

Trends in employment and labour productivity in the woodworking industry in selected EU countries

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Abstract: *Trends in employment and labour productivity in the woodworking industry in selected EU countries.* Labour productivity and employment levels are among the most important factors determining the development of enterprises, regardless of the nature of their economic activity. From the point of view of the furniture industry, whose significant position in the ranking of producers and exporters is influenced by the woodworking industry, the main supplier of raw material for production, it seems important to analyse the dynamics and structure of employment, as well as to assess the use of human resources in wood processing companies. The main objective of the paper was to compare selected aspects of the labour market and the efficiency of human resources use in the European Community, with particular emphasis on the countries belonging to the Visegrad Group. The research was supplemented by a detailed analysis of men employed in the woodworking industry and their belonging to particular age groups. On the basis of the conducted analyses it was indicated that there are differences in the aspect of production potential, employment level and labour productivity.

Keywords: wood industry, employment, labour productivity, EU countries

INTRODUCTION

Nowadays, the labour market in the EU faces many problems and dilemmas; an important one is the issue of efficient use of human resources in the wood industry. Crucial aspects are the adjustment of the level and structure of employment to the existing conditions and technical parameters, as well as the development of the competence of employees adequate to the implemented, innovative technical and organizational solutions. Wood industry is an important branch of the EU economy, and the European Community plays a special role in the global market of wood and wood products. This is confirmed by a high position of some EU countries, in particular the old member states, in the world ranking of producers and exporters of wood products. It is also worth noting that Poland is one of the leaders in terms of the value of production and furniture export (Ochman-Nowicka, Lis 2004; Adamowicz, Wiktorski 2006; Grzegorzewska, Stasiak-Betlejewska 2014; KPMG Report 2017), and among the most important semi-finished products used in the production of furniture are wood-based panels manufactured by wood processing enterprises. The analysis of the furniture manufacturing sector conducted by Gołaś (2017) revealed that there are significant differences between EU countries in terms of labour productivity measured by added value. Overall, the highest labour productivity was recorded in the furniture industry in the old EU member states, while the countries that joined the EU after 2003 had the lowest productivity. Moreover, the regression model revealed that the technological equipment used by employees was the factor causing the greatest diversification in the EU furniture industry (Report EU furniture; Landmann 2004; Gołaś 2017).

Labour market flexibility is its ability to adapt quickly to changing conditions and technologies. According to the macroeconomic approach, this means a way to achieve a balance in the labour market that can be distorted by different fluctuations in supply and demand or structural changes. The manner and pace of rebalancing depend on the degree of flexibility of the labour market, including labour demand, labour supply and wage flexibility. According to the microeconomic approach, labour market flexibility is the ability of enterprises to adapt to the scope of human resources policy and to satisfy the living needs of

both employees and job seekers. Among the EU28 economies, a strong differentiation can be observed on the “core” and “peripheries” (Landesmann et al. 2015), which is reflected in the growing disparity in labour productivity (Filippetti and Peyrache 2013). The general context in which the productivity gap in the EU is growing is defined as “great divergence”. (OECD 2018).

Labour market can be analysed with the use of many indicators. However, one of the most important factors affecting the development of economic entities and particular sectors of the economy, including the wood industry, is the effective use of labour resources. Achieving high labour productivity contributes to reducing costs, increasing the supply of cheaper goods and services, thus translates into an increase in the purchasing power of societies, their wealth and competitive abilities (Gołaś, Kozera 2008).

MATERIALS

The main objective of the research was to analyse selected aspects of employment and labour productivity in the woodworking industry in the countries belonging to the Visegrad Group (i.e. the Czech Republic, Poland, Hungary, Slovakia). The comparative analysis was carried out against the background of all EU member states (EU28), as well as the group of countries that joined the European Union after 2003. (EU13). The temporal scope of the research was adopted for the years 2010–2017. During the research, a horizontal analysis (allowing to determine the dynamics of selected economic and financial categories) was carried out, as well as a vertical analysis (determining the importance of individual countries in creating the value of sold woodworking industry and jobs in this industry). In order to determine the level of relative differentiation of the studied characteristics, the coefficient of variation was used, which is the relation of standard deviation and the average value of a given characteristic, taking into account the whole period covered by the research. Further parts of the research focused on the analysis of employment in the wood industry and investigated the profile of employment by calculating the number of men employed in the wood industry and referring this value to the total number of employees in this sector of industry. In order to make the analysis of employment more detailed, the percentage of men employed in the woodworking industry was examined and assigned to the adopted age groups, namely: 15–39 years of age, 40–59 years of age and over 60 years of age.

