

Piotr Ciżkowicz, Michał Kowalczyk, Warsaw School of Economics

Andrzej Rzońca, Warsaw School of Economics and Monetary Policy Council in the National Bank of Poland

## **Determinants of regional unemployment in Poland and their heterogeneity - panel data analysis**

Most often labour markets are examined on the country level. This approach is useful for quick comparisons, trend analyses and research on the influence of policies that differ internationally. However, in most countries there are significant disparities in local unemployment rates (Bradley, Taylor, 1997). Unfortunately, Poland is not an exception. In August 2013 the highest registered unemployment rate in Polish poviats (EU NUTS 4 level) reached 37,7%, while the lowest rate in Warsaw amounted to only 4,9%.

Regional disparities generate significant social and economic costs. For example, different levels of local unemployment may lead to unequal job opportunities and different levels of regional product within a country (Taylor, 1996). Most macroeconomic research suggests that international variation in unemployment arises mainly from differences in labour market institutions (Blanchard, 2006). But these institutions very rarely differ on the regional level. Consequently, there must be some other factors responsible for much dispersion in local unemployment (Elhorst, 2000). What are exactly these factors? This is a question of greatest relevance for regional labour market analysis.

This article has two main goals. First, we want to identify main determinants of the local unemployment in Poland using panels of poviats in years 2000-2010. We take advantage of extensive data set covering more variables suggested by the literature than in previous research for Poland in this area (Newell, 2006; Herbst et al., 2005). Analysis suggests that observed disparities arise more from regional differences in demographics, education and employment structure than from local demand shocks. Second, we want to examine potential heterogeneity in estimated relations and present its patterns for alternative subsets of poviats. It shows that impact of variables and their significance may substantially differ, when one looks only at specific groups of regions.

The article consists of seven sections. We begin with description of main theoretical approaches to regional unemployment in economics. In the second section, we discuss the variables that have been found to influence local unemployment rates in various empirical studies. Next, we show some stylised facts on regional unemployment in Poland to make a reader more familiar with situation in Polish regions. After that, we present the available data and econometric methodology. Subsequently, we regress local unemployment rates on variables suggested by literature and examine the issue of outlying observations. In the next chapter, we investigate estimates heterogeneity by running separate regressions for different quartiles of these units to check whether observed relations are universal for Polish poviats. Finally, we draw some conclusions for policy makers and further research.