Labor Market Flexibility and Unemployment: The case of post – communist Europe

By

Memeti Albert

Submitted to

Central European University

Department of Economics

In partial fulfillment of the requirements for the degree Master of Arts in

Economic Policy in Global Markets

Supervisor: Professor Gabor Kezdi

Budapest, Hungary

2014

Abstract

In the last decade, there has been a divergent trend in the youth unemployment rate among post – communist countries, with some countries experiencing larger increase in youth unemployment than others. The hypothesis for explaining this divergent trend is based on the set of policies that led to labor rigidity – minimum wage, strong unions and collective bargaining, firing and hiring regulation and cost of workers dismissal. Therefore, the purpose of this thesis is to evaluate this hypothesis and assess the impact of labor market flexibility (LMF) on the youth unemployment rate (YUR), controlling for macroeconomic and structural factors. The relationship between LMF and YUR is examined by employing fixed effect panel regression on a sample of 17 post – communist countries in Europe for the period 2000 – 2011. The results suggest that two of the LMF sub-indices - centralized collective bargaining and minimum wage & hiring regulation have a positive impact on decreasing the youth unemployment level. In addition to the sub - indices, the empirical analysis shows that economic growth, real interest rate, a higher share of part – time employment reduce the youth unemployment rate. Furthermore, the analysis of the two groups of countries (EU and non-EU) suggests that flexible labor policies should be one of the priorities in economic policies for the non – EU countries. This paper brings together theoretical and empirical aspects of the determinants of youth and total unemployment, providing a new line of research by including a labor flexibility index.

Acknowledgments

I would like to thank my supervisor Gabor Kezdi for his valuable advice and guidance during the whole period of thesis writing. In addition, I would like to express my gratitude to the Roma Access Program for their support through my university studies. Also, I would like also to thank to Professor Sanjay Kumar and Professor Sara Svensson for their helpful comments. But most of all, to my parents who did many sacrifices for me to become what I am today.

Table of Contents

List of tables and figures

List of Abbreviations

EFI – Economic Freedom Index

FE – Fixed effect

LMF – Labor Market Flexibility

LFI – Labor Flexibility Index

OECD - Organization for Economic Co-operation and Development

p.p – percentage points

TUR - Total Unemployment rate

YUR - Youth Unemployment rate

Introduction

The collapse of the communist system in the 90s marked the beginning of the transition period for the post-communist countries and a shift towards the market economy. Mass unemployment, huge output decline, and high rates of inflation (even hyperinflation) were just part of the issues that appeared in the agenda of these countries (Bokros, 2012). Macedonia, as one of the post – communist countries has experienced all of the above issues. Even though some of the issues stabilized during the years, the unemployment level yet remains high, especially among young people. The other post – communist countries in Europe show similar patterns - the unemployment remains a major problem with main causes assigned to the transition period, the shocks in the aggregate demand, macroeconomic policies, and institutional settings. Therefore, the main purpose of this thesis is to identify the factors that have an impact on youth unemployment through the empirical investigation of the post-communist countries, which allows making specific policy recommendation for Macedonia – as a main country of interest.

Various studies have examined the issue of unemployment and its causes in the post-communist Europe. Among the most influential are Aslund, Boone, & Johnson (1996), Fidrmuc (2003), Ederveen & Thissen (2004) and Gabrisch & Buscher (2006). Nonetheless, these studies give uncertain results, ranging from significant impact of the macroeconomic policies and labor market flexibility to no consistent relationship between output, reform strategies, and unemployment. Thus, there is no clear answer on how policies related to labor market flexibility and macroeconomic conditions affect unemployment.

Along with the recent crisis, some new developments in the labor market flexibility appeared to explain the determinants of unemployment. Such developments in the areas of minimum wage; hiring and firing regulations; centralized bargaining process; hour's regulation; mandated cost of worker dismissal lead to a new explanation about the labor market rigidities and their impact on the unemployment rate. At the same time, the impact of the crisis had huge impact on the labor market and resulted in greater rigidness of the labor market institutions (Verdugo, Furceri, & Guillaume, 2013). These new developments, together with the OECD studies (1996, 2006) emphasize the role of the labor market flexibility in the explanations of unemployment.

Driven from the previous studies in the OECD countries as well as the gradual development of the labor market in post – communist Europe, I take the labor market flexibility as one of the crucial factors that determine the unemployment level. I assume that higher level of labor market reforms and thus greater flexibility in the labor institutions can decrease the unemployment level in the post-communist countries. I argue, firstly that greater flexibility in the labor market allows firms to operate in an environment under fewer regulations and therefore can freely decide on the wage policy, firing and hiring procedures, etc. Secondly, as Siebert (1997:43) claim labor institutions and regulations inhibit the labor market and contribute to weak demand for labor. Therefore, it is argued that policies and institutions push up the wage costs, making it less attractive to hire workers. A few studies such as Crowley (2004); OECD (2006); Choudhry et all. (2012) and Verdugo (2012) explore how the labor market flexibility affects unemployment in developed countries. All of the studies claim that labor market institutions have an impact on the unemployment level, especially for young people and the duration of unemployment.

Thus, the main aim of the thesis is to determine the impact of labor market flexibility as well as the effect of macroeconomic and structural policies on the total and youth unemployment level in post–communist countries in Europe. The preliminary assumption is that the effect of labor market flexibility is positive and as such contributes to decrease the unemployment level. For testing this hypothesis, I include 17 post – communist countries in Europe for the period 2000 – 2011 using a fixed panel regression[1]. Following the work of Choudhry et all (2012) and Verdugo et all (2012) on the role of institutions in explaining the unemployment level, I look at the direct impact of the labor market reform on the youth and total unemployment, extending it with the impact of macroeconomic, structural and demographic factors. The contribution to the existing literature is that this paper focuses on post – communist countries that often in the existing literature were neglected. Moreover, it includes new variables (LRM, EBRD index) in the explanation of the unemployment level. In addition, I distinguish two set of groups in the post – communist countries (EU and Non – EU) to examine the effect of different institution and policies.

The results suggest that two of the LMF sub-indices - centralized collective bargaining and minimum wage & hiring regulation have a positive impact on decreasing the youth unemployment level. In addition to the sub - indices, the empirical analysis shows that economic growth, real interest rate, a high share of part – time employment, EBRD transition index decrease the youth unemployment rate. Furthermore, the analysis of the two groups of countries (EU and non-EU) suggest that flexible labor policies should be one of the priorities in economic policies for non – EU countries.

[1] Albania, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Moldova, Poland, Romania, Russia, Serbia Slovakia, Slovenia and Ukraine. Due to the lack of data I exclude Montenegro and Bosnia and Herzegovina

The remaining parts of the thesis are organized as follows: Chapter 1 presents a short contextual background about the total and youth unemployment level and trends in the post – communist countries. Chapter 2 continues with the literature review and theoretical background on the relationship between labor reforms and unemployment. In addition, I explain the channels of the impact of the different factors (macro, structural and demographic) on unemployment. Chapter 3 describes the data and methodology. In particular, in the chapter I describe the key variables of interest and the way it is measured. Chapter 4 presents and discuss the results obtain from the fixed panel estimation. Lastly, I conclude and propose policy recommendation.

Chapter 1: Unemployment trends in post – communist Europe

After the collapse of the communist regime in the 90s, post - communist countries confronted with the requirements of the market economy to implement various structural policies. Since then, some of the post – communist Europe achieved considerable success in terms of their output growth, EU accession, and structural reforms. However, the unemployment level yet remains high as in the pre – transition period.

Chapter 1 gives short overview of the total and youth unemployment trends in the post – communist countries. In addition, this chapter demonstrates that earlier unemployment was mostly a structural consequence of the post-communist transition; whereas these days it is very different, (young are a lot more affected now). Therefore, policies towards flexible labor market are most likely to be more appropriate now than they may have been earlier.

1.1 Total unemployment

Over the past decade, the post - communist Europe has been in a long process of transition, which involves massive structural reforms towards policies and practices followed in capitalist countries. However, as Bokros (2012: 59) state the "timely introduction and enhancement of specific reform" played a major role in the shift towards market economy. As regards to the model of reforms, different paths appears in the post – communist countries with a heterogeneous convergence towards the Western economies.[2] Nonetheless, the transition period during the 90s was a "painful" process followed by inflation, unemployment, and confrontation

[2] In the literature of structural reforms, two major models appear to explain the transition process from central to market economy. A) Shock therapy – characterized with a fast liberalization and privatization reforms followed by Poland and Czech Republic; b) Gradual reforms – characterized with a slow" process of liberalization and movement towards market economy (Bulgaria, Albania, Baltic countries, ex YU – countries). For more see Fidrmuc (2003) - Economic reform, democracy and growth during post-communist countries.

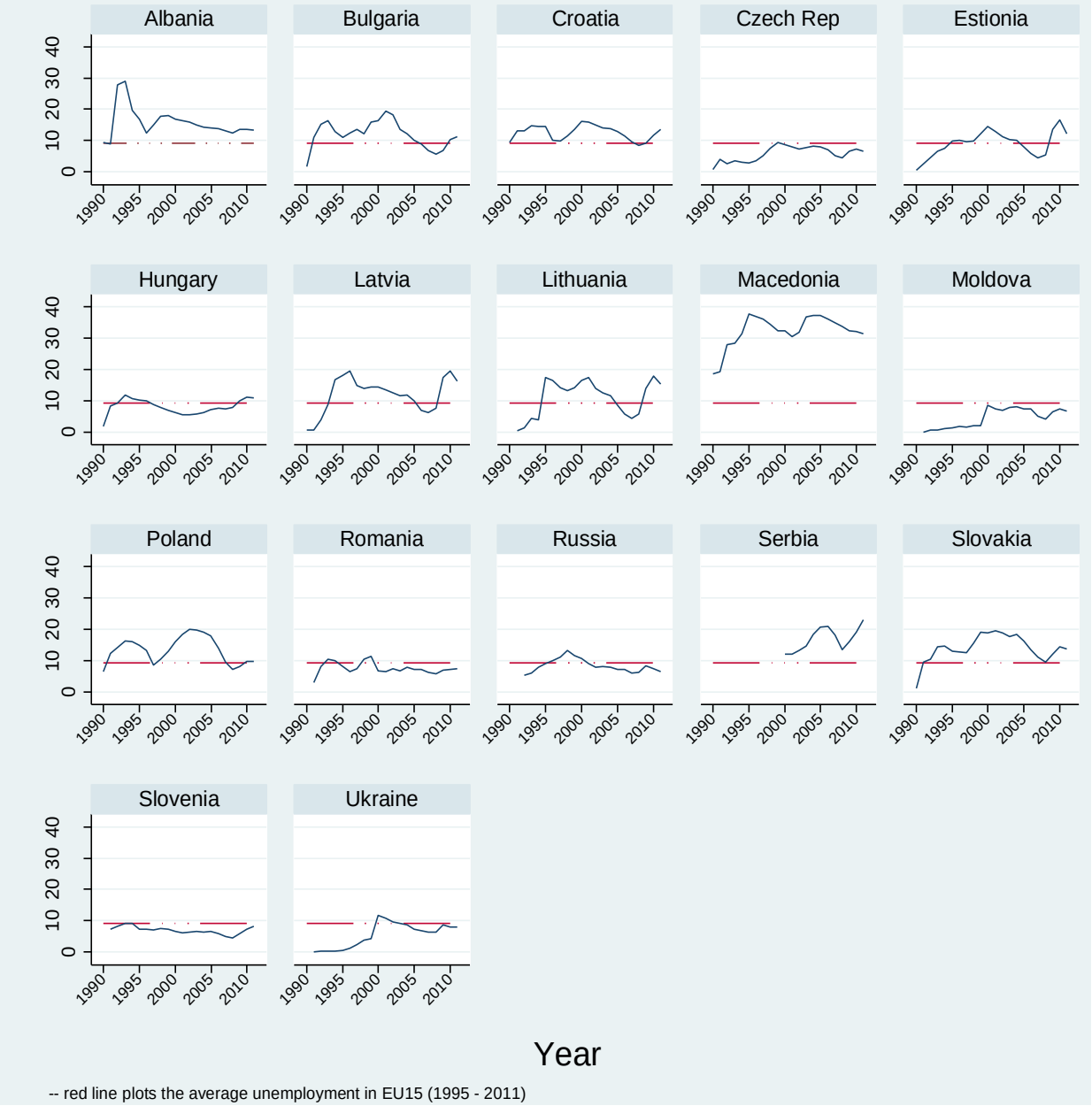
from the people. In this regard, the privatization and structural changes in the economy resulted in the decrease in the economic growth of these countries.

