



The regional labour market differences in Central-Eastern Europe

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Research questions

The three research questions the paper attempts to answer are:

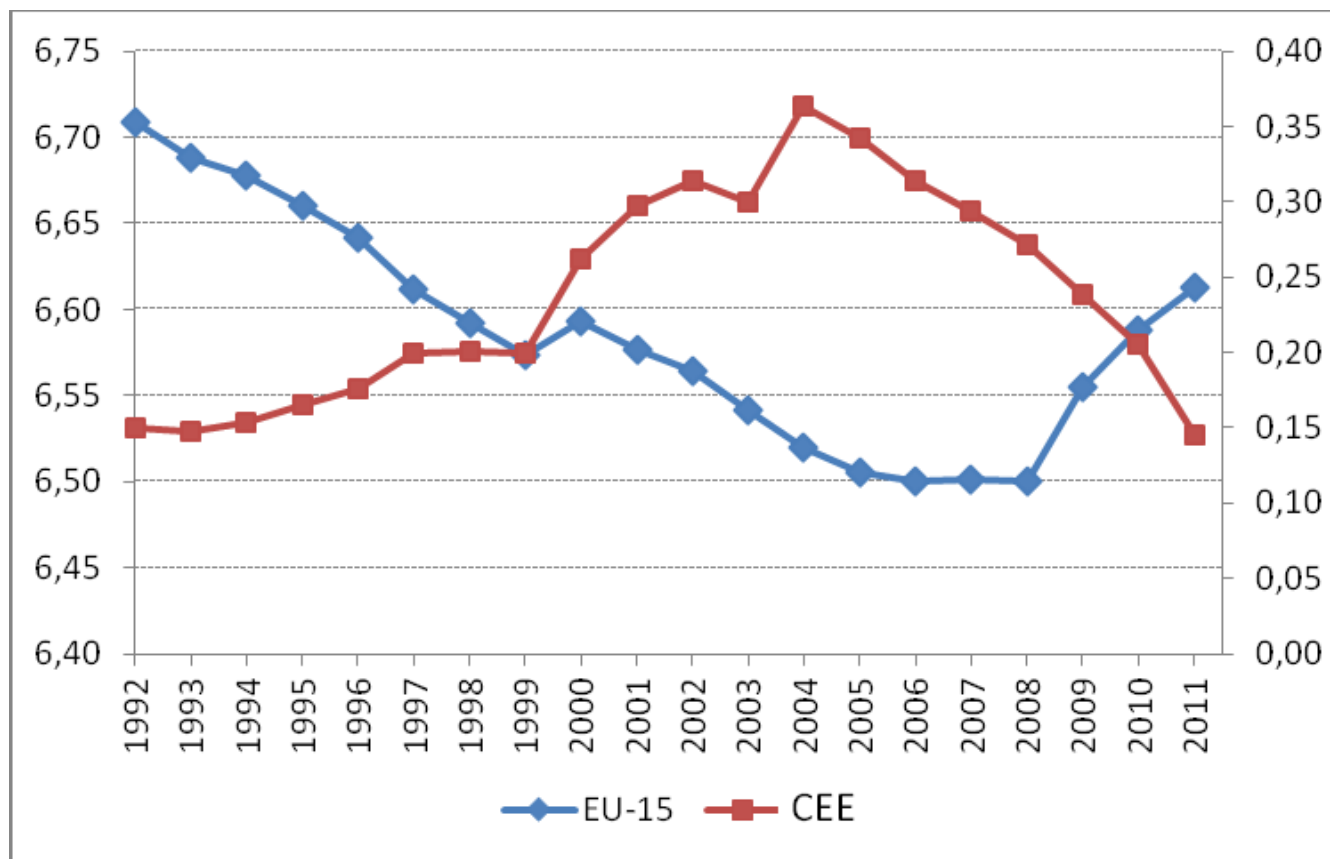
1. What are the main labour market trends in the CEE regions?
2. What kind of relationship can be observed in Okun's law based on the unemployment rate and output gap at the national and regional level? Does the Okun's law valid in this regions?
3. What kind of forecast model could give trusted results?