RESULTS

According to Eurostat data, in 2010 the sold production of the wood industry in the EU28 countries amounted to 112.0 billion euro, of which only 16.0% was produced in the new Member States (Table 1). This confirms a much greater importance of the EU15 countries in the sold production of wood and wood products. Among the analysed countries of the Visegrad Group, Poland was the largest producer of wood and wood products. The value of sold production of the wood processing industry in this country in 2010 was 6.1 billion euro; this accounted for 5.4% and as much as 34.1% of the product value of wood industry in, respectively, the EU28 and EU13. The Czech Republic should be mentioned as the next largest producer of the wood industry. The value of sold production of wood and wood products in 2010 amounted to 3.1 billion euro, which constituted 2.8% of the value of production of this industry produced by all EU Member States and 17.3% of the production achieved by the countries included in the EU13. At the beginning of the analysed period, a significantly lower value of sold production of the wood industry was observed in Slovakia (1.2 billion euro) and Hungary (0.7 billion euro). The share of these countries in creating the value of wood and wood products was 1.1 and 0.6%, respectively.

Between 2010 and 2017, the sold production of the wood industry in the EU countries increased by 12.2% and at the end of the analysed period amounted to 125.7 billion euro.

Such a slight increase within a seven-year period was caused mainly by a decrease in the dynamics of the discussed phenomenon in years 2011–2012, which was also a consequence of long-term effects of the economic crisis which affected the majority of sectors of the national economies of the EU countries.

Table 1. Sold production and employment in the wood industry in selected EU countries in years 2010–2017

Itemisation	2010	2011	2012	2013	2014	2015	2016	2017	2017/2010	V*
Sold production value [billions euro]										
UE-28	112.0	118.1	114.0	112.2	118.5	122.2	121.5	125.7	112.2	4.2
UE-13	17.9	19.6	19.5	20.3	22.2	23.2	23.0	24.9	138.9	11.0
Czechia	3.1	3.4	3.2	3.0	3.0	3.2	3.3	3.5	111.8	4.9
Hungary	0.7	0.7	0.7	0.7	0.8	0.8	0.9	1.0	135.2	13.7
Poland	6.1	6.6	6.7	6.9	7.7	8.1	7.6	8.5	140.3	11.4
Slovakia	1.2	0.9	0.8	0.8	1.1	1.2	1.0	1.1	95.1	16.0
Structure of sold production value [%]									2017–2010	V*
UE-28	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.0	0.0
UE-13	16.1	16.6	17.1	18.1	18.8	19.0	18.9	19.8	3.7	7.4
Czechia	2.8	2.9	2.8	2.7	2.6	2.6	2.7	2.8	0.0	3.4
Hungary	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.8	0.2	9.9
Poland	5.4	5.6	5.9	6.2	6.5	6.6	6.3	6.8	1.4	7.9
Slovakia	1.1	0.8	0.7	0.7	1.0	1.0	0.8	0.9	-0.2	14.9
Number of people employed [thousand]									2017/2010	V*
UE-28	1 060.9	1 041.0	1 001.8	967.9	982.6	975.8	972.4	970.8	91.5	3.6
UE-13	385.0	387.7	376.5	369.6	381.8	387.5	387.6	385.3	100.1	1.7
Czechia	61.2	60.4	59.2	55.4	54.4	54.3	54.5	53.8	87.9	5.4
Hungary	18.5	17.6	17.2	17.0	17.4	18.0	18.4	18.3	98.9	3.2
Poland	124.8	121.8	115.4	113.9	120.8	123.8	128.3	127.9	102.5	4.3
Slovakia	28.1	27.9	22.9	20.1	23.4	24.7	21.9	23.9	85.0	11.4
Structure of people employed [%]									2017–2010	V*
UE-28	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.0	0.0
UE-13	36.3	37.2	37.6	38.2	38.9	39.7	39.9	39.7	3.4	3.4
Czechia	5.8	5.8	5.9	5.7	5.5	5.6	5.6	5.5	0.0	0.0
Hungary	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9	3.7	7.4
Poland	11.8	11.7	11.5	11.8	12.3	12.7	13.2	13.2	0.0	3.4
Slovakia	2.6	2.7	2.3	2.1	2.4	2.5	2.3	2.5	0.2	9.9

