a number of non-economic benefits linked with the farm ownership made the farming families there rarely decide on its sale. On the other hand, as was mentioned earlier, in period 2 the scale of successions decreased considerably, even in south-eastern part of

the country. This tendency was exemplified by the negative influence of location in almost all macro-regions on succession at the micro-level in period 2 (except for the Central-Eastern macro-region, where the succession rate in period 2 was relatively the highest and partly resulted from the imbalanced age structure of farmers from that area).

Apart from inter-generational changes in agricultural sector, the paper also considered two other types of family farm successions: intra-generational and reverse inter-generational. These transfers were observed in the surveyed sample, although only rarely. The former usually concerned transfers between spouses or partners and referred to the situation of one person's retirement or unexpected family events (such as migration, death, illness or divorce). The cases of reverse inter-generational were also very rare. They occurred in households consisting of a small number of people, where there were no successors from the younger generation. From the research it is evident that the factors limiting the chance of the reverse inter-generational succession were the advanced age of the agricultural holding manager as well as the number of children in the household.

When considering the pace and determinants of farm succession in Poland it should be noted that this process has contributed to the balanced age of farmers as well as to the preservation of the hitherto rural settlement network so far. Nonetheless, the high rate of transfers of small and non-market-oriented entities within families has limited land concentration. Therefore, the policy instruments aiming at generational change in the sector should be revised in favour of tools that encourage some farmers to sell their agricultural property outside of the family.

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