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# HIDDEN UNEMPLOYMENT IN POLISH AGRICULTURE IN 2005-2018 – A SIMULATION OF THE SCALE OF THE PROBLEM

Key words: labor resources, hidden unemployment, labor market, agriculture, rural populations

ABSTRACT. The purpose of this paper is to estimate the levels of potential hidden unemployment in Polish agriculture in 2005, 2015 and 2018. Excessive employment in agriculture (understood as hidden unemployment) is one of the key outstanding problems in the process of modernizing Polish rural areas. This paper uses a method for estimating these processes based on the results of a simulation based on the assumption that agriculture has a 5% share in the total working population employed in the national economy. The study relied on EUROSTAT and Central Statistical Office data and on relevant literature. The level of agricultural employment and the amount of surplus workforce differ across voivodships and suggest that structural factors continue to have a strong impact. The distance to the 5% level assumed in the simulation has been decreasing in subsequent years. Hence, achieving this goal seems more and more realistic.

## INTRODUCTION

Hidden unemployment can be defined as excessive, inefficient employment with no technological or economic justification[1]. Surplus employment in agriculture means that some agricultural employees could change their job without detriment to agricultural production. This is because their labor is inefficient, and the absence of gainful activity outside agriculture results in imposing an additional financial burden on agricultural households. In the agricultural sector, hidden unemployment encompasses the surpluses of agricultural labor recorded in statistics as employees of individual farms [Frenkel 2003].

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[1] It needs to be explained that, in Poland, there is no point in estimating hidden unemployment outside agriculture because generally, non-agricultural production sectors are not affected by this phenomenon. Economic operators have adjusted to changing economic realities since the early 1990s. As a consequence, employment in non-agricultural sectors has been reduced and restructured through the progressive elimination of non-productive jobs. Also, an attempt could be made to estimate hidden unemployment in public administration. However, it seems that this sector, too, underwent adjustment processes, though in the opposite direction. Instead of reducing the number of jobs in line with the scope of tasks, the number of tasks has been increased (procedures have been extended; competencies have been redefined; and new administrative institutions and responsibilities have emerged) – see Włodzimierz Kołodziejczak and Feliks Wysocki [2015].

Current hidden unemployment is determined by reference to the existing conditions of agricultural production (area structure of farms, the production and mechanization level, the development of agricultural services, the conditions of rural infrastructure etc.). In turn, potential hidden unemployment (which may become real in the future) is conditioned by labor surpluses resulting from changing conditions of agricultural production related to mechanization as well as technological and organizational progress; the usual consequence of the above is a considerable decrease in demand for agricultural labor (thanks to the introduction of more sophisticated, less labor-intensive production techniques and more efficient machinery) [Frenkel 2003, Wysocki, Kołodziejczak 2015]. Current hidden unemployment was investigated by Izasław Frenkel [2003], based on data from the 1996 National Agricultural Census (responses of farm managers to the question on the number of farm employees who could quit their job without detriment to agricultural production). Estimations of current hidden unemployment in agriculture were carried out by numerous scientists, including Bożena Karwat-Woźniak and Paweł Chmieliński [2013], who relied on survey findings delivered by the Agricultural and Food Economics – the National Research Institute[2]. In turn, an attempt to examine the level of potential hidden unemployment can be found in papers by Włodzimierz Kołodziejczak and Feliks Wysocki [2015] and Włodzimierz Kołodziejczak [2016a].

Excessive employment in agriculture (understood as hidden unemployment) is one of the key outstanding problems in the process of modernizing Polish rural areas. Poland is found to be among countries where labor productivity in agriculture is relatively low compared to industrial and service sectors. In Polish agriculture, hidden unemployment almost exclusively affects individual farms who, for at least twenty years, have had a share of more than 95% in agricultural employment. Initially, the inefficiency of the labor force in individual farming could be a consequence of obsolete production technologies and techniques. However, as time went by, and due to massive technological and organizational progress made after 2004, the surplus of the labor force on farms has become redundant, not only because of the share these employees had in farm income but also because they could not be used in production processes. Nevertheless, according to the authors of the Polish Rural Areas report [FDPA 2018]: "Polish agriculture continues to absorb large labor resources but-for various reasons, including farm structure-ails to make productive use of them. In 2016, the Polish agricultural labor force made up nearly 1/5 of the total number of agricultural employees in the European Union; this is almost the same as in France, Spain and the UK combined together".

