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EMPLOYMENT RATE IN WOOD-PROCESSING AND FURNITURE INDUSTRIES IN THE CONTEXT OF EUROPEAN UNION ENLARGEMENT - - COMPARISON BETWEEN BULGARIA, ROMANIA AND MACEDONIA

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ABSTRACT

Labour is one of the most important production factors, since the qualification and loyalty of labour force are the basic success elements in any industrial sector. Employment rate is considered to be the key social indicator when studying the developments within certain labour markets. This is particularly relevant to the wood-processing and furniture industries. As a structural indicator, employment reveals the structure of labour markets and economic systems, measured through the balance between labour supply and demand. The existence of sufficient and competent workforce is a necessary prerequisite for achieving smart, sustainable and inclusive economic growth and stability of the industries all over the world, and with great significance for the European Union member states (in compliance with the adopted Europe 2020 Strategy). Furthermore, specific problems have appeared in the new European Union member states, which eventually would be encountered by the countries in the waiting line. Indices such as number and size of enterprises, capital consumption and price of output are variables that change over time. Economic improvement differs before and after the enlargement of the Union. The main factors which determine the employment rate in the wood-processing and furniture industries have been outlined and analyzed in this paper. They reveal the employment rates in the studied countries before and after the enlargement of the EU, and can be used for macroeconomic, productivity and competitiveness studies.

Key words: employment, wood processing, furniture, European Union, Bulgaria, Romania, Macedonia

1. INTRODUCTION

Employment in the sectors of the national economy forms the basis of the population welfare and production growth. During the enlargement of the European Union, certain countries are undergoing adaptation and development of the economic parameters of the economy in line with the other Member States (Convergence and Cohesion (Leonardi R. 1995). These processes are difficult and involve a change in the ratio of factors of production in many sectors of the economy. Some of the candidates had to reduce employment in individual sectors, others to transform into more productive forms with re-qualification of the employees (Maarten G. et.al., 2015). According to E. Marelli (2010), the dilemmas in the transition countries are the choice between regional convergence and regional cohesion and inconsistencies among the countries against inconsistencies inside them. The regional aspect of pre-accession and post-accession processes is strongly subordinated to sectoral

processes, resulting in creation of a structure in the sectors and labor resources, leading the working population to move to less-favored areas (Patton, W. and Doherty, C., 2017). Convergence is slow, where the industry is superior to services (E. Marelli, 2010). The convergence of Bulgaria's enlargement along with positive has also had a negative impact. It has forced the introduction of new technologies in wood and furniture industry. On the one hand, labour productivity in both sectors has increased in an attempt to reach the levels of the Western European countries, while technological unemployment has left some of the skilled workers outside the respective sectors.

According to the Lisbon strategy, the main determinants of well-being are: macroeconomic environment, microeconomic problems and employment and human resource use issues (Yotova, 2008). The wood-processing and furniture industries are essential for both candidate and current member states. Their strong relationship with forest resources (Dajana Klein et.al., 2009) and their location in more backward areas provide income in areas with small settlements and high unemployment.

A significant number of employment and labor market surveys were conducted in countries in transition to a market economy before their entry into the European Union, as well as the effects afterwards. At the same time, sectoral analyzes are not detailed to specific industries, making a similar type of research essential to the practice, and outlining the future development of sectors such as the wood-processing and furniture industries.

The purpose of this article is to make an econometric analysis of the main determinants of employment in wood processing and production of furniture sectors in the analyzed countries and to highlight their development after the accession of the countries to the European Union. In addition, comparisons have been made with selected Member States for which there is sufficient statistical information available and which have developed industries in the sectors.

