

Very preliminary and incomplete – comments welcome

How important are labor market institutions for labor market performance in transition countries?*

Hartmut Lehmann

DARRT, University of Bologna, IZA and DIW-Berlin

and

Alexander Muravyev

IZA, DIW-Berlin, and St. Petersburg University Graduate School of Management

October 2009

Abstract

This paper offers a first comprehensive study of the relationship between labor market institutions and policies and labor market performance in the countries of Eastern Europe and Central Asia, transition economies that in the last two decades underwent radical changes with tremendous variation in key economic variables. We take advantage of a novel hand-collected database of labor market outcomes, institutions and policies in these countries that embraces the period from 1995 to 2008. Our analysis focuses on four indicators of labor market performance: employment to population ratio, unemployment rate, long-term unemployment rate, and youth unemployment rate. As much of the previous literature, we relate these outcomes to employment protection legislation, generosity of unemployment benefits, active labor market policies, taxation of labor, and unionization rates. Our preliminary result confirm the widely held view that institutions and policies matter. However, we also find that not all of them matter and when they do, then not to the same extent. In particular, we find a negative effect of stricter employment protection and a positive effect of active labor market policies on labor market outcomes. Unemployment benefits and unionization are also correlated with labor market outcomes, albeit to a lesser extent. There is no evidence of a negative effect of higher tax wedges on the performance of labor markets in transition countries.

* The authors are grateful to the Volkswagen Foundation for financial support within the project “The Political Economy of Labor Market Reform in Transition Countries.” Sebastian Lebig and Florian Plum provided excellent research assistance in collecting and processing the data.

1. Introduction

“Developing countries present an exciting venue for studying the impact of regulatory reforms, including of labor reforms. A number of countries, especially in Eastern Europe, have recently undergone significant reforms to make labor regulation more flexible.”

Simeon Djankov and Rita Ramalho (2009)

Over the last two decades the labor economics and macroeconomics literature has seen a lively debate concerning the role of labor market institutions and policies in explaining diverging patterns of labor market performance across countries. The currently flourishing strand of literature dates back to the seminal work by Layard, Nickel and Jackman (1991), which provided essential background for the discussion of the role of institutions and policies, as well as seminal empirical studies by Nickel (1997), Elmeskov, Martin, and Scarpetta (1998), as well as Blanchard and Wolfers (2000), which took advantage of contemporaneous advances in measurement of labor market institutions and policies. The early empirical contributions focused primarily on the institutional differences between Europe and North America or within the group of OECD countries; later on, there was a growing interest in the role of interactions of shocks and labor market institutions in the determination of long-run labor market outcomes (see, e.g., Blanchard (2006) and Nickell, Nunziata and Ochel (2005)). During the last decade, the role of labor market institution and policies in non-OECD (less developed) economies has also been investigated (Djankov and Ramalho, 2009). A part of this interest in this latter set of countries stemmed from a much larger variation in institutions and labor market policies as well as in labor market outcomes across such an extended (as compared with OECD) list of countries, both in the cross-section and time dimension.

The mainstream literature, summarized in Eichhorst, Feil, and Braun (2008), identifies a core set of five labor market institutions and policies that can potentially explain labor market performance: employment protection, unemployment benefits (and passive labor market policies in general), active labor market policies, taxes on labor, and wage setting arrangements (related, most and foremost, to trade unions and statutory minimum wages). This list has remained more or less stable starting with the seminal contribution by Nickell (1997). Improved availability and better quality of data, especially from the OECD countries, has led to many important studies, exploring not only the role of particular institutions and policies, but also of their interactions (Belot and van Ours 2001) as well as of the interactions of institutions with economic shocks (Blanchard and Wolfers 2000; Bertola, Blau and Kahn 2002). Overall, however, the literature remains inconclusive and contradictory. The magnitude and statistical significance of coefficients on institutional variables vary a great deal from specification to specification, suggesting the lack of robustness (see, e.g., the assessment in OECD 2006). As acknowledged by Blanchard (2006) in his influential paper summarizing the state of knowledge about the performance of labor markets, there is little doubt that institutions matter, the question is which ones and how.

In this paper we study the role of institutions and policies in the countries of Eastern Europe and Central Asia, transition economies that in the last two decades underwent radical changes characterized by tremendous variation in key economic variables. We take advantage of a novel hand-collected dataset of labor market outcomes, institutions and policies in these countries embracing the period from 1995 to 2008. Our paper thus offers a first comprehensive study of the relationship between labor market institutions and policies and labor market performance in the transition region and can therefore be of interest to students of economic transition. At the same

time, we also believe that the contribution of our paper is of interest to economists in general. There are above all two reasons why the paper might be of general relevance. First, the use of new, but largely unexplored data has the potential of providing a robustness check to the results obtained for developed market economies with OECD data. Second, shocks to the economy, changes in labor market outcomes and changes in institutions are more marked over time in transition countries than they are in mature OECD countries providing thus a natural testing ground of the theoretical considerations that link labor market institutions and labor market outcomes. We thus feel that our analysis can contribute in a substantial way to the literature that discusses the long-standing question of whether labor market outcomes are driven by institutions per se or by combinations of shocks interacting with specific institutions.

The paper has the following structure. In section 2 we provide a brief overview of the development of labor markets as well as of institutional reforms in transition countries and discuss the hitherto scarce literature linking these two. Section 3 presents the employed data and in doing so discusses the challenges and pitfalls of data collection in the region. The section concludes with a descriptive analysis of the data. Section 4 describes our research strategy and the econometric specifications we use, while section 5 discusses the econometric results. In section 6 we draw some tentative conclusions.

2. The evolution of labor market outcomes and labor market institutions and their reflection in the literature

Several scholars have attempted to use data from transition countries for assessing the role of different labor market institutions and policies for the performance of labor markets. The main idea underlying many of these studies was that the transition

environment provides the researcher with a unique laboratory for hypothesis testing (see, e.g., Svejnar 1999 and Boeri and Lehmann 1999). Indeed, post-communist countries started with pretty similar initial conditions in terms of the performance of labor markets. The latter were characterized by shortages of labor, no official unemployment, very high levels of unionization, and no unemployment protection.¹ Imposing market forces on the economies shaped by central planning can therefore be regarded as a kind of natural experiment that may be useful in theory testing (Muravyev 2008). Moreover, a researcher focusing on the region can benefit from the enormous fluctuations of key economic variables over time and across space. The experiences of Poland and Ukraine, captured in figure 1, provide an excellent illustration to this point. The initial recession lasted only a couple of years in Poland with GDP declining by some 20% while neighboring Ukraine started recovering in 2000 only, when it had already lost almost 60% of its pre-transition (1989) GDP level. Interestingly, despite this difference in the magnitude and length of the transition shock, the unemployment rate in Poland has remained much higher than in Ukraine (19.0% against 8.6% in 2004).

Figure 1 also suggests that just a few years since the start of reforms, the experiences of transition countries, including labor market outcomes, showed great differences (Poland, Romania, Russia and Ukraine represent economies with strongly diverging trends in GDP and unemployment rates). As noted by Rutkowski (1996), by the mid-1990s, the differences between the Central European countries and those previously comprising the USSR were as pronounced as the differences between US and Western European labor markets. One point that figure 1 also seems to suggest is that the divergent labor market outcomes in transition countries cannot be attributed to economic shocks only. Institutions and policies, whether taken separately or in

¹ The former Yugoslavia is the only important exception in this regard. For example, Saveska (2000) shows that Macedonia (one of the six states that comprised Yugoslavia) suffered from double-digit unemployment rates starting with the 1970s.

combinations with shocks, should be seriously considered as candidate explanations for this divergence. Unfortunately, the potential of the transition environment to contribute to the economics literature in general has not been fully realized because of the general lack of availability and low quality of data from the region.

The few existing studies that use data from transition countries have documented a number of trends in the evolution of labor market institutions and policies as well as in the performance of labor markets. At the onset of transition, most countries started developing previously missing institutions and policies to ensure effective functioning of labor markets. At that time, even if substantial unemployment rates were foreseen, the governments (especially in Central Europe) out of political considerations were forced to adopt fairly generous unemployment benefits schemes.² These were subject to cuts, sometimes dramatic, over the course of transition (Riboud, Sanchez_Paramo, and Silva-Jauregui, 2002). Unionization rates have been in decline throughout the region, although the effectiveness of trade unions (most of which were closely affiliated and controlled by communist governments prior to 1989) may have increased, especially in Central Europe (see Rutkowski 1996). The countries of the region introduced a number of tax reforms, e.g., the switch to the flat personal income tax rate has become a common feature of most countries, following the experience of Estonia in 1994, but the tax burden on labor remains rather high in Central Europe, though not in most of the other transition countries. While active labor market programs have been introduced throughout the region, their share in GDP remains lower than in the old member states of the EU and substantially lower in South-Eastern Europe and the former Soviet Union.

Despite the potential benefits from exploring these large variations in labor market outcomes, institutions, and policies in Eastern Europe and Central Asia,

² For example, in Poland the strong political position of “Solidarity” allowed the Mazowiecki government in December 1989 to introduce layoffs in labor legislation only in tandem with the introduction of a very generous unemployment benefit system.

relatively little has been done so far. The main reason is the unavailability or the low quality of data, especially from the early stages of the transformation process. As a result, most of the existing studies in the context of transition adopt a partial approach by focusing on particular institutions and policies. For example, Nivorozhkin (2005) studies the effect of ALMP in Russia, Commander and Heitmueller (2007) discuss the role of unemployment insurance in unemployment dynamics of the countries in transition, and Behar (2009) focuses on both tax wedges and unemployment benefits in the new EU member states. Those papers that attempt to evaluate the whole set of the core institutions together (such as in Nickel 1997) adopt either a purely descriptive approach or supplement data from a few transition countries with data from the OECD economies or EU member states (see, e.g., Cazes and Nesporova 2003, Ederveen and Thissen 2007, and Fialová and Schneider 2009). While there are large potential benefits of combining data from established market economies with those from transition countries, it may require more careful econometric modeling and estimation than has been done thus far to account for different initial conditions, shocks, and overall institutional environment.

Thus, the evidence concerning the link between institutions, policies, and labor market outcomes in transition countries is very scarce. As in developed market economies, there is evidence that at least some of the labor market institutions matter in transition countries. But as in Blanchard (2006), the key question is which ones and how. Looking at specific institutions, most studies suggest that employment protection matters. Active labor market policies seem to matter, too (Rovelli and Bruno 2007). The evidence concerning taxes is more ambiguous. The study by Fialova and Schneider (2009) suggest a role played by the tax wedge, but the sample mixes up transition and OECD countries. The study by Behar (2009) finds some (albeit weak) evidence that tax

wedges and the duration of unemployment benefits are associated with poor labor market outcomes. In contrast, Commander and Heitmueller (2007) find no link between the generosity of the unemployment benefits and unemployment rates in transition countries and suggest that the overall link between institutions and unemployment rates is weaker in transition countries than in Western Europe and other OECD countries.

3. Data

This paper is based on a novel and unique hand-collected database of labor market outcomes, institutions and policies in the countries of Central and Eastern Europe as well as Central Asia that embraces the period from 1995 to 2008. To the best of our knowledge, this is the most comprehensive and most up-to-date database of this sort collected for the region. It contains information on key macroeconomic variables (such as GDP per capita, GDP growth, and inflation), key labor market statistics (the employment-to-population ratio, the unemployment rate, the long-term unemployment rate and the youth unemployment rate), employment protection legislation statistics (OECD 2004), information about the generosity of the unemployment benefit systems (average replacement ratio and maximum duration of unemployment benefits), about taxation of labor (tax wedge on labor that measures the cumulative effect of the payroll tax paid by employers and income tax paid by employees) as well as key data on trade unions.

