

**Human capital
in the structural
transformation process
of rural areas
and agriculture**



INSTITUTE OF AGRICULTURAL
AND FOOD ECONOMICS
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Human capital in the structural transformation process of rural areas and agriculture

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The aim of the publication is a summary of the results of all the research work carried out during the period 2011-2014.

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Preface

Since the second half of the last century, numerous social considerations have been influenced by the new economy. This concept is closely related to the impact of the human factor on economic growth. Therefore, the growing importance of investments in people to attain the next stages of economic progress is typical of development of countries in the world. Education and healthcare expenditures are regarded in the literature as investments in the quality of human capital¹, whose potential increases by investing in people themselves. The quality of human capital increases primarily through: education, further education and training of human resources, scientific research and gathering information (including making it accessible) or through healthcare actions, which in turn affect the length of human life and vitality.

Since Poland's accession to the European Union a number of positive developments have been observed in rural areas in terms of the level of education or educational activity of the rural population. At the same time, modernisation and an increase in the average size of agricultural holdings² have been noted. Furthermore, emerging village deagrarianisation has indirectly contributed to the gradual blurring of differences in the standards of living of the rural and urban population. Furthermore, the last ten years have enabled the rural population to benefit from the EU funds, including CAP instruments, and also to enter the single EU labour market.

The continued removal of barriers preventing business entities from economic confrontation boosts competition, including global competition. For this reason, competitiveness is currently considered a major economic challenge. Moreover, this situation is becoming better visible in the agricultural sector. As a result, the further efficiency-oriented reconstruction of socio-economic structures of this segment of our economy is one of the major challenges faced by Polish agriculture.

Technological advancements in agriculture, a change in the nature of Polish holdings and the increased diversification of economic activity of the agricultural population contributed to a significant decline in agricultural employment. In 1995-2011, the number of people employed in Polish agriculture

¹ It should be emphasised that human capital is a complex concept; therefore, it is difficult to define it clearly. Usually, its determinants are identified in the literature as follows: formal qualifications (level of education), skills, health, vital energy and human civilisational competences.

² In the text, instead of the expression agricultural holding, the names farm, family farm, unit and entity are also used interchangeably.

fell by almost 40%³. Despite the ongoing developments in relation to the location of economic activity of the agricultural population, Poland is still a country with relatively high agricultural employment. In accordance with Eurostat data, 12.6% of all working Poles were employed in Polish agriculture in 2011. Among the EU Member States, only the Romanian economy is characterised by higher agricultural employment, i.e. 28.6% of the working population employed in the agricultural sector. Consequently, those employed in Polish and Romanian agriculture accounted for about 80% of agricultural labour force of the new Member States and nearly 40% of the total working agricultural population throughout the Community. In other EU Member States, the share of the employed in agriculture ranged from 12.4% (Greece) to 1.2-1.3% (the UK and Belgium), while agricultural employment in most Community countries (75%) does not exceed 5% of the total working population, which is the EU average.

In general, due to the relatively high level of employment in Polish agriculture, no significant improvement can be observed in terms of land and capital of agricultural holdings, thus curtailing growth in both labour productivity and income earned by people employed in agriculture⁴. At the same time, excessive agricultural employment results in high scale of unused labour resources, which is reflected in the scale of hidden unemployment. Therefore, the actual level of unemployment in rural areas is higher than recorded.

A decrease in the number of people employed in Polish agriculture is one of the fundamental factors in determining the pace of efficiency-oriented transformations in this sector. The acceleration of the desired structural transformations in agriculture⁵ requires a shift from agricultural employment to non-agricultural activities⁶. The need to reduce agricultural employment and the shift of labour force from agriculture to non-agricultural sectors is an essential prerequisite for the improvement of the agrarian structure, the effectiveness of farming and the financial situation of not only farmers but also the rest of the rural population. As a result, the increased diversification of economic activity

³ A. Kamińska, K. Pogorzelski, *Rzecz o rolnictwie. Teraźniejszość i przyszłość rolnictwa na Mazowszu*, I. Magda (ed.), IV raport kwartalny, Instytut Badań Strukturalnych, Warszawa 2012.

⁴ A. Baer-Nawrocka, W. Poczta: *Przemiany w rolnictwie*, [in:] *Polska wieś 2014. Raport o stanie wsi*, I. Nurzyńska and W. Poczta (eds.), Wyd. Naukowe SCHOLAR, Warszawa 2014.

⁵ B. Chmielewska, *Ekonomiczno-społeczna sytuacja gospodarstw domowych rolników po akcesji Polski do Unii Europejskiej*, Studia i Monografie nr 158, IERiGŻ-PIB, Warszawa 2013, pp. 88-98.

⁶ J.St. Zegar, *Sytuacja ekonomiczna polskiego rolnictwa po akcesji do Unii Europejskiej*, IERiGŻ-PIB, Warszawa 2009.

not only leads to the implementation of multifunctional agricultural and rural development, but also contributes to the modernisation of the entire economy⁷.

In this context, knowledge or the adept use of numerous personal attributes and skills, as well as acquirement of new ones seem to be crucial. Therefore, research task 4601 under the Multi-Annual Programme 2011-2014, entitled *Human capital in the structural transformation process of rural areas and agriculture*, was aimed at identifying transformations taking place in the basic rural structures that determine the level of agricultural and rural development, with particular emphasis on the scale of regional differences in the socio-economic and demographic characteristics of the rural population and the interrelationship between these characteristics and the structural characteristics of agriculture and economic specifics of the site concerned. The task was included in the framework of topic VI of the Multi-Annual Programme, entitled *Developments in the socio-economic structure of agriculture and rural areas*, led by Prof. Alina Sikorska.

The task was carried out over four years. At the beginning, the determinants and level of human capital in rural areas after the EU accession were defined. The level of education, educational activity and civilisational competences of the rural population were analysed. The spatial and social mobility of the rural population was examined, and the scale of spatial differences in the characteristics of the rural population was determined. The rural population was categorised by social characteristics and their link with agriculture. Furthermore, the socio-demographic characteristics of managers of individual holdings were analysed in the context of enhancing the competitiveness of agriculture. Further research and analyses concerned the scale of involvement of the rural population in agricultural work and non-agricultural rural development (2013 to 2014).

The task was executed by a research team composed of: dr inż. Paweł Chmieliński, mgr Michał Dudek, dr inż. Bożena Karwat-Woźniak, dr hab. Agnieszka Wrzochalska, Professor of the Institute of Agricultural and Food Economics – National Research Institute (IAFE-NRI) (task manager), employees of the IAFE-NRI Social and Regional Policy Department. Moreover, researchers from several international research centres⁸ were invited to cooperate, which was reflected in selected publications.

⁷ F. Tomczak, *Gospodarka rodzinna w rolnictwie. Uwarunkowania i mechanizmy rozwoju*, IRWIR-PAN, Warszawa 2005.

⁸ Including, researchers from: Institute of Agricultural Economics in Sofia, Bulgaria; Agrarian University of Plovdiv, Bulgaria; Institute of Agricultural Economics and Information, Prague, Czech Republic; Czech University of Life Sciences, Prague, Czech Republic; Institute of Regional Research of the National Academy of Sciences of Ukraine; Institute of Agricultural

The implementation of research task, entitled *Human capital in the structural transformation process of rural areas and agriculture*, involved the development of eight detailed Multi-Annual Programme reports in Polish and English, and a number of papers published in Poland and abroad (Annex).

This paper is an attempt to synthesise the works drawn up in the course of the implementation of the aforesaid task. The first chapter characterises the specificity of rural areas ten years after the EU accession. It also analyses demographic conditions, the mobility of families and the rural population, as well as economic outward migrations. The second chapter is devoted to selected human capital determinants: level of formal education, civilisational competences of the population and determinants of health condition. The third chapter discusses the demographic characteristics of farm managers, their qualifications for agricultural work and identifies their level of human capital. The fourth chapter analyses selected issues concerning employment in Polish agriculture such as: economic activity of people related to agriculture, scale of involvement of farm managers in agriculture, unused labour resources in agriculture and conditions for the development of entrepreneurship as non-agricultural rural development directions.

Research material includes the IAFE-NRI survey results of 2011⁹ (surveys based on a sample of 8.5 thousand rural families, of which 3 310 families owned agricultural holdings with over 1 ha of agricultural land¹⁰). The families were surveyed in 76 villages¹¹ located in different regions of the country (Map 1). The sampling was purposeful and took account of socio-economic features and the agrarian structure of agricultural holdings situated within the selected regions. All families residing in selected villages were surveyed. The scope of the information collected was extensive and concerned numerous aspects of life of the rural population and the functioning of agricultural holdings.

Economics – Romanian Academy of Bucharest; Research Institute of Agricultural Economics, Budapest, Hungary; Lithuanian Institute of Agrarian Economics, Vilnius, Lithuania; Romanian Academy – Institute of Agricultural Economics, Bucharest, Romania; University of Zagreb, Croatia; University of Primorska, Slovenia; Institute of Geography Slovak Academy of Science, Bratislava, Slovakia.

⁹ The survey of 2011 was the last edition of the IAFE-NRI research carried out periodically in the same villages.

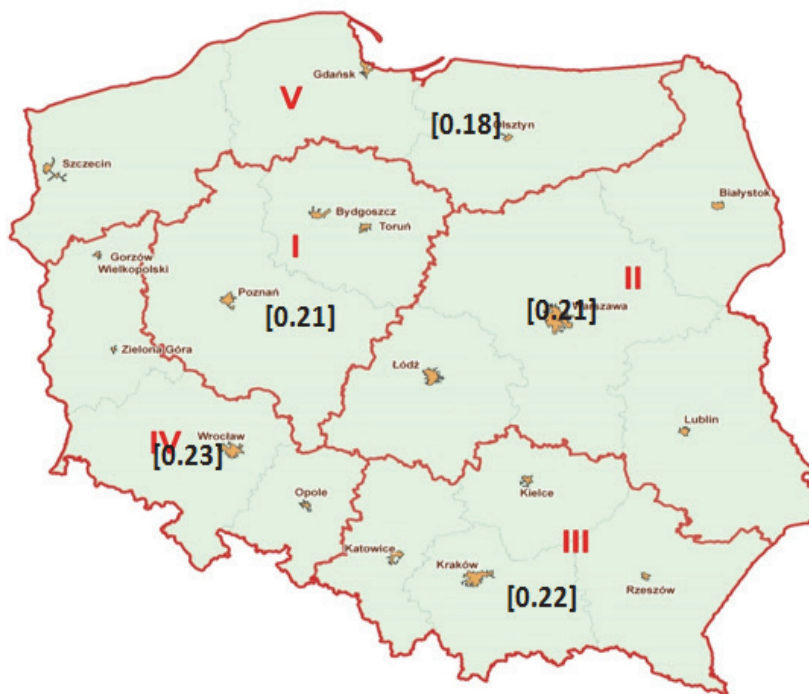
¹⁰ Each time, surveyed entities accounted for about one five-hundredth of the actual number of individual agricultural holdings; in accordance with the recent survey (2011), there were 3.3 thousand individual agricultural holdings and practically all of them (99.7%) carried out agricultural activity.

¹¹ The sampling of the villages was targeted to make the size of the surveyed holdings proportional to the actual area structure of the total number of individual agricultural holdings.

The results of surveys carried out on a similar sample, mainly in 2000 and 2005, were used as a reference point to determine the dynamics of developments. Research results from field studies were supplemented with the public statistics of Central Statistical Office (CSO).

Analyses mainly concerning selected features of farmers (Section 3.3) are the components of the proposed synthetic measure of human capital. In order to determine the different levels of its distribution, a synthetic indicator of human capital was developed and linked with the selected properties of farms (geographical location, farm size and scale of commercial agricultural production).

Map 1. Location of villages covered by the IAFE-NRI surveys by regions, including the sample size of farms



* The bold line marks and voivodships corresponding to specific macroregions are as follows:
Central-Western (I) – Kujawsko-Pomorskie and Wielkopolskie voivodships;
Central-Eastern (II) – Mazowieckie, Lubelskie, Łódzkie and Podlaskie voivodships;
South-Eastern (III) – Małopolskie, Podkarpackie, Śląskie and Świętokrzyskie voivodships;
South-Western (IV) – Dolnośląskie, Lubuskie and Opolskie voivodships;
Northern (V) – Pomorskie, Warmińsko-Mazurskie and Zachodniopomorskie voivodships.
 [...] – size of the sample (a share of the actual number of farms in macroregion).

Source: *The IAFE-NRI survey of 2011.*

Chapter 1

Rural areas 10 years after the EU accession

1.1. Demographic conditions

Rural areas in Poland cover 291.2 thousand km², which is about 90.3% of the total area of the country. In accordance with CSO data, there were nearly 53 thousand villages in Poland in 2011, each with an average of 287 residents¹². The villages surveyed were slightly larger, since each of them was inhabited in 2011 by 371 people on average. In 2005-2011, the population of the villages concerned dropped by about 6%. This was mainly due to a clear decline in the agricultural family population.

In rural communities, the share of non-farming families has been increasing for many years. Furthermore, the IAFE-NRI research reveals that the last decades have brought a significant rise in the share of non-farming families among the general population of the villages surveyed. In the research sample of the population examined in 2011, the number of non-farming rural families, i.e. possessing no land or owning plots below 1 ha of agricultural land, represented over 60% of all respondents and was 3 percentage points (pp) higher than six years ago. Thus, in relation to the period before the political transformation, the share of non-farming families in the surveyed population of rural families increased by nearly 20 pp. This process was primarily determined by an outflow of rural population from agricultural activities and their economic activation in other sectors, or the end of productive activity due to reaching retirement age.

The research reveals changes in the characteristics of the villages surveyed. The share of the smallest villages, i.e. up to 200 inhabitants, increased and the number of villages with a population of over 1 000 grew slightly. In 2011, villages with less than 200 inhabitants accounted for 21.1% of all villages, which was about 4 pp more than in 2005, and their inhabitants constituted 8.0% of the total rural population. In 2005, these values were different and stood at 17.1% and 5.5%, respectively. In 2011, villages with a population of 200 to 499 accounted for 57.9% (decrease of less than 2 pp compared to 2005), and 500 to 999 – 18.4% (decrease of nearly 3 pp). In accordance with the last survey, large villages, i.e. those with a population of at least 1 000, accounted for 2.6% (in 2005, 1.3% of the sample) of all the villages surveyed. The described polarisation in the development of the surveyed villages is indicative of both

¹² CSO, *Statistical Yearbook of Agriculture*, Warszawa 2012.

demographic developments in the rural population and the growing dependence of transformations on locations in relation to communication routes facilitating access to absorptive labour markets.

In accordance with CSO data, about 39.4% of the Polish population, i.e. 15.5 million, lived in rural areas in 2012, which is almost 613 thousand more (i.e. about 4.2%) than in 2000. What is more, a significant increase in the rural population was observed mainly after Poland's accession to the EU. Despite an increase in the absolute rural population in 2004-2012, its share in the total population increased very slightly (Table 1.1).

Table 1.1. Rural population in Poland in 2000-2012

Item	2000	2005	2012
Population ('000)	14 584	14 733	15 197
Share of the total population (%)	38.1	38.6	39.4
Median age	33.5	34.8	36.6
People aged 65+ per 1 000 children aged 0-14	604	720	759
Non-working age population per 100 working age people	76	65	58
Share of:			
Pre-working age population	27.6	23.8	20.7
Working age population	56.8	60.8	63.4
Post-working age population	15.6	15.4	15.9

Source: Based on CSO data of 2005-2013.

Over the last decade, the population in the areas concerned has increased by almost half a million, the share of the pre-working age population has decreased, while the share of the working age population has grown. The ageing of society has become a clearly visible process.

A steady increase in the average life expectancy is a positive sign of demographic transformations in Poland. In 2012, female and male life expectancy in urban and rural areas increased by nearly 2 years compared to 2004. These rates are even higher compared to previous years. For example, compared to 2000, female life expectancy in rural areas increased by 2.5 years and male life expectancy – by 2.2 years. No significant differences in the life expectancy of the urban and rural population were observed. The life expectancy of women and men born in rural areas in 2012 is 80.9 years and 71.6 years, respectively.

While life expectancy in rural areas increased, the number of children up to 14 years of age dropped. In 2005-2012, their number fell by 208.7 thousand. As a consequence, 2 575.9 thousand children (up to 14 years of age) and 1 954.7 thousand people aged 65+ lived in rural areas in 2012. Although the number of people aged 65+ per 1 000 children (up to 14 years) increased by 39 people in 2005-2012, the increase was much slower than in 2000-2005.

From the point of view of the impact of demographic conditions on the domestic economy, both a breakdown of the total population by age and changes in the ratio between different groups of working and non-working age people are important. In 2012, the pre-working age population in rural areas accounted for 3.2 million, representing 44.8% of the Polish population in this age group. The share of pre-working age people in the entire rural population was 21.1%, which is a decrease in this age group by 3.4 pp since 2004 and by 6.5 pp since 2000. Despite the significant decrease in the share of children and youth, the share of this population group in Polish rural areas was still higher than in urban areas¹³.

A decrease in the share of people under 18 years in the total population in both rural and urban areas observed in recent years was also due to entering the working age by people born in the early 1980s, i.e. during the baby boom. In 2012, almost 9.6 million working age people lived in rural areas. This is 755 thousand more (8.6%) than in 2004 and 1 307 thousand more (15.8%) than in 2000. Such a growth in the number of people aged 18-59/64 increased their share in the total rural population (by 6.4 and 3.2 pp in 2000-2012 and 2004-2012, respectively). Although only 38.7% of the Polish working age population lived in rural areas, its recent growth has been mainly due to the rural population¹⁴.

In 2012, the post-working age population in rural areas amounted to almost 2.4 million, which accounted for about 36% of the Polish population in this age group. The share of people aged 60/65+ in the rural population was close to 15.6%, which did not differ significantly from their share in the urban population (nearly 18.3%) and was similar to the share recorded in rural areas in 2004 (15.5%) and 2000 (15.6%).

When assessing the impact of the demographic characteristics of the population on economic conditions, the dependency rate indicating the total number of younger, i.e. under 18 years of age, and elderly people, i.e. aged

¹³ Share of the pre-working age population in urban areas in 2012 was lower by as much as 3.19 pp than in rural areas, although in absolute terms the number of children and youth in urban areas was higher by almost 749 thousand than in rural areas.

¹⁴ In 2004-2012, the working age population in rural and urban areas increased by 755 and 256 thousand, respectively.

60/65+, per 100 working age people is usually applied. In rural areas, this rate was 58 in 2012, which is a drop by 9 points since 2004. The burden of non-working age people decreased due to a higher number and share of working age people observed in recent years. Dependency rates calculated for the rural population were higher than in urban areas (58 compared to 54 in 2012), which means that the burden of non-working people remains lower in urban than rural areas throughout the analysed period. These rural-urban differences in dependency rates resulted from the different shares of working age people. In 2012, the share of people aged 18-59/64 in urban areas reached 64.8% and was higher by 1.6 pp than in rural areas.

In accordance with CSO data, there were 101 women per 100 men in 2012 (as in 2004). Thus, a gender balance was observed in rural rather than urban areas, with 111 women per 100 men. The gender balance related to the total rural population; however, there were differences between specific age groups.

Similarly to the urban population, the predominance of men over women could be observed in younger age groups. In the case of the rural population, the predominance of women started in the 55-59 age group, whereas in the case of the urban population, this phenomenon was noticed as early as in the 35-39 age group. As a result of the longer life expectancy of women than men on average, feminisation rates were significantly higher in older age groups. In 2012, there were 139 women per 100 men in the 70-74 age group in rural areas, while among people aged 80+, the corresponding rate was as high as 236.

1.2. Mobility of the population from rural families

In 2005-2011, 438 of farming families were no longer subject to the survey (due to a social status change or migration). They accounted for less than 12% of all farming families¹⁵ surveyed in 2005 and consisted of 1 250 people, i.e. about 10% of the rural population aged 15+, surveyed in 2005.

The research shows that migrations among families with a user of an agricultural holding were common, since they were observed in most of the villages surveyed¹⁶ and affected families owning farms of different sizes, in

¹⁵ The term socio-occupational mobility means a change of family status from farming into non-farming, which is always linked with ceasing of farming (i.e. running an agricultural holding). In some cases such situations concern also the change of place of residence.

¹⁶ Survey data reveal that no migration or social status change among farming families registered in 2005 was observed in only 6.6% of the villages surveyed in 2005-2011.

particular – just like before – families with relatively small farms¹⁷ (up to 5 ha of agricultural land), especially the smallest ones (1-2 ha of agricultural land). In the period discussed, this group of farms decreased by 17%, while as regards the group of relatively large-area holdings, i.e. over 30 ha of agricultural land, it was less than 7%. These differences should be considered positive in terms of agrarian developments in domestic agriculture.

In accordance with data on the loss of farming families by macroregions, farming families in South-Western and Northern macroregions were relatively the most mobile in spatial and socio-occupational terms in the period at issue. This phenomenon affected about 18-19% of families with agricultural holdings in 2005. Farming families in the South-Eastern macroregion were the least mobile, since the process affected less than 8% of farming families in the area in 2005.

Information on the mobility of *farming families* by social and spatial mobility clearly indicates that the intensity of these processes differed greatly. The prevailing tendency was to move away from agriculture without leaving the place of residence. A characteristic feature of migration processes was their selective nature, because migrants were relatively young and well-educated compared to the total rural population. At the same time, social migrants were relatively older and less educated than those who left the villages surveyed.

In spatial terms, migrants from rural families of the Northern macroregion were, relatively, the youngest ones, and the highest level of education was characteristic of migrants from Southern Poland, especially from the South-Western macroregion. A different situation was noted in the group of migrants from villages located in typically agricultural macroregions: Central-Western and Central-Eastern. Migrants from these areas were, relatively, poorly educated and older. This situation was observed particularly in the first of these macro-regions.

The most important factors determining the mobility of rural families include the advancement of multifunctional rural development, the situation in local labour markets, distance from major cities, the level of agricultural development (particularly, the agrarian structure of farms). The socio-demographic characteristics of migrants are also of great importance, i.e. the level of education, age and sex.

In 2005-2011, the spatial mobility of the agricultural population in the villages surveyed was relatively small, because less than 3% of agricultural families surveyed in 2005 left the villages. The intensity of this process showed relatively

¹⁷ Cf. A. Sikorska, *Przemiany w strukturze agrarnej gospodarstw chlopskich*, IERiGŻ-PIB, Warszawa 2006, p. 16.

little territorial diversification. Nevertheless, there were more migrations among farming families in the North macroregion than in other parts of the country, where the intensity of emigration fluctuated around the national average.

Contrary to the spatial mobility of families with a user of an agricultural holding, their socio-occupational mobility was significantly higher. About 9% of farming families surveyed in 2005 joined the group of non-farming households during the last research. They constituted about 39% of all new non-farming families¹⁸. Based on the results of field studies conducted earlier and in 2011, it should be stated that the intensity of social status changes among families with a user of an agricultural holding rose. In 1996-2000, the group of agricultural families decreased by 1.2% per year on average as a result of social mobility. During the next analysed period, i.e. in 2000-2005, the pace of transformation of agricultural families into non-farming households decreased to almost 1.1%, to increase to 1.5% in 2005-2011.

The aforementioned phenomenon of social mobility of farming families was observed throughout the country, only its intensity significantly varied in specific macroregions. It should be attributed to territorial differences in the level of overall economic development and regional differences in agricultural and rural structures. Family status changes, due to the liquidation of an agricultural holding, were the most intensive in South-Western and Northern regions, where 14-15% of farming families in 2005, transferred their land and joined the group of non-farming families. This situation should be associated with transformations in the economic situation of individual farming in these areas. Both in Northern and South-Western macroregions, development processes in the agricultural sector were taking place mainly due to creation of large and specialised farms¹⁹. Owners of economically sidelined units were, more often than in other areas, likely to transfer their land (sale or lease) and change their status into non-farming (or leave their village). Simultaneously, economically strong agricultural holdings were taken over by their successors, while their previous users – having ceased to work and retired – joined the group of non-farming families. This factor was particularly noticeable in the Northern macroregion, where almost half of new non-farming families used to be agricultural households. In particular, they were established by farmers who had ceased their economic activity in agriculture.

¹⁸ A new family was a household established in the period between subsequent surveys.

¹⁹ Cf. B. Karwat-Woźniak, *Gospodarstwa wysokotowarowe w rolnictwie chłopskim. Synteza wyników badań 2005-2009*, seria Program Wieloletni 2005-2009 nr 151, IERiGŻ-PIB, Warszawa 2009, p. 23.

In 2005-2011, the social mobility of the farming population was the least intensive in the South-Eastern macroregion, where previous transformations in agricultural and rural structures contributed to the consolidation of agrarian fragmentation²⁰ and resulted in the limitation of capacity of agricultural holdings to self-supply in agricultural products or family settlements.

Based on the results of research conducted in 2005 and 2011, it should be concluded that the main reasons for migration from agricultural holdings did not change, although certain differences in the number of persons with specific motivations were reported. Both in 2005-2011 and earlier, the liquidation of an agricultural holding was one of the most often reported reasons for abandoning the farming population (Table 1.2).