Hypotesis

- *Hypothesis 1: Hoover index suggests that the trend observed in the regional equalization of population and the number of employees in East-Central European countries contradicts that in the Western countries.*

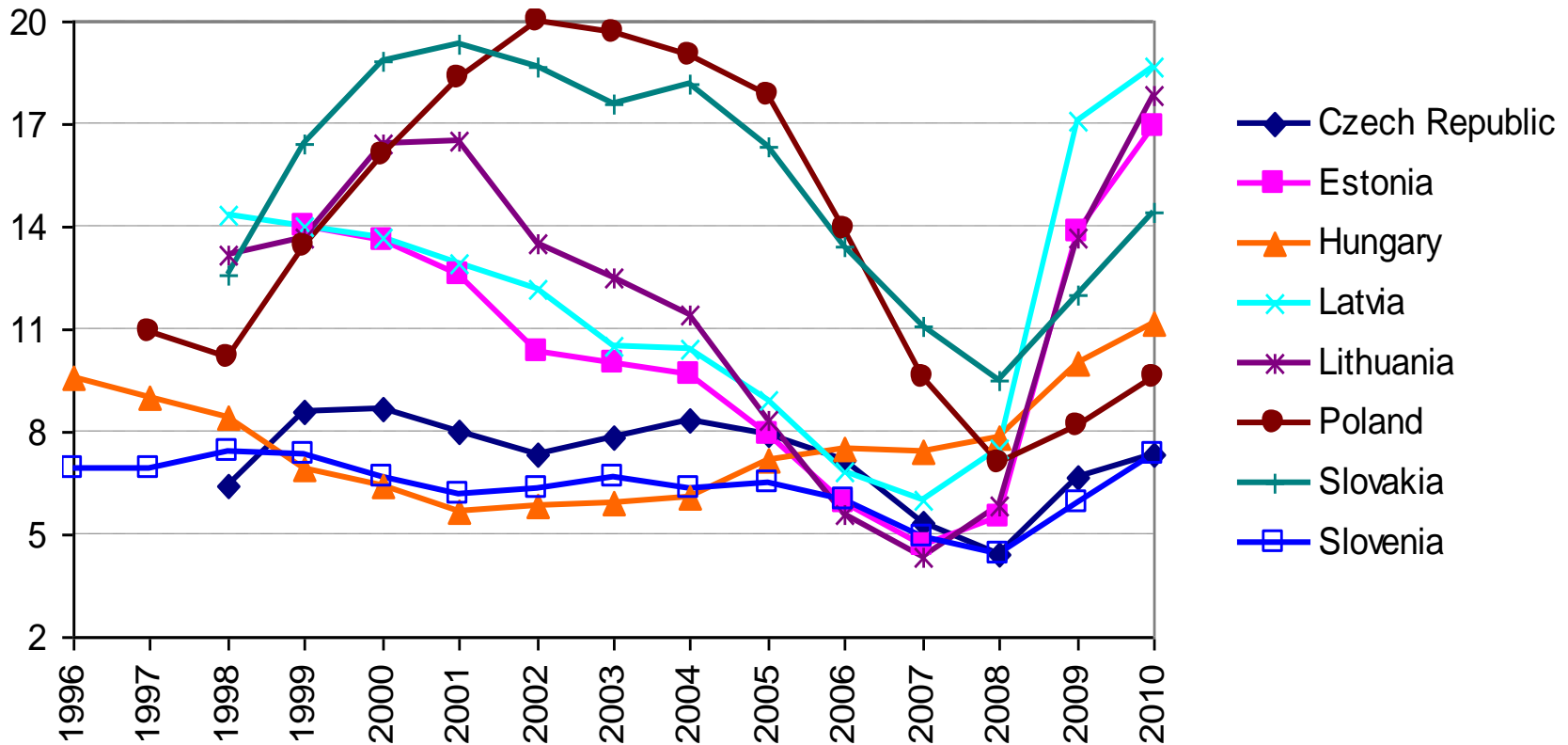
