

**CHANGES IN THE LABOUR MARKET FOR
THE WARMIA-MAZURY VOIVOD AND POLAND
IN 2005–2014**

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Key words: labour market, activity rate, employment rate, unemployment rate.

A b s t r a c t

The aim of this article is to show the relationship between the number of employees and economic activity of the population in the Warmia-Mazury Region and in Poland from 2005 to 2014. This situation on the labour market was characterised by the values of factor activity, employment rate and unemployment rate. The source of information for the calculation was data from statistical offices – the provincial, Central and Regional Labour Office. The study showed positive changes expressed by increasing employment mostly in private enterprises belonging to the SME sector. These changes were significantly correlated with the values of unemployment rate.

**ZMIANY NA RYNKU PRACY W WOJEWÓDZTWIE WARMIŃSKO-MAZURSKIM
I W POLSCE W LATACH 2005–2014**

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Słowa kluczowe: rynek pracy, współczynnik aktywności zawodowej, wskaźnik zatrudnienia, stopa bezrobocia.

A b s t r a c t

Celem artykułu jest ukazanie zależności między liczbą pracujących a aktywnością ekonomiczną mieszkańców województwa warmińsko-mazurskiego i Polski w latach 2005–2014. Sytuację na rynku pracy charakteryzowano wartościami współczynnika aktywności zawodowej, wskaźnika zatrudnienia

oraz stopy bezrobocia. Źródłem informacji do obliczeń były dane urzędów statystycznych – wojewódzkiego i głównego oraz Wojewódzkiego Urzędu Pracy w Olsztynie. Przeprowadzone badania wykazały pozytywne zmiany wyrażane zwiększającym się zatrudnieniem, głównie w przedsiębiorstwach prywatnych należących do sektora MSP. Zmiany te były istotnie skorelowane z wartościami stóp bezrobocia.

Introduction

Individual countries and regions undertake various activities aimed at building the competitiveness of their economies, which in turn should lead to the increasing economic wealth of the population. The ability to achieve this is determined by many factors, the amount of labour being one of the most important. The amount of this labour and the access to it is variable and dependent on a number of phenomena, such as globalization, technological change, demographic change, multiculturalism resulting from population movements, or economic crises occurring periodically. These processes result in turbulence in the economy and labour markets. The scope, intensity and frequency of these pulses should be a factor in the search for optimal ways of managing labour resources.

Rational management of labour is dependent, among others on employment policy, which is implemented by the authorities of the country, on models and personnel strategies implemented in specific organizations. In this context, it is reasonable and important to monitor the activity status of the population in the country or the selected local area. E. KWIATKOWSKI (2013, p. 36 et seq.), D. KOTLORZ (2012, p. 231, 232), D. KOTLORZ and A. SKÓRSKA (2013, p. 93–108), and W. JARMOŁOWICZ and B. KALINOWSKA-SUFINOWICZ (2014, p. 19) pay attention to the issues of resource streaming and economic values, which are discussed in the analysis of the labour market.

Over the years, the situation in the labour market of the Warmia-Mazury Region has not been profitable, which reflected (in low employment rates, activity rates and high levels of unemployment, among others) when relatively comparing Warmia-Mazury to other provinces in the country. It means that the labour resources have not been fully used. Detailed analysis signaled phenomena can be a valuable source of data for the size and structure of labour resources. Then, there may be a contribution to more effectively forecast, plan and (in the operational dimension) better use resources to support people looking for work.

Analysing the status of labour resources makes it possible to test their changes in terms of the number of employees and structure. W. KWIATKOWSKA writes (2007, p. 20, 21) that these changes are “an objective process in any dynamic economy”. In another study, the same author emphasizes that “the changes in resource workers (...) have led to the creation of the modern employment structure”. Furthermore, she adds that “it should be the struc-

ture for improved competitiveness and innovation of the economy of the country (province) and also effective for high productivity and quality of production” (KWIATKOWSKA 2011, p. 11, 12).