2. METHODOLOGY

In the present study, econometric models are used to describe the development of employment rate in the sectors studied. A wide range of models have been considered in the literature to explore the general and specific factors affecting sectoral employment. Most of them consider growth as the main output variable, and employment is an independent factor represented by productivity (Basile R, 2010). Attention is paid to labour market convergence as a factor of growth and employment (J. Tyrowicz and P. Wo'jcik, 2010; Marelli E., M. Signorelli, 2010; Lundgren T., 2005). Mercer E. (2000) directly assesses employment in the forest sector through an exponential model with generic factors included - the main variable being time. The exponential model is a method used for various factors, such as the minimum wage. Neumark, D. and W. Wascher (1992), Euwals R et. al. (2004) use a linear multiple model to successfully describe employment as a result of supply and demand factors for part-time work.

Regression models of employment in wood-processing and the furniture industry, partly borrowed from a Grossman model (Webbink D.W., 1985), have been applied using the following general and specific variables:

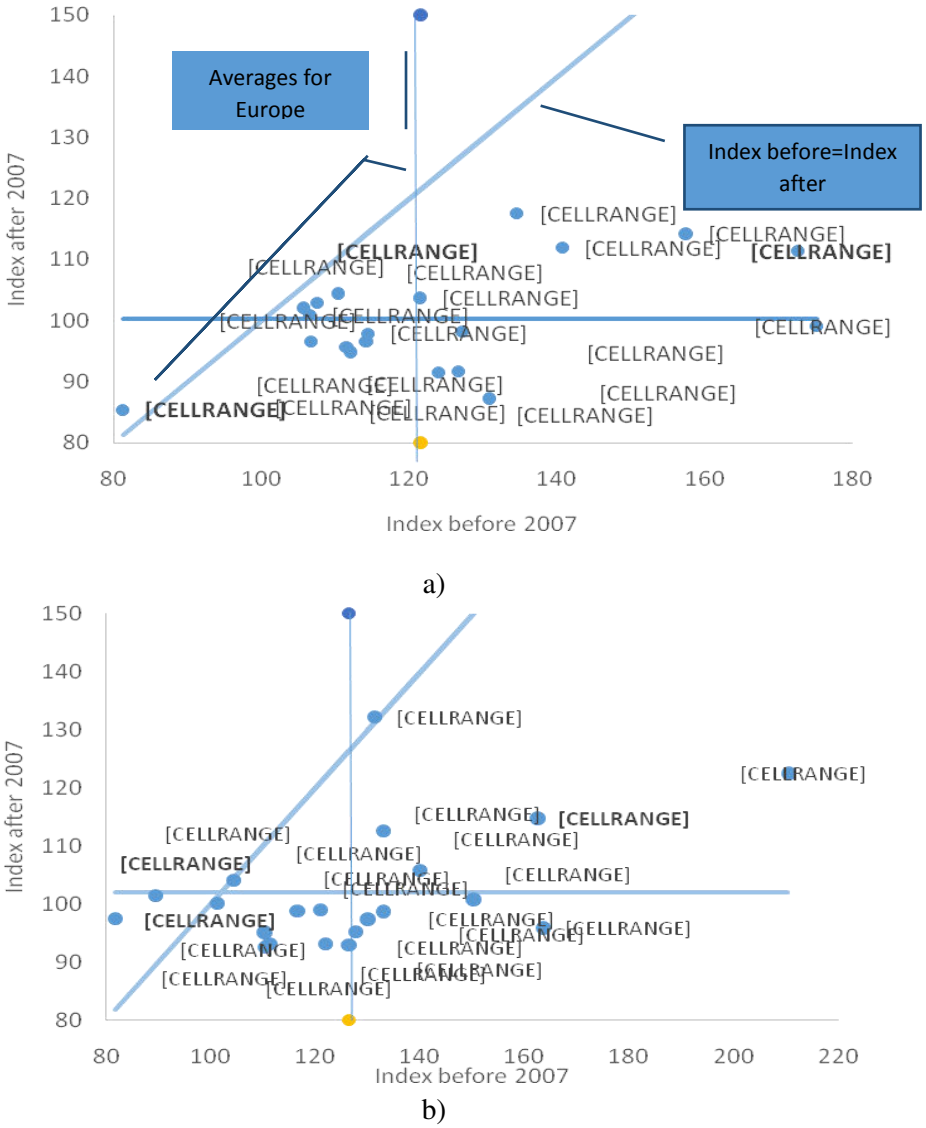
- Price indices on the domestic and external market of products from the sectors surveyed;
- Hourly rate;
- Production index;
- Gross Domestic Product Index;
- Import prices;
- Index of Population Numbers;
- Basic interest rate.
- Foreign Direct Investment (Megbowon E.T. et.al., 2016).