Evolution of Hoover index



Source: Own work based on Worldbank data

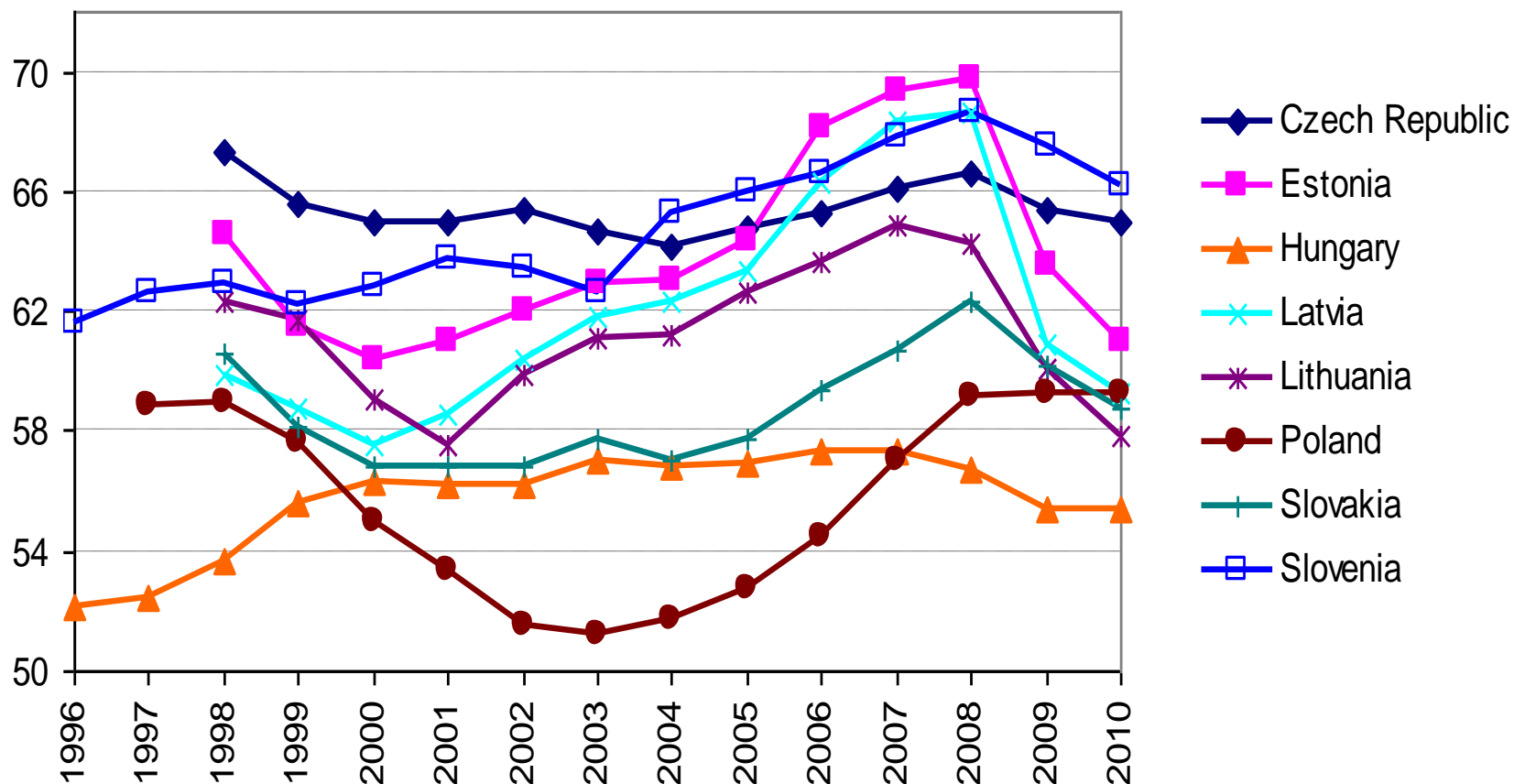


Unemployment rate (%) between 1996 and 2010





Employment rate (%) between 1996 and 2010





Length of recession in the CEE countries (% change on previous quarter)