Nationally, various aspects of the state of labour resources are presented in studies by the Central Statistical Office; published systematically and at the provincial level – in studies performed by the Provincial Statistical Offices. These issues are also the subject of numerous scientific research institutions. For example, for many years the University of Warmia and Mazury in Olsztyn together with the Institute of Labour and Social Affairs in Warsaw have published the results of scientific inquiry and research in the labour market of science representatives from various universities, both in Poland and abroad (see: *Changes in the labour market in Poland 2015, The labour market in the era of innovation 2014, Dilemmas of the labour market 2013*).

Methodology of research

The aim of the study is to show the changes in the economic activity of the population and to demonstrate the relationship between the values of measures of the economic activity (the activity rate, employment rate and unemployment rate) and the number of employees in the Warmia-Mazury Region and Poland in the years 2005–2014. The research is therefore a key indicator of the national and regional labour market¹ with the subject of research being the people employed in enterprises in the Warmia-Mazury Region and in Poland.

The research problem was formulated in the form of a question: what changes occurred in the economic activity of the population and whether there was a statistical relationship between the number of employees and the basic measures of the labour market?

In light of the objective and research problem, it was hypothesized that entities in Warmia-Mazury and Poland between 2005–2014 had changes in employment resulting in changes in the value of the activity rate, the employment rate and unemployment rates, wherein significant correlations appeared due to changes in the number of employees in private entities belonging to the SME sector.

During the research the following methods were used: literature studies and the comparative method. The comparative method allowed an analysis to be performed of the state of the labour market in the Warmia-Mazury Region with reference to the situation in Poland. The research technique was to study the source documents. Research tools were reports developed by the Warsaw

¹ The division of labour markets adopted for classification E. KWIATKOWSKI (2013, p. 17, 18), accepting reservation, that there is no complete adequacy between the concepts of state-region.

Central Statistical Office, Provincial Statistical Office and the Provincial Labour Office in Olsztyn.

Completed findings are of secondary research. The analyses and assessments used absolute measures (for example the number of unemployed) and relative measures (for example the unemployment rate). In order to examine the interaction of variables the Pearson correlation coefficient was used, which indicates whether there is a statistical relationship or not between the analyzed variables. It also provides the direction and intensity (force). The critical values of the Pearson correlation coefficient were read from *Statistical tables* (ZIELIŃSKI 1972, p. 211 et seq.). The relationships between variables were analyzed with consideration at three levels of significance α : 0.01; 0.05 and 0.1; and for 10 observations (2005–2014). To explore the significance of the correlation coefficient, the t test of significance for small samples was used.

Results of studies

The number of labour resources is due to the state of the population of a given area. The Warmia-Mazury Region is the fourth largest region in Poland, but the population is only 3.8% of the Polish population². In the period under study, the region had an increase in population of 1.2%, while there was 0.8% growth reported in Poland overall. Changes were observed in all subsets of forming labour resources, although their direction and intensity were different (Tab. 1).

By comparing the states of labour resources at the beginning and at the end of the test period, it can be said that in the Warmia-Mazury Region there was an increase in employment of 1.1% and the number of unemployed decreased by 45%. There has also been a marked reduction in the number of people without a job, up to 2008.

However in the last analysed year, the unemployed in the Warmia-Mazury Region accounted for 5.4% of the total unemployed in the country. It was also noted that the indicators for the Warmia-Mazury Region are largely consistent with the trends taking place in Poland.

The situation on the labour market in the Warmia-Mazury Region and Poland are given in Table 2. During the analysed period, the value of the activity rate decreased in the province and in Poland. In the region at the end of 2014, its value was 5.2% lower than the average value in Poland. Similar trends occurred in the values of the employment rate. However, characteristic sub-periods appeared in the values of unemployment rates. During good economic times (2005–2008) the unemployment rates decreased, while in

² Own study based on *The characteristics of Warmia and Mazury*, online (access: 28.08.2016).