These factors are considered for the period 2000 - 2015. This relatively long duration allows for the detection of convergence and cohesion processes in the surveyed countries. A leading indicator for describing the long-term development of the sectors is the comparison of the average indices for 2000-2007 and 2008-2016. The aim is to determine the proximity of Bulgaria, Romania and Macedonia to the European trends, as well as whether the countries have permanent, slow or accelerated employment growth in the sectors.

The analysis is supplemented by a cluster analysis (Lazhar Sadaoui et al., (2012) measuring cohesiveness by agglomeration analysis. It helps to clarify the proximity of the countries concerned to those already in the European Union. The application of this method allows predominantly to express the hypothesis of convergence, being illustrative of the state of the objects surveyed.

2.1. Employment in furniture industry and wood-processing before and after the entry of Bulgaria and Romania into the EU

The use of the basic employment indices of the European countries for the studied sectors is compared with three development lines - the proportion, the average before 2007 and the average after 2007. The results are presented on Fig. 1.



a)

b)

Figure1. *Development of employment rate in: wood-processing - a) and furniture industry - b)*

The graph shows the long-term trends in employment. The figures are divided into four quadrants. The first quadrant is the countries with employment development before and after 2007 below the European average. The second one is below the average for 2007-2016 and above for 2000-2007. The third one is above the average for both periods, the fourth one is below the average for 2000-2007 and above for 2007-2016. The diagonal line shows the retention of rates since 2007. Above this line is the accelerated development, and below it - delayed. The Bulgarian performance for both studied sectors was below the average European level before 2007. Employment accelerated in the furniture sector,

but is still below average for Europe. In wood-processing it is above the average European level after 2007, but has been decreased in comparison with the previous period. Following the acceptance in the EU, the employment has increased only in the furniture industry sector. Romania is an example of a slowdown in the period 2000-2007, but successful across Europe. It loses much of its employment after joining the EU, but remains in the developed area - above the average in the sector after 2007. Macedonia is in the development area below the European level for both studied periods. The furniture industry is experiencing a revival. It is encouraging that the country is above the line of the symmetrical growth. Production of furniture is a much more perspective economic sector in comparison with the wood-processing industry, reaching the indices of the EU member states.

2.2. Factors affecting employment in the sectors

Factors affecting the studied sectors were established using regression models. The methodology of work left only statistically significant models and factors. Official data by Eurostat was used. The resulting variable is the 2010 employment index. The factor variables are respectively: production index - 2010 = 100; price index 2010 = 100; investments in fixed assets millions of local currency and the general economic factors expressed by time (trend). The results are presented in Table 1.

Table1. *Regression coefficients and significance parameters of experienced models*

Bulgarian Wood-processing						
Model number	Factor	b	R	p-value	a	Period
1	Production	,450	,883	,000	82,3	2007-2016
	Prices - domestic	-,233	,883	,022		
2	Production	,489	0,923	,003	53,5	2000-2007
3	Production	,406	,939	,000	67,2	2008-2016
Romanian Wood-processing						
1	Production	-,759	,593	,000	70,1	2000-2016
2	Production	-1,159	,830	,000	236,2	2000-2008
3	Production	,260	,789	,008	73,7	2009-2016
4	Investnents - tangible goods	,052	,831	,002	69,9	2000-2016