The subsequent opening of the economy and the sharp decline of the domestic demand led to massive unemployment. Ten years after the transition period, countries from post – communist Europe still face the same problem. Figure 1 below shows the unemployment level in the selected 17 post – communist countries from 1990 to 2011. The red line plots the average unemployment level in the EU 15 from 1995 until 2011. As it can be noticed from the *Figure 1*, the unemployment level varies across the countries and years for all of the countries.

The explanation for these variations across the countries and time fall into the following two categories:

- In order to draw clear conclusion from the figure 1, one has to differentiate two periods in the unemployment trends in the post – communist countries. The first period is form 1990 to 2000, when an increasing trend in the unemployment level can be observed. The main explanation of these periods lies in the liberalization and privatization process. As it can be noticed from the figure, the period 1990 – 1996 is followed with the highest jump in the unemployment trend. Almost all of the countries (Albania, Bulgaria, Croatia, Estonia, Hungary, Latvia, Lithuania, Macedonia, Poland, Romania, Russia, and Slovenia) have similar trend, except Czech Republic, Moldova, and Ukraine. The main factors prescribed to the first period are associated with the supply shocks, changes in industrial structures and high inflation. For the other countries (Moldova and Ukraine), the reform period was postponed and it started a bit later (1994 in Case of Ukraine and 2000 in Moldova). The only successful country in managing the unemployment level during the period 1990 – 1996 is the Czech Republic, which is due to the successful privatization.

Figure 1: Unemployment level, 2000 - 2011



Source: EBRD

Nonetheless, as it can be noticed from the graph after 1998 unemployment started again to accelerate, except in Hungary and Slovenia. According to Vidovic (2001:29) the increase of the unemployment in the period 1998 – 2000 is due to the layoffs in heavy

industries; the termination of the employment gurantees in the private companies and the entry of the baby boom cohort in the labor markets.

- The second period is from 2000 to 2011, which is characterized by the macroeconomic stabilization process, EU accession and the crisis and post crisis period. The sound economic reforms as well as the average annual growth of 5.67% in the GDP during the period 2000 – 2007 (EBRD, 2007), were the main factors that contributed to the decrease in the unemployment level. The economic growth was driven from the foreign direct investment in countries such as Czech Rep, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia, which significantly contribute to converge to the western economies level. In line with the accession countries, also the other post - communist countries achieved higher economic growth due to the sound macroeconomic policies. Exception from this case were Serbia and Macedonia, which both experienced an ethnic conflict (1998 and 2001 respectively) which worsened the economic performance of the countries.

  As it can be seen from the Figure 1, the gap in unemployment level between Old and New Europe diminishes significantly, even some countries such as Czech Republic, Slovenia, Bulgaria, Estonia and Romania were better off. Some authors such as Woolfson (2007); Fidrmuc (2003) and Favell (2008) associate the decrease in the unemployment level with the migration from Eastern to Western Europe. Nonetheless, the shift towards the service industry and the inflow of foreign investment contributed to opening new jobs and thus lowering the unemployment level in the countries.

  However, the emergence of the crisis in 2007 actually brought the unemployment gap almost at the same level with the western economies. The Figure 1 demonstrates the

pattern of decreasing and reaching almost the lowest level of unemployment in 2007. Nonetheless, as the crisis broaden in the EU, all the export, and credit growth economies started to decline. Although the crisis in the small post – communist countries (Albania, Moldova, Macedonia, and Serbia) was imported from EU, it had huge impact in the export industries and therefore the unemployment level started to increase because of the decline in GDP.

According to an EBRD report from 2011, the duration of the unemployment level can be explained with the labor market rigidities. Similar studies emerge in post – crisis period claiming that actually the financial crisis increased the labor market rigidities and as such contribute to keep the unemployment level at the higher level in medium term(Vergundo, 2012).

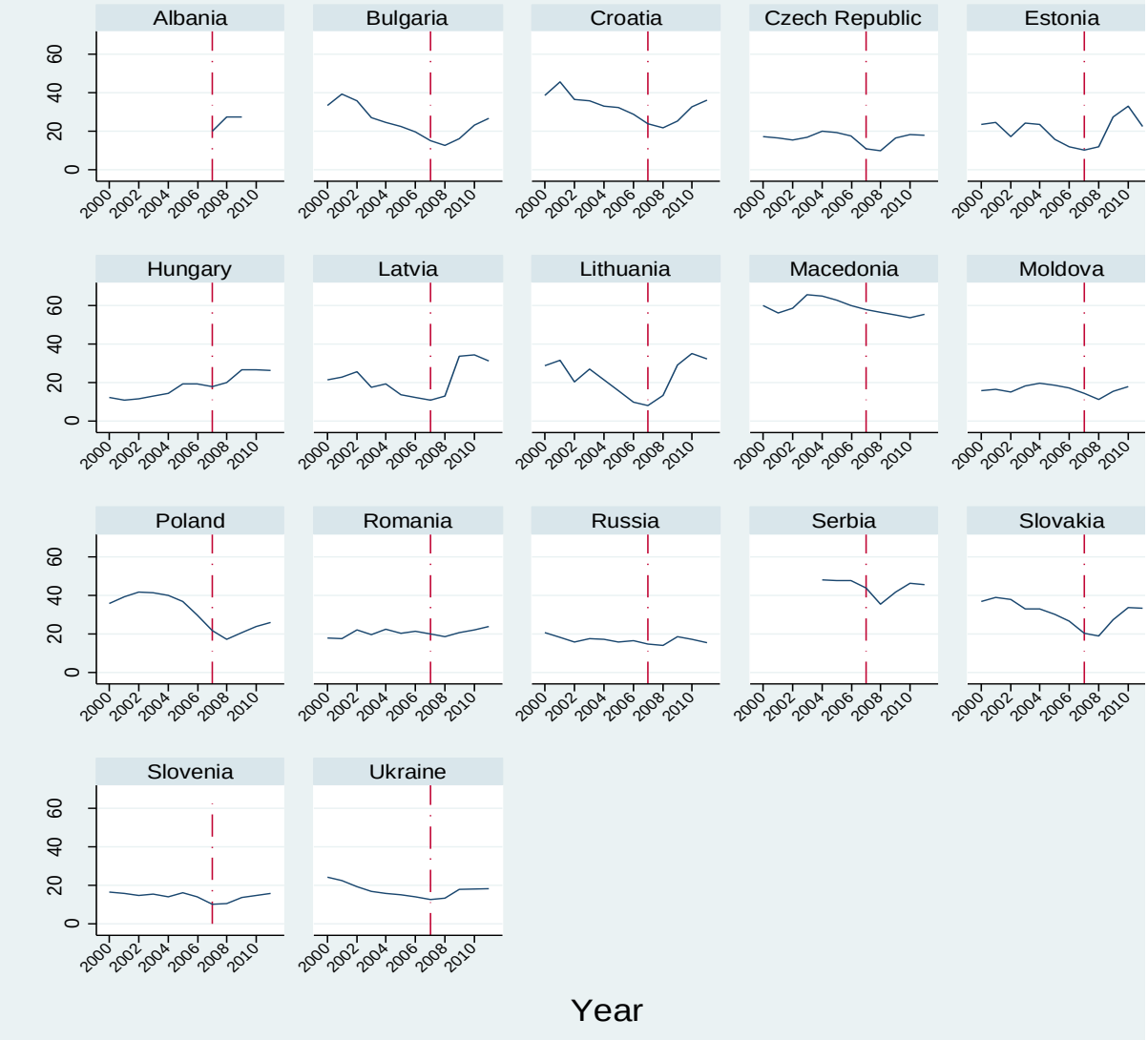
1.2 Youth Unemployment

The total unemployment level in the post – communist countries presented in the previous part state the general condition in the labor market, which in large share also determines the youth unemployment level. According to Breen (2005) the analysis of the unemployment level should reflect three factors: the demographic conditions in the country, the educational system, and the labor regulation. However, these factors in certain period mutually reinforced each other resulting in higher youth unemployment.

Regarding the demographic condition, the entrance of the baby boom generation into the labor market as well as the poor macroeconomic performance of the post – communist countries during the late 90s led to already high levels of unemployment contributed to increasing unemployment furhter. Even though, there is scarce data on the youth unemployment level, some

evidences and empirics can be found in Vidovic (2001). Along with this, the sharp declines in the employment levels due to the restructuring of the economy as well as the tightness of the labor market worsen the situation of the young people in the labor market.

Figure 1: Youth Unemployment level, 2000 - 2011



The Figure 2 presents the youth unemployment level in the 17 post – communist countries for the period 2000 to 2011. As it can be seen from the graph, there is a trend towards a decline in the youth unemployment level up to 2007. This trend is associated also with the general unemployment level, which documents the economic recovery and sound policy reforms. Right

after the crisis in 2007, the youth unemployment level started to increase in almost all of the countries (except in Macedonia). It can be observed that the overall trend after 2007 is increasing, with an amplified rigidity in the labor markets.

Comparing the youth and total unemployment, it follows that youth unemployment level has greater variation across the countries and years. Even though the total unemployment level determines in large part the youth unemployment level, the duration and nature of the total unemployment level is different and caused by the structural shift in the economy. Hence, I expect that structural and macroeconomic policies determine the total unemployment level, whereas labor market flexibility determines in a greater extent the youth unemployment level.

To sum up, the foregoing chapter gave a short overview of the total and youth unemployment level in the post – communist countries. Following the reports and the literature provided, various factors such as GDP growth, labor market institutions, structural reforms, demography, and education were identified as crucial affecting the unemployment trends in the post – communist countries. The next chapter establishes the theoretical framework of the thesis based on the previous research.

Chapter 2: Literature review

After the end of the communist regime and the macroeconomic stabilization in the post – communist countries the relationship between unemployment and labor market reforms; macroeconomic and structural polices have been subject of extensive policy debates. Various studies have been conducted questioning how the above-mentioned policies and institutions affect unemployment level. In this chapter, I review the relevant literature and present the empirical finding from the previous studies done for the post – communist countries in Europe. Firstly, I establish the theoretical framework grounded in the theories of unemployment and adapt the conceptual framework developed by Scarpetta (1996) for the purpose of my analysis. Secondly, I observe the theoretical papers and empirical evidence that documents the impact of labor market flexibility; macroeconomic and structural policies on unemployment.

2.1 Theoretical framework

In the literature of unemployment, the core debate on the causes of unemployment derives from the two schools of economic thought – Classical and Keynesian. From the classical perspective, unemployment occurs when wages in the labor market are pushed above the equilibrium level, causing the supply for labor to exceed the demand for labor. Therefore, the main policies and institutions related to the wage determination, such as collective bargaining; minimum wages etc., contributes to higher unemployment level and duration. (Gallaway & Vedder, 1987). On the other hand, the Keynesians view the unemployment as a consequence of the fall in the aggregate demand (Viner, 1936). Thus, the factors that influence the aggregate demand determine the level of employment in the economy. The earlier models on unemployment based on the Classical and Keynesian school have accepted a static standpoint in respect of the productive capacity of the

system (Arico, 2001). In this respect, most of the models did not take into consideration the dynamic nature of unemployment and the multiple factors that influence it.

The emergence of the equilibrium theory of unemployment developed by Pissarides (1990), changed the state of research on unemployment, and brought dynamic modeling in the analysis of unemployment. This innovative step changes the existing concepts and develops techniques and tools for investigating the persistence of unemployment in the society. What is characteristics of researchers following in his footsteps is that they devote much more attention for the labor institution and their context providing models, which are policy-oriented (Arico, 2001). In addition, the emergence of the new techniques and models allowed including multiple heterogeneous factors in the analysis of unemployment. In this regard, the development of the modern labor economics and the new theories such as the search theory, matching theory, wage price theory etc. brought microeconomic perspectives in the analysis of unemployment. As a result, the institutional framework and the rigidities of the labor market emerge as a crucial part of explaining the determinants of unemployment.

