

## Labor Market Institutions and their Effect on Labor Market Performance in OECD and European Countries

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The aim of this technical note is to shed some light on relationship between labor market institutions and labor market outcomes in the member states of the Organization of Economic Cooperation and Development (OECD) in North America and East Asia; the New Member States of the European Union who are not members of the OECD (e.g. the Baltic states); countries in the European “Neighborhood” with aspire to accede to the EU (e.g. countries in the Western Balkans); and other European transitions countries (e.g. Ukraine, Moldova, and the Caucasus).

The analysis updates the econometric estimation techniques used in paper by Ondřej Schneider and Kamila Fialová "Labor Market Institutions and their Effect on Labor Market Performance in the New EU Member Countries" on a larger sample of countries. My approach utilizes panel estimation techniques on country level data and variables constructed to capture changes in key labor and social protection institutions over time. Estimations exploit cross-country and time series variability in key variables such as changes in the degree of unionization, the level of the minimum wage, employment protection legislation, and the level of the payroll tax for social insurance.

### **Methodology and data**

For my analysis, I use an econometric model inspired by recent empirical research and by economic theory, set out in Fialová and Schneider (2009). My approach utilizes two-stage least squares regression estimation with instrumental variables on pooled data. Standard panel estimation procedures (random or fixed effects estimation) were not employed for insufficient explanatory power of these models and/or too few data. The source of the data was mainly OECD with some supplements from IZA, WB and Eurostat for the explanatory variables, and the ILO and EBRD for explained variables.

Three data samples are examined:

- i. Sample 1: EU and OECD members in other regions (particularly North America and East Asia)*

Data come from the OECD and, therefore, cover only the OECD members. Time period concerned is 2001-2007.<sup>1</sup>

ii. *Sample 2: The EU15 and New Member States (NMS)*<sup>2</sup>

Source of the data is the OECD again. Utilization of the larger IZA sample was not possible due to the lack of relevant data. That means, the sample covers three NMS with data available only (Czech Republic, Hungary, Poland). Time period concerned is again 2001-2007.<sup>3</sup>

iii. *Sample 3: EU New Member States and aspirants in the European Neighborhood*

Data come from the IZA database and time period concerned covers years 1999, 2003, and 2007.<sup>4</sup> Nine NMS (data for Lithuania, Malta and Cyprus were not available) are covered.<sup>5</sup>

The model examines the impact of institutional factors on four indicators of labor market performance (Eurostat methodology): unemployment rate (*UR*), long-term unemployment rate (*LTUR*), employment rate (*ER*) and activity rate (*AR*). In line with the previous research, the dependent variables are represented in logs. The regression equation has the following form:

$$\ln X_{ti} = \alpha + \beta_1 EPL_{ti} + \beta_2 MW_{ti} + \beta_3 TU_{ti} + \beta_4 TAX_{ti} + \beta_5 ALMP_{ti} + \beta_6 UBRR_{ti} + \beta_7 INFL_{ti} + \beta_8 LEFT_{ti} + \varepsilon_{ti} \quad (1),$$

where *X* takes the form of *UR*, *LtUR*, *ER*, and *AR* in consequent regressions.

Explanatory variables are the following: *EPL* is the second version of the OECD employment protection legislation index covering a wide spectrum of employment protection policies. Minimum wage (*MW*) is a cluster variable constructed according to minimum wage level and its relative share on median wage in the economy. This variable was omitted in the analysis on Sample 3 due to unavailability of the data. The trade unions' power is represented by the trade union density (*TU*).<sup>6</sup> Tax system consequences are reflected by total tax wedge on

<sup>1</sup> The sample covers 24 countries: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Korea, the Netherlands, Norway, New Zealand, Poland, Portugal, Spain, Sweden, United Kingdom, and United States. 17 countries are classified as EU OECD, 7 countries as non-EU OECD.

<sup>2</sup> The new member states group ("NMS") for the purpose of this analysis generally consists of countries acceding to the EU in 2004 and 2007.

<sup>3</sup> The sample covers 18 countries: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands, Norway, Poland, Portugal, Spain, Sweden, and United Kingdom. 15 countries are classified as old EU, 3 countries as NMS EU.

