Institutions, Economic Performance, and EU Integration

The Case Of Transition Economies and BiH

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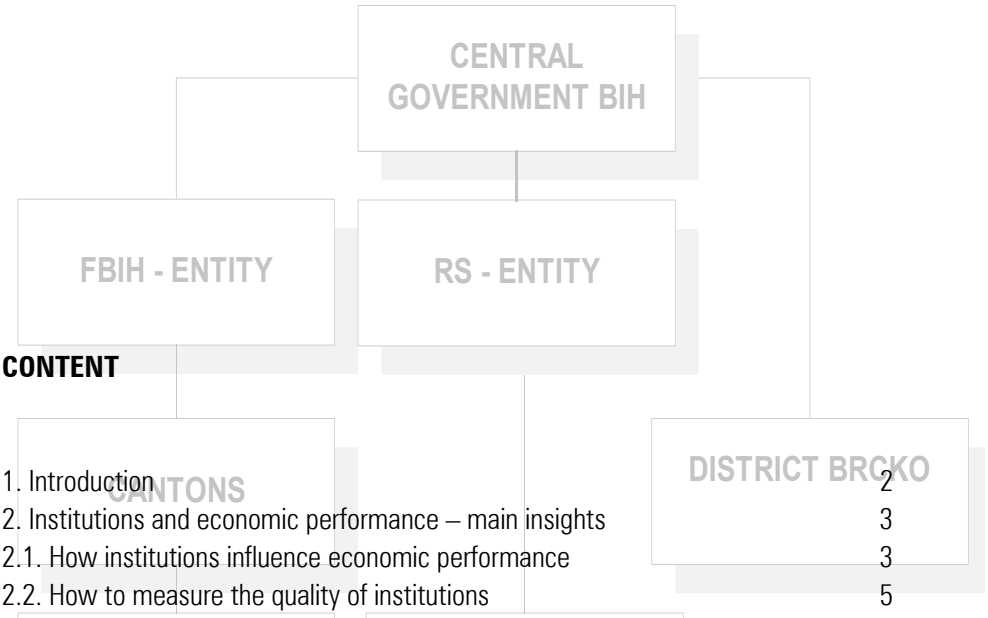

CONTENT

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EXECUTIVE SUMMARY

The general findings of this policy study are that institutions in transition economies are an important determinant that explains to a large extent different economic performances of those countries. Results obtained from empirical econometric analysis demonstrate that one percent increase in quality of institutions is associated practically with one percent increase of growth in GDP per capita.

Moreover, the results also suggest that the quality of state institutions was an important determinant of those economies' success in moving towards the full EU membership. Since the efficiency of domestic institutions in BiH is below transition average, and especially below EU-transition and EU-candidate transition countries' averages, BiH can hardly expect further improvement in the speed of EU integration processes without improvement of the efficiency of its institutions. Our quantitative estimates suggest that BiH may count (with higher probability) on EU membership in the medium-term if it improves institutional quality by roughly five percent per year. If improvements in institutional quality remain the same – in the last three years the average improvement was less than two percent - EU integration may take much longer.

Finally, our analysis of institutions "relevant" for economic performance in BiH suggests that the most efficient institutions in BiH are institutions relevant for macroeconomic stabilisation, i.e. the Central bank and fiscal institutions. The least efficient institutions in BiH are property rights institutions, regulatory institutions, and institutions for conflict management. In other words, efficiency of non-market institutions in BiH seems more problematic than the efficiency of market institutions.

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was born on 04th January 1978. He graduated at the Faculty of Economics in Sarajevo with outstanding results and was awarded as one of the best students of human sciences in BH. He completed his Master thesis at the Faculty of Economics in Sarajevo in 2004. His scientific-research work is based in fields of Macroeconomics, European economy, and Institutional Economics. He finished number of specializations at European universities, published 19 papers in domestic and foreign publications, and had presentations at 7 international conferences. Currently, he is doing PhD dissertation from the field of Institutional Economics at the Staffordshire University in the UK. He works as the senior teaching assistant at the School of Economics and Business in Sarajevo.

1. Introduction

The strategic goal of Bosnia and Herzegovina (BiH) is full membership of the European Union and it seems that an overall consensus about this "European future" has been agreed in the country. However, many questions still remain open and many problems and obstacles must be removed in order to support the most effective accession. Bosnia and Herzegovina is currently going through the Stabilisation and Association phase, a process that should further support its steps towards the full EU membership. By signing the Stabilisation and Association Agreement (SAA) BiH will enter into contractual relations with the EU. Unfortunately, BiH's position in the whole process of European integration cannot currently be marked as satisfactory, at least for two reasons. First, BiH is the only country in the region that has not signed the SAA agreement yet (April 2008). Second, if we compare the position and speed of improvement of BiH with other countries from the region, it seems that BH lags behind in the EU integration process. Similarly, the economic development of this country cannot be marked as satisfactory. The official unemployment rate is above 40%; GDP is still only around 70% of the pre-war level GDP; the trade deficit is around 50% of GDP, which makes this country import-dependent while at the same time around 50% of domestic companies do not produce at their capacity. The costs of starting and closing business put this country almost at the world bottom according World Bank doing business report (2007).

There are many reasons for this position of BiH. Without underestimating other determinants, we consider that a particularly important aspect of achieving successful integration and economic development in the future is the establishment of an efficient institutional framework. This may be especially the case for BiH having in mind the "unique" institutional framework in this country and its potential consequences for economic performance and European processes. Hence, the aim of this research is to investigate the impact of the current institutional framework in BiH on its economic performance and the process of EU integration.

Empirical research and contemporary economic theory generally suggest that a nation's institutional framework is an important factor determining economic performance as well as success in the processes of economic integration. Unfortunately, there is little empirical research for transition countries (compared to the existing applied work on developed and developing economies) that analyse the importance of institutions for economic development.

The current institutional framework in BiH is highly complex; apparently costly, creates many overlapping authorities and suffers from a general lack of harmonisation. The complexity and questionable efficiency of BH's institutional framework has been recognized as a major political issue, but the consequences for economic development and European integration have yet to be analyzed. This policy study will try to provide some insights about the role of institutions on economic performance and European integration with special reference to Bosnia and Herzegovina. However, in order to get more robust results we will conduct the research not only on separate case of this country but the issue will be analysed in the context of other transition economies. We may identify four relevant groups of transition economies for this research: EU transition countries (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia, and Romania); EU candidates (Croatia and Macedonia), other Balkan countries (Albania, Bosnia, Serbia, and Montenegro); other transition economies (the rest of transition countries which are Non-Baltic former Soviet States).

The following are the key objectives of this research:

a) To investigate the effect of institutions on economic performance with particular reference to BH in the context of a transition economy
b) To analyze the influence of institutions on the EU integration process for transition economies and Bosnia and Herzegovina
c) To derive conclusions from the research and analyse their policy implications

The structure of this policy study is as follows. After this introductory part, **Section 2** will provide the reader with the main insights from economic theory about the way institutions may influence economic performance. Having in mind that this institutional approach is quite "new" in empirical research; we will discuss how the efficiency of institutions is measured as well as how to include institutional variables in empirical research. **Section 3** will start with a short analysis of institutions and economic performance in transition economies. The main aim of this section is to get some preliminary insights about the efficiency of institutions and their potential effects on transitional economies. Section 3.1 and Section 3.2 include empirical econometric analysis that should quantify relationships between institutions, economic performance, and EU integration. Econometric analysis will be based on dynamic panel regression analysis and panel Logit model and will cover the last ten years, dependent on available data. **Section 4** is focused on Bosnia and Herzegovina where we will analyse the macroeconomic performance of this country, its institutional framework and their potential impact on the economic development. We will use relevant institutional indices and results from a local survey to analyse the efficiency of particular institutions relevant for economic performance and the European integration. The following **Sections 5; 6; and 7;** include the conclusions and policy implications of the study; Literature; and Appendices respectively.

2. Institutions and economic performance - main insights

2.1. How institutions influence economic performance

In seeking to explain differences in economic performance, economists have focused primarily on differences in the quantity and quality of physical/human capital and technological change. However, experience from financial crises and transition periods at the end of last decade implied that the standard factors of production are not capable of delivering the desired living standard without efficient institutions (Eicher and Garcia-Penalosa, 2006). In order to assess this developing area of economic analysis we first need to answer the question "What is an institution(s)?". Nobel winning economist and representative of the New Institutional Economics, Douglas North (1990) explains that "Institutions are humanly devised constraints that shape human interaction". As such, they include formal constraints (rules, laws, and constitutions), informal constraints (like norms of behaviour, conventions) and enforcement characteristics. Interactions of formal and informal constraints and enforcement mechanisms define the incentive structure of a society. A second definition, which is very simple but quite often used by economists, is: "Institutions are rules of the game in a society" (North, 1990). According this definition, institutions provide "rules of the game" and as such they reduce uncertainty in human decision-making by providing a structure to everyday life. Consequently, any organized human activity is likely to benefit from a structure that will define the "way the game is played". Our further accompanying questions may be: who are "the players" of the game?; who is included in enforcement of institutions?; who takes actions?; who takes (dis)advantages of institutions?. "The players" are organizations (i.e. state, market, firms) and groups of people

bound by some common purpose in order to achieve certain objectives (North, 1990). While institutions create the framework, actions are taken by organizations (Brett, 1995). Organizations are the "interests groups" (Harris et al., 2000) that exist inside the institutional framework in order to take advantage of the framework provided by institutions (North, 1990). The foregoing discussion implies that institutions cannot exist in practice without "basic" (state) organizations and that they are interrelated to institutions (Furubotn and Richter, 2005). Such interconnecting relationship may be one of the key reasons that in everyday life, and even in academic writings, the term institutions is used to refer to organizations (especially state organizations together). In our analysis we will analyze the effects of formal institutions (state institutions and organizations) on economic performance in transition economies and BiH. Our preferred definition is that institutions are rules, organizations and enforcement characteristics (WB, 2002).

Institutions are important because they are costly in terms of money (payment like taxis) and some opportunity costs (e.g. costs of time, lack of efficiency of institutions, etc) for business sector as well as for the whole society. Those costs, know as "transaction costs", are costs of "running economic system" (Arrow, 1969) and they differ significantly between countries (we will provide some examples in the study). Consequently, institutions may be also defined as transaction-cost reducing ways of doing things that include the economic interactions of human beings (Harriss et al., 1995; Nelson, 2005). Transaction costs come into the "real" economic world because transaction costs use "real" resources and their value should be taken into account (Olson, 1996; North, 1990; Furobotn and Ricther, 2005). A "real life" illustration may be the following: in 2007 the cost of enforcing contracts in Bosnia and Herzegovina was 38.4% of income per capita while in the OECD countries the average cost was 17.7% of income per capita (IBRD/World Bank, 2007). Obviously, entrepreneurs in BiH in comparison to the average of OECD countries face proportionately higher transaction costs considering enforcing contracts and thus higher total costs of production. Or alternatively, the contracts are not enforced which reduces the efficiency of economic decision-making. As a consequence, even the same efficiency in production between BiH companies and OECD countries' companies may lead towards diverging economic performance, since BiH companies face higher transaction costs because of their costly and probably less efficient institutions.

Developing this analysis further, institutions are not static but dynamic; they evolve over time and one can identify many reasons for institutional change. For example: existing organizations influence institutional change; political forces are very often invoked in the dynamics of institutional processes; economic reality sometimes provokes changes; outsiders can promote institutional changes; sometimes almost the whole institutional environment is changed as in the case of transition economies during their evolution from central-planned systems towards market oriented economies; and, finally, revolutions or wars (i.e. "discontinuous institutional change", North, 1990, p. 89) may result in changes of institutional frameworks. In the recent past most of these factors have influenced the development of institutions in Bosnia and Herzegovina, the country that is the main focus of this research.

State institutions in practice can be ineffective if they are not enforced by government (Eggertson, 1996; Lane and Rohner, 2004). The problem of enforcement may be particularly relevant for transition countries that changed their formal institutions overnight. The efficient enforcement of such rapidly established institutional frameworks should not be assumed, especially because the efficiency of property rights and overall institutional effectiveness is largely de-

termined by their enforcement. Without proper enforcement mechanisms the link between institutions and the market is weak, transaction costs are higher and overall efficiency of that economy may be lower.