*V – Coefficient of variation

Source: own elaboration based on Eurostat.

In 2017, the share of the EU13 countries in the production of wood industry was 19.8%, i.e. 3.7 p.p. higher than at the beginning of the analysed period. This resulted from a higher growth rate of the value of sold production of the wood processing industry in this group of countries than in the EU15 (38.9 compared to 12.2%). It should be noted, however, that it is still the member states that joined the EU before 2004 that played a greater role in creating the sold production of wood and wooden products, although the difference between the distinguished groups of countries decreased. The highest increase in the production of the wood industry in terms of value was observed in the case of Poland – by 40.3% to the level of 8.5 billion euro. Favourable economic tendencies in this country caused an increase in its

importance in creating the value of sold production of wood and wood products in the EU (from 5.4 to 6.8%). The Czech Republic was ranked next in terms of the value of production of wood and wood products among the Visegrad Group countries (3.5 billion euro), which recorded a slight increase in this indicator (11.8%). This contributed to maintaining the country's share in generating the value of sold production of the wood processing industry in the EU at the same level. The situation was diversified in the case of other Visegrad Group countries of lesser importance for the creation of EU wood industry production. A significant increase (by 35.2%) in the value of sold production of wood and wood products was observed in Hungary – 1.0 billion euro at the end of the analysed period amounted. In Slovakia, on the other hand, there was a drop by 4.9%, which contributed to a decrease in the importance of this country in creating the EU value of sold production of the wood industry. The highest level of the coefficient of variation in the value of sold production of this industry, showing a relative diversity of this feature, was observed for the Slovak wood industry (16.0%) and the lowest for the Czech Republic (4.9%).

As shown in Table 1, in 2010, the woodworking industry in the EU28 countries employed 1060.9 thousand workers, of which 385.0 thousand in the group of new member states, which constituted 36.3% of the total employment in this industry in the European Union. Again, among the Visegrad Group countries, the first place was taken by Poland, where 124.8 thousand people found employment in the production of wood and wood products, which constituted 11.8% of the employed in the EU28 and as much as 32.4% of the employed in the EU13. The level of employment in the Czech Republic was 50% lower than in Poland and in 2010 it was 61.2 thousand people, which constituted 5.8% of the employed in the wood industry in all of the EU member states. Significantly lower employment was observed in Slovakia (28.1 thousand people) and Hungary (18.5 thousand people). The share of these countries in the creation of jobs in the EU wood industry was 2.8 and 1.6%, respectively. It should be noted that the number of people employed in the wood industry in relation to the total number of people employed in this industry in the Czech Republic, Poland and Slovakia was at a similar level of 5–6%. In Hungary, on the other hand, the indicator was almost twice as low (2.8%).

Between 2010 and 2017 employment in enterprises manufacturing wood and wood products in the EU decreased by 8.5% and at the end of the analysed period was at the level of 970.8 thousand people, 385.3 of whom were employed in companies located in the EU13. In this respect the significance of the new member states increased by 3.7 p.p. to the level of 39.7%. Among the analysed countries of the Visegrad Group, only in Poland there was a subtle increase in the number of employees (by 2.5%) to the level of 127.9 thousand people. This contributed to the slightly increasing role of Poland in creating jobs in the woodworking industry. In other countries covered by the analysis the employment level decreased by 15.0% in Slovakia, 12.1% in the Czech Republic and 11.1% in Hungary. The highest rate of the variation coefficient of the number of employees, which determines the relative diversity of the feature, was observed for the Slovak wood industry (11.4%), and the lowest one for Hungary (3.2%).