<sup>4</sup> For some countries, only some of these years with data available were covered.

<sup>5</sup> The sample covers 15 countries: Albania, Bulgaria, Czech Republic, Estonia, Croatia, Hungary, Kyrgyzstan, Latvia, Moldova, Macedonia, Poland, Romania, Slovenia, Slovakia, and Ukraine. 9 countries are classified as NMS EU, 6 countries as European Neighborhood.

<sup>6</sup> Trade union density refers to the share of workers who were trade union members. However, even if the density is rather low in some countries, it is a common practice to extend trade union agreements to nonunionized workers, thus covering a large share of employees in the economy (e.g., France and Spain). Thus, the real degree of collective bargaining coverage—the share of all salary earners whose wage is actually

labor (*TAX*).<sup>7</sup> Finally, to reflect the influence of labor market policies (LMP), expenditure on active LMP as % of GDP per percentage point of unemployment (*ALMP*) and initial unemployment benefits replacement rate (*UBRR*) is included. Active labor market policies expenditure is instrumented.<sup>8</sup> In the analysis on Sample 3, initial unemployment benefits replacement rate was replaced by two other indices available from IZA: the average unemployment benefit (*UNBEN*) and maximum duration of unemployment benefits (*UNBENDUR*) to reflect the effects of passive labor market policy spending.<sup>9</sup>

The actual rate of unemployment is utilized in the regressions, but labor market institutions affect rather the equilibrium unemployment. To reflect this, additional variable was used in the model—the change in the annual rate of inflation (*INFL*; see Nickell, 1997). This variable captures the influence of economic cycle and may be also considered an indicator of macroeconomic policy stance. Finally, unemployment level might be in reality also influenced by political preferences of governments and conflict of interest over the power resources (see for instance Korpi, 1991). To account for these political factors, one more variable was added in the regression model—the government orientation with respect to the economic policy. Variable *LEFT* is a dummy acquiring 1 for parties defined as communist, socialist, social-democratic or left-wing, where we expect greater orientation on social issues resulting in lower unemployment.<sup>10</sup> As economic policy takes time to influence labor market performance, we use the *LEFT* dummy with a one year lag.

The model analyzes mainly the basic correlations between labor market performance and labor market institutions. Its deeper explanatory power is rather limited, due to the lack of data on more countries and other relevant variables that might affect the dependent variables.<sup>11</sup> Moreover, only three NMS are covered in Sample 2 and, therefore, it is impossible to run a separate analysis for this group of countries. Generally, I examine only the differences in the role of institutions between the whole region and one particular sub-

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determined by a collective agreement in a legal extension of bargained wage rates to nonunionized workers—would be a preferred indicator; unfortunately, such data is not available for the examined period and country sample.

<sup>7</sup> Total tax wedge on labor represents the combined central and sub-central government income tax plus employee and employer social security contribution taxes, as a percentage of labor costs, defined as gross wage earnings plus employer social security contributions; the tax wedge includes cash transfers (source: OECD). The indicator is calculated for a single individual without children, earning the average wage.

<sup>8</sup> This variable is endogenous because it relates the expenditure to the actual rate of unemployment. For this reason, we instrumented this variable by a new variable relating the expenditure to the average unemployment rate in a five-year period before the actual year.

<sup>9</sup> Average unemployment benefit is the average benefit as percentage of the average wage. This definition deviates from the estimates typically used by the OECD because OECD replacement rates are not very meaningful in the transition countries due to the caps on the size of the benefit in many countries. Maximum duration of unemployment benefits is defined as the period for which a person aged 40 years who has been employed for 22 years prior to unemployment receives unemployment benefits, wherever possible. The source of the data is IZA.

<sup>10</sup> The source of the data is the World Bank's database of political institutions; for details, see Keefer (2005).

