

PRODUCTIVITY IN HEALTH CARE SECTION OF THE SLOVAK ECONOMY

Silvia Megyesiová – Vanda Lieskovská

Abstract

Labor productivity is a driving force of economies that is associated with an increase of living standard of the population. The productivity is often used as an indicator for comparison of countries' economic development. Also a few year after joining the EU the new Member States achieved low productivity levels, for example in Romania and Bulgaria the productivity was lower than 15 000 Euro while in Luxembourg and Ireland it was higher than 115 000 Euro in 2015. In the same year the labor productivity of Human health and social work activities section (section Q) was lower than the total productivity in all of the EU countries. In Slovakia the overall productivity in real terms increased between 2000 and 2015 by 63.3 % from a starting level of 18 618 Euro to 30 395 Euro (chain linked volumes, 2010). Unfortunately the productivity in section Q increased in the same time span by a moderate 14.7 % from 15 164 Euro to 17 387 Euro. Low investment rate in section Q can be one of the reason why the productivity in this section did not copied a strong real growth of the total productivity rate in Slovakia.

Key words: productivity, human health and social work activities, employment, wages, investments

JEL Code: E22, E23, I19

Introduction

Member States of the European Union have a different level of advancement, that is usually compared using the levels or changes of macroeconomic indicators, like gross domestic product or gross value added (Loster – Pavelka, 2013; Mourelle – Stankovicova, 2016). But a deeper view of the level of competitiveness of the economy can be discovered by analysis of labor productivity (LP). Productivity is a ratio of a volume measure output to a measure of input use (OECD, 2001). It explains the economic principal of socio-economic development and growth. LP can be calculated and analyzed at a country level but useful is also a deeper

analysis of LP of selected sections of national economies (Frenakova – Gazda – Jasovska, 2010; Megyesiova – Lieskovska, 2015). The difference of productivity is typical not only for entire economies, but also for sectoral and regional levels (Pivonka – Loster, 2013; Zelinsky, 2012).

The paper deals with the comparison of levels and development of the overall labor productivity in the EU countries with an impact of the LP in Human health and social work activities (section Q of the NACE Rev. 2 classification) in Slovakia and other Member States. Despite of the most important role of industry sector in Slovak economy (Vojtkova, 2010) the manuscript focuses on the nonproductive section of economy.

1 Labor productivity

Gross value added (GVA) as a measure of economic activity and it can be broken down by sectors of economy. GVA enables to use the output created by a specific sector to calculate the productivity of a selected section of national economy or to use the total sum of GVA through all of the sections to calculate the overall productivity. The productivity can be expressed per person employed or per hour worked (Freeman, 2008). In the manuscript the overall labor productivity is calculated as the total GVA produced in a country divided by total employment:

$$\text{Labor productivity} = \frac{\text{gross value added}}{\text{total employment}} \quad (1)$$

The total productivity is used as an overall level of labor productivity which is then compared with the productivity of the section Q. The productivity of Human health and social work activities is calculated using the GVA created by section Q as numerator and total employment in section Q as denominator:

