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LABOR MARKET INSTITUTIONS AND THEIR INFLUENCE ON LABOR MARKET PERFORMANCE

The paper deals with labor market performance in the European Union. We used a set of institutional aspects such as employment protection legislation, structure of wage bargaining, taxation of labor and unemployment benefits that determine labor market performance. Firstly, we present a review of literature dealing with labor market institutions and their influence on the labor market performance. Afterwards, we perform an econometric analysis aimed at estimating the impact of various institutional aspects on the employment rate, the unemployment rate and the long-term unemployment. Our econometric analysis suggests that 2 institutional factors significantly influence unemployment and long-term unemployment: total tax wedge on labor and active labor market policies. While higher tax burden significantly increases the unemployment rate, active labor market policies work in the opposite direction and may offset the negative effect of high taxation of labor.

Keywords: employment protection legislation, employment, labor taxation, unemployment, unemployment benefits, wage bargaining, panel regression.

JEL Classification: J08, J31, J65, J80.

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ІНСТИТУТИ РИНКУ ПРАЦІ ТА ЇХ ВПЛИВ НА ФУНКЦІОНУВАННЯ РИНКУ ПРАЦІ

У статті розглянуто інституційні аспекти ринку, такі як законодавство про захист зайнятості, структура заробітних плат, оподаткування праці і виплати по безробіттю, які визначають ефективність ринку праці. Представлено огляд літератури по інститутах ринку праці та їх вплив на його ефективність, виконано економетричний аналіз з метою оцінювання впливу різних інституційних аспектів на рівень зайнятості, рівень безробіття і довгострокового безробіття. Економетричний аналіз показав, що на безробіття і довгострокове безробіття мають істотний вплив 2 інституційні фактори: загальний податок на працю і активна політика на ринку праці. Тоді як вище податкове навантаження значно збільшує рівень безробіття, активна політика на ринку праці діє в протилежному напрямі і може компенсувати негативний вплив високого оподаткування.

Ключові слова: законодавство про захист зайнятості, працевлаштування, оподаткування праці, безробіття, виплати по безробіттю, заробітна плата, панельна регресія.

Таб. 2. Фор. 9. Літ. 21.

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ИНСТИТУТЫ РЫНКА ТРУДА И ИХ ВЛИЯНИЕ НА ФУНКЦИОНИРОВАНИЕ РЫНКА ТРУДА

В статье рассмотрены институциональные аспекты рынка труда, такие как законодательство о защите занятости, структура заработных плат, налогообложение труда и пособия по безработице, которые определяют эффективность рынка труда. Представлен обзор литературы по институтам рынка труда и их влиянию на его

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эффективность, выполнен эконометрический анализ с целью оценки влияния различных институциональных аспектов на уровень занятости, уровень безработицы и долгосрочной безработицы. Эконометрический анализ показал, что на безработицу и долгосрочную безработицу оказывают существенное влияние 2 институциональных фактора: общий налог на труд и активная политика на рынке труда. В то время как более высокая налоговая нагрузка значительно увеличивает уровень безработицы, активная политика на рынке труда работает в противоположном направлении и может компенсировать негативное влияние высокого налогообложения труда.

Ключевые слова: законодательство о защите занятости, трудоустройство, налогообложение труда, безработица, пособия по безработице, заработная плата, панельная регрессия.

1. Introduction. The labor market and its performance are among long-term debated topics. Generally, unemployment is affected by business cycles. But the question is whether there are other factors that may affect the unemployment rate and the employment rate. From the 90th, economists have intensively discussed the ways in which labor market institutions affect labor market performance. In other words, academics explore the extent in which labor market institutions are able to affect the unemployment rate or rather the employment rate. This discussion is supported by many empirical studies whose main aim was to estimate these effects. However, the results were often ambiguous.

If we look at European labor markets and their performance we can see huge differences. Approaches towards the setting of the labor market institutions differ not only among the EU member states but also over time. The main leading organization which deals with this topic is Organization for Economic Cooperation and Development (OECD). Its recommendations are commonly respected. However, it is very difficult to generalize some of these recommendations.

This paper focuses on the role of labor market institutions and their possible effects on labor market performance. The main aim of the paper is to estimate labor market institutions effects on some macroeconomic indicators like the unemployment rate or rather employment rate.