One of the basic measures of labour productivity is the value of production per employee. As can be seen from the data presented in Figure 1 at the beginning of the analysed period, it amounted to 105 thousand euro on average in the EU member states, and it was more than twice as low for the EU13 countries. This proves that the labour productivity in the woodworking industry in the EU13 countries is lower than the average in the EU member states. Among the countries that are members of the Visegrad Group, the highest values of sold production of wood and wood products per employee were reached by the Czech Republic (50.9 thousand euro) and Poland (48.5 thousand euro). Moreover, those two

countries also exceeded the average of the new member states. Lower values of this indicator were recorded in Slovakia (42.5 thousand euro) and Hungary (39.0 thousand euro).

Between 2010 and 2017, the value of sold production of the wood processing industry per employee increased by 22.5% to 129.4 thousand euro in the EU28. In the new member states, this indicator increased by 38.8%. At the end of the analysed period, it was at the level of 64.7 thousand euro, but it was still significantly lower than the average in the EU28. Among the countries covered by the analysis, the highest labour productivity was recorded in Poland. The abovementioned rate increased by 37.0% to 66.4 thousand euro. The Czech Republic (64.7 thousand euro) ranked next in terms of labour productivity of the woodworking industry measured by the value of production per employee. Significantly lower rates were observed in Slovakia (47.5 thousand euro) and Hungary (53.3 thousand euro), although it should be noted that the latter country recorded a significant rate of growth in the value of woodworking industry production per employee (36.6%).

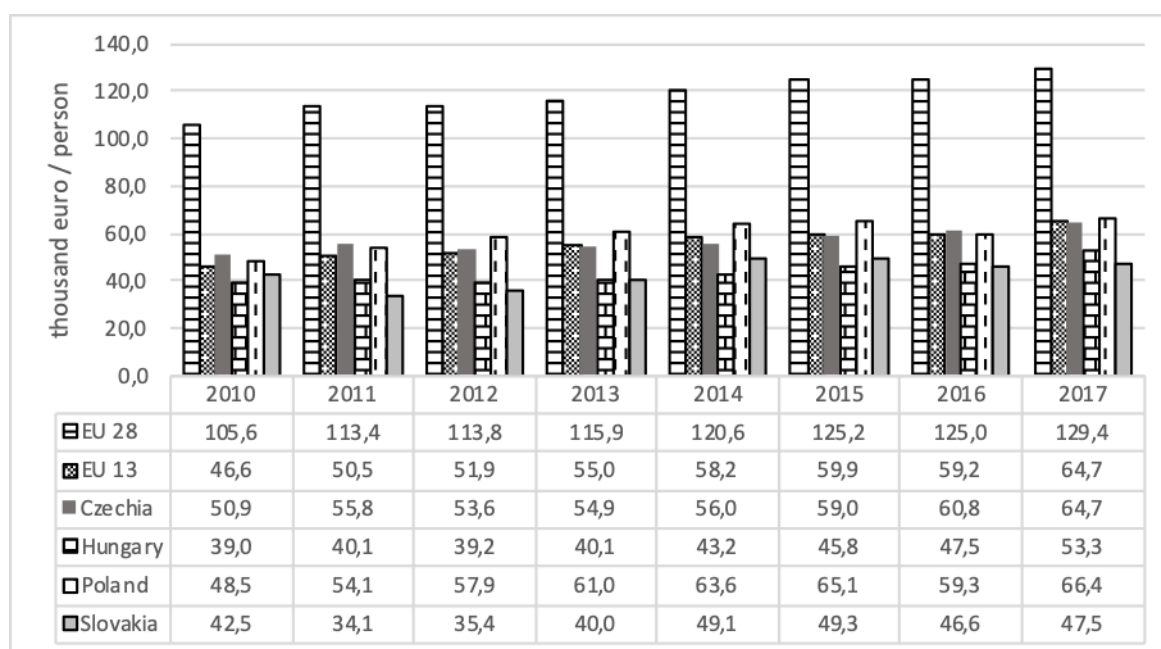


Chart 1. Value of sold production of wood industry per employee in selected EU countries in 2010–2017
Source: own elaboration based on Eurostat.