<sup>11</sup> These are, for example, the role of product market reforms (Boeri, 2005; Griffith et al., 2006) or the importance of adverse economic shocks (Blanchard and Wolfers, 2000).

sample—and their implications for the other sub-sample—using a modified Chow test (see also Cazes and Nesporova, 2003).<sup>12</sup>

## Results

### UNEMPLOYMENT RATE (UR)

**Table 1. Regression estimation results – Unemployment rate**

	OECD			European Union			NMS EU+European Neighborhood		
	Total OECD	EU OECD	non-EU	Total EU	Old EU	NMS EU	Total	NMS EU	Neighborhood
ALMP	-0.327 ***	-0.314 ***	0.624	-0.198 *	-0.118	0.397	-1.249 **	-0.444	-31.016
TAX	0.021 ***	0.013 ***	0.016	0.018 ***	0.026 ***	-0.099 ***	0.020	-0.021	-0.047
EPL	0.146 ***	0.378 ***	-0.166	0.350 ***	0.383 ***	-0.027	0.538 **	0.123	2.793
MW	0.010	-0.037 *	0.204 ***	-0.018	-0.008	0.325 **			
TU	-0.001	0.000	-0.008	-0.002	-0.002	-0.058 ***	-0.007	-0.029 **	-0.033
UBRR	-0.002	-0.009 **	0.019 ***	-0.012 ***	-0.015 ***	0.009			
UNBEN							-0.024 *	-0.010	0.103
UNBENDUR							0.029	0.039	0.128
INFL	-0.033	-0.058	0.044 *	-0.040	-0.005	0.016	-0.004	-0.051 **	-0.011
LEFT	0.125 **	0.107 *	-0.161 *	0.133 **	0.081	0.876 ***	0.298	0.087	-1.463
Constant	0.982 ***	1.274 ***	0.046	1.174 ***	0.808 ***	5.724 ***	0.785	3.218	-1.603
R sq.	0.378	0.401	0.787	0.345	0.495	0.889	0.369	0.583	0.856
N	168	119	49	126	105	21	30	19	11
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.068	0.146
Chow test F p-value	0.9838			0.916			0.6765		

Source: OECD, IZA, World Bank, ILO, EBRD, own calculations

Note: \*\*\* significant at 1% level, \*\* significant at 5% level, \* significant at 10% level. Regression method: pooled two-stage least squares procedure with instrumental variables on panel data; robust standard errors utilized.

#### • EU and OECD members in other regions

Active labor market policy expenditure, EPL, and tax wedge on labor have significant effects on UR in total OECD sample. While high taxation of labor and strict employment protection legislation tend to increase UR, larger active LMP expenditure offsets this effect and tends to reduce unemployment. Similarly, unemployment benefit initial replacement rate has a negative effect.

Estimation results for European countries only are similar to those for total OECD sample. Moreover, minimum wage exerts a negative effect on explained variable, which is, however, significant at 10% only. Furthermore, unemployment benefit initial replacement rate shows a significant negative influence.

<sup>12</sup> A modified version of the test hypothesis and statistics was used, because number of observations in the NMS group is smaller than the number of parameters,  $n_{NMS} < k$ , and thus I can not use the standard methods in this case. We test the hypothesis  $H_0: E(y | X; \beta_{OE}) = E(y | X; \beta_{NMS})$ . This is done by calculating the statistic

$$F = \frac{\frac{SSR_T - SSR_{OE}}{n_{NMS}}}{\frac{SSR_{OE}}{n_{OE} - k}} \approx F(n_{NMS}, n_{OE} - k).$$

Estimation results significantly differ for OECD countries outside Europe – minimum wage has a significant positive effect on UR; unemployment benefit initial replacement rate has a significant positive effect, too. Other labor institutions show insignificant effects in this group.

While the effects of active labor market policies, employment protection legislation and labor taxation are in line with economic theory and results of existing empirical research on this topic, the results for minimum wage and unemployment benefit initial replacement rate deserve more attention. My estimates show that the minimum wage tends to increase unemployment in non-European OECD sample, which is in accordance with the text-book pricing out effect. That means that it is mainly the Americans, Canadians, and North East Asians for whom the minimum wage might have adverse impact on labor market performance. In contrast, minimum wage tends to reduce unemployment in Europe, but this effect is significant at 10% only. Furthermore, the effect of unemployment benefit initial replacement rate is similarly ambiguous. While the generosity of unemployment benefits shows a negative effect on unemployment in Europe (might reflect its influence on matching processes), non-European sample recorded a positive sign of the regression coefficient, indicating a stimulating effect on unemployment.

