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Evaluation of the Average Wage in Agriculture Depending on the Value of Gross Agricultural Production in Different Regions in Slovakia

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Abstract

The agriculture is currently not among highly attractive, highly productive and profitable sectors, but its importance for the country and economy is unquestionable. It turns out that the level of labour productivity as well as other factors reflects the different wage level. Lower average nominal wages of workers in rural areas are a factor causing overall economy lagging of rural regions. The aim of this paper is to determine the dependence of the average wage level from gross agricultural production in different regions of Slovakia and confirm respectively refute the hypothesis of wage inequalities between regions.

Key words

Agriculture, average wage, gross agricultural production, Slovak regions, correlation analysis, regression analysis

JEL Classification: J31, Q11

Introduction

The agriculture is currently not among highly attractive, highly productive and profitable sectors as it was in the past. Its importance for the country and the economy is unquestionable. It performs several indispensable roles in the economic policy of the state, especially in terms of food security of the population or environmental protection. Social and production function are also important and are essential for the mitigation of regional disparities (Valach & Balažová 2013). By Paška (2000), social function of agriculture lies in the contribution of this sector in total employment solutions and in the use of available labour resources. However, the whole economy is characterized by high unemployment and low job creation. Despite a significant decline in employment, the agriculture and forestry still offer the most job opportunities in certain regions (Valach & Balažová, 2013).

According to Fáziková and Kozelová (2005), the wage is a major motivating factor. But it is also a factor affecting effective demand and living standard of the population and thereby is one of the important endogenous development factors of the economy of the specific area. Lower average nominal wages of workers in rural areas are another factor causing overall economy lagging of rural regions. The lower perfor-

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mance of non-agricultural economic sectors in rural areas is evident from a comparison of the average wage in agriculture and average wage total. Secondary negative effect of low wage level and dependency of the population on agriculture is that the other economic sectors adjust their wage level in line with wages in agriculture and thereby the income level of the population in rural regions continues to deteriorate.

Buchta (2013) noted that the average wages in agriculture are moving just over 70% of wages in the national economy. The overall increase in average nominal wages in agriculture has long been accelerated only due to more dynamic wage growth of leading technical and administrative staff. In other words, wage growth of manual workers is lagging behind the overall increase in average wages of all workers in agriculture.

Michálek (2007) argues that the questions of wage disparities and the relevance of examining of wage (regional) disparities are one of the major issues and problems of Central and Eastern Europe countries. In many countries of this region, the growth of wage disparities and also very low wage level lead to rejection and non-utilization of the economically active population, lead to an unemployment growth respectively to its departure to work abroad. The wage disparities, in addition to global trends "prominent factors" (globalization, the ongoing liberalization of international trade, technological progress, capital, etc..) are also strongly influenced by also microeconomic factors (especially education and qualification, level of production, a flexible labour market, deregulation of the minimum wage, etc..), but also by some other phenomena and components that are statistically elusive.

It turns out that education and qualification as an essential factor of human capital more and more affects the wage level. The wage disparities are clearly associated with differences in the value of human capital. Therefore, the low wages in agriculture reflect not only on the level of labour productivity, but also on the content of the work, which is presented by an adequate quality of the workforce. The work in agriculture to a small extent uses the technical progress and innovation. In this sector is dominated the simple manual labour with low representation of mechanization and modern machinery. The wage valuation of labour naturally responds to the difficulty, complexity and technological equipment of the work. The largest growth in incomes was recorded for people with university education and education has become the most important determinant of wages. The increasing wage level of agriculture will therefore significantly affected by innovation and technological progress, which inevitably will require a new quality of human capital also in this sector of the national economy (Buchta, 2013).

1 Material and methods

The aim of this paper is to determine the dependence of the average wage level from gross agricultural production in Slovakia and to confirm respectively to refute the hypothesis of wage disparities between regions. We defined the following hypotheses:

- H_1: There is a statistically significant dependence between the average wage per employee and value of gross agricultural production per employee in different regions of Slovakia.

In this paper was used the simple regression analysis, which describes the linear relationship between a pair of numerical variables and this dependence is shown by a regression line. The intensity of the dependence was determined by correlation analysis. For the calculation we used the Pearson correlation coefficient, which determines the direction and rate of force statistical dependence of two numeric variables. Pearson correlation coefficient is located in the interval from -1 to 1. We also used a method of the analysis, synthesis and method of descriptive statistics.

The correlation coefficient (R) will be interpreted according to the following table:

0.1 > R trivial correlation
0.1 to 0.29 small correlation
0.3 to 0.49 mean correlation
0.5 to 0.69 strong correlation
0.7 to 0.89 very strong correlation
0.9 < R almost perfect correlation (Rimarčík, 2007).

Pearson correlation coefficient also determines the direction of the linear dependence as follows:

R > 1 there is a direct linear relationship between variables
R < 1 there is a indirect linear relationship between the variables
R = 0 the variables are not linearly dependent (Rimarčík, 2007).