In line with this, different studies OECD (2006); Blanchard (1999), Nickell et all. (2005); Daveri and Tabellini (2000) attempt to set cluster of factors that affect the unemployment that can be combined into three groups:

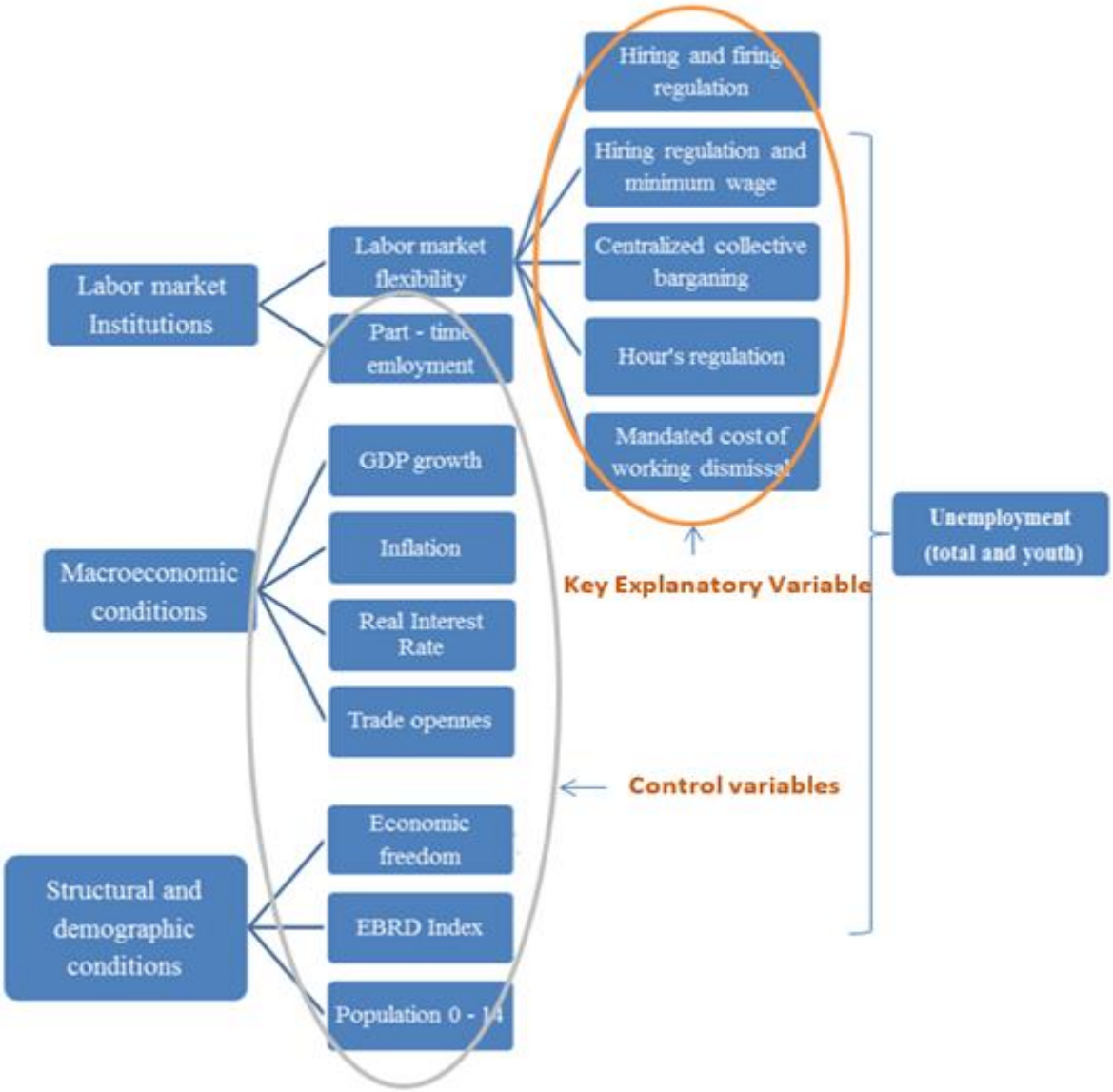
- Macroeconomic conditions - GDP growth; productivity growth; inflation; real interest rate; trade openness; terms of trade; financial crisis
- Labor market institutions and policies – Unemployment benefits; union density; labor tax; structure of collective bargaining; employment protection legislation; incidence of part – time employment; active labor policies; minimum wages; firing and hiring regulation etc.

- Structural and demographic factors – population density; share of young and old population; degree of competitiveness; economic freedom

The empirical investigation of these sets of factors which the above mention studies focus on developed or OECD countries, while only a few studies analyze the emerging and post – communist countries (Verdugo, 2012; Feldman, 2010; Signorelli, 2012). Therefore, the focus of this paper is on the post – communist countries in Europe. Furthermore, some of the countries are already part of the EU and others aspire to become, so necessary reforms in the labor market policies are needed in order to prevent huge inflow of the unemployed people. Based on the identified set of factors for the developing world as well as the recent papers Signorelli et all (2012) and Verdugo (2013) I develop the following conceptual framework.

Figure 3 describes the conceptual framework for the following thesis and summarizes the key explanatory and controlled variables. Based on the result of the OECD study (1996; 2006), I include the labor market flexibility as a key explanatory variable that explain the level of unemployment in the post-communist countries. The study of the OECD (2006) shows that, the changes in the labor policies and institutions can explain two thirds of the cyclical unemployment. Therefore, I argue that the development of the labor market and institutions in the post – communist countries would lower the unemployment rate.

Figure 2 - Conceptual Framework



Source: Adapted from Scarpetta (1996)

However, another set of arguments developed by the institutional economist claim that institutions and policies are changing incrementally and as such cannot be compared with the development world. Moreover, as Bokros (2012) argues the improvement of institutions in the post – communist countries in the large part is deeply rooted in the organizational culture and "protectionist behavior" which is very difficult to change.

2.2 Empirical Evidence

In this part, I review the literature regarding the variables from the conceptual framework grouped into three policies: policies on labor flexibility, macroeconomic and structural policies. Furthermore, I reflect upon the previous findings in the literature about the set of policies that affect unemployment and provide empirical evidence from previous studies.

2.2.1 Macroeconomic cyclical conditions

Among the primary causes that affect unemployment are the macroeconomic cyclical conditions. A central part in the explanation of unemployment is the GDP growth, given by the Okun's law. Many empirical studies document the positive impact of the GDP growth even though they emphasize that the relationship is not stable over time and fluctuates across the countries (Lee, 2000).. The initial empirical investigation (Okun, 1962) points out that one percentage point decrease in the real GDP growth is associated with 0.3 percentage point increase in the unemployment rate. In line with this, the recent OECD study (2013) documents the relationship and show that the Okun's coefficient is larger during the recession period ranging from 0.2 in US to 0.7 in Spain.

The study done by Aslund, Boone, & Johnson (1996) for the post – comunist countries shows that unemployment is not correlated with the decline in output nor with the measures of the intensity of reforms. However, a more recent study (Gabrisch & Buscher, 2006) which studies the eight countries that join EU in 2004, demonstrates that there is a relationship in the cases where the period of transition is shorter. The Okun's coeeficient range from 0.4 to 0.8 showing huge variations between countries based on the transition period. In addition Hutengs and

Stadtmann (2013) shows that Okun's coefficient for the young people 15 – 24, oscillating from 0.5 in Hugnary and 1.3 in Poland.

From the prevous section one can observe that among the studies there are different findings showing contradictory results. The explanaition behind it, lays first in the period observed and the different techniques issued. Namely, the study from 1996 shows no relatinshp due to the fact that the transition period was not finished, and the whole economic system pass through period of restructuring where the unemployment level from 1980 – 1995 kept its trend. The study from Gabrisch & Buscher (2006) show relevant updates covering the period 1998 – 2004 including also lagged variables, but is limited only to the eight new EU members.

Besides the GDP, some other macroeconomic variables such as trade openness, inflation rate and real interest rates are significant in explaining the unemployment (youth and total). In this regard, Dutt et all (2011) argue that trade openness benefit only that industries where the labor is an abundant resource and through this affect the unemployment level. The estimates from Felbermayra, Prat, & Schmerer, (2011) show negative relationship betwwen trade openness and unemployment in OECD countries.Reagarding the post – communist countries, the relationship is explained only for the countries which joined the EU in 2004, showing the benefits from the trade specilization and generation of new jobs. Since the new line of research emerge in the recent years, there are a few studies that examine the relationship between trade openness and unemployment in the post – communist Europe.

Another variable that has an impact on the unemployment level is the inflation rate, given by the Philips curve. According to the new developments of the model, the trade off between these variables exist only in the short run, whereas in the long run leads to higher inflation. Therefore,

if the actual price level is grater that the expected price level, the real wages are lower than expected raising the level of employment (Signorelli et all, 2012)). Thus, a negative relationship is expected to prevail in the short run.

The last variable from macroeconomic perspective is the real interest rate, which is a proxy for the cost of capital. According to the (Blanchard, 1999) the higher the interest rate, the greater the impact on investments which leads to fall in the employment level in the economy. According to the European Central Bank, the real interest rate played a significant role for the explanation of unemployment. However, the empirical investigation is still unclear whether there is a long run effect of interest rates on unemployment (Signorelli et all, 2012)

2.2.2 Labor Market Policies

The second group of variables that determine the unemployment level is the set of labor market policies and institutions. According to OECD Job Study (1994), labor market institutions and policies influence the job matching process and tend to raise the wages, which affect the equilibrium level of employment in the economy. The same study concludes that labor institutions and policies play a huge role in the unemployment level and explain 2/3 of the cyclical unemployment. In the literature, there are factors such as unemployment benefits, labor taxes, trade unions, EPL, minimum wages, active labor policies that are often mentioned like a core institutions that directly affect the unemployment.

However, there is additional set of literature that attempts to capture the labor market flexibility by a cumulative index that also influences the unemployment level.[3] Vergundo (2013) estimates that an increase of one point in the labor flexibility index reduces the impact of the financial crisis on unemployment for 0.6 percentage points in medium term. Among the sub – indices, the study concludes that centralized collective bargaining and hiring and firing regulation have the biggest impact on the unemployment effect. Signorelli (2012) include the changes in labor flexibility index as a key determinant of the youth and total unemployment and report that increase in one unit of labor market reforms contribute to fall of youth and total unemployment rate (0.98 and 0.83 percentage points respectively).

Even though, these studies provide a fresh perspective in the study of labor market institutions and unemployment, they have several flaws. Aleksynska (2014) claims that the studies, which include Fraser Institute data, in particular the aggregate index, are overestimated because it reports the value of the aggregate index even though three of the sub – indices are missing. In addition, she argues that some of the studies do not capture the changes in the methodology during the years. Taking into consideration some of the flaws in the study, I include only those countries and years that have data at least for the four sub- indices.

The institutional framework of the labor market also determines the diffusion of temporary contracts and part – time jobs in the economy (Booth et all, 2002). In this regard, part – time jobs can be a good strategy to deal with the unemployment. However, the impact of the part-time jobs is uncertain, since it gives less security to the employees. In such circumstances, it might lower

[3] Labor Market Flexibility is an index developed by the Fraser Institute, which include six sub categories: minimum wage and hiring regulations; hiring and firing regulation; centralized collective bargaining; hour's regulation; mandated cost of working dismissal and Conscription. Chapter 3 discusses more on the data design.

the unemployment level, especially for youth but in the same time, it might give incentives to the employers to hire more people with part – time contracts, since it is cheaper for them.

To sum up, based on the different studies (Nickell, 2005; OECD, 1996 and 2006, Signorelli, 2012; Verdugo, 2013) one can conclude that labor market institutions and polices have significant influence in the unemployment level in the countries. Some of the sub – indices of labor market flexibility (collective bargaining, hiring and firing regulation; minimum wage) affect unemployment via the wage determination channel and as such tend to raise the wage. Moreover, rigid labor markets have such a regulatory environment that makes difficult the clearance of the market and affects the job matching process.