The previous discussion implies that institutions are important because they determine economic performance by imposing "rules of the game" and by reducing the transaction costs associated with economic decision-making in the economy. We have also seen that institutions are not static, they are dynamic but their evolution should be in the direction of lowering transaction costs. This is of particular importance for transition economies and Bosnia and Herzegovina, countries that have established new institutional framework almost overnight. As two Nobel Prize winning economists argue (Coase, 1992; North, 1995), institutional analysis is especially important for transition economies, which *per se* establishes the importance of this research.

2.2. How to measure the quality of institutions

When we think about institutions and their effects on the (national) economy and the process of European integration, the big methodological issue is how to quantify the quality/efficiency of institutions. Most research has been based on existing institutional development indices that measure structural reform and institutional efficiency. (Knack and Keefer, 1995; Hall and Jones, 1999; Sachs, 2001; Rodrik et al., 2002; Acemoglu et al., 2002; Assane and Grammy, 2003; Gwartney et al., 2004; Redek and Susjan, 2005; Eicher and Screiber, 2007). Using indices such as the EBRD transition index, the Freedom House index, the Heritage Foundation index, the Index of government and anti-diversion policy rates; authors analyse the quality of the institutional framework. Growth regressions that include such aggregated institutional variables suggest some important empirical regularity and usually explain a large fraction of economic growth (Shirley, 2003). Since, those indices are mainly constructed from components that measure particular institutional areas they also enable a more precise analysis of certain institutional features, like property rights, rule of low, level of corruption, efficiency of judiciary, etc. Considering research on transition economies, the majority of empirical research is based on the EBRD transition index (Havrylyshyn et al, 1998; Raiser et al, 2000; Havrylyshyn et al, 2000; Sachs, 2001; Eicher and Schreiber, 2007). Our main focus on institutional efficiency and consequent effects on economic performance for transition economies will be analysed using the EBRD index. We will follow common practice in above mentioned research and construct institutional proxy from EBRD index using its (eight) "institutional" components, the same as in Eicher and Schreiber, 2007 (very similar approach, only with less components, is in Havrylyshyn et al., 1997; Havrylyshyn et al., 2000; Raiser et al., 2000; Sachs, 2001). However, in order to more deeply analyse some institutional features especially for BiH, we will additionally investigate the Heritage Foundation and the Nation in Transition institutional indices as well as Government indicators. The structure of these indices is presented in the Appendix 1.

The second approach in measuring institutions that we have identified is that some authors (Brunetti et al., 1997) use existing surveys and questionnaires (e.g. The World Bank and EBRD Business Environment and Enterprise Performance Survey) and construct their own indices for institutions using relevant questions. Such specific oriented questionnaire enables researchers to apply deeper analysis of institutional characteristics for the particular case or country, based on local knowledge, historical, cultural and other background. Our analysis of institutions in BiH will include relevant questions from the EWS UNPD survey (2007) in order to provide more insights about the particular efficiency of institutions relevant for economic performance in this country.

3. Institutions and economic performance in transition economies

3.1. Economic performance and institutions in transition economies - an overview

The process of transformation from central-planned to market economies among TCs started almost two decade ago. In spite of the starting reforms being quite similar in all these countries, there have been a wide range of degrees of success in their progress towards self-sustainable market economies. Hence, there are disparities in economic development and, additionally, differences in their integration progress towards the EU. Most transition research offers explanations for such differences in terms of three explanatory factors: the degree and speed of macroeconomic stabilisation achieved; initial conditions; and structural reforms. Recently, however, a fourth factor has received attention: the quality of institutions (Havrylyshyn, 2000).

When the process of transition began many institutions "collapsed". The development of institutions that support market and private enterprises in the later phase has influenced the overall economic performance of TCs. Consequently, it was "extremely demanding" for transition economies to establish capitalist institutions overnight on the "ruins of socialist institutions" that could not be used as a building block for the new capitalist system. What was happening in the practice was that by building a capitalist system those countries were also building a new institutional framework (Redek and Susjan, 2005).

There are a few empirical studies that analyse the link between institutions and economic performance in transition economies. Institutions were the main focus of research by Brunetti et al. (1997). Their findings suggest that institutional framework is an important determinant in explaining the different level of economic output among transition countries as well as their different success in attracting foreign investments. Assane and Grammy (2003) find that the quality of institutions is a very important determinant of economic growth among transition countries. Their model suggests that "good" institutions help countries to grow faster. Chousa et al. (2005) analyse the influence of institutions in transition countries on economic performances as well as "attractiveness" of a country for EU integration. Their research confirmed a hypothesis that democratic institutions and rule of law create incentive systems for economic growth in transition countries. In addition, they analyse the "aggregate attractiveness" of transition countries in the process of EU integration. They found a statistically significant relationship (model explains 73 % of variations) between the efficiency of institutions and success in the process of EU integration. Redek and Susjan (2005) found that the quality of institutions and the speed of reform is an important factor that can explain differences in the outcomes in transition countries. Finally, Eicher and Schreiber (2007) found evidence that institutions in transition countries significantly influence economic growth. However, it is worth to mentioning that only the last research includes BiH in its sample, but it does not provide any explanation for this country. Hence, the quality of the institutional framework and its impact on economic development and integration process should be investigated for BiH as well.

The first step in our analysis is to summarise the (macro)economic performances of those countries after almost two decade of transition. Since some transition countries have gained full membership of the EU we will analyse transition countries as whole sample, but also subsamples of EU transition, Balkan transition and Non-Balkan transition economies.

Table 1:
Average GDP per capita in transition countries 1992-2006

GDP pc	Observation	Mean	Standard deviation	Minimum	Maximum
ALL TRANSITION	414	2,640.9	2,971.4	51.6	18,582.3
EU TRANSITION	148	4,992.4	3,544.9	520.1	18,582.3
BALKAN	74	2,533.9	1,804.4	189.1	9,582.0
OTHER TRAN.	192	869.4	854.9	51.5	5,312.0
BiH	11	1,730.8	712.4	818.7	2,991.0
Source: EBRD, 2007 and calculations of author					

Table 1 indicates high variations between transition economies in the level of GDP per capita, hence in the standard of living. While the average value of GDP per capita in nine EU transition economies is around $5,000$ with maximum of above 18,000$, in Balkan group of countries average is 3,500$ with maximum around 5,300$. The situation is even worse for countries in the other transition economies group (i.e. Non-Balkan transition economies). The average value of GDP per capita in BiH is 1,730$ with the maximum value in 2006 of around 3,000$. With such value of GDP per capita, BiH has a GDP per capita a third of the average of EU transition countries; it is even below the average of Balkan countries. In other words, its macroeconomic performance represented by the value of GDP per capita is far from satisfactory level and growth.

Since we are primarily interested in how the institutional framework of transition economies, and Bosnia and Herzegovina in particular, influence their economic performance, we will continue our investigation looking on correlations between those variables. Simple correlation matrix between chosen institutional indices (that are proxy for the quality of institutions in transition economies) and our measure of macroeconomic performance indicates strong link between referenced variables.

(178 observations)	**GDP per capita**
EBRD index	0.6592
HF index	0.5424
NIT index	-0.7275
Source: EBRD, 2007; the Heritage Foundation and the Wall Street Journal, 2007; the Fraser Institute, 2007; and calculations of author	

Table 2:
Correlation between institutional indices and GDP per capita in transition

Correlation coefficients vary between institutional indices in the range from 0.54 till the 0.72, indicating quite high relationship between GDP per capita and our institutional indices. However, the highest correlation is between the Nation in transition index (0.77), and it is negative (because lower index means better institutions). The EBRD index indicates also quite high correlation and the value of this index is 0.66. The third index, the Heritage foundation index, has the value of correlation coefficient of 0.54.

After seeing that there is correlation on average between GDP per capita and institutional indices in transition economies, the further step is to see what the correlation between different countries is. Our results indicate that in some cases the correlation between GDP per capita and indices that are proxy for efficiency of institutions in particular countries are very high (Full list of countries with correlation coefficients available in Appendix 2).

	ALBANIA	**BIH**	**CROATIA**	**MACEDONIA**
INSTITUTIONAL INDICES	**GDP per capita**	**GDP per capita**	**GDP per capita**	**GDP per capita**
EBRD index	0.7137	0.9503	0.9873	0.9592
HF index	0.9023	0.9030	0.5512	0.7681
NIT index	-0.9753	-0.9597	-0.3475	-0.9906
Source: EBRD, 2007; the Heritage Foundation and the Wall Street Journal, 2007; the Fraser Institute, 2007; and calculations of author				

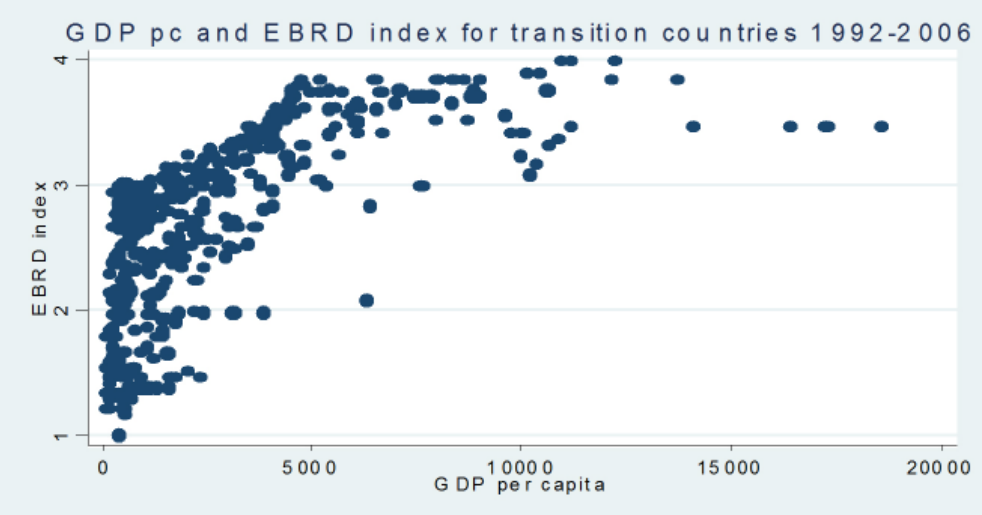
Table 3:
Correlation between institutional indices and GDP per capita for Albania, BiH, Croatia and Macedonia

Surprisingly, BiH has almost the highest level of correlation between our measure of economic performance and institutional quality among all transition economies. The correlation is more than 0.90 for all three indices, indicating strong relationships among those variables. Apart BiH, other countries from the region like Croatia and Macedonia (EU candidate countries), and

Albania (SAP country), have in almost all cases very high level of correlation coefficients as well. In other words, it is possible that institutions are an important determinant for economic performance (i.e. the level of GDP per capita) for those economies.

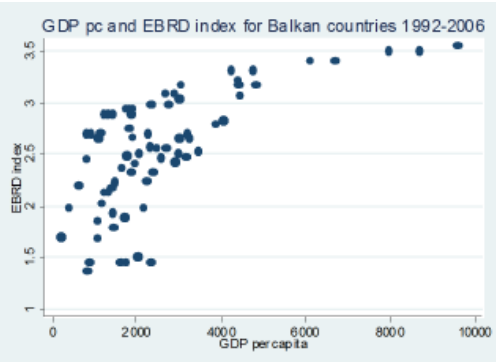
After seeing that correlation between institutional proxies and GDP per capita exist, we go further and plot GDP per capita of transition economies for the whole period and EBRD institutional index of those countries for the whole period. The Graph 1 suggests that, on average, the higher is institutional index, the higher is GDP per capita of those countries. The situation is quite the same for other two institutional indices that we are looking at (Appendix 3).

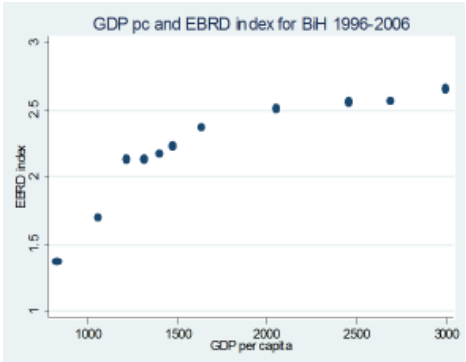
Graph 1:
GDP per capita and EBRD index for transition economies, 1992-2006



If we plot the same variables for Balkan countries and BiH, results are again quite similar indicating robust relationship between all three samples. In other words, higher is the value of institutional index, the higher is the value of GDP per capita.