In table 1 we can see the value of the average wage and the value of gross agricultural production per 1 employee in various regions of Slovakia in the time period 2009 to 2012. The gross agricultural production is the sum of sales outside of the company, the intra turnover and the difference in stocks at the beginning and at the end of year (the Statistical Office of the Slovak Republic, 2014). In the table and following graphs are used the following abbreviations: AG = average wage per employee; GAP = gross agricultural production per employee, BA = Bratislava region; TT = Trnava region; TN = Trenčín region; NT = Nitra region; ZA = Žilina region; BB = Banská Bystrica region; PO = Prešov region and KE = Košice region.

Table 1 The value of average wage (AG) and gross agricultural production (GAP) per employee in the period from 2009 to 2012 (in EUR)

	2009		2010		2011		2012	
	AW	**GAP**	**AW**	**GAP**	**AW**	**GAP**	**AW**	**GAP**
BA	681	31 953,40	698	37 935,10	777	57 229,00	819	55 286,70
TT	656	34 104,70	682	41 205,40	737	52 761,20	758	51 983,00
TN	586	28 905,00	617	28 947,70	652	35 831,60	708	37 770,30
NT	599	35 605,90	618	41 938,20	676	56 524,60	775	61 278,10
ZA	576	17 195,80	609	20 059,80	637	24 129,60	655	27 149,20
BB	537	18 002,90	555	23 402,10	588	33 861,80	623	39 887,40
PO	520	14 977,80	537	16 669,10	563	22 701,60	590	25 846,10
KE	496	22 432,50	524	24 961,50	552	32 611,00	610	39 635,30

Source: Statistical Office of the Slovak Republic. Own processing.

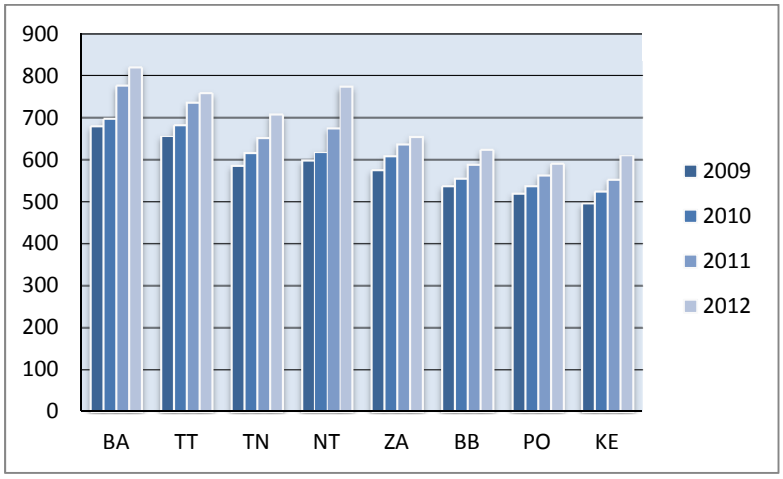
2 Results and Discussion

Income inequality in agriculture in our country significantly increased for the last twenty years. One of the causes of the increase in income disparities in Slovakia was especially income inequality in individual regions of Slovakia. Regional disparities represent the differences in socio-economic development of regions, which are the result of its inequality. Gajdoš (2001) notes that regional disparities are the product of activity of more factors and they depend on the quality but also on the different positions from which the individual regions entered into the transformation process. The factor of regional differences greatly facilitates the economic stratification of society (Matlovič, Klamár & Matlovičová, 2008).

An important indicator of regional disparities is wage in the form of the average gross wage per employee in different regions (Novotný & Vojtěch, 2006). In this part, the article deals with evaluation of the impact of selected socio-economic indicator i.e. gross agricultural production (per employee) on the average wage as the main indicator of regional disparities. The aim of this analysis is to determine whether the increase in gross agricultural output per employee in individual regions of Slovakia can influence or mitigate the wage disparities in the agricultural sector in Slovakia.

Figure 1 shows the development of value of average wage per one employee in the agricultural sector by individual regions from 2009 to 2012. If we look at its development we can see the increase of average wage over time in each region in Slovakia. The highest average wage achieves Bratislava region, Nitra region and Trnava region. Vice versa, the lowest average wage is in the Prešov region, followed by the Košice region and Banská Bystrica region. On the graph, we can clearly see the reduction of value of average wages from the western regions to the east of the country.

