LUND UNIVERSITY
School of Economics and Management

Lund University
School of Economics and Management
Department of Economics

Master Essay I
"Analysis of factors of economic growth in countries with transitional economy"

Author: Hanna Bialova

Supervisor: Pontus Hansson

Lund, 2009

Table of contents

List of figures

List of tables

Abstract

The present master essay discusses the factors of economic growth in countries with economies in transition. We consider two time intervals: transitional recession (1989-1998) and transitional recovery and growth (1998-2008). There are four groups of factors affecting growth: initial conditions, macroeconomic policies, structural reforms and social policies. The work was conducted with the help of cross-sectional regression analysis. It was found that the main condition for the long-term growth is the establishment of sustainable market institutions by the realization of structural reforms.

Key words: economic growth, transition, transformation, factors, initial conditions, macroeconomic policy, structural reforms, social policy.

1. Introduction

In this first chapter the reader is introduced to the background of the study. We state the objective of the paper, limitations, target group and main findings together with offering an outline of the rest of the paper.

1.1. Background

Twenty years ago in some socialist countries economic reforms started. Since 1990 this process has involved 25 countries in Central and Eastern Europe and the former USSR with total population about 420 million people. The aim of the reforms in these countries was the transition from a command regime to a market economy. Each country has chosen its own way of achieving this goal, so the strategy and tactics of reforms differed significantly from country to country. On their way towards market economy many countries experienced considerable difficulties. Transitional recession was comparable to the Great Depression in terms of deepness and destructiveness. Together with sharp GDP fall, many transition economies faced hyperinflation with average yearly inflation rate around 2500 percent, doubled inequality level and worsened conditions in social sphere. After accounting for numerous wars and social strives in the region, one can obtain the full picture of the first years of transition.

Now, when almost 20 years of transitional period have passed, we can see success or failure of transformation in one or another country. Some countries achieved sustainable economic growth, in other countries rapidly started growth soon turned into recession, some countries just started to grow.

The analysis of macroeconomic data gives us the possibility to divide transitional period into two sub-periods: first decade of transformation (1989-1998) which is characterized by poor economic performance in all post-communist countries and second decade of transformation (1998-2008) which can be referred as the stage of transitional recovery and growth.

An important question today is what determined good or bad economic performance in one or another post-communist country and which lesson countries can learn from their neighbors? Almost all studies of economic growth in countries with transitional economies distinguish the same set of factors contributing to growth: initial conditions, macroeconomic policy, structural reforms and social policy. Each of these groups includes variables which are positively or negatively related to growth. As the present work is not aimed to construct a growth model and predict growth, we will analyze the direct relation between growth and different factors using simple cross - sectional regression. Considering that economic growth

is a resultant of different economic vectors, which affect output and at the same time influence each other, we will use a multiple OLS regressions to control results obtained by individual factor analysis. The most important difference of the present work from the previous studies is employing the recent data in the analysis which enables to make a comparison between two different stages of transition.

1.2. Objective

The wide divergence in output growth rates across the countries in transition raised a number of questions addressed to economists. Why have some economies performed better than others during transition? Can the less successful countries learn some policy lessons from the countries which enjoyed rapid and sustained growth during the years of transition? Can cross-countries variations be better explained by the choice of economic policy or by external economic shocks and initial conditions in each country? The present research is aimed to find answers on these questions. The objective of the study is to analyze factors of economic growth in countries with transition economy and to investigate which factors had bigger impact on economic growth immediately after the liberalization, and which influenced economic development lately.

1.3. Motivation

The sharp fall in output in transition economies in the 1990s arouse considerable interest of economists. Numerous papers have analyzed determinants of transition growth during the first ten years. But recently interest to this topic has gradually vanished. Less attention in literature has been paid to the latest recovery and rapid growth in transition economies. However, it is very likely that some other factors have influenced economic development within the second decade of transitional period. Advantages of new available data and relatively small number of recent empirical studies on transition growth have become the main motivation of present research.

1.4. Limitations

The most important limitations of our work are connected to limitations of the any econometric research. First of all, regression analysis is not able to explain the mechanisms which lead to the dependencies between different factors and growth. We can not identify the cause-and-effect relations between variables, but can only discover presence or absence of some dependence. Another limitation is the number of observations (only 25 countries).

Moreover, the main critics of cross-countries analysis of economic growth is incomparableness of statistical data collected from different countries.

1.5. Target group

The target group of this paper consists of people interested in and having some general knowledge in economic transition. These could be students, professors, researchers as well as policy-makers interested in the problem of transition growth. These could be also people who simply want to learn more about such an unprecedented phenomenon as transformation from planned to market economy, which was experienced by 420 million people in former communist countries.

1.6. Main findings

As the result of current research we have discovered a strong significant dependence between economic growth and structural policy on both stages of transitional period. Therefore we have concluded that structural reforms were crucial elements for building a new economic system. Market-oriented reforms should be aimed at the establishment of efficient institutions, so that economy can fulfill its potential. The further development of the country will depend on the quality of institutions created on the transitional stage.

1.7. Outline

The structure of the paper is organized as following:

Chapter 1 is an introductory chapter. In this first chapter the reader is introduced to the background of the study. We state the objective of the paper, limitations, target group and main findings together with offering an outline of the rest of the paper.

Chapter 2. In the present chapter we will introduce the world of transitional economy to the reader. We will discuss the heritage of communism initially obtained by the countries in transition as well as output pattern, inflation rates and liberalization policies during past twenty years of transformation. We also present a hypothesis about two stages of transition: transition recession and transition growth.

In *Chapter 3* we will see a brief overview of previous empirical studies of growth during transition. We will present relevant for our study theoretical issues and previous researches on

transition growth. We divide all literature on early and recent studies and summarize the most important articles that have contributed to the understanding of the issues treated in this paper.

Chapter 4 is methodological chapter. In this chapter we will present the data and the methodology that have been used in further analysis. We will give exact sources of data on transition and describe in detail each variable used in the research together with the way of its calculation.

Chapter 5. In this chapter we will perform regression analysis of main factors influencing output pattern during transition. The agenda of the chapter will be organized as following. First we will describe the possible links between each factor and growth, and the regression equations we are going to make together with theory behind them. Then we will check our expectations by running OLS regressions and discuss the results we have come up to.

Chapter 6. In this chapter we will present to the reader main conclusions and findings of present paper. We will also make some further research suggestions and discuss policy implications of present paper.

2. Macroeconomic performance during transition

In the present chapter we introduce the world of transitional economy to the reader. We discuss the heritage of communism initially obtained by the countries in transition as well as output pattern, inflation rates and liberalization policies during past twenty years of transformation. We also present a hypothesis about two stages of transition: transition recession and transition growth.

Economic and political reforms, which started in 1989 in all Communist countries in Europe (including USSR), involved about 420 million people and around 24 million square kilometers of territory. Within a few years European landscape significantly changed. The three Communist federations – Czechoslovakia, the Soviet Union and Yugoslavia – have disintegrated. More than twenty new independent states appeared on the map. All former European Communist countries held democratic elections and stepped on the path of transition (Milanovich, 1997).

The shift from planned to market economies was a social and economic transformation of unprecedented scale. The socialist heritage implied that all the countries initially had economic systems adapted to the requirements of command economy. External liberalization caused deep distortions in both production and financial spheres. Such economic deviations strongly affected output performance. During the first decade of transformation all post-communist countries went through the transitional recession, which is comparable to the Great Depression in terms of deepness and duration (World Bank, 2002). After adjusting there economic structure to the exigencies of market economy, countries entered a second stage of transition – transitional growth. The break-point was year 1999 when all the countries in Europe in central Asia region returned to growth (Appendix 1).

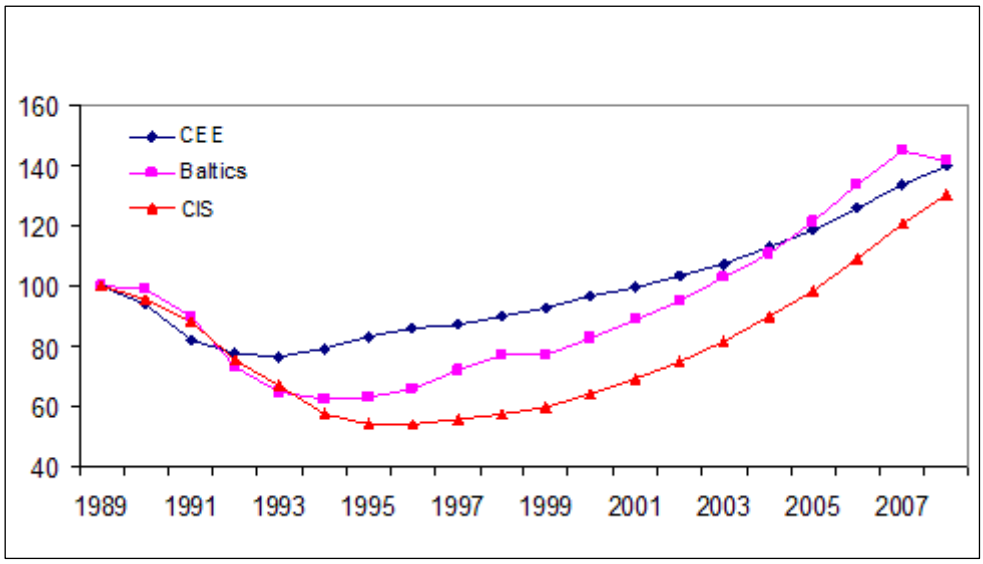
2.1. Output pattern in transition

Although all 25 countries had similar GDP trends throughout the years of transition, there were some significant variations in output performance across the countries. These differences are most noticeable between the countries in Central and Eastern Europe (CEE) and the Baltic region and those in the Commonwealth of Independent States (CIS)[1]. During the transitional recession real GDP dropped from its 1989 level by nearly 15 percent in CEE

[1] The CEE countries include: Albania, Bulgaria, Croatia, Czech Republic, Hungary, Macedonia, Poland, Romania, Slovak republic and Slovenia. The Baltics are: Latvia, Lithuania and Estonia. The OFSU are: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

and by more than 60 percent in CIS. According to the International Monetary Fund statistics, the real GDP in CEE and Baltics recovered to its 1989 level by 1998. Yet, in the CIS the gross domestic product in 1998 was only 57 percent in comparison to 1989s level (Figure 2.1). The GDP in Poland (the most populous CEE country) increased by 40 percent during the first ten years of transition. By contrast, the GDP in Russian Federation (the most populous country in the CIS) decreased by 40 percent during the same time period (World Bank, 2005). However, severe divergence in output performance between two groups of countries was softened during the second decade of transition. On average between 1999 and 2008 real GDP in the CIS grew faster than that in the CEE and in 2007 it reached 120 percent of the 1989 level. The GDP in CEE in 2007 stood at around 130 percent of its 1989 level.

