STRUCTURAL UNEMPLOYMENT AND ITS DETERMINANTS IN SOUTHEAST EUROPE

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Abstract

This paper provides comparative analysis of the structural unemployment for a group of transition countries in Southeast Europe, based on relatively simple measure, NAWRU. The paper also investigates and discusses the determinants of relatively high structural unemployment in the region. The results of the empirical estimates point to the remittances and overall changes in business climate as being the significant variables that explain relatively high structural unemployment in analyzed countries.

Key words: NAWRU, structural unemployment, Southeast Europe.

1. INTRODUCTION

High and persistent unemployment poses a significant problem for most transition economies. This is particularly important for transition economies of the Southeast Europe, that in most cases suffer from high unemployment rates and more importantly high shares of long-term unemployed. According to the data reported by Centre of Public Employment Services of Southeast European Countries (2009) the share of unemployed for the period of over 8 years in total registered unemployment ranged from 9.77 in Montenegro, 12.02 in Croatia, 14.76 in Serbia to 30.78 percent in Macedonia during the year 2008. Such high shares of unemployed for such a long periods are a clear indication of structural mismatch on the labour markets as well as serious problem for economic policies. Estimates of the size structural unemployment size in the countries of Southeast Europe can be seldom found in the literature, mostly due to the lack of methodologically consistent data series. The latter problem is also frequently

found in other transition economies, but the analytical issue is emphasized by the emergence of new states in the Western Balkan region related to the break up of former Yugoslavia, which precludes existence of longer time series required for such estimates. In such circumstances, even the basic indicators for country comparisons are frequently missing, and the available data suffer from frequent methodological updates.

As the new countries emerge in the region, they almost instantly proclaim their desire to join the European Union (EU), where one of the key policy demands in line with the adopted EU level strategies is to increase overall employment. Furthermore, in order to be able to coordinate countries' economic policies, EU membership is associated with increased demand for estimating and monitoring structural indicators, where the extent of structural unemployment is only one. The need to provide structural unemployment estimates for new EU members even based on univariate series is emphasized by Camarero, Carrion-i-Silvestre and Tamarit (2005).

Notwithstanding the EU integration processes, estimating the size of the structural unemployment should be potentially very important for the transition economies, since those economies are going through a massive restructuring phase. Consequently, changes in the structural indicators on the labour market should also reveal the speed of the restructuring process and the requirements to change the current policies if deemed necessary. The structural unemployment could be assessed on the macroeconomic level, in which case it can serve as an indicator relevant for coordination of different aspects of economic policy within the country, or the microeconomic level, when the results could serve as a guide for specific labour market measures or education system changes requirements.

To the best of author's knowledge, this is the first attempt to compare the size of the structural unemployment across the countries in this region. Furthermore, this is the first attempt to empirically investigate the determinants of structural unemployment for this specific group of countries. The results presented in this paper consequently supplement the current literature in two dimensions. First, they will provide points of comparison with similar studies conducted for the market and other transition economies. Second, they will provide insight into the determinants of persistent unemployment problem in the region, which might eventually lead to policy recommendations.

The rest of the paper has following structure. The next section describes the methodology of structural unemployment estimates used in this paper, briefly presents and discusses the results across the countries in the sample. Section 3 discusses the variables usually considered as the determinants of structural unemployment in the literature as well as their potential influence on structural unemployment in Southeast Europe. Section 4 presents the estimation results on the selected determinants in the sampled countries. The last section brings conclusions.

2. STRUCTURAL UNEMPLOYMENT MEASUREMENT: METHODOLOGY AND PRELIMINARY COMPARATIVE ANALYSIS

Economic literature differentiates between cyclical, structural and frictional unemployment. While cyclical oscillates with the business cycle and frictional relates to the transition states of the individuals on the labour market, the structural unemployment should be the most closely related to the underlying characteristics of the analyzed economy. Identifying the structural unemployment in transition economies seems an important task that should raise the awareness of other structural problems the transition economies are facing.

Structural unemployment is important concept in both labour economics and macroeconomics literature. In the first case, equilibrium search models (Burdett and Mortensen, 1998; Koning, Ridder and van den Berg, 1995) identify the structural unemployment by focusing on the individual labour market search efforts and relating those to labour demand conditions as defined by employers. These theoretical models are frequently estimated by using a single country individual level data. The empirical estimates are focused on identifying differences in structural unemployment for certain population subgroups according to age, gender, education, etc. Such results are than incorporated into the improvement of specific policy measures in national economy.

From the macroeconomic point of view, structural unemployment is related to the overall unbalances, and is assumed to be accompanied by other structural problems in the economy. The labour market inability to clear thus reflects also other inefficiencies in the economy. Since the main aim of this paper is to conduct the comparison between the countries, we retain the focus on the macroeconomic concept of the structural unemployment throughout the rest of the paper.