The paper is structured as follows: the first part deals with the role of individual labor market's institutional aspects in the economy. The second part focuses on the review of literature and comparison of main findings from previous studies. We also define the concept of panel regression in this part and thereafter we present empirical results. The last one concludes.

2. Influence of labor market institutions on the selected indicators. Generally, labor market is more complicated than other markets. According to Betcherman et al. (2001), labor market is affected by culture, institutional, legislative or political mechanisms. Labor market performance is usually influenced by these institutional aspects (Borghijis and van Poeck, 2001; Buscher et al., 2005; Jackman et al., 1996; Cazes, 2002; Ederveen and Thissen, 2004, or Tvrdon, 2008): employment protection legislation, a structure of wage bargaining, active labor market policies, taxation of labor and unemployment benefits.

Most studies have focused on the influence of institutional aspects on unemployment or employment, both in positive or negative directions: (i) some institu-

tional aspects may generate higher unemployment rate; or (ii) some institutional aspects may influence the nature of unemployment but have ambiguous effects on the unemployment rate; or (iii) some institutional aspects do not influence both the nature of unemployment or the unemployment rate.

Blanchard and Wolfers (1999) pursued how labor market institutions form the impact of shocks on unemployment in 2 directions. First, they examined aspects influence on the impact of shocks on unemployment. Secondly, they examined their influence on the persistence of unemployment. In the context of European labor market Blanchard and Wolfers (1999, p.16) conclude: "There is enough heterogeneity in labor market institutions within Europe to potentially explain differences in unemployment rates today. As to the evolution of institutions over time, it is clear that neither the view that labor market institutions have been stable through time, nor the view that the labor market rigidities are a recent development are right".

There have been published many studies whose main aim was to find if there is a relationship between the setting of the labor market institutions and the level of unemployment or employment; or in other words, if these institutional aspects can have impacts on the unemployment rate or rather the employment rate. Some recent studies have also focused on a wider analysis of labor market institutions, they concentrated on the influence of these aspects on business cycles, on the volatility of output, business environment or inflation. The following part of the paper deals with main findings and conclusions of the most important studies in this area.

2.1 Literature review. The relationship between unemployment expressed by the logarithm of the unemployment rate and labor market institutions in 20 OECD countries is used from 1983 to 1988 and from 1989 to 1994. Performed regression analysis did not show the influence of employment protection legislation on unemployment (coefficients were only slight or entirely insignificant). Conversely, Nickell (1997) demonstrated a negative correlation between EPL and the employment rate. In the case of unemployment benefits, expressed by the gross replacement rate, computed coefficient suggested the strong influence of this aspect on the unemployment rate. If a generous system of unemployment benefits increases the unemployment rate, active labor market policy measures seem to be a compensating factor that according to the results of this analysis reduce long-term unemployment. In the case of collective bargaining Nickell (1997) distinguishes the density of trade unions and coordination of wage bargaining (for more on these concepts see Tvrdon, 2007). Existence of legislation extending the results of collective bargaining on employers or sectors that are not participating in this process has an impact on unemployment in terms of its increase. Adverse effects of high rate of trade unions coverage can be mitigated if wage bargaining is coordinated.

Another high cited work is the paper of Blanchard and Wolfers (1999). The authors investigated the role of shocks and labor market institutions in increasing the unemployment rate in Western Europe. Correlation coefficients indicated that higher replacement rate, a longer period of provided unemployment benefits, stricter employment protection legislation, higher taxes on labor, higher density and higher trade unions coverage lead to greater effects of shocks on unemployment. On the contrary, active labor market policies and coordination of wage bargaining mitigated impacts of supply or demand shocks at the labor market.

Belot and van Ours (2001) performed the panel data regression analysis for the panel data on 18 OECD countries from 1960 to 1994. Estimated correlation coefficients led the authors to conclusion that the unemployment rate is positively influenced by labor taxation and unemployment benefits and trade unions' density. On the contrary, strict EPL and high centralization of collective bargaining influenced the unemployment rate in reverse direction.