Table 1.2. Migrants from farming families by the main reason for migration in successive survey periods

Macroregions*		Main reason for migration (persons in %)						
		family	liquidation of a farm	work	housing	education	taking over a farm	other**
Total	2000-2005	39.3	50.8	4.8	2.9	0.2	0.5	1.2
	2005-2011	26.0	61.7	4.3	4.7	1.0	0.5	1.8
Central-Western		25.8	64.5	6.5	-	-	2.4	0.8
Central-Eastern		23.3	63.5	4.2	6.4	0.5	-	2.1
South-Eastern		29.6	60.8	3.4	3.1	1.7	-	1.4
South-Western		25.0	60.5	5.8	7.5	1.1	-	-
Northern		29.5	55.0	1.5	4.0	2.0	-	8.0

* Marks and voivodships corresponding to specific macroregions as in Map 1.

** Related to specific random events (stay in an educational establishment, a penal institution, a healthcare institution) or reasons are unknown.

Source: Based on data from the IAFE-NRI field studies of 2005 and 2011.

Such a reason for migration was reported by 62% of migrants from farming families in 2005-2011 (compared to 51% in 2000-2005). This does not mean that it solely involved changing social status from farming to non-farming and remaining in a given village. It should be noted that the liquidation of an agricultural holding can also imply a change in a place of residence. This is proven by the fact that 17% of persons, who reported the liquidation of a farm as the main reason for their migration, left their villages to settle mostly in urban areas.

In terms of age, the liquidation of a farm was most often declared by persons aged 60+ (39%). This group was mostly composed of men (54%) with

²⁰ Cf. A. Sikorska, *Przemiany w strukturze agrarnej...*, op. cit., pp. 10, 14.

vocational education (33%). Among the main reasons for migration from farming families, family matters were also often mentioned. This motivation was reported by 26% of migrants in 2005-2011 (compared to 39% in 2000-2005). Women more often reported this reason than men (56% against 44%). They were mostly persons aged under 34 (66%) with at least secondary education (40%) and non-agricultural school qualifications (55%).

Significant reasons for migration from farming families that have an impact on mobile conditions of the farming population include housing and work-related motivation. Housing was the main reason for almost 5% of persons, which was slightly higher (by nearly 2 pp) than in earlier surveys. This reason was equally declared by men and women. This group included persons aged 35-44 with at least non-agricultural vocational education.

In 2005-2011, 4% of migrants reported job opportunities as the main reason for migration, similarly to the level reported in 2000-2005. In terms of the demographic structure, this group remained composed mainly of men (69%) aged under 44 (75%) with non-agricultural school qualifications (68%), at least at the basic level (62%). It should also be pointed out that a change in a place of residence could be associated with career plans. This can be proven by the fact that although 35% of migrants had worked before they left their agricultural holdings, the share of the employed grew to 66% after relocation.

Only 1% of the analysed population declared education as the main reason for their migration. This reason was definitely more often declared by young women (60%) than men. In this group, all persons were aged under 34.

Both in 2005-2011 and earlier, taking over another farm was incidentally reported as a reason for migration. This was reported by 0.5% of the analysed group of migrants. The figures for populations analysed in 2000-2005 and in 2005-2011 were also similar in terms of this criterion. In both analysed periods, taking over agricultural holdings was definitely more often declared by men aged 34 with agricultural secondary education (over 60%). Those holdings were usually located in a neighbouring village.

Similar patterns regarding the reasons for migration from farming families were also reported in territorial distribution, although certain dissimilarities can be observed due to, *inter alia*, differences in the level of agricultural development, the situation in local labour markets and the advancement of multifunctional rural development. For instance, in the Central-Western macroregion, liquidation of a farm (65%) or taking over farms (over 2%) were most often reported, with practically no indication of reasons related to housing or education. Among the

reasons declared by migrants from agricultural holdings situated in South-Eastern and Northern macroregions, a relatively large share of family (30%) and learning (2%) motivation was reported. Furthermore, the decision on migration in the first of the aforesaid macroregions was more often related to housing (8%) than in any other macroregion.

The analysis of mobility of farming families should also take into account the destination of migration, i.e. the current place of stay of migrants. This is particularly important with regard to transformations in the rural settlement network.

Data on the current place of residence of migrants from farming families reveal that the majority of respondents (71%) did not change their place of residence, which was due to the domination of socio-occupational mobility in migration from farming families (Table 1.3). However, compared to the previous analysis, spatial mobility in this group increased, which is proven by a drop (by almost 6 pp) in the share of migrants who stayed in the same village. This resulted from increased migration to urban areas (from 10 to 14%) and surrounding villages (from 7 to 10%). In 2011, migration to another country, which was relatively rare, further decreased by 0.4% of migrants (compared to 5.1% in the previous survey).

Table 1.3. Migrants from farming families by their current place of stay

Macroregions*		Destination of migration (% of migrants)				
		the same village	another village	urban areas	another country	n/a
Total	2000-2005	76.8	7.1	9.8	5.1	1.2
	2005-2011	71.0	10.0	13.7	4.3	0.4
Central-Western		76.6	12.9	8.1	2.4	-
Central-Eastern		68.7	11.5	15.3	3.8	0.7
South-Eastern		72.5	12.4	13.7	1.0	0.3
South-Western		75.0	1.3	9.9	13.8	-
Northern		63.0	13.0	20.0	4.0	-

* Marks and voivodeships corresponding to specific macroregions as in Map 1.

Source: Based on data from the IAFE-NRI field studies of 2005 and 2011.

However, when analysing the mobility of people from *non-agricultural families*, the number of families with no agricultural holding in 2005 decreased in 2005-2011 by 306 families (just over 6%) due to a status change or migration. The families comprised 691 people in total, representing almost 6% of the non-agricultural population covered by the previous survey. At the same time, the scale was almost twice smaller than that of the agricultural population, where – as mentioned earlier – the corresponding rate was about 12%. However, just as

in the case of farming families, spatial and social migrations of non-farming families were common and occurred in most of the villages surveyed²¹.

When analysing data on a decrease in the number of non-farming families by macroregions, it can be concluded that the relatively highest spatial and socio-occupational mobility in the analysed period was characteristic of non-farming families in South-Western and Central-Eastern macroregions. This phenomenon affected almost 8% of non-farming families surveyed in 2005. The mobility of non-farming families was the lowest in the South-Eastern macroregion, as the process involved less than 4% of non-farming families living in the area in 2005. It should also be noted that in 2005-2011, the farming families of the South-Eastern macroregion were also characterised by the lowest mobility.

The reasons for the relatively lowest mobility of farming families of the South-Eastern macroregion should be in the specificity of these areas. This specificity involves primarily a high level of development of infrastructure and a relatively absorptive non-agricultural labour market, as well as agricultural properties and environmental values (sub-mountainous areas).

The survey data of 2005 show that already at that time, villages located in the South-Eastern macroregion were characterised by above-average development of technical infrastructure. This level is due to availability of water supply (over 87% of villages were connected to the water supply system, all of them had street hydrants), sanitary facilities (over 33% of villages benefited from sewage treatment plants and 69% – from landfills) and the road network (94% of villages had asphalt access roads)²².

In accordance with the same survey, the South-Eastern macroregion is characterised by a relatively high prevalence of earning among the rural population. In 2005, over 39% of the working age population in the area was employed in non-agricultural sectors (over 34% from farming families and nearly 48% from non-farming families) with the national average of about 35% (nearly 29% from farming families and 43% from non-farming families)²³.

The data collected show that, in contrast to farming families, the non-farming population was characterised by relatively high spatial mobility. In 2005-2011, over 5% of all non-farming families surveyed in 2005 left the

²¹ The survey shows that only 3.9% of the villages surveyed in 2005-2011 comprised non-farming families registered in 2005 that had not migrated or changed their social status.

²² Cf. A. Wasilewski, *Stan oraz zmiany w infrastrukturze technicznej*, [in:] *Przeobrażenia w strukturze społeczno-ekonomicznej wsi objętych badaniem IERiGŻ w latach 2000-2005*, A. Sikorska (ed.), IERiGŻ-PIB, Warszawa 2006, pp. 21-38.

²³ Cf. D. Kołodziejczyk, *Rynek pracy na wsi*, IERiGŻ-PIB, Warszawa 2007, p. 16.

villages surveyed (in the group of farming families, the corresponding rate was less than 3%). They accounted for almost 60% of all rural families that left the villages surveyed.

Furthermore, the intensity of the process was relatively significantly diversified in macroregions. As with all processes of migration of rural families with no agricultural holdings, the spatial mobility of this population was relatively the highest in the Central-Eastern and Northern macroregions. In 2005-2011, around 7% of non-farming families living there in 2005 left these areas. This situation should be mainly related to difficulties in the local market. The chance of finding relatively long-term employment was associated with migration in the vicinity of a workplace. These conditions were established by the absorptive labour market in large urban areas. This factor was the strongest stimulus in the Central-Eastern macroregion.

In this area, nearly 60% of non-farming families that had left the villages surveyed settled in relatively large cities. With regard to the Northern macroregion, also the opportunity to work abroad played a substantial role in shaping a relatively high propensity to leave the current place of residence. This is evidenced by numerous international migrations of whole families in this area. The survey data show that, among all families that left the surveyed villages of the Northern macroregion in 2005-2011, about one-third emigrated from the country.

Most of them were families without agricultural holdings. The lowest spatial mobility, similarly to the rural population, was characteristic of the non-farming inhabitants of the South-Eastern macroregion. In this area, only less than 2% of non-farming families, which had been surveyed in 2005, left the villages surveyed by 2011. The reasons for this situation should be seen in the already discussed specifics of these areas.

The research reveals that, in contrast to the spatial mobility of the non-agricultural population, their social mobility was incidental. Only 1% of non-farming families surveyed in 2005 were classified in a recent survey in the group of families with a user of an individual agricultural holding. These households accounted for about one-quarter of relatively few new farming families²⁴.

The phenomenon of social mobility of non-farming families described above, although having low intensity throughout the country, varied across specific macroregions. It should be linked with territorial differences in economic conditions and their impact on the characteristics of agricultural structures. The

²⁴ The research shows that 5.8% of all farming families covered by the last survey were established in 2005-2011.

spatial mobility of the non-farming population was relatively the highest in the South-Eastern macroregion. In 2005-2011, 2% of non-farming households in this area changed their social status, i.e. such occurrences were twice more likely than in the entire surveyed group on average. Moreover, over 53% of all new farming families in this part of the country originated from non-farming families. Such a situation was even more frequent in the Northern macroregion, where about 60% of newly established families with a user of an agricultural holding originated from non-farming families. It should be noted that the increased social mobility of non-farming families in the Northern macroregion was the lowest across the macroregions selected to be surveyed.

Based on the results of surveys conducted in 2005 and 2011, it should be noted that there was no substantial *change in reasons for migration of non-farming families*, although there was some variation in the number of people driven by specific reasons. In 2005-2011, housing issues were the most frequent motivation to leave rural communities of non-farming families (Table 1.4).

Table 1.4. Migrants from non-farming families by the main reason of migration in successive survey periods

Macroregions*		Main reason for migration (persons in %)					
		family	work	housing	education	taking over a farm	other**
Total	2000-2005	39.8	7.7	23.8	0.5	24.7	3.5
	2005-2011	30.7	17.2	33.6	0.5	12.3	5.7
Central-Western		35.9	9.3	32.6	-	12.8	9.5
Central-Eastern		33.0	6.7	40.7	1.0	11.5	7.2
South-Eastern		29.9	2.1	27.8	-	34.0	6.2
South-Western		33.7	22.1	32.6	0.6	7.6	3.5
Northern		20.5	44.9	28.3	-	3.1	3.1

* Marks and voivodeships corresponding to specific macroregions as in Map 1.

** Related to specific random events (stay in an educational establishment, a penal institution, a healthcare institution) or reasons are unknown.

Source: Based on data from the IAFE-NRI field studies of 2005 and 2011.

This reason for migration was reported by 34% of migrants from non-farming families in 2005-2011, which was 10 pp above the corresponding rate in 2000-2005 (24%). It should also be noted that a change in a place of residence could be associated with career plans. This is proven by the fact that although 44% of migrants from non-farming families had been employed before leaving the villages surveyed, their share increased to 51% after relocation.

Taking into account socio-demographic characteristics, migrants from non-farming families motivated by housing reasons, as in the case of migrants

from farming families, were relatively young people. At the same time, the largest group comprised people aged 35-44 (39%) with secondary education (33%). Moreover, this reason more often determined the mobility of men (51%) than women (49%).

People also quite frequently mentioned family matters among the main reasons for migration from the group of non-farming families. This reason was reported by 31% of migrants in 2005-2011 (in 2000-2005, by 40%). At the same time, family matters a little more often determined the mobility of women (56%) than men (44%). These were mainly people up to 34 years of age (35%), having at least secondary education (29%) and non-farming school qualifications (59%).

This means that during the analysed period, the desire for better housing conditions was the main reason for migration among the non-farming population, while in 2000-2005 – it was family matters.

One should mention economic motives among the reasons, which gained importance when deciding on migration. Taking up employment was a reason for over 17% of migrants in 2005-2011, which was more than twice the corresponding share recorded in 2000-2005. In contrast to migrants from farming families, among migrants from non-farming families who were guided by these reasons, women constituted a somewhat larger group (51%) than men (49%). As in the case of housing-related reasons, these were people aged 35-44 (44%) with secondary education (34%) and school vocational qualifications (62%).

The research reveals that socio-occupational mobility is decreasing in importance among the determinants of mobility of non-farming families. Taking over an agricultural holding was the main reason for 12% of those who left non-farming families in 2005-2011, which is two times lower than the share recorded in the previous survey. In 2000-2005, this reason motivated about 25% of migrants from the discussed population of rural families. However, the socio-demographic characteristics of people starting to run a farm did not change. In 2005-2011, like previously, taking over an agricultural holding was a reason driving more often men (60%), aged 35-44 (34%), with basic vocational education (41%) in non-agricultural fields (58%). This population, compared to people from farming families taking over holdings, was relatively older and characterised by a lower level of education. It should also be noted that acquired holdings were generally located in the villages surveyed. Almost 96% of people who had taken over agricultural holdings did not change their place of residence, thus joining the group of farming families.

Both in 2005-2011 and earlier, further education was an incidentally reported reason for migration. In the described population, only 0.5% of people declared education as the main reason for migration. This reason motivated more often (60%) young women than men. Almost all the people in this group were aged under 34.

Similar patterns regarding the reasons for migration from farming families were also reported in territorial distribution, although certain dissimilarities can be observed. This is associated, *inter alia*, with differences in the situation in local labour markets and the advancement of multifunctional rural development. For instance, in the Central-Western macroregion, the reasons for migration involved particularly family-related motives (36%) and lack of causes related to education. Education-related motives did not condition the mobility of the discussed population in South-Eastern and Northern macroregions. Among reasons which motivated migrants from non-farming families in the first of these areas, relatively large scale of launched agricultural activities (34%) and a particularly low (2%) share of economic motives draw attention. The situation was radically different in the Northern macroregion, where the decision to migrate was the least often (3%) motivated by taking over an agricultural holding and the most often (45%) – by economic motives. With regard to reasons which motivated migrants from non-farming families in the Central-Eastern macroregion, a relatively high share of housing-related reasons (41%) attracts attention.

Regarding the issues related to the mobility of non-farming families, both in taking account of changes from the spatial perspective (migration) and from the point of view of socio-economic transformations (social mobility), it seems that the present place of stay of migrants is important; especially from the point of view of transformations in the rural settlement network, particularly the advancement of their multifunctional development.

Data on the current place of residence of migrants from non-farming families show that the largest (over 34%) group of people surveyed in 2005-2011 left for nearby villages (Table 1.5). However, in comparison to the previous survey, there was an increase in the popularity of this direction of mobility, as evidenced by an increase of 12 pp in the share of migrants who currently reside in another village. There was also a dynamic growth in a number of departures to other countries. In the compared surveys, the share of migrants from non-farming families who currently reside abroad increased almost fourfold (from almost 3% to over 11%).

Table 1.5. Migrants from non-farming families by their current place of stay

Macroregions*		Destination of migration (% of migrants)				
		the same village	another village	urban areas	another country	n/a
Total	2000-2005	41.3	21.6	32.1	2.9	2.1
	2005-2011	22.6	34.2	27.9	11.4	3.9
Central-Western		29.1	50.0	14.0	1.2	5.8
Central-Eastern		18.7	41.1	34.4	3.3	2.4
South-Eastern		61.9	30.9	5.2	2.1	-
South-Western		13.4	31.4	32.6	19.2	3.5
Northern		7.1	18.1	37.8	28.3	8.7

* Marks and voivodships corresponding to specific macroregions as in Map 1.

Source: Based on data from the IAFE-NRI field studies of 2005 and 2011.

Different trends were observed regarding departures to urban areas. In 2005-2011, almost 28% of migrants from rural non-farming families settled in urban areas, which is over 4 pp below the corresponding rate recorded in 2000-2005 (more than 32%).

There was a decrease in the population which did not change its place of residence, but only became the farming population. In 2005-2011, 23% of the described population remained in the same village, while in 2000-2005, the corresponding rate was over 41%. It must, therefore, be concluded that the spatial mobility of non-farming families significantly increased. These trends were also observed in the group of families with a user of an agricultural holding. At the same time, their intensification was relatively small, because the share of migrants who did not change their place of residence decreased in the comparable periods (2000-2005 and 2005-2011) only from 77 to 71%.

In accordance with data derived from the macroregions concerned, in 2005-2011, just as before, the relatively highest spatial mobility was characteristic of migrants from non-farming families in the Northern macroregion. The intensification of this phenomenon in 2005-2011, compared to 2000-2005, strengthened, as evidenced by a threefold decrease (from 21 to 7%) in the share of people who did not change their place of residence. This macroregion was still characterised by the relatively highest share of migration to urban areas, although in comparison with the previous survey, there was a further decline²⁵.

²⁵ Cf. Ł. Zwoliński, *Mobilność przestrzenna i społeczno-zawodowa ludności wiejskiej w latach 2000-2005*, IERiGŻ-PIB, Warszawa, p. 44.

In 2005-2011, the non-farming population of the Northern macroregion migrated mainly abroad. Migration abroad was chosen by over 28% of migrants during this period, meaning an almost thirteen fold increase, compared to the previous survey. Migrants from non-farming families in the South-Eastern macroregion left their villages the least often. Such a situation concerned as much as 62% of people from the analysed population. Moreover, another 31% settled in surrounding villages. These trends also confirmed the attractiveness of these areas as a place of residence.

1.3. Economic migrations abroad

Economic migrations, both inward and outward, are an important element of balancing supply and demand in the labour market. By reducing the unemployment rate and thanks to remittances transferred by migrants to their places of origin, this form of income-earning has a potentially significant impact on local development.

Motivations for migration are explained depending on their character and the subject surveyed, i.e. whether inward (domestic) or outward (international) migrations are examined, and whether the research concerns a local community or the entire nation. Nevertheless, determinants of decisions on migration may be divided into those in the country of origin (push factors) and in the target country (pull factors)²⁶. They affect households, local communities, regions or countries. Apart from exogenous conditions, individual traits of a person deciding to migrate and cultural conditions (the so-called migration culture or traditions) are also important²⁷.

In the last decade, almost all forms (at different scales) of contemporary migration processes have been observed in the Polish territory: employment and settlement emigration of Poles to highly developed countries; influx of immigrants to Poland seeking employment and settlement opportunities; influx of refugees; returns of Poles under the Repatriation Act, etc. The main directions of

²⁶ E. Jaźwińska, *Metody ilościowe w badaniach nad migracjami międzynarodowymi*, Instytut Studiów Społecznych UW, seria Prace migracyjne, nr 36/2000, p. 12.

²⁷ Cf. *Powrót do domu – psychospołeczne mechanizmy adaptacyjne migrantów powrotnych z terenu województwa warmińsko-mazurskiego*, project: *Powrót do domu – psychospołeczne mechanizmy adaptacyjne migrantów powrotnych z terenu województwa warmińsko-mazurskiego*, WUP w Olsztynie, Warszawa 2010, pp. 9-13.

emigration of Poles who plan to stay abroad for a longer time have remained the same for many years²⁸.

In the group covered by the IAFE-NRI survey of 2011, economic migrations abroad were observed in 88.2% of the villages (Table 1.6). In 2005-2011, on average 14 people per village surveyed departed or were regularly departing to work, including seasonally employed people and those for whom this was the main place of employment.

Table 1.6. International migrations of the rural population

Macroregions	Villages whose inhabitants regularly go to work abroad (%)	Average number of economic migrants from one village	Average duration of stay abroad (months)
Total	88.2	14	15
Central-Western	90.0	13	14
Central-Eastern	77.4	7	17
South-Eastern	93.8	15	17
South-Western	100.0	19	13
Northern	100.0	31	8

Source: Own elaboration based on the IAFE-NRI surveys of 2011.

The research revealed regions, in which the intensity of migrations is particularly high. In all the surveyed villages of South-Western and Northern macroregions, there were families whose members worked abroad. In the first case, the tradition to work abroad is very old, which translated into foreign contacts helping another people migrate. Economic migrations were also a response to the weakness of local labour markets that were not able to meet the demand for labour created by the rural community.

The mechanism of economic migrations of rural families is largely explained by the new economic theory of migration²⁹. According to that theory, migration decisions are made not individually, but within a group of people dependent on one another. The basic unit of decision-making, according to this theory, is a household whose members consider the economic situation and the

²⁸ Cf. P. Chmieliński, M. Dudek, B. Karwat-Woźniak, A. Wrzochalska, *Spatial and social mobility of the rural population*, series Multi-Annual Programme 2011-2014, Vol. 45.1, IERiGŻ-PIB, Warszawa 2012.

²⁹ Cf. W. Janicki, *Przegląd teorii migracji ludności*, Annales Universitatis Mariae Curie-Skłodowska, Vol. LXII, 2007, p. 288.

possibilities of diversifying sources of income while minimising economic risk. One of the effects of such considerations is the decision on migration of at least one family member. The decision on the diversification of sources of income (including migration) is influenced by the economic and social situation of the family comparing to other households in local terms. Migration can thus be the result of a desire to raise the social status of the family in the community. Therefore, within communities with the diversified socio-economic structure, a large share of people with a higher propensity to migrate is more characteristic than it is in homogeneous communities, taking into account social status and living conditions. In regions with a long tradition of economic emigration, this phenomenon is common among the rural population.

In addition to the severity of migration flows, rural regions also varied in terms of duration of economic migration. Within the analysed group, people working abroad were spending there an average of 15 months. In villages, where trips to work abroad were common, their duration was relatively shorter (Table 1.6). An example of this can be the villages of Northern and South-Eastern macroregions, whose migrating residents spent away from home an average of 8 and 13 months, respectively.

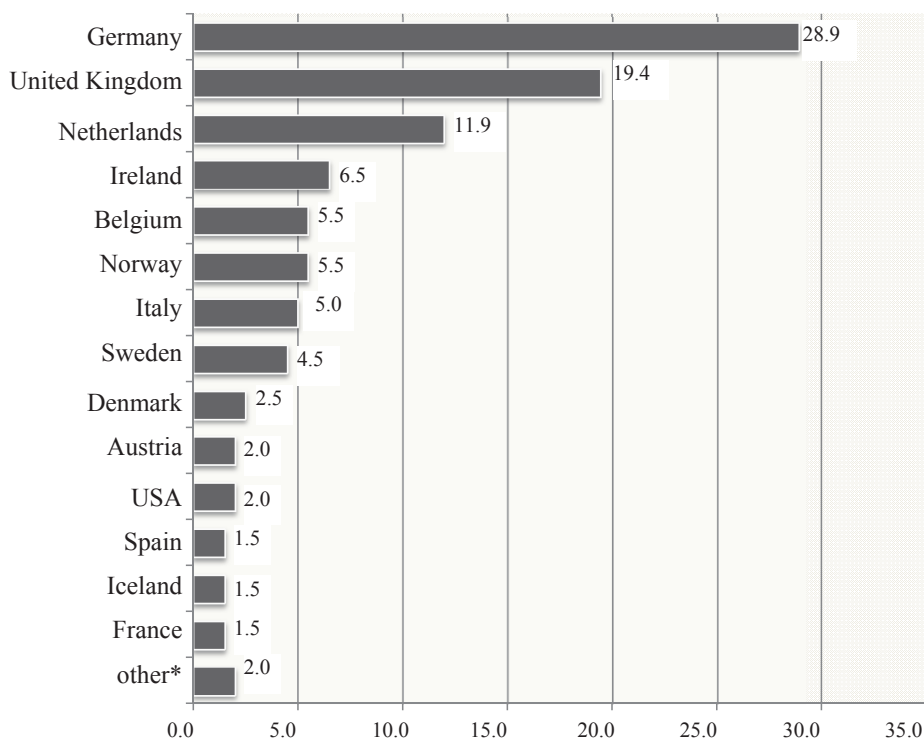
Furthermore, the research material also provided a lot of information on the most frequently chosen directions of economic migrations. For the rural population, Germany was the most popular migration destination, which has been placed in the forefront of most popular places for seasonal earning for years. Taking into account the fact that one of the first countries that opened their labour markets for workers from the new EU Member States was the United Kingdom and Ireland, the share of people migrating to these countries placed them at the forefront of the statistics (Figure 1.1).