According to Boeri and Garibaldi (2006), in 2004 all of the new member states entered the Union with unfavourable labour market conditions: low employment to population ratios, high unemployment, long joblessness spells, large informal sector that trapped workers into low-productivity jobs. Judging from available indicators and anecdotal evidence, labour markets of the Southeastern European countries can be characterized by the same attributes. Most of these characteristics lead to significant and persistent structural unemployment shares, which negatively influence the ability of the economies to adjust to adverse shocks. Recent crises has revealed that labour market impacts tend to be lagged, but severe, and with prolonged effects in the region. If the country is facing such adverse shocks with already high structural unemployment, then it is more likely that the labour market problems could be reduced only in the long run. This implies that it is very likely that the Southeast Europe will also enter the European Union with the unfavourable labour market conditions, leading to the additional vulnerability of the countries affected by the common EU level shocks. This notion leads to the importance of careful monitoring of the

labour market dynamics, including structural indicators assessments, in order to be able to design relevant policy measures.

Although the share of structural unemployment is from macroeconomic perspective very important indicator of the economy's adjustment capabilities, the methods for estimating structural unemployment are not straightforward. Description of the frequently used methods, focusing on NAIRU[1] estimation, which is considered by some authors as a similar indicator, could be found in Turner et al. (2001) or Fabiani and Mestre (2000). In this paper, we have restricted the analysis to the NAWRU[2] indicator, which is used as a measure of structural unemployment.

Since NAWRU concept is closely related to NAIRU, the separate theoretical models which would explain its derivation are not frequently discussed in the literature. Rather, the derivation of NAIRU which is in the neokeynesian literature nested within the wage and price setting equations (Layard, Nickell and Jackman, 1991), is assumed to hold for both indicators. These wage and price setting equations are and could be augmented with variables that influence the structural unemployment dynamics in the economy. These frequently include: trade unions strength and density, social security benefits, mismatch on the labour market, minimum wage, tax wedge, etc. This general framework has been adopted in the literature to empirically test the influence of specific factors on structural unemployment (see, for example, Planas, Roeger and Rossi, 2007).

Although NAWRU is, as argued by Holden and Nymoen (2002), an imperfect measure of structural unemployment, it is regularly available for OECD countries, and even used for policy analysis – in a sense, when NAWRU is declining, this is a sign of decreasing structural unemployment. The choice on employing precisely this indicator for the present analysis is made for two reasons. The first one is that its compilation requires relatively few data series, which is in case of countries notorious for their lack of readily available data sources certainly advantageous. The second is related to the fact that all of the countries in the sample analyzed in this paper have expressed their interest to join the European Union, although they are at different stages of the integration process. The integration process, among other things, entails upgrading the statistical monitoring of the economies and producing in timely manner a set of statistical indicators previously not estimated by the national statistical offices. One of such indicators estimated for the EU member countries is NAWRU.

The NAWRU indicator is estimated following the methodology described by Holden and Nymoen (2002). For the purpose of clarity, we

[1] Non-accelerating inflation rate of unemployment. A brief overview of the NAIRU concept as well as overview of estimation methods could also be found in Botrić (2008).
[2] Non-accelerating wage rate of unemployment.

summarize the method here. The first assumption is the linear relationship between wage inflation and the difference between the actual level of unemployment and the NAWRU, depicted by the following wage pressure equation:

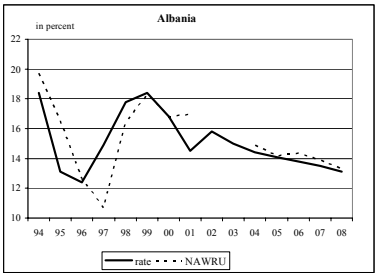
$$\Delta wg_t = -c_t(U_t - U_t^{NAWRU}) \tag{1}$$

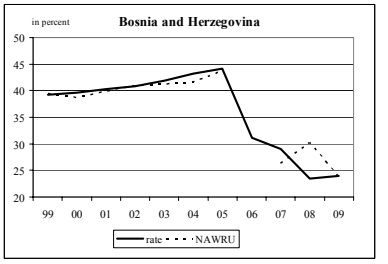
where *w* relates to wage, *t* to period and *U* to unemployment. It is further assumed that NAWRU remains constant between two consecutive periods, upon which assumption *c* parameter is calculated as following:

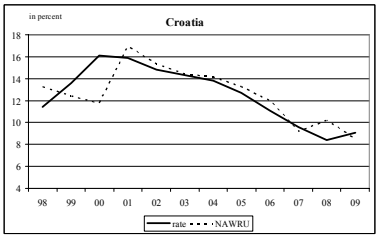
$$c_t = -\Delta^2 wg_t / \Delta U_t \tag{2}$$

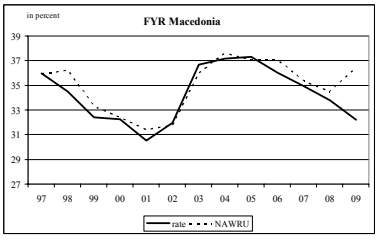
This parameter is than included back into equation (1) to obtain the non-observable NAWRU indicator. Since these NAWRU estimates tend to be highly volatile, a filtering procedure is applied (usually Hodrick-Prescott filter) in order to obtain smoother series.