The purpose of this paper is to estimate the levels of potential hidden unemployment in Polish agriculture in 2005, 2015 and 2018. The results of such an analysis would allow to draw a picture of labor market transitions that would be required in order for Polish agriculture to attain labor efficiency at a level close to that of EU countries. Also, information on the potential amount of labor resources released from agriculture allows to provide an approximate number of non-agricultural jobs that would need to be created in order to attain

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[2]    Rural and agricultural labor resources were also addressed in research by other authors, including Paweł Strzelecki [2010], Barbara Sobolewska-Węgrzyn [2012], Izasław Frenkel [2013], Paweł Chmieliński [2013], Bożena Karwat-Woźniak and Paweł Chmieliński [2013], authors of  Polish Rural Areas 2018 report [FDPA 2018].

the share of agricultural employees in the total number of employed in the national economy, set earlier as an assumption in this study. The volume of this paper is limited as per editorial requirements, and therefore focus was placed on selected issues and indicators solely.

## RESEARCH MATERIAL AND METHODS

This paper uses a method for estimating the level of potential hidden unemployment in agriculture based on the results of a simulated number of agricultural employees assumed to be 5% of the total population employed in the national economy.  That level is slightly above the average ratio for EU-27 countries (which was 4.9% in 2016 [EUROSTAT 2019]). The number of surplus employees released can also be interpreted as the approximate level of demand for new jobs in the economy[3]. This means that, in order for these changes to become reality, the number of new jobs created would need to be at least equal to the number of jobs lost in agriculture, and the total active labor force on a countrywide basis would remain relatively stable (labor resources released from agriculture would not exit the labor market). These assumptions are for convenience, and were used in order to provide a synthetic result of a simulation of the current situation and illustrate the extent of changes to the labor market, which may prove necessary in the future. This paper also examined the level of and changes in the labor market exclusion rate, considering both the initial state and one that would be recorded upon achieving the 5% level set in the simulation. It is impossible to determine what number of people potentially "released" from agriculture would change their labor market status to "unemployment" or "inactivity." Hence, this study used the labor exclusion rate calculated as the ratio of the total number of unemployed and inactive to the population aged 15 or more[4]. The years covered by this study are 2005, 2015 and 2018. This paper relies on relevant literature and data from EUROSTAT and the Local Data Bank of the Central Statistical Office.

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[3]    Because of this simplification, it may be claimed that the agricultural sector's ability to release labor force largely depends on structural factors rather than only the number of vacant jobs. This is obviously true but, in the long run, cyclical determinants affect structural determinants and vice versa [see: Layard et al. 1991, Kołodziejczak, Wysocki 2015]. Even the best match between qualitative characteristics of supply and demand is not enough to create new jobs. Only the demand for labor, expressed by a certain number of vacant jobs, may persistently and efficiently stimulate the minimization of structural barriers. In order to hire employees, entrepreneurs simply must experience a shortage of labor. Artificial and excessive regulation of that process can be harmful and may give rise to pathological phenomena (e.g. dismissing those already employed in order to access subsidies for hiring people assigned by employment authorities). In a broader context, the question must also be asked as to the ultimate source of financing for these measures and whether this type of interventionism provides macroeconomic benefits, especially considering the fact that it generates additional demand for public funds. While the author does not deny the general purposefulness of interventions, he indicates that the measures in place are often inconsistent with each other and inefficient at a macroeconomic level [see: Tyrowicz 2011].

[4]    In the nomenclature of the Central Statistical Office (CSO) of the Republic of Poland, this group is referred to as "economically active." According to the Labor Force Survey (LFS) methodology, the "economically active population" is the sum of employed and unemployed persons which, according to CSO, are referred to as "economically active" [see: Kołodziejczak 2018].