Graphs 2:
GDP per capita and EBRD index for Balkan countries and BiH, 1992-2006





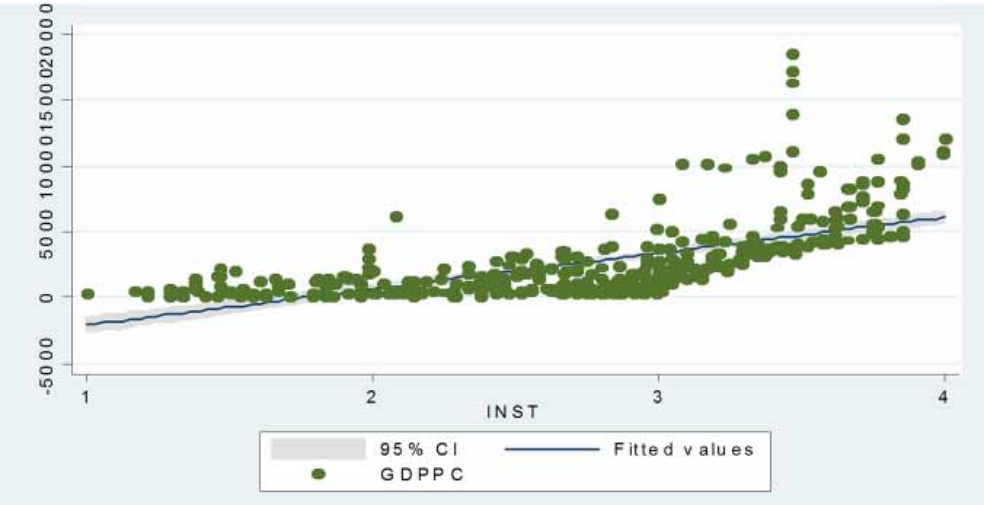
In our preliminary analysis of the link between institutional quality and macroeconomic performance in transition economies we have found indications of quite strong relationships between variables of interest. Apparently, in our modelling strategy we will try to quantify those relationships for transition economies, and find how robust is this link.

3.2. Empirical analysis - institutions and economic performance in transition

To begin our econometric investigation of the relationship between institutions and economic performance, we estimate a simple bi-variate regression of GDP per capita of transition countries on institutional indices. This is not a fully specified model, but will be useful for gaining some preliminary indication as to whether institutions matter in explaining economic perfor-

mance in transition economies. We will report here the regression with the largest number of observations, which is the one with the EBRD institutional index as the independent variable. The other two regressions with, respectively, the HF and NIT indices as the independent variables, are available in Appendix 4.

The following graph provides a visual illustration of the estimated regression. It shows that higher levels of economic performance are associated with better quality institutions.



Graph 3:
Regression line for transition countries (EBRD index)

As we may see from the regression results (Appendix 4.1), our variable of interest is statistically significant at the highest conventional levels. The result suggests that institutions, proxied by the EBRD institutional index, do influence economic performance. We do not to fully interpret the model, because it aims only to provide some indication of the results that may be obtained from a fully specified model. However, we can gain some implications of the quantitative significance of this initial or baseline regression. This is a Lin-Log model (i.e., one with a linear dependent variable and an independent variable in logarithmic form), which is interpreted as follows: a percentage change in the index causes a change of β_1 units in GDP per capita (where β_1 is the estimated coefficient on the index). The coefficient is multiplied by 0.01 to obtain the absolute change in GDP per capita caused by a one percent change in the index. Hence, a one percent (0.01) improvement in the index causes an absolute change in per capita GDP of 0.01*(3755.71) = $37.56. We reiterate that these preliminary results should not be taken as anything more than indicative. However, the above estimate does suggest that an improvement of, say, 10 percent in institutional quality – as proxied by the EBRD institutional index – may be associated with improved per capita GDP of around $400.

We now move towards a more developed model that takes account of other influences on economic performance as well as recent advances in the practice of applied economics. We begin with a model replicated from Redek and Susjan (2005), which investigates transition economies and estimates a static panel model. Their research covered the period 1995-2002, while our estimate will be for the period 1992-2006. To measure the quality of institutions the authors used the Heritage foundation index, although this is not a common choice in transitional research. Following the mainstream of the empirical research for transition economies, our proxy variable for institutions will be based on the "institutional" components of the EBRD index. Moreover, Redek and Susjan (2005) did not have in their sample some transition economies, including BiH. Our research will cover BiH in the sample since we have enough data for the estimation.

The regression function to be estimated from Redek and Susjan (2005) is:

$$GDPpc_{it} = \alpha_{it} + \beta \cdot INST_{it} + \chi \cdot INST_{it-1} + \delta \cdot INVESTM_{it} + BUDGET_{it} + INFL_{it} + FDI_{it} + \varepsilon_{it} \qquad (3.1)$$

This regression is a static panel model in which the dependent variable is GDP per capita; α_{it} is the intercept; *INST* is our proxy for institutions, including institutions in the current period ($INST_{it}$) and institutions in the lagged period ($INST_{it-1}$) -one year lag). The variable *INVESTM* denotes domestic investments as a percentage of GDP; *BUDGET* is the budget deficit in percentages of GDP; *INFL* represents the inflation rate; FDI denotes inward *FDI* as a percentage of GDP; and ε_{it} is the error term. Index "$_{it}$" represents country "$_{i}$" at time "$_{t}$". The results of replicating the static panel estimates of Redek and Susjan (2005) are available in Appendix 5. These results suggest that higher quality of institutions is associated with better economic performance. However, we do not conclude with this replication, because the model of Redek and Susjan (2005) can be developed and improved. Doing so provides a check on the robustness of the link between institutional quality and economic performance; it will also provide more accurate estimation of such effects. We develop Redek and Susjan (2005) in the following ways.

1. Instead of using the current and lagged values of the measure of institutions, we use the change in institutional quality over a five-year period. We make this change to allow for institutional influences on economic performance to take place gradually, over time. Similar approach to estimating the influence of institutions is used by Gwartney et al. (2004).
2. Our major innovation is to estimate the effect of changing institutional quality on economic performance within a dynamic rather than a static framework. This means that we allow current economic performance to be influenced by past economic performance, which is a well known feature of growth processes. Although the primary objective of this analysis is not to investigate persistence effects in economic growth, we have to take these into account if we are to estimate accurately the effects of any other influence(s) on economic performance (Bond, 2002a, p.1; Greene, 2008, p.469). Consistent with this understanding, we discovered from standard statistical diagnostic tests that the model replicated from Redek and Susjan (2005) is probably misspecified because of omitted dynamics. Accordingly, we specify a dynamic model - i.e., one that allows current economic performance to be influenced by past economic performance - and use an appropriate estimation procedure (see Appendix 6.1 for supporting references).
3. Our model covers a longer period of time and more transition economies in the sample. The results were obtained from the system GMM dynamic panel estimator developed by Arellano and Bover (1995) and Blundell and Bond (1998) and implemented by *xtabond2* in STATA 9.2 (Roodman, 2006).

As we may see from our dynamic panel estimates (Appendix 2), our variable of interest (INST5) is a statistically significant and economically substantial influence on economic performance. Institutions, proxied by the EBRD institutional index, do influence economic performance. This dynamic panel is a Log-Lin model (i.e., one with a dependent variable in logarithmic form and linear independent variable). In this model, the coefficient on institutions is multiplied by 100 to obtain the growth rate of GDP per capita caused by a one unit change in the index. Hence, a one unit (1.0) improvement in the institutional index over a period of five years causes GDP to increase by (0.2579*100) = 25.8%. Since a one unit increase of the institutional index is 25% on its scale (i.e., the scale is from 1 to 4), it indicates that each percentage point increase in the quality of institutions is associated with a one percentage point increase of the level of GDP per capita.

Since the other variables in the model are not our primary interest we will just briefly explain that the level of GDP per capita from the previous year has a positive effect on the GDP per capita in the current period. Also, a higher budget deficit from the previous period is associated with higher GDP per capita growth in the current period. In our estimated model, foreign direct investment inflow as a percentage of GDP, inflation proxied by consumer price index, and domestic investments proxied by gross fixed capital accumulation are not significant influences on economic performance.

Although we have adopted a critical approach to the pioneering paper by Redek and Susjan (2005), we conclude this section by noting that our results are qualitatively consistent with their findings. Most important, improvements in institutional quality promote economic performance. In addition, our findings on the non-significance of budget balance, inflation and inward FDI are similar to those of Redek and Susjan (2005) (the finding on FDI is also supported by Carkovic and Levine, 2002).

3.3. Institutions and EU integration in transition

Since many transition countries consider EU membership as the last stage of the transition process (Mrak, 2000) in this section we will try to estimate whether institutions were/are important determinants of the EU integration process. There have been two recent EU enlargements (2004 and 2007) in which ten transition countries became full members. Whether institutions were important determinants in getting membership will be analysed using panel Logit model (our diagnostics implied that cross-section estimates may be misspecified). Logit is an econometric model that is appropriate in the analysis of binary dependent variables that can take only two values, zero or one (in our case EU=1 versus non-member countries=0). The output of Logit model may help to identify the influence of the quality of institutions and other explanatory variables on the probability of becoming a member of the EU.

In our model the dependent variable will be a dummy variable, EU, which is established as 1 for EU transition economies and 0 for non-EU transition economies. A set of independent variables will be used in the model including institutions and indicators that are proxies for the economic criteria for EU/EMU membership. Since these nominal economic criteria are related to the level of inflation; budget deficit; public debt; and interest rate; relevant indicators for those variables will be included in the model. Real convergence is related to the standard of living, and our proxy will be GDP per capita. Hence, our model will have the following specification:

$$EU_{it} = \alpha_{it} + \beta \cdot INST_{it} + \delta \cdot GDPPC_{it} + INFLAT_{it} + BUDGET_{it} + INTEREST_{it} + EXTDEBT_{it} + \varepsilon_{it} \quad (3.2)$$

In the model, variable *INST* represents institutions[1]; *GDPPC* is GDP per capita level; *INFLAT* denotes the percentage of inflation using GDP deflator as proxy; *BUDGET* denotes budget deficit as a percentage of GDP; *INTEREST* denotes the nominal lending interest rate; and *EXTDEBT* denotes external debt as percentage of GDP. ε_{it} is the error term while index "$_i$" represents country at time "$_t$". The model is estimated for the period 2000-2006.

[1] It is the same EBRD institutional index used in the previous model, i.e. dynamic Panel model

In the previous panel analysis we found that a potential problem of endogeneity between institutions and GDP per capita may exist. Since we have used institutions with five year difference in the model, we will follow the practice and estimate Logit with the same measure of institutional change. By using a differenced institutional variable we should minimize the problem of endogeneity. The results of the panel Logit model estimates are presented in Appendix 7.1.

Our variable of interest, the institutional variable, is highly significant, it has the expected sign. A preliminary interpretation is that institutions seem important for getting EU membership, which as expected. Other coefficients have expected sign but not that on inflation. According to these results, higher inflation does not seem as disadvantage in getting the EU membership, but the significance of this variable is very low as well as magnitude of the coefficient that is close to zero. However, results indicate that the highest probability in getting membership was related to (better) institutions and (higher) level of GDP per capita (note that GDP per capita is in thousands $).

The estimated model may be now used to calculate the probability of becoming a member of the EU for every particular country, which is our main interest. If we use mean values of independent variables in the regression, for example for Bosnia and Herzegovina, we may get the probability of this country becoming an EU member given its characteristics represented by our independent variables. Hence, we will calculate those probabilities for BiH, for candidate countries (Croatia and Macedonia), and for SAP[2] country - Albania. Mean values of independent variables for every particular country are available in the Appendix 7.2 as well as table with calculated probabilities for particular countries.

[2] Data for the remaining two SAP countries - Serbia and Montenegro are limited

According obtained results, Croatia as candidate country is almost at the position which has led to EU membership. However, another candidate country, Macedonia, is far below that level and its probability of becoming a member of the EU is around 30%, Albania is similar as expected.