The main principle underlying our data collection effort was to achieve maximum compatibility of our data with the standards of OECD and EU. Therefore, the major sources of data for this paper are the OECD and EUROSTAT databases for the countries that during the 2000s became members of the European Union, World Bank and IMF statistics, as well as national statistical sources. Almost all the required data are

easily available from the mentioned sources for Central European countries that joined the EU in 2004. The quality of the data is very high in these cases. As regards countries from South-Eastern Europe and Commonwealth of Independent States (former USSR), the availability and quality of data is of a much lower standard. In many instances, we have to rely on secondary sources and estimates provided by World Bank or IMF staff (working papers, policy reports, and the like), country reports published by other institutions (e.g., ILO and national research centers) as well as working papers and articles published in academia. Importantly, the database we have constructed contains links to the original sources of data so that each number entered can be verified.

We had to drop several countries (Belarus, Tajikistan, Turkmenistan, and Uzbekistan) from the analysis altogether because of severe data problems.³ For example, Belarus does not collect statistics measuring ILO unemployment; moreover, the wage setting in the country is still heavily influenced by the state via the so-called wage grid not only in the public sector, but also in the private sector. Trade unions remain heavily influenced by the state, too. These particular institutional arrangements simply imply that the standard mode of analysis typical of free market economies cannot be directly applied here. Moreover, even in more advanced (in terms of implementation of market reforms) countries there are numerous cases of missing data. For example, Ukraine, the second largest transition country, did not produce unemployment statistics based on the ILO standards until the mid-1990s.

We first take advantage of the extensiveness and accuracy of our database to discuss the general trends in the evolution of labor market institutions and policies, as well as employment outcomes, in the region. This task is not new, but most of the analysis provided in previous studies was more fragmentary (in terms of country

³ These are also the countries that have been traditionally regarded as extreme laggards in transition from plan to market (EBRD, various years).

coverage as well as in terms of time dimension) and less supported by hard numbers compared to our paper. Such previous analyses include Cazes and Nesporova (2003), Eamets and Masso (2004), Rutkowski et al. (2005), Cazes and Nesporova (2006), among others. Thus, one of the contributions of our paper is to provide a bigger and cleaner picture of the trends in the region.

One important point to be made here is that, because of small variation over time in a number of key variables (employment protection legislation is probably the best example), we will provide and discuss the key statistics from four years covering mid- and late transition: 1996, 2000, 2004, and 2008. For expositional ease, we also classify the countries into three major groups, which are typical of the literature studying the region: Central Eastern Europe (CEE, embracing the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia), South-Eastern Europe (SEE, which includes Albania, Bosnia and Herzegovina, Bulgaria, Macedonia, Montenegro, Romania, and Serbia), and the Commonwealth of Independent States (CIS, which until recently included 12 out of 15 constituent republics of the former USSR, namely Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russian Federation, Ukraine Tajikistan, Turkmenistan, and Uzbekistan with Georgia officially leaving the organization in August 2009). For presentational purposes, most data will be presented in such an aggregated form; whenever essential, however, we will also provide and discuss data from particular countries. Finally, for comparison purposes, we will also provide respective statistics for the US and the old member states of the European Union (the EU-15).

The unemployment rates for the transition countries that we have in our data base are shown in Table 1 for the four years mentioned above. There is tremendous variation in these unemployment rates, across countries as well as over time. For

example, according to these data the Czech Republic and Slovenia have single digit unemployment rates while in Macedonia nearly one third of the labor force is unemployed throughout the reported period. This large variation should allow us to get at the main driving factors of labor market outcomes. Labor market outcomes and labor market institutions are summarized in Figure 2, where we group the data for the transition countries into three regions and contrast them with data from the EU-15 and the United States.⁴

The employment-to-population ratios⁵ show some striking patterns between the three regions. The ratio is substantially smaller in SEE than in the other two regions. It is u-shaped for CEE and CIS, indicating an upturn in labor demand in the later part of transition, while in SEE it shows a strong downward trend. Unsurprisingly the highest ratio is found in the U.S., while the EU-15 ratio, demonstrating a monotonically increasing ratio is only slightly higher than in CEE and CIS. The unemployment rates also exhibit interesting patterns even if we average the rates within regions and present roughly a mirror image of the employment-to-population ratios. However, it is noteworthy that unemployment rates are higher in CEE than in CIS even though the employment-to-population ratios hardly differ. The other important feature that should be mentioned is the large drop in the unemployment rate between 2003 and 2007 in CEE and SEE, whereas the unemployment rates drop gently in the CIS, in EU-15 and the U.S.⁶ Long-term and youth unemployment rates are far higher in SEE than in the other two regions. The largest drop in both rates between 2003 and 2007 can be observed in CEE, which could be partially related to increased migration activities after

⁴ The underlying data are shown in Tables A1 and A2 in the appendix.

⁵ Since statutory retirement varies across the 5 regions shown in Figure 2, we have calculated the ratios for the population aged between 15 and 59.

⁶ Part of this large drop in the unemployment rate in CEE and SEE is caused by the migration possibilities arising after accession of the NMS. However, since labor demand also rises in these countries between 2003 and 2007 (Rutkowski 2007), migration cannot explain the entire drop. Disentangling the various factors causing the fall in unemployment after accession has not been tackled satisfactorily in the literature (see Lehmann 2009).

accession. It is also noteworthy that the long-term unemployment rate in the U.S. is miniscule compared to the other four regions, which is not surprising given the 6 months of benefit duration and the virtual lack of income support of any kind for the long-term unemployed.

Turning to measures representing labor market institutions we can see the far larger changes in these measures for CEE and the CIS than for mature capitalist economies. For example, the employment protection legislation index shows a dramatic decline in both CEE and the CIS, implying that on this front labor market have become a lot more flexible and are actually even slightly less protection friendly than the EU-15, which show a very modest decline over the entire period. We see a monotonically declining union density rate in CEE and a halving of the rate in the CIS, while in SEE it declines from 50 to 40 percent. In EU-15 and the U.S. density rates hardly move over the entire period. In the panel on the tax wedge two points stick out: the tax wedge is far lower in the U.S. than in the other four regions, and the wedge fell dramatically after 1999 in the CIS. For the other two transition regions there is a mild downward trend, something we do not observe in the EU-15. On this measure, labor markets in all transition regions became substantially more flexible than labor markets in the EU-15.

The last three panels deal with active and passive labor market policies and should be looked at together. The EU-15 on average spends roughly 1 percent of GDP on ALMP while all transition regions spend only small fractions of this. Especially the CIS spends very little on such policies. The U.S., on the other hand has the shortest maximum duration of benefits combined, however, with a relatively high replacement rate. The EU-15 combines long maximum duration with relatively generous unemployment benefit levels, which might go some way in explaining the relatively large long-term unemployment rates. CEE and SEE have maximum durations of

roughly one year, whereas the CIS exhibits the shortest durations after the U.S. as of 1999. Replacement rates are very non-generous in CEE and the CIS, while SEE has somewhat higher rates.

Overall, Figure 2 shows striking differences across transition regions and over time with regard to labor market outcomes as well as to labor market institutions. It is this variation that we hope to exploit in our econometric analysis.

4. Econometric analysis

Our analysis of links between labor market outcomes on the one hand and labor market institutions and policies on the other hand draws heavily on the model proposed in the seminal study by Nickell (1997). In that study, unemployment variables are explained by a set of variables measuring institutions and policies, as well as by the change in inflation. At this stage of our work, we proceed in a similar fashion by considering institutions and policies only, and then by adding inflation, GDP growth rate, as well as GDP per capita as additional controls. The rationale for including GDP per capita in the list of explanatory variables may be that it can serve as a proxy of enforcement of institutions, which is likely to be sub-optimal in the countries studied. For example, the enforcement of employment protection legislation may be stricter in richer countries that spend more on the judiciary.⁷ At the current stage of our work we do not consider interactions of institutions with each other, but this is a natural extension of our work that we are going to implement in the future. We would like to acknowledge that our results do not necessarily have a causal interpretation as both institutions and policies may be shaped by labor market outcomes, for example, via the mechanism of election

⁷ We have attempted to introduce a separate variable measuring enforcement of law based on the data from four waves of the Business Environment and Enterprise Performance Survey (BEEPS), as in Pistor, Raiser, and Gelfer (2000). However, these enforcement measures appear to be too noisy. We are currently looking for better measures of law enforcement in transition countries.

(Blanchard 2006).⁸ Nevertheless, we try to avoid the direct manifestation of the endogeneity problem by using lagged (t-1) values of the explanatory variables. In other words, while labor market outcomes are measures in 1996, 2000, 2004, and 2008, data on institutions and policies come from 1995, 1999, 2003, and 2007.

Similar to most other studies, we control for omitted factors (including unobserved characteristics of countries) by using random- or fixed-effects specifications of our regression model. These are necessary as the paucity of the degrees of freedom does not allow inclusion of many potentially relevant explanatory variables. The baseline regression equation can be written the following way:

$$LMO_{it} = \alpha + \beta_1 EPL_{it} + \beta_2 ALMP_{it} + \beta_3 TAX_{it} + \beta_4 DENS_{it} + \beta_5 BENF_{it} + \beta_6 BEND_{it} + \gamma_t + c_i + \varepsilon_{it} \quad (1)$$

where index *i* denotes countries and index *t* denotes time, LMO stands for labor market outcome (which may be employment-to-population-ratio, unemployment rate, long-term unemployment rate, and youth unemployment rate), EPL measures the strictness of employment protection legislation, ALMP is the expenditure on active labor policies as a percentage of GDP, TAX is the tax wedge on labor, DENS measures union density, BENF stands for the average unemployment benefit replacement rate, BEND stands for the maximum duration of unemployment benefits, γ is a time effect, *c* is a country effect and ε is a white noise disturbance.

As can be seen from the specification of equation (1), one substantial difference from the study by Nickell (1997) is that we do not employ three variables measuring the role of trade unions, since we only have reliable data on union density. Union coverage rates as well as data on bargaining type, the other two variables used by Nickell, are

⁸ We intend to explore the political dimension of labor market reform in transition countries in a separate paper.

generally only available for CEE countries. In addition, including, e.g., data on bargaining type is not only a problem of measurement, but also of how to interpret these data in some less developed transition countries. How would one interpret data on bargaining in a country where trade unions with high membership rates are effectively controlled by the government? It is therefore no surprise that the World Bank did not provide statistics on the coverage rates and bargaining type in the CIS countries (World Bank 2005).⁹ At any rate, we believe that we capture the essential aspects of wage setting with our union density variable since it is regarded as the most important of the related factors (see, e.g., Eichhorst et al., 2008).

Besides definitions, descriptive statistics of the variables that we use in our regressions are given in Table 2. This table shows the varying availability of data as well as the tremendous variation regarding the labor market outcome and institution variables as well as the large differences in the development stage of the included transition countries. It is certainly arguable whether changes in labor market institutions in a rich transition country (Slovenia) have the same impact on labor market outcomes as in a very poor country (Kyrgyzstan); in other words, the slope parameters might not be stable across countries that differ greatly in per capita income¹⁰, so one might want to interact GDP per capita with some of the institutions. Relatively large models are however excluded because of a lack of degrees of freedom and we still need to experiment to find a more satisfactory model than the one that augments equation (1) with the three control variables inflation, GDP per capita and GDP growth.