## RESULTS OF THE STUDY

Table 1 presents the employment figures for the total national economy, and the level and share of agricultural employment in the total number of employees in 2005, 2015 and 2018. As can be noticed, the total number of people employed in the national economy grew between those years, while agricultural employment followed a downward trend. As a consequence of these two processes, the share of agricultural employees in the total population employed in the national economy went down from 18.6% in 2005 to 11.7% in 2015 and 9.6% in 2018. Despite some fluctuations related to the financial crisis, the economic recovery experienced after 2004 drove consistent growth in national employment. Due to these developments, non-agricultural sectors increased their demand for employees, including the "redundant" agricultural labor force. The opening of EU-12 labor markets, related economic migration (making labor resources less available in the domestic labor market), and demographic trends which encouraged inactivity and a reduction of the total labor force were a factor that strengthened the impact of that phenomenon. Together with growth in domestic demand and exports, the above provided momentum for changes in the national labor market, which progressively shifted towards an employee's market. This is just the opposite of what was taking place in previous years (especially during the economic transformation) whereby the employment deficit resulted in the establishment of an employer's market. It could be claimed that without the considerable inflow of foreign workers (mainly from the Ukraine), labor shortage could have been a major active barrier to the development of the Polish economy for many years [cf. Górny, Kaczmarczyk 2018]. Agricultural modernization and increased concentration of land (resulting in a smaller real demand for human labor), largely financed under the CAP and EU structural programmes, boosted the release of labor resources from individual farming [cf. Górny, Kaczmarczyk 2018].

If so, why does agriculture continue to be affected by hidden unemployment in spite of these favorable trends? Two issues need to be considered. First, employment levels in agriculture vary strongly between voivodships (Table 1). This is mainly due to their particularities: agricultural production mix; economic development level; differences in the situation of local labor markets; historical events; and, finally, differences in the characteristics of the farming population (age, education, mobility, mindset, etc.). Generally, these may be regarded as structural factors,which are poorly responsive (or respond with an important time lag) to improvements in the business climate, while being quickly strengthened by each economic downturn. Although the reduction in agricultural employment is experienced in all voivodships, Table 1 clearly reveals the existence of three groups. The first is the one with the lowest agricultural employment ratio, i.e. the Dolnośląskie, Pomorskie, Lubuskie, Śląskie and Zachodniopomorskie voivodships. They are characterized by a relatively small number of people employed in commercial agricultural production (both prior to and during the economic transformation). In the case of the Pomorskie, Lubuskie and Zachodniopomorskie voivodships, this results from the tradition of large state-owned farms and from the fact that, after their liquidation, employees made redundant did not have an alternative job in their own commercial farms.

As a consequence, less workers stayed in the agriculture sector. In the Dolnośląskie and Śląskie voivodships, industrial plant employees made redundant in the 1990s often went back to their family farms which, however, were too small and economically weak to encourage them to work as farmers. Instead, their farms were just a welfare measure, providing them with shelter in tough times. People returning to their family farms either quit the labor market upon attaining retirement age, or (if younger) moved to work abroad and adapted relatively well to the new requirements of the domestic labor market. Hence, although the group of these four voivodships attracted the labor force, they were relatively inefficient in doing so. The second group consisted of voivodeships with a high level of agricultural employment throughout the study period: the Kujawsko-Pomorskie, Lubelskie, Małopolskie, Podkarpackie, Podlaskie and Świętokrzyskie voivodships. These voivodships saw their situation improve in line with the countrywide trend. However, due to the fact that agricultural employment was initially high (in 2005), even a relatively large reduction in its level was not enough to get closer to the first group (except for the Małopolskie Voivodship). This can be attributed to two factors: the stronger attraction of labor resources by agriculture, which may be due to a large number of medium-sized farms (providing a living wage for a larger group of farm household members); and the fact that the local non-agricultural economy is less developed than in the first group which, in turn, implies a smaller demand for labor. In addition to demand factors, this group of voivodships reports the largest share of structural unemployment caused by a mismatch between labor demand and supply in terms of skills and wages [Kołodziejczak, Wysocki 2015]. The third group includes voivodships reporting agricultural employment figures similar to the countrywide average level in each year covered by this study, i.e. the Łódzkie, Mazowieckie, Opolskie, Warmińsko-Mazurskie and Wielkopolskie voivodships (Table 1). In this group, agricultural employment levels were related to the structure of land use and the impact of economic centers.