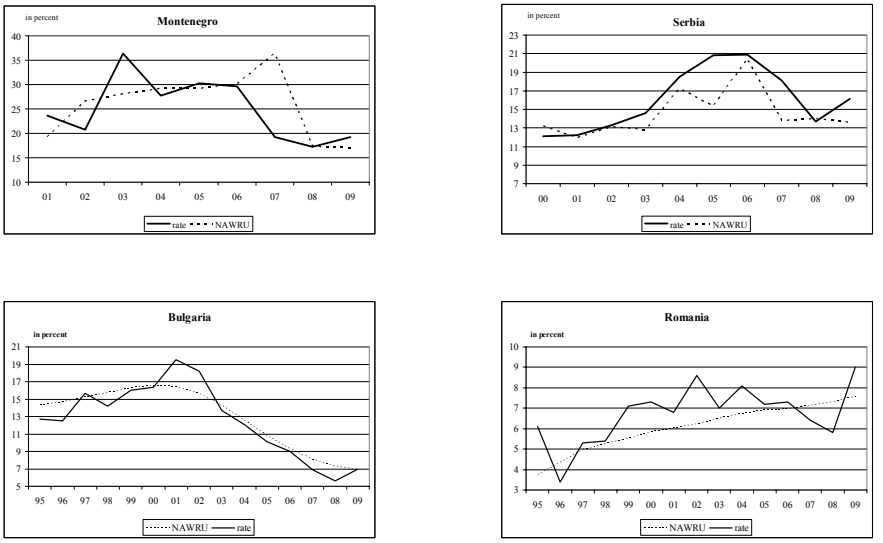
There is one exception to the methodology described; the NAWRU estimates in Figure 1 are not additionally smoothed by the Hodrick-Prescott filter. Instead, raw NAWRU estimates are presented. The data sources used for the estimation are presented in the Appendix.











Source: author's estimates; AMECO for Bulgaria and Romania.

Figure 1. NAWRU estimates and unemployment rates for the selected countries

The first thing that can be noticed from the presented data is that the NAWRU was estimated for different periods in different countries, based on the availability of the data. Furthermore, for some of the countries and certain periods, the NAWRU estimates are not presented. The reason is that, for instance in the case of Montenegro, the data on unemployment stemming from different data sources (ILO methodology vs. registered unemployment methodology) provides different estimates of the level of the unemployment rate, as explained in more details in Directorate-General for Economic and Financial Affairs and the Vienna Institute for International Economic Studies (2008). This resulted in completely incomparable NAWRU estimates between the two consecutive years. In these cases, the decision was made not to present the data at all, instead of presenting a huge erratic jump in NAWRU.

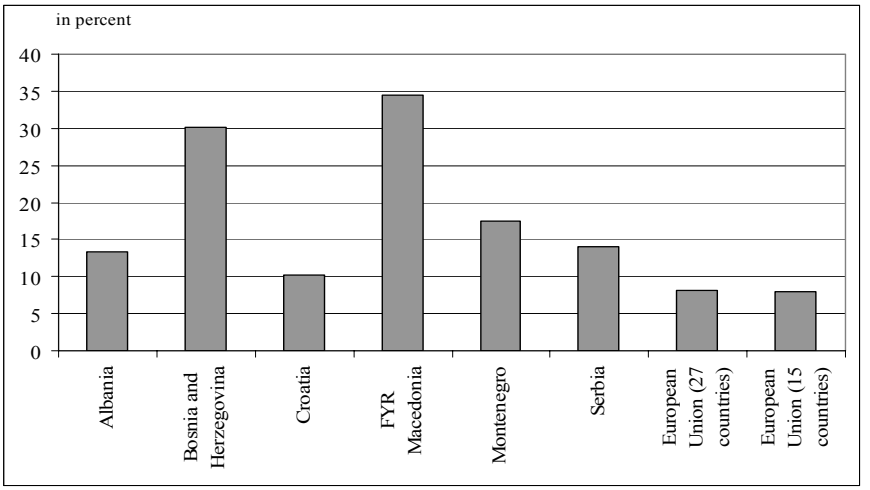
The other point to notice is that estimated NAWRUs closely follow the actual unemployment rates. The higher the unemployment rate in the country, the higher the structural unemployment. Although the share of structural unemployment is probably high in the countries in the sample, it has to be said that the method used most likely overestimates its share, as it is the case when it is applied in other economies. Even if the share itself is overestimated, it still confirms the anecdotal evidence from these countries – namely, the coexistence of high unemployment and tight labour market conditions. In these countries the structural unemployment is accompanied by long-term unemployment and slow restructuring of the economies. The high share of long-term unemployment is related to the question of employability of the available labour force, as their pool

of skills is frequently not needed by the prosperous segments of the labour market, where the demand is growing. Thus, this macroeconomic indicator points to the importance of policy measures design on the level of upgrading the existing human capital, by enabling the labour force to acquire the skills required by the labour market.

The important results of the applied method is that it can for some countries distinguish periods when the structural unemployment is falling (rising) at the same time the overall pressures on the labour market are increasing (decreasing). Due to the fact that in some of the countries in the sample the restructuring of the economy is still not concluded, and with the ongoing privatization processes labour shedding is relatively frequent, sudden outbursts of structural unemployment increases are relatively frequent. This implies that even though the results here reveal high shares of structural unemployment, the future for this countries might bring even more unemployment pressures and not only those related to the global crises effect.

