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DOES DEMOCRACY AND GOVERNMENT POLICY AFFECT LABOR MARKET OUTCOMES IN CEE COUNTRIES?

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ABSTRACT

In this paper, in a sample of Central and Eastern European countries (Albania, Bulgaria, Czech Republic, Estonia, Hungary, Macedonia, Moldova, Romania, Russian Federation, Slovak Republic, Slovenia, and Ukraine) we investigate the effects of: 1) democracy (measured by democracy indices); 2) government related variables and 3) other selected macroeconomic variables, on labor market outcomes. As labor market outcomes we use the following variables: unemployment rate, long-term unemployment rate, employment to population ratio, and average annual hours worked. As independent government related variables we use the following ones: government consumption (lagged), tax revenues as percentage of GDP (lagged), Herfindahl index of government (lagged). For the level of democracy we use following indices: Freedom house political rights and Civil liberties index (lagged), worker rights by CIRI human rights data project and Physical integrity rights index (lagged). Finally (regarding the independent macroeconomic variables), we estimate the effects of economic growth, inflation, and gross capital formation, on labor market outcomes. The empirical findings are based on two econometric techniques: The Seemingly Unrelated Regressions (SUR), and the General Method of Moments (GMM).

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JEL CLASSIFICATION: J08, J01, H51, H55, H83

1. INTRODUCTION AND LITERATURE REVIEW

There is no doubt that the labor market efficiency depends both on the economic policy, as well as on the level of democracy practicing in certain society. The democracy can be defined as a model of political organization, where political power is more equally distributed. Though democracy has very attractive features, this model of political organization may lead to inefficient policies and high levels of income redistribution.[4]

Democracy and democratic labor market institutions and their influence on labor market outcomes had been subject of debate of the economists for the past two decades.[5] As Barro[6] noted, more democracy encourages rich to poor redistributions and may enhance the power of interest groups. In another paper, Barro[7] once again concludes that the net effect of democracy on economic growth is inconclusive, which is supported by similar conclusion in the Gerring et al., paper.[8]

Labor economists and economists in general, by democracy on labor market usually mean political rights and civil liberties. Polity IV project by Marshal and Jeggers[9] data base is a reliable source for explaining democracy on labor market and worker rights. These set of rights, are mostly defined in labor and employment laws that

[4] Acemoglu, D. (2008), "Oligarchic Versus Democratic Societies." *Journal of the European Economic Association,* Vol. 6, Issue 1, pp. 1-44.
[5] Lehmann, H., Muravyev, A. (2009), " How Important are Labour Market Institutions for Labour Market Performance in Transition Countries?" IZA DP No. 4673.
[6] Barro, R. (1999),"Determinants of Democracy." *Journal of Political Economy*, 107(S6), pp. 158-183.
[7] Barro, R. (1996), "Determinants of Economic Growth: A Cross-Country Empirical Study." NBER Working Paper, No.5698.
[8] Gerring, J., Bond, P., Barndt, W., Moreno, C. (2005), "Democracy and Growth: A Historical Perspective." *World Politics*, 57 (3), pp. 323-64.
[9] Marshal,M., Jeggers, K. (2002), *Polity IV Project, Integrated Network for Societal Conflict Research (INSCR) Program Center for International Development and Conflict Management (CIDCM)*. University of Maryland, College Park 20742.

express and constitute type of social contract.[10] The social contracts define the obligations between workers and employees, and also represent some kind of mechanisms aimed for shearing the benefits and costs emanating from the economic activity.

In the period from 1960's till the 1990's, many European countries have enacted various job security provisions[11], and in many of them the employer's ability to terminate job contract at will is restricted. Lazear in his paper from 1990 finds evidence that increase in severance pay lowers the number of jobs in the economy. Also, as Blanchard and Wolfers[12] note, about the institutions and labor markets, unemployment insurance has led to chronic unemployment. They state that the costs associated with the employment protection have "killed" the job creation.