Bassanini and Duval (2006) were interested in the impact of structural policies and institutions on the aggregate unemployment rate, respectively the employment rate. Although the main goal of their paper is to estimate the impact of institutional aspects on the above mentioned variables, the value of this paper can be seen in defining the role of market regulation. According to them, almost 2/3 of non-cyclical unemployment changes can be explained by changes in government policy and labor market institutions. Moreover, high and long-term provided unemployment benefits are among the factors that could increase the aggregate unemployment rate. Another factors with the same impacts are high taxes and strict labor market regulation that does not support competition. Conversely, lower unemployment can be reached if there exists a combination of highly centralized or coordinated wage bargaining and some active labor market policy measures. According to the authors' estimations employment protection legislation did not have significant effect on aggregate unemployment.

Fialova and Schneider (2007) examined the effects of institutional aspects on the unemployment rate, the long-term unemployment rate, the employment rate and the economic activity rate using the panel regression (1999 and 2004). The authors found that high taxation of labor and strict EPL tend to increase unemployment and to reduce economic activity. However, active labor market policy measures tend to reduce unemployment and to increase the economic activity rate. A similar effect was also observed in coverage of collective bargaining.

Lehman and Muravyev (2009) focused their attention on the transition countries. Contrary to previous studies, dependent variables included the unemployment rate of graduates. To determine whether the institutional aspects influence the unemployment rate of graduates is particularly important today, when many European countries have to face a new phenomenon - a high number of unemployed graduates (most frequently mentioned example is Spain with the unemployment rate of graduates is nearly 50%). The performed regression analysis confirmed the conclusions mentioned in Scarpetta (1996): strict EPL significantly increases the unemployment rate of graduates. Conversely, higher expenditures on active labor market policies reduce unemployment of graduates. In the case of effects of active labor market policies and EPL on other dependent variables (the total unemployment rate, the long-term unemployment rate and the employment rate) the authors confirmed the findings from previous studies. Moreover, insignificant effects of union density, unemployment benefits and tax wedge were found.

Among the recent studies we can mention the paper by Rottmann and Flaig (2011). The authors conducted a panel regression on the data from 19 OECD countries from 1960 to 2000. Their findings were similar to the previous studies, it means that strict EPL, high tax wedge and a generous system of unemployment benefits increase unemployment. Conversely, higher degree of centralization of wage bargain-

ing reduces unemployment. However, the strength of these effects varies considerably among countries.

Present studies focus on other relationships. For example, Potrafke (2010) concentrated on the potential relationship between labor market institutions and globalization. The analysis is based on the data from 20 OECD countries between 1982 and 2003. The author concluded that globalization does not affect the replacement rate, the duration of unemployment benefits, public spending on active labor market policies, taxation of labor and labor market regulation. In the case of standard employment contracts regulation, globalization has reduced stringency of regulation. The author also believes that labor market institutions are influenced rather by government policy than globalization itself.

An alternative view is offered by Rumler and Scharler (2009). They studied the effects of labor market institutions on macroeconomic volatility in 20 OECD countries. The analysis showed that countries with high union density are more exposed to volatile changes in output, while the degree of coordination of wage bargaining and EPL strictness have little effect on output volatility. Another conclusion is that highly coordinated wage bargaining has a dampening effect on inflation volatility.

The latter relationship is closely connected with the research conducted by Abbritt and Weber (2009), which examined institutional aspects and their impacts on the dynamics of inflation and unemployment. According to the authors, labor market institutions can be divided into 2 groups: (i) those that cause rigidity of unemployment; and (ii) those that cause real wage rigidity. This division is important because labor market institutions should be seen individually, as their effects on the economic cycle are different and their interaction is a key factor in the dynamics of inflation and unemployment.

2.2. Panel regression. In order to explain the characteristics of the labor market institutions and the dependent variables in the EU member states, we apply simple descriptive statistics. We conducted the panel data regression analysis. Panel data estimation is often considered to be an efficient analytical method in handling econometric data. According to Asteriou and Hall (2007) panel data estimation can offer some considerable advantages: (i) the sample size can be increased considerably by using a panel and hence much better estimates can be obtained; (ii) under certain circumstances the problem of omitted variables which might cause biased estimates in a single individual regression may not occur in the panel context.