Table 1

The state of labour resources in Poland and in Warmia-Mazury (in thousands)

| Specification | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|------------------------------|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Total population | PL | 38,157.0 | 38,125.0 | 38,116.0 | 38,136.0 | 38,530.0 | 38,538.0 | 38,533.0 | 38,495.7 | 38,478.6 |
| | W-M | 1,426.6 | 1,426.9 | 1,426.2 | 1,427.1 | 1,427.1 | 1,452.6 | 1,459.7 | 1,446.9 | 1,444.0 |
| Population in production age | PL | 26,079.7 | 26,119.9 | 26,110.7 | 26,110.7 | 26,072.9 | 26,066.1 | 25,875.7 | 24,422.2 | 24,230.0 |
| | W-M | 9,84.6 | 988.2 | 989.6 | 990.6 | 989.0 | 1,007.2 | 1,002.1 | 994.8 | 931.7 |
| Economically active | P L | 16,966.0 | 16,800.0 | 16,734.0 | 16,876.0 | 17,128.0 | 17,413.0 | 17,646.0 | 17,844.0 | 17,427.0 |
| | W-M | 607.0 | 605.0 | 602.0 | 624.0 | 624.0 | 627.0 | 593.0 | 608.0 | 609.0 |
| Economically inactive | PL | 14,097.0 | 14,427.0 | 14,416.0 | 14,224.0 | 14,149.0 | 13,832.0 | 13,782.0 | 13,621.0 | 13,543.0 |
| | W-M | 553.0 | 556.0 | 555.0 | 553.0 | 547.0 | 546.0 | 548.0 | 570.0 | 583.0 |
| Employed | PL | 8,786.7 | 8,965.9 | 9,387.7 | 9,767.0 | 9,768.0 | 9,801.9 | 9,787.3 | 10,405.0 | 10,666.0 |
| | W-M | 262.6 | 268.4 | 272.3 | 271.1 | 271.2 | 272.3 | 272.4 | 263.2 | 265.6 |
| Unemployed | PL | 2,773.0 | 2,309.0 | 1,746.0 | 1,473.0 | 1,892.0 | 1,954.0 | 1,982.0 | 2,157.9 | 1,825.2 |
| | W-M | 150.9 | 127.6 | 99.0 | 87.4 | 109.2 | 105.9 | 107.3 | 113.2 | 115.9 |

PL – Poland, W-M – Warmia-Mazury Region.

Source: own study based on *Statistical Yearbook (2006, p. 165, 174, 2010, p. 169, 351), Statistical Yearbook of Labour 2015 (2016, p. 23, 106, 110), Population. State, structure and the movement of natural territorial division in 2015 2016, p. 12, 37).*

Table 2

Economic activity of the population

| Specification | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|----------------------------------|------|------|------|------|------|------|------|------|------|------|
| The activity rate | W-M | 67.5 | 66.8 | 66.7 | 66.1 | 67.2 | 67.1 | 51.4 | 51.6 | 51.1 |
| | PL | 69.8 | 69.2 | 69.1 | 69.9 | 70.9 | 72.4 | 55.9 | 55.5 | 56.3 |
| The employment rate | W-M | 49.0 | 50.7 | 54.4 | 55.8 | 56.1 | 55.0 | 45.8 | 46.9 | 47.5 |
| | PL | 53.0 | 54.5 | 57.0 | 59.2 | 59.3 | 59.7 | 50.2 | 49.3 | 51.7 |
| The registered unemployment rate | W-M | 27.2 | 23.6 | 18.7 | 16.8 | 20.7 | 20.2 | 21.3 | 21.6 | 18.7 |
| | PL | 17.6 | 14.8 | 11.2 | 9.5 | 12.1 | 12.4 | 13.4 | 13.4 | 11.4 |

PL – Poland, W-M – Warmia-Mazury Region.

Source: own study based on reports of *The Regional Labour Office in Olsztyn in the years 2006–2013, Local Data Bank GUS (2016).*

2009–2012 – in Poland and in 2009–2013 – in the Warmia-Mazury Region, there was an increase. In the last year of the analysed time the unemployment rates decreased in the Warmia-Mazury Region and in Poland. The differences between the values of unemployment rates in Poland and in the region have also changed. In 2005, the difference was 9.6 p.p., and in 2014 – 7.3 p.p. In those years, the growing unemployment rates were associated mainly with the unfavourable economic situation which was an economic effect of the global financial crisis³.

In the total number of all registered entities in the region and in Poland, the private sector clearly dominates (Tab. 3). Between 2005–2014 their number increased approximately 14%. At the same time, the number of public institutions decreased.