2.2.3 Structural and Demographic conditions

A third group of variables that influence the unemployment level are the structural and demographic conditions. The structural conditions are very important for these countries, since they pass through extensive reform starting from 90s. In the literature, structural conditions often refer to the adjustment process towards a market economy, which include indicators such as trade liberalization; privatization, reform in the banking sector etc. In addition, the structural conditions capture the degree of competitiveness of the economy that with the economic freedom index. Feldman (2010) claims that economic freedom enhances the functioning of the labor market and stimulates the economic development by providing a framework for free market competition.

Regardless of which index is used (Fraser Institute or Heritage Foundation), researches find out that economic freedom has an impact the unemployment level. Few studies, Feldman (2007; 2010); Fidrmuc (2003); Piatek, Szarzec, & Pilc (2013) investigate the impact of economic

freedom on GDP growth and unemployment, where they conclude that economic freedom has significant impact on the unemployment level, especialy for the youth. The empirical evidence suggest that an increase of one unit in the chain index of economic reform result in a decrease in the unemployment level of between 1.0 to 1.3 percentage points for the period 1980 – 2007.

The other variable, EBRD transition index, measures the progress in transition and tracks the reform developments in the post - communist countries. Rutkowski and Scarpeta (2005) detect the causes of low job creation in the enterprise restructuring and suggest that enhancing the business climate would contribute to lower the unemployment level in post – communist countries. Furthermore, a recent study from IMF (2014) correlates the poor outcomes in the labor market with the transition reforms and confirms that unemployment in Western Balkans have structural roots. However, the study lack of empirical evidence and consider large spectrum of changes within a broad framework of structural policy.

Besides the structural condition, the demographic condition plays a significant role in the theories of unemployment and steady state growth. Different models include variables such as population growth, population density, share of particular group in the total population etc., lead with an aim of explaining the increased level of unemployment, especially after the baby boom generations enter the labor market. Therefore, the ratio of population 0 – 14 years old is included in order to see whether the demographic change during the years leads to the higher youth unemployment.

Chapter 3: Data and Methodology

In this study, I explore the impact of labor market flexibility on youth and total unemployment in post – communist Europe. For this purpose, I use fixed panel regression where labor market flexibility as a key explanatory variable is regressed on both, total and youth unemployment. However, I include other control variables grounder in the previous literature in order to test the persistence of the relationship. This chapter provides general overview of the data used for my analysis and detailed explanation of the key explanatory variable with its sub – indices.

3.1 Data description

In order to estimate the impact of labor market flexibility; macroeconomic and structural policies on unemployment, I use a sample of post – communist countries in Europe for the period 2000 – 2011. The data set covers an unbalanced panel of 17 post-communist countries limited to the above mention period due to the data availability. One of the reasons behind the unbalanced data set is that most of the countries experienced turbulence periods of ethnic conflict (Macedonia, 2001 and Serbia, 1998) and thus some data for those years are missing. Another reason to limit the sample to post – communist countries is that most of the previous researches just focus on OECD or other developed countries. Also, some of the post – communist countries are part of the EU and some aspire to become, hence policies towards labor market flexibility might lead to decline in the unemployment level – especially among the young and prevent future inflow of unemployed people into the EU.

Table 1 summarizes the descriptive statistics for the variables analyzed in this study. As it can be seen, the dependent variables of interest – youth and total unemployment have 204 and 189 observation respectively. The youth unemployment ranges from 8.2 to 65.7% with a standard deviation of 12.67, which shows large variation between countries.

Table 1: Descriptive statistics

Variable	Obs.	Mean	Std. Dev.	Within Std. Dev.	Min	Max
Dependent variables						
Youth_unempl	189	11.96	6.97	5.7	4	37.3
Unemployment	204	25.06	12.67	2.9	8.2	65.7
Key explanatory variables						
LMF	188	6.13	0.96	0.79	3.6	8
Min.wage	194	5.48	2.12	1.47	1.9	10
Firing and hiring regulation	186	4.8	1.13	0.71	2.1	8.8
Centralized collective bargaining	186	7.34	0.81	0.43	4.7	8.8
Hour's regulation	184	6.65	1.77	1.04	3.3	10
Mandated cost of worker dismissal	170	7.78	1.22	0.57	3.6 0	10 10
Conscription	191	5.29	3.53	2.66		
Controlled variables						
GDP growth	203	3.98	4.58	4.47	-17.05	12.23
Inflation	203	6.19	5.54	4.17	-1.05	45
Real Interest rate	193	4.63	6.71	5.7	-40.07	20.31
Trade Openness	204	108.31	31.96	11.18	48.43	180.50
EFI	191	6.82	0.64	0.40	4.56	8
EBRD index	192	3.52	0.38	0.15	1.55	4.05
Part – time employment	160	8.27	6.65	1.68	1.6	47.6

Labor Market flexibility is the key explanatory variable that is un-weighted composite index based on six measures (min.wage; hiring and firing regulations; centralized collective variables; mandated cost of worker dismissal, hour's regulation, and conscription).. All the indicators are standardized on a 0 – 10 scale, where higher values represent more flexible labor market.

From Table 1, it can be observed that based on the LMF countries score from 3.6 – 8 which shows that labor market can be categorized in a range from rigid to medium flexible. The definition of the variables as well as the measurement of the key explanatory variables is presented in the section below. The other control variables belong to macroeconomic, structural, and demographic conditions that captures the impact on the YUT and TUR. Detailed explanation of definitions and sources of all data used in the study is presented in the Appendix (Table 2).

3.2 Measuring Labor Market Flexibility

Along with the development of the labor institutions and policies, there is a tendency to develop measures that capture the labor market flexibility. Such an attempts are made primarily by introducing an index that measured the strictness of labor market institutions including minimum wages, firing and hiring regulation, union density, dismissal practices etc. To this point, based on the previous research, four indexes of labor market flexibility are mentioned in the literature: OECD index of labor flexibility; Labor Freedom Index by Heritage Foundation; Labor Market Regulation Index by Fraser Institute and Employment Rigidity Index by the World Bank.

In this study I include the Labor Flexibility Index develop by the Fraser Institute as a key explanatory variable because all the other indices either have available data from 2004 or some of them are limited only to the developed countries. In this regard, labor market flexibility is defined in terms of its counterfactual – labor rigidities, which constrains the market clearance. Flexible labor markets are characterized with certain practices such as freedom to hire and fire workers, determining the wages by market forces and provision of individual freedom for people to choose their working time.

The Labor Flexibility Index (LFI) is based on the economic freedom index develop by Fraser Institute, category 5B, which measures the labor regulations in 152 countries from the available data set of 2013. The theoretical foundation of this index is based on the premises of the laissez faire principle, where interference in the labor market caused by too much regulation either results in pushing up the wages or creates an environment that affects the market clearance. The LFI is constructed from different public sources, surveys, expert panels gather from external sources such as IMF, World Bank, World Economic Forum.

The LFI index is composite measure based on six policy areas:

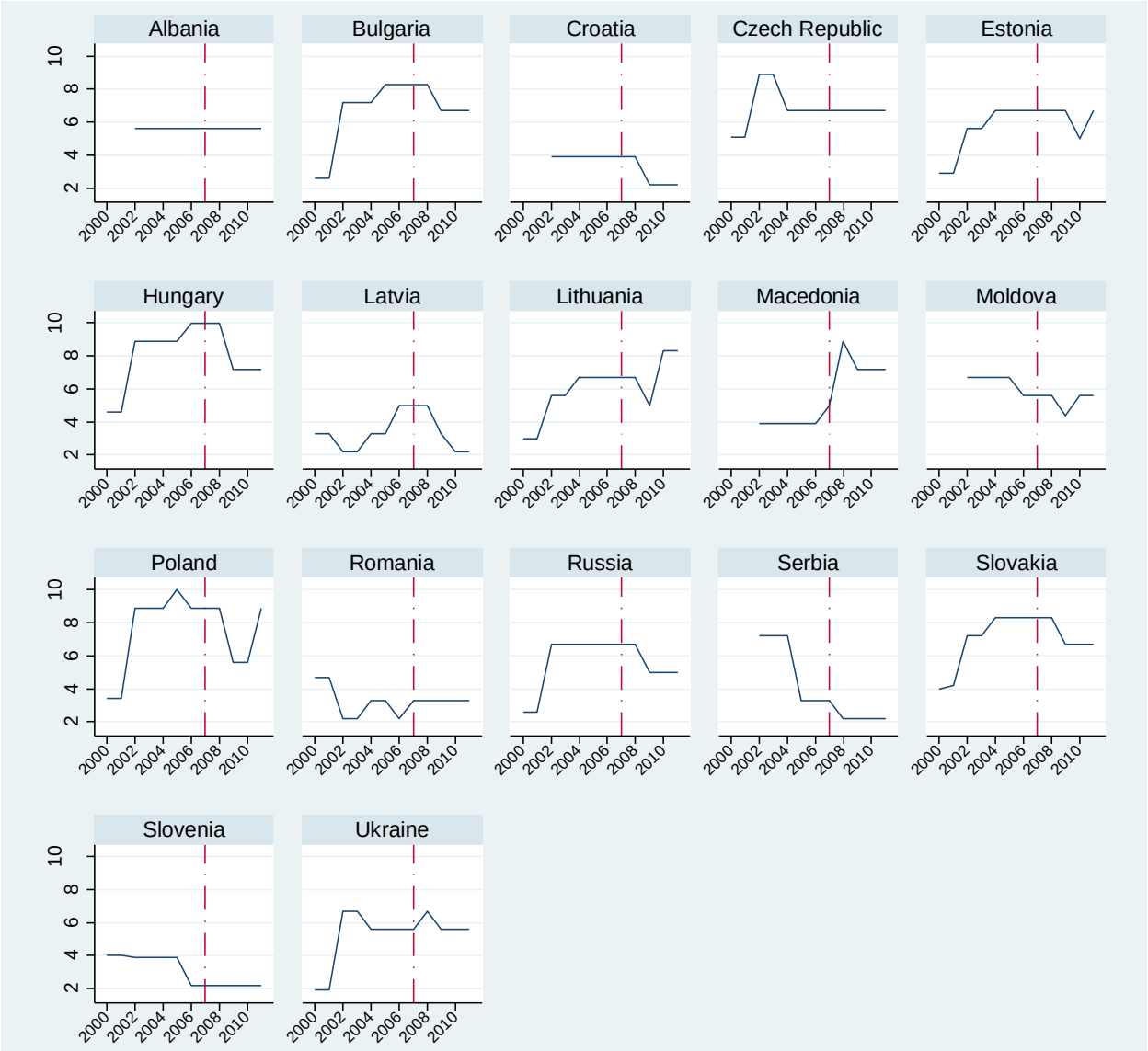
(i) Minimum wage and hiring regulation

This sub-index is derived from the World Bank Index (Difficulty of Hiring Index) which measures the protection of the employee in terms of the contract type and minimum wage ratio. The methodology for this index is based on assigning a certain value for the type of contract (1 – for prohibited fixed contract and 0 otherwise) and the duration of the fixed contract (1 for contracts less than 3 years, 0.5 for three years and 0 for 5 years or more). Similarly, scores are given to the ratio of minimum wage to the average value per worker. Higher scores associate with greater marker flexibility and market determination of wages and contracts. The existences of such measures affect the wage flexibility and protect the employees, which have an implication on the market clearance. According to previous studies, is expected this index to have negative impact on youth unemployment.

Figure 1 plots the sub – index for the period 2000 - 2011 for the post – communist countries. The y – axis present the scores for different countries ranging from 0 – 10, where higher values mean better ranking in terms of labor flexibility. It is interesting to observe the upward trend towards a

greater liberalization during the period 2000 – 2007 and a sharply decrease after the crisis period. However, some of the countries such as Albania, Croatia and Slovenia are characterized with strong labor rigidities in terms of the above mentioned sub index. These countries are associated with protectionist policies guaranteeing a fixed contract and certain minimum wage (Prašnikar, 2006).