To examine the potential differences in the role of explanatory variables between the two OECD sub-samples I applied modified Chow tests, as described above. Although some of the estimated coefficients suggest different behavior of these sub-regions, the tests' results did not reject the hypothesis of stability of regression coefficients between these two groups on the 5% significance level.

- *The EU15 and New Member States*

EPL, tax wedge on labor, active LMP expenditure and unemployment benefit initial replacement rate have significant effects on UR in total EU sample. While higher taxes on labor and stricter EPL increase UR, larger active LMP expenditure and higher unemployment benefit initial replacement rate have negative effects. The effect of active LMP expenditure is, however, significant at 10% only.

Estimation results for old European countries only are similar to those for total EU sample with an exception of active LMP expenditure, the effect of which becomes insignificant.

Estimation results significantly differ for new EU countries – minimum wage has a positive effect on UR; in contrast, higher trade union density has a negative effect, similarly to higher labor taxation. However, reliability of the model specification for this sample is lower due to low number of observations (21; 3 countries).

Again, the applied Chow tests' results did not reject the hypothesis of stability of regression coefficients between the two sub-regions on the 5% significance level.

- *EU New Member States and aspirants in the European Neighborhood*

Three labor institutions have a significant effect on UR in total sample: EPL, active LMP expenditure and average unemployment benefit. While EPL increases UR, active LMP expenditure and average unemployment benefit have negative effects.

Model specification on the two sub-samples (EU NMS and European Neighborhood countries) does not fit the data. All the regression coefficients are insignificant in sample of European Neighborhood countries. Trade union density has a significant coefficient in NMS sample, indicating a negative impact of trade union on unemployment level.

Similarly to the two previous cases, the applied Chow tests' results did not reject the hypothesis of stability of regression coefficients between the two sub-regions on the 5% significance level.

## LONG-TERM UNEMPLOYMENT (LTUR)

**Table 2. Regression estimation results – Long-term unemployment rate**

	OECD			European Union			NMS EU+European Neighborhood			
	Total OECD	EU OECD	Total	Total	Total	NMS EU	Total	NMS EU	Neighborhood	
ALMP	-0.639	-0.975 **	1.802	-0.683	-0.636	0.779 *	-9.916 **	-	***	
TAX	0.097 ***	0.036 ***	0.070	0.051 ***	0.068 ***	-0.091 ***	0.068	0.018		
EPL	0.185	0.234	-1.354 *	0.179	0.139	0.068	-1.513	-1.611		
MW	0.135 **	-0.054	0.418 ***	-0.004	0.033	0.235 **				
TU	-0.012	-0.016 *	0.023	-0.022 **	-0.021 **	-0.034 **	0.015	-0.103 **		
UBRR	-0.015 ***	-0.004	0.004	-0.012	-0.015	0.012				
UNBEN							-0.073	-0.007	Insufficient number of observations	
UNBENDUR							0.119	0.181 **		
INFL	-0.133	-0.210 *	0.149	-0.167	-0.352	0.015	0.086	-0.110		
LEFT	-0.177	-0.458	-0.957 **	-0.350	-0.413	0.864 ***	0.684	0.420		
constant	-2.466 ***	0.392	-2.574	0.114	-0.513	3.827 **	4.223	6.899		
R sq.	0.363	0.281	0.681	0.279	0.285	0.915	0.763	0.853		
N	168	119	49	126	105	21	18	17		
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000	0.180	0.067		
Chow test F p-value	0.9965			0.7392			x			

Source: OECD, IZA, World Bank, ILO, EBRD, own calculations

Note: \*\*\* significant at 1% level, \*\* significant at 5% level, \* significant at 10% level. Regression method: pooled two-stage least squares procedure with instrumental variables on panel data; robust standard errors utilized.