Bosnia and Herzegovina has a probability of around 1% of becoming an EU member given its characteristics regarding institutional quality, the level of GDP per capita, the level of inflation, budget deficit, external debt, and interest rate. Such a low probability, unfortunately, is not too much surprising. Looking at particular variables in the model for BiH we may see that the biggest problems, according to this model, are related to the low level of its institutional index and low level of GDP per capita. Since we may predict how GDP per capita in BiH will change over next decade (the last ten years GDP growth was around 5%), we may make scenarios how BiH's probability of becoming an EU member will change with changes in institutions and GDP per capita. We assume that other variables will remain the same; moreover their impact on the overall probability is quite low and slight changes will not affect the probability significantly.

We will analyse three scenarios for the period 2006-2015. In the first scenario, GDP per capita will continue to grow at the level of 6% per year till 2015, while institutions will remain the same, as well as other variables. In this scenario, the probability for BiH may achieve EU membership is slightly higher, but around 1% again. However, if the quality of institutions in BiH increases for 2% every year, in 2015 BiH will get almost the same probability as today's candidate country Macedonia; hence it will be around 30%. It is worth mentioning that last the three years average improvement of institutions in BiH measured by the EBRD institutional index was 1.9%. However, if the quality of institutions in BiH grows 5% per annum, on average, than BiH will have probability as Croatia today, and it may be around 98% (Appendix 8).

The foregoing tentative analysis suggests the importance of increasing the quality of BiH institutions in progressing EU membership. Since the quality of institutions in BiH do not increase by 5% per year, then membership in the medium-run is unlikely. European future of BiH is also determined with efficiency of its institutions, and if some positive changes do not happen in that respect, BiH will continue to lack behind other countries in the Region.

Finally, as part of the robustness checking we have estimated a model with the current level of institutions in combination with other independent variables (Appendix 9), but the results were still similar regarding the sign and significance of our variable of interest. Since institutions are likely to be endogenous variable in such specification inclusion of institutions in the model with lag of more years should minimize endogeneity. Moreover, all transition countries are not in the same position regarding the EU integration since some transition countries are more "eligible" to become members of the EU (i.e. EU candidates and SAP countries) than others. We have estimated the model with those "eligible" countries and with more years of difference of institutions, also controlling the year of accession[3] but results on institutions still remain quite consistent (Appendix 10). However, we consider this model as initial in analysing the importance of institutions for the process of EU integration. A more clearer theoretical framework is needed incorporating aspects like political factors, financial support of the EU for institutional development of candidate countries, etc. as well as better controls for endogeneity[4].

[3] Since ten transition countries became member of the EU in 2004, we do not take into account later data in the modelling for the members because those countries are already in the EU.

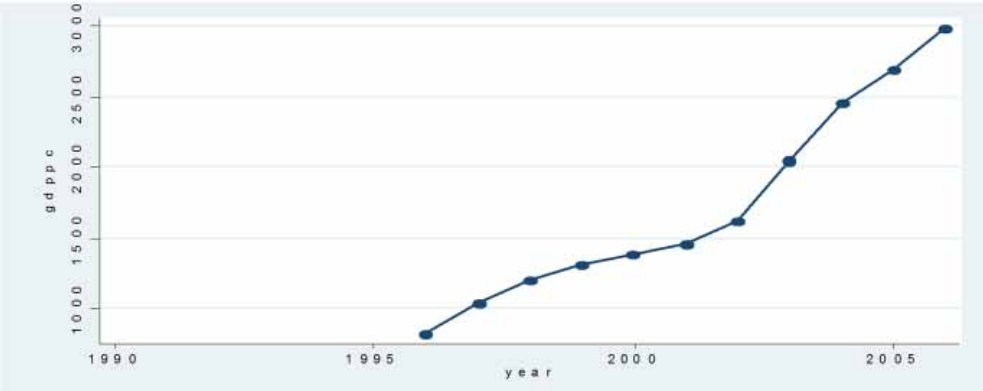
[4] In other words, more research needs to be done and the results in this section should be interpreted with extreme caution. In that respect, any comments are welcomed.

4. Institutions and economic performance in BiH

4.1. Macroeconomic performance in Bosnia and Herzegovina

After general investigation of the topic on transition economies some more details about BH economy and institutional framework will be presented in this section. First of all, some basic insights about the current macroeconomic performance of BiH will be useful. We will start with reporting GDP per capita for the whole transition period since that is our main measure of macroeconomic performance.

Graph 4:
GDP per capita in BiH, 1996-2006



As Graph 4 illustrates, BiH GDP per capita has started to rise from the level of around 700$ in 1996 to the level of almost 3,000$ in 2006. In spite of the fact that this represents huge increase in the period of 11 years, one may not be satisfied whit such growth having in mind that BiH still did not reach the level of pre-war GDP. In other words, BiH as transition country still did not overcame the level of GDP per capita that had before transition reforms. This is especially worrying if one has in mind that according some research (UNDP, EWS Quarterly Report Q4, 2007) more than 50% of companies do not use installed capacities and that around 45% of labour force is officially unemployed. Consequently, BiH real GDP may be far bellow the level of potential GDP that may be reached with fully utilised capacities.

Since BiH has as its strategic goal integration into the EU, it is interesting to see BiH economic position relative to those countries. The following table provides key macroeconomic indicators for BiH in comparison to EU candidate countries (Croatia and Macedonia) and average of EU (27) members.

Table 4:
Main macroeconomic indicators for BiH, EU, and EU candidate countries in 2006

OFFICIAL INDICATORS (2006)	Average Candidate	Average EU 27	BH
Real GDP growth rate, % change	4.0	3.0	6.2
GDP per capita, EU 27 index 100	39.6	100.0	18.0
Unemployment rate, % of labour force	26.3	7.9	45.0
Inflation rate (CPI), annual average	3.2	2.2	7.4
General government budget balance, % of GDP	1.9	- 1.6	2.6
Current account balance, % of GDP	- 4.1	* - 0.6	- 11.4
General government debt, % of GDP in 2005	62.7	57.1	-

Sources: EUROSTAT, October 2007; EBRD, 2007; Official data of National banks of: BiH, Croatia and Macedonia, October, 2007; * Current Account balance of EU 25 in 2005.

Real GDP growth in Bosnia and Herzegovina is higher compare to the EU and candidate countries, but if we have in mind that the level of GDP per capita is only about 18% of the average level of EU 27 and around 70% of pre-war level, this is not encouraging growth.

Even if we compare the GDP per capita of BH with that of candidate countries, BH is still far behind having less than 50% GDP per capita of that of candidate countries. Official unemployment in BH on the level around 45% is much higher compare to candidate countries and the EU 27 average; indeed, it is questionable to compare this indicator with EU and candidate countries. The increasing trend in unemployment over last few years puts BH at bottom place in the list of transition countries. While inflation during recent years has been very low, in 2006 inflation in BH was higher compare to candidate countries and the EU average. However, it is important to mention that the structural break in fiscal policy (because of the introduction of the value added tax) caused the increase. We expect that monetary stability (i.e. stable prices) will be re-established after the process of adjustment to the higher rate of indirect taxation. In spite of the fact that BH is known as the country with a lot of levels of governments and huge public spending, the general government budget balance was in surplus in 2006. However, this aspect of our comparison does not seem problematic. And finally, current account balance in BH, and generally the external sector, is a problematic part of BiH macroeconomy. The deficit in current account is much higher, not only compared to the EU but also to the candidate countries as well. Huge external imbalance in BH has been a constant problem during recent years and much should be done in order to improve the external position of this country.

To sum up, BiH has the biggest problems in real economy (i.e. production; unemployment; external sector), while nominal economic indicators (primarily inflation and budget deficits) are quite satisfactory. Since integration of a country into the EU assumes achieved real convergence as well (satisfactory real economy indicators) this is not promising for BiH position in the EU integration processes.

4.2. Empirical analysis of institutions in BiH

BH is a country that has less than four million people but 14 governments (national level, two entities, ten counties and one district plus 142 municipalities). Visual illustration of BiH state structure may be presented as on the Figure 1.

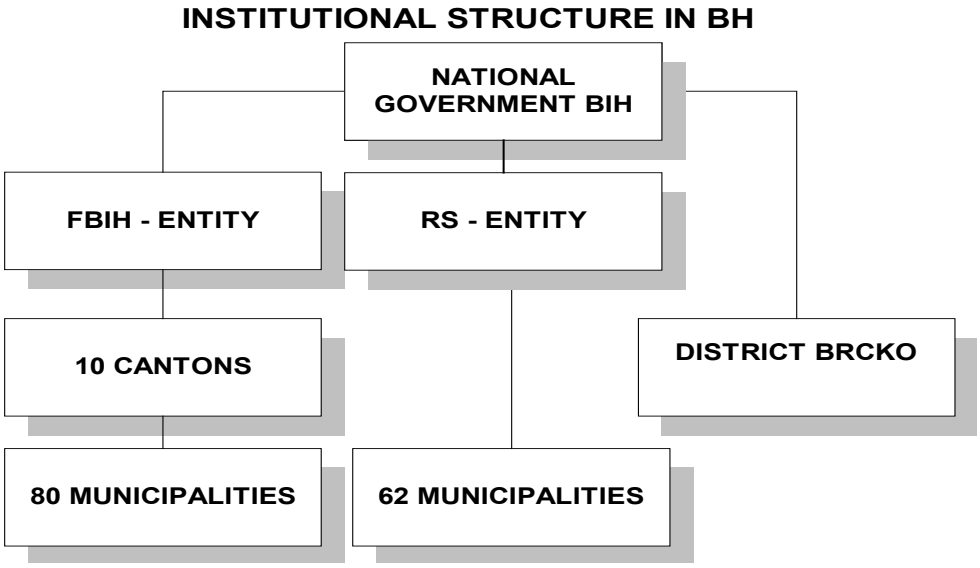
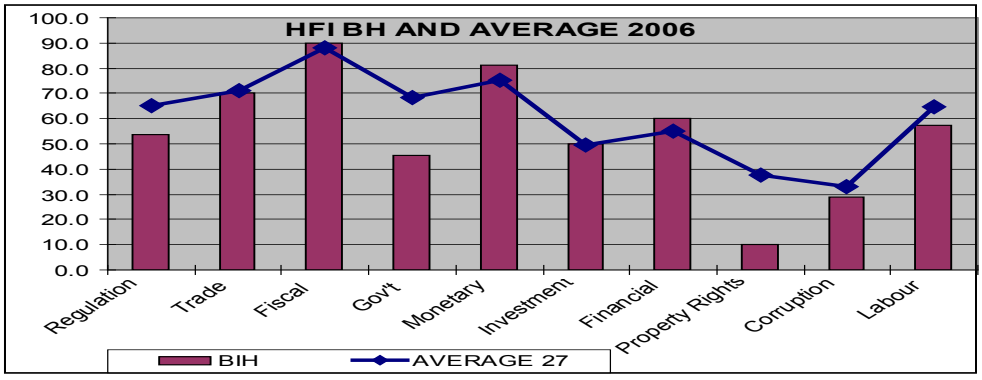


Figure 1:
Institutional framework in BiH

After only a quick look at the BH institutional framework, it seems clear that the current institutional structure in BH is very complex; it is costly, creates many overlapping authorities and even after more than one decade after initial establishment suffers from lack of harmonisation. Consequently, entrepreneurs face higher transaction costs in terms of the time and money they must spend inside the current institutional arrangements of BH. Apparently, it is not surprising that according to some surveys (ex. Early Warning System BH, UNDP; April, 2007) the biggest obstacles to economic development that entrepreneurs identify are institutionally rooted, like: unfair competition; grey economy; corruption; and low efficiency of the judiciary. The existing institutional framework of BH creates a complex maze of structures that may be an obstacle to economic development and success in its EU integration process. The complexity of BH's institutional framework has been recently recognized as a political problem, but the economic consequences of such a structure have yet to be seriously analyzed, which is the main challenge of this research.