The second important factor for agricultural employment levels is the financing for farms disbursed under the Common Agricultural Policy (CAP). There is no doubt that it has a beneficial impact on the modernization and growing potential of farms [cf. Żmija 2016]. However, because the CAP also seeks a balance between environmental, economic and social aspects, the measures it offers do not necessarily gear the labor market towards reducing employment. In certain circumstances, financing available under the CAP can contribute to perpetuating the economically disadvantageous land use structure and lead to over-employment in small family farms. Despite the generally beneficial impact of the CAP, payments decoupled from agricultural production volumes can have an adverse effect, especially on the structural part of agricultural over-employment. Indeed, from the perspective of people related to economically non-viable farms, such payments play a similar role to unemployment benefits by reducing the incentive to seek jobs [Kołodziejczak 2016a].

Table 2 presents the distance that separates Poland from the 5% share of agricultural employment in the total number of employees in the national economy, as set for the purposes of the simulation. As can be noticed, the situation improved between the years covered by this study. While in 2005, it was nearly 2 million people (73.2% of the total number of employed in agriculture and 13.6% of the total number of employed in the

Table 1. Employment in the national economy and agriculture in 2005, 2015 and 2018

| Specification | 2005 | | | 2015 | | | 2018 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | Agriculture | Share of agricultural employment | Total | Agriculture | Share of agricultural employment | Total | Agriculture | Share of agricultural employment |
| | thousand people | | % | thousand people | | % | thousand people | | % |
| Poland (total) | 14,359 | 2674 | 18.6 | 16,234 | 1,903 | 11.7 | 16,484 | 1,578 | 9.6 |
| Dolnośląskie | 1,052 | 107 | 10.2 | 1,092 | 54 | 4.9 | 1,241 | 59 | 4.8 |
| Kujawsko-Pomorskie | 764 | 149 | 19.5 | 847 | 116 | 13.7 | 872 | 106 | 12.2 |
| Lubelskie | 935 | 360 | 38.5 | 1,036 | 221 | 21.3 | 875 | 190 | 21.7 |
| Lubuskie | 416 | 56 | 13.5 | 412 | 24 | 5.8 | 425 | 29 | 6.8 |
| Łódzkie | 1,102 | 188 | 17.1 | 1,254 | 152 | 12.1 | 1,121 | 126 | 11.2 |
| Małopolskie | 1,347 | 346 | 25.7 | 1,292 | 170 | 13.2 | 1,438 | 127 | 8.8 |
| Mazowieckie | 1,937 | 299 | 15.4 | 2,827 | 362 | 12.8 | 2,523 | 230 | 9.1 |
| Opolskie | 353 | 59 | 16.7 | 403 | 42 | 10.4 | 403 | 38 | 9.4 |
| Podkarpackie | 780 | 218 | 27.9 | 800 | 131 | 16.4 | 837 | 99 | 11.8 |
| Podlaskie | 443 | 154 | 34.8 | 500 | 123 | 24.6 | 487 | 98 | 20.1 |
| Pomorskie | 702 | 91 | 13.0 | 991 | 66 | 6.7 | 1,009 | 71 | 7.0 |
| Śląskie | 1,663 | 93 | 5.6 | 1,749 | 37 | 2.1 | 1,873 | 43 | 2.3 |
| Świętokrzyskie | 546 | 205 | 37.5 | 601 | 131 | 21.8 | 507 | 91 | 17.9 |
| Warmińsko-Mazurskie | 484 | 88 | 18.2 | 588 | 76 | 12.9 | 555 | 59 | 10.6 |
| Wielkopolskie | 1,273 | 206 | 16.2 | 1,303 | 157 | 12.0 | 1,609 | 165 | 10.3 |
| Zachodniopomorskie | 561 | 56 | 10.0 | 539 | 40 | 7.4 | 707 | 45 | 6.4 |