Figure 2.1. Real GDP index (1989=100)



Source: own calculations based on data from IMF

Rates of economic growth have varied significantly also within the groups of countries. For example, in the CEE region Hungary, Poland and Slovenia had several years of constant and uninterrupted growth, while growth in Bulgaria, Romania and Check Republic was disturbed by rigorous macroeconomic crises in the mid 1990s (World Bank, 2002). In the past five years Slovak Republic had highest real GDP growth rates in the CEE region, which accelerated to 8.8 percent in 2007, while average CEE growth in 2007 stood at around 6 percent. Growth in Hungary recently continued to be weaker than in the rest of the region – only 1.3 percent in 2007. At the same time Baltic countries enjoyed comparatively high rates of GDP growth before 2007 (8.8 percent on average). But in 2008 due to large domestic and external imbalances output growth in Baltics dramatically dropped to 1.2 percent level.

In the CIS such radical reformers as Georgia, Armenia and Kyrgyz Republic experienced steep output decline in early 1990s, but managed to return to growth already by 1996. The non reformers, such as Belarus and Uzbekistan, experienced smaller GDP decline and also began to grow in mid 1990s. But Russia and Ukraine did not start to grow until 1999. Recently the real GDP growth has been strong in most countries of the Commonwealth of Independent States. According to the IMF World Economic Outlook 2008, in 2007 the average growth rate in CIS was 8.6 percent with highest rate (23 percent) achieved by Azerbaijan and lowest rate in Moldova (4 percent). However, in 2008 situation in the most countries of the region has significantly worsened because of international financial crises which hit most of economies all around the world (Table 2.1).

Table 2.1. Transition Economies: Real GDP (Annual percentage change)

Country	2004	2005	2006	2007	2008
Baltics	7,6	8,8	9,8	8,8	1,2
Estonia	7,8	9,8	10,4	6,3	-1,5
Latvia	8,6	10,2	12,2	10,3	-0,9
Lithuania	7	7,5	7,9	8,9	3,9
Central Europe	5	4,3	6,2	6,1	4,6
Check Republic	4,2	6,1	6,8	6,6	4
Hungary	5,2	4,1	3,9	1,3	1,9
Poland	5,3	3,4	6,2	6,6	5,2
Slovak Republic	5,4	6,1	8,5	10,4	7,4
Slovenia	4,2	3,9			
Southern and South-eastern Europe	6,8	4,4	7	6	7,3
Bulgaria	5,7	5,5	6,3	6,2	6,3
Croatia	3,8	4,3	4,8	5,6	3,8
Commonwealth of Independent States (CIS)	8,4	6,6	7,7	8,6	7,2
Russia	7,2	6,4	6,7	8,1	7
Ukraine	12,1	2,7	7,1	7,6	6,4
Kazakhstan	9,6	9,7	10,7	8,9	4,5
Belarus	11,4	9,3	9,9	8,2	9,2
Turkmenistan	14,7	9	9	11,6	10,8
Low-income CIS Countries	8,5	12	14,6	14,5	10,5
Armenia	10,1	14	13,3	13,8	10
Azerbaijan	10,2	24,3	31	23,4	16
Georgia	5,9	9,6	9,4	12,4	3,5
Kyrgyz Republic	7	0,2	2,7	8,2	7,5
Moldova	7,4	7,5	4	4	6,7
Tajikistan	10,6	6,7	7	7,8	6
Uzbekistan	7,7	7	7,3	9,5	8

Source: data from IMF

2.2 Initial conditions at the start of transition

At the start of transition there were significant geographical, historical and economic differences across the countries. Incomes (PPP adjusted GDP per capita) were generally higher in Central Europe and the European part of the USSR, varying from US$1,400 in Albania to US$9,200 in Slovenia (World Bank, 2002). Several countries – Azerbaijan, Kazakhstan, Turkmenistan and Russia – had rich deposits of natural resources, which gave them the potential for future growth. The CEE countries had smaller trade dependence on other communist countries than those in CIS and Baltic region, and therefore they suffered less from changes in the terms of trade after trade was liberalized. By contrast, small energy importers such as Moldova, Latvia, Lithuania and Estonia had the biggest proportional losses of about 10 percent of GDP (World Bank 2002).

At the beginning of transition period numerous post-communist countries faced wars or economic blockade (Table 2.2).

Table 2.2. Countries at War or under Economic Blockade, 1991-1997

Country	War on its territory (pre-war population in millions)	Estimated dead (in thouthands)	Percentage decline in GDP between 1989 and 1997	Economic sanctions
Albania	Yes (3,3)	0,3	23	No
Armenia	No (3,2)	0	43	Yes
Azerbaijan	Yes (7,2)	15	57	No
Croatia	Yes (4,8)	20	24	No
Georgia[a]	Yes (5,5)	11	38	Yes
Macedonia	No (2,1)	0	26	Yes
Moldova	Yes (4,3)	1	58	No
Russia	Yes (148,2)	100[b]	40	No
Tajikistan	Yes (5,2)	50	67	No
Total:	*7 countries with wars; 178,5 milion people*	*97,3*	*40,9*[c]	

a. Includes two conflicts: in Abkhazia and Southern Ossetia
b. Casualties in Chechnya
c. Weighted average

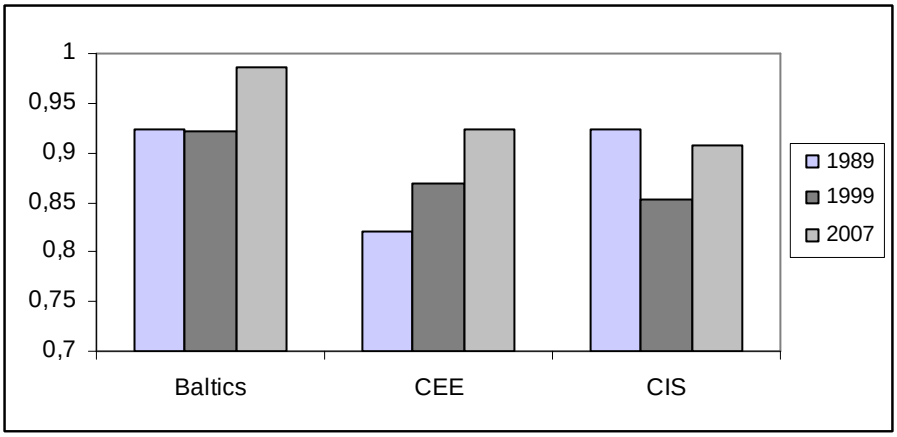
Source: B. Milanovich (1997), p.4

According to Milanovich (1997), wars and civil strives have affected approximately 30 million people (excluding Russia). Almost two hundred thousands people have been killed. By the year 2000 the majority of the conflicts have been resolved. But the social costs of

military conflicts were high. By 1999 the total value of goods and services produced on the area of transition economies declined by at least 25 percent in real terms. Percentage decline of GDP between 1989 and 1997 in countries involved in conflicts was on average 40 percent. As during this period many currencies depreciated, the decline expressed in dollars has been even steeper (Milanovich, 2007).

The level of public spending on social sphere as well as the rates of secondary school enrollment and the quality of education were traditionally high in all communist countries (Figure 2.2).

Figure 2.2. Secondary school enrollment[2]: cross-regions comparison

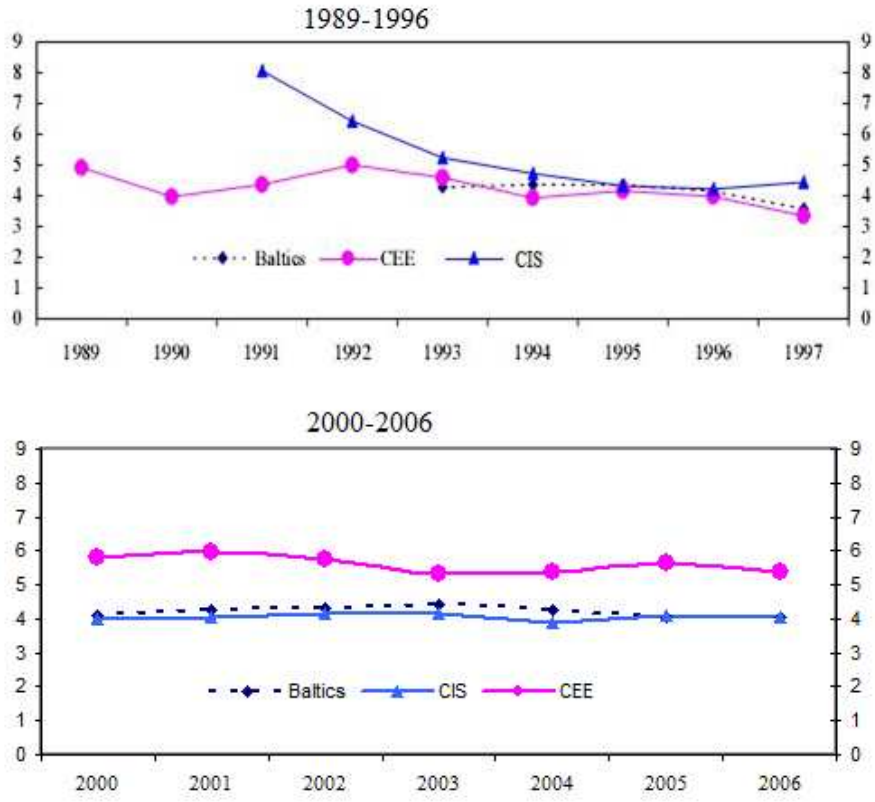


Source: Data from UNICEF. TransMonee 2008 DATABASE

However, while Baltic countries and those in CEE managed to keep and even improve the pre-transition level of secondary school enrollment rates, CIS countries experienced significant worsening in educational sphere. During the first ten years of transition enrollment rate in CIS on average decreased by 1 percent in comparison to 1989. The origin of this negative phenomenon becomes obvious when we consider education expenditures in each region. The fiscal adjustments at the beginning of 1990s were followed by significant cuts of public spending on education. These cuts were more severe in CIS region (Figure 3.3 below).