Figure 3 Minimum wage and hiring regulation

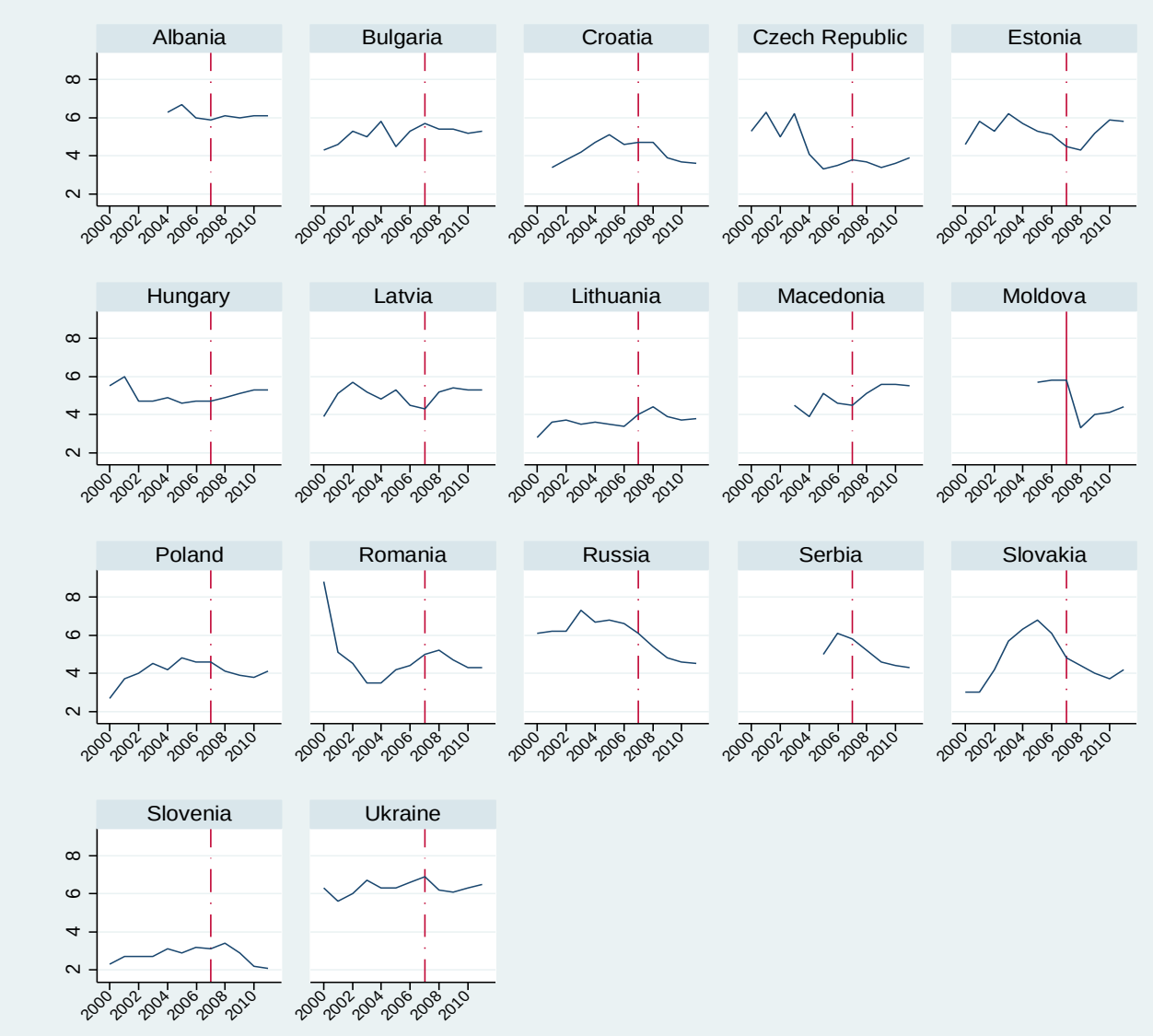


Source: Economic Freedom, Fraser Institute (2013 dataset)

(ii) Hiring and firing regulation

The following sub – index derives from the Global Competitiveness Report, which measures the degree of hiring and firing regulation in a company. This index is one of the crucial element for the flexible labor market, where high scores means the employer has greater freedom to determine the firing and hiring procedure (Figure 5)

Figure 4 - Hiring and Firing regulations in post - communist Europe for the period 2000 - 2010



Source: Economic Freedom, Fraser Institute (2013 dataset)

The effect of these policies is uncertain because it reduces mutually the inflows and outflows from employment (Rodgers, 2007). However, it is widely recognized that such policies constraints the firm's ability to adapt to adverse shocks.

The figure 5 shows unstable variation through the years and countries. From the figure, three patterns derive from the change of the sub – index through the years: Firstly, there are countries with same starting and ending position in 2000 and 2011 (Albania, Slovenia, Hungary, Croatia, Bulgaria, Ukraine) which indicates that on overall the changes were within same range. Secondly, volatile movements of the sub – index followed with step increase or high starting position in some period with high decline in scores (Romania, Slovakia, Czech Republic, Estonia, Russia, Serbia, Moldova). Finally, countries that have improved during the last decade (Lithuania, Macedonia, Latvia). It follows that these countries shift towards a more liberalized regulation after the crisis and allowed firms to adjust to the new conditions in the economy.

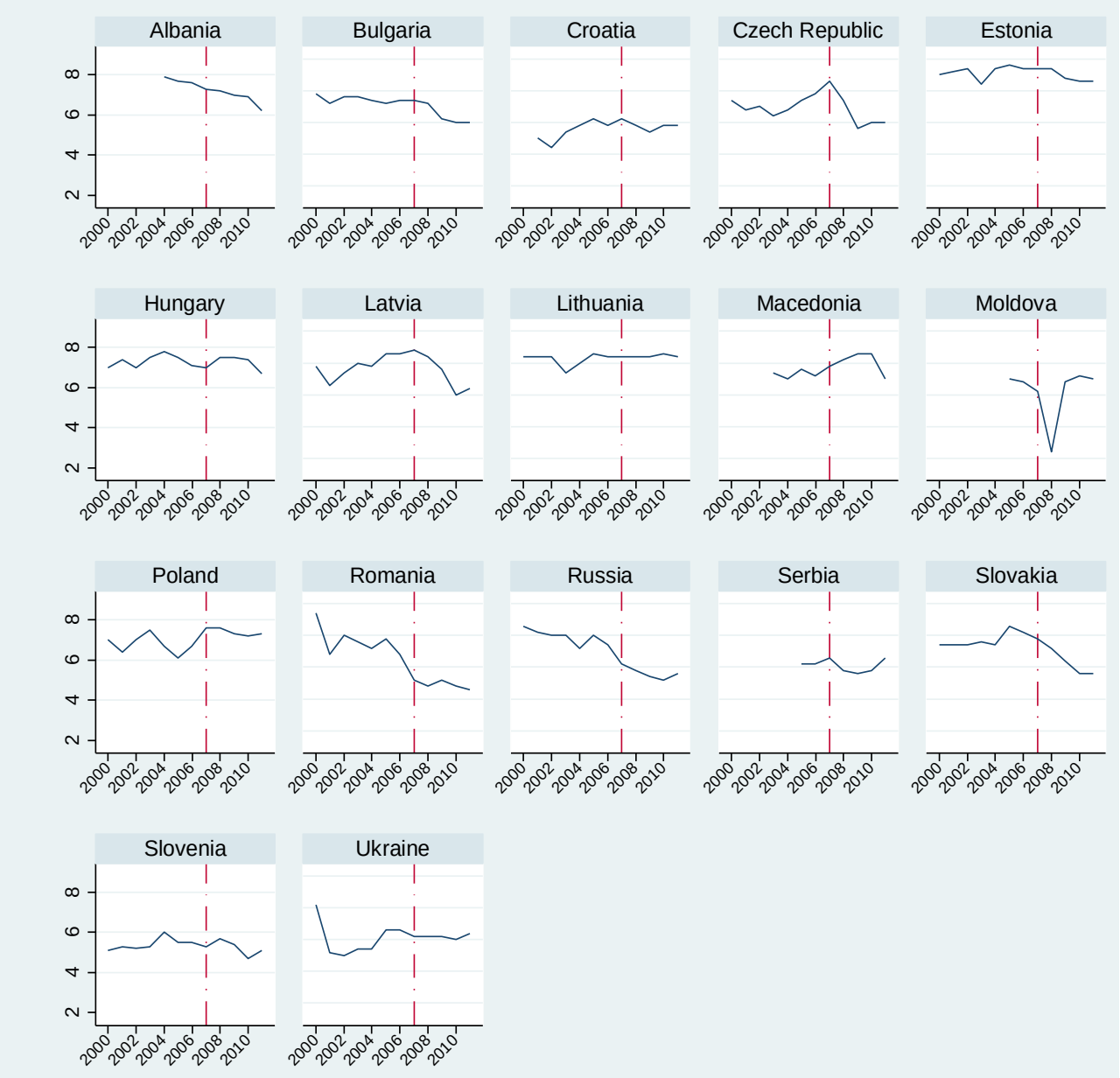
(iii) Centralized collective wage bargaining

The same methodology from the previous sub – index applies also to the centralized collective bargaining index. It is based on the survey, where firms rank from 1-7 by the degree that they freely determine the wages corresponding to standardized scores from 0 - 10. This index clearly affect the wage determination and its one of the forces that might explain the unemployment level.

Figure 6 demonstrates the sub – index of centralized collective bargaining during the period 2000 - 2011. The crises just worsen the condition in the labor market that can be easily noticed on the figure, where almost all of the countries experienced decrease in the rating score.

The highest drop in the sub-index score is noticed in the Czech Republic; Slovakia; Romania; Latvia; Russia and Moldova. This indicates that the after the crisis, labor market institutions had an impact in the market wage determination and as such might be the reason for keeping high the unemployment level. .

Figure 5 - Centralized Collective bargaining for the period 2000 – 2011



Source: Economic Freedom, Fraser Institute (2013 dataset)

(iv) Mandated cost of work dismissal

The following index originates from the World Bank's Doing business data and is related to the dismissal procedure at the work place. Based on the developed formula, countries receive scores from 0 – 10. The sub – index for the sample countries shows little variations through the years with an upward trend towards a greater flexibility (see figure 8 in the Appendix). However, since the data show little variation it can be expected that this sub-index with have little or almost no impact on the explanation of unemployment.

(v) Hour's regulation

Likewise the previous sub – index, this also originates from the same source which has additional five components related to regulation for night work; weekly work; working week; overtime; vacation. Based on the answers from the survey they assign values and construct the standardized index from 0 - 10. Countries show a pattern of similar change in the hour's regulation after the crisis period with a greater extent of flexibility of working hours. (See figure 9 in the Appendix).

(vi) Conscription

The last sub – index is based on data from the duration of the military conscription where values from different period range were assigned. However, Aleksynska (2014) points out that there is no clear channel of the impact of this sub – index on the unemployment level. In addition, some other authors question whether these sub - index relates to any labor policy or institutions that affect the unemployment. The only channel of influence is through prolonging the time for entering the labor market for the young people, thus lowering the employment perspectives of the young people. The figure is presented in the Appendix.

3.3 Methodology

Most of the empirical studies that focus on the analysis of the impact of potential determinants of unemployment rate employ a fixed panel regression. One of the advantages of this method is that FE removes the effect of time-invariant characteristics from the predictor variables and allows controlling for unobserved factors. The empirical assessment is done for the period 2000 – 2011, with a set of unbalanced data for 17 post – communist countries, to utilize the available information for the variables of interests.

In this study, I use the following baseline model:

$$YUR_{it} = LMF_{it}\,\beta + MEC_{it}\delta + Z_{it}\gamma + \varepsilon_{it} \quad (1)$$

Where

- YUR_{it} is the dependent variable of interest which represents the youth unemployment rate in country i at time t
- LMF_{it} is the key explanatory variable which denotes the labor market flexibility index in country i at time, composed from six sub – indices whose value varies from 0 – 10
- MEC_{it} represents the macroeconomic cyclical condition in country i at time t
- Z_{it} is a vector of the other controlled variables included in the model
- ε_{it} is the error term

In addition, I include the second model below, with the individual sub - indices in order to determine the area of labor flexibility at which countries should focus on their agenda for reforms. In the following model, I control only for the lagged GDP growth as one of the most important variables that affect unemployment.