Table 3

Employed by sector of ownership (in thousands)

| Specification | Number of employees | | | |
|---------------|---------------------|---------|----------------|----------|
| | public sector | | private sector | |
| | W-M | PL | W-M | PL |
| 2005 | 111.9 | 3,346.0 | 285.0 | 9,230.3 |
| 2006 | 111.8 | 3,320.8 | 294.3 | 9,584.6 |
| 2007 | 111.0 | 3,305.7 | 311.2 | 10,151.3 |
| 2008 | 111.3 | 3,295.1 | 315.2 | 10,416.0 |
| 2009 | 111.6 | 3,273.7 | 300.4 | 10,175.8 |
| 2010 | 110.9 | 3,242.1 | 312.4 | 10,536.2 |
| 2011 | 107.9 | 3,165.1 | 315.0 | 10,746.1 |
| 2012 | 106.5 | 3,427.0 | 311.6 | 10,745.0 |
| 2013 | 104.1 | 3,375.0 | 315.5 | 10,869.3 |
| 2014 | 97.0 | 3,377.1 | 322.6 | 11,186.3 |

PL – Poland, W-M – Warmia-Mazury Region.

Source: own study based on *The Local Data Bank*, online, *Statistical Yearbook of the Republic of Poland 2014* (2015, p. 238), *Statistical Yearbook of Labour 2015* (2016, p. 120, 127).

Data presented in the table shows that during the analysed period in the Warmia-Mazury Region employment in the public sector decreased, but increased in the private sector (by 13.3%). Nationally, employment increased significantly in the public sector (by 0.9%) and clearly in the private sector (by 21%). In the region and in Poland, both sectors recorded a comparable structure of employees. Approximately 77% of all employees worked in the sector of private entities, and 23% in public institutions.

³ Detailed analysis of changes in the values of unemployment rates in the Warmia-Mazury Region in 2006–2012 represent CICHA-NAZARCZUK and NAZARCZUK (2014, p. 158–169).

The significance of the relationship between employment in companies distinguished by the property sector and the basic measures of the economic activity of the population in the Warmia-Mazury Region and in Poland are summarized in Table 4.

Table 4
Number of employed by ownership sector and the economic activity of the population

| Specification | | Employment | |
|-----------------------|-----|---------------------------------|----------------------|
| | | public sector | private sector |
| | | Pearson correlation coefficient | |
| The activity rate | W-M | 0.7659 ^b | -0.2388 |
| | PL | -0.8173 ^b | -0.2514 |
| The employment rate | W-M | 0.4086 | 0.4056 |
| | PL | -0.8785 ^a | 0.3208 |
| The unemployment rate | W-M | 0.1740 | -0.8955 ^a |
| | PL | 0.3311 | -0.6977 ^c |

^{a, b, c} – coefficients statistically significant at the significance level of $\alpha = 0.01, 0.05, 0.1$, respectively.
PL – Poland, W-M – Warmia-Mazury.

Source: own research.

The values of the Pearson correlation coefficients in the table above indicate the occurrence of the statistically significant correlation between the employment and the unemployment rate in the private sector.

In the Warmia-Mazury Region and in Poland workplaces were mainly created by SME entities. During the study, the quantitative growth of these entities was noticed at both the national and provincial levels. The entities that employed workers were mostly small institutions (Tab. 5).

Table 5
Employed by size classes entities (in thousands)

| Specification | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Warmia-Mazury | | | | | | | | | | |
| Micro and small | 158.5 | 161.7 | 171.2 | 177.6 | 171.8 | 176.8 | 174.2 | 173.8 | 173.0 | 175.4 |
| Medium-sized | – | 88.9 | 90.1 | 88.1 | 83.1 | 81.5 | 84.7 | 81.4 | 89.0 | 83.2 |
| Large | – | 71.2 | 73.7 | 68.8 | 63.3 | 65.7 | 61.8 | 68.4 | 62.3 | 66.0 |
| Poland | | | | | | | | | | |
| Micro and small | 4,833.0 | 4,968.1 | 5,221.6 | 5,409.6 | 5,328.2 | 5,314.0 | 5,420.9 | 5,420.8 | 5,437.4 | 5,608.9 |
| Medium-sized | – | 2,415.2 | 2,498.1 | 2,535.2 | 2,483.0 | 2,490.0 | 2,496.9 | 2,461.7 | 2,453.7 | 2,494.2 |
| Large | – | 3,431.7 | 3,646.6 | 3,675.5 | 3,546.9 | 3,630.0 | 3,641.3 | 3,615.8 | 3,651.4 | 3,756.9 |

Source: own study based on *The activity of non-financial corporations in 2013, 2014*. (2014, p. 49, 74), *Employed in the national economy*, online (access: 27.08.2016).