[2] Share of school-age population

Figure 2.3. Education expenditures/GDP (percent)



Source: Data from UNICEF. TransMONEE 2008 DATABASE

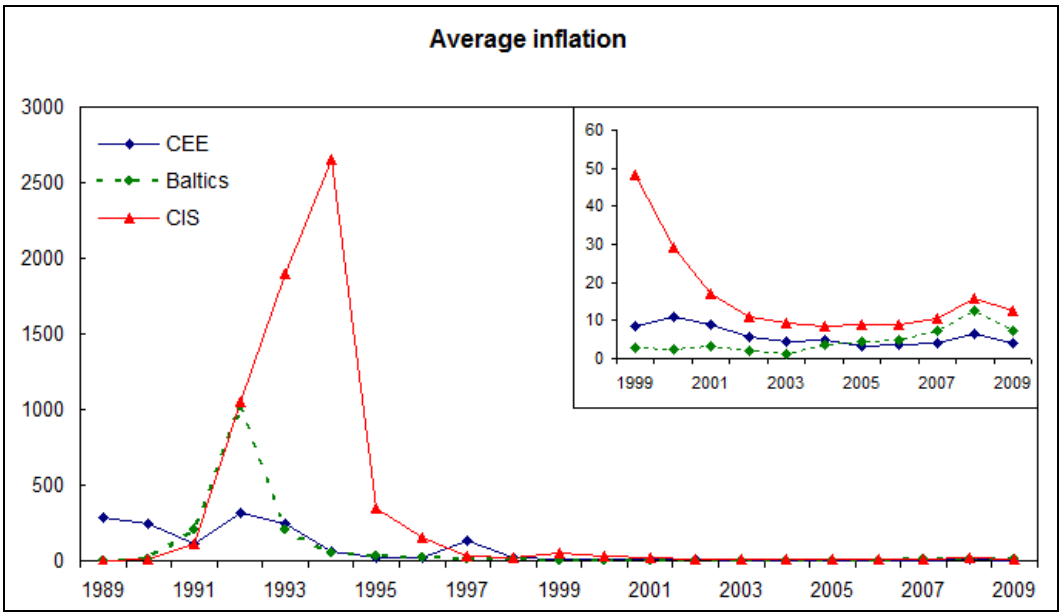
According to World Bank reports, public spending on education ranges from less than 2 percent of GDP for Armenia and Georgia to almost 8 percent of GDP for Uzbekistan. The average for OECD countries – with 10 times higher GDP per capita – is about 5 percent of GDP (World Bank, 2005). While some countries in the region managed to save reasonable level of spending on education, in the poorest countries of the Caucasus and Central Asia spending cuts made educational system almost unable to prepare students to the requirements of market economy. Decreased education budgets affected the quality of education, access and opportunities for young generation and therefore reduced human capital.

The initial conditions of existed economic distortions and the external economic shocks (military conflicts and civil strives), which occurred after the collapse of the Soviet Union are of course important for explaining cross-countries differences in output performance. However, further analysis presented in this essay shows that initial conditions were significant factors only during the initial period of output decline (1990-98), but not throughout the full twenty years of transition.

2.3. Macroeconomic policy (Inflation)

Most of the countries entered transition with such negative phenomenon as monetary overhang and repressed inflation. Repressed inflation index, measured as the difference between increase in real wages and real GDP, in 1997 – 1990 was particularly high in the USSR (De Melo et al, 1996). This fact is related to the partial liberalization of the Gorbachev reforms. The complete price liberalization in the beginning of 1990s increased inflation threat in all transitional economies.

Figure 2.4. Inflation rate during the years of transition



Source: data from EBRD

The first decade of transition is characterized by extremely high average inflation rates (Figure 2.4). In the CIS on average yearly inflation reached the level of 2500 per cent with the record of hyperinflation of 57,000 percent per year registered in Georgia. The lowest inflation rates (about 250 per cent on average) were observed in the CEE countries (Fischer, Sahay, 2000). All countries were obliged to start transformation with the reforming of the monetary systems.

Within the period 1990-1995 all transition countries except Turkmenistan started to implement stabilization programs. In order to prevent inflationary spirals and dollarization of economies, all countries included into their stabilization programs several common aspects: tight monetary and credit policies, monetary reforms and non-inflationary sources of financing budget deficits (De Melo et al, 1996).

Thereby the main success of transformation economies was effective stabilization policy, which by 1998 brought inflation rates down to single digits in all countries. The second decade of transitional period is characterized by inflation rates within the limit of 20 percent for the CIS countries and 10 percent for all other countries.

2.4. Structural reforms

The shift from planned to market economies implied for transitional countries a number of structural reforms:

- ✓ Price and trade liberalization
- ✓ Macroeconomic stabilization
- ✓ Imposition of hard budget constraints on banks and enterprises
- ✓ Reform of the tax system and restructuring of public expenditure
- ✓ Enabling environment for the development of private sector

However, there were significant differences in terms of progress in liberalization across the countries in transition. Some countries of CEE started reforms before USSR collapsed and entered transition with economies more adjusted to market requirements than CIS countries. According to EBRD data, in 2008 the most liberalized countries were those in Central Europe and the Baltics, while some CIS countries, such as Belarus, Turkmenistan, and Uzbekistan have not started radical reforms until present. A brief overview of progress in structural reforms and liberalization, achieved by transitional countries, is presented in Table 2.3:

Table 2.3. Comparison of liberalization progress across the countries

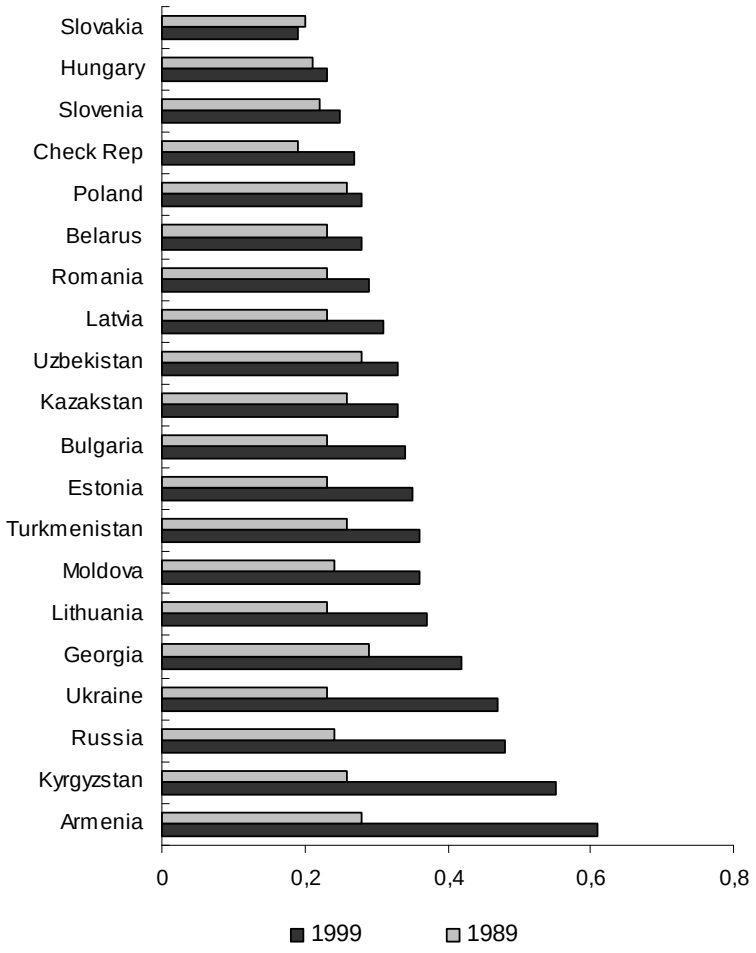
Countries	Liberalizarion progress
Estonia, Hungary, Poland	Early reformers, liberalized economies in early 1990 Implemented discipline of hard budget constraints Hospitable climate for domestic and foreigh investments Encouragment of private sector through liberalization
Check Rep, Lithuania, Slovakia	Early reformers, liberalized economies in early 1990 Softer budget constraints and hence less discipline Hospitable investment climate
Bulgaria, Kyrgyz Rep, Moldova, Romania, Russia, Ukraine	Liberalized economies but -failed to maintain discipline through hard budget constraints -were unable to restrict tunneling[a] -poor investment climate
Belarus, Turkmenistan, Uzbekistan	Some liberalisation have been made but -have not imposed hard budget constrains - policies discouraged private sector development - continued policy of strong administrative control - poor investment climate

a. tunneling is an expropriation of assets and income belonging to minority shareholders

2.5. Increased Inequality

The countries of communist regime entered transition with the lowest levels of inequality in the world. Nevertheless, few years after liberalization started, inequality has increased dramatically in some transition economies (Figure 2.5).

Figure 2.5. Changes in income inequality in selected transition economies



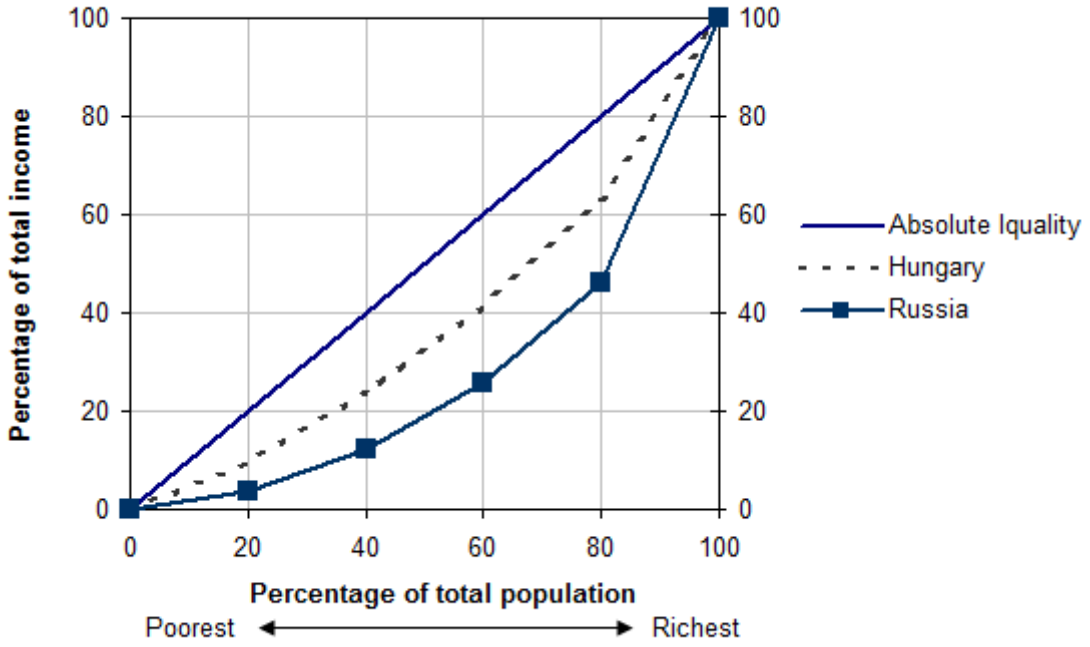
Source: data from World Bank

According to World Bank data, such countries as Armenia, Kyrgyzstan, Russia, Ukraine and Georgia are now among the most unequal in the world. During the first decade of transition Gini coefficients in these countries almost doubled.