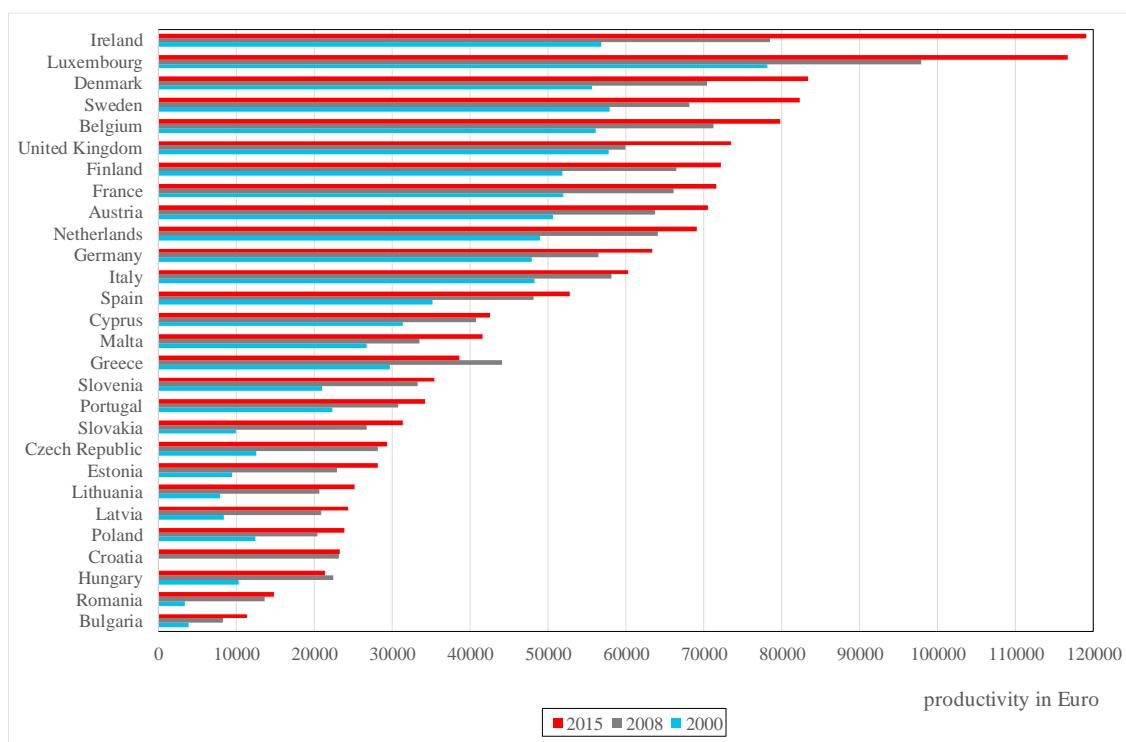
$$\text{Labor productivity in section Q} = \frac{\text{gross value added in section Q}}{\text{employment in section Q}} \quad (2)$$

1.1 Productivity in national economy and in the section Q

The labor productivity of the national economies of the EU countries is higher than the LP in section Q. In 2000 the highest productivity was achieved in Luxembourg (78 089 Euro),

followed by Sweden and United Kingdom (see Figure 1). In the same year low LP levels were typical for the “new Member States”, especially for Bulgaria (3 876 Euro) and Romania (3 403 Euro). Due to positive development of economies the productivity increased to 119 037 Euro in Ireland and 116 702 Euro in Luxembourg in 2015. Still the lowest LP was achieved in Romania (14 825 Euro) and Bulgaria (11 357 Euro).