3. IN SEARCH OF HIGH NAWRU DETERMINANTS IN SOUTHEAST EUROPE: LITERATURE REVIEW

Structural unemployment in countries analyzed in this paper is on average relatively higher than in market economies, but also in transition countries that have joined EU since 2004. This can be seen from the data presented in Figure 2, where the average for EU-27 is higher than average EU-15, but still lower than for any other Southeast Europe country.



Sources: AMECO database for EU averages, author's estimates.

Figure 2. NAWRU estimates for 2008

The comparatively high share of structural unemployment in some of the countries is even more alarming when the notion that European labour markets are considered to suffer from the eurosclerosis problem, i.e. the inability to develop efficient labour market clearing, is taken into consideration. The comparison to more efficient labour markets, such as those in USA, would give even more pessimistic results. Furthermore, other structural problems of the analyzed countries indicate that the labour market disadvantages may not be easily resolved in the short period, as they are accompanied by a series of issues that also demand attention from the policy makers. Such problems include relative late restructuring of the economies (in comparison to more advanced transition countries), inefficient government sector creating relative high tax burden on the business sector, growing indebtness, higher corruption and generally unfavourable business climate. In such circumstances, job creation is slow.

The analytical question in this segment of the paper is what affects such high structural unemployment in the Southeast Europe. The answer to this question might lead to policy recommendations, which would at least help to direct the policy measure design. In our search for the answer, we look for the relevant determinants established in other economies. The literature usually quotes following variables as determinants of NAIRU/NAWRU/structural unemployment:

- Demographic factors[3], such as relatively low share of population in working age or growth rate of labour force, which affect the supply side of the labour market, as argued by King and Morley (2007). Although structural changes and demographic factors might be more than relevant for selected sample of countries, their effect could be detected only in longer periods of time. The only demographic variable that might be relevant in shorter time periods is migration. Migration could alleviate the overall pressures on the labour market in terms of the number of registered unemployed, but in the long run certainly would be disadvantageous, since the individuals that tend to migrate are younger and with additional skills.
- Tax wedge sublimes fiscal effects on the labour market, where it is frequently assumed even for market economies where the share of the government is not as high as in transition economies, that there is positive elasticity of unemployment with respect to taxes. Examples include, but are not limited to Berger and Everaert (2010); Ederveen and Thissen (2007); Gianella, et al. (2008). The link between relatively high labour taxes and inefficient labour market in the Southeast Europe has been emphasized by Arandarenko and Vukojevic (2008).

[3] Some discussions on the relevance of demographic factors for the labour market in Croatia could be found in Švaljek and Nestić (2008).

- Union density/coverage/bargaining process is assumed to increase the labour market rigidities, implying that market will not clear as easily. Due to the implied higher firing costs, the employers will be reluctant to hire new workers, which will lead to pronounced insider-outsider effect, and persistently high long-term unemployment. Gianella et al. (2008) give evidence on the importance of this factor for OECD countries, while Andaranenko and Vukojevic (2008) point to the role of unions in wage setting in the Western Balkan countries.
- Minimum wages are considered as another impediment to labour market clearing, and are included in empirical estimates by Gianella et al. (2008); Ederveen and Thissen (2007); King and Morely (2007). Andaranenko and Vukojevic (2008) report that in comparative perspective minimum wages are mainly set at low to moderate levels in Western Balkans.
- Replacement rate/reservation wage/unemployment benefits are frequently included in the regressions in order to capture the segment of the unemployed which are not eager to accept the job at the prevailing market wage rate, for example Ederveen and Thissen (2007); King and Morely (2007). However, some of these variables are either difficult to measure or even unobservable. Micevska (2004) provides comparison of the unemployment benefit schemes in the Southeast Europe and concludes that these are not over generous.
- Employment protection legislation and institutions could act to increase the level of unemployment rates (Ederveen and Thissen (2007)). The EPL index for Southeast Europe was, at least during the nineties, often considered to be too high and the countries have taken steps to reduce the overall rigidity of the legislation (Micevska (2004)). This issue has been frequently addressed as very important in attracting foreign investors' debates as well as related to the improving of the overall business climate. However, the problem in the countries in question is often not related to the existing legislation, but to its enforcement. Therefore, even though the legislation has foreseen certain changes, the underdevelopment of the legal system and its inability to work efficiently has created additional uncertainties, both for the employers and employees. Judging strictly from the legislative would be, thus, inappropriate for sampled countries.
- Vacancy rates serve as a proxy for labour demand, an example of their inclusion as an independent variable can be found in King and Morely (2007), who also warn that this could lead to potential simultaneity bias, as unemployment and vacancy are related through the Beveridge curve. The vacancy rates for the Southeast Europe are relatively low. The data from public employment service agencies for Bulgaria, Croatia and Serbia reveal that total number of vacancies in the year is usually well below the average number of unemployed, while some of the countries, like FYR Macedonia,

do not even have statistics on vacancies (Centre of Public Employment Services of Southeast European Countries (2009)).