Next to Germany, the United Kingdom and Ireland, other important directions of migration of the rural population were the Netherlands and Belgium, Italy and the Scandinavian countries. The directions of migration of the rural population are in line with the general preferences of the Polish population in this area. European statistics point to Germany, the United Kingdom, Ireland and Italy as places commonly chosen by jobseekers³⁰. The differences in the intensity of trips to different countries between the general data and information from the villages surveyed explain the relatively high share of people taking up agricultural employment abroad. That can explain the relatively higher popularity of the Netherlands among economic migrants in the IAFE-NRI survey,

³⁰ J. Straser, *Who's Still Afraid of EU Enlargement*, ECAS 2006.

than it is reported in other sources concerning international migration at the national level³¹.

Figure 1.1. Direction of economic migrations of the rural population
(% of responses)



* Other responses: Finland, Canada, Luxembourg.

Source: Own elaboration based on the IAFE-NRI surveys of 2011.

It should be emphasised that the European Union shapes its migration policy in relation to the requirements of labour markets in the Member States, promoting the migration of people with specific qualifications, which are rare in specific countries. This policy aims at mitigating the shortage of workers with certain skills, professional experience, language proficiency, age or education. Moreover, migration policy often addresses two areas: preventing illegal migration and illegal employment of migrants without work permits and promoting integration of immigrants into society.

³¹ P. Chmieleński, *Ludność wiejska na rynku pracy, zarobkowanie, bezrobocie, przedsiębiorczość i praca za granicą ludności wiejskiej w latach 2005-2011*, IERiGŻ-PIB, Warszawa 2013.

Chapter 2

Selected determinants of human capital of rural population

2.1. Level of formal education

The level of education of the population, including the rural population, should be addressed on many levels. Due to the nature of activities carried out in agricultural holdings, the farmers' scope of work can be seen in many aspects, which may be of natural, social, economic or technical character. Running such holdings requires also the knowledge of social and political relations, legislation and the mode of operation of both the government and entities involved in supply and purchase. This knowledge is essential for farmers not only as a basis for participating in public life, but also as a condition for determining the development opportunities of their holdings. Political, administrative and social knowledge during periods, such as systemic changes, is crucial in adapting one's own business to the changing conditions.

For many years, substantial educational disparities have existed between the rural and urban population. Nevertheless, educational aspirations increased in both rural and urban areas. In 2012, as in previous years, the share of the rural population with at least secondary education was lower and that with higher education – more than twice lower, compared to urban areas (Table 2.1).

Table 2.1. Level of education of the rural and urban population aged 13+ in 2002-2012 (%)

Year	Primary	Lower secondary	Basic vocational	Secondary and post-secondary	Higher
Rural areas					
2002	38.3	x	29.2	22.4	4.3
2004	31.9	5.8	29.4	24.5	5.4
2012	25.6	6.0	26.5	25.5	9.9
Urban areas					
2002	22.2	x	21.1	38.5	13.7
2004	16.8	4.4	21.3	38.0	17.5
2012	13.7	4.3	18.5	35.3	21.4

Source: Based on CSO data of 2005-2013.

However, it should be noted that these disparities reduced in 2004-2012, compared to previous years. In accordance with the research, slightly more than one-third of the population aged 13+ (35.4% of the population) had secondary, post-secondary or higher education (almost every tenth person had higher education) in rural areas in 2012. Compared to 2004, the share of people with the above-mentioned level of education increased by 5.5 pp (those with higher education – by 4.5 pp). At the same time, the share of the population with primary education in the educational structure of the rural population significantly decreased. It must be assumed that this phenomenon was strongly associated with changes in the demographic structure, as this level of education was typical of interwar students. All these positive changes are even more evident in comparison with 2002. They were observed in relation to both rural women and men (Table 2.2).

Table 2.2. Level of education of the rural population aged 13+ in 2002-2012 by sex

Year	Primary	Lower secondary	Basic vocational	Secondary and post-secondary	Higher
Men					
2002	36.2	x	37.1	18.9	3.6
2004	29.4	5.9	37.2	21.7	4.7
2012	23.5	6.5	33.6	23.1	7.7
Women					
2002	41.7	x	20.7	24.8	4.9
2004	34.4	5.7	21.6	27.2	6.1
2012	27.8	5.5	19.6	27.9	12.1

Source: Based on CSO data of 2005-2013.

Table 2.3. Level of education of the population for farming and non-farming families in 2000-2011 (%)

Year	Lower secondary and primary	Vocational	Secondary and post-secondary	Higher
Farming population				
2000	41.7	39.2	17.0	2.1
2005	34.4	37.4	23.2	5.0
2011	24.9	30.7	32.1	12.3
Non-farming population				
2000	39.5	38.8	18.1	3.6
2005	36.1	36.1	22.5	5.3
2011	26.8	33.1	29.1	11.1

Source: Based on the IAFE-NRI surveys of 2000, 2005, 2011.

The IAFE-NRI surveys reveal that an increase in the level of education was observed in relation to both rural communities at issue, i.e. farming family members – running an agricultural holding with an area over 1 ha of agricultural land, and non-farming family members, who either had no agricultural holding or its size was below 1 ha of agricultural land (Table 2.3). It should be noted that positive changes for farming families were relatively greater.

Although recent years have brought positive changes, including doubling of the share of the rural population with higher education, the gap between the urban and rural population has remained significant. In accordance with the surveys, career plans associated with activity in the non-agricultural sectors of the economy in rural areas and nearby urban areas or abroad were the main factors boosting the educational aspirations of the rural youth.

It should also be noted that non-public educational institutions are crucial in raising the level of education of the rural population. Many schools were located in the centre of rural areas, resulting in easy access for the rural youth.

2.2. Improving the knowledge and civilisational competences

Socio-economic changes, decreasing needs for labour and wider use of machinery make the rural population turn away from agriculture and search for alternative activities in order to achieve economic goals. This necessitates raising the level of vocational and general education. Therefore, understanding a need for further education and training, including in non-agricultural aspects, by the rural population is of enormous importance, as multifunctional rural development makes it necessary to incorporate a growing number of non-agricultural functions into rural areas. This provides opportunities for alternative sources of income. Usually, the less educated rural population is characterised by low economic and cultural activity, as well as scarce entrepreneurial activity, which also hinders the possibilities of multifunctional rural development. However, the development of non-agricultural fields of economic activity requires the ability to search for information, contacts with clients, customers, markets, etc.

The role of knowledge, also with regard to Polish farmers, is all the more significant because competition with other EU Member States is fierce and modern agriculture, more and more intense and precise, is becoming a knowledge-intensive industry. In this situation, farmers with no proper

education and no possibility for further education can hardly meet modern economic requirements in order to find themselves in the changing world. Farmers lacking skills or being late with the implementation of technological advancements cannot exist in the market. Producers wishing to develop their businesses will have to keep their clients and prevent them from being attracted by other farmers. Therefore, they will need market research skills, knowledge how to establish contacts with customers and create their own brand. The changing economic conditions and the progress of civilisation necessitate such actions. From the point of view of the economic theory, commitment to improving qualifications is one of the most important types of investments in human capital, which has a direct bearing on both the level of income and relatively lower employment insecurity. It is especially important for middle-aged and elder people, who have been economically active for many years. This is why it is so important for adults to engage in educational activity. It should be noted that, nowadays, people should acquire and develop knowledge throughout their professional lives. However, the educational activity of adults in rural areas, defined as the participation of the 18+ population in various forms of education, is much lower than in urban areas (Table 2.4).

Table 2.4. Educational activity of adults in 2000-2013 by place of residence

Year	Share of people benefiting from in-school and out-of-school education			
	aged 20-24	aged 25-29	aged 30-39	aged 30+
Rural areas				
2000	26.0	7.1	0.3	0.3
2005	50.8	8.9	1.8	0.9
2013	48.0	8.5	2.7	0.8
Urban areas*				
2000	61-46	17-9	5-2	0.5-1.3
2005	70-54	25-18	11-6	3.2-0.8
2013	79-53	20-17	9-5	2.1-1.5

* Extreme scores used for: cities and towns with population of over 500 thousand and less than 20 thousand, respectively.

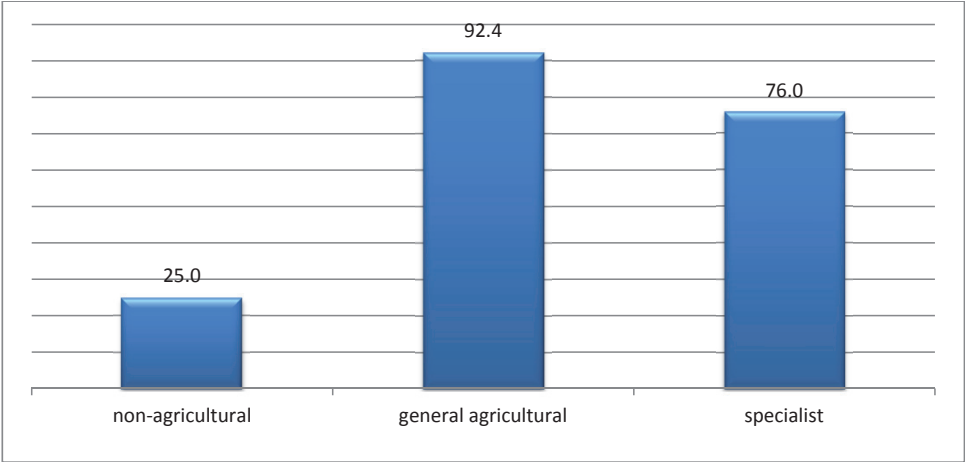
Source: Based on the Social Diagnosis.

In fact, the growth rate of the share of the urban population aged 20-24 and engaged in further education was even higher, and the stabilisation of the share of the rural population in the same age group further widens the gaps in the structure of education of the population, which are already unfavourable for rural areas.

All kinds of courses are a traditional form of out-of-school education in rural areas. In 2005-2011, they were held in every fifth surveyed village. Our

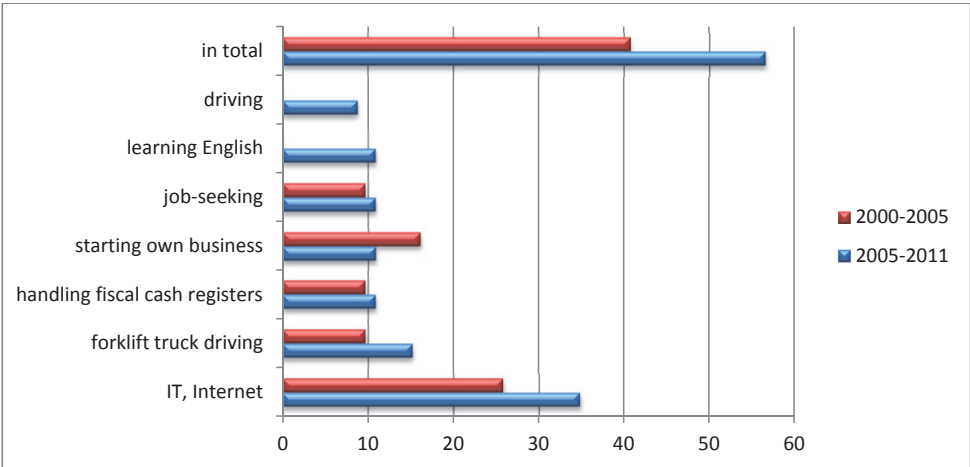
surveys revealed that especially the farming population is highly interested in this form of education. One-quarter of participants of non-agricultural courses were farming family members and their share in organised specialist courses and general agricultural courses was 75.0% and 92.4%, respectively (Figure 2.1).

Figure 2.1. Share of farming families members among participants of different types of courses in the villages surveyed in 2011



Source: Based on the IAFE-NRI survey of 2011.

Figure 2.2. Share of the villages surveyed offering courses for the unemployed

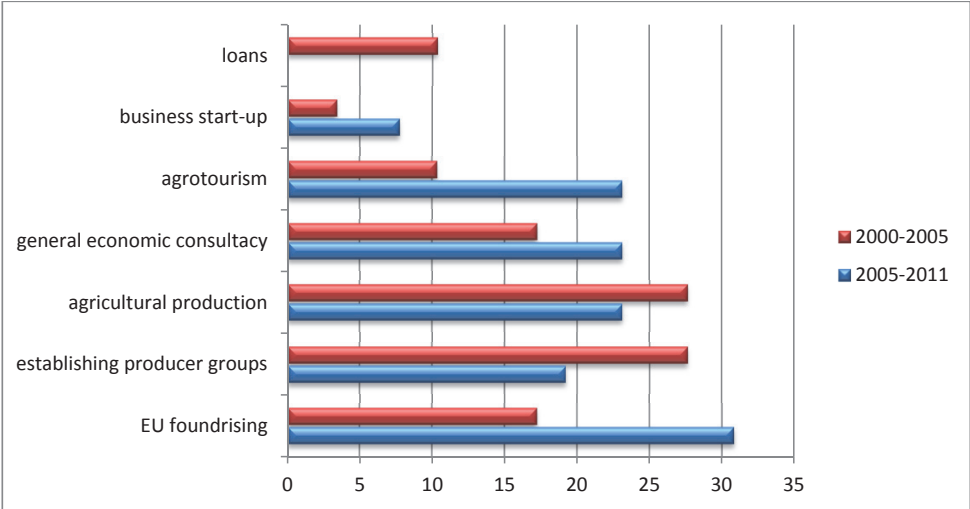


Source: Based on the IAFE-NRI surveys of 2000, 2005, 2011.

Furthermore, over half of the villages offered courses or trainings for the unemployed. This share increased significantly by 16.6 pp, compared to the previous survey period. IT courses were the most common (held in over one-third of the villages). Every tenth village offered English courses, courses related to launching own business and active job-seeking. In general, almost every fourth unemployed participated in such activities (Figure 2.2).

Despite these trainings and courses organised for both the unemployed and the remaining rural population, respondents reported a need for further educational activities (Figure 2.3). Almost every third village reported a need for EU fundraising courses, every fourth agritourism farm – for general economic consulting and agricultural production courses.

Figure 2.3. Share of the villages surveyed reporting a need for specific consulting services



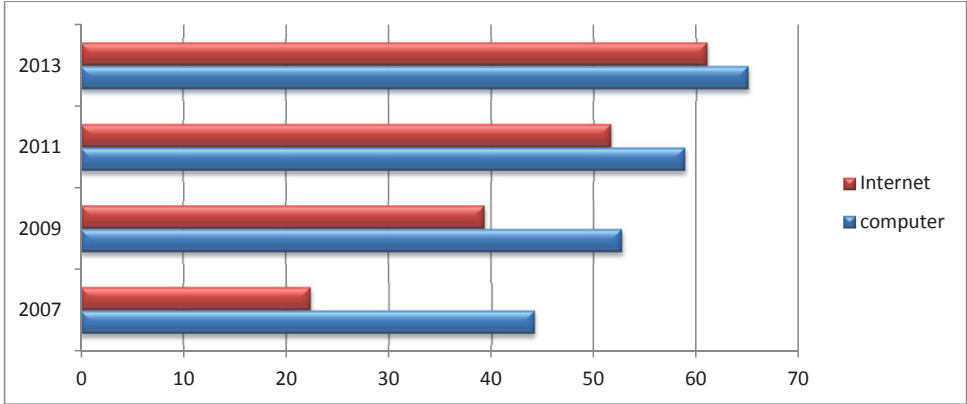
Source: Based on the IAFE-NRI surveys of 2000, 2005, 2011.

Access and ability to use new technologies are one of the main determinants of adaptation to function in contemporary society. The share of households with computers and Internet access significantly improved in the analysed period (Figure 2.4).

In 2013, almost two-thirds of rural households had computers. Almost all of them had Internet access. In the last decade, the share of both the rural population and farmers who use the Internet has significantly increased.

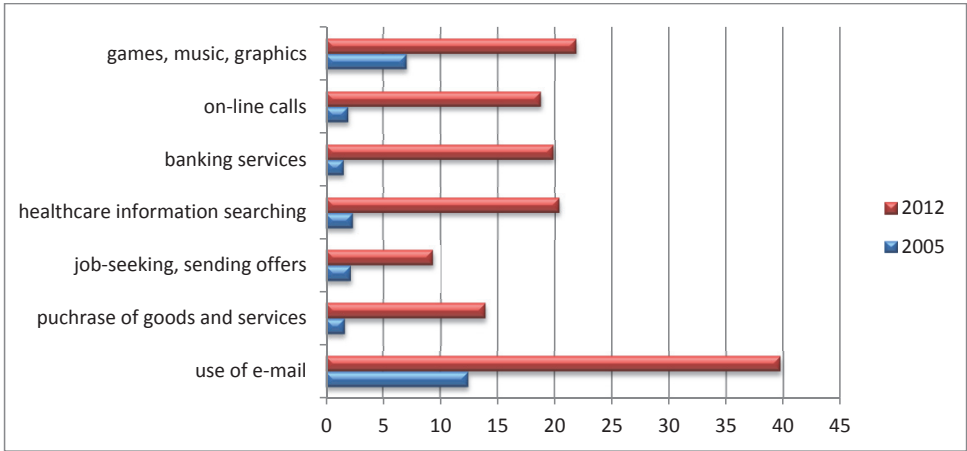
Having analysed the purposes of using the Internet (Figure 2.5) by the rural population, it can be concluded that there is a clear increase in the share of people using e-mail, on-line banking, instant messaging services or searching for relevant information, e.g. on healthcare.

Figure 2.4. Share of rural households with computers and Internet access in 2007-2013



Source: Based on CSO data.

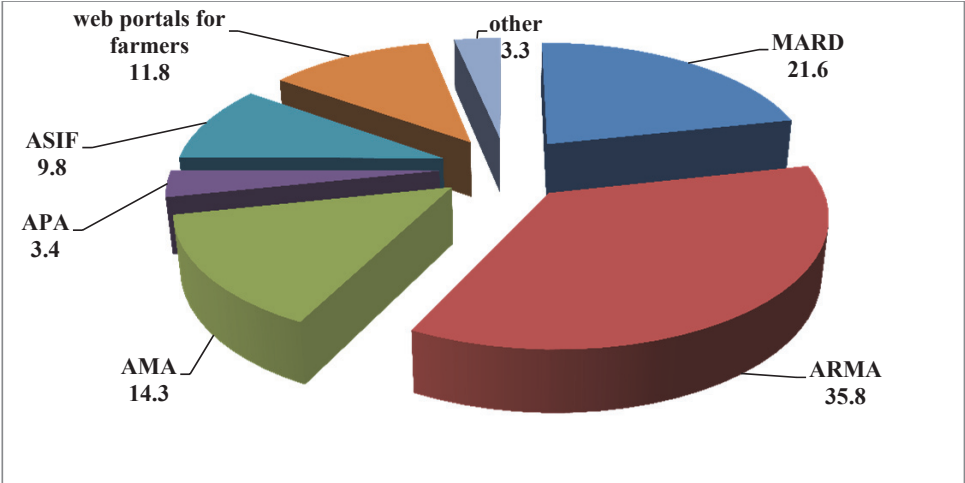
Figure 2.5. Share of the rural population aged 16-74 using the Internet in 2005 and 2012 by purpose



Source: Own elaboration based on CSO data of 2013.

According to the IAFE-NRI research results, the majority of farmers in 2011 did not use computers and the Internet to run their holdings. Only less than every fifth respondent needed these devices for professional purposes. It is worth noting that most of farmers using computers also used the Internet. The farmers surveyed most often visited ARMA and MARD websites. It may be argued that the popularity of these sites was due to the decisive role of these institutions in the EU support distribution. Nationally, specialist agricultural websites attracted relatively less attention (Figure 2.6).

Figure 2.6. Websites visited by farmers (%)



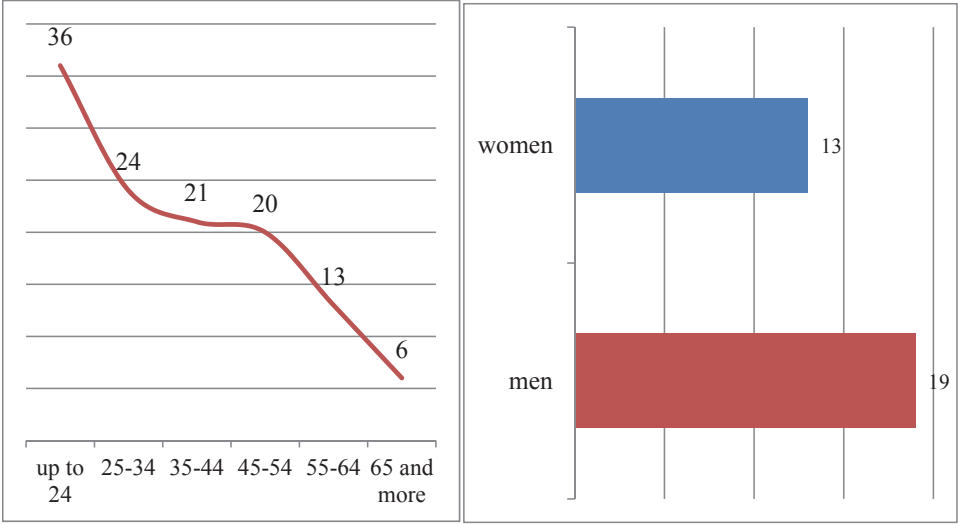
MARD – The Ministry of Agriculture and Rural Development; AMA – The Agricultural Market Agency; ARMA – The Agency for Restructuring and Modernisation of Agriculture; ASIF – The Agricultural Social Insurance Fund; APA – The Agricultural Property Agency.

Source: *The IAFE-NRI survey of 2011.*

The largest share of farmers using computers and the Internet was recorded in Central-Western Poland (Wielkopolskie and Kujawsko-Pomorskie voivodeships), which is associated with well-developed and highly market-oriented agriculture. Their relatively significant share was also observed in Northern Poland, including the Warmińsko-Mazurskie Voivodeship. The Internet and computers were relatively less frequently used in areas dominated by small, social or subsistence farms, i.e. in Southern Poland. Young farmers – aged up to 24 and up to 35, as well as male rather than female farmers more frequently used computers and the Internet (Figure 2.7).

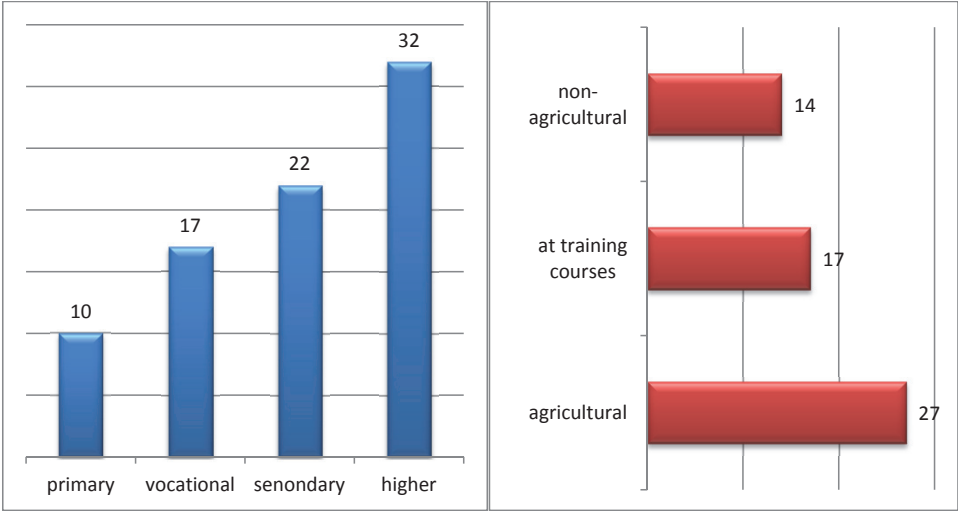
The share of computer and Internet users was associated with the level of general and agricultural education of respondents, i.e. it was the largest among the best educated farmers (Figure 2.8).

Figure 2.7. Farmers using computers and the Internet by age (on the left) and sex (on the right) (%)



Source: The IAFE-NRI survey of 2011.

Figure 2.8. Farmers using computers and the Internet by the level of general education (on the left) and type of vocational education (on the right) (%)

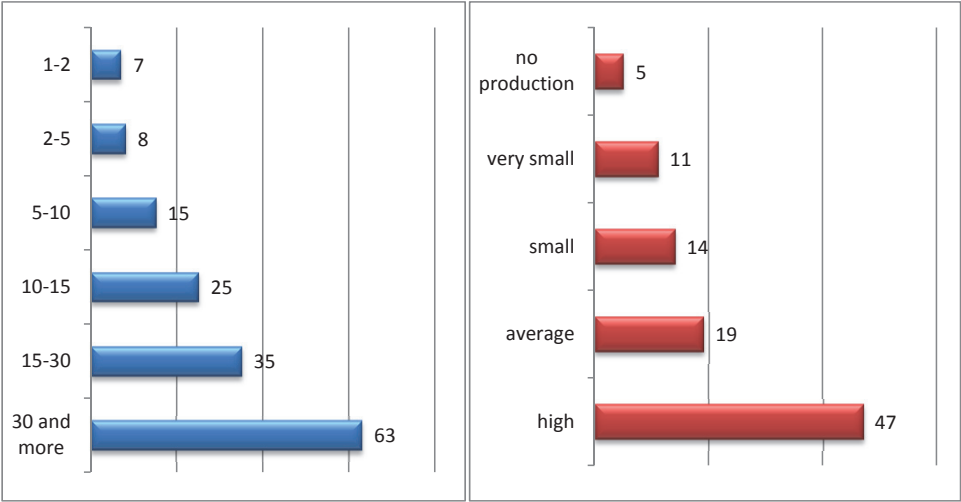


Source: The IAFE-NRI survey of 2011.