Fig. 1: Labor productivity - gross value added per person employed in Euro



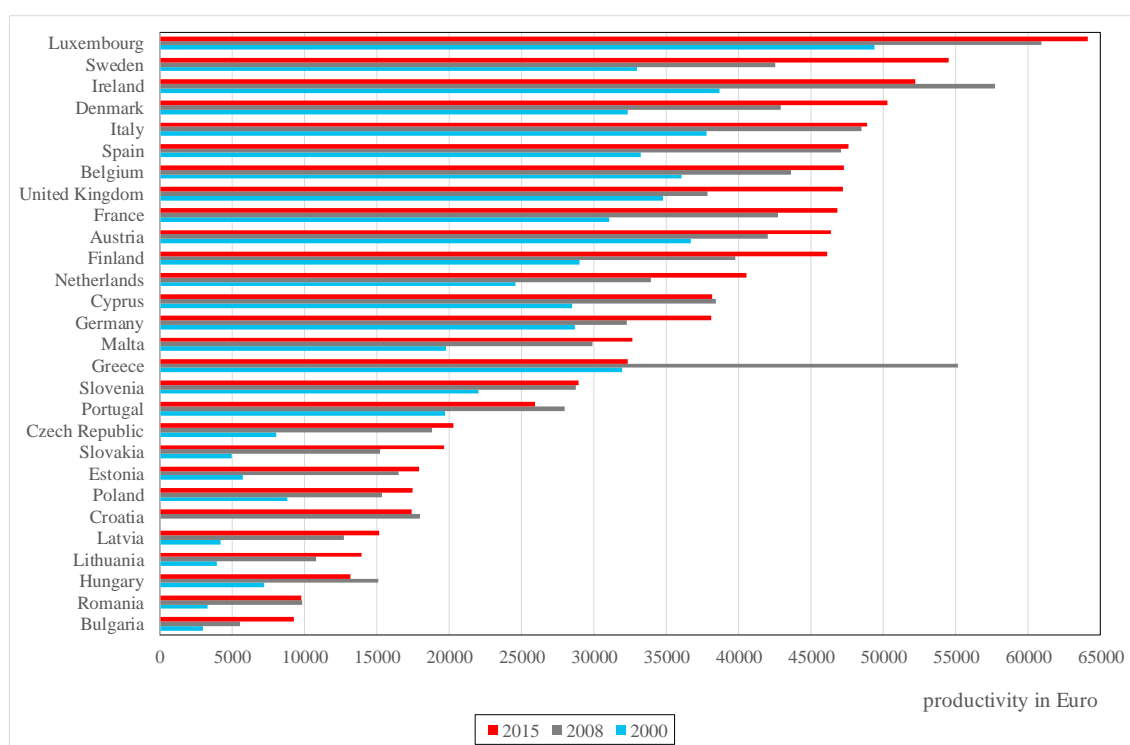
Source: Eurostat, own calculations

The labor productivity in section Q is lower than the overall productivity in EU countries. Only exceptionally the productivity in health section was higher than the total LP. The exceptions happened only at the beginning of the analyzed period of time, for example in Greece the LP in section Q was higher by 7.8 % in 2000 and by 25.2 % higher than the total productivity in 2008. In 2000 also in Slovenia the LP in section Q was a bit higher than the overall LP. The highest relative difference in the same year was seen in Lithuania, Slovakia, the Netherland and Latvia, where the productivity in section Q represented only a half of the total LP.