These control variables are certainly highly correlated with some of the labor market institution measures as Table 3 demonstrates. We also see that employment

⁹ This also suggests that the union density measures in the former Soviet Union need to be taken cum grano salis.

¹⁰ A Chow test might have low power given the small number of observations when the data are split by GDP per capita levels.

protection legislation is negatively correlated with the employment-to-population ratio but positively correlated with the other three outcome variables. Neither the tax wedge, union density, nor benefit duration show significant raw correlations with labor market outcomes, while ALMP and the replacement rate are correlated with long-term and youth unemployment and the employment-to-population ratio and the overall unemployment rate respectively. Whether these correlations survive in a multivariate regression setting will be analyzed in the next section.

5. Presentation and discussion of econometric results

We report both random effects and fixed effects estimates of equation (1) in Tables 4 and 5, while Tables 6 and 7 report models augmented by the three macro controls inflation, GDP per capita and GDP growth. The two estimators give very similar results and since we attempt to control for unobserved heterogeneity among a fixed set of countries we find it sensible to focus on the fixed effects estimates. We shall first discuss the results in Table 5 and then see whether the institutions that significantly determine labor market outcomes in the baseline regressions maintain their predictive power when macro controls are added in Table 7.

The employment-to-output ratio is strongly affected by labor market institutions even with year dummies included. Employment protection legislation depresses this ratio by a substantial amount as do union density and the replacement rate, while it increases the youth unemployment rate. A one percent increase in ALMP expenditures (a very unrealistic scenario given the low levels of ALMP expenditures) will lower unemployment by 7 percentage points, long-term unemployment and youth unemployment by 5 and 17 percentage points respectively.¹¹ An increased union density

¹¹ More realistically, raising ALMP by 0.1. % of GDP will lower unemployment by 0.7 percentage points.

raises long-term unemployment, which is in line with insider-outsider models of unemployment. It is also noteworthy that the time dummies pick up the decline of the employment-to-population ratio over the whole period and the rapid fall of youth unemployment in CEE and SEE (cf. Figure 2).

When macroeconomic controls are added, the coefficients on the employment protection legislation measure remain significant with respect to the employment-to-population ratio and to youth unemployment (Table 7). All three types of unemployment remain negatively correlated with ALMP, while union density and the replacement still impact negatively on the employment-to-population ratio, although the effects are less well defined. Union density no longer raises long-term unemployment. An increase in the inflation rate lowers long-term and youth unemployment while a one percent rise in GDP decreases the long-term unemployment rate by a third of one percent.

Our preliminary evidence shows that EPL and ALMP are the two institutions that have a strong impact on labor market performance. We also would like to argue that the correlations we have shown are causal effects running from these labor market institutions to labor market outcomes. There are several reasons for this assertion. First, we use a lag structure, regressing labor market outcomes at time t on labor market institutions at time $(t-1)$. Second, labor market institutions evolve relatively slowly even in transition countries and are, therefore, to a great degree predetermined. Third, the level of expenditures on ALMP is very small in all transition countries and the budgetary process predetermines national expenditures on ALMP. Thus, it is hard to believe that changes in labor market outcomes cause changes in expenditures on ALMP at the national level.¹² In summary, our evidence clearly shows that labor market

¹² Lehmann and Kluve (2009) stress that in transition countries the budgetary process causes expenditures at the national level to be predetermined at the beginning of the year. Governments might reallocate

institutions play an important role in explaining labor market outcomes. In particular, employment protection legislation has a negative impact, while expenditures on ALMP have a positive impact on labor market performance. Union density and the replacement rate also play some role, confirming the priors that they depress employment and raise unemployment, but these effects are less well defined once we include macroeconomic controls. It is noteworthy that the tax wedge plays absolutely no role in the determination of labor market outcomes.

Our analysis is clearly preliminary and we should mention at least three caveats that need to be taken into account as we extend our research effort. Our estimation strategy needs to be refined insofar as we need to look at the interactions of shocks and labor market institutions. The second caveat relates to international migration as a means of mitigating the tension in the labor market. Nickel (1997) proceeded under the assumption that “[d]ifferent European countries are effectively different labor markets with the intercountry movement of labor being very small, mainly because of language and cultural barriers.” This may have been true in the 1980s in the EU-15, but the recent experience of large temporary migration of workers from the new member states to the UK and Ireland has to be interpreted as evidence that migration matters for labor market outcomes in host as well as sender countries. Also, until recently there were millions of foreigners (mostly from Central Asia and Caucasus, but also from Moldova, Belarus and Ukraine) working in Russia, often without permits, and in the mid-2000s, Russia was among the largest destination countries for immigrants. The third caveat has to do with the varying degree of informal employment across transition countries. The informal economy was not insignificant even before the collapse of the iron curtain, but definitely took off in the less developed countries of the region in the 1990s. A dramatic

ALMP funds across regions due to a rise or fall of unemployment in certain regions, expenditures at the national level are, however, hardly ever affected by changes in labor market outcomes.

decline in employment-to-population ratios observed in some countries of South-Eastern Europe and of Central Asia might point to a rise in informal employment. For example, Lehmann (2009) moots for Macedonia that a large part of the long-term unemployed are workers who are sporadically employed in the informal economy. Thus informal employment may distort the observed labor market outcomes in the less developed transition countries in a substantial fashion and our future research strategy needs to consider this.

Conclusions

We present a unique data set that covers labor market outcomes, labor market institutions and macroeconomic controls from early to late transition (i.e., from 1996 to 2008) for the majority of transition countries, including countries of Central and Eastern Europe (CEE), South-Eastern Europe (SEE) and most of the successor states of the Soviet Union. Our data set is unique in that we bring compatible data on the above mentioned items together from these three regions. We use these data to investigate the importance of labor market institutions for labor market outcomes in transition countries. Given the large shocks and their tremendous variation across countries and time and given the fact that changes in labor market institutions over a relatively short span are more pronounced than in mature capitalist economies the pursuit of this research question strikes us as particularly fruitful with the help of the collected data.

The preliminary evidence that we provide shows the importance of labor market institutions in the determination of labor market outcomes. However, we also find that not all of them matter and when they do, then not to the same extent. In particular, we find a negative effect of stricter employment protection and a positive effect of active labor market policies on labor market outcomes. Unemployment benefits and

unionization are also correlated with labor market outcomes, albeit to a lesser extent. It is noteworthy, however, that there is no evidence of a negative effect of higher tax wedges on the performance of labor markets in transition countries. In our preferred estimations we use a fixed effects estimator and lag the institutions by one period. Because of this estimation strategy and because labor market evolve slowly over time we think of these correlations as pointing to causal effects that run from institutions to labor market outcomes.

References

Behar, Alberto (2009) Tax Wedges, Unemployment Benefits and Labour Market Outcomes in the New EU Members. *Czech Economic Review*, 3(1): 69-92.

Belot, Michele and van Ours, Jan C. (2001) Unemployment and Labor Market Institutions: An Empirical Analysis. *Journal of the Japanese and International Economies*, 15(4): 403-418.

Bertola, Giuseppe, Francine D. Blau and Lawrence Kahn (2001). Comparative Analysis of Labor-Market Outcomes: Lessons for the United States from International Long-Run Evidence, in: A. Krueger and R. Solow (eds.) *The Roaring Nineties: Can Full Employment be Sustained?*, New York: Russell Sage Foundation:159-218.

Blanchard, Olivier and Justin Wolfers (2000) The Role of Shocks and Institutions in the Rise of European Unemployment: The Aggregate Evidence. *Economic Journal*, 110(462): C1-33.

Blanchard, Olivier (2006) European Unemployment: The Evolution of Facts and Ideas. *Economic Policy*, 21(45): 5-59.

Boeri, Tito and Hartmut Lehmann (1999) Unemployment and Labor Market Policies in Transition Countries. *Journal of Comparative Economics*, 27(1): 1-3.

Cazes, Sandrine and Alena Nesperova (2003) *Labour Markets in Transition: Balancing Flexibility and Security in Central and Eastern Europe*. Geneva, ILO.

Cazes, Sandrine and Alena Nesperova (2006) Combining Flexibility and Security for Employment and Decent Work in the Western Balkans. *South-East Europe Review*, 9(2): 7-23.

Commander, Simon and Axel Heitmueller (2007) *Does Unemployment Insurance Help Explain Unemployment in Transition Countries?* Unpublished paper, London Business School.

Djankov, Simeon and Rita Ramalho (2009) Employment Laws in Developing Countries. *Journal of Comparative Economics*, 37(1): 3-13.

Eamets, Raul and Jan Masso (2004) Labour Market Flexibility and Employment Protection Regulation in the Baltic States, *IZA Discussion Paper No. 1147*, Institute for the Study of Labor (IZA).

EBRD (various years) *Transition Report*. European Bank for Reconstruction and Development, London.

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

Eichhorst, Werner, Michael Feil and Christoph Braun (2008) What Have We Learned? Assessing Labor Market Institutions and Indicators, *IZA Discussion Papers 3470*, Institute for the Study of Labor (IZA).

Elmeskov, Jorgen, John P. Martin, and Stefano Scarpetta (1998): Key Lessons for Labour Market Reforms: Evidence from OECD Countries' Experiences. *Swedish Economic Policy Review*, 5(2): 205-252.

Feiler, Lizzi (2009) *Reform of Labour Market Policies in a Transition Country: The Case of Azerbaijan*. Paper presented at the "Activation and Security" conference in Brno, 20-21 March, 2009.

Fialova, Kamila and Ondřej Schneider (2009) Labor Market Institutions and Their Effect on Labor Market Performance in the New EU Member Countries. *Eastern European Economics*, 47(3): 57-83.

Layard, Richard, Stephen Nickell, and Richard Jackman (1991) *Unemployment. Macroeconomic Performance and the Labour Market*, Oxford University Press, Oxford.

Lehmann, Hartmut (2009) *Macedonia's Accession to the European Union and the Labour Market*, Background Paper for the UNDP Study on Macedonia's Accession, unprocessed.

Lehmann, Hartmut and Jochen Kluve (2009) Assessing Active Labor Market Policies in Transition Economies, in: Caroleo, Ernesto and Francesco Pastore (Eds.), *The Labor Market Impact of EU Enlargement*, Physica Verlag, Heidelberg.