- EU and OECD members in other regions

Tax wedge on labor, minimum wage and unemployment benefit initial replacement rate have significant effects on LTUR for total OECD sample. While taxes and minimum wage tend to increase LTUR, unemployment benefit initial replacement rate has a negative effect. (Both minimum wage and unemployment benefit initial replacement rate showed insignificant effects for total unemployment rate.) The effects of other labor institutions are insignificant.

Estimation results for European countries only show significant effects of a slightly different set of institutional variables. While the stimulating effect of labor taxation on long-term unemployment was confirmed, it tends to be offset by negative effects of active labor market policy expenditure and higher degree of trade unionization (the effect of trade unions was insignificant for total unemployment).

Estimation results significantly differ for OECD countries outside Europe – minimum wage has a significant positive effect on LTUR and EPL exerts a negative influence, which is, however, significant at 10% level only. All other labor institutions show insignificant effects in this group.

Again, European and non-European OECD members seem to have different drivers of the long-term unemployment. While high labor taxation is the main issue in Europe, other OECD members seem to suffer the most from the minimum wage legislation.

Similarly to the previous analysis of the unemployment rates, the applied Chow tests' results did not reject the hypothesis of stability of regression coefficients between the two sub-regions on the 5% significance level.

- *The EU15 and New Member States*

Tax wedge on labor and trade union membership have significant effects on LTUR in total EU sample. While taxes increase LTUR, trade union membership has a negative effect.

Estimation results for old European countries only are similar to those for total EU sample.

Estimation results significantly differ for new EU countries – minimum wage has a significant positive effect on LTUR; in contrast, greater trade union density and higher taxation of labor exert negative effects. Active labor market policy expenditure tends to have a positive effect, significant at 10% only. Still, reliability of the model specification for this sample is lower due to low number of observations (21; 3 countries).

Again, the applied Chow tests' results did not reject the hypothesis of stability of regression coefficients between the two sub-regions on the 5% significance level.

- *EU New Member States and aspirants in the European Neighborhood*

Reliability of model estimates on this sample is rather problematic due to a very low number of observations. Due to this limitation, the results must be taken with caution.

No labor institutions but active labor market policy expenditure have significant effect on LTUR in total sample. Active labor market policy expenditure tends to reduce long-term unemployment.

The results change modestly when EU NMS only are considered: active LMP expenditure holds its significant negative effect and trade union density turns out to have a significant negative effect, too.

There is not enough data for model specification on the European Neighborhood countries sub-sample (one country).

## EMPLOYMENT RATE (ER)

**Table 3. Regression estimation results – Employment rate**

	OECD			European Union			NMS EU+European Neighborhood		
	Total OECD	EU OECD	Total	Total	Total	NMS EU	Total	NMS EU	Neighborhood
ALMP	0.085 ***	0.100 ***	-0.061	0.078 ***	0.070 ***	-0.119	0.087	0.044	2.531
TAX	-0.009 ***	-0.008 ***	-0.004 ***	-0.009 ***	-0.010 ***	0.016 ***	-0.003	-0.009	0.005
EPL	-0.057 ***	-0.063 ***	-0.071 ***	-0.058 ***	-0.066 ***	0.122	-0.069	-0.026	-0.373
MW	-0.004	-0.005	-0.025 ***	-0.009 *	-0.008 *	-0.086 ***			
TU	0.001 ***	0.001 ***	0.006 ***	0.001 ***	0.001 ***	0.027 ***	0.000	0.009 ***	0.002
UBRR	0.003 ***	0.003 ***	-0.003 ***	0.004 ***	0.004 ***	0.001			
UNBEN							0.005	0.001	-0.009
UNBENDUR							-0.005	-0.009 **	-0.034
INFL	0.005	0.009	-0.008 **	0.006	0.002	-0.008	0.001	0.010 ***	0.002
LEFT	0.009	0.017	0.026 **	0.009	0.015	-0.215 ***	-0.100 **	-0.070	0.117
Constant	4.201 ***	4.171 ***	4.408 ***	4.192 ***	4.227 ***	2.796 ***	4.179 ***	4.254 ***	4.819 **
R sq.	0.664	0.622	0.707	0.621	0.671	0.822	0.249	0.695	0.668
N	168	119	49	126	105	21	30	19	11
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000	0.198	0.003	0.736
Chow test F p-value	0.5037			0.9999			0.8499		

Source: OECD, IZA, World Bank, ILO, EBRD, own calculations

Note: \*\*\* significant at 1% level, \*\* significant at 5% level, \* significant at 10% level. Regression method: pooled two-stage least squares procedure with instrumental variables on panel data; robust standard errors utilized.