However, there is a profound divide in terms of inequality between CEE and Baltic states, and countries in CIS. While most of CIS members faced rapid stratification of the population, inequality in Central and Southeastern Europe increased just slightly. To get more transparent picture of what these differences mean for the economy on practice, we will compare Lorenz

curves of Russia (country with one of the highest Gini coefficient in the CIS region) and Hungary (one of the most equal country in CEE).

Figure 2.6. Lorenz curves for Russia and Hungary in 2006



Source: own calculations based on World Bank data

In Russia the ratio of income received by the richest quintile of the population to that of the poorest quintile was about 14:1 in 1999. This means that the richest people were exorbitantly rich and the poorest were around or even above the poverty line. In Hungary this ratio was only 4:1 in comparison to an average of about 6:1 in developed countries.

It is reasonable to suppose that increase of inequality during the transition arose from incomplete reforms and liberalization. Although inequality has increased almost everywhere, the more advanced reformers show much more equal outcomes in comparison to less advanced reformers.

According to the World Bank study (World Bank, 2002), the rise of inequality in CEE and Baltics is largely explained by such positive consequences of reforms as increasing returns to education and entrepreneurship, wage dispersion, strong social transfers and redistribution mechanisms. The case of CIS is extremely different. Rising education premiums and wages of “white-collars” can just poorly explain significant increase of inequality. More likely the reason for high inequality in CIS is that governments, following there narrow vested interests,

often modified policy to their advantage, often at a high social cost (World Bank, 2002). The second reason is widespread corruption as well as tunneling and thefts. The last problem is lack of the income opportunities in many countries of former USSR. While wages at old jobs became scanty and were not paid, new job opportunities did not appear due distorted competition in the market and corruption. The access to some informal networks or ability to pay became key factors in getting well-paid job. This has led to highly unequal outcomes (World Bank, 2005).

2.6. Main conclusions and hypothesis of two stages of transition

Analyzing data from 20 years experience of transformation we discovered that output pattern in all former communist countries is U-shaped. During the first years of transition countries passed through deep economic recession. Hyperinflation, dramatically increased inequality, wars and social strived became essential attributes of transition economies during the first decade.

However, by 1998-99 almost all countries with transition economies started economic growth. It is important to admit that the recent decade was characterized by relatively better macroeconomic performance. Stabilization programs brought inflation down to single digits. Almost all military conflicts were resolved. Some countries achieved impressive results in social sphere and liberalization process.

U-shaped output pattern within transformation period and large differences in macroeconomic performance between two decades allow hypothesis of two stages of transition – transition recession and transition growth. Therefore, in our further analysis we will divide the whole dataset into two sub-periods – 1989-1998 (corresponds to the period with declining output trend) and 1998-2008 (growth) – and will estimate cross-section regressions separately for each time interval.

3. Previous research

In this chapter the relevant for our study theoretical issues and previous researches on transition growth are presented. We divide all literature on early and recent studies and summarize the most important articles that have contributed to the understanding of the issues treated in this paper.

The sharp fall in output in transition economies in the 1990s arouse considerable interest of economists. Numerous papers have analyzed determinants of transition recession. But interest to this topic has gradually vanished and less attention in literature has been paid to recent recovery and rapid growth in transition economies. According to the hypothesis, stated in chapter 2 about two stages of transition (i.e. all the countries passed through transitional recession and after started transitional growth) all studies on transition growth can be divided into two groups. The early works examined output performance during the recession and more recent ones – include into analysis data from the recovery and growth period.

3.1. Early studies. Explaining output performance at the beginning of transition

Although the shift from planned to market economies occurred in post-communist at the beginning of 1990s raised significant interest of economists all over the world, the empirical studies of transition growth started only in 1996-97 when researchers obtained enough data. The relatively short time period is still the most significant limit of any study on transition growth. However by the mid-1990 there were already enough data to draw some conclusions of output performance during the transition.

The methods of analysis varied significantly depending on the target of research. In order to explain differences in growth rates and levels of income across the countries, most of the researchers used either simple cross-section regressions or panel data analysis. While some studies were aimed to construct a model of economic growth during transition and employed multiple regression analysis, other works were targeted to account for each factor individually and therefore simple regressions were used.

Already in early publications researchers defined four essential factors of output performance during the transition: (1) initial conditions, (2) successful macroeconomic stabilization, leading to lower inflation, (3) permanency in implementing market reforms and (4) social policy.

Most of the studies (Fischer, Sahay, 2000; de Melo et al., 2001) found that country's starting point have a strong impact on subsequent development, especially during the first years of transformation. However, there was a strong consensus among economists that influence of initial conditions declines over time.

Numerous studies found out that macroeconomic policies (generally captured by annual inflation rate) have strongly influenced growth during the first decade of transition. Many researches (Fischer et al., 1996; Havrylyshyn and van Rooden ,1998; Berg et al, 1999) found that lower inflation rates and hard budget constraints are associated with better output performance. And visa versa, hyperinflation in many countries of former USSR was damaging and prolonged transition recession. However several papers (Christoffersen and Doyle, 2000; Ghosh and Phillips, 1998) found a minimal level of inflation below which the stylized fact "low inflation – faster growth" is no more valid.

Most of the studies found structural reforms to be important on the early stage of transition (de Melo et al, 1996, 2001; Berg et al, 1999; Castaniera et al, 1999). Though, there was no consensus about the way to measure reforms. The most commonly used in literature indicator is liberalization index yearly calculated by the EBRD, which was first used in the work by de Melo et al (1996). Some researchers extended the topic including into analysis quality of institutions and government (Havrylyshyn and van Rooden , 2000). However, the authors discovered that economic liberalization was still more important during transition than good institutional environment.

Some researchers (Fischer et al, 1996) included into analysis the fourth group of variables reflecting social policy. Authors argued that imperfect system of social transfers and redistribution raised poverty and inequality. This led to social instability, increased the risk of property rights violations and aversively effected growth. However, some Keynesian economists believed that the higher of inequality can stimulate growth by increasing the average propensity to save (Barro, 1999).

The summary of the main papers, methods used in the analysis and findings, relevant for the current essay, are presented in Table 3.1 below:

Table 3.1. Early studies of economic growth in transition

Authors	Year	Method	Data	Results
Fischer, Sahay and Vegh	1996	Panel data regression analysis of the main short-run determinants of growth	26 transition economies from 1989 to 1994	Earlier start of stabilization programs and lower fiscal deficits have led to lower inflation and higher growth
De Melo, Denizer, Gelb, and Tenev	1996	Emperical data overview, no statistical tests of hypothesis. Authors first eintroduced the Liberalization index (weighted average of policy reforms in external market, internal market and priveatization) to represent structural reforms	28 transition economies	The speed and degree of economic liberalization explains the cross-countries differences in output performance
Havrylyshyn, van Rooden	1998	Panel data regression analysis with variables representing macroeconomic policy, structural reforms	25 transition economies from 1990 to 1997	Macroeconomic stabilization and structural reforms are key to the economic recovery
Berg, Andrew, Eduardo Borensztein, Sahay, and Zettelmeyer	1999	Panel regression analysis with variables representing macroeconomic policy, structural reforms and initial conditions	26 countries from 1991 to 1996	Cross-countries differences in economic growth are associated with policies rather than initial conditions the differences between CIS and CEE can largely be explained by differences in structural policy
Castanheira, Micael, and Vladimir Popov	1999	Use only cross-section variability of data, taking the average of growth as the dependent variable. Independent variables: Liberalization index, war dummy, average inflation	25 countries from 1989 to 1998	Liberalization index is significant for growth recovery (1994-1998), but not for the overall period
Fischer, Sahay	2000	Simple cross-section regressions to access the impact of initial conditions, exogenous shocks, macroeconomic policies and structural reforms on growth	25 transition economies from 1989 to 1998	Both stabilization policies and structural reforms positively contribute to growth and mitigate transitional recession.
de Melo, Denizer, Gelb, and Tenev	2001	Cross-section and panel regression analysis where growht is explained by initial conditions, policy reforms and war dummy variable. Introduced cummulative Liberalization index	28 transition economies from 1989 to1998	Initial conditions are important, both for performance and the speed of economic liberalization Adverse effect of macroeconomic and structural distortions on output performance.

3.2. Recent studies. Explaining transitional growth

While by the start of the new millennium there was a strong consensus among researchers that initial conditions and stabilization policies are important on the first stage of transformation, it is reasonable to say that no agreement has been reached on the role of different factors in the recent stage of recovery and growth. The majority of recent studies were focused on the causal link between structural reforms and growth. With including more recent data into the analysis the influence of reforms on growth has become more controversial. The big attention was paid to proper measures of reform and problem of multicollinearity among different indices of liberalization (Falcetti et al, 2006).

In this context we should notice the research carried out by Falcetti, Lysenko and Sanfey (2006). Authors discovered that for countries with transitional economies there is a stable positive relationship between market reforms and economic growth. Falcetti et al. also argued that the relationship "structural reforms – economic growth" in countries with transitional economies is very complex phenomenon: in addition to reforms growth is influenced by many other factors. And moreover there is a reverse dependence between growth and reforms, i.e. growing output positively contributes to further economic liberalization. However the paper was criticized in economic literature for incorrect model specification, in particular for including into the model various reform indices which caused the problem of multicollinearity.

The dependence of results on the choice of time period is discussed in Fidrmuc (2003). Fidrmuc first suggested to take a moving five-year average of data and estimating cross-section regressions separately for each time interval. The most important his finding is that the liberalization index is positive and significant factor for the early period of transition (1990-1995) but not for the last period (1996-2000).

Using the advantage of new available data, some researcher broadened analysis, including into regressions pioneering variables. The main variables used to explain growth were population growth, partner country growth, school enrollment rates, openness, government taxation, and institutional environment. Thus, Shiells et al (2005) discovered that Russian growth was a significant factor of economic growth in other CIS during the firs decade of transition, but this dependence became weaker after 1998.

Despite the differences in methodological approach, most of the economist found out that stabilization policies and initial conditions were important in the beginning of transition at least, while structural reforms became the most relevant factor of growth on the stage of transitional growth.

4. Methodology

Chapter 4 is methodological chapter. In this chapter we present the data and the methodology that have been used in further analysis. We give exact sources of data on transition and describe in detail each variable used in the research together with the way of its calculation.

4.1 Method

According to the hypothesis about two stages of transition allowed in chapter 2, we will perform regression analysis on two time intervals separately. The first period is 1989-1998 and approximately corresponds to the transitional recession; the second period is 1998-2008 and corresponds to the transitional growth, when we observe a large divergence in economic situation across the post-socialist countries. It is reasonable to do so, because almost all macroeconomic time series, used in the regression analysis, have different trends on each of two time intervals and regression results for the whole time interval will be inevitably biased.