In order to estimate the individual impact of the sub – indices of LMF, I use also the following estimation:

$$YUR_{it} = Minw_{it}\,\beta + FHre_{it}\delta + Cenbar_{it}\gamma + Costdis_{it}\,\alpha + Costdis_{it}\,\mu + Hreg\tau + \varepsilon_{it} \quad (2)$$

$Minw_{it}$ – Sub – index for minimum wage and hiring regulation taking values from 0 – 10 for country i at time t

$FHre_{it}$ – Sub – index for firing and hiring regulation taking values from 0 – 10 for country i at time t

$Cenbar_{it}$ – Sub – index for centralized collective bargaining taking values from 0 – 10 for country i at time t

$Costdis_{it}$ – Sub – index for mandated cost of working dismissal taking values from 0 – 10 for country i at time t

Hreg – Sub – index for hour's regulation taking values from 0 – 10 for country i at time t

Cons – Sub – index dente for conscription taking values from 0 – 10 for country i at time t

L.GDP growth – Lag GDP growth for country i at time t

In addition to the following models, I divide the countries into two groups (EU and Non-EU) including a dummy variable. This specification allows making policy recommendation for the countries who seek to become part of EU. As such, tackling the unemployment and implementing policies towards labor flexibility might enhance the way towards EU.

Chapter 4: Results and Discussion

I estimate the equation (1) using a fixed effect panel regression over the period 2000 – 2011, for a 17 post – communist countries in Europe. The results from the empirical analysis are given below in Table 3, 4 for youth and total unemployment, respectively. I will discuss the results from the tables independently to capture the specific factors that have an impact on the unemployment rate and after that jointly to highlight the difference between results from youth and total unemployment.

4.1 Youth unemployment and its determinants

In the table below, the first column, presents the results from the base model. As it was specified before, the base model assesses the impact of labor flexibility index and lagged GDP growth rate on the total unemployment rate, without taking into consideration the yearly fixed effect[4]. Without taking into consideration the year fixed effect, the LMF index coefficient is negative and significant. This finding indicates that LMF index has positive effect on reducing the youth unemployment rate. The estimates suggest the increasing the LMF index by one standard deviation will result in of 2 % p.p decline in the youth unemployment rate. However, the yearly effect suppressed the effect of the LMF index, as it can be seen from column 2; the LMF index is not significant. Additional to the LMF index in the base model, I include also the lagged GDP growth, which shows to be significant and persistent. The estimates indicate that increasing the GDP growth by 1% will result to decline of 0.8 % p.p in the youth unemployment level, which is line with the previous research.

[4] The purpose behind is to demonstrate the difference on reporting the significance of the LMF effect. In some of the papers that evaluate the impact of the same index on OECD countries, the yearly effect is not reported (Scarpeta et all, 2012)

From model (2) to model (10), I incorporate the other control variables in order to evaluate the impact of the other macroeconomic, structural, and demographic variables.

Table 2 – Estimated results for YUR.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VAR	YUR	YUR	YUR	YUR	YUR	YUR	YUR	YUR	YUR
LMF index	2.54***	-0.27	-0.18	-0.39	-0.56		-0.22	0.38	-0.31
	(0.566)	(0.744)	(0.759)	(0.754)	(0.771)		(0.746)	(0.915)	(0.808)
GDP growth (-1)	-0.62***	-0.87***	-0.87***	-0.68***	-0.70***	-0.65***	-0.84***	-0.84***	-0.95***
	(0.0833)	(0.124)	(0.125)	(0.127)	(0.128)	(0.137)	(0.163)	(0.169)	(0.186)
Inflation			-0.0749						
			(0.121)						
Real interest rate				0.200**					
				(0.0838)					
Trade openness					0.0586				
					(0.0421)				
EFI						-0.895			
						(1.698)			
Pop014							-0.847		
							(0.667)		
Part-time Empl.								-0.805*	
								(0.464)	
EBRD index									-33.04***
									(11.04)
Year FE	×	✓	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Obs.	176	176	176	165	165	166	130	129	118
R-squared	0.295	0.502	0.504	0.514	0.517	0.533	0.634	0.628	0.670
Number of Countries	17	17	17	17	17	17	15	15	14

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In model (3), I include the inflation rate that has negative, but non–significant coefficient. This estimate demonstrate that inflation rate does not have impact on the youth unemployment rate, which is line with the previous research arguing that inflation rate have an impact on

unemployment level in short run, but not in the long run. From the base model, just the coefficient of lagged GDP remains significant denoting its robustness.

In model (4), I control for the impact of the real interest rate. The finding for the real interest rate indicates that increase of 1% in the interest rate is associated with an increase of 0.2% pp in the unemployment level. The estimate is significant at 5% and is in line with the previous literature (ECB; Feldman, 2010).

For the next model (5), I include the trade openness as a control variable. The estimates suggest that there is no relationship between trade openness and youth unemployment. The coefficient is positive but not significant. These finding is in contrast to the previous findings, which can be explain with the minor changes in the trade openness across the countries. In particular, this pattern shows that through the year the volume of trade on average remains at the same level as in 2000.

In the rest of the models from (6) to (9), I include the other structural and demographic variables. EFI is incorporated in model (6) as explanatory variable to capture the impact for various policies (governance, legal structure, property rights, access to money, and regulation of labor and business) that in general is expected to have a positive impact on the unemployment level. However, the estimates indicate that EFI does not have an impact on the youth unemployment level. Model (7) includes the share of population aged 0 – 14 in the total population as a control variable, based on the premises that a large share of young people has negative impact on youth unemployment. The previous findings for the OECD countries demonstrate that a higher proportion of people 0 – 14 lead to higher incidence of youth unemployment. However, the findings for the post – communist countries show that the relationship is negative but not significant. Next model (8) includes part – time employment as a control variable, which appears

to be effective strategy to cope with unemployment. The coefficient is negative and statistically significant at 10%.

In the last model, I include the EBRD transition index, which captures the progress in transition and tracks the economic developments in the post - communist countries in terms of five areas - Large-scale privatization, Small-scale privatization, Governance and enterprise restructuring, Price liberalization, Trade & Forex system and Competition Policy. As it can be seen from the table, the coefficient is statistically significant, which implies that increase in EBRD index for one standard deviation is associated with 5% p.p reduction in YUR.

The empirical analysis of the previous section shows that labor flexibility index does not have an impact on the youth unemployment rate. However, as it was previously discussed some of the sub – indices are constant or have little variation during the years, that in large part determine the impact of the overall LFI. The inclusion of other control variables shows that lagged GDP growth, real interest rate, part – time employment and EBRD transition index have an impact on the YUR.

- Empirical analysis - TUR

The estimation results for the TUR are presented in the table 5 below. Firstly, I start with estimation of the base model – analyzing the impact of the LMF index and lagged GDP growth. From the column 1, can be noticed that LMF coefficient is negative and statistically significant, without including the year FE. However, as it is reported in the second column the year FE effect suppress the impact of the LMF index. Regarding the second variable of interest, the coefficient shows significant and consistent relationship. Comparing with the YUR, the lagged GDP growth

shows smaller impact, which leads to the conclusion that YUR is more dependent on the cyclical condition in the economy.

Including the other control variables, from model (3) to model (8), only the real interest rate, EFI index, and EBRD index show to be significant and have impact on the TUR. In this regards, as it was expected the real interest rate is positive and significant at 10%, but comparing with the YUR has a smaller impact on the TUR. From this, it can be concluded that the real interest rate has greater and more significant influence on the YUR, which relates to the increased investment opportunities and employment of young people.

The result for the EFI in model (6) implies that more economic freedom can lead to a decline in the TUR. The coefficient appears to be significant at 5%, which is in contrast to the YUR where the coefficient was insignificant. The explanation behind that is that the EFI is more related to the improvement of the general macroeconomic conditions in the countries and as such, indirectly has greater influence on the overall unemployment. Finally, the last significant variable that has an impact on both TUR and YUR is the EBRD transition index. The coefficient shows that an increase of the EBRD index for one standard deviation is associated with 1.3 % p.p decline in the TUR. The other controlled variables such as inflation and trade openness appear to be insignificant in the explanation of both TUR and YUR. These finding are in contrast to the previous finding, where significant impact of both variables is observed (Signorelli, 2012).

The comparison between factors that affect TUR and YUR shows that some of the variables included in the models such as - lagged GPD growth, real interest rate, and EBRD index are common and have significant impact on decreasing the unemployment level. In regards to the key explanatory variable, it appears that LMF have significant impact on both levels when year

FE is not taken into consideration. The explanation behind it is related to the nature of changes in the sub – indices from which the LMF index is consisted. Therefore, the next section is devoted to the impact of the individual sub – indices on the TUR and YUR.

Table 3 – Estimated results for TUR

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VAR	TUR	TUR	TUR	TUR	TUR	TUR	TUR	TUR
LMF index	-1.55***	-0.115	-0.066	-0.185	-0.218		0.258	-0.0809
	(0.282)	(0.744)	(0.368)	(0.367)	(0.372)		(0.444)	-0.369
GDP growth(-1)	-0.30***	-0.47***	-0.46***	-0.38***	-0.47***	-0.34***	-0.57***	-0.46***
	(0.0415)	(0.0602)	(0.0603)	(0.0618)	(0.0605)	(0.0675)	(0.0750)	(0.0616)
Inflation			-0.04					
			(0.0584)					
Real interest rate				0.0756*				
				(0.0414)				
Trade openness					0.0586			
					(0.0204)			
EFI						-1.741**		
						(0.803)		
Part-time Empl.							0.109	
							(0.203)	
EBRD index								-8.96**
								(3.830)
Constant	22.44***	17.68***	17.79***	16.60***	15.94***	32.34***	15.60***	48.79***
	(1.807)	(1.808)	(1.818)	(1.870)	(2.414)	(8.186)	(3.246)	-13.09
Year FE	×	✓	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓	✓	✓
Obs.	176	176	176	165	165	166	140	165
R-squared	0.305	0.535	0.537	0.538	0.538	0.556	0.613	0.683
Number of Countries	17	17	17	17	17	17	14	16

4.2 The impact of LMF sub – indices on YUR and TUR

This section estimates the equation below, in order to capture the individual effect of the LMF sub-indices on total and youth unemployment. From the previous section, we can conclude that the overall LMF index does not have an impact on unemployment level. However, as it can be seen from the line charts in chapter 3 most of the sub-indices show little variations across the time, which strongly affect the overall impact of the LMF index.

$$YUR_{it} = Minw_{it}\,\beta + FHre_{it}\delta + Cenbar_{it}\gamma + Costdis_{it}\,\alpha + Cons_{it}\,\mu + Hreg\tau + \varepsilon_{it}$$

Table 5 reports the individual impact of the LMF sub – indices, controlling for the lagged GDP growth together with the year and country FE.

Table 4 – Estimated results for the impact of LMF sub – indices on TUR

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	TUR	TUR	TUR	TUR	TUR	TUR
Lagged GDP growth	-0.40*** (0.060)	-0.47*** (0.060)	-0.47*** (0.060)	-0.46*** (0.061)	-0.40*** (0.062)	-0.47*** (0.061)
Min.wage and hiring reg.	-0.43*** (0.154)					
Hiring and firing reg.		-0.064 (0.259)				
Centralized coll. bargaining			-0.843* (0.457)			
Hour's reg.				0.244 (0.247)		
Cost of worker dismissal					-0.134 (0.381)	
Conscription						0.0355 (0.0864)
Constant	15.59*** (0.871)	14.44*** (1.409)	20.57*** (3.561)	13.23*** (1.584)	14.05*** (2.934)	14.18*** (0.706)
Year FE	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Observations	194	186	186	184	170	191
R-squared	0.363	0.378	0.391	0.329	0.292	0.390
Number of Countries	17	17	17	17	17	17
	*** p<0.01, ** p<0.05, * p<0.1					

As it can be seen from the table, minimum wage and hiring regulation have significant impact on the TUR. The coefficient shows that an increase of one standard deviation in the sub–index is associated with a 0.63 % p.p decline in the unemployment level. Therefore, policies towards elimination of minimum wage and fixed contracts might have significant impact on the unemployment level. Another variable that have impact on the TUR is the sub – index for centralized collective bargaining. The estimate shows that an increase of one standard deviation of the sub–index would result on 0.36% p.p reduction in the unemployment level. The coefficients for the other indices that are included in the LMF index show that are not significant and as such does not have impact on the unemployment level.