It is worth noting that Internet and computer users were farmers managing agricultural holdings with a relatively large area of agricultural land and significant sales scale of agricultural products.

As regards families operating large and well-managed holdings, computers and the Internet were basic tools for their daily work, without which it would be difficult to do anything. In general, their use for business reasons did not find grounds in the absence of agricultural production (Figure 2.9).

Figure 2.9. Farms using computers and the Internet by size groups and scale of agricultural production (%)



Source: The IAFE-NRI survey of 2011.

Based on the results of the IAFE surveys, it can also be said that farmers using computers and the Internet carried out investments from the EU funds. Most of the necessary information, documents, forms and practical advice for RDP beneficiaries can be found on the Internet. It should be assumed that computers and the Internet proved to be helpful in performing projects of this type. The surveys reveal that the Internet was used mostly by vegetable and dairy farms. Moreover, these tools were often used in farms covered by the CAP Pillar II instruments and farms operated by families with children (multi-person families).

The average Internet-using Polish farmer is a young or middle-aged man with at least secondary education (often in agricultural fields) and having children. Agricultural activity is the main source of income for him and his family.

He owns a large farm and sells a significant part of his production to the market. He uses also various RDP instruments (Table 2.5).

Table 2.5. Farmer using a computer and the Internet in professional work: profile

Summary Statistical profile of a farmer using a computer and the Internet in professional work
Age: up to 45
Sex: male
Education: at least secondary (often in agricultural fields)
Owner of a medium-sized or large farm with significant production volumes sold to the market (relatively often with dairy or vegetable production)
Uses CAP support measures (not only subsidies)
Agricultural activity is the main source of income for his family
Has children

Source: Own elaboration based on the IAFE-NRI survey of 2011.

Foreign languages are another determinant of adaptation to the changing reality. In recent years, the share of the English- and German-speaking rural population has increased. The surveys of 2011 showed that 11.3% of the total rural population can speak one foreign language (Table 2.6).

Table 2.6. Share of respondents speaking foreign languages in 2011

Foreign language	Farming families	Non-farming families	In total
One language	11.0	11.5	11.3
English	7.8	7.9	7.9
German	1.8	2.1	2.0
Russian	1.0	1.1	1.0
Other	0.4	0.4	0.4
Two languages	2.0	2.7	2.4

Source: Based on the IAFE-NRI survey of 2011.

English was the most common language (7.9% of the population). However, the next one was German (only 2% of the rural population could communicate in this language). Slightly more than 2% of the rural population could speak two foreign languages. Foreign language skills both in farming and non-farming families were comparable. Foreign language farmers can easier

establish trade relations. In particular, Russian³² – which is relatively common among farmers – facilitates their trade relations with Eastern neighbours.

2.3. Determinants of the health condition³³

Since the second half of the last century, numerous social considerations have been influenced by the new economy. This concept is closely related to the impact of human factors on economic growth. Therefore, the growing importance of investments in people to attain the next stages of economic progress is typical of development of countries in the world. Education and healthcare expenditures are regarded in the literature as investments in the quality of human capital, whose potential increases by investing in people themselves. The quality of human capital increases not only through: education, further education and training of human resources; migrations; information gathering and scientific research, but also through healthcare actions (affecting the length of human life and vitality).

Factors affecting the health of society can be grouped into those that result from the conditions of the surrounding environment, i.e. those associated with both the environmental situation, working conditions and with healthcare infrastructure. At the same time, health is directly affected by health behaviour and lifestyle of society.

In defining the determinants of the health condition of the rural population, account must also be taken of the very nature of work of those engaged in agriculture, which is characterised by a variety of activities performed during the day, various working conditions, irregular working hours – often 10-12 hours, resulting in different meal times. Negative factors also include unfavourable climatic conditions such as: continuous temperature changes, sunlight, air humidity variations or winds.

In rural areas, there are much fewer healthcare institutions and consequently the number of people per such facility is almost twice higher than in urban areas (Table 2.7). Also the number of medical visits per 100 inhabitants in rural areas is much lower than in urban areas (Table 2.8). However, it should be emphasised that, although slowly, the situation has improved in the last decade.

³² In accordance with the *Social Diagnosis* data of 2005 and 2007, 33.8% and 41.8% of farmers, respectively, declared active and passive knowledge of Russian.

³³ In the Constitution of 1948, the World Health Organization (WHO) defines health as: “a state of complete physical, social and mental well-being, and not merely the absence of disease or infirmity”. In recent years, this definition has been extended by: “leading a productive social and economic life”.

Table 2.7. Number of people (in thousand) per healthcare facility in rural and urban areas in 2000-2012

Item	2000	2005	2010	2012
Rural areas				
Per healthcare facility	5.4	4.6	3.6	3.3
Per doctor's office	16.8	9.6	8.9	8.9
Urban areas				
Per healthcare facility	4.3	2.6	1.6	1.6
Per doctor's office	5.6	3.9	4.5	4.8

Source: Own elaboration based on CSO data of 2005-2013.

Table 2.8. Number of visits in healthcare facilities and doctor's offices per one hundred persons in rural and urban areas in 2000-2012

Item	2000	2005	2010	2012
Rural areas				
As part of private medical practice	29.4	34.3	28.6	26.8
In total, in healthcare facilities	243.9	252.1	277.1	289.1
Medical facilities	221.9	237.9	260.6	270.2
Dental facilities	22.1	14.3	16.4	18.9
Urban areas				
As part of private medical practice	53.0	75.7	63.4	58.2
In total, in healthcare facilities	770.6	859.4	955.1	1 004.1
Medical facilities	700.6	793.3	877.2	916.9
Dental facilities	69.9	66.1	77.9	87.2

Source: Own elaboration based on CSO data of 2005-2013.

Although the number of dental visits per capita is still much lower in rural areas, it should be noted that this value is relatively low also among the urban population.

From the point of view of the rural population, not only the sheer number of healthcare facilities is very important, but above all, their spatial distance, i.e. their proximity to a place of residence and how long it takes, if need be, to get to them. The IAFE-NRI surveys show that in 2011, only 12% of villages provided

access to pharmacies, 14.5% – to doctor’s offices, and 13.2% – to clinics (health centres). The inhabitants of nearly half of the villages surveyed had to cover the distance of at least 5 km to reach a specific facility (Table 2.9).

Table 2.9. Spatial accessibility of healthcare facilities in the villages surveyed in 2000-2011 (%)

Year	In rural areas	1-2 km	3-4 km	5 km and more
Pharmacies				
2000	5.3	5.3	28.9	60.5
2005	16.3	8.0	32.0	44.0
2011	12.0	9.3	28.0	50.7
Doctor’s offices				
2000	14.1	9.9	29.6	46.5
2005	13.1	9.2	30.3	47.4
2011	14.5	6.5	30.3	48.7
Dentist’s offices				
2011	13.2	7.9	29.0	49.9
Clinics				
2000	14.7	5.3	34.7	45.3
2005	13.1	7.9	31.6	47.4
2011	13.2	9.2	30.3	47.4

Source: Based on the IAFE-NRI survey of 2011.

All the aforesaid positive changes related to healthcare in rural areas and environmental values (own food, fresh air, recreation opportunities), as well as physical effort constantly required to perform a whole lot of work make, as already stated, the rural population live longer compared to the urban population. Moreover, life expectancy increased significantly during the survey period. In 2012, rural areas were inhabited by over 1.5 million people aged 70+, including 556 thousand people aged 80+. In recent years, the population of this group has increased (by 120 thousand people compared to 2005). Providing care to those people, including actions not only at the family level, but above all, at the level of local authorities, is clearly a problem.

It should also be emphasised that, at the same time, the infant mortality rate significantly decreased in rural areas and its level in 2012 was comparable to that of urban areas (4.8 in rural areas compared to 4.7 in urban areas). In 2005, their values in rural and urban areas reached 6.5 and 6.3, respectively.

The causes of death in both urban and rural communities are also similar. Thus, its structure is dominated by cardiovascular diseases (nearly half of deaths) and cancers (nearly one-quarter of deaths). In recent years, numerous factors were observed in the rural environment, which adversely affect the level of stress among this population group³⁴. These factors include not only the changing economic situation in Poland and worldwide, but also: unpredictable weather, time pressure, random unforeseeable (natural disasters), government decisions (regulatory developments), the price volatility of products, difficulties in selling them, as well as the geographical insulation of farmers. Agricultural holding managers are a group of farmers subject to intense stress, as they are mainly the ones responsible for the state of their agricultural holdings. In consequence, all of these factors causing long-lasting stress lead to behaviour which significantly reduces the level of work safety³⁵ and may contribute to other health problems.

Health condition and health predispositions of society are also supported by other processes conditioning progress and opportunities for the socio-economic development of the country. Good health condition is directly reflected in commitment and performance of an individual, his/her educational achievements, all of which translate into achieving social well-being.

³⁴ In accordance with the U.S. National Institute for Occupational Safety and Health (NIOSH), the agricultural profession is among the top ten of (130 surveyed) the most stressful professions.

³⁵ In accordance with CSO statistics, in 2011, mental or physical stress caused 8.8% of recorded workplace accidents in agricultural holdings, *Rocznik Statystyczny*, GUS 2012, Dział VI. Rynek pracy.

Chapter 3

Human capital of surveyed farm managers

3.1. Demographic characteristics

The IAFE-NRI surveys prove that a farm manager does not have to be its owner (user³⁶). However, as the research results indicate, this situation is rare and, based on the data analysed, occurs less frequently than in one per twenty holdings. Similar relationships between owning a farm and managing it are confirmed by general statistical results. In accordance with the National Agricultural Census 2010, farm users accounted for 95.3% of managers of individual agricultural holdings, their spouses – for 2.8%, other members of their families – 1.6%, and non-members of their families, i.e. employed labour force – 0.3%³⁷. However, no cases of managing individual agricultural holdings by non-members of the families were reported in the IAFE-NRI surveys. Nevertheless, there were incidental (1.9%) cases of managers whose agricultural holding was placed in different location than their place of residence. Despite some signs of aging, the age structure of Polish farmers can be regarded as relatively favourable, especially against the situation in this respect in the EU agriculture (Figure 3.1).

Data from field studies indicate that the share of mobile working age farmers in 2011 reached 36%, including nearly 13% of managers under 35. Nonetheless, the share of managers in the above age groups was significantly lower than in previous years (Table 3.1).

At the same time, changes in the share of the age groups of managers of individual agricultural holdings were particularly significant in the last of the periods concerned, i.e. 2005-2011. At the time, the share of younger working age managers of individual agricultural holdings decreased on average by 1.3 pp per year, and those aged up to 35 – by 1.1 pp, whilst in 1992-2005, the corresponding rates stood at 0.4 and 0.3 pp, respectively.

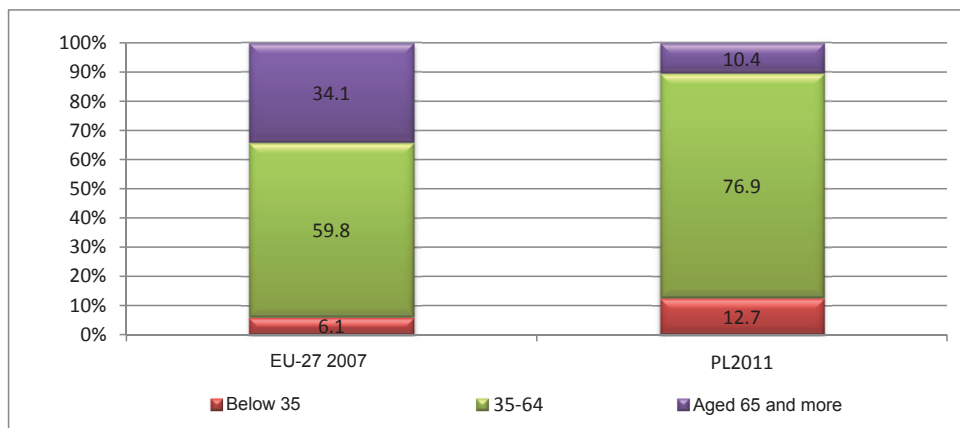
At the same time, the group of managers at the age of non-mobility systematically increased. In 2005-2011, its share increased from almost 47% to about 52%, which is almost 0.9 pp per year on average. Compared to 1992-

³⁶ A user (owner) of an individual agricultural holding shall be any natural person(s), irrespective of his/her/their legal title to an actually operated agricultural property and the location of land within one or more municipalities.

³⁷ *National Agricultural Census 2010*, CSO, Warszawa 2012, p. 39.

-2005, this age group of managers grew on average by 0.5 pp per year (from over 40 to almost 47%).

Figure 3.1. Structure of farmers in Poland and the EU-27 by age



Source: Eurostat 2007, the IAFE-NRI 2011.

Table 3.1. Structure of farm managers by age

Year	Share of managers in*			
	working age			post-working age
	of mobility	including below 35	of non-mobility	
1992	49.1	23.1	40.2	10.7
1996	47.9	21.6	40.2	11.9
2000	46.6	20.2	43.1	10.3
2005	43.8	19.5	46.6	9.6
2011	36.0	12.8	51.8	12.2

* The following CSO economic age groups were adopted: **pre-working age** – people up to 17; **working age** – women aged 18-59 and men aged 18-64; **post-working age** – women aged 60+ and men aged 65+. The **working age** is further divided into two groups: **mobile age** (younger working age) – people aged 18-44, and **non-mobility age** (senior working age) – women aged 45-59 and men aged 45-64.

Source: Based on the IAFE-NRI survey data of 1992, 1996, 2000, 2005, 2011.

While analysing developments in the share of retirement age farmers, it can be found that trends identified in specific periods were different in nature, but the size of this group was relatively highly stable. In 1992-1996, its size increased slightly (from 11 to 12%). In the subsequent analysed periods (1996-2000 and 2000-2005), the share of post-working age managers slightly

decreased and reached less than 10% in 2005. In contrast, the research edition of 2011 documented that the share of post-working age managers of individual holdings was just over 12%, which is 2 pp more than six years ago.

While interpreting the relatively small developments in the size of the group of retirement age farmers, which were observed in 1992-2011, it is clear that this situation, especially at the beginning, was due to amendments to farmers' retirement law, liberalisation of legal framework with respect to inheritance and distribution of family agricultural properties. At the same time, imbalances in the non-agricultural labour market, better agricultural situation and growing opportunities for securing satisfactory returns from work in family agricultural holdings encouraged young people to run agricultural activity. In later years, in addition to circumstances (early ASIF retirement pensions and the system of structural pensions) encouraging pre-working age farmers to cease their agricultural activity and transfer their family agricultural holdings to the younger generation, conditions related to preferential credit granting criteria and financial assistance for young managers from public funds, especially from the EU funds, increasingly influenced generational changes in Polish agriculture.

While examining the structure of farm managers by sex, it was found that relations between the number of men and women, both in 2000-2011 and earlier, were similar and relatively highly stable. The share of women among managers of individual agricultural holdings was relatively constant and reached about one-fifth. It should be noted, however, that the share of women among family agricultural holding managers in 1992-2011 slightly, but systematically, increased (from about 20% to almost 23%).

While analysing the share of women managing agricultural holdings and the scale of developments, it can be concluded that, in spite of cultural changes and the blurring distinction between male and female professions, the position of a holding manager remains ascribed to men. This situation is conditioned by many factors. Currently, it is increasingly influenced by the professional attitude of women and their tendency to separate housework from agricultural economic activity on their family farm. Nevertheless, women still do not engage in farm work to a larger extent, and above all – in farm management. This situation is usually observed in large and economically strong farms, whose scale of production allows securing satisfactory returns from agricultural activity. In general, women continue to manage relatively small holdings which usually results from

the paid work of men or unforeseeable circumstances (illness or absence of a man in the family)³⁸.

The above circumstances may contribute to accelerating the transfer of agricultural land to larger-area, economically strong and market-oriented holdings and, consequently, to the efficiency-oriented reconstruction of the agricultural sector and improving its competitive capacity, including in terms of resources.

The analyses undertaken suggest that the relationship between the age of a farmer and the area of his/her holding is constant, although non-linear. Having analysed the age of managers according to the area of their agricultural land, it can be stated that in 2011, just as before, the larger the area of farms, the relatively younger their managers. The lowest share of post-working age managers can be found in relatively large-area units (Table 3.2).

Table 3.2. Age structure of managers of individual agricultural holdings by size groups

Size groups (ha of agricultural land)		Share of managers by age*			
		working age			post-working age
		in total	of mobility	of non-mobility	
In total	2000	89.7	46.6	43.1	10.3
	2011	87.8	36.0	51.8	12.2
1-2	2000	80.1	38.0	42.1	19.9
	2011	79.7	29.9	49.8	20.3
2-5	2000	86.7	42.1	44.6	13.3
	2011	83.7	31.9	51.8	16.3
5-10	2000	92.3	48.9	43.4	7.7
	2011	91.7	38.9	52.8	8.3
10-15	2000	95.1	54.3	40.8	4.9
	2011	91.5	39.4	52.1	8.5
15-20	2000	96.7	51.4	45.3	3.3
	2011	94.7	44.7	50.0	5.3
20-30	2000	97.3	51.2	46.1	2.7
	2011	95.5	42.2	53.3	4.5
30-50	2000	96.4	63.0	33.4	3.6
	2011	96.8	42.1	54.8	3.2
50 and more	2000	96.8	61.3	35.5	3.2
	2011	98.1	45.1	54.0	1.9

* Age groups as shown in Table 3.1.

Source: Based on the IAFE-NRI survey data of 2000, 2011.

³⁸ A. Wrzochalska, *Kobiety kierujące gospodarstwami rolnymi*, Komunikaty, Raporty, Ekspertyzy nr 542, IERiGŻ-PIB, Warszawa 2010.

Their share in the smallest-area farms (1-2 ha of agricultural land) was just over 20% and gradually decreased with a growth in size to reach the lowest level for the largest agricultural holdings, i.e. those with at least 50 ha of agricultural land, which is less than 2%.

In 2011, the share of mobile working age managers in individual agricultural holdings with 1-2 hectares of agricultural land was less than 30% and gradually rose along with another area groups to reach the highest level in 50 ha units and larger, i.e. over 45%. Thus, the larger the farm, the higher the share of younger working age farmers. However, the managers of individual agricultural holdings aged 18-44 were not the majority in any of the area groups considered.

The existence of a significant relationship between the demographic characteristics of farmers and the economic potential (condition) of their farms is also proven by the age structure of holding managers as per the volume of agricultural production put on agricultural commodity markets.

The analysis of the age structure of farmers by market activity documented that some of the symptoms of aging were observed among both managers of subsistence (without commodity production) and market-oriented holdings. At the same time, the former were relatively older than the managers of holdings with large-scale sales (Table 3.3).

Table 3.3. Age structure of managers of individual agricultural holdings by scale of commodity production

Farms	Share of managers by age*				
	working age				post-working age
	in total	of mobility	including below 35	of non-mobility	
In total	87.8	36.0	12.8	51.8	12.2
- without commodity production	78.2	28.9	9.7	49.2	21.8
- with commodity production:					
In total	91.5	38.7	13.9	52.8	8.7
including the sale of agricultural production (PLN '000)					
up to 10	85.7	35.4	12.2	50.3	14.3
100 and more	95.0	38.4	14.7	56.6	5.0

* Age groups as shown in Table 3.1.

Source: Based on the IAFE-NRI survey data of 2011.

At the same time, there is still a significant relationship between the age of managers and the volume of production for the market. Although holdings with the same scale of commodity production were managed by people of different age, the general case is that the larger the scale of commodity production, the smaller the share of holdings managed by retirement age people and the higher the share of mobile working age farmers.

Data from field studies indicate that in 2011, only 5% of holdings with the scale of commodity production allowing to secure satisfactory returns from work in family agricultural activity were managed by retirement age people. At the same time, it was almost three times less than in the group of holdings selling small amounts (up to PLN 10 thousand) of agricultural commodities and over four times more than the corresponding share in the group of subsistence agricultural holdings.

Furthermore, holdings with relatively large scale of production were significantly more often managed by young people. If we consider mobile working age farmers as such, in 2011, this was the case in 38% of holdings with commodity production of at least PLN 100 thousand, which is 2 pp more than in the group of managers of subsistence holdings.

However, in the population of farmers with holdings without commodity production, the share of people aged up to 44 was nearly 29%. Thus, it was about 9 pp less than among managers of agricultural holdings allowing to secure satisfactory returns.

3.2. Agricultural qualifications

Modern agriculture requires comprehensive knowledge³⁹. This statement applies particularly to agricultural holding managers. For this reason, their agricultural knowledge and skills are an important feature significantly influencing their production and financial performance.

Knowledge, in the context of growing competition, increasingly determines the level of returns from business activity⁴⁰. Thus, advancing skills and investing in agricultural education by individuals wishing to become professional farmers are necessary for their development. Farmers gain their skills

³⁹ A. Kowalski, *Czynniki produkcji w agrobiznesie*, [in:] *Encyklopedia Agrobiznesu*, A. Woś, (ed.), Fundacja Innowacja, Warszawa 1998, pp. 108-114.

⁴⁰ B. Klepacki, *Znaczenie wiedzy i wykształcenia w rozwoju rolnictwa*, *Zagadnienia Ekonomiczne*, 2/2005, pp. 47-57.

needed for agricultural activity by various methods, but their formal reflection is the level of education, both general and vocational, particularly professional, i.e. relating to agriculture.

The analysis of available empirical data suggests that generational changes among farm managers went hand in hand with an increasingly higher level of their schooling (Table 3.4, Table 3.5 and Table 3.6).

Table 3.4. General education* of managers of individual agricultural holdings

Year	Share of people with			
	statutory education**	basic vocational education	secondary and post-secondary education	higher education
1992	56.8	28.9	12.8	1.5
1996	43.4	39.2	15.7	1.5
2000	36.1	45.6	15.8	2.5
2005	26.5	46.3	22.2	5.0
2011	20.2	45.4	27.5	6.9

* Compilation includes completed education.

** Concerns primary and lower secondary education. This group also included people with uncompleted statutory education. They accounted for 0.5-2%.

Source: Based on data from the IAFE-NRI surveys of 1992, 1996, 2000, 2005 and 2011.

Table 3.5. Agricultural education* of managers of individual agricultural holdings

Year	Share of people with agricultural education obtained		
	at school	at training courses	lack of agricultural education
	Row in total = 100		
1992	17.9	39.6	42.5
1996	20.8	27.9	51.3
2000	23.0	27.0	50.0
2005	24.4	19.5	56.1
2011	24.1	16.9	59.0

* Compilation includes completed education.

Source: Based on data from the IAFE-NRI surveys of 1992, 1996, 2000, 2005 and 2011.

These changes should be considered as very positive, because the level of education has a direct impact on the speed and effects of the implementation of technical and technological innovations in agriculture⁴¹, and besides, there is

⁴¹ A. Kowalski, *Czynniki produkcji w agrobiznesie...*, op. cit., p. 111.

a significant correlation between the level of education and the means of production at one's disposal⁴².

Table 3.6. Non-agricultural education* of managers of individual agricultural holdings

Year	Share of people with agricultural education obtained		
	at school	at training courses	lack of agricultural education
	Row in total = 100		
1992	24.5	5.8	69.7
1996	35.7	4.9	59.4
2000	40.2	4.4	55.4
2005	48.1	2.1	49.8
2011	53.2	1.9	44.9

* Compilation includes completed education.

Source: Based on data from the IAFE-NRI surveys of 1992, 1996, 2000, 2005 and 2011.

In accordance with data from field studies, in 2011, still about 20% of managers completed only primary or lower secondary education. The share of farmers who finished their education at the statutory level decreased significantly compared to 2000, and was almost twice lower. Both in 2000 and 2011, basic education was the most common; about 45-46% of farmers attained this level of education. At the same time, there was progress at the level of secondary and post-secondary schools (increase from 16 to 28%), as well as higher education institutions (share of managers of individual agricultural holdings who attained this level of education increased from almost 3% to nearly 7%).

The over twofold increase in the share of farmers with higher education recorded in 2000-2011 should be considered significant. Especially when the rate of return on investment in higher education in the case of agricultural sciences was still the lowest of all fields of study, although steadily growing since the early 1990s⁴³.