In some studies, such as that of Nickel[13], labor market dynamics is being attributed to the changes in institutions only (this conclusion is being drawn from the OECD countries). Bertola, Blauand and Kahn[14], on the other hand, explained that macroeconomic and demographic shocks and changing labor market institutions have little to explain about the US unemployment, but much more to explain about the US relative unemployment. Some studies, as Blanchard and Gali[15], connected unemployment, productivity shocks and the monetary policy. Their model proved that, under standard utility specification, productivity shocks do not affect unemployment.[16]

Recently, labor economists introduce the idea that individual policies interact systematically with the overall institutional framework. Recently, also, some studies

[10] Rittich, K. (2010),"Between Workers' Rights and Flexibility: Labor Law in an Uncertain World." *Saint Louis University Law Journal,* Vol. 54, p. 565.
[11] Lazear, E. P. (1990), "Job Security Provisions and Employment." *The Quarterly Journal of Economics,* Vol. 105, no. 3, pp. 699-726.
[12] Blanchard, O., Wolfers, J. (2000),"The Role of Shocks and Institutions in the Rise of European Unemployment: The Aggregate Evidence." *Economic Journal*, 110(462), pp. C1-33.
[13] Nickel, S. (1997), "Unemployment and Labor Market Rigidities: Europe versus North America." *Journal of Economic Perspectives*, Vol. 11, No. 3, pp. 55-74.
[14] Bertola, G., Blau, F, Kahn, L. (2001), "Comparative Analysis of Labour-Market Outcomes: Lessons for the United States from International Long-Run Evidence." NBER Working Paper No. 8526.
[15] Blanchard,O., Gali, J. (2007), "Labour Markets and Monetary Policy: A New-Keynesian Model with Unemployment." NBER Working Paper No. 13897.
[16] It is through real wage setting and the labor market frictions, one way by which productivity shocks effects on unemployment, are determined.

have focused on the degree of competition on the product market and financial market development. In that context, the paper by Amable, Demmou and Gatti[17], provide evidence on the linkages between large array of institutional arrangements on product, labor and financial markets.

Developing countries are interesting for investigation of the employment laws and regulatory reforms connected with the labor market.[18] On the topic of regulation of labor market, Besley and Burges[19] suggested that regulating in a pro-worker direction is associated with the increases in urban poverty. In the investigation of 85 countries worldwide, Botero et al.,[20] found that richer countries regulate labor less than poor countries, although they have more generous security systems.[21] In general, heavier labor regulation, according to the previous paper, is associated with larger unofficial economy and higher youth unemployment.

From the government related variables, the one that is most directly related as a proxy of government is Herfindahl index of government concentration[22]. Larger the number of parties in the coalition, lower the index. If it is one-party system this index would take value one, otherwise it would take value between 0 and 1.[23] In his study, Wohlschlegel[24] investigated the effect of corruption on unemployment. He concludes that voters in corrupt countries elect single strong party, because they expect single

[17] Amable B., L. Demmou and D. Gatti [2007] Employment Performance and Institutions: New Answers to an Old Question. IZA DP No. 2731. Discussion Paper Series, Bonn: IZA.
[18] Djankov, S., Ramalho, R. (2009), "Employment Laws in Developing Countries." *Journal of Comparative Economics*, 37(1), pp. 3-13.
[19] Besley, T., Burgess, R. (2004), "Can Labor Regulation Hinder Economic Performance? Evidence from India." *Quarterly Journal of Economics*, 119 (1), pp. 91–134.
[20] Botero, J., Djankov, S., La Porta, R., Lopez-de-Silanes, L., Shleifer, A. (2004), "The Regulation of Labour." *Quarterly Journal of Economics*, 119 (3), pp. 1339–1382.
[21] Left-wing governments are associated with more stringent labor regulations, and more generous security systems.
[22] This index is calculated as: $H = \sum_{i=1}^{n} s_i^2$ where s_i represents the number of the seats in parliament held by each party supporter of the government with respect to total seats in parliament. This index ranges 0 to 1.
[23] Longoni, E., Gregorini, F. (2009), *Inequality, Political Systems and Public Spending*. University of Milan – Bicocca.
[24] Wohlschlegel, A. (2012), "Government Concentration: Cause of or Remedy for Corruption?" (November 30, 2012). Available at SSRN: http://ssrn.com/abstract=2183120 or http://dx.doi.org/10.2139/ssrn.2183120.

party government to be more successful in coping with such a corrupted environment. So, in a way, government concentration and corruption are positively associated. But, also, corruption increase unemployment, though this effect is weaker in countries with more concentrated governments. Thus, the effect of government concentration on unemployment is ambiguous.

Government size is usually measured by the government consumption, as percentage to GDP. Many research studies estimate the effect of government size on labor market outcomes, such as unemployment. For example, Feldmann's[25] study uses data from 1985 to 2002 for 19 industrialized countries and his main finding is that the large government sector is likely to increase unemployment. Karras[26] in his study observed negative employment effects of government spending in eight countries, on a sample of 18 countries.