- Muravyev, Alexander (2008) Human Capital Externalities Evidence from the Transition Economy of Russia. *Economics of Transition*, 16(3): 415-443.
- Nickell, Stephen (1997) Unemployment and Labor Market Rigidities: Europe versus North America. *Journal of Economic Perspectives*, 11(3): 55-74.
- Nickell, Stephen, Nunziata Luca, and Wolfgang Ochel (2005) Unemployment in the OECD since the 1960s. What do We Know? *Economic Journal*, 115 (500): 01-27.
- Nivorozhkin, Anton (2005) An Evaluation of Government-Sponsored Vocational Training Programmes for the Unemployed in Urban Russia. *Cambridge Journal of Economics*, 29(6): 1053-1072.
- OECD (2006): OECD Employment Outlook 2006, OECD, Paris.
- Pistor, Katharina, Martin Raiser, and Stanislaw Gelfer (2000) Law and Finance in Transition Economies. *Economics of Transition*, 8(2): 325-368.
- Riboud, Michelle, Carolina Sánchez-Páramo and Carlos Silva-Jáuregui (2003) Does Eurosclerosis Matter? Institutional Reform and Labor Market Performance in Central and Eastern European Countries in the 1990s. *Social Protection Discussion Paper Series No. 0202*, World Bank.
- Rovelli, Riccardo and Randolph Bruno (2010) Labor Market Policies and Outcomes in the Enlarged EU. *Journal of Common Market Studies* (forthcoming).
- Rutkowski, Michal (1996) Labour Market Policies in Transition Economies. *MOCT-MOST*, 6(1): 19-38.
- Rutkowski, Jan (2007) From the Shortage of Jobs to the Shortage of Skilled Workers: Labor Markets in the EU New Member status, *IZA Discussion Paper 3202*, Institute for the Study of Labor (IZA).
- Rutkowski, Jan, Stefano Scarpetta, Philip O'Keefe, Arup Banerji (2005) *Enhancing Job Opportunities: Eastern Europe and the Former Soviet Union*. World Bank, Washington DC.

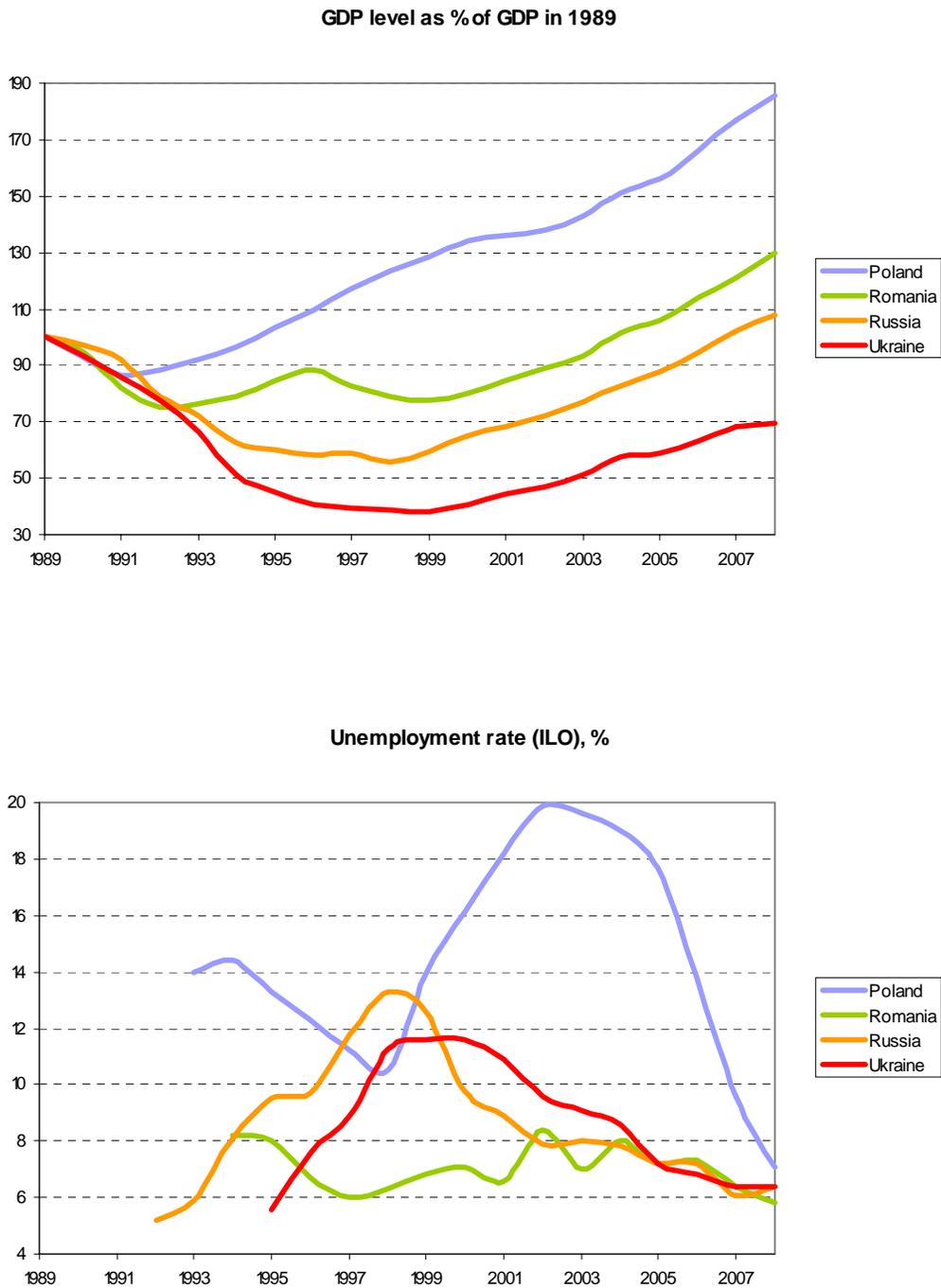
Saveska, Suzana (2000) Unemployment as a Social Cost of Transition in Central and Eastern Europe: Applicability to the Republic of Macedonia. *NISPAcee Occasional Paper*, 1(1), Winter 2000.

Schüle, Ulrich (1999) Labour Market Policy in Post-Soviet Economies: The Case of Azerbaijan. *MOCT-MOST*, 9(2): 153-170.

Svejnar, Jan (1999) Labor Markets in the Transitional Central and Eastern European Economies. In O. Ashenfelter & D. Card (eds.) *Handbook of Labor Economics*. New York and Oxford, Elsevier Science, North-Holland, 3(3): 2809-857.

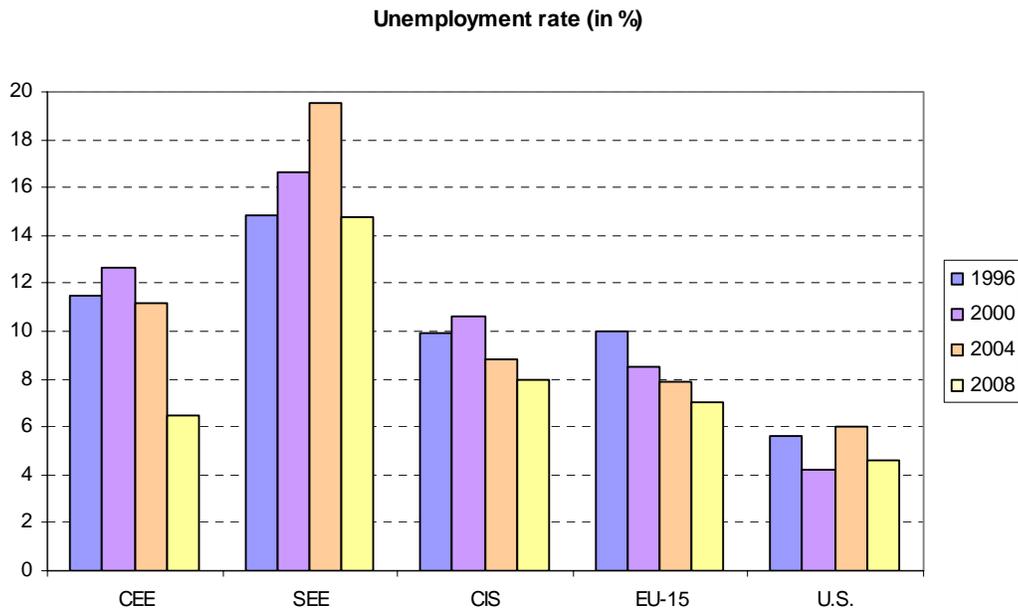
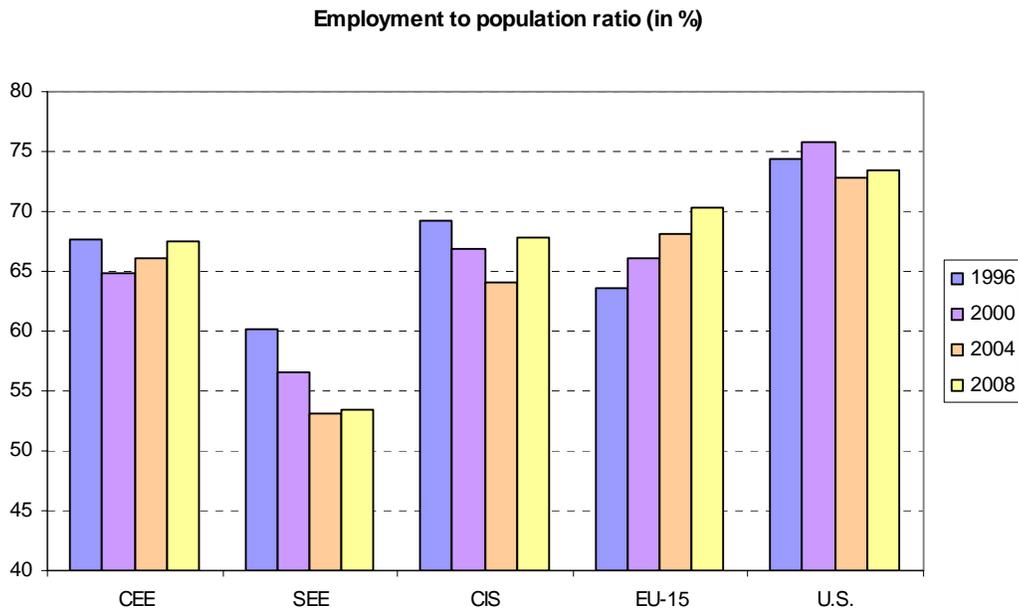
World Bank (2002). *Transition: The First Ten Years*. Washington DC, The World Bank.

Figure 1: GDP shocks and unemployment rates in 4 selected countries

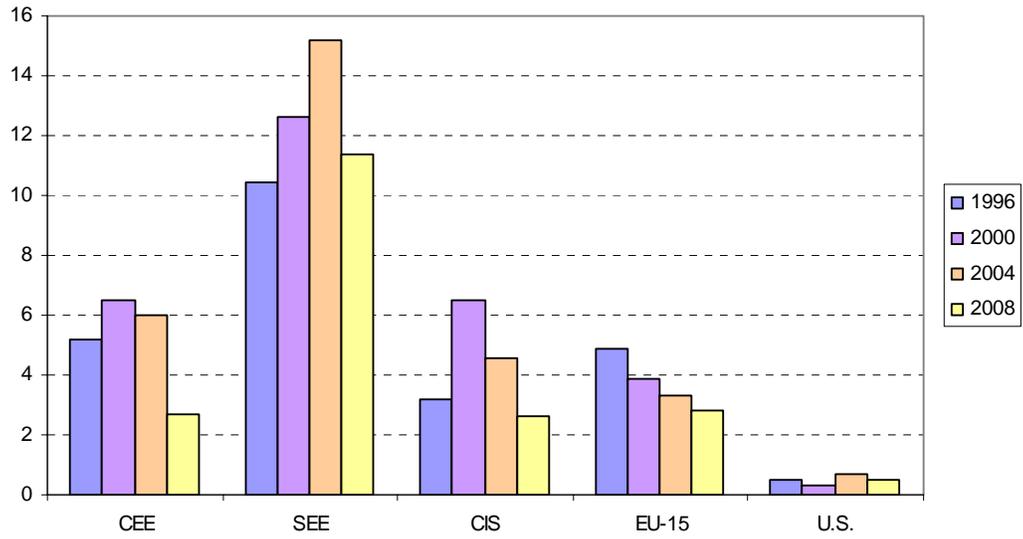


Source: For transition countries: Data Base of IZA Program Area "Labor markets in emerging and transition economies."