A panel data set is formulated by a sample that contains N cross-sectional units that are observed at different T time periods. Consider, for example, a simple linear model with one explanatory variable as given by:

$$Y_{it} = \alpha + \beta X_{it} + \varepsilon_{it}, \quad (1)$$

where the variables Y and X have both i and t subscripts for $i=1,2,\dots,N$ sections and $t=1,2,\dots,T$ time periods. If our sample set consist of a constant T for all cross-sectional units, or in other words if we obtain a full nest of data both across countries and across time, then the data set is called balanced. Otherwise, when observations are missing for the time periods of some of the cross-sectional units the panel is called unbalanced. If we have different countries in our sample, we can expect differences in their behavior. Thus, our model can be formally written as:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + \beta_K X_{Kit} + \varepsilon_{it}, \quad (2)$$

where y_{it} depends on a set of K explanatory variables x_{it} and the constants are specific to the i -th unit (country) at time t , at the same time they are constant.

In this paper, we used 3 different methods: (i) the common constant model; (ii) the fixed effects model and (iii) the random effects model.

1) The Constant Coefficients Model (also called the pooled OLS model) is the type of panel model that has constant coefficients, referring to both intercepts and slopes. In the event that there is neither significant country, nor significant temporal effects, we could pool all of the data and run an ordinary least squares regression model. Although most of the time there are either country or temporal effects, there are occasions when neither of these is statistically significant.

2) The Fixed Effects Model (FEM) is another type of panel model that would have constant slopes but intercepts that differ according to the cross-sectional (group) unit, for example, the country. Although there are no significant temporal effects, there are significant differences among countries in this type of model. While the intercept is cross-section (group) specific and in this case differs from country to country, it may or may not differ over time. This model can be written Asteriou and Hall (2007):

$$Y_{it} = \alpha_i + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + \beta_K X_{Kit} + \varepsilon_{it} \quad (3)$$

The fixed effect model is a very useful basic model to start from; however, traditionally, panel data estimation has been mainly applied to the datasets where N is very large and in this case a simplifying assumption is sometimes made which gives rise to the random effects model.

3) The Random Effects Model (REM) is also called a regression with a random constant term. One way to handle the ignorance or error is to assume that the intercept is a random outcome variable. The random outcome is a function of a mean value plus a random error. But this cross-sectional specific error term v_i , which indicates the deviation from the constant of the cross-sectional unit (in this example, country) must be uncorrelated with the errors of the variables if this is to be modeled. The time series cross-sectional regression model is one with an intercept that is a random effect.

Hence, the variability of the constant for each section comes from the fact that:

$$\alpha_i = \alpha + v_i, \quad (4)$$

where v_i is a zero mean standard random variable.

The random effects model therefore takes the following form (Asteriou and Hall, 2007):

$$Y_{it} = (\alpha + v_i) + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + \beta_K X_{Kit} + \varepsilon_{it} \quad (5)$$

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + \beta_K X_{Kit} + (v_i + \varepsilon_{it}) \quad (6)$$

Given a model and data in which fixed effects estimation would be appropriate, a Hausman test tests whether random effects estimation would be almost as good. In a fixed-effects kind of case, the Hausman test is a test of H_0 : that random effects would be consistent and efficient vs. H_1 : random effects would be inconsistent. The result of the test is a vector of dimension k ($\dim(b)$) which will be distributed chi-

square(k). So if the Hausman test statistics is large, one must use FE. If the statistics is small, one may get away with RE.

In the next part of this section we provide the empirical results obtained in EView 7.

2.3 Empirical estimation.

In this chapter of the paper, we present the estimates of institutional aspects' impacts (as independent variables) on individual labor market macroeconomic indicators (dependent variables) - the employment rate, the unemployment rate and the long-term unemployment rate. We constructed a panel of 15 EU member states (11 Eurozone member states and 4 Visegrad Group countries) and used the data from 2000 till 2008.

As mentioned above, we set the unemployment rate (UR), the long-term unemployment rate (LUR) and the employment rate (ER) as dependent variable Y_{it} . We set employment protection legislation (EPL), collective bargaining coverage (COV), taxation of labor (TAX), initial net replacement rate (NRR) and active labor market policies (ALMP) as explanatory variables X_{it} (Table 1).