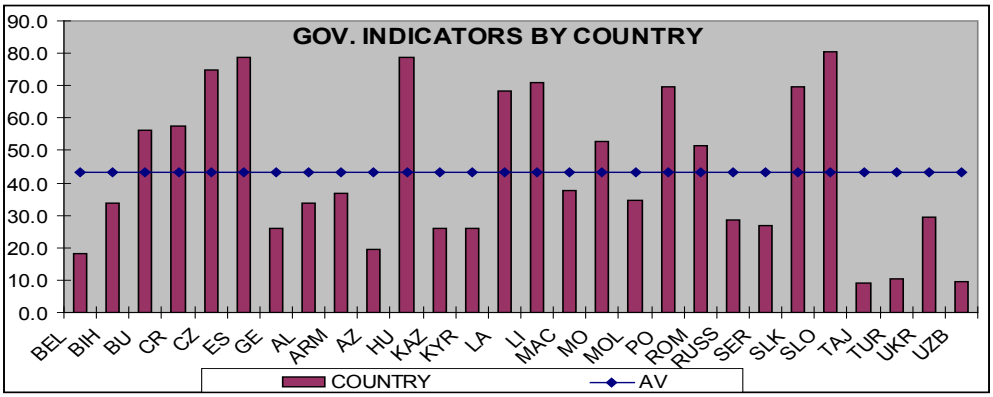
We have seen in the previous section, that there is strong correlation between macroeconomic performance and institutional quality in BiH. Some more details will be useful. We will look at some of the components of institutional indices for BiH in order to identify particular institutional areas where the biggest problems exist. Starting from the Heritage foundation index, we may see that BiH is lagging behind the average of transition countries in the key institutional areas.

Graph 5:
The Heritage foundation index for BiH and transition economies in 2006



From the Graph above, it is possible to identify where the largest gap exists. Those are mainly the field of regulation; government; and property rights; all components of particular importance for an efficient institutional framework. Property rights institutions are especially marked low. According to institutional economics, legally guaranteed property rights are "vital" in reducing transaction costs in an economy (Stein, 1995; Beck and Laeven, 2005); hence property rights are a "crucial" determinant of economic performance (North, 1995). Apparently, the relatively low level of property rights efficiency in BiH may have negative consequences for domestic economy. We may conclude the same for regulation and government, since institutions may not have the desired effects on the economic system if they are not properly enforced by government. In other words, enforcement of institutions is of particular importance and it proceeds first from government and then into the market (Eggertson, 1996). Accordingly, the relatively low level of efficiency of government and regulation in Bosnia and Herzegovina again may have negative consequences for the economy as well as on its European integration process. Other institutional areas are quite close to the transitional average.

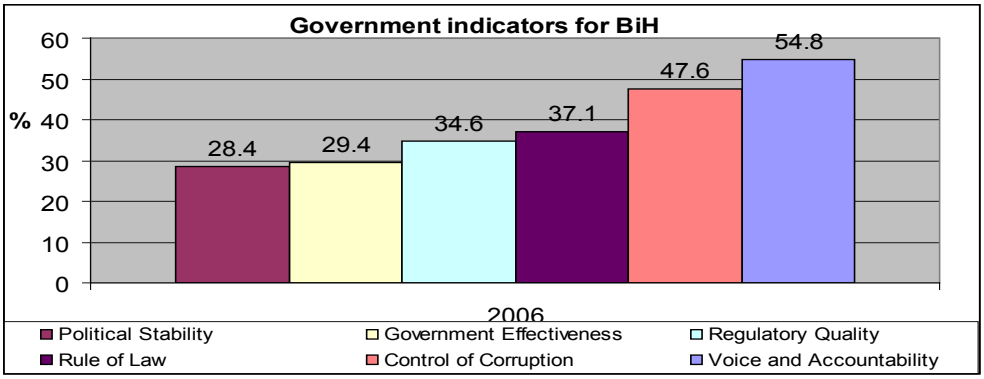
Since regulation and government has been already identified as problematic for BiH, more insights may be provided by using Governance indicators.



Graph 6:
The Governance indicators for transition countries in 2006

Looking at the Governance indicators that directly measure the institutional efficiency of six institutional fields related to Governance, we may see that BiH is again below the transition average in 2006. It is also indicative for our investigation that the highest levels of Governance indicators are recorded for transition countries that are member of the EU (except in the case of Poland, Bulgaria and Romania). Also, the candidate countries for the EU have relatively efficient government institutions, namely Croatia and Macedonia.

Looking at components of Governance indicators, BiH has the lowest efficiency for indicators that represent Political stability; Government effectiveness; Regulation quality; and Rule of law. The value of those indices is in percentile ranks from 0 to 100, where 100 mean the highest quality. Visual illustration of the value of those indices is provided on the Graph 7.

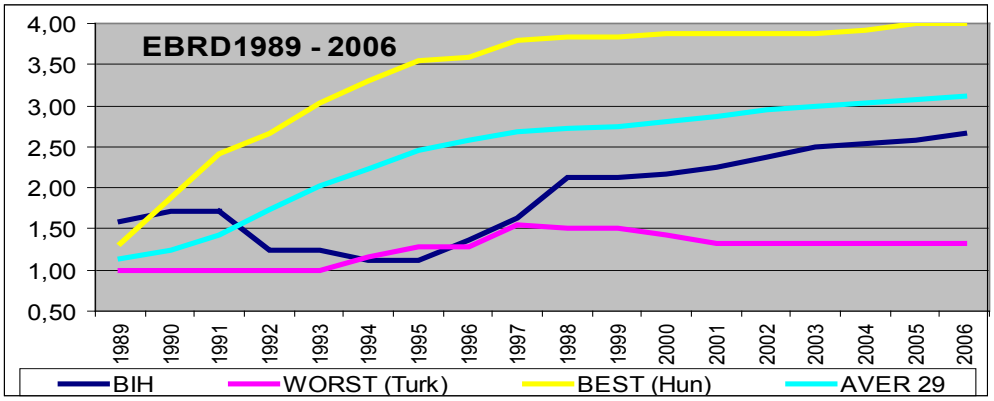


Graph 7:
Government sub-indices for Bosnia and Herzegovina, 2006

According results presented on the Graph 7, Political stability has the lowest value indicating the high likelihood of BH government in being destabilized. Moreover, the Government efficiency takes the "second" low place indicating the low quality of public services, quality of policy formulation, and implementation. Thirdly, Regulatory policy is also marked very low suggesting the "inability" of government to formulate and implement sound policies and regulations that support private sector development. Apart from the problem of political instability, government efficiency and enforcement of institutions by government, the rule of law is another "crucial" determinant of the institutional framework.

Finally, EBRD transition indicators that compose our institutional index in BiH are also not satisfactory. The following Graph 8 illustrates the position of BiH in comparison to the transition average, the best (Hungary) and the worst (Turkmenistan) country in the sample.

Graph 8:
The EBRD index for BiH and transition economies, 1989-2006



Bosnia and Herzegovina, according to the EBRD institutional index, is still below the transition average. This indicator has especially dropped over the war period, which is not surprising. But the later trend, apart from a huge post-war increase, may also not be satisfactory. More precisely, the BiH average of this index is around 50% of the benchmark level that means a fully established market economy.

Table 5:
Enforcing Contracts in BiH 2003-2007

Finally, desirable efficiency of institutions largely depends on proper enforcement of institutions. An another illustration of the efficiency of institutions considering enforcement contracts in BiH can be obtained using the World Bank *Doing Business* data base.

Indicator	BIH 2003	BIH 2004	BIH 2005	BIH 2006	BIH 2007	Region 2007	OECD 2007
Procedures (number)	31	36	36	36	38	35.9	31.3
Time (days)	630	330	330	595	595	443	443
Cost (% of: claim 2007, 2006; debt 2005, 2004; income per capita 2003)	51.8	19.6	19.6	19.6	38.4	22.7	17.7

Sources: Doing Business 2004; 2005; 2006; 2007; 2008, EBRD/World Bank.

Table 5 illustrates that enforcement of contracts in BiH requires more procedures, time and costs than in other countries from the South-East European Region and OECD countries. For example, it is more than twice as costly to enforce contracts in BiH as it is in the OECD countries, on average. Even worse, it takes almost 15 times more to enforce contract in BiH compare to the Region, and substantially more compare to the OECD economies. This suggests that the BiH companies face more difficulties regarding proper enforcements compared to OECD countries and even countries from the same region. If enforcement of institutions is not well established, the consequent effect on economic performance may be adverse. Apparently, the efficiency of BiH institutions is questionable, with a lack of enforcement, even if the established formal institutions are similar to those in developed economies.

We have already seen that institutions are important determinant of economic performance in transition economies, hence in Bosnia and Herzegovina as well. Moreover, institutions are highly correlated with the level of GDP per capita in Bosnia and Herzegovina. The further question that one may ask is: can we mark the efficiency of institutions "relevant" for economic growth in BiH. Rodrik (1999), for example, identifies following institutions "relevant for high economic growth": property rights institutions; regulatory institutions; institutions for macroeconomic stabilisation; institutions for conflict management; institutions for social insurance. However, Rodrik suggests that local knowledge is also important about those institutions, hence the list of institutions that

"matter" for economic success of a country. Following the Rodrik's institutions that "matter" for high economic growth, the list of some relevant institutions and their efficiency marked by the business sector in BiH is available from EWS UNDP survey - Top 150 companies. We will present the data for 2007 obtained through three views (April; September; and December 2007).

Table 6:
Efficiency of "relevant" institutions in BiH

Can you estimate how the following institutions do their job?															
	Very good			**Slightly good**			**Slightly bad**			**Very bad**			**NA**		
	IV' 07	**IX**	**XII**	**IV' 07**	**IX**	**XII**	**IV' 07**	**IX**	**XII**	**IV' 07**	**IX**	**XII**	**IV' 07**	**IX**	**XII**
Central bank BH	34	45	34	34	37	43	3	3	3	3	0	1	24	14	19
Indirect taxation authority BH	23	28	18	54	49	48	10	8	16	5	5	8	8	10	10
The tax administration	14	20	10	49	47	39	16	13	22	7	7	15	14	13	14
Judiciary system BH	5	7	3	37	29	19	13	22	23	34	33	46	11	9	10
Directorate for European integration	3	5	4	33	28	23	8	9	15	8	9	13	47	49	46
Foreign investments promotion agency	2	7	3	31	20	20	8	11	19	18	18	19	40	43	39
Agency for privatization	7	8	4	29	24	20	14	21	24	23	22	28	28	26	24
Banking agency	10	13	13	41	39	43	7	7	8	6	7	10	36	34	27
Employment service	2	11	8	43	30	23	15	14	27	14	20	19	26	26	24
Foreign trade chamber BH	2	14	4	44	37	34	13	13	16	10	14	22	31	22	24
Chamber of economy	5	13	3	46	35	38	17	18	16	10	12	22	22	22	22
Social security funds	2	7	1	26	16	8	11	7	8	8	19	20	52	51	63
Source: Early Warning System, Quarterly reports I-II, III, and IV, 2007, UNDP BiH															

The results from the Table 6 suggest that the highest level of efficiency in BiH were marked for macroeconomic stabilisation institutions (i.e. Central bank BiH and fiscal authorities). Unfortunately, economic environment is determined not only with economic market institutions but also non-market institutions (Rodrik, 1999) and the level of efficiency of those institutions seems as problematic in BiH. Without going into deep explanation for all institutions listed in the Table 6, it seems quite obvious that the least efficient institutions in BiH marked by the business sectors in 2007 are: Judiciary system; Agency for privatisation; and Employment services.

If efficiency of the formal institutions in BiH is not as expected, then it is possible that informal institutions are used as substitute for "inefficient" formal state institutions. *Informal institutions* include unwritten rules of society such as conventions, codes of behaviour, cultural norms, moral norms, friendship relations, and so on. Every society usually has some unwritten "laws" and attitudes which ordinary people learn and respect. Many authors argue that formal and informal institutions interact with one another (Redmond, 2005) and they may be seen as complementary in their influence on economic output (Eggertson, 1996; North, 1990; Khan, 1995; Fukuyama, 2006). However, with increasing role of formal institutions in modern economies, informal institutions are less used (Norht, 1990). Fortunately, we may analyse how informal institutions in BiH are important for business sector after identifying that some formal institutions are marked as not efficient. Moreover, we will look at some estimates of costs of institutions in BiH and efficiency of governments in BiH.

Table 7:
Costs of institutions in BiH, (in)efficiency of formal institutions and usage of informal institutions in business sector

	IV 07 % of average	**IX 07 % of average**	**XII 07 % of average**
Costs of institutions in money are higher then expected	53	57	66
Opportunity costs of institutions (indirect costs) are higher then expected	51	53	67
Inefficiency of formal institutions (State level)	42	52	54
Inefficiency of formal institutions (Entity level)	36	49	50
Usage of informal institutions	53	58	66
Source: UNDP BiH, EWS quarterly report Q1-Q2, Q3, Q4, 2007.			