Moreover, such division let us investigate which factors were more important immediately after the liberalization, and which became important for economic development later on.

As the present work is not aimed to predict growth but only to show which factors influenced it during the transition period, we will analyze direct relation between dependent and explanatory variables using simple cross - section regression. The method is commonly used in transitional literature (Castaniera et al, 1999; Fischer and Sahay, 2000). The most important difference from the previous studies is including more recent data into analysis, which gives possibility to compare two stages of transition.

All regressions are performed in econometric program Eviews. In order to get correct estimates we use Newey and West (1987) covariance estimator, which is consistent in the presence of both heteroskedasticity and autocorrelation and is available in Eviews.

The main limitation of analysis is the number of observations (only 25). Therefore at the first part of the analysis we run regressions with just one explanatory variable, accounting for each factor's impact on output separately.

However, it is in our interest to control obtained results. As in reality economic growth is affected by numerous factors at the same time, we will run a multiple OLS regressions for both periods considered.

It is important to keep in mind the limitations of any econometric research. Theory does not let us specify the regression model precisely because economic growth is an extremely complex process. Regression analysis can not "explain" growth, but at best can illustrate its nature by giving stylized facts (Havrylyshyn et.al, 1998). Moreover, some researchers criticize the cross-countries analysis of economic growth. They argue that countries are not comparable because of differences in economy structures and methods of calculating statistical data. However the international organizations (such as EBRD, IMF, and the World Bank) report comparative data on economic performance in transitional countries, although this data is based on national official statistics level (Katchanovski, 2000).

4.2. Data description

For the regression analysis we used the data for the periods 1989 – 1998 and 1998 – 2008 from 25 countries in Central and Eastern Europe and the former USSR[3]. We exploited following indicators:

Table 4.1. Data sources

Indicator	Source
Consumer price index (per cent)	EBRD[1]
Gini coefficient	UNU- WIDER[2], Milanovich (1997)
Gross domestic product per capita, constant prices	IMF[3]
Involvement in wars	Milanovich (1997)
PPP adjusted GDP per capita	IMF
Secondary school enrolment	UNICEF[4]
Structural indicators	EBRD

1. EBRD Economic Statistics and Forecast. http://www.ebrd.com/country/sector/econo/stats/index.htm
2. United Nations University. World Institute for Development Economics Research http://www.wider.unu.edu/research/Database/en_GB/wiid/
3. World Economic Outlook Database. http://www.imf.org/external/pubs/ft/weo/2009/01/weodata/index.aspx
4. UNICEF IRC http://www.unicef-irc.org/search.php?q=data

[3] These countries are: Albania, Armenia, Azerbaijan, Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, FYR Macedonia, Moldova, Poland, Romania, Russia, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan

In order to explore the cross-country relationships between growth, inflation and liberalization, initial conditions and social policy we used a number of variables, which are presented and briefly described in Table 4.2 below:

Table 4.2. List of Variables

Group of variables	Variable	Definition	Dimension
Growth (endogeniuos)	OUTPUT_98	GDP per cap in 1998 / GDP per cap in 1989	percent
	OUTPUT_08	GDP per cap in 2008 / GDP per cap in 1998	percent
Initial conditions	GDP_PPP_89	PPP adjusted GDP per capita in 1989	levels
	GDP_PPP_98	PPP adjusted GDP per capita in 1998	levels
	ENR_SEC_89	Secondary school enrolment in 1989	percent
	ENR_SEC_98	Secondary school enrolment in 1998	percent
	WAR_DUMMY	Equal to 1 if there was a war territory of the country, and 0 otherwise	binary variable
Macroeconomic policy	ACPI_98	Geometrical mean of inflation from 1989 to 1998	percent
	ACPI_08	Geometrical mean of inflation from 1998 to 2008	percent
Structural reforms	CLI_98	Cumulative liberalization index in 1989-1998[1]	levels
	CLI_08	Cumulative liberalization index in 1998-2000	levels
Social policy	GINI_98	Absolute difference between Gini coefficients in 1998 and 1989	levels
	GINI_08	Absolute difference between Gini coefficients in 2008 and 1998	levels

1. Cumulative liberalization index is calculated as sum of yearly liberalization indices reported for each country by EBRD

In all the estimated equations we will use OUTPUT_98 (GDP in 1998 as percentage of GDP in 1989) or OUTPUT_08 (GDP in 2008 as percentage of GDP in 1998). In chapter 2 we can observe persistence of GDP per capita behavior during two considered periods of transition in all sample countries (before 1998 it constantly declined and after constantly increased without any significant spikes). Therefore we assume that calculated variable OUTPUT illustrates output trends on both stages of transition.

Initial conditions are expressed by PPP adjusted GDP per capita (GDP_PPP), secondary school enrollment (ENR_SEC), which serves as an index of social development at the time of transition, and dummy variable equal to one if there was a war on the territory of the country (WAR_DUMMY). Macroeconomic policies are captured by the geometrical mean of inflation (ACPI), and structural reforms are represented by the cumulative EBRD liberalization index (CLI). Finally, to represent the degree of inequality we use Gini coefficients (GINI).

All indicators are frequently used in empirical studies for explaining economic growth. Data is available for all 25 countries considered in the current work. However, regarding the data used we have to make some important comments. First of all it refers to the countries' output data, which have drawbacks both at the conceptual level and the level of measurement (Havrylyshyn et. al, 1998). First of all it is difficult to compare command prices before the start of economic transformation with the new market prices. Secondly, at the beginning of the reform period information in many countries was collected from the government sector only. As the result a significant part of data about developing private sector was lost. Moreover both public and private enterprises tended to understate reported data in order to avoid taxation or any other regulations. Another considerable problem is the existence of large informal sector in many post-communist countries. We will not try to account for all data limitations mentioned above, but will keep them in mind while drawing the conclusions.

5. Analysis and main results

In this chapter we perform regression analysis of main factors influencing output pattern during transition. The agenda is organized as following. First we describe the possible links between each factor and growth, and the regression equations we are going to make together with theory behind them. Then we check our expectations by running OLS regressions and discuss the results we have come up to.

5.1. Initial conditions

As indicators of initial conditions we used the following variables:

- PPP adjusted GDP per capita (GDP_PPP)
- Secondary school enrollment at the start of analyzed period (SEC_ENR)
- War dummy variable (WAR_DUMMY)

According to the prior theoretical findings, growth during transition tends to be positively related to initial output level, but this dependence is becoming weaker over time. In order to verify this stylized fact, for the first time interval (1989-1998) will run the following regression:

$$OUTPUT\_98 = C + \alpha * GDP\_PPP\_89 + \varepsilon$$

Another important question is whether countries with bigger GDP drop in 1990s were growing faster or slower afterwards. As GDP fall during the recession is captured by the variable GDP_PPP_98, we will obtain the answer by analyzing the following equation:

$$OUTPUT\_08 = C + \alpha * GDP\_PPP\_98 + \varepsilon$$

Wars and social strives shocked some transitional economies in the first decade of liberalization. The last decade was relatively more peaceful and almost all military conflicts were resolved by 2000. Therefore, for the both analyzed periods we use the same dummy variable, equal to 1 if there was a conflict on the territory of the country within 1989-1999:

$$OUTPUT\_98 = C + \alpha * WAR\_DUMMY + \varepsilon$$
$$OUTPUT\_08 = C + \alpha * WAR\_DUMMY + \varepsilon$$

The first equation captures an instant effect of war on transitional economy, while the second one accounts for a lagged effect of wars and social strives. Wars mean not only destructions

but also huge public spending. Hence, we expect to find that countries, which experienced military conflicts on their territory, performed worse in terms of output.

In order to investigate how qualitative changes in education system influenced output during the transition, we analyze two following equations:

$$OUTPUT\_98 = C + \alpha * ENR\_SEC\_89 + \varepsilon$$
$$OUTPUT\_08 = C + \alpha * ENR\_SEC\_98 + \varepsilon,$$

where ENR_SEC_89 and ENR_SEC_98 are secondary education enrolment rates in 1989 and 1998 respectively. Although human capital is considered an important factor of growth in economic literature, we might not find a strong dependence between human capital and growth in the present analysis. The reason is that level of education in post-communist countries is historically high and does not differ significantly across the countries.

The results of regression analysis for the first time interval 1989-1998 are presented in Table 5.1 below:

Table 5.1 Initial conditions on the first transition stage (1989-1998)

Dependent variable: OUTPUT_98			Number of observations:25			
Exogenous variable	**Intercept**	**t-value**	**Coefficient**	**t-value**	**R^2adj**	**DW**
Initial output (OUTPUT_89)	49,44*	5,52	0,049*	3,38	0,24	2,26
War on the territory (WAR_DUMMY)	79,091*	16,32	-23,041**	-2,52	0,18	1,55
School enrollment (SEC_ENR_89)	71,698***	1,73	0,035	0,08	0,15	2,05

* - statistical significance at 1% level
** - statistical significance at 5% level
*** - statistical significance at 10% level

We can notice a strong positive dependence between initial level of output and GDP changes during the first period of transition (coefficient is significant at 1% level). The coefficient 0,049 means that each additional dollar of initial GDP_PPP per capita would add 0,049 percent to country's GDP change between 1998 and 1989. This explains the fact that in countries with higher pre-reform income GDP declined less during the recession.

The coefficient of WAR_DUMMY is significant at 5% level. We find a negative dependence between OUTPUT and WAR_DUMMY variables. Countries, destructively affected by wars, during the first decade of transition lost about 23 percent of their potential GDP.

The relationship between output and the rate of secondary education enrolment is insignificant. This result was predictable as sample countries initially had very similar enrollment rates.

The results of regression analysis for the second time interval 1998-2008 are presented in Table 5.1 below:

Table 5.2 Initial conditions on the second transition stage (1998-2008)

Dependent variable: OUTPUT_08			Number of observations:25			
Exogenous variable	**Intercept**	**t-value**	**Coefficient**	**t-value**	**R^2adj**	**DW**
Initial output (OUTPUT_98)	238,474*	12,09	-0,008**	-2,73	0,21	1,98
War on the territory (WAR_DUMMY)	189,066*	12,23	20,139	0,69	-0,02	1,69
School enrollment (SEC_ENR_98)	89,226	0,62	0,177	0,36	0,23	1,97

* - statistical significance at 1% level
** - statistical significance at 5% level
*** - statistical significance at 10% level

For the second period of transition we find a small negative dependence between country's per capita income in 1998 and relative output change within recent ten years. Negative sign of the coefficient means that countries, where per capita GDP in 1998 was lower, after 1998 grew on average faster. The result is interesting, and moreover corresponds to the real data. In chapter 2 above, we showed that recently growth in poorer CIS countries was faster than in CEE states, which on average have the highest per capita GDP among all transitional countries.