Bulgarian Production of furniture						
Model number	Factor	b	R	p-value	a	Period
1	Production	,319	,872	,002	47,9	2000-2016
	Time	5,263		,019		
	Time^2	-,308		,005		
2	Production	,234	,959	,012	53,3	2000-2007
	Time	3,785		,006		
3	Production	-8,423	,893	,004	117,2	2008-2016
	Time	,730		,010		
Romanian Production of furniture						
1	Production ^2	,004	,846	,008	158,4	2000-2016
	Time	-7,552		,000		
2	Production	-,561	,655	,008	223,9	2000-2007
3	Production	,481	,641	,017	56,8	2008-2016
Macedonian Production of furniture						
1	Production	2,615	0,8	,000	76,511	2008-2016

The table shows the specific development of employment rate before and after the entry into the European Union. The most important factor in wood-processing is the production index. In furniture industry important factors are the production index and the general economic factors. In Bulgaria for the entire survey period, each percentage of increased production provided 0.45% increase in employment in wood processing and 0.319% in the furniture industry. Prior to the accession of the country, the production was stronger factor than afterwards. In wood processing sector each percentage increase has led to an increase in employment by 0.489%, while after the country's accession it was 0.409%. In furniture industry, processes are opposite before and after. Before production, it created employment - 0.234%, and then its increase was accompanied by a decrease of 8.423% in the employment rate of each increase in production. The reasons for this are revealed, on the one hand, by lack of link between investment and employment, and on the other hand, the non-linear influence of the general economic conditions at the factor Time^2 = -0.308. It is apparent that after 2008-2009, these factors have a negative impact in comparison to the previous period. In Bulgaria this is a result of the lack of staff. The analysis of furniture industry after 2007 shows that the slowdown in the positive impact of the economy is within 3,055% = 3,785 (before) -0,735 (after).

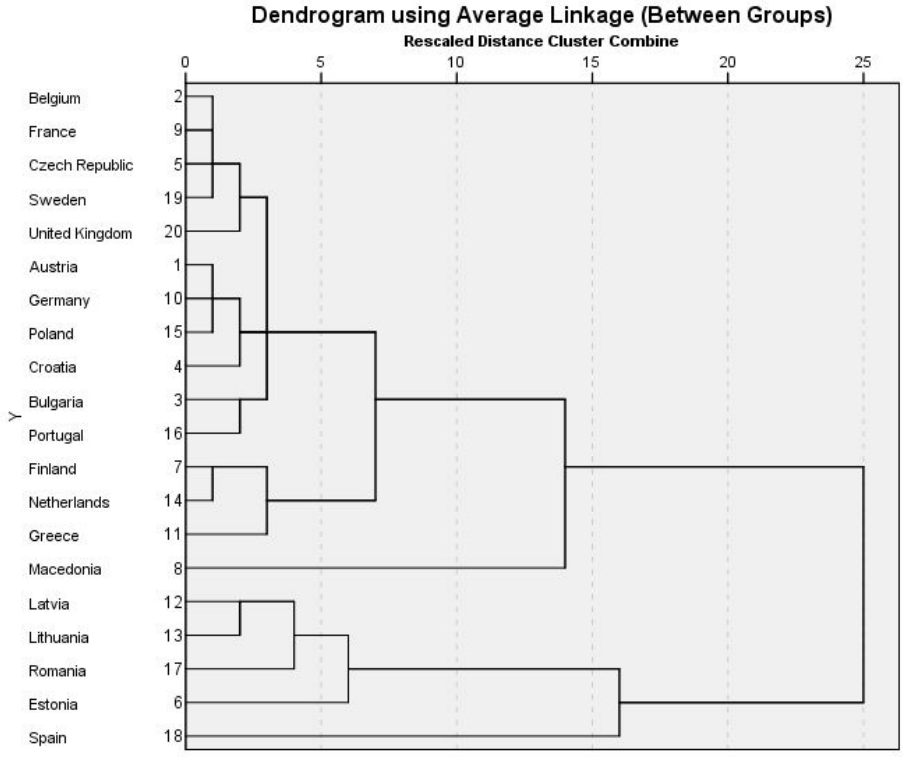
Romanian industries represent a typical example of convergence. Both in wood-processing and furniture industries there are processes of adaptation of production to the new economic conditions. Employment is adapted to the modern conditions: before the country's accession in the EU, each increased production rate was followed by decrease in employment by about 1.15% for the wood-processing and 0.561 in furniture production sector. Total economic conditions led to a decrease of 7.55% in employment in production of furniture. After the country's accession, the processes are heading in a positive direction. It can be assumed that the sectors are in the process of convergence and the employment in them is increasing: 0.260% in wood-processing and 0.481- in the production of furniture. Romania is the only country surveyed where investment in fixed assets has resulted in increased employment, namely in the wood-processing industry after the country's aaccession - 0.052%.