Formal state and entity governments in BiH are marked as inefficient by around 50% companies. In addition, the costs of formal institutions in BiH for business sector are marked as "higher than expected" from around 60% of companies. Moreover, indirect costs, known as opportunity costs that arise because of long institutional procedures, long time necessary to acquire information, lack of enforcement of some institutions, etc., are also estimated as quite high. Overall, direct and indirect costs of institutions in BiH, i.e. transaction costs (costs in terms of money and opportunity costs) seem very high.

If formal institutions are not efficient, if they are costly, it is possible then that informal institutions may be used as "substitute" for inefficient formal institutions. And it seems that we have such situation in BiH. If we look the data from the table, we may see that around 60% companies were using informal institutions in their everyday business activities in 2007. Moreover, if we look changes over three quartiles, we may see that as institutions in BiH were less efficient and were more expensive (in the second half of 2007 there were political crisis in BiH that led to crisis of institutions as well), business sector used informal institutions in a more extent.

Table 8:
Assessment of institutions in BiH,

Our analysis indicates that institutions in BiH may be marked as bellow satisfactory level, using official institutional indices as relevant for the analysis, but also results from "ground" survey in BiH. Based on the foregoing discussion, we may provide summary findings as in the Table 8.

INSTITUTIONS	ASSESSMENT	COMMENTS
Institutions for macroeconomic stabilisation	Efficiency at "satisfactory" level	UNDP survey indicates that efficiency of those institutions are not problematic for business sector. Official data go in line with survey results: economic environment without high inflation; low budget deficits; rapid increase in collection of taxes last years.
Property rights institutions	Efficiency marked as very low	HFI and GI suggest that property rights are far bellow transition level. Also, UNDP survey indicates that judiciary system, which is relevant for property rights protection, is the least efficient in BiH,
Regulatory institutions	Efficiency marked as extremely low	GI imply that institutions responsible for regulation in BiH are far bellow satisfactory level. UNDP survey indicates lack of efficiency of different level of governments, especially central government
Institutions for conflict management	Efficiency marked as very low	UNDP survey indicates that judiciary system is the least efficient in BiH
Institutions for social insurance	Efficiency marked as quite low	UNDP survey suggest that institutions for social insurance are not that problematic for business sector but still they are not marked as efficient
Informal institutions	Marked as highly present	Results from UNDP EWS survey suggest that informal institutions are highly used in everyday business activities and as efficiency of formal institutions decreased they were used even more

Institutions relevant for macroeconomic stabilisation in BiH (i.e. Central bank BiH and fiscal tax agencies) are marked in this analysis at "satisfactory" level. What is satisfactory is difficult to say, but results from the business survey were quite "good" for those institutions. Moreover, even official statistical indicators may support those results since BiH did not have problems with inflation last years; public deficits were at "reasonable" level, while fiscal reforms of the tax system in BiH increased the level of public revenues.

Property rights and Rule of low institutions were marked as very low for BiH, looking on institutional sub-indices, but also results from the business survey. Those two types of institutions are marked as especially important in institutional economics; unfortunately, BiH does not provide optimistic results. Moreover, looking on trends of those institutions for the last few years, indications of some positive improvements are not visible.

Government institutions in BiH are marked as highly inefficient by institutional indices but also looking on the results from empirical survey in BiH. Governments in BiH, according obtained results, do not provide qualitative public services, are not efficient in the enforcements of some institutions, and do not provide appropriate institutional support for private sectors. Looking on different levels of government in BiH, results indicate that the lowest efficiency "belong" to the central government.

Institutions for conflict management may be also marked as very low. Judiciary system in BiH is marked by business sector as the least efficient in 2007. It is also characterized with time spending and costly procedures, lack of the enforcement, especially in solving business disputes. Apparently, increasing the efficiency of judiciary system in BiH seems as high priority in BiH, not only as general institutional problem, but also as "high transaction costs" problem for private sector.

Finally, informal institutions are highly used among private sector companies in order to compensate low/lack efficient state formal institutions. Results obtained through the business sector survey indicate that as efficiency of formal institutions decreased at the end of 2007, there was an increase in using informal institutions by private companies. Informal institutions are mainly part of the overall institutional environment, but institutional economists suggest that modern economies are less likely to use informal institutions because they may be more costly in the complex process of exchange, and they do not provide high certainty. This may be particularly true for BiH companies that participate at developed European markets characterized by complex institutional environment that may not recognize "informal" BiH institutions. Moreover, the process of European integration needs strong formal institutions that will support all reforms that BiH is going to face. Apparently, high presence of informal institutions in BiH may be "second-best" strategy used to compensate low efficiency of domestic formal institutions, which is again indication of the low level of formal institutions efficiency.

5. Conclusions and *policy implications*

- The general findings of this policy study are that institutions in transition economies are an important determinant that may to a large extent explain different economic performances of those countries. Moreover, efficiency of state institutions was an important determinant of those economies in their success towards the full EU membership. *Consequently, institutions need to be treated as important factor that influence economic performance and European integration process in transition economies, hence in Bosnia and Herzegovina.*
- A simple correlation analysis for transition economies indicated that economic performance and institutional quality are highly correlated. Almost the highest correlation between institutions and economic performance was obtained for Bosnia and Herzegovina (i.e. the coefficient of correlation between institutions and GDP per capita was 0.95). *Accordingly, institutions in BiH may hihgly important in supporting better economic performance of this country compare to other transition economies.*
- According obtained econometric results in a simple bi-variate model, an increase of institutional quality in transition economies by 10% may improve the level of GDP per capita more than 370$ on average. In the more complex empirical model, results suggest that one percent increase in quality of institutions is associated practically with one percentage increase in growth of GDP per capita. *Accordingly, by increasing efficiency of institutions for one percent, the GDP per capita growth may be increased roughly by one percent, on average. It indicates that economic growth in BiH and transition economies may be supported by improving the efficiency/quality of institutions.*
- Our analysis suggests that most efficient institutions in BiH are institutions for macroeconomic stabilisation – Central bank and fiscal institutions. The least efficient institutions in BiH are property rights institutions; regulatory institutions; and institutions for conflict management. *Accordingly, BiH needs to improve the efficiency of non-market institutions in order to improve its economic performance and EU integration process. It is necessary to consider non-market institutions as factors that influence BiH economic performance, not only market economic institutions. Namely, it will be important to improve the efficiency of Central government BiH, Judiciary system, Agency for privatisation, and Employment services.*
- Since the efficiency of domestic institutions in BiH is bellow transition average, especially bellow EU-transition and EU-candidate transition countries, BiH may hardly expect further improvement in the EU integration process without improvement of the efficiency of its domestic institutions. The results from the panel Logit model indicates that, with the current macroeconomic performance and efficiency of domestic institutions, BiH has around one percent of probability to become member of the EU, having in mind results of other economies that have already become EU countries. *Taking into account possible economic development of BiH (6% growth of GDP) in the medium-run, BiH may count on EU membership (with higher percentage of probability) if improves the efficiency of its institutions roughly five percent per year. If institutional efficiency remains quite the same (last three years EBRD institutional index raised 1.9% on average), EU integration may last much longer.*
- Costs of state institutions are high for business sector as direct costs (in terms of money paying for taxes, tariffs, administration fees, etc.), as well as in terms of indirect costs (costs because of lack of enforcement of some institutions, because of long procedures, etc.). Results indicate that indirect costs of institutions in BiH are very high. *Accordingly,*

it is necessary to improve enforcement of state institutions by decreasing time-spending procedures, mainly regarding contract enforcement, obtaining different business licenses, acquiring information, and solving business disputes. Appropriate remedies may be undertaken in a short-period of time and it is necessary to develop strategy to improve enforcement efficiency of existing institutions.

- Informal institutions in BiH are used to a large extent by business sector. When efficiency of domestic formal institutions were marked as lower (e.g. during the "political crisis" at the second half of 2007), business sector used informal institutions to a more extent. High usage of informal institutions in BiH supports previous results that efficiency of formal state institutions in BiH may not be desirable. Extensive reliance of business sector on informal institutions may increase overall costs of business and harm the competitiveness of domestic companies, especially if they participate on international market. ***By providing more efficient state institutions, transaction costs for business sector will be lower; expectably informal institutions will be less used in business operations, and finally, competitiveness of domestic companies, as well as BiH economy may became higher. By increasing institutional efficiency in BiH it is possible to increase competitiveness of domestic companies and BiH economy overall, hence to increase the standard of living - it is the main massage of our policy study!***

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7. Appendices

Appendix 1.

THE EBRD INDEX

A first source used as proxy for institutions in transition is the EBRD's transition index.
ž'The transition indicator scores reflect the judgment of the EBRD's Office of the Chief Economist about country-specific progress in transition. The scores are based on the following classification system, which was originally developed in the 1994 Transition Report, but has been refined and amended in subsequent reports. "+" and "-" ratings are treated by adding 0.33 and subtracting 0.33 from the full value. Averages are obtained by rounding down, for example. a score of 2.6 is treated as 2+, but a score of 2.8 is treated as 3-." (EBRD, 2007)
We will not use all transition indicators, but using the methodology developed by Eicher and Schreiber (2007) we will make institutional proxy from the following EBRD indicators:

- *Governance and enterprise restructuring*
- *Price liberalization*
- *Trade and foreign exchange system*
- *Competition policy*
- *Banking reform and interest rate liberalization*
- *Securities markets and non-bank financial institutions*
- *Large-scale privatization*
- *Small-scale privatization*

Other relevant details about the methodology in constructing those indices may be obtained from the official web page of the European Bank for Reconstruction and Development, which is: www.ebrd.com

THE HERITAGE FOUNDATION INDEX

The Heritage foundation and the Wall Street Journal publish its "Index of Economic Freedom" composed of the 10 economic freedoms. The Index of economic freedom is a simple average of 10 individual freedoms, which are:

- *Business freedom*
- *Freedom from government*
- *Property rights*
- *Freedom from corruption*
- *Trade freedom*
- *Monetary freedom*
- *Fiscal freedom*
- *Investment freedom*
- *Financial freedom*
- *Labour freedom*

As may be seen, many of components of the Index of economic freedom measure institutional features and efficiency. More details about the methodology may be found at the Heritage foundation official page, which is: www.heritage.org

THE NATION IN TRANSITION INDEX

The Freedom House publishes the Nation in transition index starting from 1999. This index is constructed as average of ratings for:

- *Electoral process*
- *Civil society*
- *Independent media*
- *National democratic governance*
- *Local democratic governance*
- *Judicial framework and independence*
- *Corruption*

This index covers main institutional fields and it is published for specifically for transition economies. More about methodology and other relevant issues may be found on the official page, which is: www.freedomhouse.org

THE GOVERNANCE INDICATORS

The Governance indicators index provides a summary of the six aggregate governance indicators with all publicly-available disaggregated data on which aggregated indicators are base. The index covers 11 years 1996-2006 in six governance dimensions:

- *Regulation quality*
- *Government effectiveness*
- *Rule of law*
- *Control of corruption*
- *Political stability and lack of violence*
- *Voice and accountability*

As can be seen from those components, this index covers also quite precisely institutional areas. However, more about methodology may be found in Kaufman, D., Kraay, A, and Mastruzzi, M (2007) Governance matters VI: Governance indicators for 1996-2006, *World Bank Policy Research Paper No. 4280.*

Appendix 2

Correlation between institutional indices and GDP per capita for transition economies

-> country = ARMENIA
(obs=7)

	gdppc	ebrd	hfi	nit
gdppc	1.0000			
ebrd	0.8450	1.0000		
hfi	0.8936	0.8229	1.0000	
nit	0.9328	0.8973	0.7326	1.0000

-> country = AZERBEIJAN
(obs=7)

	gdppc	ebrd	hfi	nit
gdppc	1.0000			
ebrd	0.7137	1.0000		
hfi	0.8212	0.9284	1.0000	
nit	0.8830	0.4969	0.5825	1.0000

-> country = BELARUS
(obs=7)

	gdppc	ebrd	hfi	nit
gdppc	1.0000			
ebrd	0.7070	1.0000		
hfi	0.9023	0.4604	1.0000	
nit	0.9753	0.7976	0.8101	1.0000

-> country = BULGARIA
(obs=7)

	gdppc	ebrd	hfi	nit
gdppc	1.0000			
ebrd	0.9818	1.0000		
hfi	0.9522	0.9779	1.0000	
nit	-0.9317	-0.9528	-0.9873	1.0000