Table 1. Summarized Literature Review

Study	Used measures	Econometric technique	Main findings
Acemoglu (2008)	Protection of property rights.	None, theoretical model and historical perspective.	Oligarchic society may first become richer, but then fall behind similar democratic society.
Amable, Demmou and Gatti (2007)	Unemployment rate, inactivity rate, jobless rate.	OLS, Fixed effect vector decomposition estimator, GLS, and panel corrected standard error estimator.	Positive effect of employment protection on employment performance.
Barro (1999)	Democracy measured by a subjective indicator of electoral rights, political rights index and civil liberties index, gaps between female and male in years of education, urbanization rate, etc.	Panel study of over 100 countries from 1960-1995.	Democracy has little with the country size (measured by the log of population) but it has significant association with the income. Democracy rises with the middle class share of income. For a given standard of living, democracy fall with the urbanization.

[25] Feldmann, H. (2006), *Government Size and Unemployment: Evidence from Industrial Countries*. University of Bath.
[26] Karras, G. (1993), "Employment and Output Effects of Government Spending: Is Government Size Important?" *Economic Inquiry*, Vol. 31, no. 3, pp. 354-369.

Blanchard and Gali (2007)	Unemployment rate with the productivity shocks and introduction of real wage rigidities.	None, theoretical new-Keynesian model.	Under standard utility specification, productivity shocks have no effect on unemployment, but once real wage rigidities are introduced inefficient unemployment arises.
Blanchard and Wolfers (2000)	European unemployment interaction with the labor market institutions, as presented by: employment protection tax wedge, union density bargaining power, etc.	Panel study for 20 OECD nations. Data cover period since 1960.	Relationship between shocks and institutions are crucial in explaining unemployment.
Djankov and Ramalho (2009)	Labor regulation and labor market outcomes, also the interaction between labor market rigidities and labor market outcomes.	Survey of the research of the effect of the employment laws in developing countries (using papers published since 2004).	Developing countries with rigid employment laws tend to have larger informal sectors and higher unemployment, especially among young workers.
Feldmann (2006)	Government consumption and taxes, and their effect on unemployment rate. As government size related variables are taken: state owned enterprises, and transfers and subsidies.	Generalized least squares estimate. This study uses data of 19 industrialized countries.	Large government sector is likely to increase unemployment.
Gerring et al., (2005)	Dependent variable in this study is economic growth and main emphasis has been out on the relationship between economic growth and the level of democracy. Democracy is being measured by the Polity IV score.	Cross-country regression.	Relationship between democracy (democracy level and stock) and economic growth is thus robust and positive.
Lehmann and Muravyev (2009)	Labor market outcomes unemployment rate, long term unemployment rate and employment protection legislation along with the active labor market policies.	Panel study with lagged regressors, in order endogeneity problem to be solved.	Institutions matter for labor market outcomes, and that deregulation of market improves their performances.
Nickell (1997)	Unemployment rate, interaction with labor market institutions: employment protection, active labor market policies, union density, union coverage index.	Panel random effect GLS for 20 OECD countries, for the period 1983-88 and 1989-1994.	European labor market is rigid and inflexible, so the result is high unemployment. North American labor market is dynamic and flexible, so the result is low unemployment.
Wohlschlegel (2012)	Corruption and government concentration with relation to unemployment rate.	Causality analysis.	Corruption increases unemployment. This effect is weaker in countries with more concentrated governments.

2. DATA

We use annual data for 12 countries from CEE group (Albania, Bulgaria, Czech Republic, Estonia, Hungary, Macedonia, Moldova, Romania, Russian Federation, Slovak Republic, Slovenia, and Ukraine) for the period 1993 - 2011. Data on labor market outcomes: unemployment rate, long-term unemployment rate (unemployed for more than 12 months), average annual hours worked and employment to population ratio, are available from Penn World Tables. Also, from this table are gathered data on capital formation (physical capital). Data on government consumption, inflation and, taxes as percentage of GDP, are obtained from the World Bank. Data on Freedom House political rights and Freedom house civil liberties are obtained from the Pippa Noris shared data sets, from John F.Kennedy School of government at Harvard University. Herfindahl index of government concentration has been derived from data base on political institutions. Data on worker rights and Physical integrity rights index are provided from CIRI human rights data project by Cigranelli and Richards[27]. The descriptive statistics of the variables used in estimations is presented in Table 2:

Table 2. Descriptive statistics and variables description

	Variable	Mean	Std. Dev.	Min	Max	Observations	
Emplp	Employment to population ratio	50.31903	6.359795	32.4	62.7	N =	247
Avh	Average hours worked	1857.352	151.7761	1593.38	2293.48	N =	228
Ltur	Long term unemployment	5.41407	4.945736	0.9	30.2	N =	199
Unem.rate	Unemployment rate	11.20787	7.231255	3.9	37.3	N =	216
Worker	Workers' rights (CIRI)	0.866397	0.812982	0	2	N =	247
Herfgov	Herfindahl index of government concentration	0.466005	0.376019	0	1	N =	247
Physint	Physical integrity rights index	3.678862	2.990891	0	8	N =	246
logRGDP	Logarithm of real GDP	9.049146	0.676928	7.290968	10.20836	N =	234
Inflation	Inflation (CPI)	48.07333	17.80478	6.74	91.2	N =	234
Gov.cons	Government consumption	9.093803	2.46359	4.81	19.28	N =	234
Tax revenues as	Taxes (% of GDP)	16.84172	4.332618	5.96	26.87	N =	180

[27] Cingranelli, D., Richards, D. (2010), "The Cingranelli and Richards (CIRI) Human Rights Data Project." *Human Rights Quarterly*, 32 (2010), pp. 395–418.

percentage of GDP							
Gross capital formation	Gross capital formation (wealth)	2.28E+10	5.54E+10	1.62E+08	4.64E+11	N =	247
FH_PR	Freedom House political rights index	3.919028	2.553796	1	7	N =	247
FH_CL	Freedom House civil liberties index	2.894737	1.606976	1	7	N =	247

3. METHODOLOGY OF THE APPLIED ECONOMETRICS WORK

Zellner[28] proposed efficient method of estimation which is generalization of the linear regression model. Namely, Zellner proposed estimation technique that yields more efficient coefficient estimator than single equation least squares estimators, such as OLS. In this way coefficients are estimated simultaneously by applying generalized least squares to the whole system. In the algebraic form let first:

$$y_i = X_i\beta_i + u_i \qquad (1)$$

In matrix form previous expression can be written as:

$$\begin{bmatrix} y_1 \\ y_2 \\ \vdots \\ . \\ y_I \end{bmatrix} = \begin{bmatrix} X_1 & 0 & 0 \\ 0 & X_2 & 0 \\ \vdots & . & \vdots \\ . & . & . \\ 0 & 0 & X_I \end{bmatrix} \begin{bmatrix} \beta_1 \\ \beta_2 \\ \vdots \\ . \\ \beta_I \end{bmatrix} + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \vdots \\ . \\ \varepsilon_I \end{bmatrix} = X\beta + \varepsilon \qquad (2)$$

In Zelner's SUR models $I > 1$, i.e. number of dependent variables is greater than one, number of dependent variables that allow for different regressor matrices in each equation may differ i.e. $X_i \neq X_j$. This method of estimation, also, accounts for contemporaneous correlation i.e. $E(\varepsilon_{it}, \varepsilon_{jt}) \neq 0$.[29] The vector of all stacked independent variables is: $Y = (y_1', y_2', \dots\dots, y_I')$, X is the block diagonal matrix, $\beta = (\beta_1', \beta_2', \dots\dots, \beta_3')$ is the vector of stacked coefficient of all equations. Then, the OLS estimation of the system would be $\beta^{OLS} = (X'X)^{-1}X'y$. The SUR model accounts for

[28] Zellner, A. (1962), "An Efficient Method of Estimating Seemingly Unrelated Regression Equations and Tests for Aggregation Bias." *Journal of the American Statistical Association,* No. 57, pp. 348–368.
[29] Hubert, M., Verdonck, T., Yorulmazb, O. (2014), "Fast Robust SUR With Applications to the Multivariate Chain Ladder Method." *preprint send to Elsevier*.