Other two equations do not show any significant results. Thus we can conclude that external shocks of the first decade of transition (wars and social strives) did not disturb further economic development. Drawing conclusions regarding dependence between growth and secondary school enrollment rates, which is generally used as an index of economic development, is more problematic. Education (or human capital) is a source of long-run growth, and our analysis is performed on relatively short time-interval. And it is very likely that impact of education on economic growth was not captured due to used methodology. Another reason of insignificance was already mentioned above. Although the second decade of transition was characterized by large cross-countries divergence in many economic and political aspects, educational level in former communist countries still remained very similar.

5.2. Macroeconomic policy

Macroeconomic policy in transitional literature is generally captured by inflation rate. In economic theory we can find an explanation for both negative and positive effects of inflation on economic growth, and both effects are confirmed by empirical studies. The most important mechanism underlying link between inflation and growth is the distortional effect of high inflation on relative prices. As the result the structure of investment tends to be ineffective. Prices can not serve as market signals any more. Furthermore, high inflation level leads to redistribution of income and increase of inequality level. Raised inequality also contributes to growth deterioration.

High inflation also means low (or negative) interest rates and consequently savings lose the power to be a source of economic growth. In the presence of inflation low interest rates are unable to stimulate investment due to small (or negative) and unpredictable real returns.

In addition to the negative impact of inflation on growth, we should mention a positive impact of disinflation and stabilization policy. First of all, there is some certain level of inflation (usually from 9 to 50 percents) excess of which leads to decrease of output growth (Gylfason, Herbertson, 1999). Secondly, a plain reduction of inflation rates from a very high level to some reasonable values, say 100 percents, can arouse economic growth (Havrylyshyn et.al, 1998). Proper stabilization policy can eliminate negative consequences of high inflation by removing inflation itself. Additionally, it creates the necessary prerequisites for the tight budget constraints as one of the essential conditions of sustainable economic growth, i.e., empirical studies showed that countries which had started stabilization program earlier obtained higher growth rates or smaller output drop (Fischer, Sahay, 2000).

In the case of transition economies we expect negative impact of inflation on growth during the first part of the transitional period, when inflation level in most of the countries was extremely high. However for the second period of transition we can suppose a positive impact of effective stabilization policy and decreased inflation on economic performance.

To estimate the impact of inflation on economic growth, we run the following regressions:

$$OUTPUT\_98 = C + \alpha * ACPI\_98 + \varepsilon$$

$$OUTPUT\_08 = C + \alpha * ACPI\_08 + \varepsilon,$$

where ACPI_98 and ACPI_08 are the geometrical means of yearly inflation rates for the periods 1989 –1998 and 1998-2008 respectively. The results are presented in table 5.3 below:

Table 5.3 Inflation and growth - results of regression analysis

Time interval: 1989 -1998 Dependent variable: OUTPUT_98					Time interval: 1998 - 2008 Dependent variable: OUTPUT_08				
Exogenous variable	**Intercept**	**t -value**	**Coefficient**	**t-value**	**Exogenous variable**	**Intercept**	**t -value**	**Coefficient**	**t-value**
ACPI_98	91,458*	11,73	-0,330*	-2,81	ACPI_08	187,995*	8,97	0,833	0,41
Number of observations:25 R^2adj = 0,24 DW = 2,52					Number of observations:25 R^2adj = -0,35 DW = 1,58				

* - statistical significance at 1% level

According to our expectations, we found a strong negative dependence between inflation and output on the first stage of transformation. We can see that one percent increase of ACPI is decreasing relative output by 0,33 percent. Taking into account hyperinflation in many CIS countries in early 1990s, in is not surprising that recession in the region was so deep.

The coefficient of ACPI in the equation for the second period is positive, as we supposed above, but insignificant.

5.3. Structural reforms

The causal link between reforms and growth in transition countries is complex. Many factors influence a country's growth rate in a given year and it is impossible to identify precisely the exact importance of market-oriented reforms. However, researchers using different methodology and model specifications came up to the similar results: market-oriented reforms matter.

In present paper we also expect to find a strong positive dependence between countries' economic performance and indicator of structural reforms during on the both stages of transition.

There is a strong consensus in studies of transition that structural reforms are crucial element for construction of new economic system. Reforming is aimed to create new effective institutions and helps to realize the economic potential (Olson, 1996). Liberalization is the most important part of economic policy during the recovery stage, because further economic development will depend on the efficiency of new institutions. Reforms can either move economy towards the sustainable growth or will push economy back to the initial conditions.

For the analysis of analyze structural reforms' impact on growth we use a liberalization index developed by EBRD. Using this index does not let us to answer the question about the effectiveness of established institutions or structural reforms. High liberalization index means closeness of institutions to the requirements of market economy; however it cannot tell us if institutions are proper for current economic situation and if they are approved by economic agents.

Thus, index of liberalization can rather answer the question "how many reforms were carried out in some country", than whether these reforms reached their target and lead to the establishment of sustainable and effective institutional environment. This fact puts some restrictions on using liberalization index as an indicator of policy efficiency.

Despite the limitations mentioned above, EBRD liberalization index is perhaps one of the most commonly used measures of structural reforms. In order to account for the impact of reforms on growth during each stage of transition, we run two following regressions:

$OUTPUT\_98 = C + \alpha * CLI\_98 + \varepsilon$
$OUTPUT\_08 = C + \alpha * CLI\_08 + \varepsilon,$

The results of the regression analysis are presented in table 5.4:

Table 5.4 Reforms and growth - results of regression analysis

Time interval: 1989 -1998 Dependent variable: OUTPUT_98					Time interval: 1998 - 2008 Dependent variable: OUTPUT_08				
Exogenous variable	**Intercept**	**t -value**	**Coefficient**	**t-value**	**Exogenous variable**	**Intercept**	**t -value**	**Coefficient**	**t-value**
CLI_98	-14,179*	-2,96	3,669*	5,15	CLI_08	-39,032*	-7,72	6,530*	3,95
Number of observations:25 R^2adj = 0,51 DW = 1,69					Number of observations:25 R^2adj = 0,37 DW = 2,02				

* - statistical significance at 1% level

All coefficients in both equations are significant at 1 percent level. Our results demonstrate that structural reforms mitigated the negative effects of the transitional recession during first decade of transition. Furthermore, liberalization policy has been significant factor in cross-countries differences in the speed of economic recovery and growth. Success achieved by some countries is based on the foundation of an efficient market economy during the first decade of transition. But we must also notice that coefficient of CLI_08 is larger than the coefficient of CLI_98, which means that importance of economic liberalization was increasing

over time. Our results are proved by empirical data. As we have seen in chapter 2, CEE countries which have been more progressive in implementing reforms, on average performed considerably better then less successful reformers or non-reformers in CIS.

5.4. Social policy

One way to analyze the relationship between growth and social policy is to use Gini coefficient as an explanatory variable. It helps to identify the impact of raised inequality on economic growth.

There are few mechanisms behind inequality – growth relationship. They are: imperfect credit market, mechanisms of economic policy (fiscal redistribution and corruption), social instability and savings. In the presence of asymmetric information people with low income may renounce investments in human capital in favor of current consumption, which will have negative impact on economic growth in the long run. The fiscal redistribution creates situation in the economy when the rich pay high taxes which are is redistributed through social transfers to the poor. Therefore people lose incentives to earn a lot, the level of investments falls down and economic growth deteriorates. Polar inequality might cause social instability, which has undoubtedly destructive impact on growth.

In case of transitional economies we expect a strong negative impact of increasing inequality on economic performance, as in early 1990s social stratification rapidly increased and raised social and political instability in transition countries.

In order to examine the dependence between raised inequality and economic growth, we estimate two equations:

$$OUTPUT\_98 = C + \alpha * GINI\_98 + \varepsilon$$
$$OUTPUT\_08 = C + \alpha * GINI\_08 + \varepsilon,$$

where GINI is absolute change of Gini coefficient between last and first year of considered period,

The results are introduced in table 5.5 below:

Table 5.5 Inequality and growth - results of regression analysis

Time interval: 1989 -1998 Dependent variable: OUTPUT_98					Time interval: 1998 - 2008 Dependent variable: OUTPUT_08				
Exogenous variable	**Intercept**	**t -value**	**Coefficient**	**t-value**	**Exogenous variable**	**Intercept**	**t -value**	**Coefficient**	**t-value**
GINI_98	94,114*	15,03	-16,730*	-3,73	GINI_08	199,019*	13,95	-16,493	-0,99
Number of observations:25 R^2adj = 0,42 DW = 2,55					Number of observations:25 R^2adj = 0,024 DW = 1,60				

* - statistical significance at 1% level

We can see that inequality had significant adverse impact on output during the first stage of transition. The coefficient -1,673 can be interpreted as following. An increase of Gini coefficient by 0,1 point within 1989-1998 caused decrease of relative output by 1,6 percent. We conclude that sharp increase in inequality, occurred after liberalization, negatively contributed to economic recession of 1990s.

For the period of economic recovery and growth (1998-2008) a significant dependence between output and inequality has not been discovered. It is reasonable to suppose that on the recent transition stage economic agents have adopted to the new economic conditions. And income distribution in most sample countries is still far from the fair one, transition economies continue to grow.

5.5. Multiple regression analysis

In order to control the results obtained above, we now run multiple regressions using all factors considered above as explanatory variables. It is well known that output growth is an extremely complex phenomenon which is determined by numerous factors. In combination factors can give outcome, which differs from their individual effects.

After the exclusion of insignificant variables from the regression equation, which increased its explanatory power, we obtained results explaining growth during each of two transformation stages.

The results of multiple regression analysis for the first decade are presented in table 5.6:

Table 5.6 Multiple regression results for the first transition stage (1989-1998)

Dependent variable: OUTPUT_98		Number of observations:25		
Exogenous variable	**Intercept**	**CLI_98**	**WAR_DUMMY**	**GINI_98**
Coefficient	21,408	3,069*	-13,631***	-0,599***
t-value	1,34	4,54	-1,99	-1,87
R^2adj = 0,59 DW = 1,89				

* - statistical significance at 1% level
** - statistical significance at 5% level
*** - statistical significance at 10% level

As we can see, during the period 1989-1998 output behavior can was explained by degree of inequality, involvement in war and degree of economic liberalization. It is important to notice that the coefficient of CLI_98 is similar to one estimated by individual regression (see Table 5.4). Thus, we proved our conclusions about importance of structural reforms on the first stage of transition.