-> country = CZECH
(obs=7)

	gdppc	ebrd	hfi	nit
gdppc	1.0000			
ebrd	0.9680	1.0000		
hfi	-0.3978	-0.4590	1.0000	
nit	0.2125	0.3081	-0.8184	1.0000

-> country = ESTONIA
(obs=7)

	gdppc	ebrd	hfi	nit
gdppc	1.0000			
ebrd	0.9686	1.0000		
hfi	-0.1732	-0.0128	1.0000	
nit	-0.7523	-0.8218	-0.4668	1.0000

-> country = GEORGIA
(obs=7)

	gdppc	ebrd	hfi	nit
gdppc	1.0000			
ebrd	0.9628	1.0000		
hfi	0.9043	0.7982	1.0000	
nit	0.7656	0.7039	0.5554	1.0000

-> country = HUNGARY
(obs=7)

	gdppc	ebrd	hfi	nit
gdppc	1.0000			
ebrd	0.8437	1.0000		
hfi	-0.4416	-0.0363	1.0000	

```
-> country = KAZAKHSTAN
(obs=7)
             |    gdppc      ebrd      hfi       nit
-------------+------------------------------------
       gdppc |   1.0000
        ebrd |   0.9372   1.0000
         hfi |   0.8350   0.6736   1.0000
         nit |   0.8335   0.9461   0.5861   1.0000

-> country = KYRGYZSTAN
(obs=7)
             |    gdppc      ebrd      hfi       nit
-------------+------------------------------------
       gdppc |   1.0000
        ebrd |   0.8931   1.0000
         hfi |   0.8502   0.7104   1.0000
         nit |   0.7846   0.8665   0.4846   1.0000

-> country = LATVIA
(obs=7)
             |    gdppc      ebrd      hfi       nit
-------------+------------------------------------
       gdppc |   1.0000
        ebrd |   0.8504   1.0000
         hfi |   0.6239   0.4568   1.0000
         nit |  -0.9304  -0.6914  -0.6948   1.0000

-> country = LITHUANIA
(obs=7)
             |    gdppc      ebrd      hfi       nit
-------------+------------------------------------
       gdppc |   1.0000
        ebrd |   0.9095   1.0000
         hfi |   0.9294   0.9099   1.0000
         nit |  -0.3441  -0.5334  -0.5611   1.0000

-> country = MOLDOVA
(obs=7)
             |    gdppc      ebrd      hfi       nit
-------------+------------------------------------
       gdppc |   1.0000
        ebrd |   0.8469   1.0000
         hfi |   0.3418   0.0959   1.0000
         nit |   0.9422   0.7242   0.2958   1.0000

-> country = POLAND
             |    gdppc      ebrd      hfi       nit
-------------+------------------------------------
       gdppc |   1.0000
        ebrd |   0.8998   1.0000
         hfi |  -0.5833  -0.4453   1.0000
         nit |   0.9819   0.8773  -0.5103   1.0000

-> country = ROMANIA
(obs=7)
             |    gdppc      ebrd      hfi       nit
-------------+------------------------------------
       gdppc |   1.0000
        ebrd |   0.9600   1.0000
         hfi |   0.5431   0.6697   1.0000
         nit |  -0.8305  -0.8373  -0.7263   1.0000
-> country = RUSSIA
(obs=6)
             |    gdppc      ebrd      hfi       nit
-------------+------------------------------------
       gdppc |   1.0000
        ebrd |   0.8076   1.0000
         hfi |   0.5342   0.2245   1.0000
         nit |   0.9610   0.8325   0.3072   1.0000
-> country = SLOVAK REP.
(obs=6)
             |    gdppc      ebrd      hfi       nit
-------------+------------------------------------
       gdppc |   1.0000
        ebrd |   0.9724   1.0000
```

-> country = SLOVENIA
(obs=7)

	gdppc	ebrd	hfi	nit
gdppc	1.0000			
ebrd	0.7566	1.0000		
hfi	0.8747	0.4451	1.0000	
nit	-0.9216	-0.7899	-0.7025	1.0000

-> country = TAJIKISTAN
(obs=7)

	gdppc	ebrd	hfi	nit
gdppc	1.0000			
ebrd	0.9582	1.0000		
hfi	0.8546	0.8108	1.0000	
nit	0.7920	0.7218	0.8425	1.0000

-> country = TURKEMENISTAN
(obs=7)

	gdppc	ebrd	hfi	nit
gdppc	1.0000			
ebrd	-0.5150	1.0000		
hfi	0.6111	-0.7617	1.0000	
nit	0.9490	-0.6761	0.5917	1.0000

-> country = UKRAINE
(obs=7)

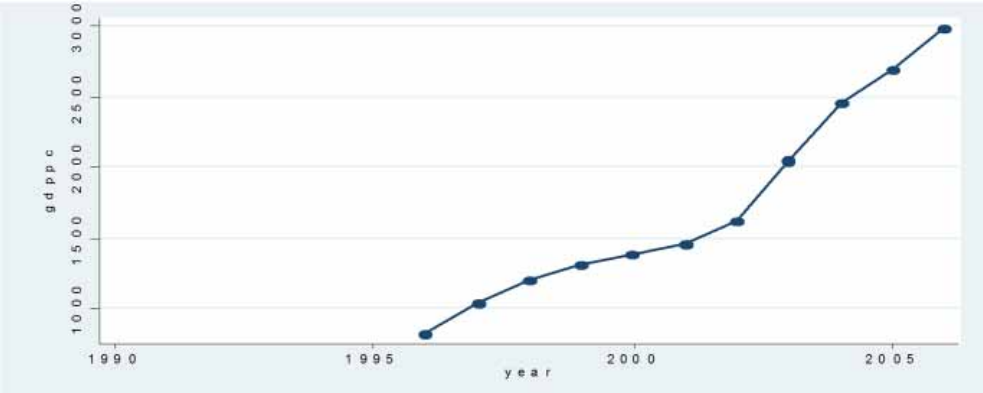
	gdppc	ebrd	hfi	nit
gdppc	1.0000			
ebrd	0.8945	1.0000		
hfi	0.8826	0.8970	1.0000	
nit	-0.8257	-0.5288	-0.7149	1.0000

-> country = UZBEKISTAN
(obs=7)

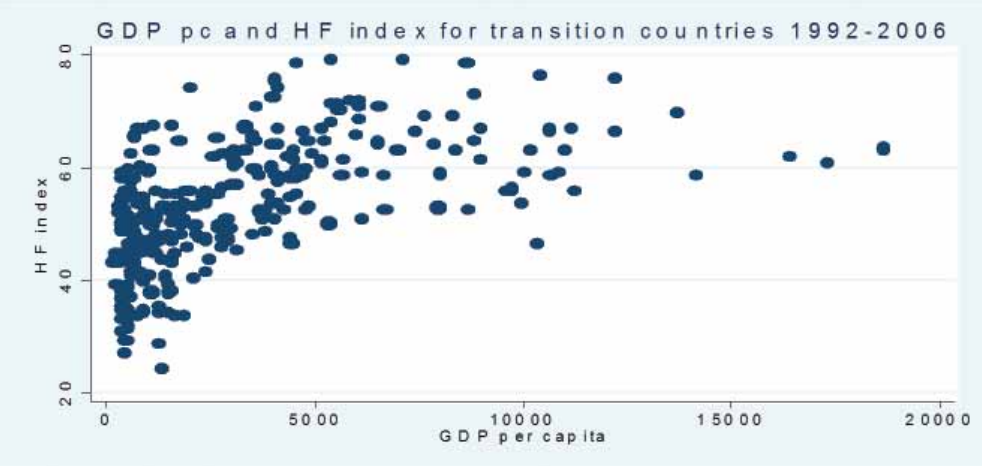
	gdppc	ebrd	hfi	nit
gdppc	1.0000			
ebrd	0.5061	1.0000		
hfi	0.9681	0.6654	1.0000	
nit	0.7589	0.6998	0.8473	1.0000

Appendix 3

GDP per capita and HF index for transition economies, 1992-2006



GDP per capita and NIT index for transition economies, 1992-2006



Appendix 4.

Regression results 1: Institutions and economic performance (EBRD index)

(Dependent variable: GDP per capita)

```
Fixed-effects (within) regression               Number of obs      =       414
Group variable (i): code                        Number of groups   =        29

R-sq:  within  = 0.1927                         Obs per group: min =         7
       between = 0.4226                                        avg =      14.3
       overall = 0.3327                                        max =        15

                                                F(1,384)           =     91.66
corr(u_i, Xb)  = 0.2994                         Prob > F           =    0.0000
------------------------------------------------------------------------------
       GDPPC |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      LnINST |    3755.71   392.2776     9.57   0.000     2984.429    4526.991
       _cons |  -969.3013   384.0221    -2.52   0.012    -1724.351   -214.2521
-------------+----------------------------------------------------------------
     sigma_u |  2044.3773
     sigma_e |  1479.6022
         rho |  .65625291   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(28, 384) =    25.98                 Prob > F = 0.0000
```

Regression results 1.2: Institutions and economic performance (HFI index)

```
Fixed-effects (within) regression               Number of obs      =       289
Group variable (i): code                        Number of groups   =        27

R-sq:  within  = 0.1029                         Obs per group: min =         5
       between = 0.3306                                        avg =      10.7
       overall = 0.2582                                        max =        12
                                                F(1,261)           =     29.94
corr(u_i, Xb)  = 0.3094                         Prob > F           =    0.0000
------------------------------------------------------------------------------
       gdppc |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       lnHFI |   4180.625   763.9879     5.47   0.000     2676.261    5684.99
       _cons |   -13426.6   3029.823    -4.43   0.000    -19392.61   -7460.588
-------------+----------------------------------------------------------------
     sigma_u |  2554.2708
     sigma_e |  1512.0733
         rho |  .74050022   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(26, 261) =    28.62                 Prob > F = 0.0000
```

Regression results 1.3: Institutions and economic performance (NIT index)

```
Fixed-effects (within) regression               Number of obs      =       186
Group variable (i): code                        Number of groups   =        28

R-sq:  within  = 0.0238                         Obs per group: min =         3
       between = 0.7091                                        avg =       6.6
       overall = 0.5911                                        max =         7
                                                F(1,157)           =      3.82
corr(u_i, Xb)  = 0.4719                         Prob > F           =    0.0524
------------------------------------------------------------------------------
       gdppc |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       lnNIT |  -4163.734   2130.351    -1.95   0.052    -8371.58    44.11238
       _cons |   9164.286    2822.43     3.25   0.001     3589.452    14739.12
-------------+----------------------------------------------------------------
     sigma_u |  1986.7857
     sigma_e |  1602.1892
         rho |  .60594394   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(27, 157) =     8.35                 Prob > F = 0.0000
```

Appendix 5.