The highest productivity in section Q was achieved in 2000 in Luxembourg. The productivity was as high as 49 398 Euro, which means that the LP per person employed in

section Q was in Luxembourg lower by 28 690 Euro compared to the overall LP. High productivity in section Q was in 2000 reached in Ireland (38 696 Euro) and Italy (37 754 Euro). The ranking of the lowest levels of LP in section Q copied the ranking of overall productivity because again the worst situation in LP were typical for Romania (3 257 Euro) and Bulgaria (2 944 Euro). Also in 2015 the highest LP in section Q was achieved in Luxembourg, followed by Sweden and Ireland (see Figure 2). New Member States, namely Hungary, Romania and Bulgaria still stay at the last positions of the LP ranking in section of Human health and social work activities.

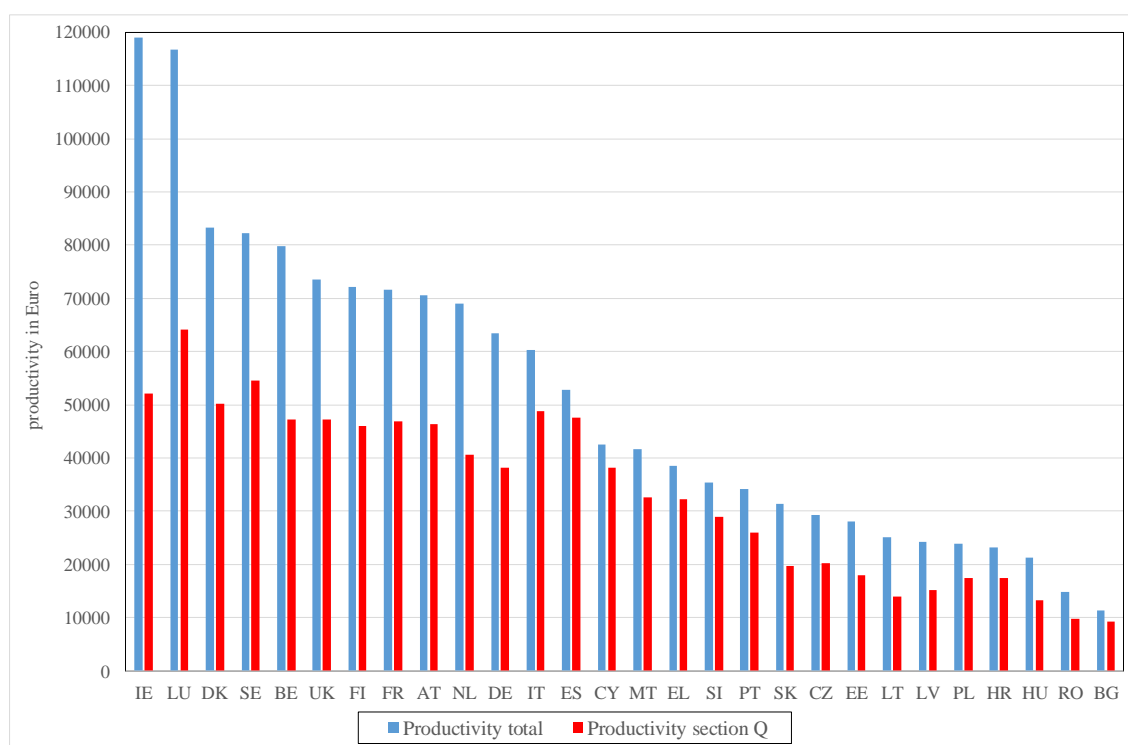
Fig. 2: Labor productivity in section Q - GVA per person employed in section Q in Euro