In the Republic of Macedonia, no statistically significant impact of the factors studied on the employment in the wood-processing industry has been discovered. This shows discrete development and lack of convergence. The situation in furniture industry is the opposite, where the processes are in development and the industry provides annual growth of employment by 2.615% for every percentage of increased production index. More employees were needed to meet the need of productivity.

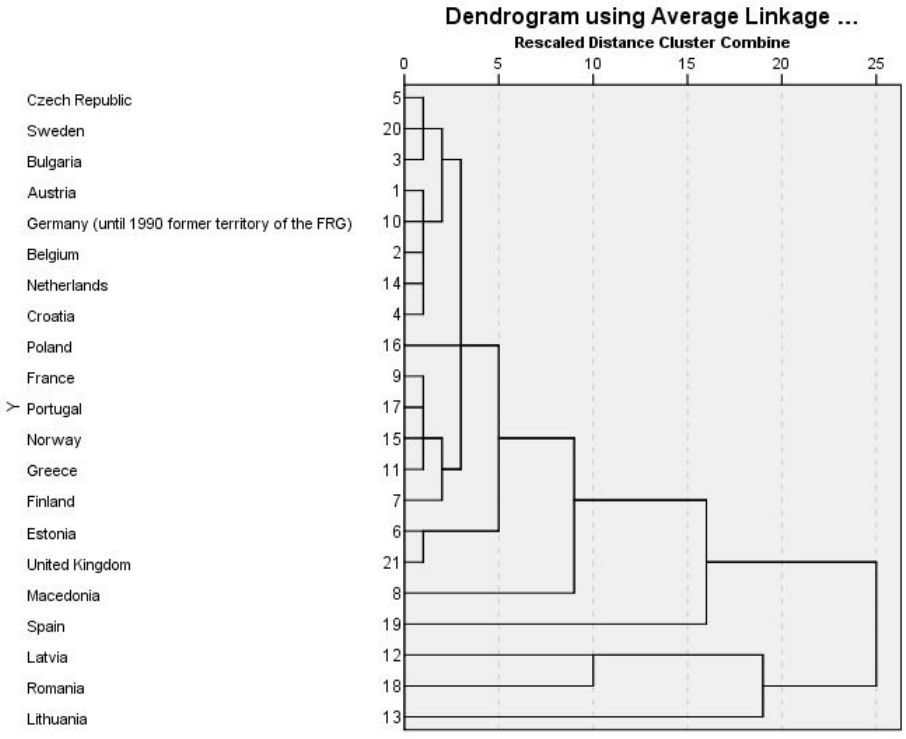
2.3. Existence of convergence

The survey suggests a hypothesis of employment convergence in the surveyed sectors of the economy with those in the EU. The applied algorithmic cluster analysis should focus on participation of the surveyed countries in one or another cluster. The results presented in the dendrogram on Fig. 2.