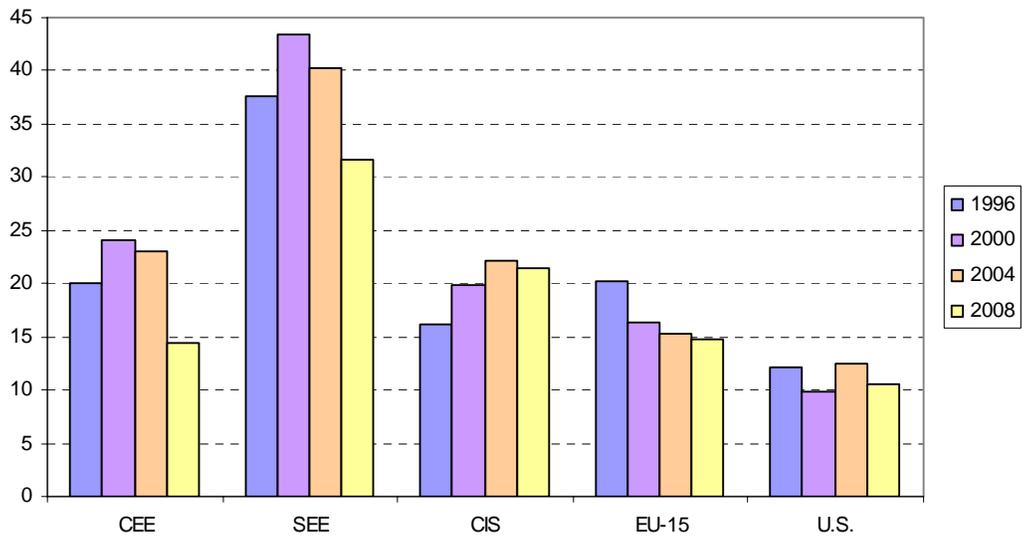
Figure 2. Labor Market Outcomes and Labor Market Institutions by Region



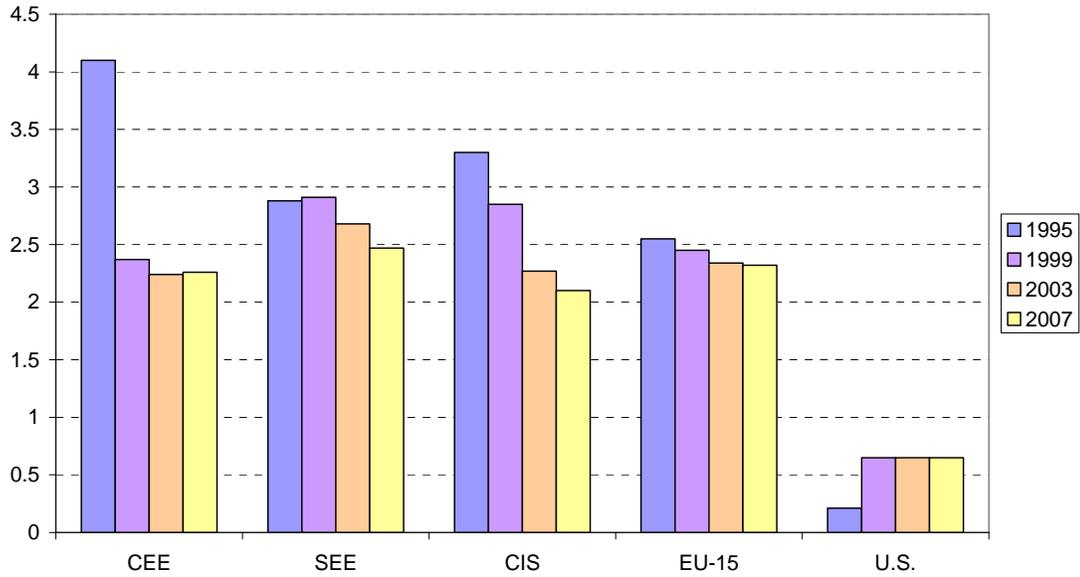
Long-term unemployment rate (in %)



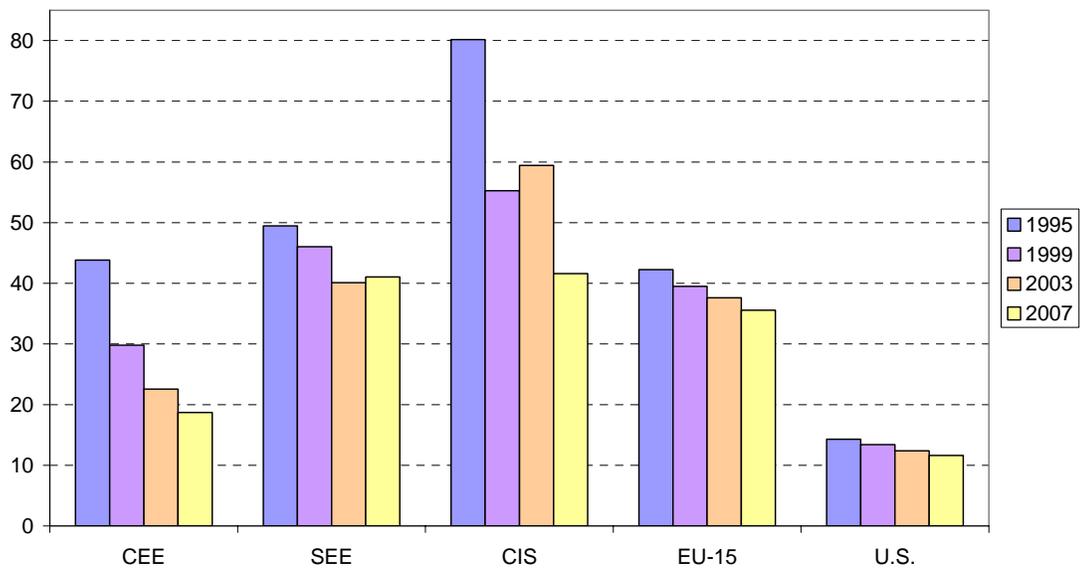
Youth unemployment rate (in %)



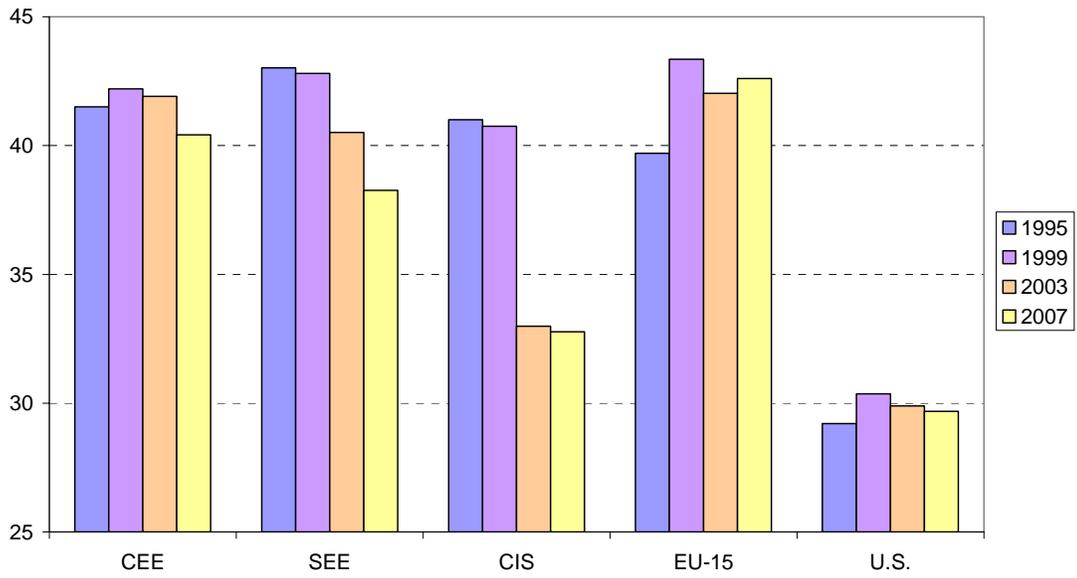
Employment protection legislation index (OECD methodology)



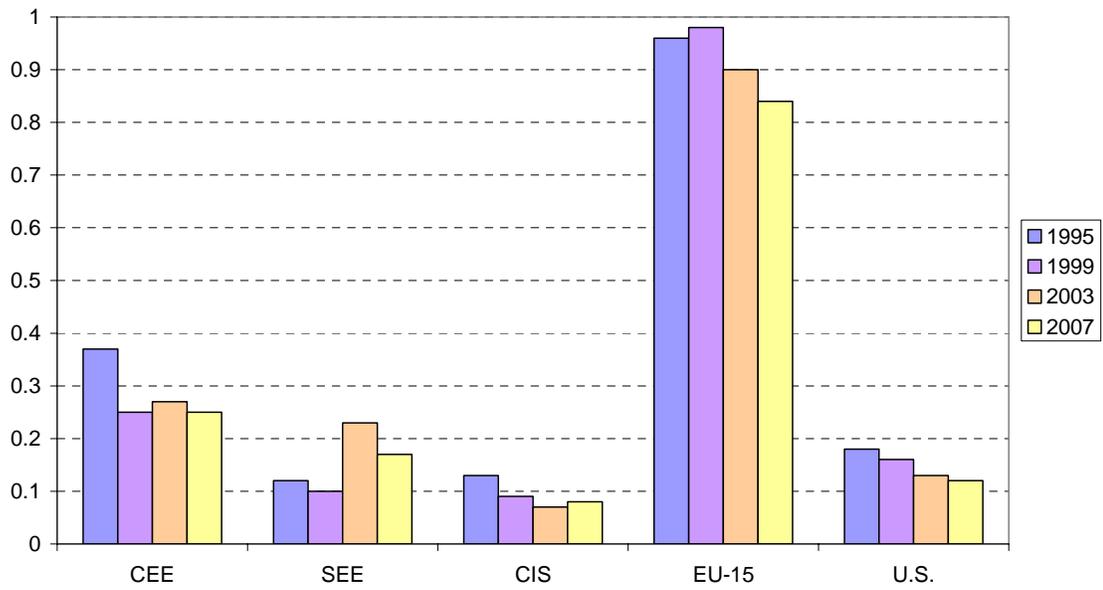
Union density (in %)



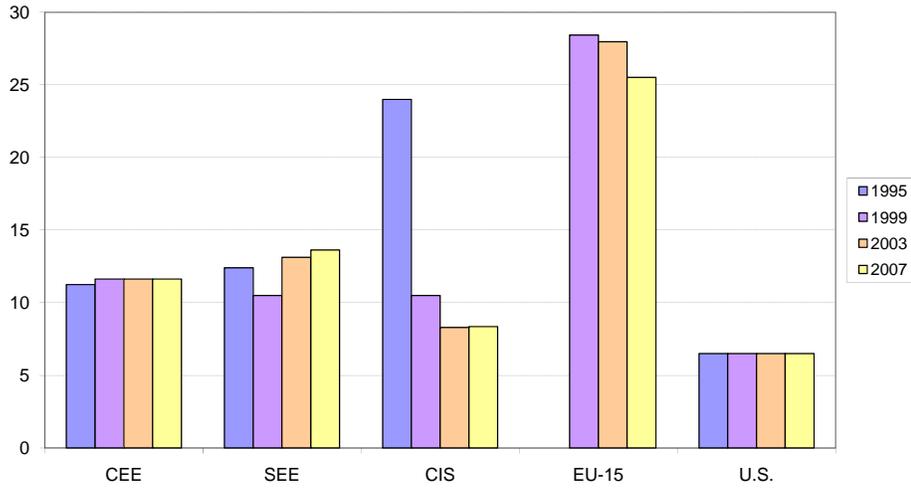
Tax wedge on labor (in %)