| | 2007Q3 | 2007Q4 | 2008Q1 | 2008Q2 | 2008Q3 | 2008Q4 | 2009Q1 | 2009Q2 | 2009Q3 | 2009Q4 | 2010Q1 | 2010Q2 | 2010Q3 |
|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Czech Republic | 1.3 | 1.0 | 0.3 | 0.7 | 0.2 | -0.9 | -3.6 | -0.5 | 0.5 | 0.4 | 0.6 | 0.8 | 1.0 |
| Estonia | 0.4 | 0.4 | -2.2 | -1.0 | -2.6 | -5.7 | -5.6 | -3.7 | -1.3 | 1.4 | 1.0 | 1.9 | 0.7 |
| Hungary | 0.3 | 0.6 | 1.2 | -0.2 | -1.0 | -2.1 | -3.2 | -1.3 | -0.8 | 0.1 | 1.4 | 0.2 | 0.6 |
| Latvia | 1.9 | 0.9 | -3.0 | -1.8 | -1.8 | -4.0 | -11.3 | -1.3 | -4.2 | -0.6 | 1.0 | 1.2 | 0.9 |
| Lithuania | 3.4 | 0.3 | 1.0 | 0.4 | -1.8 | -1.2 | -11.5 | -2.1 | -0.1 | -1.1 | 1.4 | 1.0 | 0.3 |
| Poland | 1.3 | 2.2 | 1.4 | 0.7 | 0.8 | -0.4 | 0.4 | 0.6 | 0.4 | 1.4 | 0.7 | 1.2 | 1.3 |
| Slovakia | 2.5 | 5.2 | -1.4 | 1.0 | 1.2 | 0.6 | -7.6 | 1.1 | 1.2 | 1.4 | 0.7 | 0.9 | 0.9 |
| Slovenia | 2.0 | 0.8 | 1.7 | 0.7 | 0.2 | -3.3 | -6.0 | -0.6 | 0.4 | 0.1 | -0.1 | 1.0 | 0.3 |



Thesis

- *Thesis 1: Labour market competition has intensifying since the expansion of the European Union in 2004, while an apparent equalization is taking place in East-Central European countries; however this equalization is not coupled with convergence it rather results in a joint divergence.*



Hypothesis

- *Hypothesis 2: The function-like relationship between the output gap and the unemployment rate (Okun's Law) is true at national levels; however, significant differences emerge compared with the theoretical model in the case of regions.*



Definition of Okun's law

- “Okun's law postulates a negative relationship between movements of the unemployment rate and the real gross domestic product (GDP).” (Sänger – Stiassny, 2000:3)
- “Typically, growth slowdowns coincide with rising unemployment. This negative correlation between GDP growth and unemployment has been named Okun's law, after the economist Arthur Okun who first documented it in the early 1960s.” (Knotek, 2007:73)
- **According to the Okun's law every ca. 2% rising GDP compared to the potential GDP causes 1% unemployment growth.**