interrelations between equations, assuming that error terms from the different equations are correlated, i.e. $\beta^{SUR} = [X'\Omega^{-1}X][X'\Omega^{-1}Y]$, where Ω^{-1} is a weighting matrix based on a covariance matrix of the error terms. This covariance matrix is the expected value of the error terms of the *n*th observation in the *i*th equation. The covariance is $\sigma_{ij} = E(\varepsilon_{in}, \varepsilon_{jn})$. The elements of the covariance matrix can be calculated as: $\hat{\sigma}_{ij} = \frac{\hat{\varepsilon}_i, \hat{\varepsilon}_j}{N}$. Now, we know that $\Omega = \sum \otimes I_N$, where and $\otimes$ is the Kronecker product actually block matrix[30]. In the second step generalized least squares regression is being run for the β^{SUR}, so estimation is:

$$\beta^{SUR} = \left[X'\left(\hat{\Sigma}^{-1} \otimes I_N\right)X\right]^{-1}\left[X'\left(\hat{\Sigma}^{-1} \otimes I_N\right)y\right] \qquad (3)$$

In a large sample, such as in this paper, this estimator is asymptotically efficient. The assumption of independence of the labor market outcomes is not really supported by the economic theory. That is why one can think that single equation OLS approach would be inefficient from a statistical point of view.[31] Since some of the regressors appear to be endogenous, we use seemingly unrelated regressions with lagged regressors - to solve the endogeneity problem. Seemingly unrelated regressions technique implies that, in general equilibrium analysis, all variables are endogenous and only estimation that could be done is with exogenous/lagged values of endogenous variables i.e. reduced form of the equations.[32]

GMM dynamic panel data model, i.e. Arellano-Bond estimation[33], has also been applied in order to account for the endogeneity problem. The first-order liner dynamic panel model can be expressed by the following regression:

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[30] If matrix *A* is *mXn*, and matrix *B* is *pXq* matrix, then *Kronecker product* is: $A \otimes B = \begin{bmatrix} a_{11}B & \cdots & a_{1n}B \\ \vdots & \ddots & \vdots \\ a_{m1}B & \cdots & a_{nm}B \end{bmatrix}$.

[31] Judge, G. G., Hill, R. C., Griffiths, W. E., Lutkepohl, H., Lee, T. C. (1988), *Introduction to Theory and Practice of Econometrics*. 2ed, Wiley New York

[32] Kennedy, P. (2003), *A guide to Econometrics*. MIT press, fifth edition.

[33] Arellano, M., Bond, S. (1991), "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations." *Review of Economic Studies*, 58, pp. 277-297.

$$y_{it} = \beta y_{i,t-1} + \gamma x_{i,t} + (\alpha_i + \varepsilon_{i,t}) \quad (4)$$

where: $i(=1,....N)$ is standing for a cross-section group, while $t(=1,....T)$ for time period. The expression in parenthesis is composite error term that "covers" group-specific random effect (α_i) (that is time invariant) and the error term $(\varepsilon_{i,t})$ that is assumed to be $IID(0,\sigma_\varepsilon^2)$, and that varies over both groups and time. In order to solve the time invariant problem of the group-specific random effect (α_i) - which biases estimation of (β) - the equation (4) is transformed into the following expression:

$$y_{i,t} - y_{i,t-1} = \beta(y_{i,t-1} - y_{i,t-2}) + \gamma(x_{i,t} - x_{i,t-1}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1}) \quad (5)$$

Due to the correlation problem between the lagged $y_{i,t}$ and $\varepsilon_{i,t}$, as well as the correlation problem inside the error term structure, the instrumental variables are applied. More precisely, for example, the lagged difference $(y_{i,t-1} - y_{i,t-2})$ is substituted with $(y_{i,t-2} - y_{i,t-3})$[34], or with the lagged level $(y_{i,,t-2})$.[35] The instrument should be highly correlated with $(y_{i,t-1} - y_{i,t-2})$, but not correlated with $(\varepsilon_{i,t} - \varepsilon_{i,t-1})$. Moreover, if $(x_{i,t})$ are strictly exogenous, then $E\{x_{i,s}\Delta\varepsilon_{i,t}\} = 0$ for each s and t, so that $x_{i,1}.....x_{i,T}$ can be used as an instruments in eq.5. The Arellano – Bond estimation uses lagged levels as instruments.

4. RESULTS

In this empirical section, we apply seemingly unrelated regressions technique (SUR), for panel data. Basically, one can use SUR when dealing with longitudinal panel data. This technique is being usually applied if there exist unequal variances in the

[34] Greene, W. (2002), *Limdep Version 8.0: Econometric Modeling Guide*. Vol.2, Plainview NY: Econometric Software, Inc.
[35] Arellano, M. (1989), "A Note on the Anderson-Hsiao Estimator for Panel Data." *Economics Letters*, 31, pp. 337-41.

data, and more important - if the error terms amongst the equations are correlated. The SUR consists of equations explaining identical variables, but for different samples. Using SUR, when the equations are related only with their error terms, we achieve higher estimation efficiency. In fact, the SUR estimator is efficient under the assumptions we have made, because it is just a special case of the GLS estimator (if the error terms are uncorrelated across equations, the GLS and OLS estimators are numerically identical). We assume that the equations in our models are independent, but that correlation among the error terms of the equations exists, representing identical unsystematic influences. Furthermore, we use lagged regressors to account for the potential endogeneity. Finally, the GMM model, i.e. Arellano-Bond estimation, is being applied to account for endogeneity, but also to account for short and long run effects.