Likewise, the TUR, the same impact of the sub – indices is noticed on the YUR just with different magnitude. From the table below it can be observed, that the same sub – indices, minimum wage, and hiring regulation together with the centralized collective bargaining have an impact on the YUR. The coefficient for the minimum wage and hiring regulation indicates that an increase of one standard deviation would reduce the youth unemployment level for 1.1% p.p. Compared with the TUR, this sub – index have greater impact on the youth unemployment.

Also, the centralized collective bargaining index as well has a greater impact on the YUR. The result suggests that an increased f one standard deviation in the sub – index is associated with 2.54 % p.p decline in the youth unemployment at significance level of 10%. Similarly as for the TUR, the other sub – indices demonstrate that are not significant for the YUR.

Table 5 - Impact of the LMF sub-indices on YUR

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	YUR	YUR	YUR	YUR	YUR	YUR
Lagged GDP growth	-0.77*** (0.12)	-0.90*** (0.12)	-0.84*** (0.12)	-0.79*** (0.12)	-0.80*** (0.12)	-0.88*** (0.12)
Min.wage and hiring reg.	-0.754** (0.316)					
Hiring and firing reg.		-0.382 (0.552)				
Centralized coll. bargaining			-1.735* (0.88)			
Hour's reg.				0.176 (0.506)		
Cost of worker dismissal					-0.219 (0.661)	
Conscription						0.201 (0.168)
Constant	35.23*** -1.791	36.14*** -3.048	46.62*** -6.416	33.37*** -3.252	31.40*** -5.072	34.01*** -1.469
Year FE	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Observations	181	174	174	176	169	177
R-squared	0.464	0.517	0.528	0.46	0.474	0.51
Number of Countries	17	17	17	17	17	17
Standard errors in parentheses	*** p<0.01, ** p<0.05, * p<0.1					

From the analysis of the sub – indices follows that minimum wage and hiring regulation as well as the centralized collective bargaining have an impact on the youth and total unemployment. Since, two out of six sub – indices indicate to be significant for the YUR and TUR follows the conclusion that the other sub – indices dominate the overall LMF index. Nonetheless, this analysis allows determining the individual effect and as such providing two important policy conclusions. Firstly, policies in the direction of elimination of minimum wage and fixed contract might lead to effective approaches for coping with the YUR and TUR. Secondly, countries

should allow free determination of the wages in the labor market, since practices to influence this process shows to be negative and contributes to increase the YUR and TUR.

4.3 The impact of LMF index on EU and Non – EU countries

The sub – structure of the sample consisted from 17 post - communist countries allow to make further analysis on the impact of the LMF index by dividing the set of countries into two groups EU and non – EU members. The rationale behind this division is due to the fact the prior to join the EU; countries are required to implement set of policies (acquis communautaire) to harmonize their legislation and policies with the EU members. The set of policies include also a chapter on the labor market flexibilization, which countries have to implement under certain period.

Therefore, I argue that countries that join the EU in 2004 had time to implement policies towards labor market flexibilization and as such, I assume that the impact of LMF index on unemployment would be lower. In order to estimate this assumption, in addition to the base model I include a dummy variable for EU and non – EU countries.

Table 6 presents the results for the impact of LMF index on EU and non – EU countries.

	(1)	(2)	(3)	(4)
VARIABLES	TUR	TUR	YUR	YUR
	Non -EU	EU	Non-EU	EU
LMF index	-0.685* (-0.393)	0.175 (0.52)	-1.497 (0.93)	0.0557 (1.101)
Lagged GDP growth	-0.112 (0.0925)	-0.553*** (0.0792)	-0.311 (0.219)	-0.974*** (0.168)
Year FE	✓	✓	✓	✓
Country FE	✓	✓	✓	✓
Observations	66	110	66	110
R-squared	0.581	0.612	0.469	0.56
Number of Countries	7	10	7	10

The results suggest that LMF index have an impact on the total unemployment rate in non – EU countries at significance level of 10%. It is interesting to observe that the lagged GDP growth is not significant for the non – EU countries. The reason behind the significance of the LMF in the non – EU countries is related to the labor market characteristics disposed to more protective policies and rigid labor institutions. It seems that small changes in the labor market and higher score on the LFI index might be associated with decrease of the TUR in these set of countries.

The empirical analysis of the EU and non – EU countries provides interesting results, showing that LMF index has an impact on the TUR in non – Countries. However, the small number of observation for the non – EU countries as well as the significance of the relationship does not allow to derive clear policy conclusion. Nonetheless, the explanation behind it remains and suggests that non – EU countries should apply policies towards free wage determination and greater labor market flexibilization.

Chapter 5: Policy Recommendation and Conclusion

The main purpose of the thesis is to determine the impact of labor market flexibility on the total and youth unemployment level in post – communist countries in Europe. The preliminary assumption was that the effect of labor market flexibility is positive and as such contributes to decrease the unemployment level. For testing this hypothesis, I include 17 post-communist countries in Europe for the period 2000 – 2011 using a fixed panel regression.

The results suggest that two of the LMF sub-indices - centralized collective bargaining and minimum wage & hiring regulation have a positive impact on decreasing the youth unemployment level. In addition to the sub - indices, the empirical analysis shows that economic growth, real interest rate, a high share of part – time employment, EBRD transition index decrease youth unemployment rate. Furthermore, the analysis of the two groups of countries (EU and non-EU) suggest that flexible labor policies should be one of the priorities in economic policies for non – EU countries.

Based on the results described in chapter 4, the following policy recommendation for Macedonia – as one of the main country of interest, can be proposed:

Firstly, Macedonia as one of the countries with the highest youth and total unemployment rate should adapt policies towards stimulating economic growth. Taking into consideration the current situation as well as the recommendation from the EU the government should focus on establishing a business environment with fewer regulations and promotions of policies towards more economic freedom.

Secondly, promotions of policies towards greater labor market flexibilization show to be beneficial for countries that joined the EU. Therefore, practices of imposing a minimum wage as it was recently done (2014) show to be have negative impact on the unemployment, especially among young. In addition, policies towards free wage determination and effective regulatory institutions utilize the job – matching process, which might have impact on the employment level.

Thirdly, the introduction of new policies and measures should be coordinated and be in line with the current strategy of attracting foreign direct investments and opening new jobs. For example, even though the regulatory framework and business environment in Macedonia significantly improved during the last three years (Doing Business Report), the recent government measure on imposing a minimum wage for the firms actually worsen the employment opportunities in the country.

To conclude, the results of this paper suggest that policies towards labor market flexibilization have a positive impact on youth unemployment rate. At the same time, some of the countries are candidate members for EU and as such, flexibilization of the labor market might be beneficial in a long-term and enhance the opportunities for joining the EU.

Bibliography

Aleksynska, M. (2014). *Deregulating labour markets:How robust is the analysis of recent IMF working papers?* ILO.

Aricò , F. (2001). Growth and Unemployment: towards a theoretical integration. *Journal of Economic Literature* .

Aslund, A., Boone, P., & Johnson, S. (1996). How to Stabilize: Lessons from Post -communist Countries. *Economic Studies Program, The Brookings Institution*.

Blanchard, O. (1999). *Macroeconomics .* Prentice Hall PTR.

Bokros, L. (2012). *Accidental Occidental: Economics and Culture of Transition in Mitteleuropa, the Baltic and the Balkan Area.* Budapest: Central European University.

Booth, A., Francesconi, M., & Frank, J. (2002). Temporary Jobs: Stepping Stones or Dead Ends? *Economic Journal*.

Breen , R. (2005). Explaining Cross-national Variatin in Youth Unemployment: Market and Institutions Factorss. *European Sociological Review*, 125-134.

Charles, W. (2007). abour standards and migration in the New Europe: Post communist legacies and perspectives. *European Journal of Industrial Relation*.

Choudhry, M., Marelli, E., & Signorelli, M. (2012). Youth unemployment rate and impact of financial crises. *International Journal of Manpower*, 76 - 95.

Crowley, S. (2004). Explaining Labor Weakness in Post-Communist Europe: Historical Legacies and Comparative Perspective. *East European Politics & Societies*.

Daveri , F., & Tabellini, G. (2000). Unemployment, growth and taxation in industrial countries. *Economic Policy, CEPR & CES & MSH*, 47-104.

Dutt , P., Mitra , D., & Ranjan, P. (2009). International trade and unemployment: Theory and cross-national evidence. *Journal of International Economics*, 32-44.

EBRD. (2007). *Transition report 2007 - People in transition.* EBRD.

Ederveen , S., & Thissen, L. (2004). Can Labour Market Institutions Explain Unemployment Rates in New EU Member States. *European Network of Economic Policy Research Institutes*.

Favell, A. (2008). The New Face of East - West Migration in Europe. *Journal of Ethnic and Migration Studies*, 701 - 716.

Felbermayra, G., Prat, J., & Schmerer, H.-J. (2011). Trade and unemployment: What do the data say? *European Economic Review*, 741-758.

Feldman, H. (2010). *Economic Freedom of the World.* Fraser Institute.

Fidrmuc, J. (2003). Economic reform, democracy and growth during post - communist transition . *European Journal of Political Economy* , 583-604.

Gabrisch, H., & Buscher, H. (2006). The Relationship between Unemployment and Output in Post-communist Countries. *Taylor & Francis Journals*, 261 - 276.

Gallaway, L., & Vedder, R. (1987). Wages, Prices and Employment: Von Mises and the Progressives . *The review of Austrian Economics*, 33-80.

IMF. (2014). *Unemployment in Western Balkans.* IMF.

Lee, J. (2000). The Robustness of Okun's Law: Evidence from OECD countries. *Journal of Macroeconomics*.

Nickell, S., Nunziata, L., & Ochel, W. (2005). Unemployment in the OECD ince the 1960s. What do we know? *The Economic Journal*, 1-27.

OECD . (2006). *OECD Employment Outlook 2006 - Boosting Jobs and Incomes.* OECD publishing.

OECD. (1994). *The OECD jobs study : facts, analysis, strategies.* OECD publishing.

OECD. (2013). *OECD Skills Outlook 2013* . OECD publishing.

Pissarides, C. (1990). *Equilibrium Unemployment Theory.* MIT Press.

Piatek, D., Szarzec, K., & Pilc, M. (2013). Economic Freedom, democracy and economic growth: a casual investigation in transition countries. *Post - Comunist Economices, Taylor & Francis*, 267 - 288.

Prašnikar, J. (2006). *Competitiveness, Social Responsibility and Economic Growth.* New York: Nova Science Publisher.

Rutkowski , J., & Scarpetta, S. (2005). Enhancing Job Opportunities : Eastern Europe and the Former Soviet Union. *World Bank Publications*.

Siebert, H. (1997). Labor Market Rigidities: At the Root of Unemployment in Europe. *Journal of Economic Perspectives*, 37 - 54.

Verdugo, L. B., Furceri, D., & Guillaume, D. (2013). Banking crisis, labor reforms, and unemployment. *Journal of Comparative Economics*.

Vidovic, H. (2001). Labor Market Trends in Central and Eastern European Countries. In B. Funck, & L. Pizzati, *Labor, Employment and Social Policeis in the EU Enlargement Process* (pp. 27-47). The World Bank.

Viner, J. (1936). Mr.Keynes on the causes of Unemployment . *Oxford Journals* , 147 - 167.

