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The Impact of Labor Market Institutions on Labor Market Performance in Transition Countries¹

1. Introduction

For many years the labor economic literature has seen a lively and continuously growing discussion concerning the role of labor market institutions for the labor market performance (broad review of the literature can be found in Boeri and Van Ours (2008), brief summaries in Layard, Nickell and Jackman (2005, p. XIII–XXXIX) and Blanchard (2006), among others). Nevertheless, despite the growing amount of studies in that field, the available evidences still remain inconclusive and are often contradictory (Blanchard 2006, p. 43–46; Lehmann and Muravyev 2012, p. 237). However, the analyses of labor market institutions presented in the literature focus predominantly on the highly developed countries. Thus, one of the possible extensions to that topic is to consider the transition countries, where both labor market institutions and labor market outcomes were changing significantly and heterogeneously during the transition period.

One of the first studies whose aim was to analyze the labor market institutions in transition countries was that published by Cazes and Nesporova (2003). They estimated that labor market institutions in the late 1990s in the countries of Central and South-Eastern Europe had similar impact on the labor market performance as in the highly developed countries. These authors have also suggested that the influence of labor market institutions on the labor market performance

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in the group of the Commonwealth of Independent States can be significantly different than in Central and South-Eastern Europe, but due to the shortage of data they were unable to empirically verify this hypothesis. Thanks to the recent work of Lehmann and Muravyev (2012), who created the novel, hand-collected dataset also for the Commonwealth of Independent States, we will be able to verify this hypothesis with the use of empirical methods.

Thus, the goal of this study is to analyze the influence of labor market institutions on the labor market performance in transition countries during the transition period and to determine whether this influence was different in Central and South-Eastern Europe than in the Commonwealth of Independent States. The data were collected for the 15 “old” EU countries and 25 transition economies that were grouped into the following regions²: Central-Eastern Europe and the Baltic States (CEE), Commonwealth of Independent States (CIS), and South-Eastern Europe (SEE).

Lehmann and Muravyev (2012) used their database mainly to estimate precisely the relationship between labor market institutions and labor market outcomes for the whole group of transition countries and did not test whether there are any significant differences among particular groups of these countries. Thus, the major novelty of our research lies in the attempt to fulfill this gap. What is more, since a large excess supply of low-skilled workers and high demand for better skilled workers were the common problems for many transition countries (Winiecki 2008), we have included also the index of labor market structural mismatch – MM, which was proposed by Layard, Nickell and Jackman (2005, p. 307–310), as one of the indicators of labor market outcomes. It will give us a possibility to assess to what extent the structural mismatches in the labor markets in transition countries were determined by the institutional framework. To our knowledge, the MM indicator has not been included yet in any empirical research concerning the labor market institutions in transition countries.

The paper is organized as follows: section 2 describes the two models of labor management in transition countries identified by Cazes and Nesporova (2003, p. 139–141) more precisely and provides a synthetic description of changes in the labor market institutions and outcomes in transition countries based on the collected data. Section 3 presents the results of the cluster analysis and the Chow tests, which allows to assess whether the labor markets in CEE, CIS, SEE and EU-15 follow different patterns in their adjustment to the institutional framework. In section 4, in order to identify the common relations between labor market institutions and outcomes in transition economies, the set of panel data models with country fixed effects are estimated, whereas section 5 gives a brief summary of the conducted analyses.

² The following categorization was used: Central and Eastern Europe (CEE): Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland and Slovakia; Commonwealth of Independent States (CIS): Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan; South Eastern Europe (SEE): Albania, Bulgaria, Croatia, Macedonia, Romania and Slovenia. Countries such as Bosnia and Herzegovina, Kosovo, Montenegro and Serbia were not analyzed.

2. Changes in the labor market institutions and labor market outcomes

2.1. Two models of labor management

A characteristic feature for all centrally planned economies was the phenomenon of full employment, which was a consequence of soft budget constraints and labor hoarding (Kornai 1979). As almost all companies were state-owned and were facing soft budget constraints, the state (through the network of state-owned companies) in the centrally planned economy ensured employees a full protection against unemployment risk. What is more, the large part of social protection in this system was also provided by the state-owned companies – they were responsible for providing child care, health care services, subsidies for meals, holidays, etc. (Milanovic 1995, p. 1–9; Fakin and de Crombrughe 1997, p. 7).

Although Cazes and Nesporova (2003, p. 139–141) stress that transition countries are strongly diversified, they argue that in the time of economic transition two general models of labor management can be identified for the post-socialist countries – one for the CEE and SEE countries, and the other for the CIS countries. In CEE and SEE the responsibility for redundant employees was largely transferred onto public institutions. Unemployment benefits schemes were introduced and active labor market policy programs were launched. Also, the processes of privatization and restructuring of companies were initiated quickly, so the companies could rapidly rationalize their levels of employment and strongly reduce their social protection programs. The consequence of this model was a significant growth in unemployment levels and economic inactivity on the one hand, and considerable gains in labor productivity and in real wages on the other hand.

In the CIS countries, however, the responsibility for redundant employees was only partially transferred onto public institutions and employment protection was still mainly provided by companies. When enterprises needed to reduce the labor costs, they did not tend to dismiss their employees, but used such instruments as short-time work (reduced hours), administrative leave or delayed wage payment. This situation was accepted by the government, employees and also by employers, who could save on labor turnover costs. In consequence, the unemployment level and economic inactivity in this model were lower, but so were also the productivity levels and real wages.

The reason why the CEE, SEE and CIS countries managed their labor differently can be better understood when one looks at the broader picture. Since many CIS countries are generally less advanced in the process of economic transformation than the CEE and SEE economies (EBRD 2010, p. 1–27; Piątek and Szarzec 2011), relying mainly on employment protection within enterprises in the CIS countries can be seen as a part of that delay in transformation process. Important factors could be also the aspirations of the CEE and SEE countries to become members of the EU, which prompted these countries to adopt labor

market regulations characteristic for other EU members (Kwiatkowski, Socha and Sztanderska 2001; Boeri and Garibaldi 2005; Pavlova and Rohozynsky 2005, s. 15–16; Gligorov et. al. 2008). A significant argument is also given by North (1997, p. 16) who indicates that different characteristics of the transformation processes in CIS are a consequence of the lack of heritage of market economy and democracy in these countries, which results in differences in informal institutions between CIS and other transition economies. Although North uses the above insight to evaluate the whole process of transformation, it can be also applicable to labor markets.

2.2. Collected Data

The analysis of the labor market institutions and labor market outcomes in this study was based on the database of 15 indicators assembled for 25 transition economies and for 15 “old” EU countries (for the sources of particular variables see Table 1 in the Appendix, for short description of the used variables and their descriptive statistics see Table 2). It was decided to use the EU-15 countries as a highly-developed reference group (instead of typically used OECD countries), since many transition countries were trying to adapt their institutional framework to the EU standards.