Table 1. Characteristics of variables in models

Dependent variable	Code	Source	Explaining variable	Code	Units	Source
Unemployment rate	UR	Eurostat	Employment protection legislation	EPL	indice 0-6 (the higher value the more stringent)	OECD
Long-term unemployment	LUR	Eurostat	Collective bargaining coverage	COV	(as %, shows the percentage of labor force)	ICTWSS
Employment rate	ER	Eurostat	Labor taxation	TAX	(as % of total labor costs – sum of income tax and employee and employer social security contributions)	OECD
			Initial net replacement rate	NRR	(as %, the fraction of current or potential income which the social system provides to a person if he or she does not work)	OECD
			Active labor market policies	ALMP	(expenditures as % of GDP)	Eurostat

Source: Own processing.

The regression equations have the following forms:

$$UR_{it} = \alpha_i + \beta_1 EPL_{it} + \beta_2 COV_{it} + \beta_3 ALMP_{it} + \beta_4 TAX_{it} + \beta_5 NRR_{it} + \varepsilon_{it} \quad (7)$$

$$LUR_{it} = \alpha_i + \beta_1 EPL_{it} + \beta_2 COV_{it} + \beta_3 ALMP_{it} + \beta_4 TAX_{it} + \beta_5 NRR_{it} + \varepsilon_{it} \quad (8)$$

$$ER_{it} = \alpha_i + \beta_1 EPL_{it} + \beta_2 COV_{it} + \beta_3 ALMP_{it} + \beta_4 TAX_{it} + \beta_5 NRR_{it} + \varepsilon_{it} \quad (9)$$

Table 2 shows the results of panel regression. We used least squares estimation procedure. Firstly, we estimated parameters in the model, where the unemployment rate was a dependent variable. Estimated regression coefficients indicate the positive impact of EPL, COV, TAX and NRR on the unemployment rate. In other words, with the increase of explanatory variables increases also a dependent variable. The model seems to be statistically significant. Regression coefficients estimation was performed at the significance level of 5%. However, EPL and NRR were statistically insignificant. According to the estimated regression coefficient, ALMP had the highest influence on UR. The negative value of the coefficient indicates that if ALMP expenditures increase, UR decreases significantly.

Table 2. Results of regression analysis

	Unemployment rate UR	Long-term unemployment LUR	Employment rate ER
constanta	-19.44942	-12.73346	100.2585
EPL	0.855097	0.418003	-2.32178
COV	0.135807	0.092229	-0.287875
ALMP	-3.43786	-2.198653	-2.195629
TAX	0.414745	0.231966	-0.231564
NRR	0.016285	0.01319	-0.007662
N (country, time)	135 (15,9)	135 (15,9)	135 (15,9)

Source: Own calculations.

In the case of long-term unemployment we have come to similar findings - ALMP and TAX have effect on the long-term unemployment. However, these effects are moderate in comparison with the effects of these variables on the unemployment rate. Moreover, regression EPL and NRR coefficients seem to be statistically insignificant.

The last model, where we used the employment rate as a dependent variable gives us different results. Statistically insignificant were the variables of NRR and ALMP. Other explanatory variables have negative effects on the employment rate. The highest effect showed EPL.

3. Conclusion. Our econometric analysis suggests that 2 institutional factors significantly influence unemployment and long-term unemployment: total tax wedge on labor and active labor market policies. While higher tax burden significantly increases the unemployment rate, active labor market policies work in the opposite direction and may offset the negative effect of taxation. Panel regression showed that a relatively significant impact on employment rate has employment protection legislation. In other word, stricter EPL causes a decrease in the employment rate. As in the previous case, the results showed a very weak influence of collective bargaining on the employment rate. Other variables appear to be statistically insignificant.

We can say that our results confirmed the conclusions from previous studies. They showed that effect of labor market institutions on these variables is ambiguous. This is largely due to the specifics of the labor market that differs from other markets in the economy considerably. As mentioned in the theoretical part, difficult to meas-

ure phenomena quite often have impact on these aspects. Here we can mention, for example, the willingness of employers to hire new labor force, fluctuation of employed and unemployed labor force, the structure of unemployment and also its duration. Creation of an integrated indicator describing labor market performance seems to be a difficult task, mainly due to different effects of the labor market institutions on employment and unemployment. From the above it follows therefore that to determine the optimal values for variables representing various institutional aspects are complicated. Quite often, the institutional setting of the labor market is linked to other aspects of the labor market or the whole economy. Moreover, we can see that these parameters differ among the EU member states significantly.

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