Annexes:

Annex 1 – Variables, Sources, and Definition

Variable	Definition	Source
Dependent variables		
Unemployment rate (TUR)	Unemployment refers to the share of the labor force that is without work but available for and seeking employment. Definitions of labor force and unemployment differ by country.	Source: UNECE Statistical Database, compiled from national and international official sources.
Youth Unemployment rate (YUR)	Youth unemployment refers to the share of the labor force ages 15-24 without work but available for and seeking employment.	Source: UNECE Statistical Database, compiled from national and international official sources.
Explanatory variables		
LMR	LMR is a composite index based on six measures of labor market institutions (minimum wage, hiring and firing regulations, centralized collective bargaining, mandated cost of hiring, mandated cost of worker dismissal and conscription). The LMR index is an un-weighted average of these six measures and its value varies from 1-10	Fraser Institute http://www.freetheworld.com/2011/2011/Dataset.xls
GDP Growth	Annual GDP growth	World Development Indicators
Inflation	Annual change in the consumer price index	World Development Indicators
Real Interest Rate	Real interest rate is the lending interest rate adjusted for inflation as measured by the GDP deflator.	World Development Indicators
Trade Openness	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.	World Development Indicators
Economic Freedom Index	Summary index from Economic Freedom of the World, scaled to take values between 0 (least free) and 10 (most free). The index measures the degree of economic freedom in the following areas: (1) Size of government: expenditures,	Fraser Institute

	taxes and enterprises, (2) Legal structure and security of property rights, (3) Access to sound money (4) Freedom to trade internationally, (5) Regulation of credit, labor, and business. The summary ratings of the index are the arithmetic means of the five area ratings.	
Part – time employment	Part time employment refers to regular employment in which working time is substantially less than normal. Definitions of part time employment differ by country.	World Development Indicators
Population ages 0-14 (% of total)	Population, age 0-14 (% of total) is the population between the ages of 0 and 14 as a percentage of the total population.	World Development Indicator
EBRD transition index	The EBRD assesses progress in transition through a set of transition indicators. Assessments are made in six areas: Large-scale privatization; Small-scale privatization; Governance and enterprise restructuring; Price liberalization; Trade and foreign exchange system; Competition policy. The measurement scale for the indicators ranges from 1 to 4+, where 1 represents little or no change from a rigid centrally planned economy and 4+ represents the standards of an industrialised market economy.	EBRD

Figure 7 – Hour's Regulation

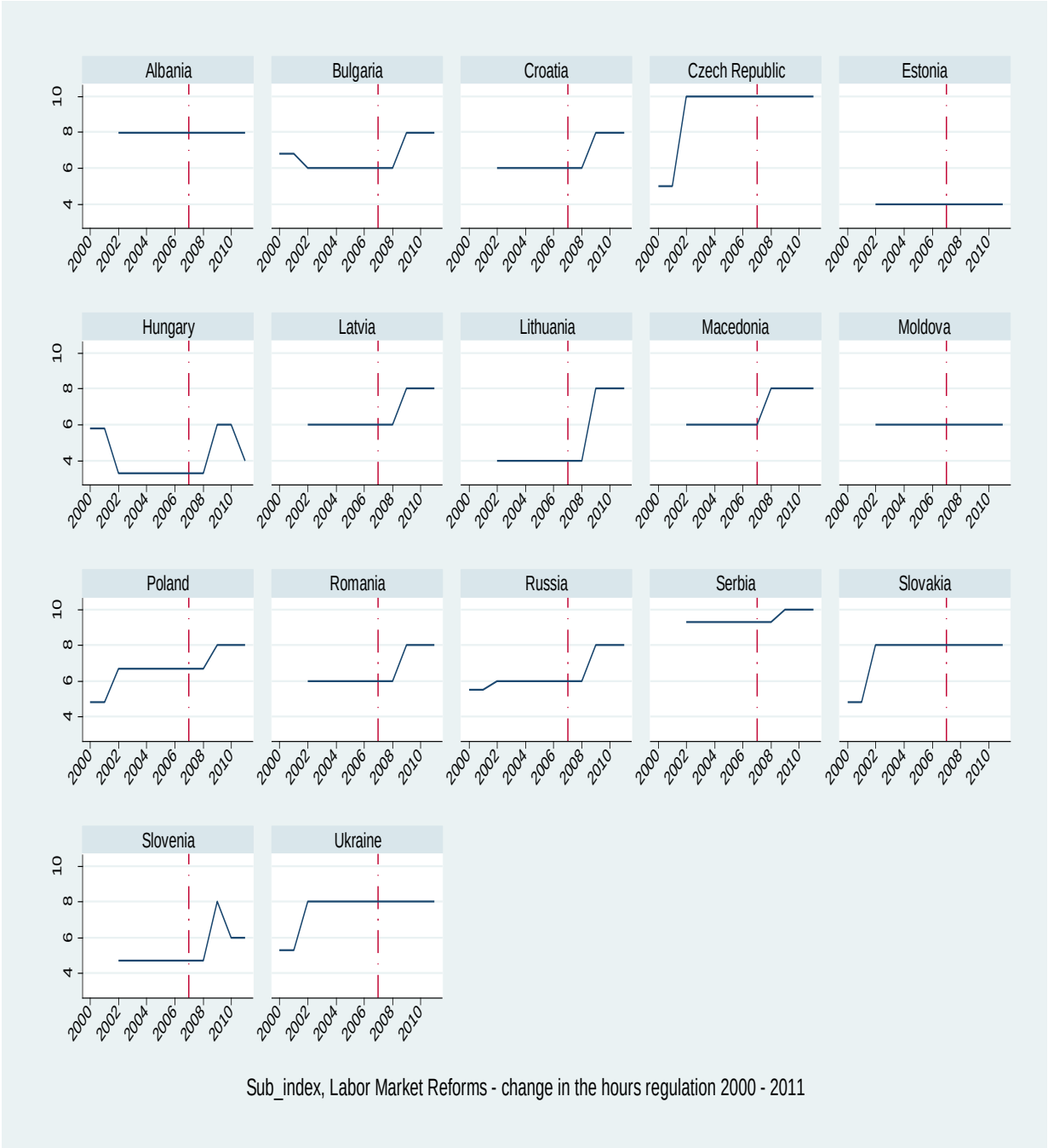


Figure 8 – Mandated cost of worker dismissal

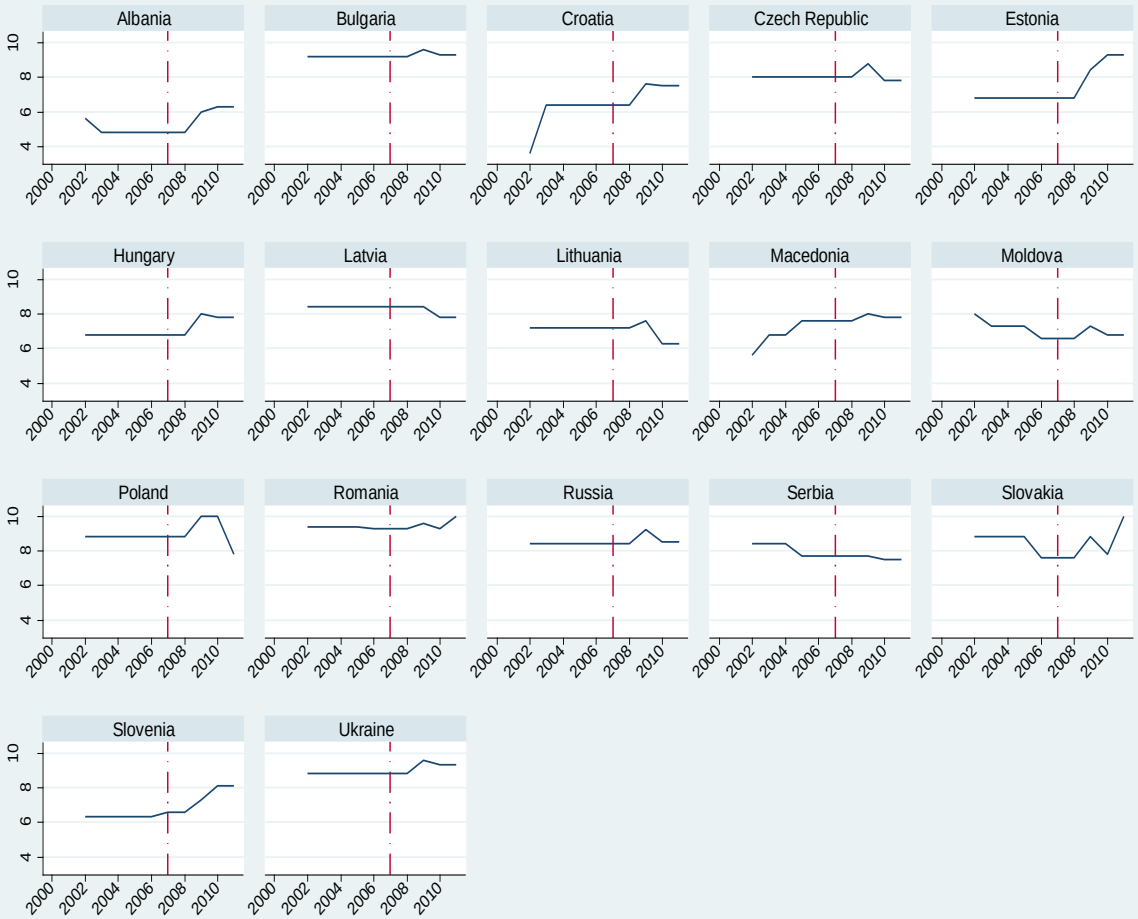
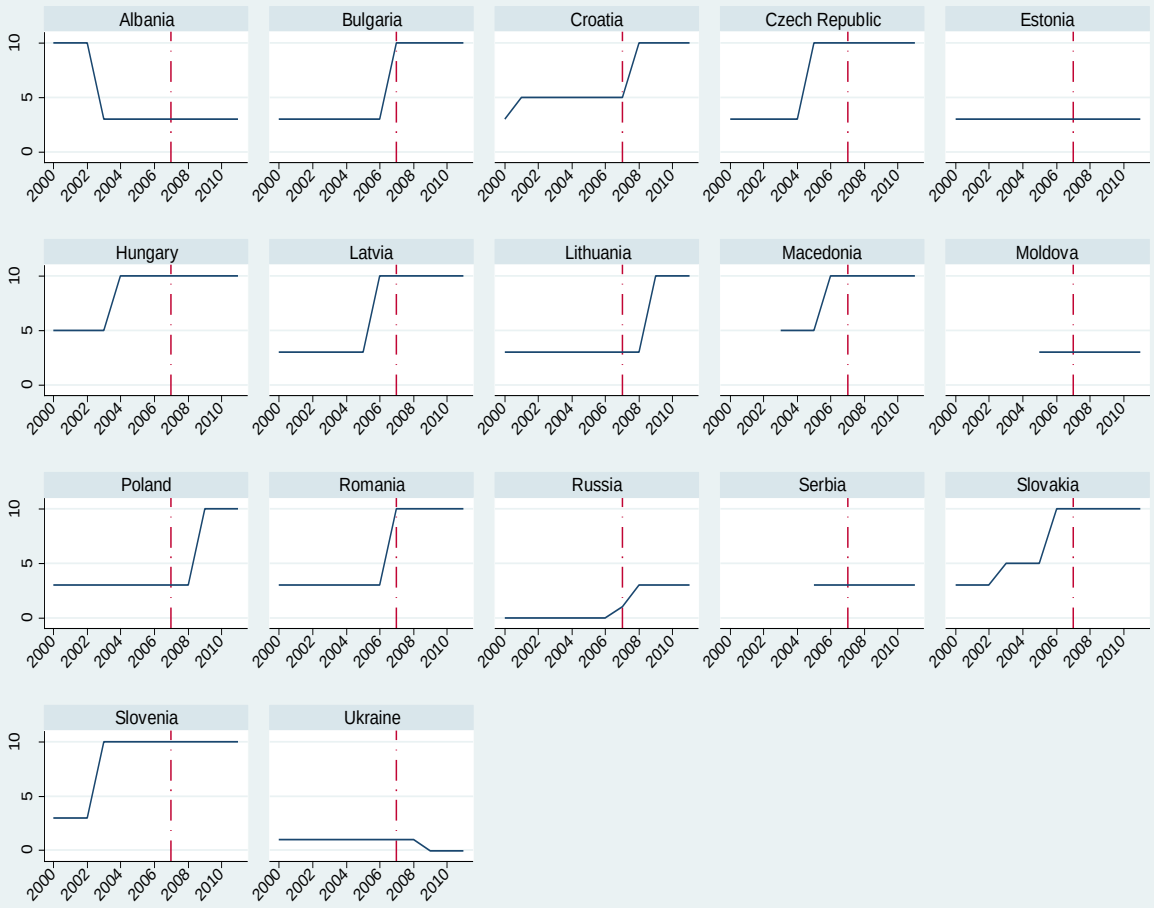


Figure 9 - Conscription



Sub_index, Labor Market Reforms - change in Conscription 2000 - 2011