It was also decided to use the data on labor market institutions for four years: 1995, 1999, 2003 and 2007 respectively, while the data for labor market outcomes (in order to avoid direct manifestation of the endogeneity problem) were collected for the years: 1996, 2000, 2004 and 2008. Although it was possible to create longer time series for many countries from CEE and EU-15 regions, in the case of some CIS and SEE countries the only observations that could be collected were those published by Lehmann and Muravyev (2012), who created their database only for these years. In consequence, since we wanted to obtain results equally representative for all analyzed groups of transition countries (CEE, CIS and SEE) rather than CEE biased results, it was decided to limit the data only to the above indicated years³.

To measure the labor market performance, six indicators were used. The first one is the employment to population ratio, which would allow us to capture the level of economic activity and also (indirectly) the level of job creation. We also used two other typical measures of the labor market performance that are the unemployment rate and youth unemployment rate. Since the transition countries were characterized by a significant excess supply of low-skilled workers (demanded in generally heavy-industry oriented socialist economy) and by a high demand for better skilled workers (needed in service and consumer oriented mar-

³ In case of the analysis of the institutional variables averages of several years are frequently used. However, if this approach had been used in this study, it would have meant that for many CIS and SEE countries such averages of several years would have been calculated only with the use of one year observation, which has no reasonable justification.

ket economy) (Winiecki 2008), we also decided to take into account long-term unemployment and unemployment of people with primary or lower education. Additionally, we also included into the analysis the indicator of structural mismatch on the labor market in terms of qualifications – estimated as the MM index (proposed by Layard, Nickell and Jackman (2005, p. 308–310)), which is given with the following equation:

$$MM = \frac{1}{2} \text{var} \left(\frac{u_{pri}}{u}, \frac{u_{sec}}{u}, \frac{u_{ter}}{u} \right) \quad (1)$$

where u_{pri} , u_{sec} , u_{ter} are the unemployment rates of people with primary (or lower), secondary and tertiary level of education respectively, u is the unemployment rate in the whole economy, and var means the variance. This indicator is based on the assumption that diversity in the unemployment rates among different social groups means that some of them have more difficulties in finding and keeping work, which is the symptom of structural mismatches on the labor market. However, it should be stressed that in the case of the MM indicator there are many missing values in the created database for numerous SEE and especially CIS countries, thus the results obtained for this indicator should be treated with great caution.

By including the MM indicator, we are also trying to capture the level of labor force qualificational mobility in transition countries. However, like in the majority of analyses concerning the relation between labor market institutions and labor market performance (Nickell 1997; Lehmann and Muravyev 2012, p. 238–239), we have ignored the phenomenon of spatial migration. Such approach is also justified by the unavailability of reliable data (United Nations 2002, p. 9–11), mainly because the majority of spatial migration in transition countries is unofficial (Pavlova and Rohozynsky 2005, p. 13–14; Lehmann and Muravyev 2012, p. 239). This omission, however, should not have a very significant impact on the obtained results, because as e.g. Cazes and Nesporova (2003, p. 19) notice (at least in the 90's), the spatial mobility in transition countries was generally even smaller than in western European countries. Fidrmuc (2004, p. 246) also underlines that most of the poorer regions in transition countries have largely immobile populations.

In the case of labor market institutions, the choice of indicators that should be included into the analysis was based on the literature (Blanchard and Wolfers 1999; Layard, Nickell and Jackman 2005, p. XXVII–XXXIX; Arpaia and Mourre 2005, p. 33–35; Eichhorst, Feil, Braun 2008) and especially on the data availability. In consequence, it was decided to use the EPL index⁴, the tax wedge, the average unemployment benefit and its maximum duration, expenditure on ALMP and the union density. Many other important institutional factors (like union coverage, wage bargaining coordination or minimum wage) had to be omitted due to the very limited data availability, which is confined almost only to the CEE countries.

⁴ The index elaborated by OECD, expressing the strength of the employment protection legislation.

2.3. Changes in labor market outcomes and institutions

The analysis of the collected data shows that particular labor market outcomes (Figure 1) changed heterogeneously in the analyzed regions. As far as the employment to population ratio is concerned (Figure 1a), it can be noticed that the highest level of this indicator among the transition countries can be observed in the CIS countries (in the 1990's it was even higher than in EU-15) and the lowest in SEE, however the differences are not substantial. Much greater differences can be noticed for the unemployment indicators (Figure 1b-d), in case of which the performance of CEE and SEE regions was much poorer than the performance of CIS, where the levels of analyzed indicators were in many cases similar to the values observed in EU-15. Unfortunately, we were unable to compare fully the performance of the analyzed regions in terms of the unemployment rates of people with primary education and the MM index (Figure 1e-f) due to a high amount of missing values for the CIS region. We can only notice that the unemployment rates of people with primary education were generally much higher in transition countries than in EU-15, while the level of structural mismatch of the labor market was substantial in CEE and rather low in SEE.

The differences in the institutional framework are also significant among the analyzed regions (Figure 2). The regulations of CIS countries for regular contracts (Figure 2a) were rather more restrictive than in other transition countries, while their regulations concerning the collective dismissals (Figure 2c) were much more flexible. However, it should be stressed that as far as the EPL is concerned, rather the cross-country and not the cross-regional heterogeneity prevails. The tax wedge level (Figure 2d) was significantly lower in CIS, which coincided with more restrictive unemployment benefit system (Figure 2e-f) and significantly lower expenditure on ALMP (Figure 2g) than in other transition countries. The analyzed regions are also very significantly diversified as far as the union density is concerned (Figure 2h): during the transition period the union density in CIS was two times bigger than in CEE.

In consequence, it can be noticed that the collected data show quite significant consistency with the two models of labor management in transition countries described by Cazes and Nesporova (2003, p. 139–141), at least as far as the CEE and CIS regions are concerned. During the transition period the CEE countries experienced worse labor market outcomes as compared with the CIS countries; however, their institutional framework was much more similar to EU-15 than in the CIS. At the same time the collected data indicate that the labor market outcomes and institutions in SEE are significantly different than in CEE and CIS, and in consequence, the SEE countries cannot be easily attributed to any of the described models.