Source: Eurostat, own calculations

In 2015 in all of the EU countries the LP in section Q was lower than the productivity in the national economy (see Figure 3). The highest difference in relative and also in absolute value was in this year reached in Ireland. The overall LP jumped to 119 037 Euro while the productivity in section Q stood at 52 171 Euro, so the difference of the productivity was as high as 66 866 Euro. The LP in health care section of the economy was lower by only 10 % compared with the total productivity in Spain and Cyprus.

Fig. 3: Total labor productivity and LP in section Q in 2015



Source: Eurostat, own calculations

Country codes: BE-Belgium, BG-Bulgaria, CZ-Czech Republic, DK-Denmark, DE-Germany, EE-Estonia, IE-Ireland, EL-Greece, ES-Spain, FR-France, HR-Croatia, IT-Italy, CY-Cyprus, LV-Latvia, LT-Lithuania, LU-Luxembourg, HU-Hungary, MT-Malta, NL-the Netherlands, AT-Austria, PL-Poland, PT-Portugal, RO-Romania, SI-Slovenia, SK-Slovakia, FI-Finland, SE-Sweden, UK-the United Kingdom

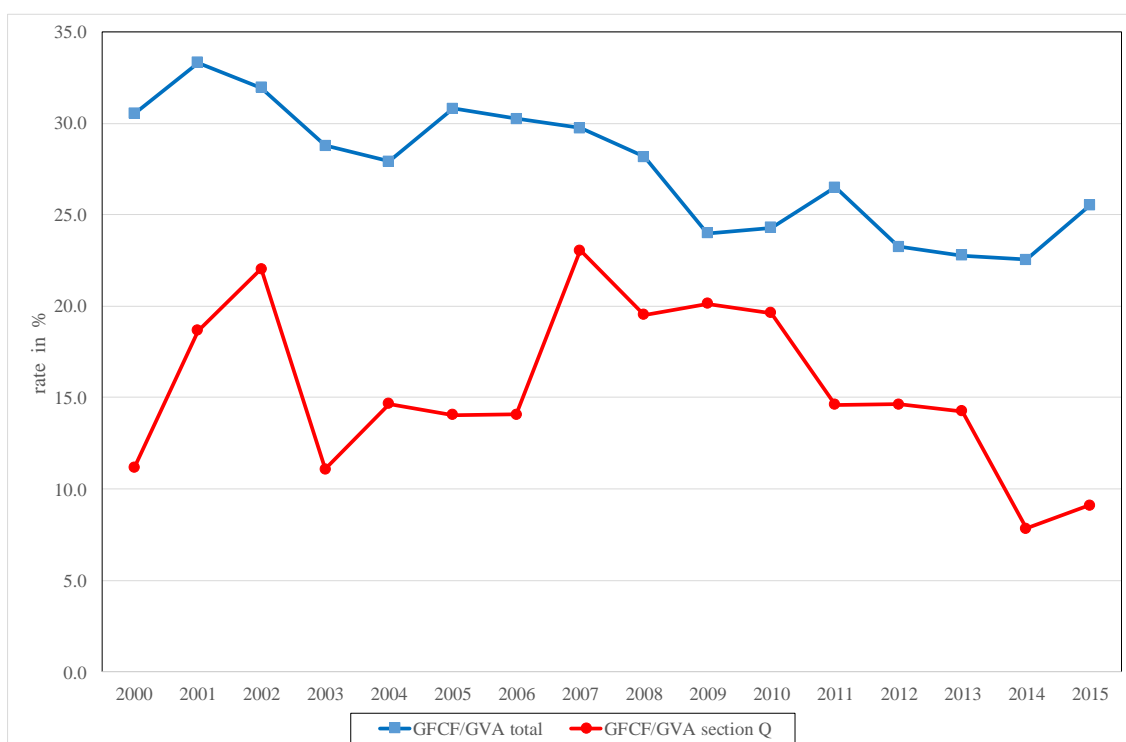
2 Productivity in Section Q in Slovakia

The total LP in constant prices in Slovakia increased steadily from 2000 to 2015, with only one exception in year 2009 when the overall productivity declined by 3.6 %. The highest annual increases were reached before the economic crises in 2006 by 7.8 % and in 2007 by 8.7 %. Due to a positive economic development in Slovakia the total LP (in chain linked volumes, 2010) increased from 18 618 Euro in 2000 to 30 395 Euro in 2015. In real terms it means an increase of LP by 63.3 %. High real increases of LP in the same time span were typical for the new Member States, for example in Romania the productivity increased by 109 %, in Lithuania by 92.5 %, in Latvia by 81.4 %. On the other hand the real LP between 2015 and 2000 declined in Luxembourg (- 2.4 %), in Italy (- 5.5 %).

The productivity in section Q was in Slovakia like in other Member States lower compared to overall LP. The LP calculated from the chain linked volumes (2010) reached in 2000 a level of 15 164 Euro and increased to 17 387 Euro in 2015. The real changes of the productivity in section Q were more turbulent than the development of the total LP. A

negative growth of the LP in section Q was achieved in following years: 2002 (-5.8 %), 2003 (-5.7 %), 2004 (- 3.8 %), 2009 (- 2 %), 2011 (- 4.6 %), 2014 (- 4.7 %). The turbulent development was the main reason why the LP in section Q between 2015 and 2000 grow in real terms only by 14.7 %. This moderate real growth of LP in section Q in time span of 15 years compared with a real change of the total LP in the same period of time by 63.3 % declare a huge difference between the development of total LP and productivity in section Q.