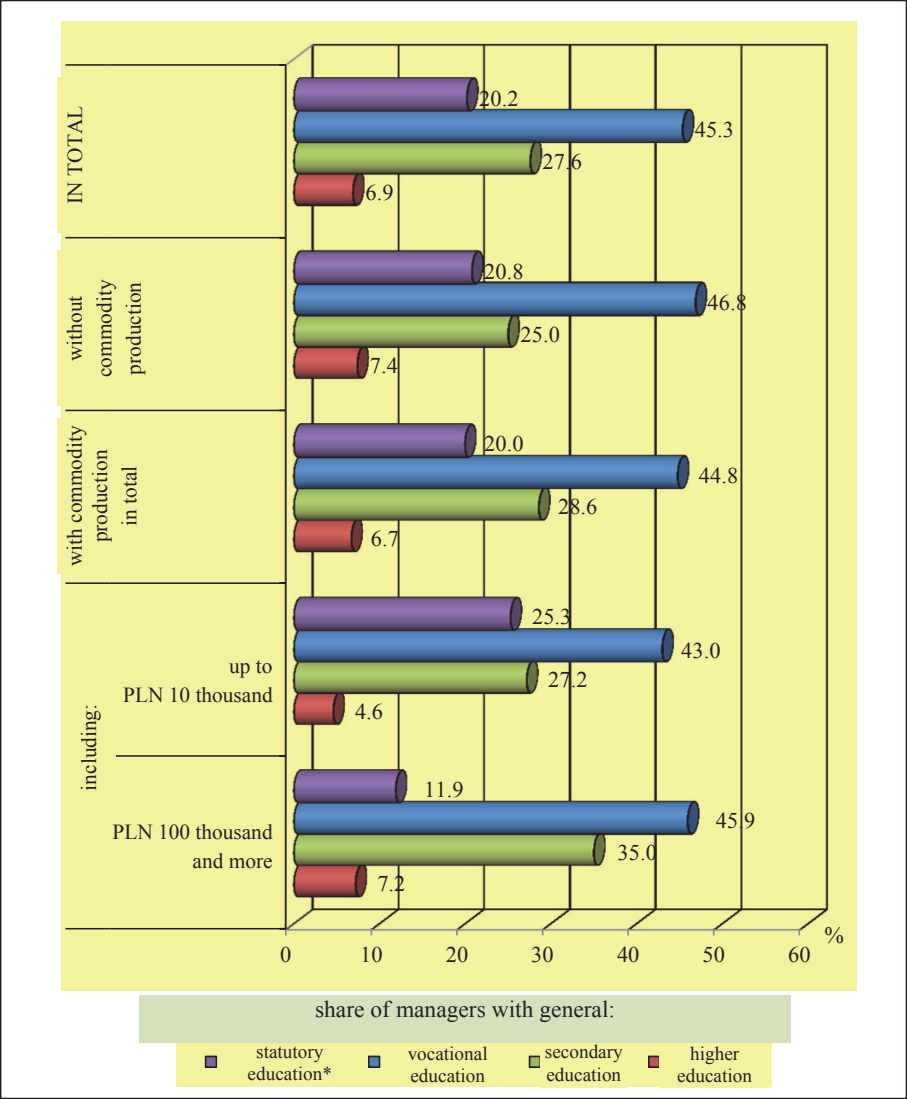
The above positive changes in the level of education were particularly significant among managers of market-oriented farms, usually of larger area. Assuming that the measure of a good education is the share of people with at

⁴² M. Dudek, *Rola czynnika ludzkiego w rolnictwie indywidualnym na przykładzie gospodarstw emerytów i młodych rolników*, seria PW 2005-2009 nr 91, IERiGŻ-PIB, Warszawa 2008.

⁴³ J. Czapiński, *Stopa zwrotu z inwestowania w wykształcenie na poziomie wyższym*, [in:] *Diagnoza społeczna 2013. Warunki i jakość życia Polaków*. J. Czapiński, T. Panek (eds.), Rada Monitoringu Społecznego, Warszawa 2013, pp. 206-209.

least secondary education, it can be concluded that the larger the unit, the higher the level of schooling of managers.

Figure 3.2. General education* of managers of individual agricultural holdings by market activity of their holdings



* Applies to completed education.
 ** Concerns primary and lower secondary education. This group also included people with uncompleted primary or lower secondary education. In 2011, they accounted for 0.3% of the total analysed population.

Source: Based on the IAFE-NRI survey data of 2011.

With respect to people running agricultural activity, professional preparation for the job was evidenced most clearly by agricultural education, especially school education. For this reason, in order to assess the level of education of managers of individual agricultural holdings, one should also take account of education that ensures professional qualifications, although in the case of individual farming, the important thing is experience measured in years of farm work.

The survey data collected show that, in contrast to earlier periods, no progress in the prevalence of agricultural school qualifications was observed in 2000-2011 (Figure 3.2). At this time, the share of managers with agricultural education did not change and stood at 23-24%. At the same time, the share of farmers who completed only courses preparing for the agricultural profession decreased systematically (from 27 to 17%). As a consequence, the group of managers with virtually no formal agricultural qualifications increased (from 50 to 59%).

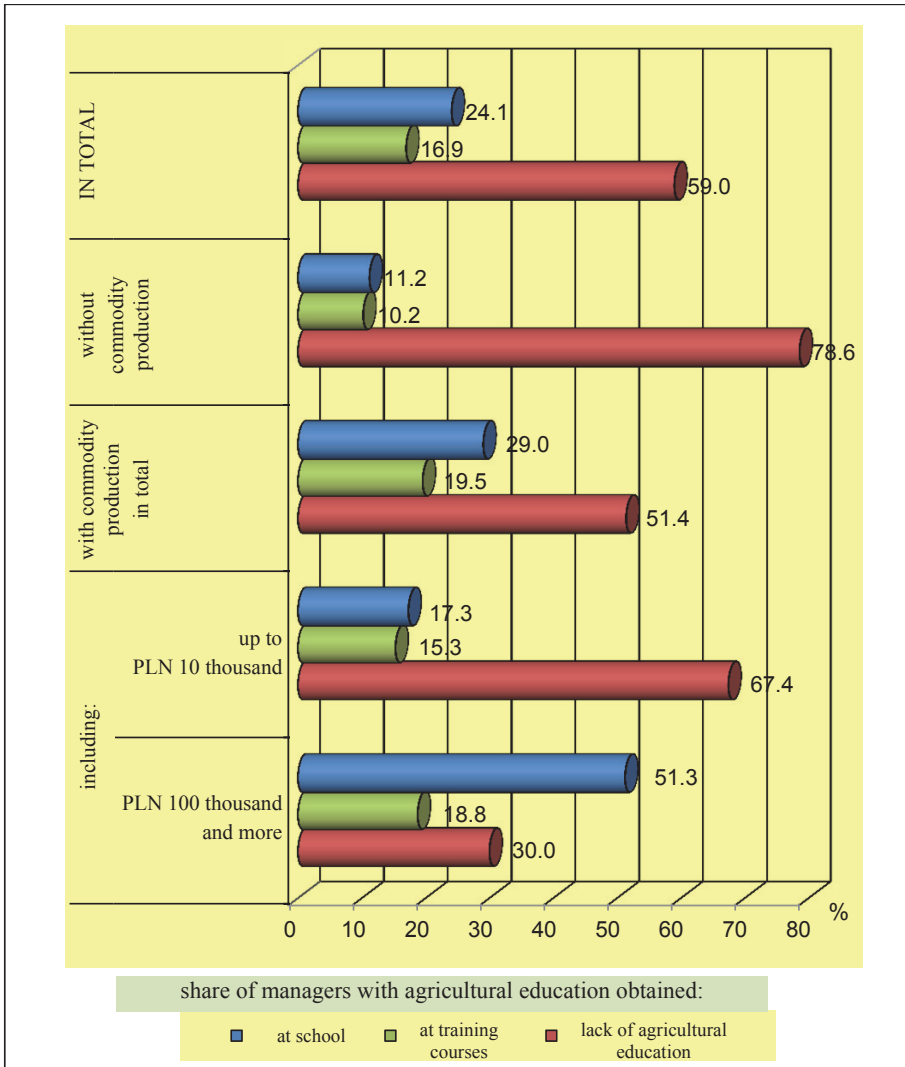
The above-changes in the level of agricultural qualifications among holding managers should be associated with the liberalisation of formal requirements in terms of having a specific vocational preparation to conduct agricultural production for those acquiring agricultural property, especially those inheriting it.

In the age of growing competition, meeting effectively its demands is increasingly dependent on the knowledge of managers. For this reason, mainly people from market-oriented agricultural holdings with considerable production potential and a large cultivated area are interested in acquiring agricultural education. This is reflected in different professional education levels among managers of farms of varied size and scale of commodity production.

Figures 3.2 and 3.3 reveal that the larger the area of a farm and the volume of commodity production, the higher the number of farmers with agricultural vocational education. This relationship is reflected primarily in differences in the prevalence of agricultural school education among managers of farms of different size and volume of commodity production.

Consequently, the highest shares of people with agricultural qualifications were observed among the managers of the largest farms or those characterised by large-scale commodity production. In 2011, among the managers of units with at least 20 ha of agricultural land, every second person completed agricultural school education, and every fourth – an agricultural course. Among managers of farms with 1-2 ha of agricultural land, the respective ratios were every tenth and every eighth person.

Figure 3.3. Agricultural vocational education of managers by market activity of their farms



* Compilation includes completed education.

Source: Based on the IAFE-NRI survey data of 2011.

As regards the relationship between the level of professional education and market activity, the analysis of survey data shows that in 2011, just as before, the share of farmers with vocational agricultural qualifications increases along with a growth in the volume of agricultural production for the market. Among the managers of farms with commodity production of at least PLN 100 thousand, more than 51% of people completed agricultural schools and another

19% acquired professional education through courses. In the group of managers of holdings with commodity production of up to PLN 10 thousand, the corresponding rates were 17 and 15%, respectively (Figure 3.3).

Among the managers of farms with agricultural production solely for subsistence, the share of people with agricultural education was 11%, another 10% completed courses preparing for the agricultural profession.

These findings confirm the idea that primarily people owning a holding with large production capacity, or those having a chance to manage (take over) it, are interested in acquiring agricultural education. This should be associated with the intention to develop agricultural activity and improve competitive capacity.

Regardless of agricultural qualifications, the share of people with non-agricultural education among farm managers was relatively high and followed an upward trend (from 40% in 2000 to 53% in 2011) throughout the period at issue.

This increased popularity of non-agricultural education results from the prevalence of education mainly for non-agricultural sectors of the economy in the rural environment. Furthermore, the improved level of non-agricultural professional qualifications in the analysed population should be considered as favourable, especially in terms of opportunities to diversify economic activity and find non-agricultural employment.

Many analyses emphasised that more and more people associated with operating an individual agricultural holding are effectively seeking non-agricultural employment⁴⁴.

The process of diversification of economic activity was also observed in the group of managers of individual agricultural holdings. A growing group of farmers combines farm management with non-agricultural employment. However, the share of people in the group of managers not employed full-time in agricultural activity is still large.

Data from the National Agricultural Census 2010 showed that only about 33% of managers worked in their holding permanently on a full-time basis, which gives at least 2 120 hours per year.

The observed systematic increase in the level of non-agricultural vocational qualifications of managers is beneficial not only from the perspective of employment in the non-agricultural labour market, but also from the point of view of agricultural activity. Today, the effective operation of an agricultural

⁴⁴ B. Karwat-Woźniak, P. Chmieliński, *Population and Labour in Family Farming in Poland*, series Multi-Annual Programme 2005-2009, Vol. 28.1, IERiGŻ-PIB, Warszawa 2006, pp. 19-21.

holding requires numerous skills and competences that go far beyond conventional preparation for the agricultural profession.

The IAFE-NRI research results revealed that the number of farmers with non-agricultural school education decreases in proportion to the area of a holding and the volume of commodity production. Thus, these relations are the opposite of having agricultural school qualifications.

The analysis of survey data suggests that people with school preparation for non-agricultural professions remained the relatively largest group among managers of relatively small-area units (over 60% in the group of units with up to 5 ha of agricultural land), producing only for subsistence (63%) or placing only small volumes of agricultural commodities on the market (56% with sales of up to PLN 10 thousand).

Moreover, it is nothing unusual that managers of farms characterised by relatively large scale of production and large area completed school education not directly related to agriculture. In accordance with survey data, in 2011, more than every third manager of a 50 ha unit and larger had agricultural school education. When we consider managers of units with the scale of commodity production of 100 thousand and more, the share of people with school preparation for non-agricultural professions was over 37%.

The relatively high incidence of non-agricultural education among managers of larger and market-oriented farms indicates that labour market conditions and the increasing attractiveness of employment in technically well-equipped and organised units meant that some people with non-agricultural qualifications chose employment in family agricultural activity.

3.3. Level of human capital

Leaving aside many controversies, human capital is considered an important issue widely discussed in the modern economy. An argument often voiced is that certain human traits largely determine the effects of work or the financial performance of economic organisations. In other words, the higher the quality of human capital characteristic of an individual or involved in the functioning of an enterprise, the larger the different results of economic activity. High importance given to human capital is also associated with the structural properties of the modern economy. The dominance of the service sector based on knowledge and information makes economic development more often combined with the use of commercially-oriented scientific research, the implementation of innovation, and

broadening knowledge and practical skills. Also agriculture is perceived as an area requiring more intensive intellectual inputs.

The use of achievements of biological, agronomic sciences or modern means of production became an important way of achieving a market advantage for agricultural producers. Growing competition made knowledge on the processes taking place in the market environment increasingly important. Still, however, the economic result in agriculture depends on the optimal use of labour, capital and land. A management factor plays in this process an important role. This last element relates specifically to the traits and attitudes of agricultural holding managers.

As regards agricultural activity, high importance of knowledge and information is due to several reasons. Some of them are typical of a region, others are specific to agriculture at the domestic level. The number of agricultural producers in Poland is high and their market position, in relation to other units of food chain, is considered unfavourable. This is reflected in the intensity of competition, but also results in large-scale liquidation of farms. In accordance with public statistical data, over 1 563 thousand agricultural holdings operated in Poland in 2010. Compared to the previous census, this is 393 thousand, i.e. one-fifth, less⁴⁵.

Structural changes in the sector were an important reason for this decrease. It is estimated that a significant share of farms went out of business as a result of not meeting economic competition requirements or taking incorrect management decisions⁴⁶. It can be assumed that the complexity of the economic environment for agricultural activity increases. This is accompanied by an increase in the amount of legislation, particularly in the field of agricultural policy⁴⁷. The EU and national agricultural policy makes agricultural producers face different, often divergent or irreconcilable, goals. In addition to taking care of the economic viability of agricultural holdings, farmers' activity should be socially and environmentally friendly. These tasks can only be met after achieving compliance with a series of standards and principles. The increase in the amount of regulations in the sector was particularly significant in connection with the implementation of the cross-compliance principle.

In 2014-2020, the set of regulations is to be extended to practices beneficial for the climate and the environment (i.e. green component of the CAP). The

⁴⁵ *Raport z wyników. Powszechny Spis Rolny 2010*, GUS, Warszawa 2011, p. 26.

⁴⁶ A. Sikorska, *Przemiany w strukturze agrarnej indywidualnych gospodarstw rolnych*, Research Project No. 0021/B/H03/2011/40, IERiGŻ-PIB, Warszawa 2013, pp. 21, 38.

⁴⁷ P. Roza, T. Selnes, *Simplification of the CAP. Assessment of the European Commission's Reform Proposals*, LEI report 2012-011, The Hague 2012, p. 24.

beneficiaries of direct payments should, therefore, meet a number of requirements that are intended to make European agriculture more sustainable and adapted to the needs of society as a whole. However, familiarity with these regulations is the *sine qua non* of their application.

As the scope of regulations in the sector expands, the number of market requirements as to the quality of agricultural products increases. Both consumers and processors report the demand for goods of high quality. There is also an increasing interest in conventional and organic products. In this case, the production process is expensive and requires expert knowledge. In turn, finding markets for this type of goods is contingent upon taking intensive information and marketing actions, which is undoubtedly a challenge for agricultural holding managers.

Furthermore, it is argued that the market environment becomes increasingly unstable. This is, *inter alia*, due to price volatility, integration, globalisation and regulation or the exacerbation of climate change. Accurate management decisions based on commercially useful information are a way to reduce uncertainty and thus achieve a competitive advantage. In this respect, not only an opportunity to access valuable – from the economic point of view – knowledge is a key issue, but also an ability to interpret and use it in practice. This part of the study aims at determining the level of human capital of farmers in Poland, as well as indicating its most important determinants and conditions. Additionally, the level of human capital of agricultural holding managers was identified in selected agricultural structures and prospects for its development were indicated.

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Human capital can be defined as all the assets of an individual ensuring the same or better position in the economic system. It is thus a complex phenomenon. The use of multivariate statistical analysis methods, more specifically, the zero unitarisation method (ZUM)⁴⁸, is one way to measure it. Because of its multifaceted nature, human capital is described by a number of properties (diagnostic variables). In addition to a traditionally applied correlate of human capital, which is the level of general or vocational education, the following elements may be included, e.g.: age, health condition, ICT competences or the use of knowledge and information provided by specialised institutions.

The age of farmers was used in the study as one variable to describe the level of their human capital. This property was taken as a nominant. The litera-

⁴⁸ K. Kukuła, *Metoda unitaryzacji zerowanej*, Wydawnictwo Naukowe PWN 2000, p. 9.

ture shows that it may have a varied impact on production and income effects related to agricultural activity. On the one hand, the young age is generally associated with relatively better health and higher mental well-being conducive to the development of economic activity. Later in life, there is often a tendency to limit involvement in agricultural holding management, in order to secure financial situation, enjoy consumption or leisure time⁴⁹. On the other hand, it is emphasised that only elder farmers have valuable professional experience, in particular specific knowledge resources related to particular agricultural holdings (farm-specific human capital)⁵⁰. However, it can be presumed that technical progress in agriculture (increasing mechanisation of work) and better health of the population will foster the reduction of the negative impact of age on running agricultural activity⁵¹.

The health condition of farmers was the second property of human capital applied in the analysis⁵². It was classified as a stimulant. The significance of this dimension lies in the fact that it conditions the capabilities and quality of actions taken by people in the economic system. Nonetheless, agricultural work is currently considered to be particularly vulnerable to accidents and likely to put health at risk⁵³. The level of general education was another property describing the phenomenon in question. It was taken as a stimulant. It was assumed that the better the general education preparation, the higher the level of farmer's human capital⁵⁴.

Also the level of vocational education of farm managers was taken as a stimulant of their human capital⁵⁵. Educational preparation, especially in a field closely related to the work performed, is a key aspect of human capital. Two further diagnostic variables relate to theories emphasising the need for rais-

⁴⁹ M. Lobley, J.R. Baker, I. Witehead, *Farm Succession and Retirement: Some International Comparisons*, Journal of Agriculture, Food Systems and Community Development, Vol. 1, Issue 1, New Leaf Associates Inc. 2010, p. 51.

⁵⁰ D.N. Laband, B.F. Lentz, *Occupational Inheritance in Agriculture*, American Journal of Agricultural Economics, Vol. 65, Issue 2, AAEA 1983, p. 312.

⁵¹ For the reasons identified, it was found that, from the point of view of economic activity, the middle age, i.e. about 44 years, was the most optimal phase of life for agricultural holding managers.

⁵² The "farmer's health condition" variable was measured on an ordinal scale and had three variants: poor, average and good.

⁵³ C.E. Gerrard, *Farmers' Occupational Health: Cause for Concern, Cause for Action*, Journal of Advanced Nursing, Issue 28(1), Blackwell Science Ltd. 1998, pp. 155-156.

⁵⁴ Account was taken of three levels of general education: basic, basic vocational and at least secondary.

⁵⁵ The "agricultural education level" variable had three variants: lack of agricultural education, course and school education.

ing professional qualifications acquired at different levels of formal education. In this case, two information sources, the use of which may play a role in agricultural activity, were considered, i.e. agricultural advisory institutions⁵⁶ and IT infrastructure in the form of a computer and the Internet⁵⁷.

As already mentioned, the study uses diagnostic variables of various types. If the phenomenon considered includes variables measured on different scales, it is reasonable to apply the ZUM, since it meets the requirement of equal variation ranges of aggregate properties after their standardisation⁵⁸. The quantitative property, i.e. the “age” variable, was standardised using a formula suitable for the nominant⁵⁹:

$$z_{ij} = \begin{cases} \frac{x_{ij} - \min x_{ij}}{c_{oj} - m_{ij}} \text{ for } x_{ij} < o_{ij} \\ 1 \text{ for } x_{ij} = o_{ij}, & X_j \in N, (1) \\ \frac{\max x_{ij} - x_{ij}}{\max x_{ij} - c_{oj}} \text{ for } x_{ij} > o_{ij} \end{cases}$$

where: c_{oj} is the nominal value j^{th} of this diagnostic property belonging to the set of nominants N . The nominal value was set at 44.

In turn, qualitative variables (measured on ordinal scale) were standardised using the rank method according to the following formula⁶⁰:

$$z_{ij} = \frac{l_{ij} - 1}{k_j - 1}, (2)$$

$$(l_j = 1, \dots, k_j),$$

$$(j = m + 1, \dots),$$

⁵⁶ The described dimension of human capital referred to the frequency of cooperation of an agricultural holding manager with an adviser. The corresponding variable had three variants: lack of cooperation, temporary cooperation and permanent cooperation.

⁵⁷ This aspect of human capital involved farmer’s use of computers and the Internet for professional purposes. The corresponding variable had three variants: does not use, uses only computers, uses computers and the Internet.

⁵⁸ In support of the ZUM, it must be pointed out that it can be used to standardise positive and negative properties, as well as those equal zero. Thanks to the ZUM, standardised properties are positive or equal zero.

⁵⁹ K. Kukuła, *Propozycja budowy rankingu obiektów z wykorzystaniem cech ilościowych oraz jakościowych*, Metody Ilościowe w Badaniach Ekonomicznych, Vol. XIII/I, SGGW, Warszawa 2012, p. 9.

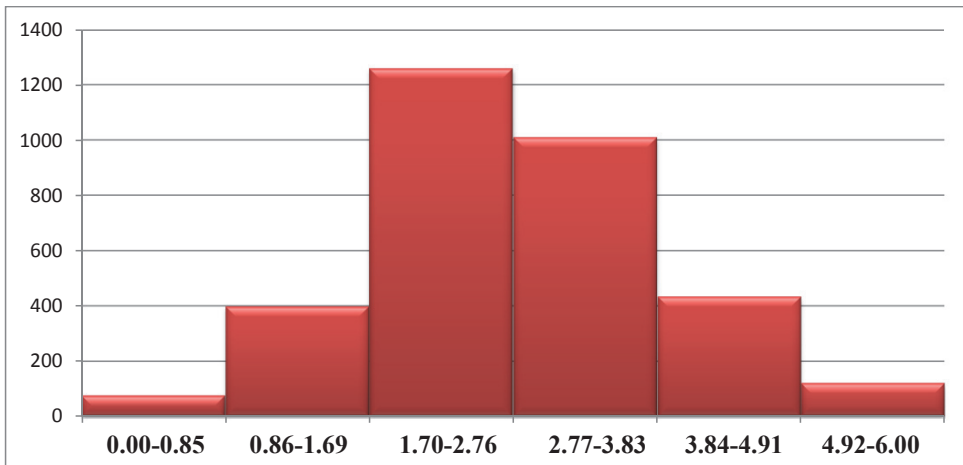
⁶⁰ K. Kukuła, *Propozycja budowy rankingu obiektów z wykorzystaniem cech ilościowych oraz jakościowych*, op. cit., p. 11.

where: l_{ij} – assessment i^{th} of this object in the scope j^{th} of this qualitative variable, k_j – number of states (assessments) j^{th} of this qualitative variable.

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While analysing data, it can be concluded that a large share of the surveyed farmers was characterised by a low level of human capital (Figure 3.4). In 2011, the total average index of human capital among respondents was 2.8. In the case of at least half of farmers, it stood at 2.7. In turn, its value did not exceed 3.4 for three-quarters of them. At the same time, it should be noted that the highest possible value of human capital could amount to 6.0⁶¹. The low level of a synthetic measure was due to low values of most of the component variables in the population concerned. This was particularly true for the use of ICTs in a professional capacity, cooperation with agricultural advisers, as well as the level of agricultural education.

Figure 3.4. Distribution of the synthetic variable of human capital of farm managers



Source: Own calculations based on the IAFE-NRI survey data of 2011.

⁶¹ The analysis of data indicates that the distribution of the synthetic variable was asymmetric to the right. The increased concentration of observation units concerned its low values. This is confirmed by the values of selected descriptive statistics: the skewness (0.4), mean and median values.

The research conducted revealed that the vast majority of farmers (82%) did not use a computer and the Internet for running their agricultural holdings. These tools were not prevalent in the management of agricultural activity. This is partly due to the low availability of high-speed broadband connections in rural areas. However, most of respondents did not perceive these devices as useful in daily work. Farmers using computers and the Internet for professional purposes accounted for only 18% of all respondents. The latter almost always used their computers to surf the Internet. It must be assumed that specialised software was used very rarely for conducting agricultural production. Farmers were slightly interested in such solutions, which were characteristic of people conducting large-scale specialised production⁶². Respondents using ICTs preferred to seek information via the Internet. They most frequently visited the websites of the Agency for Restructuring and Modernisation of Agriculture. The popularity of these sites was due to the fact that this institution was responsible for the distribution of support under the EU and national agricultural policy, in particular direct payments and CAP Pillar II instruments. Moreover, farmers frequently visited the websites of the Ministry of Agriculture and Rural Development and the Agricultural Market Agency. The websites of the Agricultural Social Insurance Fund and other industry websites were relatively less frequently visited by respondents.