3. The cluster analysis and the Chow test results

In order to identify groups of similar countries in terms of labor market institutions, the cluster analysis was conducted. This analysis was carried out for six

selected variables describing labor market institutional framework (EPL, tax wedge, average unemployment benefit, maximum benefit duration, expenditure on ALMP and union density). Since there was quite a significant amount of missing values for 1995 and 1999, the cluster analysis was conducted only for 2003 and 2007⁵. The final results are presented in Table 3, while particular dendrograms are shown in Figures 3–4. The results allow us to identify two different clusters which consisted of nearly the same countries both in 2003 and 2007. In 2003, the first group comprised of transition countries as well as the United Kingdom and Ireland, while the latter group consisted of other EU-15 countries. In 2007, only Greece changed its place from the EU-15 group to the transition countries group augmented by the United Kingdom and Ireland. Thus, it can be concluded that institutional framework of the labor market in transition countries is more similar to the one of the United Kingdom and Ireland than to the institutional framework characteristic for the continental EU-15. Comparing this result with the descriptive analysis, we can say that the labor market institutions in transition countries do not provide less flexibility than the labor market institutions in the continental part of the EU-15, and in case of many countries they provide even more.

In order to verify whether two different models of labor management can be identified (as it was proposed by Cazes and Nesporova (2003, p. 139–141)) in transition countries, the Chow test was carried out (Chow 1960, p. 591–605). In the presented research the test hypothesis was stated as: the influence of indicators of labor market institutions on the particular indicator of labor market outcomes is the same in both groups of the analyzed countries. Rejecting this hypothesis means that the influence is significantly different, which gives a premise to conclude that the models of labor management in the analyzed groups of countries are also different. Thus, for instance rejecting this hypothesis for the CIS and CEE, and not rejecting it for the CEE and EU-15 would support the Cazes' and Nesporova's view.

The Chow tests were conducted for consecutive pairs of the analyzed groups of countries and were based on the estimation results of the pooled models, including all indicators of labor market institutions analyzed in the cluster analysis. It was decided to use the estimator of the covariance matrix proposed by Arellano (2003, p. 18), which is designed to handle both heteroskedasticity and autocorrelation in the data sets consisting of many units observed in relatively few periods. The logarithmic transformation was applied only to the indicators of labor market outcomes (dependent variables) and like in many other studies (Nickell 1997; Cazes and Nesporova 2003; Lehmann and Muravyev 2012) the institutional (independent) variables were not transformed. It should be however added that the results of the models estimated with the logarithmically transformed independent variables were very similar, albeit the fit of these models occurred to be generally worse. The final results of the conducted Chow tests are presented in Table 4 in the Appendix.

⁵ The missing data for individual variables have been replaced by their average values. To ensure comparability of the data, the cluster analysis was carried out for the standardized values for individual variables.

The obtained results are rather ambiguous; however, they allow us to formulate some general conclusions. For the CEE and EU-15 countries the hypothesis of stability of the coefficients was rejected for three analyzed indicators of labor market outcomes. This suggests that there were some significant differences between the patterns of how labor market reacts on the institutional setting in these groups of countries. Similar results were obtained for CIS and UE-15, where the hypothesis of stability had to be rejected for two labor market outcomes indicators. However, in the case of the CEE and CIS countries this hypothesis cannot be rejected for any of the analyzed indicators of labor market outcomes, which means that the relationship between labor market institutions and labor market performance in these groups of countries is similar. These results are distant from those expected by Cazes and Nesporova, because they indicate that the influence of labor market institutions on labor market in CEE is rather more similar to other transition countries than to the UE-15 countries. Although the obtained results should be interpreted with caution due to a significant amount of missing values for some transition countries, they provide an argument to reject Cazes' and Nesporova's hypothesis.

It can be also added that the conducted Chow tests confirmed that the SEE countries cannot be easily attributed to any other group of countries. The results indicate that the hypothesis of stability of the coefficients in every series of the Chow tests conducted for the set of countries including the SEE countries had to be rejected for two indicators of labor market outcomes.

It should be however stressed that the conducted Chow tests do not indicate that there is only one model of the labor management in the transition countries. In fact, as the detailed analysis of the collected data for particular countries suggests, rather the cross-country not the cross-regional heterogeneity prevails in the group of transition countries.

4. The fixed effects model

4.1. Details of the estimation procedure

In order to analyze the average influence of labor market institutions on labor market outcomes in transition countries, the fixed effects (LSDV) model was used. The implementation of the fixed-effects specification of the regression model allowed us not only to exclude the regional and country effects, but also to control the omitted factors which affected the labor market outcomes. What is more, the F-tests conducted after the estimations of the pooled models (needed for the Chow test) indicated that the null hypotheses that all groups have a common intercept should be rejected. This meant that including the

country fixed effects into the models would significantly improve their fitness to the data⁶.

In the estimations the following LSDV model was used:

$$\begin{aligned} LMO_{i,t} = & const + \beta_1 EPL_{i,t-1} + \beta_2 TAX_{i,t-1} + \beta_3 BENF_{i,t-1} + \\ & + \beta_4 BEND_{i,t-1} + \beta_5 ALMP_{i,t-1} + \beta_6 DENS_{i,t-1} + \\ & + \beta_7 \Delta GDP_3Y_{i,t-1} + \beta_8 EBRD_{i,t-1} + \beta_9 EBRD_{i,t-1}^2 + \gamma_t + c_i + \varepsilon_{i,t}, \end{aligned} \quad (2)$$

where i represents country and t denotes time (years: 1996, 2000, 2004 or 2008), γ_t is time effect, c_i is a country fixed effect and ε is a white noise disturbance. LMO stands for labor market outcomes (employment to population ratio, unemployment rate, long-term unemployment rate, youth unemployment rate, unemployment of persons with primary or lower education and the MM indicator). EPL measures the strictness of employment protection legislation, TAX is the tax wedge, BENF stands for the average unemployment benefit, BEND is the maximum duration of employment benefits, ALMP stands for the expenditure on active labor market policies and DENS measures union density.

We also decided to extend the model by adding the 3-year geometric mean of the GDP growth⁷ and the average value (the arithmetic one) of the six transition indicators published by the EBRD⁸. What is more, it was conjectured that the relationship between transition indicators and labor market outcomes is not linear – better LMO should be observed in countries that have finished or just started the transition process, while worse LMO in countries that are in the middle of the process.

As in the case of the Chow test, it was decided to apply logarithmic transformation only to the dependent variables and not to transform the independent variables. The decision to include the time dummies was based on the Wald test for their joint significance. The covariance matrices were estimated with the estimator proposed by Arellano (2003, p. 18).

4.2. Results

The final results of the estimations are reported in Table 5. Although the results should be interpreted with caution due to a significant amount of missing values, they show that labor market outcomes in transition countries in the analyzed

⁶ It also means that the cross-country differences in labor market outcomes in transition countries cannot be satisfactorily explained only by the differences in the labor market institutional framework.