The analysis of employment in the wood industry was developed by analysis of the structure of employment depending on the age group of employees. Data on the classification of men employed in the woodworking industry by age group was presented in Table 2.

Between 2010 and 2017, in EU28 countries, in all three age groups, men employed in the woodworking industry accounted for more than 80% of all employees. In the age groups 15–39 and 40–59, the share of employed men among all employees ranged from 83.5% to 87.0% and from 81.5% to 83.9%, respectively. The greater variability in the number of all men employed in that industry was observed in the group of employees over 60 years of age (3.2%). Additionally, in the last year of the analysis, this group was characterized by a slight increase in the share of the structure of employment in the woodworking industry. Only a larger share than in 2017 can be seen for 2012, when the share of men in total employment reached 90.2%.

A significant share of men in the total number of the employed can also be found in the analysis of the discussed figure in the EU13. In the group of people aged 15–39, the share of men ranged from 83.4–87.7%. A similar structure of men among all employees was observed in the group of people aged 40–59 (from 79.1% in 2012 and 2014 to 80.9% in 2016). As in

the case of EU28 countries, the lowest share of employed men was observed in the two youngest age groups of employees – the highest value was again observed for people over 60 (3.7%). Moreover, this age group recorded a decrease of 2.5 p.p. in 2017 in comparison to 2010.

Table 2. Percentage of men employed in the woodworking industry by age group in selected EU countries 2010–2017

Itemisation	Age group	2010	2011	2012	2013	2014	2015	2016	2017	2017–2010 [p.p]	V*
UE-28	15–39	84.2	85.6	84.7	84.9	83.5	87.0	86.2	83.8	-0.4	1.4
	40–59	81.5	82.0	83.9	82.6	81.9	82.0	82.6	82.0	0.5	0.9
	60 or over	86.9	86.1	90.2	86.7	83.6	81.4	85.1	88.2	1.3	3.2
UE-13	15–39	83.4	85.3	84.4	84.7	84.8	87.7	86.0	83.7	0.3	1.6
	40–59	79.7	79.5	79.1	78.4	79.1	80.7	80.9	80.3	0.6	1.1
	60 or over	92.8	91.7	92.9	92.3	90.9	83.6	86.5	90.3	-2.5	3.7
Czechia	15–39	85.4	87.0	80.0	87.0	88.1	92.1	78.4	84.0	-1.4	5.2
	40–59	77.3	75.5	79.2	78.8	78.2	83.6	77.1	81.4	4.1	3.3
	60 or over	91.7	95.5	100.0	81.5	96.3	90.0	95.5	97.5	5.8	6.2
Hungary	15–39	80.5	87.0	90.4	92.2	96.8	88.7	89.5	90.7	10.2	5.2
	40–59	86.0	88.8	86.9	83.2	77.0	70.0	71.3	83.2	-2.8	8.9
	60 or over	100.0	88.6	88.9	100.0	85.7	100.0	93.3	86.4	-13.6	6.8
Poland	15–39	83.5	86.4	86.7	83.7	81.8	88.6	89.4	87.7	4.2	3.1
	40–59	82.8	82.3	81.0	81.7	83.7	79.4	84.9	81.1	-1.7	2.1
	60 or over	85.4	92.5	98.8	100.0	91.5	79.2	85.7	95.0	9.6	7.9
Slovakia	15–39	92.4	93.9	89.1	80.7	92.6	92.6	75.3	76.7	-15.7	9.0
	40–59	79.5	81.1	87.8	89.3	81.7	77.7	77.5	92.1	12.6	6.7
	60 or over	100.0	100.0	87.5	100.0	83.3	100.0	100.0	100	0.0	7.1

*V – Coefficient of variation

Source: own elaboration based on Eurostat.