- *EU and OECD members in other regions*

All labor institutions but the minimum wage have significant and similar effects on ER in both total OECD sample and EU OECD sub-sample. EPL and labor taxation tend to diminish ER, while active labor market programs, trade unions and unemployment benefit initial replacement rate have stimulating effects.

The situation differs in non-EU OECD sub-sample, where EPL, taxation of labor and trade unions act similarly to total sample and EU sub-sample, but unemployment benefit initial replacement rate has an opposite effect on ER (negative). This means that while generosity of passive labor market programs seem to stimulate employment in Europe (might be explained by improved efficiency of matching and functioning of the labor market), it tends to depress employment in non-EU OECD countries (might be explained by abuse of the programs, increased reservation wage of the unemployed etc.). The coefficient of the minimum wage becomes significant with a negative sign in this sub-sample, indicating a diminishing effect on employment. Active labor market programs have insignificant influence on employment level.

Similarly to the previous analysis of unemployment and long-term unemployment, the applied Chow tests' results did not reject the hypothesis of stability of regression coefficients between the two sub-regions on the 5% significance level.

- *The EU15 and New Member States*

All labor institutions exert significant and similar effects on ER in both total EU sample and old EU sub-sample. EPL, minimum wage and labor taxation tend to diminish ER, while active labor market programs, trade unions and unemployment benefit initial replacement rate

have stimulating effects. The coefficient of the minimum wage is, however, significant at 10% only.

On the other hand, taxation of labor has a positive effect on ER in the NMS sub-sample, similarly to trade unionization. Minimum wage tends to have a diminishing effect on ER here. Both passive and active labor market policy indicators and employment protection legislation are insignificant in this sub-sample. However, reliability of this model specification for this sample is lower due to low number of observations (21; 3 countries).

Again, the applied Chow tests' results did not reject the hypothesis of stability of regression coefficients between the two sub-regions on the 5% significance level.

- *EU New Member States and aspirants in the European Neighborhood*

The model does not fit the data for the total sample and for the European Neighborhood sub-sample – no explanatory variable is significant.

Two labor institutions have a significant impact on ER in EU NMS sub-sample: trade union density significantly increases the employment rate; in contrast, duration of unemployment benefits payment significantly reduces employment.

Again, the applied Chow tests' results did not reject the hypothesis of stability of regression coefficients between the two sub-regions on the 5% significance level.

## ACTIVITY RATE (AR)

**Table 4. Regression estimation results – Activity rate**

	OECD			European Union			NMS EU+European Neighborhood		
	Total OECD	EU OECD	non-EU	Total EU	Old EU	NMS EU	Total	NMS EU	Neighborhood
ALMP	0.072 ***	0.101 ***	-0.017	0.091 ***	0.117 ***	-0.081	-0.077	-0.036	-1.257
TAX	-0.004 ***	-0.004 ***	0.000	-0.004 ***	-0.005 ***	0.005 **	0.003	-0.015 **	0.011
EPL	-0.029 ***	0.016	-0.106 ***	0.018	0.033 **	0.092	0.017	-0.019	0.060
MW	-0.006	-0.016 ***	-0.014 ***	-0.017 ***	-0.019 ***	-0.042 ***			
TU	0.001 ***	0.001 *	0.006 ***	0.001 ***	0.001 **	0.017 ***	-0.001 **	0.004 ***	-0.001
UBRR	0.003 ***	0.002 **	-0.003 ***	0.002 ***	0.001 *	0.002 *			
UNBEN							0.001	0.001	0.000
UNBENDUR							0.000	-0.004	0.011
INFL	-0.001	0.000	-0.003	-0.001	-0.001	-0.005	0.001	0.005 **	0.002
LEFT	0.008	0.011	0.017 **	0.007	0.000	-0.079 ***	-0.065 ***	-0.054	-0.120
constant	4.257 ***	4.215 ***	4.490 ***	4.225 ***	4.243 ***	3.547 ***	4.081 ***	4.835 ***	3.725 ***
R sq.	0.486	0.643	0.973	0.660	0.638	0.903	0.443	0.743	0.933
N	168	119	49	126	105	21	30	19	11
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000	0.018	0.000	0.081
Chow test F p-value	0.5648			0.9999			0.8413		