⁷ It was calculated as: $\sqrt[3]{\frac{Y_{t-1}}{Y_{t-2}} \cdot \frac{Y_{t-2}}{Y_{t-3}} \cdot \frac{Y_{t-3}}{Y_{t-4}}}$, where Y denotes real GDP *per capita*.

⁸ These were: Large scale privatization, Small scale privatization, Governance and enterprise restructuring, Price liberalization, Trade and foreign exchange system and Competition policy.

years were significantly affected only by two labor market institutions: the EPL index and the expenditure on ALMP.

The obtained results show that the higher the employment protection was, the lower the employment to population ratio was observed. This result is quite surprising since the empirical results obtained for the highly developed countries rather show that the EPL index does not have a significant impact on the level of employment to population ratio (Boeri and Van Ours 2008, p. 211–215; Skedinger 2010, p. 75–152). Lehmann and Muravyev (2012, p. 253–254) – who have obtained similar results – suggest that the significant relation between the EPL index and the employment to population ratio in transition countries is a consequence of the fact that the EPL index in their study also occurred to increase the unemployment among young people. Our estimates confirm this conclusion and additionally show that the EPL also increased unemployment among the least educated people.

The obtained results also show that the higher the expenditure on ALMP was, the lower unemployment rate was. Such result is consistent with micro studies of ALMP in transition countries conducted by Lehmann and Kluve (2010) that suggests positive effects of some programs, especially those involving job brokerage and training or retraining schemes. However, the results show that the ALMP do not affect the long-term unemployment and unemployment among young and the least educated people. Such results are rather surprising since these unemployment types should be of particular concern to the public employment system (just as they are in the highly developed countries). However, Lehmann and Kluve (2010, p. 305) warn against comparing the ALMP programs in transition and highly developed countries. They underline that public employment system in post-socialist countries during the transition period had to operate with very limited budgets, whereas the group of potential beneficiaries was considerably large since the core of the labor force experienced prolonged spells of unemployment in these countries. In consequence, in some countries (for instance in Poland (Bieliński et. al. 2008, p. 157; Ministry of Labour and Social Policy 2009, p. 16)) participation in the ALMP programs was eagerly proposed to people who had the greatest chance to establish a long-term employment relation, while many of the long-term and the least educated unemployed people could not count on help they should have received. Existence of such mechanism can explain why we observe statistically significant influence of ALMP in transition countries only on the short-term and better qualified unemployed people.

It should be also noted that the obtained results do not confirm existence of some relationships that one may expect. Especially, the results do not indicate that the tax wedge influenced labor market performance in the analyzed countries, which is in contrast with other researches (Lehmann and Muravyev 2012, p. 253–256) and also with the theoretical models (Boeri and Van Ours 2008, p. 81–100). The estimated models were also not helpful in explaining the hetero-

generality of long-term unemployment and the MM index among the analyzed countries; however, in the case of the latter variable this could be caused by a small amount of observations.

It can be also noted that the models for the employment to population ratio and the unemployment rate give a strong rationale to include the squared values of the EBRD transition indicators into the equations. The results indicate that the highest levels of employment (and lowest levels of unemployment) could be observed in the countries that are in the beginning or at the end of the transition process.

5. Conclusions

The conducted analysis shows that labor market institutions and outcomes were changing heterogeneously during the transition period both among particular post-socialist countries and among particular regions (CEE, CIS and SEE). The results indicate that labor market institutions in transition countries (especially in CIS) generally ensure a high level of flexibility. Labor market institutional framework in transition countries is more similar to the framework characteristic for such countries as the United Kingdom or Ireland than to the EU-15 continental countries.

What is more, the conducted Chow tests indicate that the influence of labor market institutions on some labor market outcomes in CEE, CIS and SEE is significantly different than in EU-15, whereas there are no significant differences between CEE and CIS for all analyzed indicators. These results are in contrast with the hypothesis proposed by Cazes and Nesporova (2003, p. 123–132), who suggested that the relation between labor market institutions and outcomes in CEE is similar to EU-15, whereas in CIS it is different. Although the obtained results must be interpreted with caution due to a significant amount of missing values, they provide an argument to reject this hypothesis.

The inclusion of the *fixed effects* allowed us to exclude the regional and country effects and to analyze the average influence of labor market institutions on labor market outcomes in transition countries. The obtained results show that only two labor market institutions have a significant impact on labor market performance in these countries. The first one is the EPL index which increases unemployment among young and the least educated people and in consequence leads to a significant decrease in the employment to population ratio. The second is the expenditure on ALMP which helps to reduce the unemployment rate; however, it does not have a significant impact on long-term unemployment and unemployment among young and the least educated people.

The conducted analysis also shows that although the transition countries can shed some new light on the relationship between labor market institutions and labor market performance, the possible analyses for that region are still limited

due to a significant amount of missing values for the CIS and also partially for the SEE region. Thus, the recommendation for the further research is to create more complete datasets for these countries.

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Appendix

Table 1
Variables and their sources

Type of variable	Variable	Source
Labor market outcomes	Employment to population ratio	<i>KILM Database</i> , ILO
	Unemployment rate	<i>World Economic Outlook Database</i> , September 2011, IMF; <i>KILM Database</i> , ILO
	Long-term unemployment rate	<i>KILM Database</i> , ILO; Lehmann and Muravyev (2012)
	Youth unemployment rate	<i>KILM Database</i> , ILO; Lehmann and Muravyev (2012)
	Unemployment rate of people with primary or lower education	<i>KILM Database</i> , ILO
	Indicator of the labor market structural mismatch – MM	Own estimates based on the data concerning unemployment of people categorized by the level of education attained. Data taken from the <i>KILM Database</i> , ILO; methodology proposed by Layard, Nickell and Jackman (2005, p. 307–310).
Labor market institutions	EPL (2nd version), EPL for regular contracts, EPL for temporary contracts, EPL for collective dismissals	OECD, Lehmann and Muravyev (2012), Muravyev (2010), Gligorov et. al. (2008), Micevska (2008), Kajzer (2007)
	Tax wedge	Eurostat, Lehmann and Muravyev (2012)
	Average unemployment benefit, Maximum benefit duration	Lehmann and Muravyev (2012), <i>SSPTW database</i> (Social Security Administration 2012)
	Expenditure on ALMP	Eurostat, Lehmann and Muravyev (2012)
	Union density	<i>ICTWSS Database</i> (Viser 2011), Lehmann and Muravyev (2012)
Other	GDP growth – 3-year mean	Own estimates based on the values of the GDP <i>per capita</i> (constant 2000 US \$) taken from the <i>World Development Indicators</i> , World Bank
	Average value of the six EBRD transition indicators	EBRD

Source: own elaboration.