Fig. 4: Rate of gross fixed capital formation to GVA in Slovakia



Source: Eurostat, own calculations

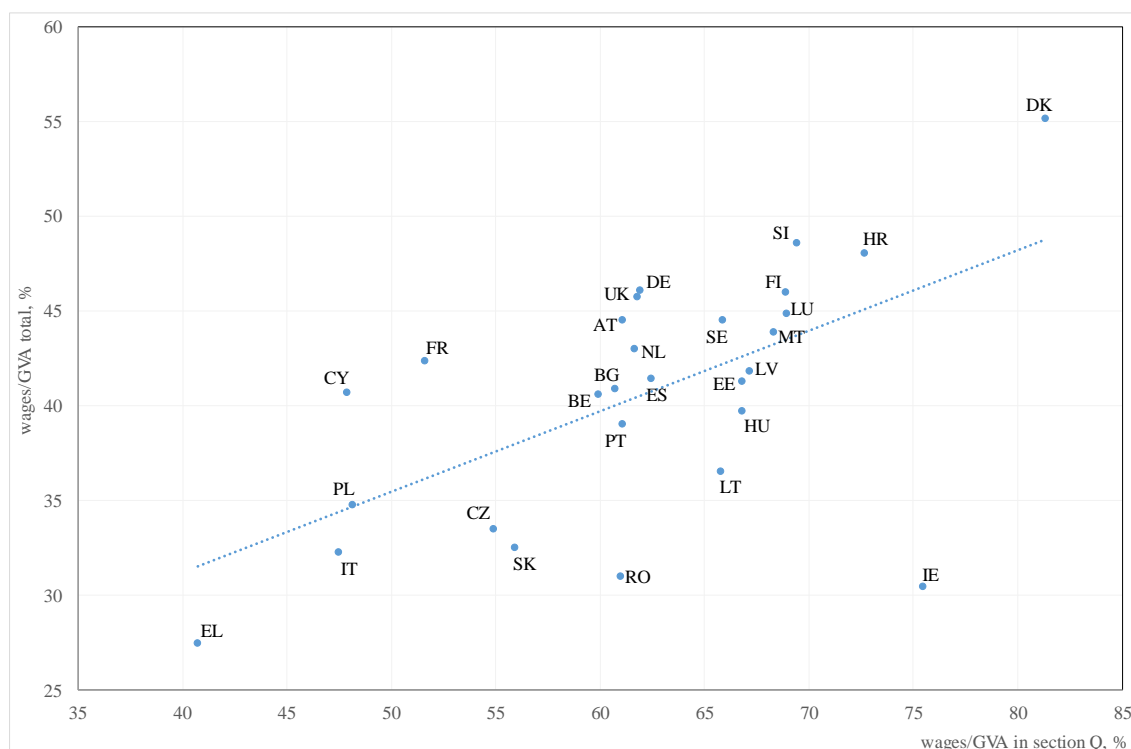
One reason of the moderate productivity change can be related with investment activity in the section of human health and social work activities. While the investment rate measured as the percentage of gross fixed capital formation (GFCF) to GVA calculated for the economy as a whole shows a strong investment activity, the rate calculated separately for the section Q shows only a very moderate investment activity. The rate of the GFCF to GVA in Slovakia ranged between a minimum of 22.5 % to a maximum of 33.3 %, the average level was as high as 27.5 %. The investment rate higher than 28 % in the time span from 2000 till 2015 was a reality altogether in 8 years.

Unfortunately the investment rate in section of health activities ranged in the same period of time from a minimum value of 7.8 % to a maximum level of 23.1 % (see Figure 4). The average investment rate was only 15.5 %. So the low investment rate in section Q can be one of the reasons why between 2000 and 2015 the productivity in section of Human health and social work activities did not copied a high real increase of the overall LP and instead achieved only a moderate real increase.

3 Wages in economy and in Section Q

The percentage rate of wages to GVA in section Q is higher than the same rate for the entire economy. For example in Denmark in 2000 about 81 % of the GVA composed from wages. High wages rate to the GVA was achieved also in Ireland (77 %), Lithuania (71.6 %), Portugal (70 %). The ranking of the rate is closed by Czechia (47 %), Bulgaria (46 %), Greece (37 %). The situation did not change a lot in the time span of 15 years.

Fig. 5: Rates of wages to GVA in national economies and in section Q in 2015



Source: Eurostat, own calculations

In 2015 again the highest wage rate to GVA in section Q was reached in Denmark (81.3 %), followed by Ireland (75.5 %) and Croatia (72.7 %). Also the lower rates of wages to

GVA in section of health activities are relatively high, for example in Cyprus and Italy the rates stayed at the level of about 48 % and in Greece the lowest measured rate stood at 40.7 %.