Results from static panel model

```
Random-effects GLS regression                   Number of obs      =       338
Group variable (i): code                        Number of groups   =        27
R-sq:  within  = 0.6456                         Obs per group: min =         8
       between = 0.6355                                        avg =      12.5
       overall = 0.6083                                        max =        13
Random effects u_i ~ Gaussian                   Wald chi2(6)       =    568.95
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000

------------------------------------------------------------------------------
     gdppcln |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        INST |
         --. |   .5317862   .1337387     3.98   0.000     .2696632    .7939092
         L1. |   .3306197   .0989657     3.34   0.001     .1366506    .5245889
      BUDGET |   .0164835   .0045286     3.64   0.000     .0076075    .0253594
      INVESTM|   .0065832   .0028253     2.33   0.020     .0010456    .0121207
         FDI |  -.0039573   .0043647    -0.91   0.365    -.0125119    .0045973
        INFL |  -5.14e-06   .0000178    -0.29   0.772      -.00004    .0000297
       _cons |   4.836706   .2155645    22.44   0.000     4.414207    5.259205
-------------+----------------------------------------------------------------
     sigma_u |  .53010796
     sigma_e |  .25552911
         rho |  .81145446   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Appendix 6.

Dynamic panel – two-steps results

```
Arellano-Bond dynamic panel-data estimation     Number of obs      =       240
Group variable (i): code                        Number of groups   =        27
                                                Wald chi2(7)       =  14115.26
Time variable (t): year                         Obs per group: min =         7
                                                               avg =  8.888889
                                                               max =         9
Two-step results
------------------------------------------------------------------------------
   D.gdppcln |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     GDPPCLN |
          LD. |   .8193361   .0258091    31.75   0.000     .7687511    .8699211
         L2D. |  -.1109368   .0235219    -4.72   0.000     -.157039   -.0648347
              INST5 |
          D1. |   .2512943   .0105915    23.73   0.000     .2305353    .2720532
         INFL |
          D1. |  -.0000848   .0000217    -3.91   0.000    -.0001273   -.0000423
       BUDGET |
          D1. |   .0102326   .0016727     6.12   0.000     .0069541    .0135111
          FDI |
          D1. |  -.0000881   .0006081    -0.14   0.885    -.0012799    .0011037
     INVESTM |
          D1. |   .0009822   .0006181     1.59   0.112    -.0002292    .0021936
        _cons |     .05392   .0020412    26.42   0.000     .0499192    .0579207
------------------------------------------------------------------------------
Warning: Arellano and Bond recommend using one-step results for
         inference on coefficients

Sargan test of over-identifying restrictions:
         chi2(70) =    25.66      Prob > chi2 = 1.0000

Arellano-Bond test that average autocovariance in residuals of order 1 is 0:
         H0: no autocorrelation    z =  -2.91   Pr > z = 0.0037
Arellano-Bond test that average autocovariance in residuals of order 2 is 0:
         H0: no autocorrelation    z =  -0.67   Pr > z = 0.5060
```

Appendix 6.1.

Dynamic panel for transition economies 1992-2006 – One-step results

```
Arellano-Bond dynamic panel-data estimation     Number of obs      =       240
Group variable (i): code                        Number of groups   =        27
                                                Wald chi2(7)       =    442.55
Time variable (t): year                         Obs per group: min =         7
                                                               avg =  8.888889
                                                               max =         9

One-step results
------------------------------------------------------------------------------
   D.GDPPCLN |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     GDPPCLN |
         LD. |   .8075127   .0664493    12.15   0.000     .6772744     .937751
        L2D. |  -.1015713   .0488104    -2.08   0.037    -.1972379   -.0059047
       INST5 |
         D1. |   .2579362   .0374511     6.89   0.000     .1845333    .3313391
        INFL |
         D1. |  -.0000811   .0000853    -0.95   0.342    -.0002483    .0000861
      BUDGET |
         D1. |   .0106241    .003746     2.84   0.005     .0032821    .0179662
          FDI |
         D1. |  -.0000701   .0023604    -0.03   0.976    -.0046964    .0045562
     INVESTM |
         D1. |   .0007161   .0020369     0.35   0.725    -.0032762    .0047084
       _cons |   .0546407   .0059505     9.18   0.000     .0429779    .0663034
------------------------------------------------------------------------------
Sargan test of over-identifying restrictions:
        chi2(70) =   114.58      Prob > chi2 = 0.0006
Arellano-Bond test that average autocovariance in residuals of order 1 is 0:
        H0: no autocorrelation   z =  -5.49   Pr > z = 0.0000
Arellano-Bond test that average autocovariance in residuals of order 2 is 0:
        H0: no autocorrelation   z =  -0.90   Pr > z = 0.3671
```

Appendix 7.1

Regression results 3.3: Panel Logit estimates for transition economies

```
Random-effects logistic regression              Number of obs      =       157
Group variable (i): code                        Number of groups   =        27

Random effects u_i ~ Gaussian                   Obs per group: min =         1
                                                               avg =       5.8
                                                               max =         6

                                                Wald chi2(6)       =     21.98
Log likelihood  = -20.701885                    Prob > chi2        =    0.0012
```

EU	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
INST |						
L5.	7.417589	3.193307	2.32	0.020	1.158822	13.67636
GDPPC	.0005782	.000416	1.39	0.165	-.0002372	.0013935
INFLAT	.0175717	.0472862	0.37	0.710	-.0751076	.110251
BUDGET	-.0936925	.2423535	-0.39	0.699	-.5686967	.3813117
INTEREST	-.0011292	.0912482	-0.01	0.990	-.1799724	.177714
EXTDEBT	-.02354	.0327253	-0.72	0.472	-.0876804	.0406004
_cons	-23.69343	9.258681	-2.56	0.010	-41.84011	-5.546749
/lnsig2u	2.232666	.3922871			1.463797	3.001534
sigma_u	3.053636	.5989509			2.079024	4.485129
rho	.7392007	.0756263			.5678169	.8594449

```
Likelihood-ratio test of rho=0: chibar2(01) =    44.60 Prob >= chibar2 = 0.000
```

Marginal effects after xtlogit

```
      y  = Linear prediction (predict)
         = -1.9427503
```

variable	dy/dx	Std. Err.	z	P>|z|	[	95% C.I.	]	X
L5.INST	7.417589	3.19331	2.32	0.020	1.15882	13.6764		2.79687
GDPPC	.0005782	.00042	1.39	0.165	-.000237	.001394		3356.54
INFLAT	.0175717	.04729	0.37	0.710	-.075108	.110251		11.2906
BUDGET	-.0936925	.24235	-0.39	0.699	-.568697	.381312		-2.30408
INTEREST	-.0011292	.09125	-0.01	0.990	-.179972	.177714		17.6709
EXTDEBT	-.02354	.03273	-0.72	0.472	-.08768	.0406		56.511

Appendix 7.2

Mean values for the Logit calculations (Albania, BiH, Croatia, Macedonia)

ALBANIA

Mean estimation Number of obs = 6

	Mean	Std. Err.	[95% Conf.	Interval]
INST	2.936328	.0201513	2.884528	2.988129
GDPPC	1809.667	254.5132	1155.42	2463.914
INFLAT	3.993333	.4308261	2.88586	5.100807
BUDGET	-6.316808	.9395702	-8.73205	-3.901566
INTEREST	14.31167	1.535989	10.36328	18.26005
EXTDEBT	27.65711	3.566785	18.4884	36.82582

BIH

Mean estimation Number of obs = 6

	Mean	Std. Err.	[95% Conf.	Interval]
INST	2.412057	.0693179	2.23387	2.590245
GDPPC	1944	220.9401	1376.055	2511.945
INFLAT	5.315	2.664627	-1.534642	12.16464
BUDGET	-3.020922	1.313054	-6.396234	.3543896
INTEREST	15.09333	3.247744	6.744743	23.44192
EXTDEBT	55.00108	1.311983	51.62852	58.37364

CROATIA

Mean estimation Number of obs = 6

	Mean	Std. Err.	[95% Conf.	Interval]
INST	3.423516	.0353527	3.332639	3.514393
GDPPC	6386	713.8746	4550.927	8221.073
INFLAT	3.806667	.2233781	3.232455	4.380878
BUDGET	-5.707309	.5473173	-7.114232	-4.300385
INTEREST	10.61124	.3268986	9.770924	11.45156
EXTDEBT	68.99167	4.9281	56.32358	81.65975

MACEDONIA

Mean estimation Number of obs = 6

	Mean	Std. Err.	[95% Conf.	Interval]
INST	3.009453	.0289368	2.935069	3.083838
GDPPC	2203.167	195.4305	1700.796	2705.537
INFLAT	3.318333	1.111562	.4609729	6.175694
BUDGET	-1.413186	1.483691	-5.227135	2.400763
INTEREST	15.74606	1.350103	12.27551	19.21661
EXTDEBT	41.48751	.8589593	39.27949	43.69554

	COEFF. (C)	BIH (V)	BIH (V*C)	CRO (V)	CRO (V*C)	MAC (V)	MAC (V*C)	ALB (V)	ALB (V*C)
CONS	-23.6930	1.0000	-23.6930	1.0000	-23.6930	1.0000	-23.6930	1.0000	-23.6930
INST	7.4170	2.4120	17.8898	3.4230	25.3884	3.0095	22.3215	2.9360	21.7763
GDPPC	0.0006	1944.0	1.1236	6386.0	3.6911	2203.1	1.2734	1809.0	1.0456
INFLAT	0.0175	5.3150	0.0930	3.8000	0.0665	3.3183	0.0581	3.9930	0.0699
BUDGET	-0.0936	-3.0200	0.2827	-5.7070	0.5342	-1.4130	0.1323	-6.3170	0.5913
EXTDEBT	-0.0235	55.010	-1.2927	68.991	-1.6213	41.487	-0.9749	27.657	-0.6499
INTEREST	-0.0011	15.0010	-0.0165	10.611	-0.0117	15.740	-0.0173	14.3110	-0.0157
Sum of V*C			-5.6131		4.3542		-0.9000		-0.8756
Antilog (A)			0.0036		77.8056		0.4066		0.4166
Probability (A/1+A)			0.0036		0.9873		0.2890		0.2941
Probability to become member of the EU in percentages			4%		99%		29%		29%

Table:
Calculated probability using means of independent variables, 2000-2006

Appendix 8.

Growth	2006	2007	…	2012	2013	2114	2015	CUMULATIVE PROBABILITY IN 2005
GDPPC 6%	1944	2060.64	…	2757.60	2923.05	3098.44	3284.34	-
INST 1%	2.412	2.412	….	2.412	2.412	2.412	2.412	1%
INST 2%	2.460	2.5094	….	2.770	2.8260	2.882	2.9402	30%
INST 5%	2.412	2.5326	…	3.232311	3.393926	3.56362	3.741804	99%

Three scenarios of growth of institutions and GDP per capita in BiH

Appendix 9.

Results with institutions from the current period with „eligible countries"

```
Random-effects logistic regression              Number of obs      =       148
Group variable (i): code                        Number of groups   =        14
Random effects u_i ~ Gaussian                   Obs per group: min =         6
                                                               avg =      10.6
                                                               max =        11
                                                Wald chi2(6)       =      6.80
Log likelihood  = -9.5536337                    Prob > chi2        =    0.3396
------------------------------------------------------------------------------
          EU |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        INST |   46.51753   21.41553     2.17   0.030     4.543875    88.49119
       GDPPC |   .0001303    .000419     0.31   0.756    -.0006909    .0009515
      BUDGET |    .06026    .4417975     0.14   0.892    -.8056472    .9261672
     EXTDEBT |  -.3898655    .186922    -2.09   0.037    -.7562259   -.0235051
      INFLAT |   .0337684   .0201277     1.68   0.093    -.0056811    .0732179
    INTEREST |  -.0367228   .0998621    -0.37   0.713    -.2324489    .1590034
       _cons |  -132.5957   60.23025    -2.20   0.028    -250.6448   -14.54655
-------------+----------------------------------------------------------------
    /lnsig2u |   2.044857   .5615666                      .9442067    3.145507
-------------+----------------------------------------------------------------
     sigma_u |   2.779938   .7805601                      1.603363    4.819903
         rho |   .7014076   .1176117                      .4386505    .8759539
------------------------------------------------------------------------------
Likelihood-ratio test of rho=0: chibar2(01) =    20.01 Prob >= chibar2 = 0.000
```

Appendix 10.

Results with institutions from the max. lagged period (8 years) with eligible countries and controling the year of accession

```
Random-effects logistic regression              Number of obs      =        84
Group variable (i): code                        Number of groups   =        14
Random effects u_i ~ Gaussian                   Obs per group: min =         6
                                                               avg =       6.0
                                                               max =         6
                                                Wald chi2(6)       =      9.08
Log likelihood  =   -12.2451                    Prob > chi2        =    0.1690
------------------------------------------------------------------------------
          EU |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       INST8 |    5.141099   2.914338     1.76   0.078    -.5708988    10.8531
       GDPPC |     .001786   .0007389     2.42   0.016     .0003378    .0032342
      BUDGET |    -.1367836   .3276626    -0.42   0.676    -.7789904    .5054233
      EXTDEBT |   -.0948889   .0796189    -1.19   0.233     -.250939    .0611612
   INFLATION |    .1984443   .3535973     0.56   0.575    -.4945937    .8914824
    INTEREST |    -.500711   .3094924    -1.62   0.106    -1.107305    .1058829
       _cons |   -1.503896   5.643744    -0.27   0.790    -12.56543    9.557639
-------------+----------------------------------------------------------------
    /lnsig2u |    2.150756   .4848154                      1.200535    3.100977
-------------+----------------------------------------------------------------
     sigma_u |    2.931101   .7105215                      1.822607    4.713772
         rho |    .7231035   .0970721                       .502422    .8710337
------------------------------------------------------------------------------
Likelihood-ratio test of rho=0: chibar2(01) =    27.90 Prob >= chibar2 = 0.000
```

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