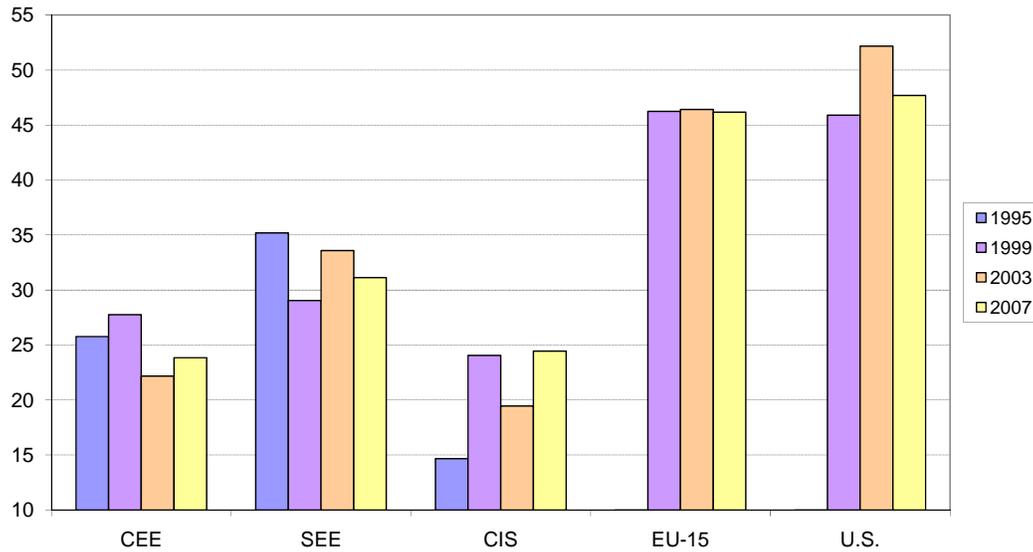
Expenditures on active labor market policies (in % of GDP)



Maximum duration of unemployment benefit (months)



Average replacement ratio (in % of wage)



Source: For transition countries: Data Base of IZA Program Area "Labor markets in emerging and transition economies."

Table 1. Unemployment rates (in %) for transition countries

| region | country | 1996 | 2000 | 2004 | 2008 |
|--------|----------------------|------|------|------|------|
| CEE | Czech Republic | 3.9 | 8.8 | 8.3 | 4.4 |
| | Estonia | 9.9 | 13.6 | 9.7 | 5.5 |
| | Hungary | 9.9 | 6.4 | 6.1 | 7.8 |
| | Latvia | 20.6 | 14.4 | 10.4 | 7.5 |
| | Lithuania | 16.4 | 16.4 | 11.4 | 5.8 |
| | Poland | 12.3 | 16.1 | 19.0 | 7.1 |
| | Slovakia | 11.3 | 18.6 | 18.1 | 9.5 |
| | Slovenia | 7.3 | 7.2 | 6.1 | 4.4 |
| SEE | Albania | 12.0 | 16.8 | 14.4 | 12.7 |
| | Bosnia & Herzegovina | n/a | 16.0 | 22.0 | 23.4 |
| | Bulgaria | 13.5 | 16.3 | 12.0 | 5.6 |
| | Croatia | 10.0 | 16.1 | 13.8 | 8.4 |
| | Macedonia | 31.9 | 32.2 | 37.2 | 33.8 |
| | Montenegro | n/a | n/a | 30.3 | 14.7 |
| | Romania | 6.7 | 7.1 | 8.0 | 5.8 |
| | Serbia | n/a | 12.1 | 18.5 | 13.6 |
| CIS | Armenia | 9.3 | 11.7 | 9.6 | 6.3 |
| | Azerbaijan | n/a | 12.8 | 8.4 | 6.1 |
| | Georgia | n/a | 10.8 | 12.6 | 16.5 |
| | Kazakhstan | 13.0 | 12.8 | 8.4 | 6.6 |
| | Moldova | n/a | 8.5 | 8.1 | 4.0 |
| | Russia | 9.7 | 9.8 | 7.8 | 6.4 |
| | Ukraine | 7.6 | 11.6 | 8.6 | 6.4 |

Source: Data Base of IZA Program Area “Labor markets in emerging and transition economies.”

Table 2. Overall descriptive statistics and the definitions of variables

| Variable | | Obs | Mean | Std. Dev. | Min | Max |
|----------|--|-----|--------|-----------|-------|---------|
| ER | Employment-to-population ratio, % | 108 | 63.9 | 9.6 | 33.6 | 83.2 |
| UR | Unemployment rate (ILO), % | 91 | 12.0 | 6.7 | 3.9 | 37.2 |
| LTUR | Long-term unemployment rate (ILO), % | 78 | 7.5 | 6.7 | 0.6 | 31.8 |
| YUR | Youth unemployment rate (percent unemployed among 15-24 years old) | 88 | 26.2 | 14.8 | 7.2 | 69.5 |
| EPL | Employment protection legislation, overall index (OECD) | 71 | 2.5 | 0.6 | 1.5 | 4.1 |
| DENS | Union density, % | 82 | 41.1 | 19.7 | 13.2 | 96.1 |
| TAX | Tax wedge on labor, % | 85 | 39.0 | 5.5 | 23.0 | 53.2 |
| ALMP | Expenditures on active labor market policies, % GDP | 74 | 0.2 | 0.2 | 0.0 | 0.8 |
| BENF | Average unemployment benefit replacement ratio (average benefit to average wage) | 82 | 26.2 | 10.9 | 7.0 | 60.0 |
| BEND | Maximum duration of unemployment benefit, months | 87 | 11.1 | 5.4 | 1.0 | 24.0 |
| INFL | Inflation rate, % | 107 | 107.6 | 359.6 | -4.6 | 2725.1 |
| GDPG | GDP per capita, 2000 US\$ | 107 | 2465.2 | 2339.6 | 146.5 | 12662.0 |
| GDPG | GDP growth rate, % | 110 | 3.9 | 7.0 | -17.5 | 27.0 |

Source: Data Base of IZA Program Area "Labor markets in emerging and transition economies."

Table 3. Piecewise correlations of variables

| | | ER | UR | LTUR | YUR | EPL | DENS | TAX | ALMP | BENF | BEND | INFL | GDPC | GDPG |
|----------------|-------|---------------|---------------|---------------|---------------|--------------|---------------|---------------|--------------|---------------|---------------|---------------|--------------|------|
| Empl. ratio | corr | 1 | | | | | | | | | | | | |
| ER | sign. | | | | | | | | | | | | | |
| | obs. | 108 | | | | | | | | | | | | |
| Unempl. rate | corr | -0.680 | 1 | | | | | | | | | | | |
| UR | sign. | 0.000 | | | | | | | | | | | | |
| | obs. | 91 | 91 | | | | | | | | | | | |
| L-T unempl | corr | -0.760 | 0.970 | 1 | | | | | | | | | | |
| LTUR | sign. | 0.000 | 0.000 | | | | | | | | | | | |
| | obs. | 78 | 78 | 78 | | | | | | | | | | |
| Youth unempl. | corr | -0.710 | 0.843 | 0.848 | 1 | | | | | | | | | |
| YUR | sign. | 0.000 | 0.000 | 0.000 | | | | | | | | | | |
| | obs. | 86 | 86 | 77 | 88 | | | | | | | | | |
| EPL | corr | -0.330 | 0.356 | 0.348 | 0.430 | 1 | | | | | | | | |
| EPL | sign. | 0.006 | 0.003 | 0.004 | 0.000 | | | | | | | | | |
| | obs. | 68 | 68 | 66 | 68 | 71 | | | | | | | | |
| Union density | corr | -0.110 | 0.117 | 0.162 | 0.182 | 0.440 | 1 | | | | | | | |
| DENS | sign. | 0.340 | 0.318 | 0.179 | 0.118 | 0.000 | | | | | | | | |
| | obs. | 77 | 75 | 70 | 75 | 67 | 82 | | | | | | | |
| Tax wedge | corr | 0.016 | 0.119 | 0.107 | 0.073 | 0.198 | -0.240 | 1 | | | | | | |
| TAX | sign. | 0.888 | 0.295 | 0.365 | 0.526 | 0.106 | 0.039 | | | | | | | |
| | obs. | 83 | 79 | 74 | 77 | 68 | 73 | 85 | | | | | | |
| ALMP | corr | 0.104 | -0.190 | -0.230 | -0.210 | -0.1 | -0.17 | 0.285 | 1 | | | | | |
| ALMP | sign. | 0.380 | 0.115 | 0.057 | 0.087 | 0.448 | 0.178 | 0.018 | | | | | | |
| | obs. | 73 | 73 | 69 | 70 | 61 | 68 | 69 | 74 | | | | | |
| Benefit | corr | -0.200 | 0.220 | 0.259 | 0.186 | 0.195 | 0.042 | 0.201 | 0.172 | 1 | | | | |
| BENF | sign. | 0.074 | 0.055 | 0.027 | 0.107 | 0.117 | 0.724 | 0.084 | 0.158 | | | | | |
| | obs. | 80 | 77 | 73 | 76 | 66 | 73 | 75 | 69 | 82 | | | | |
| Benefit durat. | corr | -0.140 | -0.010 | 0.021 | 0.069 | 0.232 | 0.157 | 0.219 | 0.274 | 0.473 | 1 | | | |
| BEND | sign. | 0.193 | 0.934 | 0.860 | 0.552 | 0.057 | 0.186 | 0.048 | 0.022 | 0.000 | | | | |
| | obs. | 85 | 80 | 74 | 77 | 68 | 73 | 82 | 70 | 78 | 87 | | | |
| Inflation rate | corr | 0.161 | -0.050 | -0.070 | -0.12 | 0.245 | 0.437 | 0.169 | -0.08 | -0.200 | 0.223 | 1 | | |
| INFL | sign. | 0.100 | 0.627 | 0.556 | 0.259 | 0.045 | 0.000 | 0.124 | 0.494 | 0.080 | 0.040 | | | |
| | obs. | 106 | 91 | 78 | 86 | 68 | 77 | 84 | 73 | 81 | 86 | 107 | | |
| GDP p. capita | corr | 0.164 | -0.250 | -0.300 | -0.250 | 0.003 | -0.42 | 0.381 | 0.425 | 0.074 | 0.322 | -0.220 | 1 | |
| GDPC | sign. | 0.097 | 0.019 | 0.007 | 0.017 | 0.981 | 0.000 | 0.000 | 0.000 | 0.510 | 0.003 | 0.024 | | |
| | obs. | 104 | 90 | 78 | 87 | 68 | 77 | 84 | 73 | 82 | 84 | 104 | 107 | |
| GDP growth r. | corr | -0.150 | -0.170 | -0.130 | -0.05 | -0.19 | -0.370 | -0.500 | -0.05 | 0.088 | -0.230 | -0.410 | 0.175 | 1 |
| GDPG | sign. | 0.124 | 0.109 | 0.242 | 0.659 | 0.119 | 0.000 | 0.000 | 0.673 | 0.434 | 0.030 | 0.000 | 0.073 | |
| | obs. | 107 | 91 | 78 | 87 | 69 | 78 | 85 | 73 | 82 | 87 | 107 | 106 | 110 |

Note: Correlations significant at 10% level are marked bold.