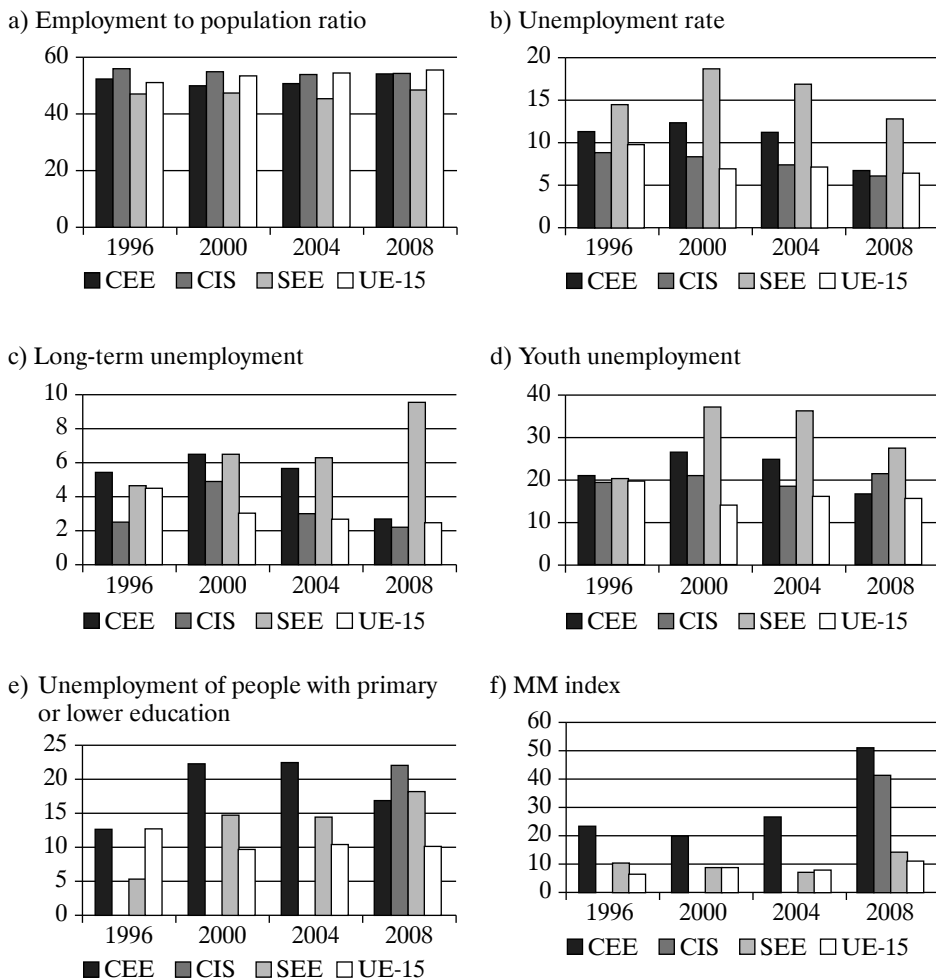
Table 2
Descriptive statistics and short descriptions of variables

Variable	Short description	Obs.	Mean	Std. Dev.	Min	Max
Employment to population ratio	%	160	52.8	6.2	32.4	65.9
Unemployment rate	%	150	9.3	5.8	0.1	37.2
Long-term unemployment rate	%	130	5	5	0.4	31.8
Youth unemployment rate	%	139	20.8	12.3	5.1	69.5
Unemployment rate of people with primary or lower education	%	107	14.4	9.7	2.5	66.2
MM index	Methodology proposed by Layard, Nickell and Jackman (2005, p. 307–310). Estimates based on the unemployment rates of people categorized by the level of education attained.	106	21.9	61.2	0.2	595.4
EPL (2nd version)	Values from 0 to 6; 6 denotes the most restrictive employment protection legislation	156	2.3	0.7	0.4	4.1
EPL for regular contracts		140	2.7	0.8	0.7	4.4
EPL for temporary contracts		140	1.8	1.1	0.3	5.4
EPL for collective dismissals		124	2.6	1.4	0	5.3
Tax wedge	% of the total labor costs of the earner	126	38.4	6.4	20.2	51
Average unemployment benefit	% of an average wage	110	34.6	19.3	5.5	84.9
Maximum benefit duration	In months	109	13.3	10.5	1	60
Expenditure on ALMP	% of GDP	102	0.4	0.4	0	2.1
Union density	Union members as a % of wage and salary earners in employment	135	40.5	21.8	7.3	100
Δ GDP_3Y	GDP growth – 3-year geometric mean	100	1.034	0.072	0.806	1.272
EBRD	Average value of the six EBRD transition indicators	100	3.11	0.639	1.39	4.055

Source: own elaboration.

Figure 1

Changes in the labor market outcomes (averages of the regions)