Figure 1 Development of value of average wage per one employee in the agricultural sector by individual regions in the period 2009-2012 (in EUR)

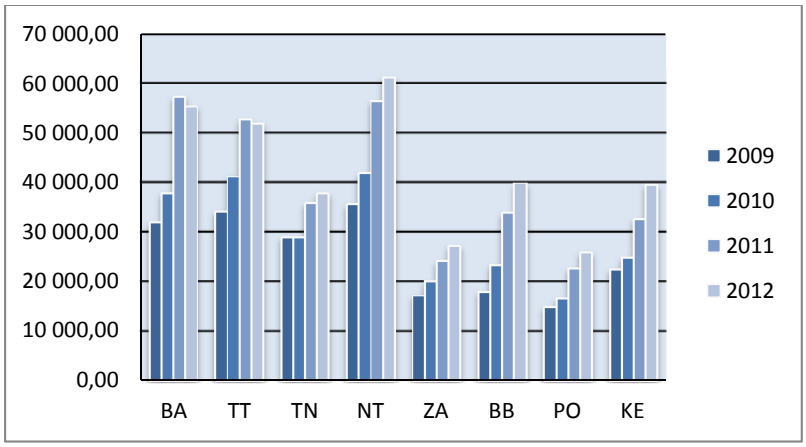


Source: own processing.

The important component of regional disparities also represents the value of agricultural production. Figure 2 shows the development of value of gross agricultural pro-

duction of gross turnover per one employee by individual region. If we look at the values of gross agricultural production per employee, so these have increased in every region of Slovakia throughout the entire period. The biggest values of gross agricultural production per employee achieves Nitra region, followed by Bratislava and Trnava region. On the other hand, the smallest values are achieved by Prešov region, Trenčín region and Žilina region.

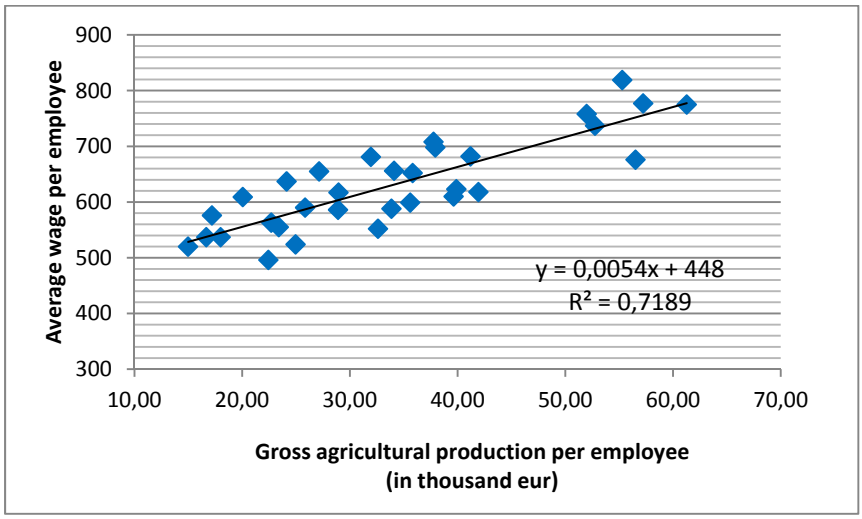
Figure 2 Development of the value of gross agricultural production of gross turnover per 1 employee by regions (in EUR)



Source: own processing.

During the verification of the hypothesis which was: "there is a statistically significant dependence between the average wage per employee and value of gross agricultural production per employee in different regions of Slovakia" we identified the following facts. There is very strong correlation (Multiple R = 0.847903767) between the value of the average wage per employee and value of gross agricultural production per employee in different regions of Slovakia and between variables was recorded direct linear relationship. The variability in the values of dependent variable was explained on 71 %. This model is statistically significant (significance F = 9.08279E-10) and this hypothesis can be accepted. The results of evaluating of the hypotheses are shown in Figure 3 and Table 2.

Figure 3 Impact of gross agricultural production per employee on average wage per employee



Source: own processing.

Table 2 Impact of gross agricultural production per employee on average wage per employee

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,847903767
R Square	0,718940799
Adjusted R Square	0,709572159
Standard Error	7016,281039
Observations	32

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	3777726652	3,78E+09	76,73908	9,08279E-10
Residual	30	1476845989	49228200		
Total	31	5254572641			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	-50313,6844	9721,270185	-5,17563	1,42E-05	70167,16664	30460,2021	-70167,167	30460,2021
X Variable 1	133,7302113	15,26585884	8,760084	9,08E-10	102,5531683	164,907254	102,553168	164,907254

Source: own processing.

Conclusion

Demotivation of employees through wages represents an obstacle to faster socio-economic development. The optimal combination of wage level and the degree of

wage inequality are important factors that affect the satisfaction of the population's consumption. In each country may be the optimal combination of these two rates (level and inequality of wages) different. In any case, the very low wage level and high wage inequality is undesirable and socially unacceptable in the long term. While the wage level is determined mainly by the performance of the economy, the wage inequality in agriculture is determined by a wide range of different factors with differentiated impact (Kertesi & Köllő, 2000). One of these factors is the value of gross agricultural production per one employee. During the verification of the hypothesis, we identified that there is very strong correlation (Multiple R = 0.847903767) between the value of the average wage per employee and value of gross agricultural production per employee in different regions of Slovakia. It follows from the foregoing that the increase in gross agricultural production per employee in these Slovak regions that are lagging behind can mitigate wage inequalities in the agricultural sector in Slovakia.

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