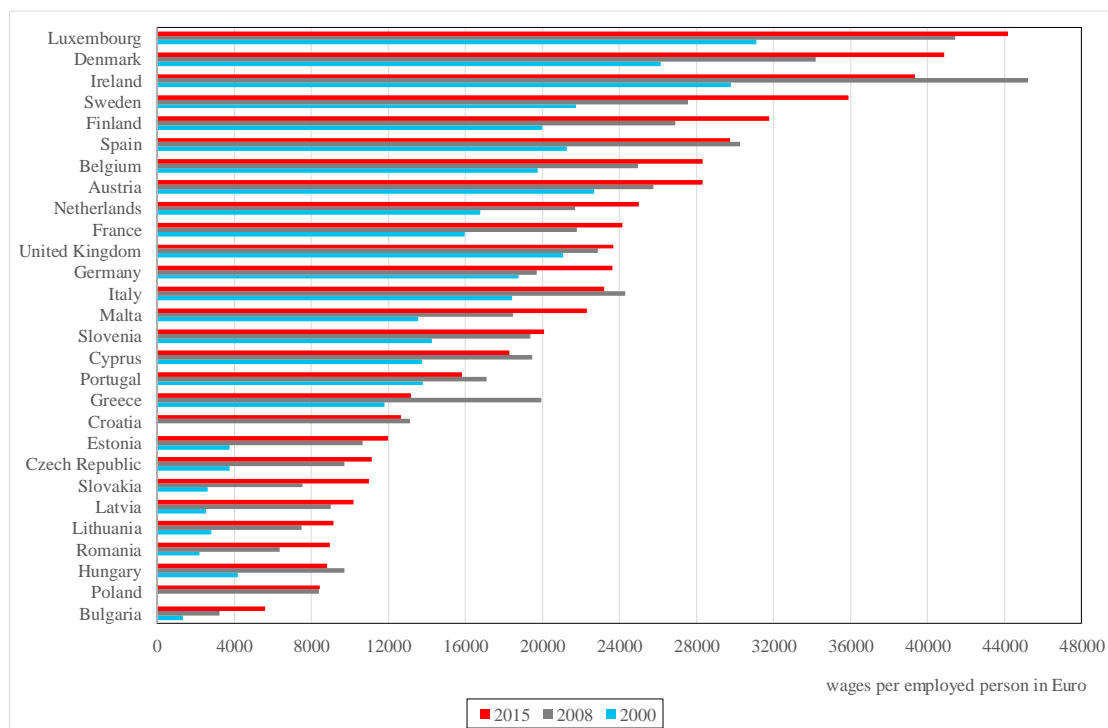
The high rates of wages to GVA are not typical for all of the sections of national economies. For comparison in 2000 the highest rate of total wages to total GVA was also achieved in Denmark, but the rate was only 54 %, which means that it was by 27 percentage points (p.p.) lower than the rate in section Q. The lowest rates of total wages to GVA were in 2000 reached in Bulgaria (30.6 %), Italy (29.8 %) and Greece (27.4 %).

The association between the rates of total wages to GVA in entire economies of the EU countries and the similar rates in section Q in 2015 are presented in Figure 5. It is visible that the maximum of overall rate was achieved again in Denmark (55.2 %), with a deference to the rate in section Q by 26 p.p. It is clear that the overall rate is much smaller than the rate of wages to GVA in the section of Human health and social work activities. The Pearson correlation coefficient between the both rates is positive and as high as 0.61. It means that between the both rates is a positive and strong association. In a EU country with high overall rate we can expect also a high wage rate in section Q. The average overall wage rate of the EU countries, that was about 40 % is much lower than the average wage rate of the section Q, that was about 62 % which means that in 2015 the difference of wage rates reached 22 p.p.

In Slovakia the total wage rate stood at 34.6 % in 2000, while the rate in section Q was 53 %. In 2015 the overall wage rate declined to 32.5 %, but the wage rate at section Q increased to 56 %. The average annual wage calculated from the total GVA per person employed in Slovakia was about 3 407 Euro in 2000 and increased to 10 172 Euro in 2015. In section Q at the beginning of analyzed period the average wage stood at 2 618 Euro and jumped to a level of 10 980 Euro. The fact that the GVA in section Q is mostly created by wages (56 % in Slovakia in 2015) paid in this section, an increase of productivity is possible also through wage increases. The section of Human health and social work activities is a nonproductive section of economy and it means that the productivity can be in fact increased also due to increase of wages per employed person. The first ten positions of the lowest wage per person employed in section Q were in 2015 occupied by new Member States, namely: Bulgaria (5 604 Euro), Poland, Hungary, Romania, Lithuania, Latvia, Slovakia, Czechia, Estonia and Croatia (12 639 Euro). The ranking is closed by countries with high levels of wage per employed person in section of health activities: Finland (31 754 Euro), Sweden, Ireland, Denmark, Luxembourg (44 191 Euro). The extremely high differences in wages in

section Q can lead in time of free movement of working force to enormous effort of some specialists working in health sector in low income economies to move and work in health sector in high income economies. This is a problem also of Slovak health care sector. A lot of very good qualified nurses or physicians leave Slovakia and try to find a much better paid job for example in Austria, Germany or other EU country. To ensure good quality of public health in future in Slovakia will have to be related also with an increase of wages paid in section Q. Otherwise this section can lose lot of very qualified specialist. The increase of wage will not only stimulate the persons employed in health section of economy, but it will increase also the productivity of this nonproductive section of the Slovak economy.