What is more, the low level of human capital of farmers was also due to a low tendency of agricultural holding managers to cooperate with agricultural advisory services. Every fourth respondent cooperated with their representatives temporally, and every tenth – permanently. Over two-thirds of respondents used no advisory services. As in the case of computers and the Internet, the vast majority of farmers declared no need to seek advice of this type. Other barriers, such as limited availability of the services described or their excessive cost, played a marginal role. Poor formal preparation of farmers to pursue their profession had a significant negative impact on the level of their human capital. As a matter of fact, most of them had no agricultural education. Only less than one-quarter of respondents completed agricultural studies at schools of different types. These were generally vocational and secondary schools, less often universities and higher education institutions. The relatively smallest group of usually older farmers completed agricultural courses.

In accordance with the data available, the level of general education of farmers was typically low. People with basic vocational education were the majority in this group. They accounted for 45% of all respondents. Agricultural

⁶² E. Lorencowicz, J. Figurski, *Ocena wykorzystania komputerów i internetu w indywidualnych gospodarstwach rolnych*, Acta Sci. Pol., Technica Agraria 7(3-4) 2008, Lublin 2008, p. 31.

holding managers with secondary (27% of all respondents) and primary (20%) education constituted a much smaller group among the interviewees. Farmers with higher education were the relatively smallest group among all respondents.

As regards the age of farmers, the sample was dominated by middle-aged people. At least half of them did not exceed 49 years of age. Very young and old managers constituted relatively small groups.

The empirical evidence collected revealed that the subjective health condition of farmers was satisfactory which, in the case of a significant number of respondents, positively influenced the human capital index. More than 48% of all respondents rated their health as good and 37% – as average. There were few respondents who declared their health condition as very good and very poor.

The analyses undertaken suggest that the level of human capital of farmers was associated with the selected characteristics of agricultural holdings. In particular, the level of human capital relatively most strongly and positively correlated with the scale of commodity production and the area of agricultural land of an agricultural holding (Table 3.7)⁶³.

Farms with a very small and small cultivated area, as well as those with no or little production for sale were usually managed by farmers with a low level of human capital. In units with 1 to 2 ha of agricultural land and with 2 to 5 ha such farmers constituted less than half of respondents. A similar situation was observed in the case of farms without commodity production. In turn, units with the largest area (30 ha and more) and very large scale of sold agricultural production were usually managed by farmers with a high level of human capital. It is worth noting that the relationship between the level of human capital and the area of a farm or its production performance was considered solely for statistical purposes and concerned the coexistence of the characteristics at issue.

The increased concentration of high-quality human capital on market-oriented farms and in units with large agricultural land areas was also reflected in information on regional disparities in the level of the synthetic indicator (Table 3.7). Farmers with a high level of human capital run their units relatively most frequently in the Central-Western macroregion. They accounted for 27% of all local managers. These areas are usually associated with developed and specialised agriculture, which, at the same time, requires highly qualified labour resources. In contrast, the relatively lowest share of people with a high level of

⁶³ The intensity of the relationship between farmer's human capital and the value of commodity production measured using the Spearman's rank correlation coefficient was 0.43. In turn, the value of the same statistics for "human capital" and "area of agricultural land of a farm" variables was 0.40.

human capital among all managers was observed in South-Eastern Poland (12%). This region was traditionally characterised by considerable land fragmentation and domination of subsistence farms, which are often a place of living for their users, a hobby or a way to self-supply food. Due to the characteristics of the settlement network and the proximity of urban centres in the rural areas of Świętokrzyskie, Małopolskie, Podkarpackie and Śląskie voivodeships, most of the agricultural population was engaged in non-agricultural professional work and often had little to do with agricultural production. Especially in South-Eastern Poland, but also in rural areas in other parts of the country, many holding managers limited their involvement in agricultural activity. Among farmers working in their agricultural workshops on a part-time, seasonal or occasional basis, those with a low level of human capital formed the largest group.

Table 3.7. Level of human capital of managers and the selected characteristics of agricultural holdings

Value of commodity production	very low	low	average	high	Area of arable land (ha)	very low	low	average	high
lack of production	25.5	48.9	20.3	5.3	1-2	23.6	48.4	22.5	5.5
very low	19.4	43.8	28.8	8.0	2-5	19.5	47.9	25.6	7.0
low	11.7	40.5	36.1	11.7	5-10	10.8	37.7	37.5	14.0
average	6.9	32.9	39.8	20.4	10-15	9.6	27.7	38.9	23.8
high	2.7	18.6	33.4	45.3	15-30	6.2	23.2	35.8	34.8
in total	14.4	38.1	30.6	16.9	30 and more	0.6	7.8	26.3	65.3
<i>Spearman's rank correlation coefficient = 0.43; t = 27; p = 0.00</i>					in total	14.4	38.1	30.6	16.9
					<i>Spearman's rank correlation coefficient = 0.40; t = 24; p = 0.00</i>				
Macroregion	very low	low	average	high	Labour input	very low	low	average	high
I	9.2	27.9	36.3	26.6	seasonal or occasional	24.7	44.0	23.8	7.5
II	14.3	38.9	31.2	15.6	permanent (part-time)	13.9	44.0	29.3	12.8
III	17.4	43.4	27.2	12.0	permanent (full-time)	9.1	30.5	35.3	25.1
IV	9.7	36.7	28.4	25.2	in total	14.4	38.1	30.6	16.9
V	15.9	27.4	35.9	20.8	<i>Spearman's rank correlation coefficient = 0.27; t = 16; p = 0.00</i>				
in total	14.4	38.1	30.6	16.9					
<i>Cramer's V coefficient = 0.10; df= 12; p = 0.00</i>									

Source: Own calculations based on the IAFE-NRI survey data of 2011.

The analyses presented in the study document a low level of human capital among a significant part of the farmers surveyed. These results are consistent with other papers⁶⁴. Nevertheless, it should be stressed that they present only an attempt to quantitatively describe a hard-to-measure phenomenon. The level of qualification of labour force is determined with many different tools that take account of the quality of knowledge and practical skills, targeted at a particular segment of the labour market. One has to consider the fact that the proposed human capital index combines several indicator variables relating to the different characteristics of an individual involved in the management of agricultural production. In this context, it can be argued that possibilities for combining these characteristics into a single summary measure are limited, since they are hardly comparable properties⁶⁵. The approach used to determine the human capital of farmers resulted from a subjective expert analysis and a review of the literature. However, the choice of indicator variables partially restricted the type and nature of the empirical data collected. Furthermore, the approach to present the quality of the labour factor represents a specific current of economic research, recognising the selected characteristics of employees as inputs, which may be the object of investment and transmission in other forms of capital (primarily, in economic capital)⁶⁶. With regard to the agricultural sector, this interpretation of the phenomenon in question is relatively closer to conventional efficiency-oriented agriculture based on agricultural research achievements. In this approach, farmers are primarily recipients of knowledge generated by scientific, advisory institutions or by enterprises operating in their environment⁶⁷. There are interpretations questioning such a way of transferring information to agricultural producers and criticising its narrow scope. In fact, it is supposed not to take account of local practical knowledge generated at the level of an agricultural holding thanks to combining physical and intellectual work of farmers associated with a specific social and physical environment, as well as the achievements of other disciplines, especially biological sciences. The presented disadvantages of numerous agricultural knowledge transfer systems are considered to be a barrier to the development of sustainable agriculture.

⁶⁴ In accordance with these studies, the level of human capital of farmers in 2009-2011 was low and belonged to one of the lowest among all the analysed socio-professional groups. Under the terms described, the index was lower only in the case of pensioners.

⁶⁵ S. Steinber, *Human Capital: A Critique*, The Review of Black Political Economy, Vol. 14, No. 1, SpringerLink 1985, p. 69.

⁶⁶ Such an approach ignores the ways to attract the resources described, as well as does not take into account the existing structural constraints to their development.

⁶⁷ J.Jr. Kloppenburg, *Social Theory and De/reconstruction of Agricultural Science: Local Knowledge for an Alternative Agriculture*, [in:] K. Górlach (ed.), *Sociologia wsi w Ameryce Północnej*, UMK, Toruń 1998, pp. 240-247.

Regardless of doubts related to the theoretical and methodological foundations of research on the measurement of the quality of the labour factor in the agricultural sector, a low level of human capital among Polish farmers should not be assessed purely negatively. The in-depth analysis of available data documents positive developments regarding the majority of the elements that make up the index described. In particular, they were observed in 2000-2011. This period brought a significant improvement in the level of general education of farmers⁶⁸. What is more, computers and the Internet, as well as the services of agricultural advisory institutions became increasingly popular among agricultural holding managers⁶⁹. Their subjective health condition improved, so did the level of their agricultural education⁷⁰. However, the surveyed population became slightly older⁷¹. It should be assumed that the average value of the proposed measure of human capital of farmers is about to grow in the future, mainly due to higher education levels, wider use of computers and the Internet, closer cooperation with advisory bodies, as well as better health condition. In the light of demographic developments and structural changes in the agricultural sector, the process of aging of agricultural holding managers is expected to continue.

Today, human capital is considered to be a resource significantly determining the results of economic activity. Its importance is also emphasised in the development of the agricultural sector. The research conducted proves a low level of human capital in relation to a significant share of the farmers surveyed. This is largely due to historical conditions. Most of the agricultural holding

⁶⁸ In accordance with the IAFE-NRI data, the share of agricultural holding managers with secondary and higher education in 2000-2011 increased by 4.4 pp and 11.7 pp, respectively (i.e. from 2.5 to 6.9% and from 15.8 to 27.5%).

⁶⁹ The IAFE-NRI survey results prove that the share of holding managers permanently and temporarily cooperating with agricultural advisers in 2000-2011 increased by 19 pp (i.e. from 17 to 36%). In turn, the research carried out under the *Social Diagnosis* in 2003-2011 documents an increase in the share of farmers using the Internet by 31 pp (i.e. from 2 to 33%), cf. *Use of Information and Communication Technologies*, [in:] J. Czapiński, T. Panek (eds.), *Social Diagnosis 2011. Objective and subjective quality of life in Poland*, Contemporary Economics, vol. 5, issue 3, Special issue, University of Finance and Management in Warsaw, Warszawa 2011, p. 310.

⁷⁰ The authors of the *Social Diagnosis* argue that physical well-being was positive and relatively more favourable in the case of farmers, cf. J. Czapiński, *The quality of life in Poland – winners and losers*, [in:] J. Czapiński, T. Panek (eds.), *Social Diagnosis 2013. Objective and subjective quality of life in Poland*, Contemporary Economics, vol. 7, Special issue, University of Finance and Management in Warsaw, Warszawa 2013, p. 402. In turn, the IAFE-NRI studies reveal that the share of people with agricultural school education among all agricultural holding managers in 2000-2011 increased slightly, i.e. by 1 pp (from 23 to 24%).

⁷¹ In 2000-2011, the shares of farmers in older age groups increased, unlike the shares of those in younger age groups, which decreased. The average age of respondents increased by three years (from 46 to 49 years) and the median age – by 4 years (from 45 to 49).

managers surveyed were middle-aged and their educational activity coincided with a period characterised by a lower valorisation of formal education than at present. Moreover, they were generally not willing to apply ICTs in their daily professional practice. It should also be borne in mind that a significant group of the managers surveyed was not fully engaged in running agricultural holdings for a long time due to non-agricultural employment. The foregoing explains the shortage of professional agricultural qualifications amongst these people or their failure to take any actions aimed at broadening knowledge. Regardless of the above, there are clear signs of improvement in the whole population surveyed with respect to most of the dimensions of human capital. This trend is also expected to continue in the future.

The interconnection of both human and economic capitals was another regularity observed as a result of the analyses undertaken. The former was usually characteristic of market-oriented agricultural holdings with large agricultural land area and certain development potential. This was significantly determined by synergistic feedback⁷². Economically strong holdings, which offered opportunities for earning a satisfactory income, attracted highly qualified young people to work in agriculture. As a result, the high quality of the human factor ensured the same or better market position. Positive economic phenomena on other farms were hard to achieve, which was related to shortages in the specified types of capital, but also certain attitudes of their users. This increased tendency of bringing human and economic capitals together in the domestic agricultural sector was also reflected in data on the spatial distribution of human capital. Farmers with a high level of human capital were overrepresented in Central-Western Poland, dominated by efficiency-oriented and commodity agriculture. Relatively fewer people with these characteristics led their agricultural activity in South-Eastern part of the country, with a significant share of traditionally-run semi-subsistence or non-market farms.

⁷² J.St. Zegar, *Economic Size of Farms and their Sustainability – The Case of Poland*, [in:] *Growth and Competitiveness Factors of the Agri-Food Sector in Poland and Ukraine Against the Background of Global Trends* (collective work), Szczecin 2013, p. 141.

Chapter 4

Employment in Polish agriculture – rationalisation processes and directions of non-agricultural rural development

4.1. Economic activity⁷³ of people related to family farms⁷⁴

A family agricultural holding is a specific place of work, since it operates primarily thanks to the work of people associated with it⁷⁵. At the same time, a reasonable use of family labour force is one of its tasks⁷⁶. For this reason and due to the nature of agricultural production (seasonal nature of work and its periodic accumulation), the need of agricultural family members to engage in production activity is relatively large, yet very diverse. That is why people associated with individual agricultural holdings⁷⁷ have higher economic activity than the rest of the population⁷⁸. This thesis is also confirmed by the results of field studies and the scale of diversity is illustrated by the economic activity rate⁷⁹ of the populations selected in the labour market (Table 4.1).

Having analysed developments in the economic activity rate, it can be concluded that each surveyed population was increasingly less active in the labour market in the period concerned. These trends were particularly strong in the group of the rural population, especially following the EU accession. Consequently, data from field studies reveal that in 2011, 67.3% of people aged 15+

⁷³ The analysed period was 1992-2011, with a particular emphasis on 2000-2011. This approach was determined by the availability of comparable empirical data and intensive developments in the conditions of functioning of Polish agriculture associated with integration into the EU economic structures and globalisation.

⁷⁴ In line with definitions adopted for the labour market and economic activity, unless otherwise stated, the analysis applies to people aged 15+ from families with a user of an individual agricultural holding.

⁷⁵ F. Tomczak, *Gospodarstwo rodzinne i jego ewolucja*, [in:] *Gospodarstwo rolnicze wobec wy-mogów współczesnego rynku i Unii Europejskiej*, SGGW, Warszawa 1997; F. Tomczak, *Gospo-darstwo rodzinne*, [in:] *Encyklopedia Agrobiznesu*, Fundacja Innowacja, Warszawa 1998.

⁷⁶ A. Woś, *Rolnictwo polskie 1945-2000. Porównawcza analiza systemowa*, IERiGŻ-PIB, Warszawa 2000.

⁷⁷ The study defines people from families with a user of an individual agricultural holding as the agricultural population.

⁷⁸ J.St. Zegar, *Źródła utrzymania rodzin związanych z rolnictwem*, IERiGŻ-PIB, Warszawa 2006.

⁷⁹ The economic activity rate is the share of the employed and jobseekers in the total population (of the group concerned). As regards the analysed community of the agricultural population, the rate was at most only about 0.7 pp above the employment rate. However, the difference gradually decreased to reach 0.3 pp in 2011. This is due to the family organisation of labour dominant in agriculture. This means that open unemployment among the agricultural population is not only relatively small, but also follows a downward trend.

related to a user of a family farm were economically active, compared to the economic activity rate in 2005 which stood at 79.6%. This means that the economic activity rate of the farming population in 2005-2011 decreased by 12.3 pp, which is almost 2.1 pp per year on average. Thus, the drop in the economic activity of the population in question recorded at the time was twice higher than that of 1992-2005, when the average decline in the economic activity rate of the agricultural population reached 1.0 pp.

Table 4.1. Developments in the economic activity of the selected groups of the population in Poland

Year	Economic activity rate (%)		
	population		
	urban*	rural*	including the farming population**
1992	59.5	65.5	93.3
1996	56.4	60.3	90.7
2000	55.8	57.5	89.1
2005	54.2	56.0	79.6
2011	50.6	53.7	67.3

Source: Based on * LFS results for selected periods: *Aktywność ekonomiczna ludności Polski w latach 2003-2007, CSO and Podstawowe informacje o sytuacji demograficzno-społecznej ludności Polski oraz zasobach mieszkaniowych. Wyniki Narodowego Spisu Powszechnego Ludności i Mieszkań 2011, CSO, Warszawa*; ** *The IAFE-NRI surveys of 1992, 1996, 2000, 2005 and 2011.*

The decline in economic activity was mainly associated with a lower level of involvement of the learning youth, women and post-working age people in family agricultural activity (Table 4.2).

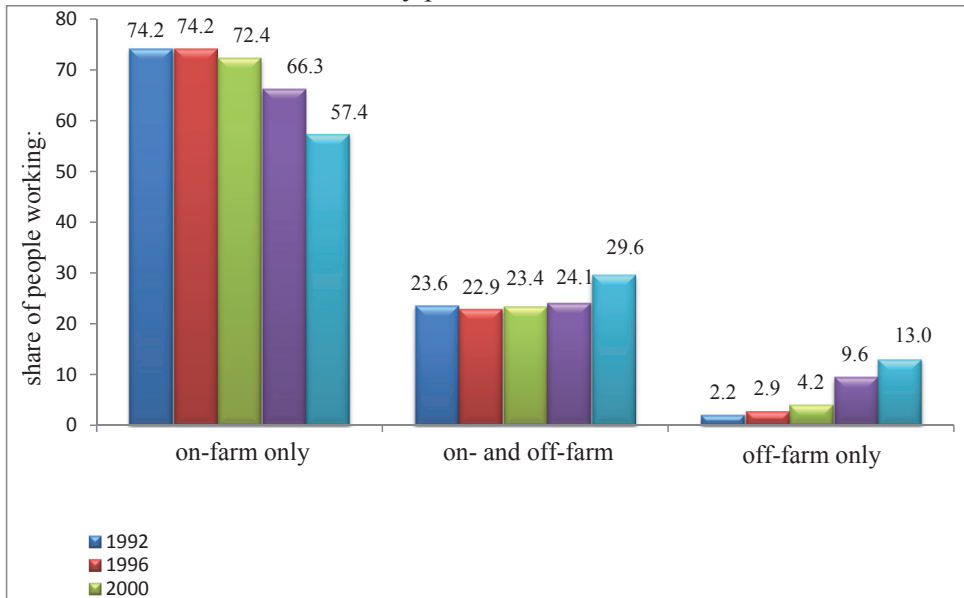
Table 4.2. Developments in the economic activity of the farming population by age and sex

Year	Economic activity rate						
	in total	including					
		by economic age groups*				post-working age	women
		pre-working age	working age		post-working age		
of mobility	of non-mobility						
1996	90.7	73.9	95.5	96.1	65.7	83.9	
2000	89.1	72.7	94.6	95.2	61.5	83.6	
2005	79.6	43.2	88.4	92.5	50.6	74.6	
2011	67.3	3.9	83.6	91.7	39.2	58.5	

Source: Based on the IAFE-NRI surveys of 1996, 2000, 2005 and 2011.

This situation resulted from a decrease in the demand for occasional labour due to higher mechanisation of agricultural production. The research shows that the developments in the economic activity of the farming population were accompanied by continuous changes in its location. These trends are reflected in the structure of the employed by their place of work (Figure 4.1).

Figure 4.1. Developments in the structure of the agricultural population by place of work



Source: Based on the IAFE-NRI surveys of 1992, 1996, 2000, 2005 and 2011.

At the same time, as in the case of the economically active farming population in 1992-2000, developments in the structure of employment by place of work were relatively minor. The share of people working in their individual agricultural holdings decreased slightly (from 74.2 to 72.4%). Nevertheless, the share of those employed exclusively off a family farm in the total working farming population almost doubled. The affected group of the working farming population was still small (4.2%). In parallel to these trends, a relatively constant share of people working on and off their family farm was observed.

Along with the advancement of adaptation of the Polish economy to operate under competitive conditions, the diversification of economic activity of the farming population notably strengthened. This was largely due to increasing employment opportunities in Poland and abroad. As a result, 57.4% of working members of farming families in 2011 were engaged only in their own agricultur-

al activity and 13.0% – exclusively off their family farm. In 2005-2011, the share of the employed from farming families combining their economic activity with working on and off their units – although previously stable – slightly increased (from 23.6 to 29.6%).

The research conducted proves that the scale of agricultural activity has a bearing on opportunities for the rational use of labour resources of a family with a user of an individual agricultural holding⁸⁰, which translates into the amount of earned income from work on a family farm. Consequently, this justifies differences in the advancement of diversification of economic activity of the agricultural population associated with particular groups of agricultural holdings. This is evidenced by, *inter alia*, the share of the employed exclusively in agricultural production growing along with the area of a holding, which still determines the volume of production and the amount of agricultural income under Polish conditions⁸¹.

In accordance with data from field studies, the diversification of economic activity of people related to larger area family agricultural holdings accelerates (Table 4.3). However, just like earlier, the share of those working exclusively on a family farm in 2011 grew from 39.6% (39.0% in 2005) in the group of units with 1-2 ha of agricultural land to 79.4% (82.0% in 2005) in 30 ha units and larger.

In summary, transformations in the structural distribution of the population by place of work were continuous in nature and clearly intensified after 2000. The ongoing transformations indicate that a growing number of people from farming families begin to actively seek employment alternatives, often completely giving up work on a family farm. There are trends to rationalise employment and hire only needed resources in an agricultural holding. This process is proven by a decreasing number of family members engaging in work on a farm. This thesis is also confirmed by the dwindling importance of a family farm as a place of economic activity for the rural population, especially as an exclusive place of work (Figure 4.2). These trends accelerate along with the advancement of functioning of our agriculture under market conditions and in the EU economic structures.

⁸⁰ I. Frenkel, *Struktura demograficzno-zawodowa ludności wiejskiej w świetle wyników Narodowego Spisu Powszechnego 2002*, [in:] *Uwarunkowania i kierunki przemian społeczno-gospodarczych na obszarach wiejskich*, A. Rosner (ed.), IRWiR PAN, Warszawa 2005.

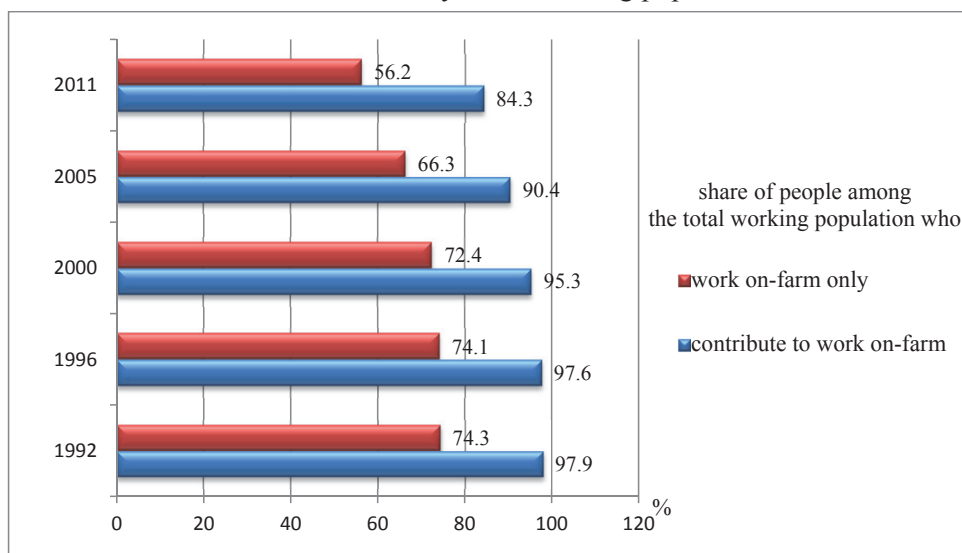
⁸¹ A. Szemberg, *Ludność i praca (wyniki ankiety 1996)*, IERiGŻ-PIB, Warszawa 1997; A. Szemberg, *Ludność i praca w gospodarstwach rolnych*, IERiGŻ, Warszawa 2001; B. Karwat-Woźniak, P. Chmieliński, *Population and labour in family farming in Poland*, series Multi-Annual Programme 2005-2009, Vol. 28.1, IERiGŻ-PIB, Warszawa 2006.

Table 4.3. Agricultural population by place of work and size of a farm

Size groups (ha of agricultural land)	Year	Share of the employed		
		on-farm only	on- and off-farm	off-farm only
		Row in total = 100		
1-2	2005	39.0	42.0	19.0
	2011	39.6	40.7	19.7
2-5	2005	47.4	37.4	15.2
	2011	49.5	35.3	15.2
5-10	2005	66.4	23.7	9.9
	2011	60.3	29.4	10.3
10-15	2005	85.2	10.9	3.9
	2011	69.4	21.8	8.8
15-20	2005	77.3	16.6	16.6
	2011	69.5	20.3	10.2
20-30	2005	80.8	13.6	5.6
	2011	72.8	16.5	10.7
30 and more	2005	79.5	16.5	4.0
	2011	79.4	13.0	7.6

Source: Based on the IAFE-NRI field studies of 2005 and 2011.