The next Table 5.7 shows the results of multiple regression analysis for the recent period of transition:

Table 5.7 Multiple regression results for the second transition stage (1998-2008)

Dependent variable: OUTPUT_08		Number of observations:25	
Exogenous variable	**Intercept**	**CLI_08**	**ACPI_08**
Coefficient	24,258*	9,712*	-0,695*
t-value	5,96	4,74	-2,43
R^2adj = 0,52 DW = 1,75			

* - statistical significance at 1% level

On the second stage (1998-2008) output performance was affected by structural as well as macroeconomic policies. As one can notice, CLI coefficient is bigger for the second period (see Table 5.6). Thus, we confirmed our suggestion about increasing importance of market-oriented reforms over time.

The results of multiple regression analysis generally correspond to the results obtained from the analysis of each factor individually. All the findings, obtained from can be summarized and compared with the help of following table:

Table 5.8 Comparison of main results

	Simple regression		Multiple regression	
Variable	**1989 - 1998**	**1999 - 2008**	**1989 -1998**	**1999 - 2008**
GDP_PPP	+	-	insignificant	insignificant
WAR_DUMMY	-	insignificant	-	insignificant
ENR_SEC	insignificant	insignificant	insignificant	insignificant
ACPI	-	insignificant	insignificant	-
CLI	+	+	+	+
GINI	-	insignificant	-	insignificant

Results obtained from two estimation methods differ in 4 cases out of 12 for two variables: GDP_PPP and ACPI. The positive dependence between initial output and growth is not confirmed by multiple regression analysis. Additionally, results of inflation analysis are contradictory. While examining individual impact of inflation on output we found negative correlation between these two macroeconomic variables only in the first period of transformation. After including into regression all other factors we observe the adverse dependence between ACPI and growth only for the last decade of transition.

In both cases (simple and multiple regressions) we obtained same results for WAR_DUMMY, ENR_SEC, CLI and GINI variables. Thus, we confirmed a strong significant dependence between economic growth and structural policy on both stages of transformational period. Also we can claim that involvement in wars as well as inequality rates had negative impact on output performance during the first decade of transition. Finally we did not find any significant relationship between school enrollment rates and output.

6. Conclusions

In this chapter we present to the reader main conclusions and findings of this paper. We also make some further research suggestions and discuss policy implications of present paper.

In the present essay we discussed factors of economic growth in countries with economies in transition. Analyzing data from 20 years experience of transformation we discovered that output pattern in all former communist countries is U-shaped, meaning that transition economies first passed through deep recession and after started to grow again. Moreover, first years of transition were characterized by poor macroeconomic performance. Countries faced hyperinflation, increased inequality as well as wars and social strives. However, by 1998-99 situation changed. Inflation was brought down; growth was less interrupted by internal and external macroeconomic shocks.

At the same, analysis of empirical data collected from two previous decades of transformation period shows a large divergence in macroeconomic performance across the countries. These differences are the most obvious between the countries in Central and Eastern Europe, and those in the Commonwealth of Independent states. We noticed that CEE countries, which started liberalizing reforms earlier and had less macroeconomic distortions at the start of transition, suffered from recession of 1990s considerably less, than countries in CIS. Recently most of CEE countries have become members of the European Union and continue to grow, whilst most of the CIS countries are still struggling against high inflation, poverty, inequality and corruption. The key difference between two regions is permanency and efficiency of implemented structural reforms.

As the next step of our analysis we supposed that output trends at the beginning of transition and during recent decade were determined by different sets of factors. Our econometric estimates show that initial conditions matter mostly for the first years of transition as their impact is decreasing over time. We also found that inequality level, which rapidly increased immediately after liberalization, negatively affected output during the first ten years of transition. But it did not affect economic growth afterwards as economies have adjusted to a new social environment. Obtained results are consistent with the economic theory and the previous studies of economic transition, as most of the researchers came to a strong consensus that the initial conditions and social policies are important on the first stage of transformation.

The main finding of this paper is that there is a strong, positive influence of structural reforms on growth across transition economies. We also discovered that effect of market-oriented

policy on output was stronger within the recent decade. Perhaps, recently growth has been driven by reforms implemented previously, in 1990s, as well as by subsequent reform efforts. While the initial conditions determined the output decline at the beginning of transition, market-oriented reforms have played the most significant role in encouraging subsequent economic growth. Successful reformers have moved their economies towards the sustainable growth, whereas non-reformers came back to the initial point of economic development. In general, the results we have achieved are in line with the main studies on economic transition.

The second President of the Czech Republic Vaclav Klaus ones compared transition with the game of chess. When we play chess "it is impossible to foresee the situation on the chessboard after the 25th move, but the best one can do is to learn theoretical opening strategies of the game". The same is with transition – twenty years have passed since liberalization reforms started and no one can predict now the further development of transition economies. However, the main message sent in our study to the policy-makers is to move ahead in transition towards market and continue implementing the most important reforms in appropriate sequence, even without knowing outcome a priori.

As the transition proceeds further giving new data and evidence, there inevitably appears the need of macroeconomic policy adjustments. Thus, this topic will continue to be fruitful area of analysis and research. The main suggestion to further research is to perform econometric analysis with the help of panel data regressions. First of all it will increase the number of observations and therefore probability of getting biased results will be smaller. Secondly, using panel data analysis researcher can be more flexible in terms of used variables, as there will be no need of calculating some aggregated indices in order to capture development of main macroeconomic indicators over time.

References

Barro, R.J. (1999) “Inequality, Growth and Investment”, NBER Working Paper W7038;

Barro, R., Sala-i-Martin, X. (2001) “Economic Growth”, Cambridge, MIT Press;

Berg, A., Borensztein, E., Sahay, R., Zettelmeyer, J. (1999) “The Evolution of Output in Transition Economies: Explaining the Differences”, IMF Working paper, WP/99/73;

Castaniera , M., Popov, V. (1999) “Investment, Restructuring and Performance in Transition Economies”, *Taylor and Francis Journals*, vol. 11(4), pages 445-462, December.

Christoffersen, Doyle (2000), “From inflation to growth: eight years of transition”, *Economics of Transition*, Vol. 8, No. 2, pp. 421-451;

De Melo, M., Denizer, C., Gelb, A., and Tenev, S. (1996) “From plan to market: Patterns of transition”, *World Bank Policy Research Working Paper*, 1564, 397-424;

De Melo, M., Denizer, C., Gelb, A., Tenev, S. (2001) Circumstance and Choice: the Role of Initial Condition and Policies in Transition Economies, *World Bank Economic Review*, 15, 1–31;

EBRD, Transition Reports, Various Years.

Falcetti, Elisabetta, Tatiana Lysenko, and Peter Sanfey (2006) “Reforms and growth in transition: re-examining the evidence,” *EBRD Working Paper* No. 90.

Fidrmuc (2003), “Economic reform, democracy and growth during post-communist transition”, *European Journal of Political Economy*, Vol. 19, pp. 583-604.

Fischer S., Gelb A. (1991) “The Process of Socialist Economic Transformation”, *Journal of Economic Perspectives*, Vol. 5;

Fischer, S., Sahay, R., Vegh, C. (1996) “Stabilization and Growth in Transition Economies: The Early experience”, *Journal of Economic Perspectives*, 10, 45–66;

Fisher S., Sahay R. (2000) “Transition economies after ten years”, IMF Working paper WP/00/30;

A. Ghosh and S. Phillips (1998), “Inflation, disinflation and growth”, IMF Working Paper WP/98/68, Washington D.C.

Gylfason T., Herbertson T. (1999) “Does inflation Matter Growth?” University of Iceland;

International Monetary Fund (2006) World Economic Outlook, (Washington DC).

_____ (2008) World Economic Outlook (Washington DC).

Havrylyshyn O., Ivailo Izvorski, and Ron van Rooden (1998) “Recovery and Growth During the Transition Economy”, IMF Working paper WP/98/141;

Havrylyshyn, O., Izvorski, I., and van Rooden, R. (2000) “Institutions Matter In Transition, But So Do Policies”, IMF Working Paper, WP/00/70;

Katchanovski, I. (2000) “Divergence in growth in post-communist countries”, *Journal of Public Policy 20*, no. 01: 55-81;

Milanovic, B. (1997) “Income, Inequality, and Poverty during The Transition From Planned to Market Economy”, The World Bank, Washington, DC;

Olson, M., (1996), “Distinguished Lecture On Economics In Government”, *Journal of Economic Perspectives*. Vol. 10. 2;

Shiells, C., M. Pani, and E. Jafarov (2005) “Is Russia Still Driving Regional Economic Growth?” IMF Working Paper No. 05/192, (International Monetary Fund).

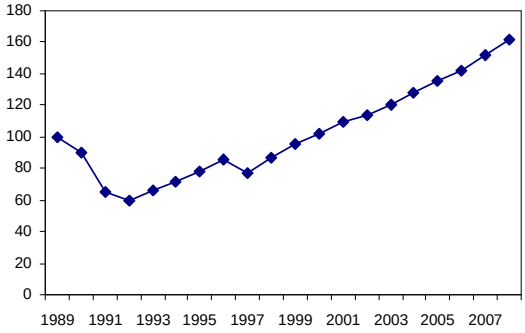
World Bank, (2002), “Transition. The First Ten Years. Analysis and Lessons for Eastern Europe and the Former Soviet Union”, The World Bank, Washington, D.C.

_____ (2005) “Economic Growth in the 1990s: Learning from a Decade of Reform”, The World Bank, Washington, D.C.

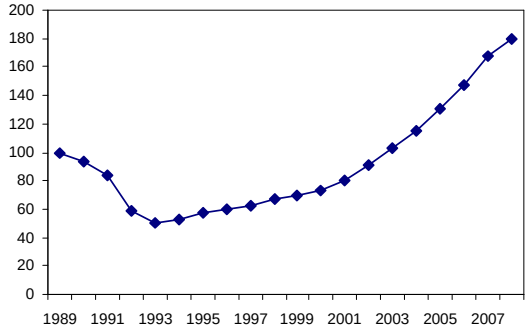
Appendix

Output performance during transition (1989=100)