Source: Local Data Bank of the Central Statistical Office and own calculations

national economy), it went down to "only" 754 thousand (47.8% and 4.6%, respectively) in 2008. Although this is still quite a large distance, the improvement, compared to 2005, is substantial. However, the situation differs between voivodships. In the Dolnośląskie and Śląskie voivodships, agricultural employment is below the assumed level of 5% (Table 1), which means there is no need to "release" the labor force from agriculture in order to meet the target of the simulation. In the Pomorskie, Lubuskie and Zachodniopomorskie voivodships, found to be closest to the 5% level, it would be necessary for the agricultural sector, in 2018, to release 28.9%, 26.7%, and 21.4% of its employees, respectively, which represents 2.0%, 1.8% and 1.4% of the total labor force in these voivodships. This is quite realistic in the near future because the release of labor would impose a relatively small burden on non-agricultural sectors, provided of course that the favorable business climate persists. The Lubelskie, Podlaskie and Świętokrzyskie voivodships are at the other end

Table 2. Distance to the 5% simulation target

| Specification | Distance to the 5% level | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | thousand people | | | % of the total agricultural labor force | | | % of the total number of employees in the national economy | | |
| | 2005 | 2015 | 2018 | 2005 | 2015 | 2018 | 2005 | 2015 | 2018 |
| Poland (total) | 1956.1 | 1091.3 | 753.8 | 73.2 | 57.3 | 47.8 | 13.6 | 6.7 | 4.6 |
| Dolnośląskie | 54.4 | -0.6 | -3.1 | 50.8 | -1.1 | -5.2 | 5.2 | -0.1 | -0.2 |
| Kujawsko-Pomorskie | 110.8 | 73.7 | 62.4 | 74.4 | 63.5 | 58.9 | 14.5 | 8.7 | 7.2 |
| Lubelskie | 313.3 | 169.2 | 146.3 | 87.0 | 76.6 | 77.0 | 33.5 | 16.3 | 16.7 |
| Lubuskie | 35.2 | 3.4 | 7.8 | 62.9 | 14.2 | 26.7 | 8.5 | 0.8 | 1.8 |
| Łódzkie | 132.9 | 89.3 | 70.0 | 70.7 | 58.8 | 55.5 | 12.1 | 7.1 | 6.2 |
| Małopolskie | 278.7 | 105.4 | 55.1 | 80.5 | 62.0 | 43.4 | 20.7 | 8.2 | 3.8 |
| Mazowieckie | 202.2 | 220.7 | 103.9 | 67.6 | 61.0 | 45.2 | 10.4 | 7.8 | 4.1 |
| Opolskie | 41.4 | 21.9 | 17.9 | 70.1 | 52.0 | 47.0 | 11.7 | 5.4 | 4.4 |
| Podkarpackie | 179.0 | 91.0 | 57.2 | 82.1 | 69.5 | 57.7 | 22.9 | 11.4 | 6.8 |
| Podlaskie | 131.9 | 98.0 | 73.7 | 85.6 | 79.7 | 75.2 | 29.8 | 19.6 | 15.1 |
| Pomorskie | 55.9 | 16.5 | 20.6 | 61.4 | 24.9 | 28.9 | 8.0 | 1.7 | 2.0 |
| Śląskie | 9.8 | -50.5 | -50.7 | 10.6 | -136.4 | -117.8 | 0.6 | -2.9 | -2.7 |
| Świętokrzyskie | 177.7 | 101.0 | 65.7 | 86.7 | 77.1 | 72.1 | 32.5 | 16.8 | 12.9 |
| Warmińsko-Mazurskie | 63.8 | 46.6 | 31.3 | 72.5 | 61.3 | 53.0 | 13.2 | 7.9 | 5.6 |
| Wielkopolskie | 142.4 | 91.9 | 84.6 | 69.1 | 58.5 | 51.2 | 11.2 | 7.0 | 5.3 |
| Zachodnio-pomorskie | 28.0 | 13.1 | 9.7 | 49.9 | 32.6 | 21.4 | 5.0 | 2.4 | 1.4 |