Fig. 6: Wages per employed person in section Q in Euro



Source: Eurostat, own calculations

Conclusion

The labor productivity in section Q not only in Slovakia but also in other EU countries was lower than the overall productivity level. In 2015 the highest relative and absolute difference in both productivities was achieved in Ireland where to total LP jumped to 119 037 Euro and the productivity in section Q stood at 52 171 Euro which means that the difference of the productivity levels was as high as 66 866 Euro.

The real growth of productivity in section Q in Slovakia did not reach the high real increases of the overall productivity. The total productivity declined in the time span of 15 years from 2000 to 2015 only in 2009, while the annual real LP in section Q dropped in 2002 – 2004, 2009, 2011 and 2014. One of the reasons why the productivity in section Q grew only moderately between 2000 and 2015 is a low investment activity in this section. The investment rate in Slovak economy ranged between 22.5 % to 33.3 % (average investment rate in 15 years was as high as 28 %) which represents a strong overall investment activity. The investment rate in section Q varied between 7.8 % to 23.1 % with an average rate in 15 years' time span of only 15.5 %. The low investment rate can be one of the reasons why the productivity in section Q did not copy the strong overall real increase of the total LP in Slovakia.

Acknowledgment

This paper was supported by the Slovak Scientific Grant Agency as part of the research project VEGA 1/0376/17.

References

- Eurostat. (n.d.). Retrieved May, 2017, from <http://ec.europa.eu/eurostat/data/database>
- Freeman, R. (2008). Labour Productivity Indicators. Retrieved May 05, 2016, from <https://www.oecd.org/std/productivity-stats/2352458.pdf>
- Frenakova, M., Gazda, V., & Jasovska, J. (2010). Hidden Cooperation or Competition among Industrial Production Branches: Some Results for the Slovak Republic. *E&M Ekonomie a management*, 13(3), 6-15. ISSN: 1212-3609
- Loster, T., & Pavelka, T. (2013). Evaluating of the Results of Clustering in Practical Economic Tasks. In Loster Tomas, Pavelka Tomas (Eds.), *7th International Days of Statistics and Economics*. pp. 804-818. Prague, Czech Republic. ISBN: 978-80-86175-87-4
- Megyessiova, S., & Lieskovska, V. (2015). Decomposition of GDP Growth and Convergence of Selected Indicators. pp. 931-937. Zlin, Czech Republic. ISBN: 978-80-7454-482-8
- Mourelle, E., & Stankovicova, I. (2016). Measuring the relationship between inflation and economic growth: Evidence from selected European countries. In Loster Tomas, Pavelka Tomas (Eds.), *10th International Days of Statistics and Economics* pp. 1292-1301. Prague, Czech Republic. ISBN: 978-80-87990-10-0

OECD. (2001). Measuring Productivity - OECD Manual. Measurement of Aggregate and Industry-level Productivity Growth. Retrieved from <https://www.oecd.org/std/productivity-stats/2352458.pdf>

Pivonka, T., & Loster, T. (2013). Clustering of EU Countries Before and During Crisis. In Loster Tomas, Pavelka Tomas (Eds.), 7th International Days of Statistics and Economics. pp. 1110-1121. Prague, Czech Republic. ISBN: 978-80-86175-87-4

Vojtkova, M. (2010). Regional disparities in the efficiency of industrial activities. In Regional disparities in Central and Eastern Europe: theoretical models and empirical analyses. pp. 289-304. Smolenice, Slovakia. ISBN: 978-80-7144-180-9.

Zelinsky, T. (2012). Changes in Relative Material Deprivation in Regions of Slovakia and the Czech Republic. *Panoeconomicus*, 59(3), 335-353. doi:10.2298/pan1203335z

Contact

Silvia Megyesiová

University of Economics in Bratislava

Tajovského 13, 041 30 Košice, Slovakia

silvia.megyesiova@euke.sk

Vanda Lieskovská

University of Economics in Bratislava

Tajovského 13, 041 30 Košice, Slovakia

vanda.lieskovska@euke.sk