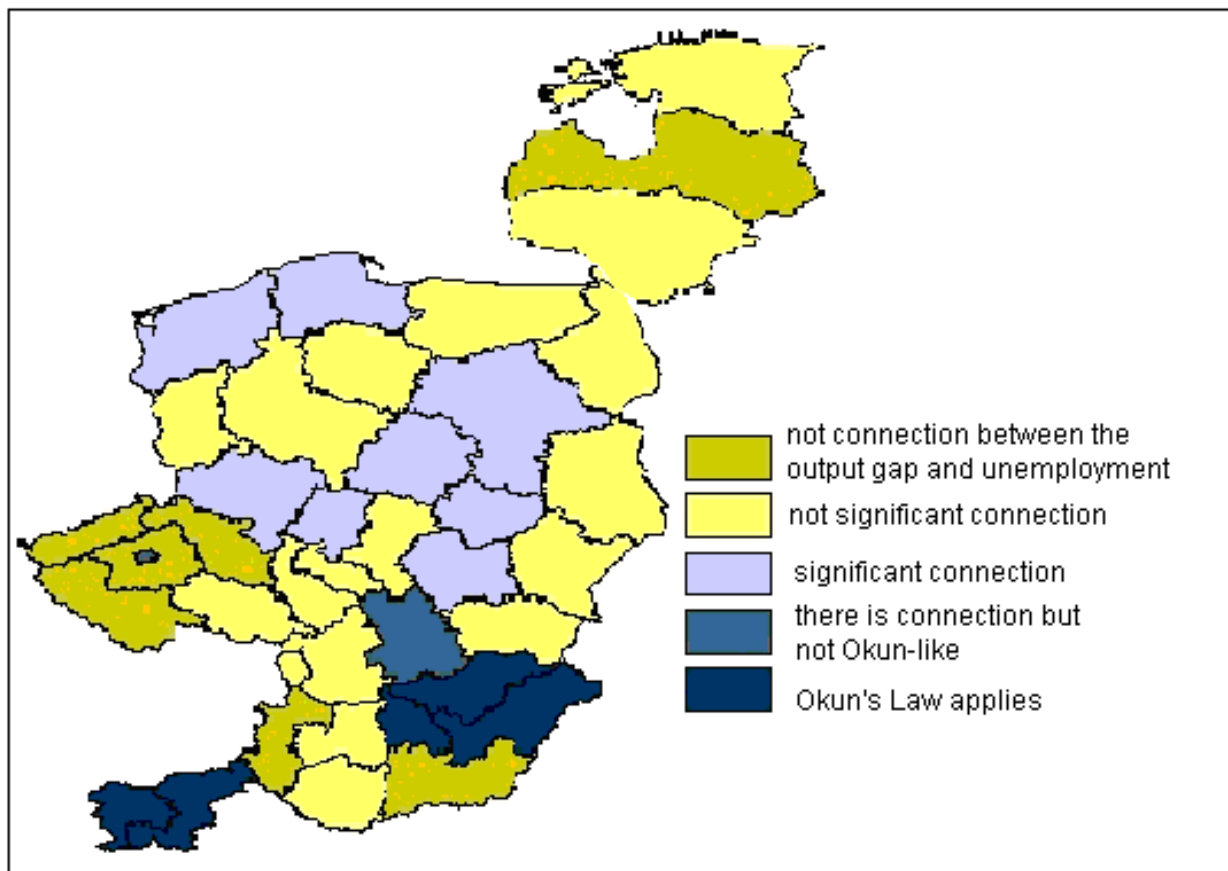


The Okun's law in the CEE countries (1996-2010)

| | Okun's law | output gap (if the unemployment rate is zero) | natural unemployment rate (if the output gap is zero) | natural unemployment rate (if the output gap is - 2%) |
|----------------|-------------------------|---|---|---|
| Czech Republic | $x = - 1.853u + 13.328$ | 13.328 | 7.193 | 6.113 |
| Estonia | $x = - 1.958u + 19.207$ | 19.207 | 9.809 | 10.083 |
| Latvia | $x = - 1.740u + 20.057$ | 20.057 | 11.527 | 12.676 |
| Lithuania | $x = - 1.451u + 16.646$ | 16.646 | 11.472 | 12.850 |
| Hungary | $x = - 2.061u + 15.570$ | 15.570 | 7.555 | 8.525 |
| Poland | $x = - 0.582u + 8.107$ | 8.107 | 13.930 | 17.367 |
| Slovenia | $x = - 2.969u + 18.820$ | 18.820 | 6.339 | 7.012 |
| Slovakia | $x = - 1.218u + 18.603$ | 18.603 | 15.273 | 16.915 |



Evolution of Okun's Law in East-Central European Regions



Source: Own work



Thesis

- ***Thesis 2: Okun's Law is true at the level of countries, however it does not apply at regional levels in each case – which means that this connection cannot be used to investigate regional processes with complete confidence. However, "anomalies" can be detected at regional level. The regions can be categorized into three groups:***
 - *Okun's Law applies*
 - *There is a connection between the unemployment rate and the output gap, however it is not Okun-like (with a 2% decrease of output gap the unemployment rate increases multiple times, approx. 6-10%).*
 - *There is no connection between the two indicators.*