Table 4. Labor market performance, institutions and policies: baseline regression results

(RE estimation)

| | ER | UR | LTUR | YUR |
|--------|----------------------|---------------------|---------------------|-----------------------|
| EPL | -4.810** (1.941) | 0.715 (1.014) | 0.102 (0.777) | 4.372** (2.062) |
| ALMP | 4.554 (4.144) | -7.244** (3.456) | -5.778** (2.462) | -16.577*** (5.826) |
| TAX | -0.005 (0.205) | 0.184 (0.165) | 0.082 (0.136) | -0.029 (0.369) |
| DENS | -0.145*** (0.048) | 0.044 (0.056) | 0.049 (0.044) | 0.071 (0.091) |
| BENF | -0.163 (0.135) | 0.096 (0.119) | 0.082 (0.069) | 0.171 (0.220) |
| BEND | -0.002 (0.085) | 0.046 (0.063) | 0.034 (0.054) | 0.009 (0.161) |
| Y1999 | -5.778*** (1.430) | 1.688 (1.334) | 1.284 (0.949) | 2.219 (2.524) |
| Y2003 | -7.900*** (1.220) | 1.821 (1.780) | 1.856 (1.222) | 2.448 (2.845) |
| Y2007 | -7.598*** (1.537) | -1.863 (2.015) | -0.811 (1.437) | -5.511* (3.014) |
| Const. | 86.823*** (6.753) | -0.118 (8.475) | 0.813 (6.080) | 16.471 (16.866) |
| r2 | 0.37 | 0.54 | 0.45 | 0.60 |
| N | 59 | 59 | 58 | 59 |

Note: The results are obtained using the random-effects estimator with cluster-robust standard errors (clustering by country). Standard errors are reported in parentheses. Asterisks denote significance levels: *** - significant at 1%, ** - significant at 5% and * - significant at 10%. R2 refers to the within variation in the data.

Table 5. Labor market performance, institutions and policies: baseline regression results

(FE estimation)

| | ER | UR | LTUR | YUR |
|--------|-----------------------|--------------------|---------------------|----------------------|
| EPL | -5.033** (1.922) | 0.462 (1.113) | -0.082 (0.862) | 3.970* (2.206) |
| ALMP | 5.639 (4.957) | -7.087* (4.044) | -5.208** (2.481) | -16.681** (6.630) |
| TAX | 0.093 (0.329) | 0.039 (0.216) | 0.012 (0.167) | 0.139 (0.483) |
| DENS | -0.152** (0.062) | 0.071 (0.048) | 0.063* (0.033) | 0.016 (0.085) |
| BENF | -0.238* (0.135) | 0.151 (0.140) | 0.111 (0.078) | 0.085 (0.262) |
| BEND | -0.003 (0.110) | 0.015 (0.092) | 0.003 (0.070) | -0.013 (0.190) |
| Y1999 | -5.700*** (1.360) | 1.890 (1.200) | 1.439 (0.878) | 0.854 (2.284) |
| Y2003 | -7.847*** (1.251) | 1.833 (1.336) | 1.816** (0.829) | 0.740 (2.244) |
| Y2007 | -7.295*** (1.174) | -2.013 (1.425) | -0.873 (1.055) | -7.071*** (2.477) |
| Const. | 85.128*** (10.289) | 5.066 (9.765) | 3.555 (7.114) | 14.522 (20.977) |
| r2 | .38 | .55 | .46 | .60 |
| N | 59 | 59 | 58 | 59 |

Note: The results are obtained using the fixed-effects estimator with cluster-robust standard errors (clustering by country). Standard errors are reported in parentheses. Asterisks denote significance levels: *** - significant at 1%, ** - significant at 5% and * - significant at 10%. R2 refers to the within variation in the data.

Table 6. Labor market performance, institutions and policies: baseline regression results with macro-controls (RE estimation)

| | ER | UR | LTUR | YUR |
|--------|----------------------|----------------------|----------------------|-----------------------|
| EPL | -4.738*** (1.644) | 1.024 (0.690) | 0.346 (0.389) | 4.864** (2.009) |
| ALMP | 6.009 (4.537) | -8.501** (3.505) | -6.956*** (2.562) | -18.991*** (6.320) |
| TAX | -0.281 (0.254) | 0.153 (0.211) | 0.078 (0.165) | -0.006 (0.481) |
| DENS | -0.105** (0.041) | -0.020 (0.049) | -0.011 (0.033) | -0.019 (0.081) |
| BENF | -0.240* (0.138) | 0.089 (0.112) | 0.075 (0.076) | 0.189 (0.252) |
| BEND | 0.008 (0.105) | 0.085 (0.083) | 0.044 (0.059) | 0.075 (0.180) |
| INFL | 0.021 (0.017) | -0.026** (0.011) | -0.027*** (0.007) | -0.059*** (0.021) |
| GDPG | -0.021 (0.141) | -0.289* (0.157) | -0.306*** (0.114) | -0.447 (0.301) |
| GDPC | 0.002*** (0.001) | -0.001*** (0.000) | -0.001** (0.000) | -0.002** (0.001) |
| Y1999 | -3.977** (1.868) | -0.583 (1.824) | -0.925 (1.478) | -2.610 (3.886) |
| Y2003 | -6.912*** (1.571) | 0.178 (2.017) | 0.263 (1.592) | -1.467 (4.371) |
| Y2007 | -8.294*** (2.368) | -2.028 (2.595) | -1.098 (2.123) | -7.110 (4.905) |
| Const. | 90.406*** (9.897) | 8.818 (10.661) | 9.350 (7.733) | 27.894 (21.540) |
| r2 | 0.45 | 0.66 | 0.66 | 0.68 |
| N | 59 | 59 | 58 | 59 |

Note: The results are obtained using the random-effects estimator with cluster-robust standard errors (clustering by country). Standard errors are reported in parentheses. Asterisks denote significance levels: *** - significant at 1%, ** - significant at 5% and * - significant at 10%. R2 refers to the within variation in the data.

Table 7. Labor market performance, institutions and policies: baseline regression results with macro-controls (FE estimation)

| | ER | UR | LTUR | YUR |
|--------|-----------------------|---------------------|---------------------|----------------------|
| EPL | -4.578** (1.636) | 0.525 (0.825) | 0.145 (0.508) | 4.414** (2.048) |
| ALMP | 10.766 (7.508) | -10.723* (5.479) | -6.711* (3.533) | -19.547** (9.069) |
| TAX | -0.152 (0.401) | 0.025 (0.248) | 0.030 (0.177) | 0.137 (0.564) |
| DENS | -0.104 (0.069) | -0.012 (0.057) | -0.006 (0.041) | -0.085 (0.111) |
| BENF | -0.229 (0.176) | 0.063 (0.155) | 0.072 (0.093) | 0.058 (0.343) |
| BEND | -0.034 (0.149) | 0.100 (0.125) | 0.027 (0.083) | 0.107 (0.237) |
| INFL | 0.002 (0.021) | -0.011 (0.013) | -0.024** (0.009) | -0.058** (0.023) |
| GDPG | -0.046 (0.148) | -0.272 (0.166) | -0.321** (0.116) | -0.506 (0.301) |
| GDPC | 0.002* (0.001) | -0.002** (0.001) | -0.001 (0.001) | -0.001 (0.001) |
| Y1999 | -4.896*** (1.647) | 0.240 (1.821) | -0.721 (1.376) | -4.346 (3.370) |
| Y2003 | -8.729*** (1.736) | 1.477 (2.050) | 0.354 (1.535) | -3.581 (3.895) |
| Y2007 | -10.367*** (2.999) | -0.511 (2.590) | -1.026 (2.096) | -9.449* (4.890) |
| Const. | 84.657*** (15.158) | 15.407 (11.929) | 11.576 (8.169) | 26.143 (24.435) |
| r2 | .47 | .68 | .67 | .69 |
| N | 59 | 59 | 58 | 59 |

Note: The results are obtained using the fixed-effects estimator with cluster-robust standard errors (clustering by country). Standard errors are reported in parentheses. Asterisks denote significance levels: *** - significant at 1%, ** - significant at 5% and * - significant at 10%. R2 refers to the within variation in the data.

Appendix I.

Table A1. Descriptive statistics: labor market outcomes

Employment to population ratio, %

| region | | 1995 | 1999 | 2003 | 2007 |
|--------|----------|-------|-------|-------|-------|
| CEE | mean | 67.6 | 64.78 | 66.04 | 67.53 |
| | median | 67.35 | 65.25 | 68.55 | 68.45 |
| | no. obs. | 8 | 8 | 8 | 8 |
| SEE | mean | 60.08 | 56.53 | 53.11 | 53.47 |
| | median | 60 | 55.9 | 52.5 | 56.6 |
| | no. obs. | 5 | 7 | 8 | 8 |
| CIS | mean | 69.16 | 66.82 | 64.1 | 67.85 |
| | median | 69.45 | 67.5 | 66.7 | 69 |
| | no. obs. | 12 | 12 | 12 | 11 |
| EU-15 | mean | 63.6 | 66.1 | 68.05 | 70.27 |
| U.S. | mean | 74.35 | 75.75 | 72.77 | 73.37 |

Unemployment rate, %

| region | | 1995 | 1999 | 2003 | 2007 |
|--------|----------|-------|-------|-------|-------|
| CEE | mean | 11.45 | 12.69 | 11.14 | 6.5 |
| | median | 10.6 | 14 | 10.05 | 6.45 |
| | no. obs. | 8 | 8 | 8 | 8 |
| SEE | mean | 14.82 | 16.66 | 19.52 | 14.75 |
| | median | 12 | 16.1 | 16.45 | 13.15 |
| | no. obs. | 5 | 7 | 8 | 8 |
| CIS | mean | 9.9 | 10.61 | 8.82 | 7.93 |
| | median | 9.5 | 11.2 | 8.4 | 6.4 |
| | no. obs. | 4 | 10 | 9 | 8 |
| EU-15 | mean | 10.0 | 8.50 | 7.90 | 7.0 |
| U.S. | mean | 5.60 | 4.20 | 6.0 | 4.60 |

Long-term unemployment rate, %

| region | | 1995 | 1999 | 2003 | 2007 |
|--------|----------|-------|-------|-------|-------|
| CEE | mean | 5.17 | 6.53 | 5.97 | 2.69 |
| | median | 4.8 | 6.8 | 4.86 | 2.05 |
| | no. obs. | 7 | 8 | 8 | 8 |
| SEE | mean | 10.43 | 12.62 | 15.18 | 11.35 |
| | median | 8.33 | 10.86 | 13.62 | 10.22 |
| | no. obs. | 5 | 6 | 8 | 8 |
| CIS | mean | 3.18 | 6.5 | 4.54 | 2.65 |
| | median | 3.18 | 6.89 | 3.79 | 2.64 |
| | no. obs. | 1 | 5 | 8 | 6 |
| EU-15 | mean | 4.9 | 3.9 | 3.3 | 2.8 |
| U.S. | mean | 0.5 | 0.3 | 0.7 | 0.5 |