Figure 4.2. Importance of an individual agricultural holding as a place of economic activity of the farming population



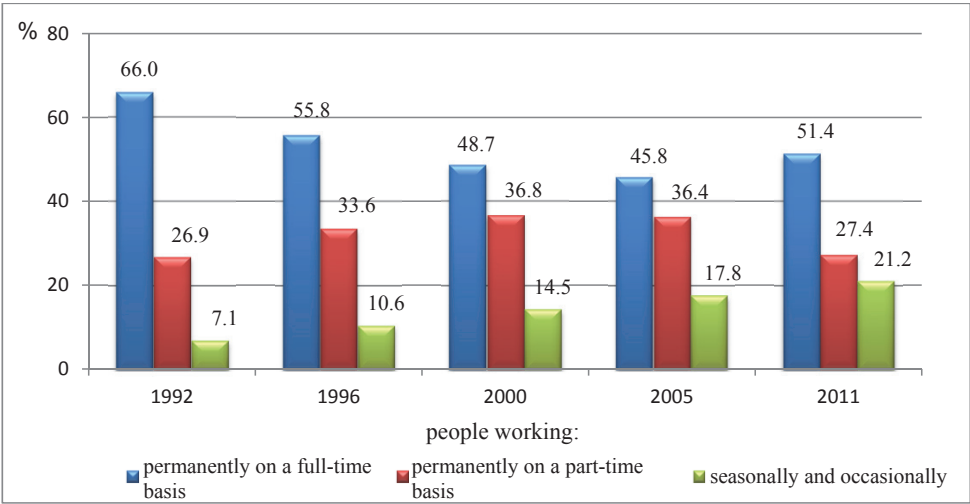
Source: Based on the IAFE-NRI surveys of 1992, 1996, 2000, 2005 and 2011.

Despite this decline, in 2011, the majority (84.3%) of economically active farming family members aged 15+ continued to work in their agricultural holdings, being the only place of employment for over half of them (56.2%).

Nevertheless, it should be noted that the share of people contributing to work on their own farm in 1992-2011 decreased on average by 0.7 pp per year, while the share of people from farming families engaged in work on a farm in 2000-2011 declined on average by 1 pp per year. As regards those working only in a family agricultural holding, the corresponding rates were about 0.9 and 1.5 pp, respectively.

Furthermore, the research reveals that the drop in the population engaged only in agricultural activity brought also changes in its structure in terms of the amount of work performed (Figure 4.3).

Figure 4.3. Transformations in the structure of people working only on a family farm by amount of work performed



Source: Based on the IAFE-NRI surveys of 1992, 1996, 2000, 2005 and 2011.

The rate of these transformations was different in the specific periods concerned, so did their directions. After all, it can be concluded that the transformations in the amount of work performed by the population engaged only in agricultural activity were primarily reflected in a decline in the share of permanent full-time farm workers (from 66.0 to 51.4%) and a 3-fold increase (from 7.1 to 21.2%) in the share of those seasonally or occasionally engaged in agricultural activity. In 1992-2011, there were no changes in the share of permanent farm workers, but working less than 8 hours a day (26.9-27.4%).

In short, the trends of changes in the location of economic activity of the agricultural population surveyed are confirmed by the diversification of its economic activity and the professionalisation of employment in family agricultural holdings. Despite these changes, they also document a still relatively large group of people contributing fairly little to work. The size of this group proves the scale of the untapped labour potential of the farming population.

Changes in the economic activity of the farming population, particularly the dwindling importance of a family farm as a place of economic activity for this population, are also reflected in decreasing agricultural *labour inputs*.

In accordance with data from field studies, just like the past decade of the last century, 2000-2011 brought another decline in agricultural labour inputs (Table 4.4). In 2000-2011, this rate dropped from 15.3 to 10.0 AWUs per 100 ha of agricultural land, i.e. by 34.6%. This means that the rate throughout the mentioned period (2000-2011) decreased on average by 3.1% per year, compared to 2.6% in 1992-2011.

Table 4.4. Developments in the level of labour inputs in individual agricultural holdings

Year	Annual Work Units (AWUs)				Rate of changes			
	In total, per		including		In total, per		including	
	farm	100 ha of land	farm	100 ha of land	farm	100 ha of land	farm	100 ha of land
1988	1.44	19.7	1.41	19.2	96.0	98.5	97.2	98.4
1992	1.50	20.0	1.45	19.5	100.0	100.0	100.0	100.0
1996	1.42	17.2	1.37	16.6	94.7	86.0	94.5	85.1
2000	1.33	15.3	1.27	14.7	86.7	76.5	86.7	75.4
2005	1.19	12.4	1.13	11.8	79.3	62.0	77.9	60.5
2011	0.96	10.0	0.93	9.7	64.0	50.0	64.1	49.7

Source: Based on the IAFE-NRI field studies of 1988, 1992, 1996, 2000, 2005 and 2011.

The relatively high propensity to rationalise employment, which was observed after 2000, should be primarily attributed to an increase in both the advancement of land concentration⁸² and the number of large-area farms⁸³, as well as to better technical infrastructure of farms, especially machinery and equipment

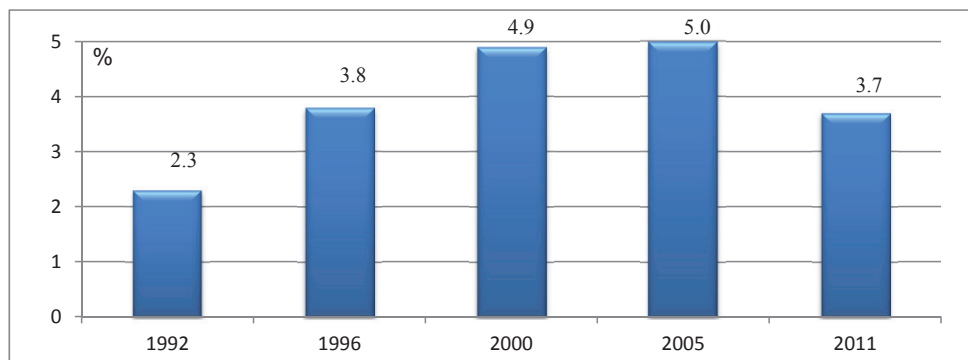
⁸² Data from field studies show that the average area of an agricultural holding in 2000-2011 grew on average by 1.3% per year (from 8.5 to 9.7 ha of arable land), compared to 0.9% in 1992-2000.

⁸³ The share of 30 ha holdings and larger in 2011 among the holdings surveyed was 5.6%, compared to 4.2% in 2005, 2.9% in 2000, 2.1% in 1996 and just 1.1% in 1992.

enabling comprehensive mechanisation of agricultural production⁸⁴, whose emerging effects reduced the demand for labour. These transformations were also stimulated by increased opportunities for economic migrations, mainly to the so-called EU-15. Additionally, labour outflows from Poland not only facilitated a drop in the supply of labour, but also stimulated the creation of new jobs, which was associated with the growing demand as regards families whose members were emigrants⁸⁵.

The decline in labour inputs in individual agricultural holdings was due to a drop in labour inputs of family members, as family labour force dominated total labour inputs in agricultural activity. In general, the significance of hired labour remained minor. These trends are confirmed by both general statistical data and the results of the IAFE-NRI field studies (Figure 4.4). Moreover, after an increase (from 2.3 to 5.0%) in 1992-2005 in the share of external labour force in total agricultural labour inputs in the individual agricultural holdings surveyed, the trend reversed. In 2011, the rate dropped to 3.7%.

Figure 4.4. Developments in the share of hired labour in total labour inputs in agricultural activity on farms



Source: Based on the IAFE-NRI surveys of 1992, 1996, 2000, 2005 and 2011.

⁸⁴ Data from field studies reveal that the share of well-equipped households with tractors in 2000-2011 increased from 16 to 33%. This also confirms mechanisation advances in the entire manufacturing process. At the time, the number of holdings with a set of machines allowing for mechanisation of the whole technological process grew by almost 25%. These changes were almost 3 times faster than throughout the 1990s.

⁸⁵ J. Rosiek, *Procesy migracyjne w Unii Europejskiej a funkcjonowanie rynku pracy w Polsce*, [in:] *Wykorzystanie zasobów pracy we współczesnej gospodarce*, D. Kopycińska (ed.), Uniwersytet Szczeciński, Szczecin 2007.

4.2. Economic activity of farm managers

Pursuing the most optimal use of labour resources is one of the key tasks of agricultural holding managers. Given the family character of agricultural holdings in Poland and the relatively strongly fragmented area structure, the decisions of managers in this respect include not only the scope of involvement of family members in running the activity, but also the level of involvement of a farm manager. From the perspective of a household and its budget, the scale of involvement in agricultural activity, its complete cessation or a decision to combine it with other forms of earning a living depend on the economic strategy chosen, which is primarily targeted at economic benefits. Decisions on the level of involvement of farm managers and their family members in agricultural activity are preconditioned by the scale of production of a farm which – under Polish conditions – is still largely dependent on its area of land, technical infrastructure and opportunities for non-agricultural sources of income⁸⁶. The rather good, against the European background, age structure and the improving educational structure of agricultural holding managers facilitate their professional mobility, while the decision to diversify the economic activity of farmers, especially as regards small holdings, allows them to further pursue their activity, even if the scale of production is relatively small.

The concept of the European agricultural model assumes duality of its functions which, apart from food production objectives, encompasses social and environmental functions as well. This model supported by the EU measures assumes the co-existence of large farms able to ensure food security with smaller ones, whose functioning would be related to the maintenance of public goods, which mainly include rural landscape and cultural values, as well as the state of the natural environment⁸⁷. Globalisation exerts a pressure on agriculture to minimise the costs of land use and labour, and thereby to industrialise agriculture⁸⁸.

This pressure is a natural consequence of market processes, but it constitutes a threat to the European agricultural model, which allows for a certain decrease in efficiency⁸⁹ (and thus competitiveness) for the benefit of protection

⁸⁶ Cf. B. Karwat-Woźniak, *Charakterystyka gospodarstw rolnych uznanych przez użytkowników za rozwojowe*, Komunikaty, Raporty, Ekspertyzy nr 474, IERiGŻ, Warszawa 2001, pp. 5-6.

⁸⁷ Cf. *Opinion of the European Economic and Social Committee on the Reform of the Common Agricultural Policy in 2013* (2010/C 354/06), Official Journal of the European Union, C 354, 28 December 2010.

⁸⁸ Cf. S. Kowalczyk, *Globalizacja agrobiznesu: specyfika, wymiary, konsekwencje*, Zagadnienia Ekonomiki Rolnej nr 2/2010.

⁸⁹ *COPA-COGECA's memorandum on the future development of the European Model of Agriculture*, Pr(06)116F1, P(06)117F1 Brussels, 7 July 2006.

of goods recognised as public. Under such circumstances, the diversification of economic activity of the agricultural population is considered one of the key elements of efforts to maintain the agricultural model that corresponds to social expectations.

Employment for Polish individual farms is characterised by significant variation in the scope of involvement in farm work, as well as considerable spread of methods to earn a living. In accordance with data from the National Agricultural Census 2010, regardless of the amount of performed work, almost 2.4 million family members worked only in an individual agricultural holding, further 117 thousand combined their work in a family agricultural holding with paid employment, while the holding was the main place of their economic activity⁹⁰. Moreover, more and more holdings do not generate any income on a permanent basis. This situation preconditions also the level of involvement of a farm manager in the conducted agricultural activity.

More than two-thirds of managers of individual agricultural holdings surveyed in 2011 worked only in their own holding, and one-third combined this work with economic activity in the non-agricultural labour market. This share has been on an upward trend for years. The data of 2000 reveal that the share of such people constituted less than one-quarter of the total described group⁹¹. At the same time, the share of redundant labour resources among all the employed in an individual agricultural holding is still rather high.

The research also proves dependence between the number of people combining work on their own farm with paid employment in non-agricultural sectors, and the size of their unit (Table 4.5).

In accordance with data from field studies, the share of managers of smaller farms, i.e. with up to 2 ha of agricultural land, active in the non-agricultural labour market constituted almost half of all respondents in this group in 2011. This share decreases along with an increase in the size of the unit owned, while even in the case of the largest-area farm, i.e. above 20 ha of land, every sixth manager, on average, combined work in an agricultural holding with non-agricultural employment.

Among people working only in an agricultural holding, those permanent full-time agricultural workers represented only two-thirds of the group of the

⁹⁰ B. Karwat-Woźniak, P. Chmieliński, *Ludność wiejska oraz jej aktywność zawodowa i sytuacja na rynku pracy*, [in:] *Rynek pracy wobec zmian demograficznych*, M. Kiełkowska (ed.), Zeszyty Demograficzne, Instytut Obywatelski, Warszawa 2013.

⁹¹ J. Buks, B. Buks, *Cechy społeczno-demograficzne i aktywność ekonomiczna kierowników gospodarstw rolnych*, Komunikaty, Raporty, Ekspertyzy nr 495, IERiGŻ, Warszawa 2005.

managers surveyed. Simultaneously, this share was significantly lower in the group of farmers from the smallest-area farms and constituted only 22% in the case of holdings with up to 2 ha of agricultural land and less than 43% as regards farms with 2-5 ha of land. These groups were characterised by part-time and occasional or seasonal involvement in farm work (Table 4.6).

Table 4.5. Managers according to the involvement in work at the farm and size groups

Share of persons	Total	Size group (ha of UAA)							
		1-2	2-5	5-10	10-15	15-20	20-30	30-50	50 and more
working on-farm only	64.0	50.6	55.8	67.2	75.1	74.8	83.4	84.1	81.1
combining on-farm and off-farm employment	36.0	49.4	44.2	32.8	24.9	25.2	16.6	15.9	18.9

Source: Based on the IAFE-NRI survey data of 2011.

Table 4.6. Economic activity of managers of individual agricultural holdings by size groups

Size groups	Working on-farm only				Working on- and off-farm		
	in total	including:			in total	including:	
		permanent full-time work	permanent part-time work	seasonal, occasional work		mainly on-farm work	mainly off-farm work
Total	100.0	63.5	20.0	16.5	100.0	9.7	90.3
1-2	100.0	22.5	32.2	45.3	100.0	1.6	98.4
2-5	100.0	42.7	33.2	24.0	100.0	2.7	97.3
5-10	100.0	72.7	16.8	10.4	100.0	9.5	90.5
10-15	100.0	84.8	10.3	4.8	100.0	20.8	79.2
15-20	100.0	89.0	9.7	1.3	100.0	30.8	69.2
20-30	100.0	91.6	4.8	3.6	100.0	54.5	45.5
30-50	100.0	93.4	5.7	0.9	100.0	65.0	35.0
50 and more	100.0	95.3	2.3	2.3	100.0	80.0	20.0

Source: Based on the IAFE-NRI survey data of 2011.

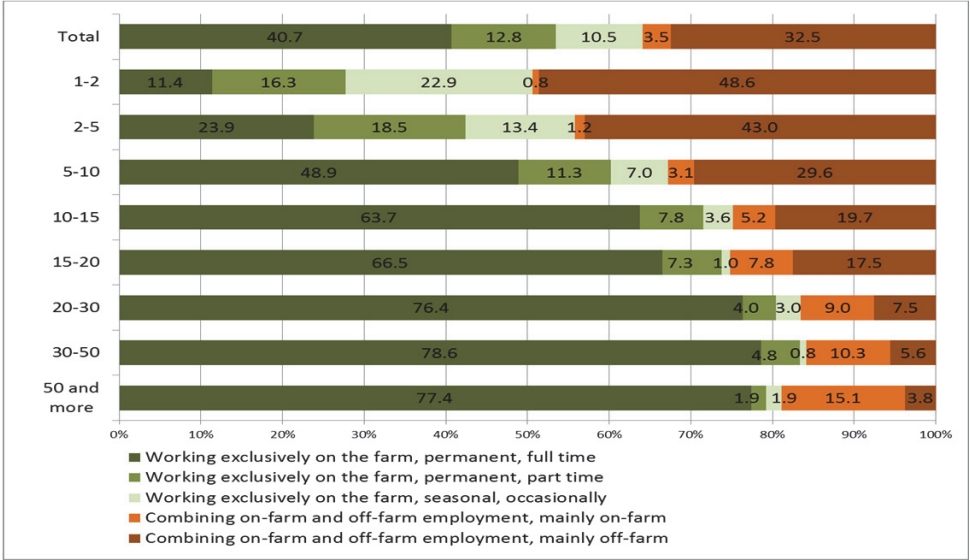
Labour inputs of managers increased along with the size of their area of land; hence the share of managers involved full-time in production activity amounted to over 90% only in units with over 20 ha of land.

Similar relations may be observed in the case of holding managers, who combine this function with non-agricultural employment. In general, those

choosing that type of economic activity worked outside their own agricultural holding. This group amounted to 90% of the total number of people combining these two forms of employment.

When analysing dependences between farm areas and the economic activity of managers, it should be noted that permanent full-time agricultural workers represent no more than 41% of all respondents. Others do not engage in farm work, as there is no need for it, or they are active also in the non-agricultural labour market (Figure 4.5).

Figure 4.5. Economic activity of managers by size of their farms



Source: Based on the IAFE-NRI survey data of 2011.

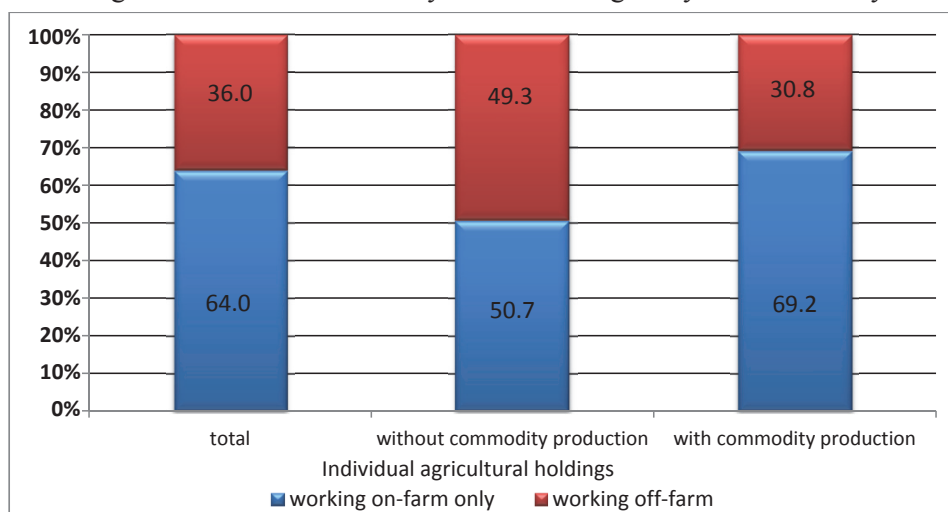
This comparison illustrates low involvement in work on farm with 1-2 ha and 2-5 ha of agricultural land, where this share amounts to 11% and 24%, respectively, and proves a high level of involvement in work outside own agricultural holdings.

It should be noted that the improving educational structure (along with the growing significance of non-agricultural education) and the relatively favourable age structure translate into a significant level of diversification of professional involvement of managers of family agricultural holdings in Poland. This is evidenced by the fact that even in the case of the largest-area agricultural holdings, farmers seek additional earning opportunities, which is possible, *inter alia*, thanks to advances in agricultural work mechanisation.

The decision of managers on the scale of involvement in farm work is closely related, *inter alia*, to **the scale of market activity** of its farm, since ensuring satisfactory returns from agricultural activity depends on having relevant production assets at one's disposal⁹².

The analysis of economic activity of the farmers surveyed according to their market activity documented the fact that managers of farms pursuing commodity production were relatively more often than others involved in work only in their units. They accounted for nearly 70%, as compared to 51% in the remaining group (Figure 4.6).

Figure 4.6. Economic activity of farm managers by market activity



Source: Based on the IAFE-NRI survey data of 2011.

At the same time, there is a significant dependence between the economic activity of managers and the volume of market-oriented production generated by their farms. Managers of units without commodity production and declaring working only in their own agricultural holding were definitely more often involved in part-time, as well as seasonal and occasional work. Nearly three-quarters of the managers surveyed reported that their very limited working time was related to lack of market activity of their farm (Table 4.7). Among farmers from holdings pursuing commodity production, this ratio was opposite – nearly three-quarters of them worked in a holding on a permanent full-time basis.

⁹² B. Karwat-Woźniak, *Gospodarstwa wysokotowarowe w rolnictwie chłopskim. Synteza wyników badań 2005-2009*, seria Program Wieloletni 2005-2009 nr 151, IERiGŻ-PIB, Warszawa 2009, p. 16.

When analysing the structure of managers working on farms active in the market, it should be emphasised that their share in full-time work differed depending on the scale of production. As regards units with production amounting up to PLN 10 thousand, only about half of managers worked full-time. Only relatively significant market activity of a farm guaranteed full involvement of its manager in the decision-making and production process. Such people accounted for 91% of the group analysed.

Table 4.7. Structure of the managers surveyed working in an individual agricultural holding by market activity (2011)

Macroregions	Working on-farm only			
	in total	including:		
		permanent full-time work	permanent part-time work	seasonal occasional work
Total	100.0	63.5	20.0	16.5
Without commodity production	100.0	26.6	24.9	48.5
With commodity production	100.0	73.9	18.6	7.4
including with commodity production:				
up to PLN 10 thousand	100.0	53.0	31.3	15.7
PLN 100 thousand and more	100.0	90.8	6.6	2.6

Source: Based on the IAFE-NRI survey data of 2011.

In general, the following regularity may be observed: the greater the scale of commodity production, the higher the share of farms managed by people working full-time only in their own agricultural holdings. However, the analysis of the structure of managers, who combined work on their own farms with non-agricultural employment, points to the crucial significance of market activity as a factor influencing the scale of differentiation in this regard (Table 4.8).

The group of agricultural holding managers not pursuing commodity production, who combine different forms of earning a living and point to their farms as the main place of work, is insignificant (below 1%).

In 2011, it was also observed that there is a strong differentiation as regards the predominant place of work of farm managers pursuing commodity production. While 76% of farm managers enjoying sales above PLN 100 thousand declared involvement in mainly agricultural work, the corresponding rate in the case of holdings with commodity production below PLN 10 thousand amounted to less than 4%.

Table 4.8. Structure of the managers combining work on-farm with non-agricultural employment by market activity

Macroregions	Working on- and off-farm		
	in total	including:	
		mainly on-farm work	mainly off-farm work
Total	100.0	9.7	90.3
Without commodity production	100.0	0.2	99.8
With commodity production	100.0	15.5	84.5
including with commodity production:			
up to PLN 10 thousand	100.0	3.8	96.2
PLN 100 thousand and more	100.0	76.6	23.4

Source: Based on the IAFE-NRI survey data of 2011.

Furthermore, it should be noted that nearly one-quarter of agricultural holding managers enjoying production above PLN 100 thousand, who combine work in agriculture with non-agricultural employment, indicated work outside a holding as their main source of income.

4.3. Unused labour resources in family farming

The statistics available reveal that the scale of unemployment registered among the rural population is relatively small, as it affects 45-50 thousand farmers. This is due to the existing legal environment and the family organisation of labour in agricultural activity. On the one hand, this form of organisation results in significant economic activity of farming family members, and on the other hand, in the persistence of a large group of people contributing little to work. This group is largely redundant in terms of its agricultural activity, since its withdrawal would be without prejudice to the level of agricultural production (marginal productivity of their work is close to zero) and basically is a measure of unused labour force in agriculture (hidden form of unemployment). What is important is not the prevalence of this phenomenon, but mainly its scale. If the level of redundant labour resources in holdings significantly exceeds the level of

the so-called hygienic unemployment⁹³, there are usually (intensified) difficulties in modernising agricultural structures⁹⁴.

The IAFE-NRI research proves a high level of latent (hidden) unemployment on family farms, which is structural in nature and results from limited earning opportunities for those who actually fail to find employment in their agricultural holdings. Given the level of technological development, this segment of the population is redundant in agriculture and has no employment opportunities in non-agricultural sectors, most often due to its inadequate qualifications and limited mobility.

The rate of hidden unemployment is hard to measure due to its complex nature. Even the so-called actual unemployment in the family economy cannot be clearly determined. For this reason, any method to determine the level of redundant labour resources carries imperfections that arise mainly from the complexity of the issue.

Moreover, data from the IAFE-NRI field studies make it possible to determine the redundant population according to a subjective criterion⁹⁵ and objective reasons. Any method to determine the level of redundant labour resources carries certain imperfections that arise mainly from the complexity of unemployment in family holdings. In determining this phenomenon on the basis of survey findings, the unused working time was considered the most appropriate criterion⁹⁶. Under this condition, based on survey findings, it can be estimated that 500-550 thousand working age people redundant from the perspective of farm needs (being a measure of estimated hidden unemployment in the agricultural sector) worked exclusively or principally in individual farming in 2011, accounting for about 16% of the working age population working exclusively or primarily in individual agricultural holdings (rate of redundant labour resources).

⁹³ An unemployment rate of 3-4% is assumed as a limit value for hygienic unemployment, i.e. the share of the unemployed in the total number of people able to work (employed and unemployed) will not exceed this rate.

⁹⁴ A. Woś, *Rolnictwo polskie 1945-2000. Porównawcza analiza systemowa*, IERiGŻ-PIB, Warszawa 2000.

⁹⁵ All surveys were performed with reference to the opinion of managers on the usefulness of work of working age family members in agricultural production, assuming that the farm concerned is to operate at least at the current level.