In the first model, as democracy indicator, Freedom house political rights measure has being used. The other variables include workers' rights *(*$Worker_{it}$*)*, Herfindahl index of government *(*$Herfgov_{it}$*)*, Physical integrity rights index ($Physint_{it}$) and inflation *(*$Inflation_{it}$*)*. Variable related with the economic activity is the logarithm of real GDP *(*$logRGDP_{it}$*)*, while the gross capital formation – as a proxy for wealth, and the tax revenues - as percentage of GDP (T_{it}), are included too. In the model 2, the only regressor that is different is the Freedom house civil liberties measure. In fact, we have introduced this measure instead of Freedom house political rights index in order to test the robustness of the impact of democracy on labor market outcomes, when the democracy measure is changed. In the model 3 government consumption, as a proxy for macroeconomic policy, has been introduced among the regressors. This model, also, includes Freedom house political rights index - as measure for democracy, and the other standard regressors from model 1 and model 2. Model 4 is GMM model, and it is Arellano-Bond estimation, where among the regressors are included: worker's rights measure, Herfindahl index of government concentration, Physical integrity rights index, Freedom house civil liberties index and government consumption, and other

standard regressors from the first three models. The results from the different models are presented in the appendix (Tables 3, 4, 5 and 6).

In the model 1, Freedom house political rights index, as measure of democracy, is positively associated with employment to population ratio, but negatively associated with the long-term unemployment rate and general unemployment rate. These results are *a priori* expected, since it is acceptable that higher level of democracy increases employment and the number of annual hours worked, and thus reduce the long-term unemployment and unemployment in general. Logarithm of real GDP is positively associated with the employment to population ratio and also positively associated with the long-term unemployment rate and general unemployment rate (with rise of productivity, fewer workers will be needed to produce the same amount of output). So, in the short run, incremental increase in productivity, causes rise of unemployment, but in the long run unemployment effect disappears.[36]

In the model 2, one can see that democracy index is significant only in the first equation. Otherwise, freedom house civil liberties do not enter significantly in either equation. Worker rights do significantly influence average annual hours worked and employment to population ratio, while they enter negatively when in association with long-term unemployment and unemployment rate.

In the model 3, workers rights have significant positive effect on the average annual hours worked, and they enter negatively and significantly with the unemployment rate. Government consumption seems to have negative effect on employment to population ratio and on average annual hours worked, while the effect is positive on long-term unemployment and unemployment rate. Hence, fiscal prudence is needed in these countries. Tax revenues, as expected, affect negatively on average annual hours worked and employment to population ratio. Democracy affects employment positively and significantly, and has negative impact on unemployment related variables.

[36] Blanchard,O., Solow, R., Wilson, B.A. (2007), *Productivity and Unemployment*. MIT Economics.

Finally, with the model 4 the short and the long-term effects on labor market variables are captured. The results suggest that the Freedom house civil liberties, on a short run, decrease employment to population ratio, but on a long run increases long-term unemployment, in the dynamical framework. Physical integrity rights index reduces long-term unemployment rate on a long run.

5. CONCLUSION

Regression results prove that increase in the worker rights index will induce on average higher employment to population ratio, and will increase annual hours worked. Also higher lagged worker rights will reduce long-term unemployment and general unemployment rate. Democracy indices, on average, increase employment to population ratio and average annual hours worked, and reduce long-term unemployment rate and general unemployment rate. However, these results are conditional upon the analysis on a short and on a long run, i.e. the Arellano-Bond estimation. When analyzed in terms of time effect, on a long run, Freedom house civil liberties index reduces employment to population ratio and increases long-term unemployment rate, while, on a short run, this index significantly increases the general unemployment rate.