Source: OECD, IZA, World Bank, ILO, EBRD, own calculations

Note: \*\*\* significant at 1% level, \*\* significant at 5% level, \* significant at 10% level. Regression method: pooled two-stage least squares procedure with instrumental variables on panel data; robust standard errors utilized.

- *EU and OECD members in other regions*

All labor institutions but minimum wage have significant effects on AR in total OECD sample. EPL and labor taxation tend to diminish AR, while active labor market programs, trade union density and unemployment benefit initial replacement rate have stimulating effects.

In the EU sub-sample, the results are quite similar with the exception of two variables – while the EPL becomes insignificant, minimum wage turns out to be significant with a negative effect on AR.

The significance of the EPL coefficient in the total sample was probably driven by non-EU OECD sub-sample, where EPL exerts a significant negative effect on AR. Further, minimum wage and unemployment benefit initial replacement rate have negative effects here, while trade unions have an opposite, diminishing effect. Active labor market programs and labor taxation are insignificant for explaining the heterogeneity in activity rates in non-European OECD countries.

The applied Chow tests' results did not reject the hypothesis of stability of regression coefficients between the two sub-regions on the 5% significance level.

- *The EU15 and New Member States*

All labor institutions but EPL have significant and similar effects on AR in total EU sample. Minimum wage and labor taxation tend to diminish AR, while active labor market programs, trade unions and unemployment benefit initial replacement rate have stimulating effects.

The old EU sub-sample gives very similar results, with a little difference in unemployment benefit initial replacement rate becoming significant at 10% only and EPL turning out to have a significant positive effect on AR.

In the NMS sub-sample, taxation of labor has an opposite, positive effect on ER, similarly to trade unionization and unemployment benefit initial replacement (significant at 10% only). Minimum wage tends to have a diminishing effect on AR again. But once again, reliability of this model specification for this sample is lower due to low number of observations (21; 3 countries).

Again, the applied Chow tests' results did not reject the hypothesis of stability of regression coefficients between the two sub-regions on the 5% significance level.

- *EU New Member States and aspirants in the European Neighborhood*

One labor institution only has a weakly significant effect on AR in total sample: trade union membership, which tends to exert a negative effect on activity.

In the EU NMS sub-sample, tax wedge on labor significantly depresses activity rate, while trade union density tends to stimulate it.

Model specification on the European Neighborhood sub-sample does not fit and all the coefficients are insignificant.

Finally, the applied Chow tests' results did not reject the hypothesis of stability of regression coefficients between the two sub-regions on the 5% significance level.

## **Conclusions**

Several estimation approaches for different data samples and explanatory variables were used to analyze the impact of labor market institutions on the labor market outcomes in European and OECD countries. Previous research on this topic indicated that the relationship is not straightforward or statistically very robust (see Fialová and Schneider, 2009). Institutions are difficult to define, measure, and compare between countries, and their effect may change over time. This technical note, nevertheless, analyzes the impact of labor market institutions in above-mentioned regions and finds that they do affect major labor market indicators. My findings correspond generally with the previous empirical studies of Cazes and Nesporova (2003) and Nickell (1997) and with major theoretical concepts on this issue.

While the estimations applied on the OECD and European Union samples give consistent and robust results, results of the model applied on the European Neighborhood sample suffer from limited robustness due to limited number of observations available with a relatively many RHS variables. Separate analysis of the EU NMS is a similar case (3 countries only). Therefore, the results for these groups of countries must be taken with caution.