Source: Local Data Bank of the Central Statistical Office and own calculations

of the spectrum. In 2018, Lubelskie was the most disadvantaged voivodeship: in order to attain the level set in the simulation, it would be necessary to release 146,000 people from agriculture, i.e. 77.0% of the agricultural labor force (16.7% of the total number of employees in that voivodship). The disadvantaged group also includes the Podlaskie and Świętokrzyskie voivodships, where it would be necessary to release 75.2% and 72.1%, respectively, of the agricultural labor force (15.1% and 12.9% of the total number of employed in these voivodships). The Mazowieckie Voivodship found itself in a peculiar situation; in order to meet the simulation target, it would be necessary to release 103,900 people from agriculture (only the Lubelskie Voivodship reported a greater number). However, because of the economic strength of this voivodship, the relative figures are low: 45.2% of the agricultural labor force and 4.1% of the total number of employed in the voivodship.

The number of people that would need to be "released" from agriculture (Table 2) can be equated with demand for non-agricultural jobs needed to maintain the exclusion ratio at the initial level of the simulation. Table 3 presents the labor exclusion rate in a situation in which agricultural employment is reduced without creating an adequate number of

Table 3. The number of people excluded from work (unemployed and inactive); the exclusion rate in the initial state and at the 5% level assumed in the simulation

| Specification | Labor force exclusion rate in the initial state [%] | | | Labor force exclusion rate n the simulation scenario [%] | | |
|---|---|---|---|---|---|---|
| | 2005 | 2015 | 2018 | 2005 | 2015 | 2018 |
| Poland (total) | 54.0 | 49.4 | 46.3 | 60.3 | 52.9 | 48.8 |
| Dolnośląskie | 56.5 | 52.8 | 45.1 | 58.7 | 52.8 | 45.0 |
| Kujawsko-Pomorskie | 54.3 | 51.4 | 48.1 | 60.9 | 55.9 | 51.9 |
| Lubelskie | 49.9 | 47.6 | 49.1 | 66.7 | 56.1 | 57.8 |
| Lubuskie | 54.3 | 48.6 | 46.0 | 58.2 | 49.0 | 46.9 |
| Łódzkie | 54.3 | 48.4 | 46.2 | 59.8 | 52.3 | 49.7 |
| Małopolskie | 50.0 | 49.5 | 46.7 | 60.4 | 53.6 | 48.8 |
| Mazowieckie | 52.1 | 44.7 | 42.3 | 57.1 | 49.7 | 44.7 |
| Opolskie | 55.4 | 51.5 | 47.3 | 60.6 | 54.4 | 49.8 |
| Podkarpackie | 53.3 | 48.2 | 49.1 | 64.1 | 53.7 | 52.6 |
| Podlaskie | 49.4 | 49.4 | 47.4 | 64.5 | 59.4 | 55.6 |
| Pomorskie | 56.0 | 48.8 | 43.0 | 59.5 | 49.8 | 44.1 |
| Śląskie | 57.9 | 53.0 | 49.3 | 58.1 | 51.7 | 47.9 |
| Świętokrzyskie | 53.1 | 50.0 | 48.5 | 68.4 | 58.5 | 55.1 |
| Warmińsko-Mazurskie | 57.8 | 51.4 | 50.4 | 63.4 | 55.5 | 53.3 |
| Wielkopolskie | 52.6 | 47.3 | 43.7 | 57.9 | 50.8 | 46.7 |
| Zachodniopomorskie | 57.6 | 53.1 | 47.2 | 59.7 | 54.1 | 47.9 |