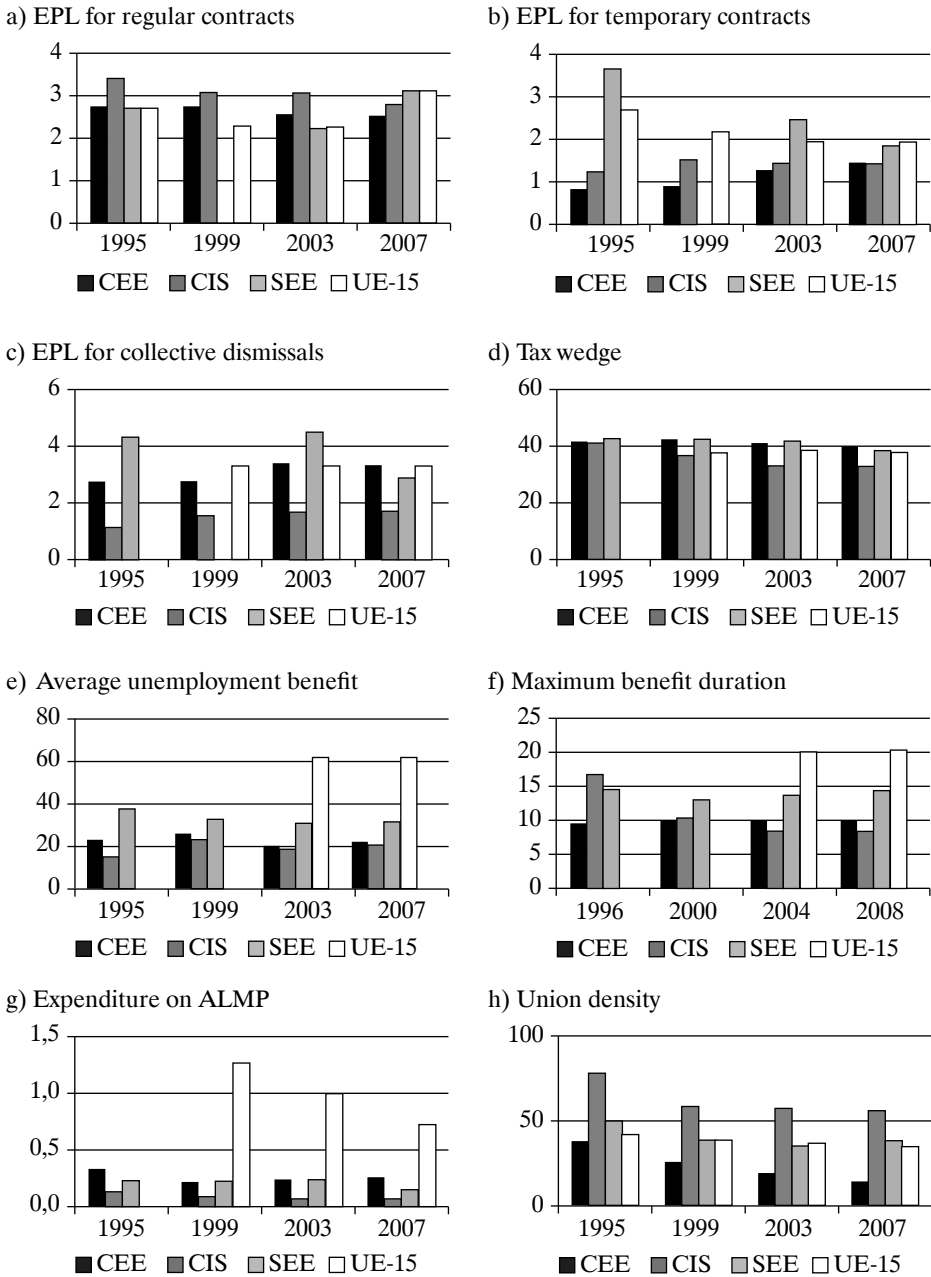


Note: Some calculated averages of the regions for CIS or SEE countries can be misleading, as due to the missing values they were not calculated for all the countries from the mentioned regions.

Source: own elaboration, based on the data presented in Tables 1–2.

Figure 2

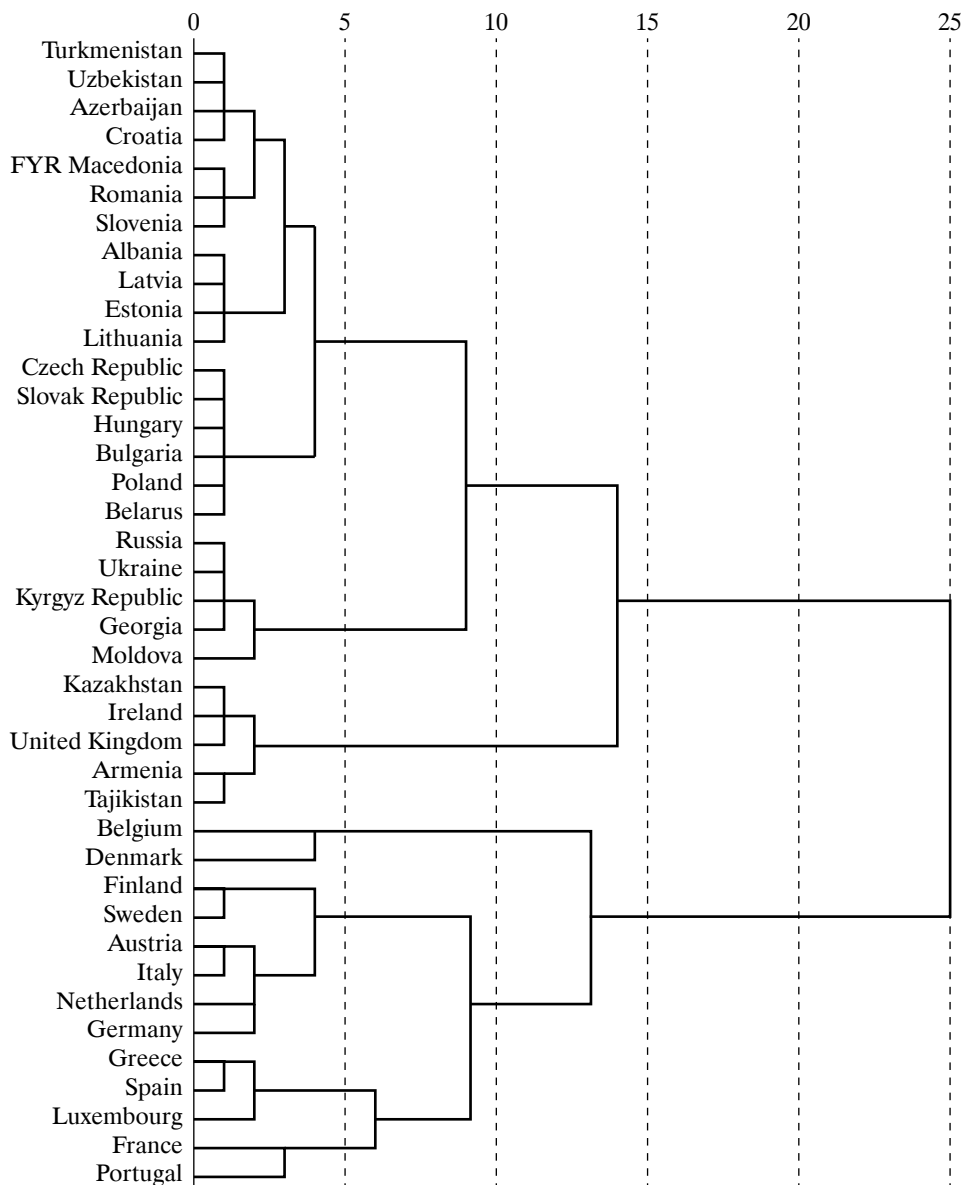
Changes in the labor market institutions (averages of the regions)



Source: the same as for Figure 1.