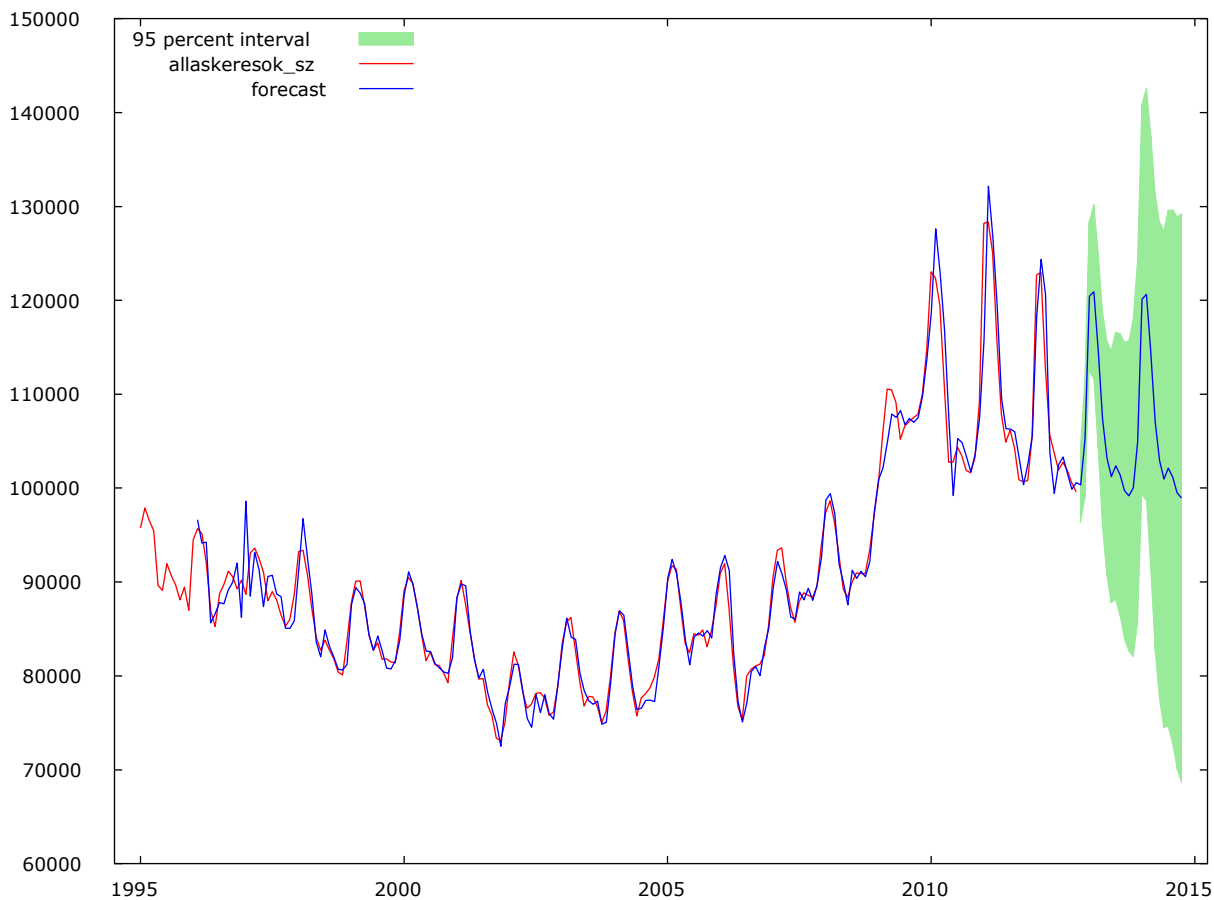


Hypothesis

- ***Hypothesis 3: a) According to this hypothesis, ARIMA (Auto-Regressive Integrated Moving Average) is a possible method of forecasts that support regional employment policy. Applying the method makes it possible to determine the expected direction and extent of changes in the region's labour market; the prognosis prepared with this forecasting method can provide a guideline for the regional employment policy.***
b) The impact of the economic crisis on regional labour market can be demonstrated by comparing the forecasted and actual number of registered job-seekers in Northern Hungary for the period between February 2009 and July 2010.