Source: Local Data Bank of the Central Statistical Office and own calculations

jobs in industrial service sectors. In that case, the average exclusion rate in Poland would rise from the initial level of 54.0% to 60.3% in 2005, from 49.4% to 52.9% in 2015 and from 46.3% to 48.8% in 2018. Hence, there has been a clear improvement in the general condition of the labor market: the simulated exclusion rate in 2018 would be 5.2 percentage points lower than the initial exclusion rate in 2005 and 0.6 percentage points lower than the initial exclusion rate in 2015. The above corroborates the findings from previous research [Kołodziejczak, Wysocki 2015, 2015, Kołodziejczak 2016b], especially with regard to the strong relationship between the reduction in agricultural employment, on the one side, and economic development and the creation of non-agricultural jobs, on the other. The analysis of differences in the situation between voivodships allows for concluding that the increase in exclusion rates is primarily related to the level and share of agricultural employment in total employment in the initial state, as presented in Tables 1 and 2. In 2018, the exclusion rate would not increase in relation to the initial level in the Dolnośląskie, Lubuskie and Śląskie voivodships. Other voivodships are actually unable to reduce agricultural employment to the level of 5% set in the simulation without creating enough non-agricultural jobs.

## SUMMARY

The findings and conclusions from this analysis are as follows:

1. The largest share of agricultural employment was recorded in voivodships with an economy historically based on traditional individual farming (Podkarpackie, Lubelskie, Podlaskie and Świętokrzyskie). The lowest levels of agricultural employment were found in voivodships considerably affected by collectivization in the past (Pomorskie, Lubuskie, Zachodniopomorskie) or were strongly related to industry and mining (Śląskie, Dolnośląskie).

2. The level of agricultural employment and the amount of surplus workforce differ across voivodships and suggest that historical events and other structural factors continue to have a strong impact. Development and transformation processes, which differed from one voivodship to another, played an equally important role as the legacy of the transition period. Strong differences between the characteristics under consideration suggest that the reduction of hidden unemployment in agriculture cannot be simulated using a unified procedure for different voivodships.

3. The distance to the 5% level assumed in the simulation has been decreasing in subsequent years. Hence, achieving this goal seems more and more realistic. The issue to be resolved is the time horizon of this process and the importance of individual factors conditioning the possibilities of reducing employment in agriculture. In the study period, the Polish economy progressed along a relatively stable development path, and Polish agriculture was undergoing upgrade and modernization processes. However, if the GDP growth rate declines and, as a consequence, so does the demand for labor, the process of reducing agricultural employment can slow down or even temporarily change its direction.

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# BEZROBOCIE UKRYTE W POLSKIM ROLNICTWIE W LATACH 2005-2018 – PRÓBA SYMULACJI SKALI ZJAWISKA

Słowa kluczowe: zasoby pracy, bezrobocie ukryte, rynek pracy, rolnictwo, ludność wiejska

## ABSTRAKT

Celem artykułu jest próba oszacowania poziomu potencjalnego bezrobocia ukrytego w polskim rolnictwie w latach 2005, 2015 i 2018. Nadmierne zatrudnienie w rolnictwie, czyli bezrobocie ukryte, jest jednym z najważniejszych problemów, jakie pozostały do rozwiązania w procesie modernizacji polskiej wsi. Zastosowano metodę szacowania poziomu tego zjawiska na podstawie wyników symulacji liczby pracujących w rolnictwie, przyjmując, że pracowałoby w nim 5% ogółu pracujących w gospodarce narodowej. Wykorzystano dane EUROSTAT i GUS oraz literaturę przedmiotu. Zróżnicowany pomiędzy województwami poziom zatrudnienia w rolnictwie i skala nadwyżek zasobów pracy wskazują na wciąż silne oddziaływanie czynników o charakterze strukturalnym. Korzystne zmiany wartości wskaźników charakteryzujących rynek pracy oraz malejące obciążenie rolnictwa bezrobociem ukrytym, wskazują, że przyjęty w symulacji poziom 5% wydaje się coraz bardziej realny.

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