Figure 3

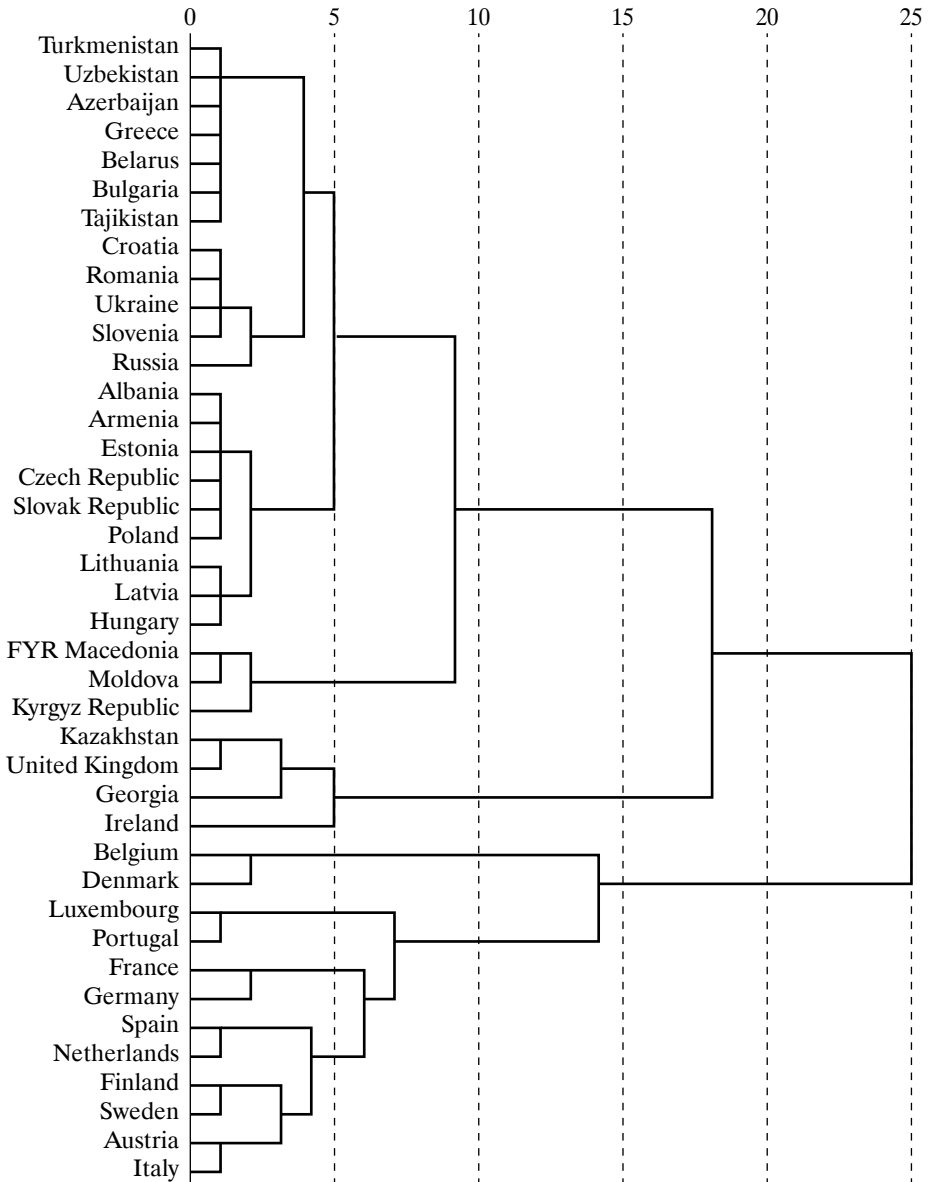
Dendrogram of the countries in terms of labor market institutions for 2003



Source: own elaboration.

Note: The Ward method for hierarchical clustering was used. Variables were standardized and missing data were filled with the average values of particular variables in the analyzed year. The countries are listed on the vertical axis, and the horizontal axis represents the distance between groups that were clustered in a particular step, using a 0 to 25 scale. The bigger the distances before two clusters that are joined, the greater the differences between these clusters.

Figure 4
Dendrogram of the countries in terms of labor market institutions for 2007



Source: the same as Figure 2.

Table 3
Clusters of countries in terms of the labor market institutions

Year	Number of identified clusters	Allocation of countries to the clusters		
2003	2	Albania Armenia Azerbaijan Belarus Bulgaria Croatia Czech Republic Estonia Georgia Hungary Ireland Kazakhstan Kyrgyz Republic Latvia	Lithuania Moldova Macedonia Poland Romania Russia Slovakia Slovenia Turkmenistan Tajikistan Ukraine Uzbekistan United Kingdom	Austria Belgium Denmark Finland France Germany Greece Italy Luxembourg Netherlands Portugal Spain Sweden
2007	2	Albania Armenia Azerbaijan Belarus Bulgaria Croatia Czech Republic Estonia Georgia Greece Hungary Ireland Kazakhstan Kyrgyz Republic	Latvia Lithuania Moldova Macedonia Poland Romania Russia Slovakia Slovenia Turkmenistan Tajikistan Ukraine Uzbekistan United Kingdom	Austria Belgium Denmark Finland France Germany Italy Luxembourg Netherlands Portugal Spain Sweden

Note: The dendrograms were divided into clusters due to the analysis of distances between the centroids of the clusters (that is group averages) added in successive steps of the dendrogram amalgamation. The step of amalgamation for which the highest growth of distance was observed was treated as a step for which the amalgamation should be stopped. The clusters created before that step were treated as final clusters.

Source: own elaboration.

Table 4
Results of the Chow tests for structural stability

Dependent variable	Chow test results					
	EU-15 and CEE	EU-15 and SEE	EU-15 and CIS	CEE and SEE	CEE and CIS	SEE and CIS
Employment to population ratio	3.1**	2.68**	1.04	5.08***	1.15	0.91
Unemployment rate	0.69	0.40	0.75	0.42	0.44	1.01
Long-term unemployment rate	2.47**	0.66	1.27	1.09	0.86	1.78
Youth unemployment rate	1.37	0.5	2.24*	1.51	0.54	2.19*
Unemployment rate of people with primary or lower education	2.08*	4.18***	1.79	3.77***	1.08	1.65
Indicator of the labor market structural mismatch – MM	1.64	1.32	4.91***	0.85	2.77	11.65**
Number of countries	23	20	27	13	20	17

Note: The presented numbers are the values of the Chow test statistic which has an *F* distribution. All the models were estimated as the pooled models with the estimator of the covariance matrix proposed by Arellano (2003, p. 18). Asterisks denote significance levels: *** – 1%, ** – 5% and * – 10%.

Source: own estimates.