The data in the table indicate that by the year 2012 in the Warmia-Mazury Region, employment increased only for small and micro entities. Despite the decline in employment for these entities in 2013–2014, in the last year of the study, people working for SMEs accounted for nearly 60% of all employees in the region.

Others worked in large and medium-sized entities (a fifth of the total employed). Table 6 shows the impact of changes in employment for entities distinguished by the number of employees, on the basic measures of the labour market in the Warmia-Mazury Region.

Table 6
Number of employed by size entities and the economic activity of the population

| Specification | | Employment | | |
|-----------------------|-----|---------------------------------|-----------------------|----------------------|
| | | micro and small entities | medium-sized entities | large entities |
| | | Pearson correlation coefficient | | |
| The activity rate | W-M | -0.1124 | -0.8150 | -0.4664 |
| | PL | 0.5829 | 0.2575 | 0.3298 |
| The employment rate | W-M | 0.9594 ^a | -0.5859 | -0.5303 |
| | PL | 0.9846 ^a | 0.7840 ^b | 0.7298 ^b |
| The unemployment rate | W-M | -0.9151 ^a | -0.0999 | -0.0571 |
| | PL | -0.8846 ^a | -0.9496 ^a | -0.8432 ^a |

^{a, b, c} – coefficients statistically significant at the significance level of $\alpha = 0.01, 0.05, 0.1$, respectively.

PL – Poland, W-M – Warmia-Mazury Region.

Source: own research.

Based on the results received, it can be concluded that hiring workers in micro and small entities which operate in the Warmia-Mazury Region, had a significant impact on the employment rate. During this time, employment in medium-sized and large entities declined and therefore had a negative correlation which was statistically insignificant. Whereas in Poland, the increase in the employment rate was due to a simultaneous increase in employment in all entities classified according to the level of employment, the number of employees in small and micro entities had the greatest influence in the Warmia-Mazury Region. A similar trend had also occurred in the decline of the unemployment rate, which decreased in Poland due to an increase in employment in all types of entities, and in the Warmia-Mazury Region only as a result of employment in micro and small entities.

In the analysed period, most of the employees in companies registered in the Warmia-Mazury Region worked in the service sector, and the least number of employees in the agricultural sector (Tab. 7).

The amounts shown in the table demonstrate a decreasing number of employment in the agricultural sector and an increasing number in the industrial and service sectors, which means that there is a movement of labour resources from agriculture to other sectors.

Table 7

Employed by economic sectors (in thousands)

| Specification | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Warmia-Mazury | | | | | | | | | | |
| The agricultural sector | 79.0 | 79.0 | 71.0 | 71.0 | 72.0 | 69.0 | 60.0 | 60.0 | 70.0 | 70.4 |
| The industrial sector | 147.0 | 149.0 | 175.0 | 187.0 | 170.0 | 177.0 | 175.0 | 164.0 | 118.9 | 121.7 |
| The service sector | 257.0 | 281.0 | 292.0 | 301.0 | 321.0 | 321.0 | 305.0 | 291.0 | 230.7 | 234.2 |
| Poland | | | | | | | | | | |
| The agricultural sector | 2,452.0 | 2,304.0 | 2,247.0 | 2,206.0 | 2,107.0 | 2,050.0 | 2,045.0 | 1,908.0 | 2,382.1 | 2,388.1 |
| The industrial sector | 4,127.0 | 4,374.0 | 4,681.0 | 5,036.0 | 4,934.0 | 4,813.0 | 4,933.0 | 4,778.0 | 3,665.1 | 3,752.7 |
| The service sector | 7,531.0 | 7,912.0 | 8,309.0 | 8,549.0 | 8,819.0 | 9,087.0 | 9,147.0 | 8,940.0 | 7,872.6 | 8,096.6 |

Source: own study based on *Economic activity of the population* (average data), *Employed by economic sectors and sex* (1995–2012), *Local Data Bank*, online (access: 27.08.2016), *Statistical Yearbook of Labour 2015*. (2016, p. 25, 27, 122).