- Productivity changes alter the labour market situation, but its overall impact is rather ambiguous (King and Morely (2007)). The literature foresees that it could have both positive and negative effect on structural unemployment.
- Interest rates are frequently included due to the fact that in empirical research they tend to be unambiguously associated with higher unemployment (Gianella et al. (2008); King and Morely (2007)).
- Real wages increases should reduce the hiring rate, and consequently negatively influence the structural unemployment (King and Morely (2007)). However, since we believe that the labour markets of the analyzed countries are highly segmented, this could not be the case.
- Sector structure of the economy/labour market is included due to the fact that large and sudden structural shifts can severely influence the labour demand (King and Morely (2007)). Informal sector is very important employer in the countries analyzed in this paper. The estimates of the actual shares of informal sector vary according to the method applied and are usually not provided consistently on an annual basis. The influence of the informal sector on the labour market relations are presumed to be high. The documentation of this relationship is, unfortunately, difficult.
- Product market regulations are related to the elasticity of labour demand, which is positively associated with the degree of competition on the product market. Gianella et al. (2008) consider this variable for OECD countries, but in the case of transition countries, due to inherited overregulation of the markets, this variable might even be important.

The review implies that all of the variables listed could be considered as potential determinants of structural unemployment in the analyzed countries. Some of the variables were not considered in the empirical estimation presented in the next section due to their relatively low variability during the short periods of time[4]. Those include changes in demographic factors, changes in employment protection legislation, minimum wages or sector structure of the economy and/or labour market. Although it can be argued that some of the variables, like the EPL index, had certain variation during the transition period, which was positively correlated with unemployment rates (Micevska (2004)), the variation is smaller in the period analyzed in this paper. Based on the considerations presented here, the next section discusses the specified model, estimation strategy as well as the results.

[4] The data enables crude analysis for some of the variables, though. The simple correlation analysis for the pairs of available data reveals following correlations with NAWRU: -0,24 with the vacancy rate; 0,08 with ratio of minimum wage to average net wage. The available data thus indicate that the nature of the relationships established in other countries is similar also in the Southeastern Europe.

4. ESTIMATION STRATEGY AND RESULTS

The empirical estimation strategy is focused on explaining the structural unemployment level in Southeast Europe, thereby estimated NAWRU was the dependent variable[5]. The independent variables were chosen from the pool of variables discussed in previous section mostly based on their availability. The analysis, however, includes additional variable, based on the notion that it is probably relatively more important for the selected group of countries than in the analysis for other countries. This is the variable that is related to remittances. The reason for adding this variable as a determinant of structural unemployment is related to the discouraged worker effect. Specifically, it is assumed that if a family member is working in another country (and sending part of the income to the home-country), this raises the reservation wage of the unemployed family member at home-country and thereby adds to the persistence of structural unemployment.

The basic equation estimated in the paper is of the following kind:

$$y_{i,t} = \alpha + \beta X_{i,t} + e_{i,t} \tag{3}$$

where y denotes dependent variable, and X a set of regressors. Panel data method with fixed effects was applied[6], and the variables were pre-tested for the multicolinearity. The following set of regressors was included:

- Tax wedge was estimated as a relation between the average nominal wage and comparable average gross wage. It is not completely adequate measure of the total tax burden of labour, as the denominator in this relation is not the total labour cost. For the estimates of the relation of gross wages to total labour costs in some of the countries of our sample see the review by Arandarenko and Vukojevic (2008).
- Productivity included was measured by labour productivity annual growth rates.
- The relative importance of remittances was estimated by their share in each country's GDP.
- Index of economic freedom was considered as a proxy for overall business climate and the changes in product market regulations. Although a more

[5] The dependent variable was pretested with the battery of panel unit root tests. The following tests (test statistics with the adequate level of significance in the parentheses): Levin, Lin and Chu (-6,04***); Im, Pesaran and Shin (-1,30*); ADF-Fisher (35,66***); PP-Fisher (23,48*) all rejected the null of a unit root process. Since in small samples the first test outperforms others, we decided that there was no evidence of unit root in the process and proceeded with the estimation in levels.

[6] It has to be emphasized that the method chosen does not completely alleviate the estimates obtained from the potential bias. However, when other methods were considered, such as GMM or 2SLS, the author was faced with two for the time being unresolved issues – shortness of the available series and unavailability of the adequate variables to be used as potential instruments.

specified index related to labour market conditions could be more appropriate, the final choice on the inclusion of this index was made based on its availability for the longest period of time in selected countries.

In addition to the countries in section 2, Bulgaria and Romania were also included in the empirical estimates[7]. The analysis could not include some of the other countries previously analyzed in section 2, either due to the fact that NAWRUs moved erratically, or the adequate sources for independent variables were not found. The estimation sample was finally reduced to 5 countries (Bulgaria, Croatia, Macedonia, Serbia and Romania) and the estimated period to 2000-2009 and even for this reduced sample we had to work with an unbalanced panel. Results are presented in Table 1.