Proximity was measured on basis of employment indexes in wood-processing and furniture industry for the period 2008-2016. This approach should reveal the similarities in the processes related to the development of employment by years. The graphs clearly determine the presence of two major clusters with partial clusters inside them. Clusters complement the results shown in Figure 1. They can be summarized as clusters of countries with employment growth in the above-average European sectors and clusters below the average values. Bulgaria is in the second sector with a clear presence of convergence in both studied economic sectors. Romania is among the "best", i.e. in the group of countries with high and strategically sustainable levels of employment. The Republic of Macedonia has a lower convergence than the other two countries. Particularly weak is the convergence in wood-processing industry. There is a strong convergence among all studied countries in furniture industry sector and here Macedonia stands closer to the other countries. Interestingly, countries such as Norway, which has an increased exchange and exchange of personnel with the EU, are significantly similar to those of other countries. The latter result puts Macedonia in the task of achieving synergy in employment growth in the sectors studied with the Member States.



a)



b)

Figure 2. *Cluster analysis dendorgams: a) wood processing b) furniture industry*

3. CONCLUSION

In the countries surveyed, employment rate in wood-processing and furniture industry evolves in line with the European trends of varying degrees of proximity. The processes before and after the accession of Bulgaria and Romania to the EU, can be characterized as diverse. In both periods, production had had a major impact on employment, or, rather, managerial decisions in it. In Bulgaria, the market impact in wood-processing is stronger than in Romania, which can be seen as a reason for more rapid development of employment after the country's accession, compared to the pre-accession period. The long adaptation of the Romanian sectors before the accession is accompanied by a sustained and accelerated employment development after the accession. Macedonian wood-processing industry does not have an established development, which is a direct result of production decisions. It should find its way in the next 2 to 5 years in order to prepare the sector for European challenges. State and branch organizations should play a major role. The furniture industry of Macedonia has a very high strategic potential. The accelerated employment growth in this sector should also be accompanied by an accelerated investment in technology and innovations.

For all sectors and countries studied, the manufacturing decisions of the enterprises are essential. It can be expected that continuous improvement of furniture industry technologies may slow down the pace of employment development in this economic sector. This is also relevant to the wood-processing industry, where large enterprises will invest more in technology. Future efforts should be focused on continuous qualification improvement, lifelong learning activities, workers' participation in continuous vocational education and on-the-job training, as the qualification demands are growing even in elementary occupations.

REFERENCES

[1] Euwals, R., Hogerbrugge, M. (2004): Explaining the Growth of Part-Time Employment: Factors of Supply and DemandIZA Discussion Paper No. 1124.

[2] Goosa, M., Koningsb, J., Vandeweyerb., M. (2015): Employment Growth in Europe: The Roles of Innovation, Local Job Multipliers and Institutions, Utrecht School of Economics Tjalling C. Koopmans Research Institute Discussion Paper Series 15-10.

[3] Klein, D., Kies, U., Schulte. A. (2012): Regional employment trends of wood-based industries in Germany's forest cluster: a comparative shift-share analysis of post-reunification development European Journal of Forest Research, Springer-Verlag.

[4] Leonardi, R. (1995): Convergence, Cohesion and Integration in the European Union, Pallgrave Mc Milan, p.8.

[5] Marelli, E., Signorelli, M. (2010): Transition, Regional Features, Growth and Labour Market Dynamics, Springer-Verlag, p.105.

[6] Megbowon, E.T. et.al. (2016): Foreign direct investment inflow, capital formation and employment in south Africa: a time series analysis, International journal of economics and finance studies Vol 8, No 2, 2016 ISSN: 1309-8055 (Online), p. 178.

[7] Neumark, D., Wascher, W. (1992): Employment effects of minimum and subminimum wages: Panel data on state minimum wage laws. Industrial and Labor Relations Review, 46 (1), pp. 55–81.

[8] Patton, W., Doherty, C. (2017): Career, family, and workforce mobility: an interdisciplinary conversation. Journal of Career Development, p.6.

[9] Sadaoui, L., Badri, M., Badri, L., (2012): Improving Class Cohesion Measurement: Towards a Novel Approach Using Hierarchical Clustering, Journal of Software Engineering and Applications, 2012, 5, 449-458.

[10] Webbink, D. W. (1985): Factors affecting steel employment besides steel imports, FTC Bureau of Ecooomics, Working paper NO. 128, p. 2.

[11] Yotova, L. (2008): Bulgaria' welfare before and after the eu accession: between the expectations and reality, UNWE Yearbook, p.290.