In 2014 employees in the agriculture sector accounted for respectively 97.4% and 89.1% of the workforce recorded in 2005 in Poland and the Warmia-Mazury Region. The diagnosed trend occurred in entities in the Warmia-Mazury Region and across the country. It is also consistent with the work flow processes between the sectors working in European countries. It should be noted, however, that these relations in Poland, and thus also in the individual provinces⁴, are significantly different from the states recorded in highly developed economies. For example, in 2011 there was about 1.5% of the total working population employed in German agriculture (*The agricultural population...* 2013, p. 368), in Poland 13.3% and in the Warmia-Mazury Region – as many as 26.7%. There were fewer employees the industrial sector in Germany (around 24.0% of the total) than in Poland and the Warmia-Mazury Region. In turn, the service sector employed 74.5% of all employees (*The structure of employment in terms...* 2007-2013, p. 241).

⁴ Results obtained in the Warmia-Mazury Region are consistent with the results of research in the province Lodz (KWIATKOWSKA 2011, p. 23–25).

The significance of the impact of changes in employment for entities, distinguished by economic sectors at regional and national levels, on the values of the labour market's measures is shown in Table 8.

Table 8

The relationship between the number of employed by economic sector and the economic activity of the population

| Specification | | Employment | | |
|-----------------------|-----|---------------------------------|----------------------|----------------------|
| | | agricultural sector | industrial sector | service sector |
| | | Pearson correlation coefficient | | |
| The activity rate | W-M | 0.5569 | 0.0873 | 0.1131 |
| | PL | 0.4425 | 0.0302 | -0.0937 |
| The employment rate | W-M | 0.0145 | 0.7040 ^c | 0.7048 ^c |
| | PL | -0.0883 | 0.6152 | 0.4418 |
| The unemployment rate | W-M | 0.4859 | -0.9459 ^a | -0.7122 ^b |
| | PL | 0.4634 | -0.8931 ^a | -0.6166 |

^{a, b, c} – coefficients statistically significant at the significance level of $\alpha = 0.01, 0.05, 0.1$, respectively.
 PL – Poland, W-M – Warmia-Mazury Region.
 Source: own research.

Values shown in the table above indicate the presence of the statistically significant correlation between the number of employees and the employment rate in the Warmia-Mazury Region, in both the industrial and service sector. A significant correlation also appeared between the employment and the unemployment rate in the industrial sector (in both the Warmia-Mazury Region and Poland), but in the service sector – only in the Warmia-Mazury Region.

Conclusions

The aim of the study was to show the changes in the economic activity of the population and to demonstrate the relationship between the number of employees and the basic measures of the labour market in Warmia-Mazury and in Poland in 2005–2014. Data collected during the empirical research positively verified the hypothesis and allows us to formulate the following findings:

- potential labour resources in Poland and in the Warmia-Mazury Region gradually increased, which was demonstrated by the increase in the number of people of working age, people economically active and unemployed actively seeking work;

– working people were employed mainly in the private sector, where changes in the number of employees were significantly correlated with the values of unemployment rates;

– in the Warmia-Mazury Region and in Poland, workplaces were mainly in micro and small entities (classification by number of employees), in which an increase in employment had a significant impact on the values of the employment and unemployment rates;

– in entities registered in the region and in Poland, the movement of employees between economic sectors was reported; significant correlations occurred between changes in employment in industry and services, and the employment rate and unemployment rates.

The above findings lead to the following conclusion: the changes which have occurred at the national and regional labour market should be assessed positively. This statement results from the following fact. After the global financial crisis of 2008 had adverse effects that spilled over into the economies of individual countries and regions, the basic labour market measures improved; even though the improvement was much slower as compared to the pre-crisis years of good economic performance, ie. in 2005–2008.

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