Table 1

Determinants of NAWRU – estimation results

Variable	Estimated coefficient
Constant	31,90*** (6,70)
Tax wedge	0,05 (0,54)
Productivity	0,03 (0,82)
Remittances	0,70*** (3,96)
Index of economic freedom	-0,42*** (-4,18)
Diagnostics	
Number of observations	41
Adjusted R^2	0,97
Redundant cross section fixed effects LR test F statistics (p-value)	85,52*** (0,00)
Residual tests	
- skewness - kurtosis	-0,25 2,79
Jarque-Bera (probability)	0,51 (0,78)

Source: author's estimates.

t-values are presented in brackets below the regression coefficients. Cross-section weights (PCSE) standard errors and covariances used in order to account for possible heteroskedasticities. Coefficients marked *** are significant at the level of 1%, ** at the level of 5%, * at the level of 10%.

[7] For these countries, the NAWRU estimates were already available in the AMECO database. The author independently estimated NAWRU for these countries in order to check the methodology applied for the rest of the countries in the sample, and found no major differences.

It has to be emphasized that these results should be taken with caution. The main concern is that the analyzed sample is rather short. Although the selected tests were not able to indicate specific problems in the residuals of presented specification, the estimation might still suffer from undetected issues. The results should be treated as indications, and not firm conclusions. However, they still provide enough evidence to emphasize some points previously not discusses in the case of the analyzed countries.

The results are expected in terms of sign of the estimated coefficient and in line with the results obtained for OECD countries. The first is the clear relationship, although insignificant, between fiscal burden and structural unemployment. The higher the tax wedge in the country the higher the NAWRU. As Berger and Everaert (2010) claim, labour taxes usually have significant effect in countries characterised by strong but decentralised unions. In countries with more competitive labour markets or with higher degree of centralisation in wage bargaining, labour taxes are not significant for unemployment.

The nature of the collective bargaining process as well as wage setting mechanisms in Southeast Europe are different across countries, as can be seen in Directorate-General for Economic and Financial Affairs and the Vienna Institute for International Economic Studies (2008). It can be noticed that in most countries public sector is more unionised than the private sector. And in countries with larger public sector, the tendencies to have more centralised wage bargaining are more expressed together with the need to finance large government sectors with additional taxation. The public sector tends to have highly expressed insider-outsider effect, and thereby the link between the persistent structural unemployment and higher taxation is enforced.

The coefficient for the productivity variable is not significant and the sign seems somewhat at odds with expectations. Increases in productivity are related to the lower NAWRU, meaning that the countries that experience overall improvements in labour efficiency are at the same time those that have higher structural unemployment. This could be directly related to the question of labour market segmentation, which at one side influences the labour productivity increases for the incumbent workers, but at the other for those who are unemployed creates no additional demand. These factors precisely lead to long term unemployment increases and persistence in structural unemployment. The fact that the coefficient is not significant could also be explained. Structural unemployment in countries in transition is usually directly related to revealing previous latent unemployment associated with the socialist system of "right to work". The job creation is mostly offset by the job destruction stemming from restructuring which mostly ends in structural unemployment. Positive effects of overall productivity increases on decreasing unemployment pressures should be expected only in the long run.

What is frequently discussed but seldom quantitatively proven for the region of Southeast Europe is the unfavourable role of the remittances on the

efficiency of the local labour market. It is highly reasonable to assume that the household's additional income from the members of family living in more affluent countries increases the reservation wage of unemployed family member, thereby reducing the employment search effort and the probability of finding a job. The highly significant positive sign of the remittances variable with higher structural unemployment substantiates this story. This is probably even more emphasized through the undetected remittances, i.e. when migrant workers return during the holiday season and support their families with unrecorded funds, which are frequently spent in the informal sector. Such pattern of behaviour puts additional drag on the labour market clearing system, as the usual demand and supply mechanisms remain concealed under the veil of grey economy.

The issue of omitted variables not included in the analysis – minimum wage, unemployment benefit system, wage setting system, union density, collective bargaining process, employment protection legislation, product market regulations – implies that the results obtained here are at best biased and should be treated with caution. Even if we were not able to test the significance of these variables empirically in the analysis provided in this paper, the literature as well as frequently expressed policy concerns warns that these variables play significant role in persisting structural unemployment problem in Southeast Europe. For example, we could assume that high employment protection levels, recently introduced or increased minimum wages, increase unemployment benefits and rigid wage determination process all increase the probability that the high structural unemployment will remain an important issue for a long period in the analyzed countries.

5. CONCLUSIONS

This paper has presented a comparative study of the structural unemployment, as measured by the NAWRU indicator, in the Southeast European countries. The adoption of relatively simple method has enabled comparisons of the magnitude of the structural unemployment problem across the countries in the region. From these comparisons, it can be concluded that the countries in which the overall unemployment rate is high are at the same time those in which the structural unemployment is pronounced, implying that the reduction of the unemployment burden will probably be long and costly.