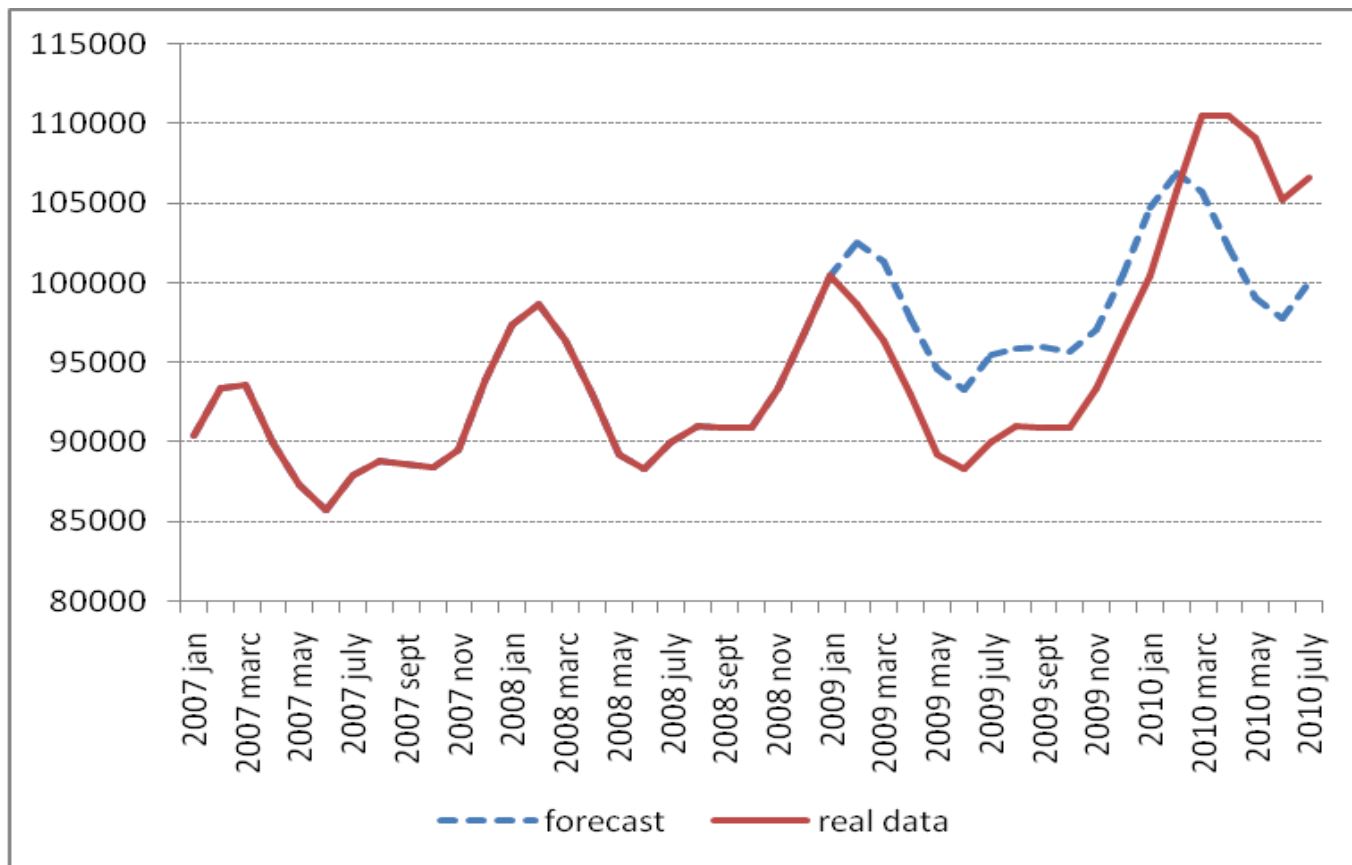
Prediction of the number of registered unemployed until October 2014



Source: Own calculation



Result of the prediction if the economic crisis had not occurred



Source: Own calculation



Thesis

- *Thesis 3: a) Having applied ARIMA method to the past-period time series of the number of registered job-seekers it has been proven that the predicted and actual data match at 95% level of confidence. The prognosis prepared for 24 months using that forecasting method predicts a further minor deterioration of the region's employment situation for the regional employment policy.*
b) The difference between the prediction of Northern Hungary's registered job-seekers for the 18 months of the crisis and the actual changes prove the existence of the delayed labour market impact (hysteresis).



Recommendations for developing an efficient regional employment policy

- A multi-channel employment policy would be reasonable in the long term that combines the traditional forms of employment and alternative solutions.
- Regions having similar characteristics and similar labour market features should cooperate and act jointly in the European Union; joint asserting of interests and joint representation would bring significant results.
- The flow of sectoral labour force may exert less and less influential power for regional employment policy in the future.
- Regional employment policy should give priority to the supporting of human potential by way of, within the active employment policy tools, increasing the amount spent on labour market trainings; it requires taking the demands and emerging needs of employers.
- Various labour market forecasting models are available to support regional employment policy.



Thank you for your attention!

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