⁹⁶ All working age people working exclusively or mainly in an individual agricultural holding for at most three months per year were considered redundant, so did those working for over three months per year, but no more than 3 hours a day.

Improving the competitiveness of Polish agriculture, also in terms of resources, involves creating an appropriate group of economically strong farms⁹⁷. This goal can be achieved upon accelerating agrarian transformations, which entails increasing the rate of liquidation of agricultural holdings and diversification of economic activity of people working in individual agricultural holdings and, consequently, decreasing (by about 50%) the number of employees in individual farming. The pace of this process will be conditioned by an increase in the number of jobs for the rural population.

A strong competitive pressure resulting from operating under the European market conditions made agricultural holdings further specialise and concentrate their means of production. Therefore, the demand for labour force is gradually decreasing, thus causing the population to date engaged solely in agricultural activity to more often take action to diversify its sources of income⁹⁸.

4.4. Conditions for the development of entrepreneurship as non-agricultural directions of rural development

Interest in rural efforts to undertake non-agricultural economic activity is primarily due to looking for ways to improve the economic situation of the rural population, mitigating the effects of actual and hidden unemployment in rural areas, and finally improving agricultural structures⁹⁹.

The survey data of 2011 show that 79% of all the villages surveyed provided access to workplaces employing local people. In total, their number amounted to 2 020, half of which were located within the villages surveyed. On average, there were 4-5 companies in the vicinity of every village, each of them employing 6 residents on average. It is important that half of them, on average, were employed in a facility located in the village in which they reside.

Spatial differences in the prevalence of workplaces within the villages surveyed were associated primarily with a different density of manufacturing companies, the number of which ranged from 1 to 3 in the neighbourhood of the

⁹⁷ A. Sikorska, A. Kowalski, B. Karwat-Woźniak, L. Goraj, P. Chmieliński, *Instrumenty oddziaływania Państwa na kształtowanie struktury obszarowej gospodarstw rolnych w Polsce; rola systemu ubezpieczenia społecznego rolników w kształtowaniu tej struktury. Stan obecny i rekomendacje na przyszłość oraz propozycje nowych rozwiązań dotyczących tego obszaru dla systemu ubezpieczeń społecznych*, IERiGŻ-PIB, Warszawa 2009.

⁹⁸ B. Karwat-Woźniak, P. Chmieliński, *Population and labour in family farming in Poland*, series Multi-Annual Programme 2005-2009, Vol. 28.1, IERiGŻ-PIB, Warszawa 2006.

⁹⁹ M.A. Sikorska, *Procesy przekształceń strukturalnych...*, op. cit.

village concerned, depending on the macroregion analysed. The number of service facilities operating in all macroregions, excluding the Western-Central macroregion, comprised 2 enterprises.

Having analysed the structure of workplaces by their business profile, it can be concluded that service facilities were the most frequent, accounting for 42% of all entities employing residents of the villages surveyed in 2011. The remainder included mainly manufacturing companies (32%). In addition to these two main groups, there were also public entities related to the functioning of the local government, education and healthcare (25.6% of all workplaces in rural areas).

However, the analysis of the demand for labour generated by facilities of different types proved a major role of manufacturing enterprises, employing almost 60% of all those who work in companies located within the villages surveyed. Service facilities and other entities provided employment for about 20% of all people working in proximity to their place of residence. In terms of the development of local labour markets, newly established manufacturing enterprises generated the greatest demand for labour. A large share of service companies in the total number of enterprises was characteristic of local entrepreneurship and, apart from manufacturing facilities, was an important determinant of the local demand for labour. Such activity was highly flexible in adapting to market demands and to developments in general economic conditions, as evidenced by the relatively greatest fluctuation in the number of newly established and liquidated service facilities, as compared to other companies.

Changes in the business profile of companies located near the villages surveyed were accompanied by the changing ownership structure of sectors. In 2011, almost 78% of workplaces were privately owned. At the same time, state entities represented only a small share, while cooperatives were negligible.

Furthermore, research findings comprised data on the total number of people employed in workplaces operating within villages (i.e. not only those from the villages surveyed), making it possible to analyse enterprises according to the generally applied staff headcount criterion. In terms of the local labour market, it is important insofar as it often happens that several companies operating in a specific area provide employment for the majority of people working outside agriculture, thus determining the socio-economic situation of the population of the entire area (except for employment, also by creating demand, stimulating the development of regional trade and services)¹⁰⁰. This is confirmed by the research conducted, which shows that there was one or two workplaces in

¹⁰⁰ G.J. Borjas, *Labour Economics*, McGraw-Hill Irwin, New York, 2013.

the vicinity of about 5% of the villages surveyed by the IAFE-NRI employing over one-third of all gainfully employed residents of surrounding areas.

Apart from the possibility of employment in nearby workplaces, there were families in 81% of the villages surveyed, whose members conducted own economic activity. Non-agricultural activity is an important driver of local economic development and a significant source of income for families which, e.g. as a result of mounting competition, lost their agricultural livelihood or opportunities for non-agricultural employment. It is often associated with agricultural activity and conducted based on household assets (including the use of buildings, equipment).

The research revealed that own economic activity was more characteristic of non-agricultural rather than agricultural families. The research shows that the self-employed have substantial liquidity, especially in high unemployment areas. As regards the underdeveloped local labour market and resulting risk for individuals starting their own business, mainly people with poor alternative income opportunities launch their own economic activity. Agricultural families are less motivated to undertake a new economic initiative, as opposed to non-agricultural families.

Most frequently, economic operators entered the business sector. In particular, they carried out groceries and general stores. The involvement of agricultural families in itinerant trade activities (usually itinerant trade in clothing) and trade in their own agricultural products at marketplaces or fairs deserves attention. On average, two (mostly agricultural) families in each of the villages surveyed were engaged in this type of activity. They accounted for 77% of all non-stationary traders. Such activity was largely based on selling own farm-grown and home-grown (as regards non-agricultural families) products. The foregoing is evidenced by a high share (up to 89%) of families selling agricultural products, i.e. eggs, poultry, meat and vegetables, at marketplaces, within their holding and at roadside stands. The remaining assortment offered by non-stationary traders comprised clothing (almost 7%) and household chemicals (less than 3%). Home and marketplace trading activities were rarely turned into a fixed point of sale. In 2005-2011, only 8% of all non-stationary trading families from the villages surveyed changed itinerant trade into a store¹⁰¹.

¹⁰¹ P. Chmieliński, *Uwarunkowania, wizja i cele strategiczne rozwoju przedsiębiorczości wiejskiej w zakresie otoczenia instytucjonalnego, opracowanie w ramach projektu pn. Rozwój przedsiębiorczości na terenach wiejskich – diagnoza, kierunki, rekomendacje dla polityki rozwoju obszarów wiejskich*, prepared by IGiPZ PAN, FDPA for MRiRW, Warszawa 2014 (typescript).

It should be emphasised that local institutional infrastructure is crucial in supporting rural development. It includes, *inter alia*, standards, principles, organisational structures and mechanisms of action that form grounds for local development. Although local governments constitute the core of this system, information and advisory organisations play a very important role in terms of activation of rural communities, especially Agricultural Advisory Centres, local business centres (foundations, associations, incubators), consulting and advisory points or loan funds. After Poland's accession to the European Union, regional branches of the Agency for Restructuring and Modernisation of Agriculture, which now serve as a paying agency under operating policy instruments to support agriculture and rural areas being a source of information and advice for the rural population in this regard, have gained in importance¹⁰².

In a world of growing importance of non-agricultural economic activity of the rural population, future development of rural areas in Poland will be closely related to strengthening the residential (housing) function of rural areas, whose importance will grow along with the development of communications and community infrastructure, conditioning the quality of life in rural areas. The research shows that the size of the labour market will be limited not only by distance, but also travel time to a place of employment. The development of infrastructure not only hinders the migration of the rural population to urban areas, but also intensifies the opposite trends: the flow of the urban population to rural areas (primarily, however, to villages located in the vicinity of agglomerations or along major transportation routes) and circular spatial mobility.

In the 2014-2020 perspective, transformations in the socio-economic structure of the rural population will be associated primarily with a growing share of the population in the whole rural population that does not run agricultural holdings. A forecast of changes in the size of the rural population by 2035 (CSO 2009) assumes positive net internal migration as regards rural areas, mainly as a result of the outflow of the population from large cities to rural areas, especially in proximity to agglomerations. Therefore, the change in the functions of rural areas will make the share of the rural population in the national population steadily increase despite the decline in its size. These changes will be associated with an increase in the non-agricultural rural population.

¹⁰² P. Chmieliński, *Uwarunkowania, wizja i cele strategiczne rozwoju przedsiębiorczości wiejskiej...*, op. cit.

Summary and conclusions

- According to CSO data rural areas in Poland are inhabited by a significant share of the country's population (over 39%). However, the share of non-farming families has been increasing since many years. The IAFE-NRI research reveals that the last decades have brought a significant rise in the share of non-farming families among the general population of the villages surveyed. In the research sample of the population surveyed in 2011, the number of non-farming rural families, i.e. possessing no land or owning plots below 1 ha of agricultural land, represented over 60% of all respondents and was by 3 pp higher than six years ago. Thus, in relation to the period before the political transformation, the share of non-farming families in the surveyed population of rural families increased by nearly 20 pp. This process was primarily determined by a shift of the rural population from agricultural activities and its professional activation in other sectors of the economy or the end of productive activity due to reaching retirement age.
- Having analysed the mobility of the rural population based on the empirical evidence from the so-called closed surveys, it was found that its mobility increased in 2005-2011, as opposed to previous years. This applied to both farming and non-farming families. At the same time, these trends were slightly stronger among farming families, which was mainly due to an increase in socio-occupational migration in the category of rural households. Again, just like before, the highest mobility was observed among families running relatively small-area farms. These trends should be considered positive in terms of agrarian developments in domestic agriculture. In accordance with the research, a change in socio-occupational status of rural families proved to be an important feature of their mobility. In particular, it was associated with a change in status of ownership of an agricultural holding, meaning that nearly two-thirds of migrants from farming families reported the liquidation of their holding as the main reason for migration. Over one-quarter of the population pointed to family reasons. Housing issues were the most important reason for the mobility of non-farming families reported by over one-third of all migrants from these households. Almost the same share of the population reported family issues as a reason for migration; however, the group reporting economic motives was twice smaller. More than 12% of people who change their status from non-farming into farming reported taking up an agricultural holding as the main reason thereof. The importance of social mobility in determining population flows is also documented by the fact that 71% of migrants from

farming families and almost 23% from non-farming households did not change their place of residence, but rather their social status. The population of farming families affected by this process was over six times larger than the group of non-farming families. As a result, the number of non-farming households grew, as opposed to the number of farming families which dropped. These trends indicate the progressive deagrarianisation of rural areas. The research shows that the share of people who moved to surrounding villages and cities among all spatial migrants was the same (i.e. 40%). Urban areas were the main destination of migration for people leaving agricultural holdings, while migrants from non-agricultural families chose other rural areas. Data on the economic activity of mobile people before and after migration document that migration resulted not only in a drop in the size of the farming population and a reduction in scale of unused labour resources (hidden unemployment), but above all, in an increase in the wage-earning population. As regards migrants from farming families, also a two-fold decrease in registered unemployment draws attention. At the same time, these positive changes occurred in parallel to large-scale economic inactivity, which even slightly increased in the case of migrants from non-farming families. The most important factors determining the mobility of rural families include the advancement of multifunctional rural development, the situation in local labour markets, distance from major cities, the level of agricultural development (particularly, the agrarian structure of farms). The socio-demographic characteristics of migrants are also of great importance, i.e. the level of education, age and sex. A characteristic feature of migration processes was their selective nature, because migrants were relatively young and well-educated compared to the total rural population. At the same time, social migrants were relatively older and less educated than those who left the villages surveyed.

- In spatial terms, migrants from rural families of the Northern macroregion were relatively the youngest ones, and the highest level of education was characteristic of migrants from Southern Poland, especially from the South-Western macroregion. The situation was different in the group of migrants from villages located in typically agricultural macroregions: Central-Western and Central-Eastern. Migrants from these areas were, relatively, poorly educated and older. This situation was observed particularly in the first of these macroregions.
- According to public statistics the process of aging was clearly observed in both urban and rural areas. In 2012, there were 759 people aged 64+

per 1 000 children and adolescents aged 0-14 (compared to 720 in 2005 and 604 in 2000). Also the dependency ratio in 2012 reached a relatively low level of 58 non-working age people per 100 working age people, compared to 76 in 2005 and 65 in 2000. A decline in the infant mortality rate and a steady growth in average life expectancy are the most important positive signs of demographic transformations in Poland. In 2012, compared to 2004, female and male life expectancy in urban and rural areas increased by nearly 2 years, thereby significantly increasing the group of people aged 70+ to almost 1.5 million (in 2012), including more than 550 thousand people aged 80+. This situation makes society and (mainly local) authorities face new problems and tasks with respect to providing these people and their families with support and care.

- The symptoms of aging in rural areas could also be observed in the group of agricultural holding managers. Although most of them (88-90%) were still working age people, the relationship between the share of mobile and older working age managers changed. The process was characterised by a systematic decline in the share of farmers aged 18-44 and an increase in the share of managers at the age of non-mobility. Consequently, older working age people constituted the largest age group among managers of individual holdings in 2011 (52%), while in 2000 – these were farmers aged 18-44 (47%).
- Despite some signs of aging, the age structure of Polish farmers can still be regarded as relatively favourable, especially in comparison with the situation in this respect in the EU agriculture, where agricultural holding managers aged 65+ accounted for over 34%, compared to about 10% in Poland.
- An **increase in the level of education**, especially higher and primary education, has been one of the most significant positive changes in the level of human capital in rural areas over the past ten years. Almost ten years after Poland's accession to the EU, nearly every tenth rural resident had higher education. However, there was still a gap as compared to urban residents. It should be emphasised that the dispersion of rural areas necessitates a higher number of schools than in urban areas. Most educational institutions are placed under the direct supervision of local authorities, mainly the government at the local and county level. Thus, their location depends not only on the spatial and demographic structure, but also on the financial situation of the local government, which directly affects the development of educational policy in a specific area.

The IAFE-NRI surveys reveal that an increase in the level of education was observed in both of the above-mentioned rural communities, i.e. members of farming families owning an agricultural holding with over 1 ha of agricultural land and those from non-farming families.

- Nowadays, running agricultural activity takes more and more skills and extensive knowledge. This is, *inter alia*, due to modern technology and scientific research in various fields being introduced to large-scale agriculture. At the same time, farmers operate in an increasingly unstable environment.
- The analysis of available empirical data suggests that generational changes among farm managers went hand in hand with an increasingly higher level of their schooling. These changes should be considered as very positive, because the level of education has a direct impact on the speed and effects of the implementation of technical and technological innovations in agriculture. In 2011, still about 20% of managers completed only primary or lower secondary education. At the same time, the share of farmers who finished their education at the statutory level decreased significantly compared to 2000, and was almost twice lower. Both in 2000 and 2011, basic education was the most common; about 45-46% of farmers attained this level of education. At the same time, there was progress at the level of secondary and post-secondary schools (increase from 16 to 28%), as well as higher education institutions (share of managers of individual agricultural holdings who attained this level of education increased from 3% to 7%).
- The research confirmed a growth in already relatively high popularity of non-agricultural education among farmers. In 2000-2011, the share of people with non-agricultural school qualifications among managers increased from 40 to 53%. The improved level of non-agricultural professional qualifications in the analysed population should be considered as favourable, not only in terms of opportunities to diversify economic activity and find non-agricultural employment, but also own agricultural employment. Today, the effective operation of an agricultural holding requires a range of skills and competences that go far beyond conventional preparation for the agricultural profession.
- The survey data collected show that, in contrast to earlier periods, no progress in the prevalence of agricultural school qualifications was observed in 2000-2011. At this time, the share of managers with agricultural education did not change and stood at 23-24%. At the same time, the share of farmers who completed only courses preparing for the agricultural

profession decreased systematically (from 27 to 17%). Nevertheless, it should be noted that, despite the stagnation in the prevalence of agricultural education among managers of market-oriented agricultural holdings with relatively high production capacity, there was progress in professional preparation for the agricultural profession. As a result, in 2011, people with agricultural vocational school education constituted the largest group among managers of market-oriented farms with production capacity allowing for securing income comparable to that obtained from non-agricultural activity. The relatively young age of Polish managers and their steadily improving level of education is a positive signal in the efficiency-oriented reconstruction of structures in Polish agriculture.

- The analysis of data from field studies documents the relationship between the age structure and education level of farmers and economic capacity (strength) of individual agricultural holdings managed by them. In every analysed period, the greater the economic capacity (area, size of production activity), the higher the share of managers aged 18-44 with general education, at least secondary and vocational school education in the field of agriculture, and the smaller the share of post-working age farmers with professional preparation for the agricultural profession.
- The research results showed that the age structure and education level of managers of individual agricultural holdings were still differentiated from the spatial viewpoint, but macroregional differences were relatively smaller than in the case of area groups or the size of agricultural activity. Moreover, there is still a correlation between the demographic structure and education of managers and characteristics of macroregions in terms of their agrarian structure, marketability of agricultural production, the level of economic development and the availability of non-agricultural employment. In areas with a favourable area structure, large-scale commodity production and high profitability of agricultural activity, farmers are still a relatively younger group prepared better for their profession. For many years, the conditions of agricultural structures have been conducive to the professionalisation of agricultural activity in the Central-Western macroregion. In contrast, managers of individual agricultural holdings in macroregions with a relatively high level of urbanisation and the prevalence of gainful employment among the rural population were characterised by a relatively large population of older people. Such conditions were present in Southern Poland, especially in the South-Eastern macroregion, whose unfavourable climatic and natural conditions and

extremely fragmented area structure constituted serious obstacles to the development of agricultural production.

- In accordance with survey data, in 2011, a statistical Polish farm manager was male (78%), aged about 47 (every second was at the age of non-mobility), with general education at the basic vocational level (over 45%) and no school preparation for the profession (only 24% of managers completed agricultural schools). In contrast, he had school qualifications to undertake employment outside his family agricultural holding (over 53% of farmers completed non-agricultural vocational schools).
- Modern societies must put emphasis mainly on education and training, but also create favourable conditions for studying and adult education. Continuing education involves lifelong knowledge and skill development. It should be emphasised that the period concerned was characterised by unwillingness of people aged 39+ to use educational services.
- From the point of view of the economic theory, commitment to improving qualifications is one of the most important types of investments in human capital, which has a direct bearing on both the level of income and relatively lower employment insecurity. It is especially important for middle-aged and elder people, who have been economically active for many years. This is why it is so important for adults to engage in educational activity. It should be emphasised that their share, especially in rural areas, increased significantly. In 2013, as compared to 2000, it almost doubled in the age group of 20-24 and 30-39 years of age. Although there is still a huge gap between rural and urban areas in this regard, the rate of change was higher in rural rather than urban communities. However, the process of skill development by adults remains selective and has a relatively short range. It should be recognised that adult education, not only in rural areas, but also throughout the country, is still marginal. This is confirmed by a comparison with the countries of Western Europe, which shows that Poland has the lowest employment rates of people aged 55-64 which, *inter alia*, should be considered as an effect of educational inactivity. It is, therefore, necessary to increase the skills of people aged 30+, especially in rural areas, as their period of service is relatively long, while opportunities for educational activity are limited.
- All kinds of courses are a traditional form of out-of-school education in rural areas. In 2005-2011, they were held in every fifth surveyed village. Our surveys revealed that the agricultural population is highly interested in this form of education. Even in the case of non-agricultural courses,

one-quarter of participants were agricultural family members. It should be noted that the rural population reported a need for holding courses related to new forms of activity, rather than trainings directly related to agricultural production, which means less demand for agronomic knowledge and more focus on contemporary issues.

- Knowledge and information facilitate the adaptation of new agricultural developments. They also minimise business risk. In this context, access to relevant information and the ability to use it appropriately are crucial. Access to the Internet and thus owning a computer is a very important source of information that may be of economic importance for farmers. There are positive changes as regards civilisational competences understood as the ability to use digital technology by the rural population. In the last decade, the share of both rural population and farmers who use the Internet has significantly increased. More and more people in rural areas use e-mail, on-line banking, on-line calling services or search for relevant information, e.g. on healthcare.
- The health condition of the rural population was another indicator of the level of human capital under analysis. In addition to factors negatively affecting the health condition of the whole population, there are many others related to the specific nature of agricultural work and rural life. The health condition of rural residents can be improved by taking measures related in particular to improving access to healthcare facilities. The entire healthcare infrastructure must be linked with communication (i.e. provide good and smooth access to such a facility for patients and to patients for a specialised unit, as well as quick contact both by telephone and e-mail).
- Pro-health education is essential in rural areas, since farmers' behaviour in case of emergency often depends only on themselves, as they are usually completely isolated during their open-air work at the so-called one-man workplace, thus being outside the control of others.
- It must be emphasised, however, that better social situation (mainly the level of education and educational activity at large) of the rural population not only involves a civilisational dimension, but also takes in economic aspects, since it directly affects: the intensity of production, openness to innovation and economic effectiveness. When considering the assessment of the level of education and qualifications of the rural population, it can be concluded that its preparation for functioning in contemporary society and the modern labour market, especially as regards the mobile age population,

is insufficient. Therefore, increasing their chances of finding a job requires special measures aimed at enhancing their employability.

- The last decades have brought an increasing decline in the share of people working in agriculture among all employees. The scope of their involvement in agricultural activity is also changing. In 2000-2011, the population of permanent full-time farm workers decreased, while the number of those working only occasionally is gradually increasing. Hence, the growing group of the so-called farming population not involved or involved to a limited extent in agricultural work, staying economically inactive or looking for non-agricultural employment opportunities.
- The research conducted revealed that transformations in the structural distribution of the **population by place of work** were continuous in nature and clearly intensified after 2000. The ongoing transformations indicate that a growing number of people from farming families begin to actively seek employment alternatives, often completely giving up work on a family farm. There are trends to rationalise employment and hire only needed resources in an agricultural holding. This process is proven by a decreasing number of agricultural family members engaging in work on a family farm. This thesis is also confirmed by the dwindling importance of a family farm as a place of economic activity for those related to it, especially as an exclusive place of work.
- The analyses performed documented that, in spite of changes, the farming population is still characterised by relatively high (67%) economic activity, more and more frequently undertaken outside a holding. Along with the advancement of adaptation of the Polish economy to operate under competitive conditions and in the EU economic structures, the diversification of economic activity of this population strengthened. This was largely due to increasing employment opportunities in Poland and abroad. As a result, 57% of working members of farming families in 2011 were engaged only in their own agricultural activity and 13.0% – exclusively outside their holdings. The others (30%) combined their economic activity with working on and off their farms.
- A decline in the population engaged only in its economic activity in a family farm was accompanied by a change in their structure by working time. In general, these transformations were primarily reflected in a drop in the share of permanent full-time farm workers. In accordance with the research, 2000-2011 brought another decline in agricultural labour inputs. At this time, the amount of labour inputs per 100 ha of agricultural land

dropped on average by 3.1% per year, which is much more than in 1992-2011 (2.6% per year on average). However, compared to Community agriculture (6.2 AWUs per 100 ha of agricultural land), especially the EU-15 agriculture (4.1 AWUs per 100 ha of agricultural land), labour inputs in Polish agriculture are still high (10 AWUs per 100 ha of agricultural land).

- Farm managers have very different attitudes towards the agricultural activity. Having analysed data obtained from the IAFE-NRI field studies, it can be concluded that there is a correlation between the economic activity of managers of individual agricultural holdings in relation to their agrarian structure, as well as marketability of agricultural production. In the situation of Poland, the link between the marketability of farms and their area is still significant, and therefore both of them were strongly reflected in the decisions of agricultural holding managers on the scale of involvement in agricultural activity and the diversification of economic activity. It should be noted that a significant group of managers of relatively large-area units decides to combine their management with non-agricultural employment. This is possible thanks to advancements in labour-saving techniques. There is still a significant divergence in the scale of involvement of managers in work on their own farms. Historical differences in this respect do not blur, as evidenced by a high level of dual-employment observed for years among the agricultural population (including holding managers) in Southern Poland, where scale of agrarian fragmentation is high.
- However, agricultural holdings in Poland comprise a large group of units not allowing for securing satisfactory income, thus persons formally acting as managers are minimally involved in agricultural activity. At the same time, it can be concluded that a large share of managers of small agricultural holdings with small-scale or without commodity production is part of a strategy to support their families, which involves optimising the structure of income of their members and also includes decisions on the economic activity of holding managers. The European agricultural model seeks to support holdings whose operation is important from the point of view of their functions in terms of the environment and the preservation of natural and cultural heritage. In this sense, the decisions of managers of small agricultural holdings to diversify economic activity while limiting work in their own holding can be seen as positive.
- Despite the ongoing diversification of economic activity and rationalisation of employment in individual agricultural holdings, there are still

many of those contributing relatively little to work, being redundant from the perspective of the size of their agricultural activity. The size of the population is a measure of hidden unemployment in the agricultural sector whose level, in accordance with field study findings, is estimated at 500-550 thousand people.

- The analyses performed confirmed that mainly family members work in individual agricultural holdings. Work carried out by non-family staff members accounted for less than 4% of all agricultural labour inputs.

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