The analysis in the paper also focused on attempt to reveal the determinants of high structural unemployment in the region. Similar to findings for more advanced economies (Gianella et al. (2008)), fiscal burden adds to the inefficiencies of the labour market. Thereby, relatively higher taxes on labour are positively associated with the inability to reduce structural unemployment. From this, a simple policy recommendation would be to reduce the fiscal burden. However, the fragility of fiscal system in most analyzed countries precludes advocating such simple solutions without further thorough analysis. At least, the argument that Berger and Everaert (2010) provide, on formal testing the

cointegration between unemployment and labour taxes should be addressed once the data availability allows for longer time series.

The overall restructuring of the economy, measured in the paper by index of economic freedom, also improves the chances of reducing structural unemployment. However, Southeast European countries tend to lag behind more advanced transition economies in the speed of market adjustments. This could imply that the determination to advance with the ongoing and new reforms would eventually help to alleviate the unemployment.

The key result of this paper is that remittances were associated with the labour market of the analyzed countries. The remittances affect the behaviour of unemployed persons and their willingness to accept a job. This is particularly important for the case of long-term unemployed, who might be more inclined to search new job offers only for the same level of qualifications they had while working within the declining sectors of the economy, where the prospects of finding new job are diminishing. Thereby, family links of migrant workers with the home country are adversely influencing efficiency of the local labour markets. They do provide short term relief for the relatives in need, but in the long term do not stimulate market oriented behaviour and thus potentially lead to unfavourable poverty circle.

One of the issues deliberately omitted in this paper is the issue of shadow economy. The influence of this phenomenon on labour markets in the sampled countries is, beyond any reasonable doubt, high. The possibilities to find additional sources of income not registered by the tax authorities certainly influence the propensity of the unemployed to search employment in the formal sector. Although this fact is acknowledged, the inclusion of shadow economy size in the estimation procedure for this group of countries is left for future research, when the available data sources will enable at least to some extent comparable estimates of the size of the shadow economy.

It has to be emphasized that the conclusions are based on relatively short sample and with most data compiled from various sources. Since the structural unemployment is presumably long-term indicator, estimating its determinants based on short time series, poses the question whether the identified relationships cover only one side of the business cycle. Further research would have to deliver more elaborate comparative measures on structural unemployment, but also include additional potential determinants to provide better understanding of the inefficiency of the labour markets in Southeast Europe.

Additional research efforts should be also directed into the analysis of structural unemployment based on microeconomic datasets in each analyzed country. Such estimates should result in more precise estimate of the overall structural unemployment but also the structure of structural unemployment in each country. With such estimates, the specific policy recommendations to alleviate the unemployment burden in the analyzed economies could be better addressed. This issue is, however, left for future research.

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REFERENCES

Agency for Statistics of Bosnia and Herzegovina, (2010), Internet: http://www.bhas.ba/eng/Default.asp (accessed November 23, 2010).

Arandarenko, M. and Vukojevic, V., (2008) "Labor Costs and Labor Taxes in the Western Balkans." Internet: http://siteresources.worldbank.org/INTECAREGTOPHEANUT/Resources/Betcherman&Arandarenko labor_taxes_western _balkans.pdf. (accessed November 23, 2009)

Boeri, T., Garibaldi, P., (2006), "Are labour markets in the new member states sufficiently flexible for EMU?"*Journal of Banking and Finance* 30(5).

Botrić, V. (2008), "NAIRU: pojam i metode ocjene." *Ekonomski pregled* 59 (5-6).

Berger, T. and Everaert, G. (2010), "Labour Taxes and Unemployment Evidence from a Panel Unobserved Component Model." *Journal of Economic Dynamics & Control* 34(3).

Burdett, K. and Mortensen, D. T., (1998), "Wage Differentials, Employer Size, and Unemployment. " *International Economic Review* 39(2).

Camarero, M., Carrion-i-Silvestre, J.L. and Tamarit, C. (2005), "Unemployment Dynamics and NAIRU Estimates for Accession Countries: A Univariate Approach." *Journal of Comparative Economics* 33(3).

Centre of Public Employment Services of Southeast European Countries, (2009), Statistical Bulletin No. 2, July 2009, Internet: http://www.cpessec.org/ (accessed December 17, 2010).

Central Bureau of Statistics Republic of Croatia, (2010), Internet: www.dzs.hr. (accessed November 3, 2010).

Directorate-General for Economic and Financial Affairs and the Vienna Institute for International Economic Studies, (2008) "Adjustment Capacity of Labour Markets of the Western Balkan Countries (Countries Studies – Volume II)." European Economy: Economic Papers 346.

EBRD (2006), *Transition Report 2006: Finance in Transition*. London: European Bank for Reconstruction and Development.

EBRD (2010), Structural Change Indicators database, Internet: http://www.ebrd.com/country/sector/econo/stats/index.htm (accessed November 17, 2010).

Ederveen, S. and Thissen, L., (2007), "Can Labour Market Institutions Explain High Unemployment Rates in the New EU Member States?" *Empirica* 34(4):299-317.

European Commission Economic and Financial Affairs, (2010), AMECO database, Internet:http://ec.europa.eu/economy_finance/db_indicators/ameco/index_en.htm (accessed November 23, 2010).