Herfindahl index of government concentration, on average, it does significantly increase long-term unemployment rate and general unemployment rate. On a long run, this index increases long-term and general unemployment rate. It satisfies our expectations that smaller democracy levels (higher government concentration, which means higher Herfidahl indices) result in higher unemployment rates. The same can be concluded for the Physical integrity rights index. On average, it does positively and significantly affect the long-term unemployment rate and general unemployment rate. On a long run, higher Physical integrity rights index, on average, reduces long term unemployment rate, whereas on a short run, it generally reduces the unemployment rate. The higher government respect for disappearance, extrajudicial killing, political imprisonment, and torture (higher democracy level), the smaller unemployment rates.

Government consumption, as percentage of GDP, affects positively both, the employment to population ratio and unemployment rate, though, on a long run, government consumption reduces employment to population ratio, and, on average, it increases the long-term unemployment rate. The previous is in line with our expectations, as well as with the economic theory. One has to have in mind that observed CEE countries in their transition period were predetermined to conduct expansive fiscal policy, especially in the segment of government consumption. The reasons were different - from the European Union integration processes and the need for infrastructural improvements (intensive capital investments) to anti-cyclical and social policy corrections. Therefore, taking into account the crowding-out effect of fiscal policy – which implies that fiscal policy, on a long run, leads to extinction of the private sector – the reduction of employment and increase of the rate of unemployment, on a long run, were inevitable. So, in general, government consumption, on average, reduces positive labor market outcomes (employment to population ratio and average annual hours worked), and increases long-term unemployment rate and general unemployment rate.

The effects of the other macroeconomic variables on labor market outcomes, are not quite clear. We believe that it is due to the specific macroeconomic policies in different CEE countries. This statement is valid for both, EU and non-EU countries. Moreover, different macroeconomic policies were conducted in all EU member countries, implied in our sample, before their accession. We have tried to solve this problem by using GMM model, where the specific effects of different macroeconomic policies among countries would have been neutralized, but the results were partially successful.

Finally, one can conclude that higher level of democracy induces more positive labor market outcomes. The main conclusion from this paper, which at the same time can be understood as a recommendation for policy makers in observed CEE countries, is that employers have to be influenced to improve the worker rights in their respective countries. Our investigation confirms that higher worker rights have positive impact on

the rate of unemployment. Improving workers rights can be done through various mechanisms i.e. imposing minimum wage on a higher level, as percentage from the average pay in the country or industry, or through higher workers participation which is regulated with the European worker's council directive. Regarding macroeconomic policies, taking into account the existence of the crowding-out effect, we strongly believe that fiscal prudence is needed.

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Appendix

Table 3. Seemingly unrelated regression (SUR) in panel data set (model 1)

Model		1	2	3	4
Dependent variable		emplp (Employment to population ratio)	lavh log of (average hours worked)	Ltur (long term unemployment)	Unem.rate (Unemployment rate)
		Coef.	Coef.	Coef.	Coef.
L_Worker	Lagged Workers' rights (CIRI)	-0.100	0.058***	-0.80***	-1.49
L_Hergov	Lagged Herfindahl index of government concentration	-0.696*	-0.018*	0.76*	1.03*
L_Physint	Lagged Physical integrity rights index	-0.456***	-0.007**	0.42***	0.60***
L_FH_PR	Lagged Freedom House political rights index	0.313***	0.003*	-0.28***	-0.41****
L_Inflation	Lagged Inflation (CPI)	-0.074***	0.001*	-0.02*	-0.04*
L_logRGDP	Lagged Logarithm of real GDP	3.686***	-0.058***	1.34***	1.67***
L_Gross capital formation	Lagged Gross capital formation (wealth)	2.06E-11***	4.53E-13***	-9.73E-12***	-9.84E-12***

L_Tax revenues as percentage of GDP	Lagged Taxes (%of income)	-0.550***	-0.004***	-0.05	-0.07
C	Constant	30.299***	8.050***	-5.99	-2.99
R^2		0.5887	0.4470	0.2281	0.2187

Note: *** statistical significance at all levels of significance;** at 5%,*at 10%.