Analysing the share of male employees in the woodworking industry in the Visegrad countries, it can be observed that the distinguished age groups were characterized by a greater variability than in the EU13 countries, to which the Visegrad countries belong. In the Czech Republic, the age group that showed the greatest variability was the + 60 years old. The coefficient of variation for this group was at the level of 6.2%, and the values in the analysed years ranged from 81.5% to 100.0%. This value may result from a small number of employed women whose age corresponds with that age group. The analysis of the figures obtained for the abovementioned age group shows that during as many as 7 years of the study, the share of male employees was over 90%. The percentage of men employed in other age groups in the Czech Republic ranged from 77.3% to 92.1%.

In contrast to the Czech Republic, the highest variability in the share of the male employees (8.9%) in Hungary was observed in the 40–59 age group. The percentage of men employed in woodworking companies ranged from 70 to 88.8%, while the lowest values were recorded in the final years period covered by the analysis, which indicates an increasing share of women in the number of employees in woodworking companies.

In the case of Poland, the percentage of men employed in wood processing companies was the lowest in the 40–59 age group. There were significantly more men in this group – from about 80% to almost 85%. In 2017, however, the share of men decreased to 81.1%,

which also proves that the number of employed women in this group is growing. In other classification groups of the employed, the number of male employees was equally high and ranged from 81.8% in the age group 15–39 to even 100.0% in the age group 60 and more.

In contrast to the previously analysed countries of the Visegrad Group, Slovakia was characterized by the highest coefficient of variation of the examined figure in the group of people aged 15–39 – the value of this indicator was 9.0%. In the abovementioned group employed men constitute between 75.3 and 93.9% of the total number of employed people.

CONCLUSIONS

The research allows the following conclusions to be drawn:

1. Among the analysed countries of the Visegrad Group, Poland played a leading role in the creation of production value and jobs in the wood industry. Almost one third of wood industry production in terms of value in the EU13 countries was achieved in Polish companies. Over 32% of people employed in the wood industry in the new EU member states found employment in Polish enterprises. A lower level of employment, as well as a lower value of sold production of wood and wood products, was observed in Hungary and Slovakia.
2. The efficiency of the use of labour resources is much lower in the EU13 than the average in the European Community as a whole. The highest productivity measured as the value of sold production per employee was recorded in Poland and the Czech Republic.
3. The high share of men in particular age groups of the total number of employed may result from the specificity of the woodworking industry. The percentage of men employed, regardless of their age group, in both the EU13 and EU28 countries, was over 80%.
4. In the Visegrad countries, it can be observed that the employment level in the selected age groups was more volatile than the average in the EU13 group of countries to which they belong.
5. The share of women in the 15–39 and 40–59 age groups in the total number of the employed has increased in recent years in both the EU28 and the EU13. On the other hand, in the Czech Republic and Slovakia, the proportion of women in each age group has decreased in recent years. The share of the employed women in the 15–59 age group in Poland increased at the end of the analysed period.

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Streszczenie: *Tendencje zmian w zatrudnieniu i wydajność pracy w przemyśle drzewnym w wybranych krajach UE.* Wydajność pracy i poziom zatrudnienia stanowią jedne z ważniejszych czynników determinujących rozwój przedsiębiorstwa, niezależnie od charakteru prowadzonej przez nie działalności gospodarczej. Z punktu widzenia przemysłu meblarskiego, na którego znaczącą pozycję w rankingu producentów i eksporterów wywiera wpływ przemysł drzewny, główny dostawca surowca do produkcji, istotną kwestią wydaje się dokonanie analizy dynamiki i struktury zatrudnienia, a także oceny wykorzystania zasobów ludzkich w zakładach zajmujących się przerobem drewna. Głównym celem artykułu jest porównanie wybranych aspektów dotyczących rynku pracy i wydajności wykorzystania zasobów ludzkich we Wspólnocie Europejskiej, ze szczególnym uwzględnieniem krajów należących do Grupy Wyszehradzkiej. Uzupełnienie badań stanowi szczegółowa analiza zatrudnionych w przemyśle drzewnym mężczyzn i ich przynależność do poszczególnych grup wiekowych. Na podstawie przeprowadzonych analiz wskazano, że występują różnice między wyróżnionymi krajami w aspekcie potencjału produkcyjnego, poziomu zatrudnienia i wydajności pracy.

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