Youth unemployment rate, %

| region | | 1995 | 1999 | 2003 | 2007 |
|--------|----------|-------|-------|-------|-------|
| CEE | mean | 19.96 | 24.1 | 22.96 | 14.38 |
| | median | 19.2 | 23.15 | 21.05 | 13.25 |
| | no. obs. | 7 | 8 | 8 | 8 |
| SEE | mean | 37.7 | 43.49 | 40.2 | 31.69 |
| | median | 30.55 | 40.95 | 38.4 | 28.85 |
| | no. obs. | 4 | 8 | 8 | 8 |
| CIS | mean | 16.2 | 19.94 | 22.21 | 21.5 |
| | median | 18.3 | 19.65 | 17.2 | 14 |
| | no. obs. | 3 | 10 | 9 | 7 |
| EU-15 | mean | 20.30 | 16.40 | 15.30 | 14.70 |
| U.S. | mean | 12.10 | 9.90 | 12.40 | 10.50 |

Table A2. Descriptive statistics: institutions and policies

EPL (OECD methodology)

| region | | 1995 | 1999 | 2003 | 2007 |
|--------|----------|------|------|------|------|
| CEE | mean | 4.1 | 2.37 | 2.24 | 2.26 |
| | median | 4.1 | 2.35 | 2.32 | 2.25 |
| | no. obs. | 1 | 8 | 8 | 8 |
| SEE | mean | 2.88 | 2.91 | 2.68 | 2.47 |
| | median | 2.9 | 2.9 | 2.7 | 2.4 |
| | no. obs. | 5 | 9 | 9 | 8 |
| CIS | mean | 3.3 | 2.85 | 2.27 | 2.1 |
| | median | 3.3 | 2.85 | 2.25 | 2.2 |
| | no. obs. | 1 | 2 | 6 | 6 |
| EU-15 | mean | 2.55 | 2.45 | 2.34 | 2.32 |
| U.S. | mean | 0.21 | 0.65 | 0.65 | 0.65 |

Union density, %

| region | | 1995 | 1999 | 2003 | 2007 |
|--------|----------|-------|-------|-------|-------|
| CEE | mean | 43.82 | 29.79 | 22.57 | 18.69 |
| | median | 41.29 | 26.07 | 18.83 | 16.49 |
| | no. obs. | 8 | 8 | 8 | 8 |
| SEE | mean | 49.45 | 46.01 | 40.09 | 41.05 |
| | median | 49.45 | 51 | 41 | 35.83 |
| | no. obs. | 2 | 9 | 9 | 8 |
| CIS | mean | 80.18 | 55.25 | 59.41 | 41.6 |
| | median | 80.4 | 54.5 | 58 | 30 |
| | no. obs. | 4 | 4 | 7 | 5 |
| EU-15 | mean | 42.24 | 39.49 | 37.61 | 35.56 |
| U.S. | mean | 14.3 | 13.4 | 12.4 | 11.6 |

Tax wedge on labor, %

| region | | 1995 | 1999 | 2003 | 2007 |
|--------|----------|-------|-------|-------|-------|
| CEE | mean | 41.5 | 42.2 | 41.91 | 40.42 |
| | median | 41.05 | 41.55 | 41.55 | 40.9 |
| | no. obs. | 8 | 8 | 8 | 8 |
| SEE | mean | 43.02 | 42.8 | 40.51 | 38.26 |
| | median | 41.75 | 41.6 | 41.65 | 40.25 |
| | no. obs. | 4 | 8 | 8 | 8 |
| CIS | mean | 41 | 40.75 | 32.99 | 32.77 |
| | median | 41 | 40.75 | 36 | 31.6 |
| | no. obs. | 1 | 2 | 11 | 11 |
| EU-15 | mean | 39.7 | 43.35 | 42.03 | 42.6 |
| U.S. | mean | 29.2 | 30.36 | 29.89 | 29.68 |

Expenditures on ALMP, % of GDP

| region | | 1995 | 1999 | 2003 | 2007 |
|--------|----------|------|------|------|------|
| CEE | mean | 0.37 | 0.25 | 0.27 | 0.25 |
| | median | 0.27 | 0.2 | 0.24 | 0.24 |
| | no. obs. | 8 | 8 | 8 | 8 |
| SEE | mean | 0.12 | 0.1 | 0.23 | 0.17 |
| | median | 0.16 | 0.1 | 0.13 | 0.12 |
| | no. obs. | 3 | 6 | 8 | 7 |
| CIS | mean | 0.13 | 0.09 | 0.07 | 0.08 |
| | median | 0.13 | 0.09 | 0.05 | 0.08 |
| | no. obs. | 2 | 5 | 6 | 5 |
| EU-15 | mean | 0.96 | 0.98 | 0.90 | 0.84 |
| U.S. | mean | 0.18 | 0.16 | 0.13 | 0.12 |

Maximum duration of unemployment benefit, months

| region | | 1995 | 1999 | 2003 | 2007 |
|--------|----------|-------|-------|-------|-------|
| CEE | mean | 11.25 | 11.63 | 11.63 | 11.63 |
| | median | 9 | 10.5 | 9 | 9 |
| | no. obs. | 8 | 8 | 8 | 8 |
| SEE | mean | 12.4 | 10.5 | 13.13 | 13.63 |
| | median | 12 | 11 | 12 | 12 |
| | no. obs. | 5 | 8 | 8 | 8 |
| CIS | mean | 24 | 10.5 | 8.3 | 8.36 |
| | median | 24 | 12 | 6 | 6 |
| | no. obs. | 1 | 4 | 10 | 11 |
| EU-15 | mean | n/a | 28.44 | 27.98 | 25.52 |
| U.S. | mean | 6.50 | 6.50 | 6.50 | 6.50 |

Average replacement ratio, %

| region | | 1995 | 1999 | 2003 | 2007 |
|--------|----------|-------|-------|-------|-------|
| CEE | mean | 25.77 | 27.75 | 22.17 | 23.84 |
| | median | 24.6 | 30.4 | 21.7 | 21.35 |
| | no. obs. | 7 | 8 | 8 | 8 |
| SEE | mean | 35.2 | 29.04 | 33.59 | 31.13 |
| | median | 34 | 30 | 33.1 | 31.5 |
| | no. obs. | 5 | 7 | 7 | 8 |
| CIS | mean | 14.67 | 24.05 | 19.46 | 24.44 |
| | median | 14 | 27 | 20.45 | 21.3 |
| | no. obs. | 3 | 6 | 8 | 7 |
| EU-15 | mean | n/a | 46.24 | 46.42 | 46.16 |
| U.S. | mean | n/a | 45.89 | 52.17 | 47.68 |

Table A3. Descriptive statistics: macroeconomic indicators

GDP per capita, 2000 US \$

| region | | 1995 | 1999 | 2003 | 2007 |
|--------|----------|-------|-------|-------|-------|
| CEE | mean | 3824 | 4567 | 5421 | 6980 |
| | median | 3196 | 3964 | 4843 | 6072 |
| | no. obs. | 8 | 8 | 8 | 8 |
| SEE | mean | 1554 | 1794 | 1984 | 2491 |
| | median | 1565 | 1450 | 1635 | 2082 |
| | no. obs. | 6 | 7 | 8 | 8 |
| CIS | mean | 639 | 663 | 891 | 1303 |
| | median | 515 | 574 | 784 | 1147 |
| | no. obs. | 12 | 12 | 11 | 11 |
| EU-15 | mean | 19706 | 22384 | 24298 | 26781 |
| U.S. | mean | 29942 | 33748 | 35290 | 38096 |

GDP growth rate, %

| region | | 1995 | 1999 | 2003 | 2007 |
|--------|----------|--------|------|------|-------|
| CEE | mean | 2.59 | 3.31 | 5.07 | 7.38 |
| | median | 3.96 | 3.6 | 4.47 | 7.41 |
| | no. obs. | 8 | 8 | 8 | 8 |
| SEE | mean | 3.53 | 4.14 | 3.94 | 6.47 |
| | median | 4.92 | 2.83 | 4.49 | 6.15 |
| | no. obs. | 6 | 8 | 8 | 8 |
| CIS | mean | -10.26 | 3.42 | 8.42 | 10.29 |
| | median | -11.88 | 3.61 | 7.84 | 8.86 |
| | no. obs. | 12 | 12 | 12 | 12 |
| EU-15 | mean | 3.20 | 4.25 | 1.59 | 3.17 |
| U.S. | mean | 2.50 | 4.45 | 2.51 | 2.03 |

Inflation rate, %

| region | | 1995 | 1999 | 2003 | 2007 |
|--------|----------|--------|-------|-------|------|
| CEE | mean | 27.07 | 7.01 | 3.04 | 4.39 |
| | median | 26.81 | 6.72 | 2.45 | 3.93 |
| | no. obs. | 8 | 8 | 8 | 8 |
| SEE | mean | 59.93 | 16.51 | 7.47 | 4.73 |
| | median | 71.1 | 10.52 | 3.93 | 3.42 |
| | no. obs. | 5 | 7 | 8 | 8 |
| CIS | mean | 911.75 | 33.92 | 10.16 | 9.62 |
| | median | 789.13 | 21.65 | 6.66 | 9.5 |
| | no. obs. | 11 | 12 | 12 | 12 |
| EU-15 | mean | 2.97 | 1.47 | 2.17 | 2.36 |
| U.S. | mean | 2.81 | 2.19 | 2.27 | 2.85 |

Appendix II. Details about the construction of the database.

Difficulties in classifying the social security systems

In most countries of the region, the size of the unemployment benefit is related to past earnings. The rate may be as high as 100% (like in Croatia at the end of the 1990s and in Ukraine in the mid-2000s). The problem is that there is an upper cap on the size of the benefit, which often implies, de facto, a flat rate benefit. For example, in the early 2000s the benefit replacement rate in Croatia was 100% of average salary in the last three months of employment, but the maximum was restricted to 900 Kn. Compared to the average wage of 3600 Kn, the amount is far less than the 100% replacement rate. Similarly, unemployed in Russia can get 75% of their average wage in the last three months of employment, but there is a cap of 4900 RUR (or 110 Euro) as of mid-2009. Relative to the average wage in the economy (17441 RUR as of 1st quarter 2009), the unemployment benefit is very low. The minimum benefit is almost negligible, amounting to 850 RUR only. It is essential that the minimum and maximum amounts of unemployment benefits are not set in a law, but are subject to government discretion.

Low unemployment benefits are often combined with very strict eligibility rules. This is particularly common in the CIS countries. As a result, the share of unemployed people applying for benefits, and especially the share of those receiving benefits, is very low. For example, a recent paper by Feiler (2009) describing the Azerbaijani labor market in 2007, shows that out of 290,000 unemployed people in the country only 50,651 (or 17.5%) were officially registered as jobseekers and only 4,902 (or 1.7%) received unemployment benefits. This situation has persisted from the 1990s, as the paper by Schüle (1999) suggests. (Feiler also gives statistics for several other countries: in Kyrgyzstan, only 5% of all unemployed persons received unemployment benefits, in Tajikistan – 5.7%, and in Moldova and Armenia – between 4% and 12%).

This seems to be a typical picture in the CIS countries. In some countries, the unemployment benefits is a lump sum amount.

Difficulties in measuring trade union activity.

The major issue is that the traditional variables like trade union density and coverage provide very little information about the subject matter in the CIS countries, especially less developed ones. The World Bank, for example, even refused to provide statistics on the coverage rates in the CIS countries.