When analyzing the pattern of differences in the unemployment rates, all three samples indicate a positive effect of employment protection legislation on increasing unemployment in examined countries. Similar effect was documented for labor taxation and the minimum wage, although the robustness of these results is weakened by insignificance of the coefficients in some of the samples and negative estimated coefficients of labor taxation on unemployment in European NMS and of the minimum wage on unemployment in EU OECD countries (significant at 10% level only). Furthermore, active labor market policy expenditure tends to reduce unemployment significantly. More generous unemployment benefits mostly tend to influence the unemployment rate negatively with an exception of the non-EU OECD countries. The effect of higher trade unions' power was mostly insignificant in presented results.

While the effects of active labor market policies, employment protection legislation and labor taxation are in line with economic theory and results of other empirical research on this topic, the results for minimum wage and unemployment benefit initial replacement rate deserve a more detailed explanation. The results show that the minimum wage tends to increase unemployment in non-European OECD sample, which is in accordance with the text-book pricing out effect. That means that it is mainly the Americans, Canadians, and North East Asians for whom the minimum wage might have adverse impact on labor market performance. In contrast, minimum wage tends to reduce unemployment in Europe, but

this effect is significant at 10% only. Furthermore, the effect of unemployment benefit initial replacement rate is similarly ambiguous. While the generosity of unemployment benefits shows a negative effect on unemployment in Europe (might reflect its positive influence on matching processes), non-European sample recorded a positive sign of the regression coefficient, indicating a stimulating effect on unemployment.

Taxation of labor showed a positive effect on long-term unemployment across the OECD and EU samples with an exception of EU NMS, where a negative effect seems to be the case (although reliability of this result is limited due to low number of observations). Minimum wage tends to have a significant stimulating effect on long-term unemployment. Again, European and non-European OECD members seem to have different drivers of the long-term unemployment. While high labor taxation is the main issue in Europe, other OECD members seem to suffer the most from the minimum wage legislation. Further, trade union density tends to significantly reduce long-term unemployment in European Union. This might be connected with a high degree of coordination and centralization of the trade unions' claims, which are typical for European countries. The effect of employment protection legislation was generally insignificant in my estimations. Similarly, the effect of unemployment benefits initial replacement rate was mostly insignificant with an exception of a negative effect reported in total OECD sample. Active labor market policy expenditure has an insignificant effect, too.

Turning to explaining the variation in labor supply, the model specification applied on employment rates was able to explain a larger part of the heterogeneity when compared with its explanatory power in the case of both unemployment indicators. Active labor market policy expenditure tends to significantly stimulate employment. Similar effect was registered for trade union density, which might be again connected with the high degree of centralization and coordination. Generosity of passive labor market programs also tends to stimulate employment with an exception of non-EU OECD countries, which registered an opposite effect of this relationship. On the other hand, strictness of employment protection legislation affects employment negatively. Similarly, high labor taxes discourage employment in all the sub-samples but NMS EU. Minimum wage exerts a negative impact on employment in the non-EU OECD and NMS EU sub-samples.

As far as the differences in activity rates are concerned, both strict employment protection and high taxation generally discourage economic activity in examined countries. However, there are two exceptions: firstly, labor taxes tend to support economic activity in NMS EU, which might be, however, considered an unreliable result due to low number of observations. Secondly, EPL shows a positive effect in old European countries. Active labor market programs and trade unions' activity stimulate labor participation. Generosity of passive labor market programs has an ambiguous impact: while it tends to increase economic activity in Europe, the effect on non-European OECD countries is opposite again. The negative effect of the minimum wage seems counterintuitive, but might be explained by

its negative impact on employment. Workers, who lost their jobs as a result of introduction of the minimum wage, might be discouraged from participating in the labor market at all (especially the young and women, who are usually expected to be hit the most).

The results of applied Chow tests examining the potential differences in the role of explanatory variables between the particular sub-samples are inconclusive. Generally, I was not able to reject the hypothesis of stability of regression coefficients between the examined groups of countries in all tested models. While some of the estimated coefficients suggest different behavior, the available data did not allow to study this issue in detail.

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