Table 4. Seemingly unrelated regression (SUR) in panel data set (model 2)

Model		1	2	3	4
Dependent variable		Emplp (Employment to population ratio)	lavh log of (average hours worked)	Ltur (long term unemployment)	Unem. rate (Unemployment rate)
		Coef.	Coef.	Coef.	Coef.
L_Worker	Lagged Workers' rights (CIRI)	0.35	0.060***	-1.02***	-1.79***
L_Hergov	Lagged Herfindahl index of government concentration	-0.50	-0.014	0.37	0.43
L_Physint	Lagged Physical integrity rights index	-0.50***	-0.006***	0.38***	0.53***
L_FH_CL	Lagged Freedom House civil liberties index	0.38***	-0.002***	0.01	0.09
L_Inflation	Lagged Inflation (CPI)	-0.08***	0.001*	-0.02*	-0.03*
L_logRGDP	Lagged Logarithm of real GDP	4.57***	-0.052***	0.69	0.75
L_Gross capital formation	Lagged Gross capital formation (wealth)	1.81E-11***	4.61E-13***	-9.67E-12***	-1.02E-11***
L_Tax revenues as percentage of GDP	Lagged Taxes (%of income)	-0.546***	-0.004***	-0.04	-0.056
C	Constant	22.272***	8.011***	-0.88	4.013
R^2		0.5806	0.4420	0.1569	0.1431

Note: *** statistical significance at all levels of significance;** at 5%,*at 10%.

Table 5. Seemingly unrelated regression (SUR) in panel data set (model 3)

Model		1	2	3	4
Dependent variable		Emplp (Employment to population ratio)	lavh log of (average hours worked)	Ltur (long term unemployment)	Unem.rate (Unemployment rate)
		Coef.	Coef.	Coef.	Coef.
L_Worker	Lagged Workers' rights (CIRI)	-0.10	0.052***	-0.35	-0.89***
L_Hergov	Lagged Herfindahl index of government concentration	0.26	-0.007	-0.24	-0.23
L_Physint	Lagged Physical integrity rights index	-0.44***	-0.004*	0.27***	0.39***
L_FH_PR	Lagged Freedom House political rights index	0.26***	0.001	-0.18***	-0.27***

L_Gov.consump	Lagged Government consumption	-0.32***	-0.006***	0.52***	0.67***
L_logRGDP	Lagged Logarithm of real GDP	2.33***	-0.041***	0.61***	0.53
L_Gross capital formation	Lagged Gross capital formation (wealth)	1.94E-11***	4.23E-13***	-7.43E-12***	-6.84E-12*
L_Tax revenues as percentage of GDP	Lagged Taxes (%of income)	-0.56***	-0.004***	-0.06*	-0.08*
C	Constant	41.60***	7.978***	-4.40*	0.34
R^2		0.5799	0.4749	0.4683	0.4200

Note: *** statistical significance at all levels of significance;** at 5%,*at 10%.

Table 6. GMM regressions (model 4)

Model		1	2	3	4
Dependent variable		Emplp (Employment to population ratio)	Avh (average hours worked)	Ltur (long term unemployment)	Unem.rate (Unemployment rate)
		Coef.	Coef.	Coef.	Coef.
Dependent variables Lag(1)		0.87***	0.76	0.82***	0.96***
Lag(2)		-0.01	-0.17***	-0.20***	-0.39***
Worker	Workers' rights (CIRI)		6.69	0.04	-0.02
Lag(1)		-0.39	-0.31	0.39***	0.26
Hergov	Herfindahl index of government concentration	-0.10	-11.47	0.67***	0.93***
Lag(1)		0.34	-12.70	0.04	0.49
Physint	Physical integrity rights index index	0.06	0.56	-0.18***	-0.13
Lag(1)		-0.01	2.32	-0.09*	-0.18**
FH_CL	Freedom House civil liberties index	-0.14***	-0.38	0.10*	-0.06
Lag(1)		-0.09	1.56	0.05	0.19***
Gov.cons	Government consumption	-0.33*	-8.10**	0.41***	0.096
Lag(1)		0.61***	2.18	-0.13	0.252
logRGDP	Logarithm of real GDP	7.68***	22.88	-9.40***	-14.2***
Lag(1)		-6.09**	-99.68**	8.62***	12.8***
Gross capital formation	Gross capital formation (wealth)	-3.76E-12	-2.17E-10*	2.41E-12	-4.39E-12
Lag(1)		4.41E-12	1.47E-10	-3.50E-12	2.21E-12
Tax revenues as percentage of GDP	Taxes (% of GDP)	0.040	1.64	-0.09	-0.25***
Lag(1)		-0.075	-1.19	-0.04	0.11
Constant	Constant	-9.141	1690.427***	9.20	16.87
Sargan test H_0: over identifying restrictions are valid ;p-value		0.5944	0.0000	0.6249	0.6249

Note: *** statistical significance at all levels of significance;**at 5%,*at 10%.

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