Table 5
Results of the fixed effects regression for the labor market institutions

Dependent variable:	Employment to population ratio	Unemployment rate	Long-term unemployment	Youth unemployment	Unemployment rate of people with primary or lower education	MM indicator
Independent variables:						
EPL	-0.059*** (0.02)	-0.042 (0.081)	-0.01 (0.16)	0.193*** (0.052)	0.308** (0.12)	-0.194 (0.242)
Tax wedge	-0.001 (0.003)	0.005 (0.007)	-0.001 (0.015)	0.008 (0.008)	-0.006 (0.03)	-0.009 (0.074)
Average unemployment benefit	0.001 (0.002)	-0.01 (0.006)	-0.016 (0.012)	-0.008 (0.006)	-0.005 (0.015)	0.018 (0.027)
Maximum benefit duration	-0.001 (0.001)	-0.008 (0.007)	-0.009 (0.014)	0.003 (0.008)	0.001 (0.008)	-0.01 (0.019)
Expenditure on ALMP	0.029 (0.044)	-0.434** (0.201)	-0.249 (0.426)	-0.278 (0.23)	0.229 (0.295)	1.384 (1.179)
Union density	-0.001 (0.001)	0.003 (0.003)	-0.003 (0.008)	0.000 (0.002)	0.012 (0.015)	-0.042 (0.027)
Δ GDP_3Y	0.117 (0.244)	-1.712** (0.725)	-1.329 (1.461)	-0.647 (0.825)	0.679 (2.077)	5.232 (6.875)
EBRD	-1.027*** (0.282)	1.759* (1.014)	-0.239 (2.325)	0.696 (1.078)	0.442 (1.455)	-5.676 (4.047)
EBRD ²	0.161*** (0.049)	-0.315** (0.149)	-0.239 (0.386)	-0.205 (0.177)	-0.252 (0.204)	0.815 (0.659)
Y2000	-0.065** (0.028)	0.335** (0.134)	0.5* (0.255)	0.366*** (0.134)	0.707*** (0.191)	-
Y2004	-0.099** (0.045)	0.268 (0.187)	0.388 (0.41)	0.488** (0.182)	0.938*** (0.252)	-
Y2008	-0.066 (0.053)	-0.026 (0.201)	-0.242 (0.503)	0.189 (0.19)	0.85** (0.396)	-
Const	5.673*** (0.634)	1.857 (2.059)	2.428 (4.514)	2.96 (2.089)	2.196 (3.48)	8.289 (8.586)
Observations	69	69	65	67	45	45
Fixed periods effects	yes	yes	yes	yes	yes	no
Adjusted R ²	0.86	0.84	0.74	0.82	0.76	0.76
P-value for the F statistic	0.00	0.00	0.00	0.00	0.00	0.00
P-value for the F test with H0: all the c_i are equal	0.00	0.00	0.00	0.00	0.00	0.01

Source: own estimates. Standard errors are reported in parentheses. Asterisks denote significance levels: *** – 1%, ** – 5% and * – 10%. The estimator of the covariance matrix proposed by Arellano (2003, p. 18) was used.

WPLYW INSTYTUCJI RYNKU PRACY NA EFEKTYWNOŚĆ RYNKU PRACY W KRAJACH TRANSFORMACJI

Streszczenie

Celem artykułu jest przeanalizowanie wpływu różnych instytucji rynku pracy na efektywność tego rynku w 25 krajach postsocjalistycznych w okresie transformacji systemowej i ustalenie, czy wpływ ten był taki sam jak w krajach UE-15. Zebrane dane wskazują, że instytucje rynku pracy w krajach transformacji (zwłaszcza w WNP) zapewniają raczej wyższy stopień elastyczności rynku pracy niż kraje UE-15. Testy Chowa pokazują przy tym, że wpływ instytucji rynku pracy na niektóre wskaźniki tego rynku jest zasadniczo odmienny w krajach transformacji niż w krajach UE-15. Co więcej, po wyłączeniu efektów stałych wyrażających specyfikę danego kraju (za pomocą modelu *fixed effects*) okazuje się, że tylko dwa wskaźniki charakteryzujące instytucje rynku pracy, a mianowicie wskaźnik EPL (wyrażający stopień ochrony prawnej pracowników) oraz wydatki państwa na aktywne programy rynku pracy (ALMP) mają znaczący wpływ na podstawowe parametry rynku pracy w krajach transformacji. Wzrost wskaźnika EPL przyczynia się do wzrostu bezrobocia wśród ludzi młodych i z niskim wykształceniem, a w rezultacie do spadku wskaźnika zatrudnienia; natomiast wzrost wydatków na ALMP sprzyja obniżeniu stopy bezrobocia.

Słowa kluczowe: instytucje rynku pracy, aktywne programy rynku pracy (ALMP), zatrudnienie i bezrobocie, kraje transformacji

THE IMPACT OF LABOR MARKET INSTITUTIONS ON LABOR MARKET PERFORMANCE IN TRANSITION COUNTRIES

Summary

The goal of this study is to analyze the influence of labor market institutions on labor market performance in 25 post-socialist countries during the transition period and to determine whether this influence was the same as in the EU-15 countries. The collected data indicate that labor market institutions in transition countries (especially in CIS) ensure rather higher level of flexibility of the labor market as compared to the institutions in the EU-15 economies. Moreover, the Chow tests show that the influence of labor market institutions on some indicators of labor market outcomes is significantly different in the transition countries and in the EU-15 countries. Furthermore, the exclusion of country fixed effects allowed us to find that only two labor market institution indicators, i.e.: the EPL index and the expenditure on ALMP, have significant influence on labor market outcomes in transition countries. The rise of the EPL index results in higher unemployment among young and the least-educated people and leads to a decrease in the employment to population ratio, whereas the ALMP helps in reducing the unemployment rate.

Key words: labor market institutions, active labor market policies (ALMP), employment vs. unemployment, transition economy

ВЛИЯНИЕ ИНСТИТУТОВ РЫНКА ТРУДА НА ЭФФЕКТИВНОСТЬ РЫНКА ТРУДА В СТРАНАХ ТРАНСФОРМАЦИИ

Резюме

Целью статьи является проведение анализа влияния различных институтов рынка труда на эффективность рынка труда в 25-ти постсоциалистических странах в период трансформации и сравнение со странами ЕС-15. Собранные данные указывают, что институты рынка труда в странах трансформации (особенно в СНГ) обеспечивают более высокую степень гибкости рынка труда по сравнению со странами ЕС-15. Кроме того, тесты Чоу указывают, что влияние институтов рынка труда на некоторые его показатели в странах трансформации коренным образом отличается от этого влияния в странах ЕС-15. Более того, после исключения постоянных эффектов, отражающих специфику данной страны, оказывается, что только два показателя: EPL (степень правовой защиты работников) и расходы государства на активные программы для рынка труда (ALMP), имеют значительное влияние на основные параметры рынка труда в странах трансформации. Увеличение показателя EPL вызывает рост безработицы среди молодых людей и людей с низким уровнем образования, зато рост расходов на ALMP способствует понижению нормы безработицы.

Ключевые слова: институты рынка труда, активные программы для рынка труда (ALMP), занятость и безработица, страны трансформации