Fabiani, S. and Mestre, R., (2000), "Alternative Measures of the NAIRU in the Euro Area: Estimates and Assessment." ECB Working Paper 17.

Gianella, C., Koske, I., Rusticelli, E. and Chatal, O., (2008), "What Drives the NAIRU? Evidence from a Panel of OECD Countries." OECD Economics Department Working Paper 649.

Holden, S. and Nymoen, R., (2002), "Measuring Structural Unemployment: NAWRU Estimates in the Nordic Countries." *Scandinavian Journal of Economics*, 104(1).

Institute of Statistics Albania, (2010), Internet: http://www.instat.gov.al/ (accessed November 15, 2010).

King, T. B. and Morley, J., (2007), "In Search of the Natural Rate of Unemployment." *Journal of Monetary Economics* 54(2).

Koning, P. Ridder, G. and van den Berg, G.J. (1995), "Structural and Frictional Unemployment in an Equilibrium Search Model with Heterogeneous Agents." *Journal of Applied Econometrics* 10(2).

Layard, R., Nickell, S. and Jackman, R., (1991), *Unemployment: Macroeconomic Performance and the Labour Market,* Oxford: Oxford University Press.

Micevska, M., (2004), "Unemployment and Labour Market Rigidities in Southeast Europe." Internet: http://www.wiiw.ac.at/balkan/files/GDN_Enterprise LabourInformal_UnemploymentSEE.pdf, (accessed November 5, 2009).

National Bank of Serbia, (2010), Internet: http://www.nbs.yu/export/internet/english/ (accessed December 8, 2010).

National Bank of the Republic of Macedonia, (2010), Internet: http://www.nbrm.gov.mk/defaulten.asp?ItemID=41989BA5CE65DA48AC1B50206D0DE89D (accessed December 7, 2010).

National Institute of Statistics Romania, (2010), Internet: http://www.insse.ro/cms/rw/pages/index.en.do (accessed November 17, 2010).

Planas, C., Roeger, W., and Rossi, A., (2007), "How much has labour taxation contributed to European structural unemployment?" *Journal of Economic Dynamics and Control* 31(4).

State Statistical Office Republic of Macedonia, (2010), Internet: http://www.stat.gov.mk/english/glavna_eng.asp (accessed November 20, 2010).

Švaljek, S. and Nestić, D. (2008), "The Croatian demographic reality and labour market challenges", in Vehovec, M. (editor), *New perspectives on a longer working life in Croatia and Slovenia*. Zagreb: Ekonomski institut, Zagreb and Friedrich Ebert Stiftung. Also available:http://www.eizg.hr/AdminLite/FCKeditor /UserFiles/File/new-perspectives-on-a-longer-working-life.pdf (accessed January 28, 2010).

The Heritage Foundation and Wall Street Journal, (2010), Index of Economic Freedom database. Internet: http://www.heritage.org/Index/ (accessed December 7, 2010).

Turner, D., Boone, L., Giorno, C., Meacci, M., Rae, D. and Richardson, P., (2001), "Estimating the Structural Rate of Unemployment for the OECD Countries", OECD Economic Studies No. 33, 2001/II, Internet: http://www.oecd.org/dataoecd/27/46/18464874.pdf. (accessed January 5, 2010).

WIIW, (2010), *Handbook of Statistics CD*. Vienna: The Vienna Institute for International Economic Studies.

APPENDIX 1

Data Sources

Variable	**Source**	**Countries**
NAWRU	AMECO database	Bulgaria, Romania
unemployment rate	WIIW (2010), and national statistics offices web sites	Albania, Bosnia and Herzegovina, Croatia, Montenegro, Serbia
	AMECO database	FYR Macedonia
net wage	national statistical offices	Croatia, Romania
	national banks web sites	FYR Macedonia, Serbia
	Eurostat	Bulgaria
gross wage	WIIW (2010), and national statistics offices web sites	Albania, Croatia, Montenegro, Serbia, Romania
	ILO	Bosnia and Herzegovina, Serbia
	Eurostat	Bulgaria
	national banks web sites	FYR Macedonia, Serbia
Share of remittances in GDP	UNCTAD database	all countries in the sample
changes in labour productivity	EBRD (2006) and EBRD structural change indicators (2010)	all countries in the sample
Index of economic freedom	The Heritage Foundation and Wall Street Journal (2010)	all countries in the sample

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STRUKTURNA NEZAPOSLENOST I NJEZINE DETERMINANTE U JUGOISTOČNOJ EUROPI

Sažetak

Rad sadrži komparativnu analizu strukturne nezaposlenosti u tranzicijskim zemljama jugositočne Europe, iskazano relativno jednostavnim pokazateljem NAWRU. U radu se istražuju i analiziraju determinante relativno visoke strukturne nezaposlenosti u regiji. Rezultati provedene empirijske analize upućuju na zaključak da doznake stranih radnika i promjene u poslovnoj klimi mogu objasniti relativno visoku strukturnu nezaposlenosti u analiziranim zemljama.

Ključne riječi: NAWRU, strukturna nezaposlenosti, jugoistočna Europa.

JEL klasifikacija: E24, J60