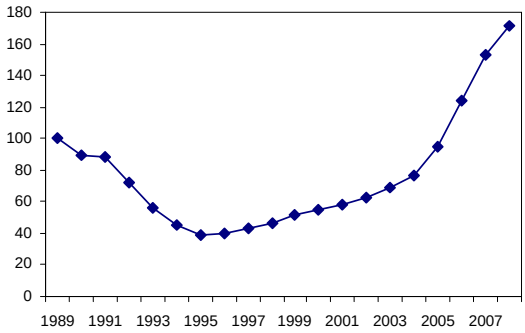
Albania



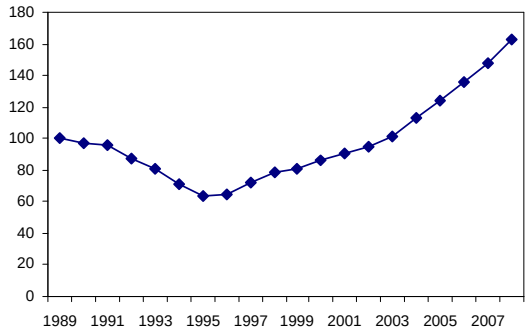
Armenia



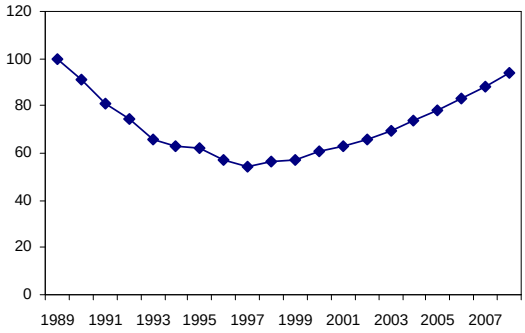
Azerbaijan



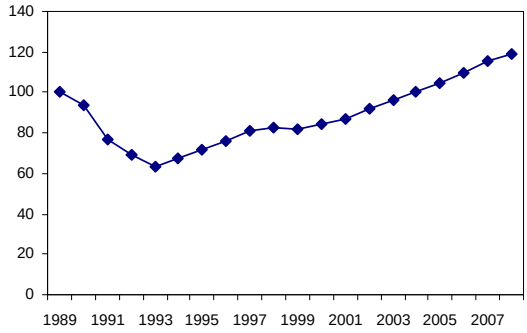
Belarus



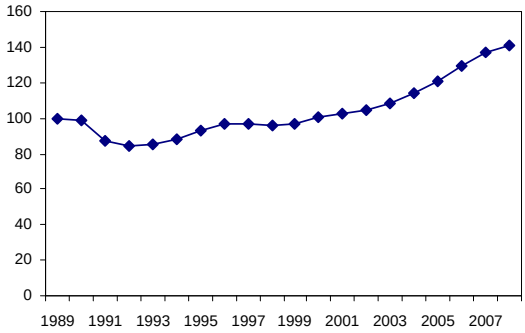
Bulgaria



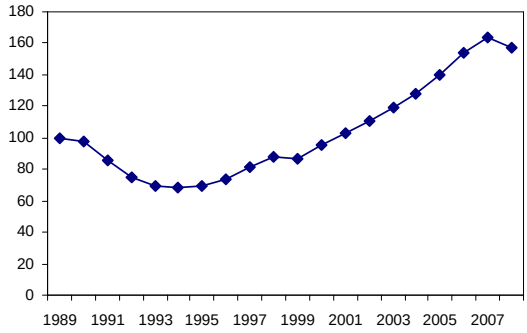
Croatia



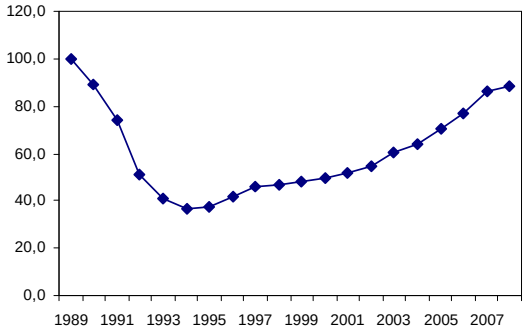
Czeck Republic



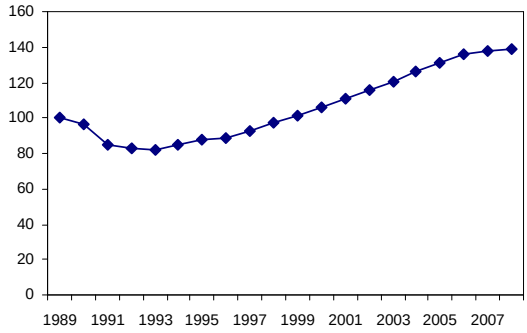
Estonia



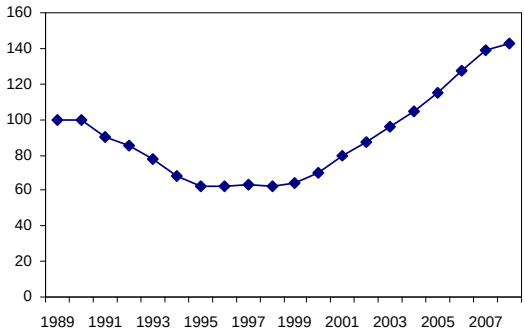
Georgia



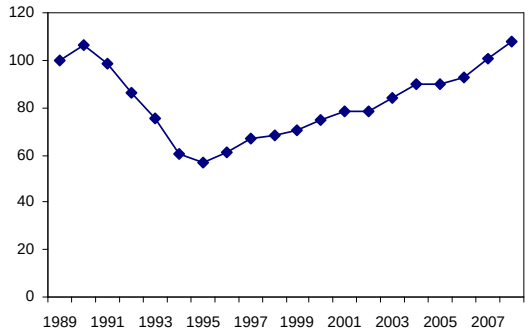
Hungary



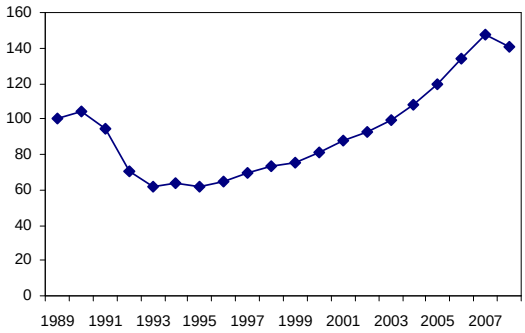
Kazakhstan



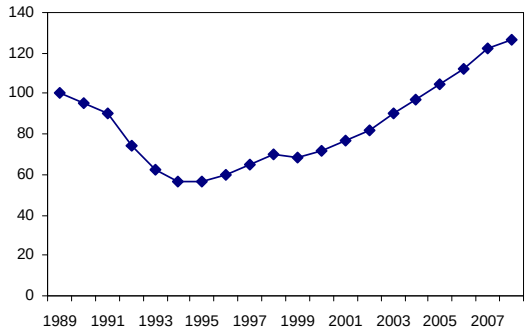
Kyrgyz Repuplic



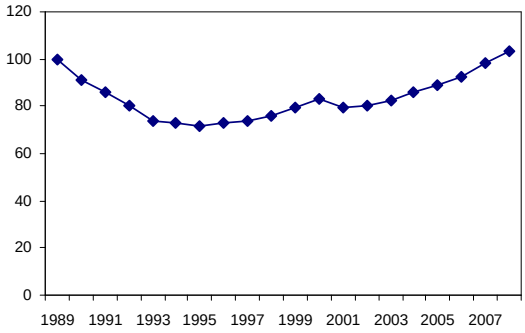
Latvia



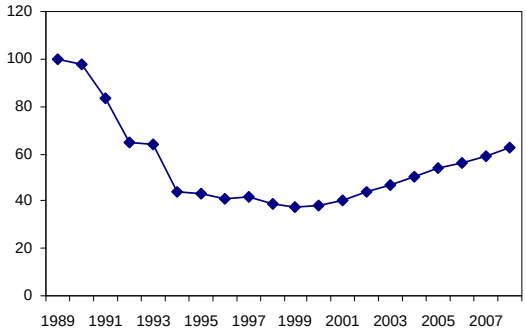
Lithuania



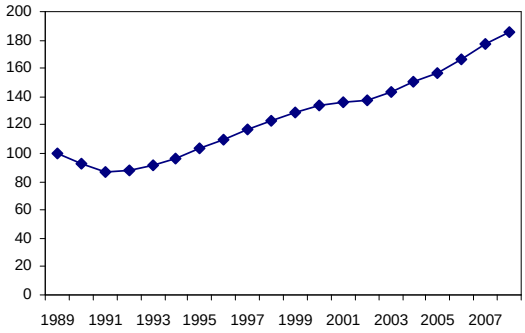
Macedonia



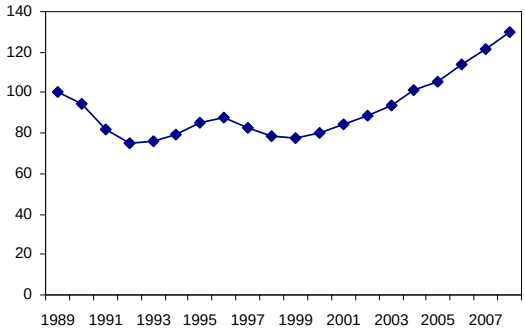
Moldova



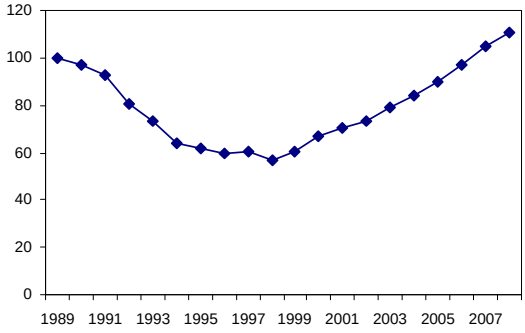
Poland



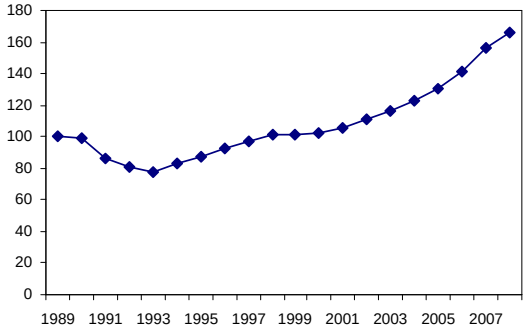
Romania



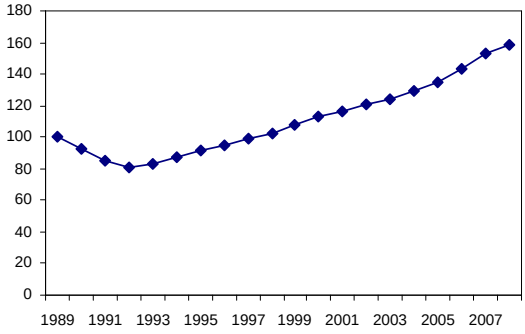
Russia



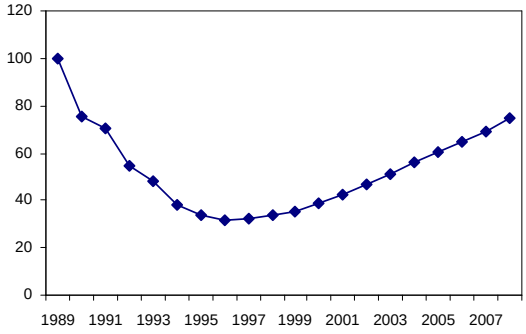
Slovak Republic



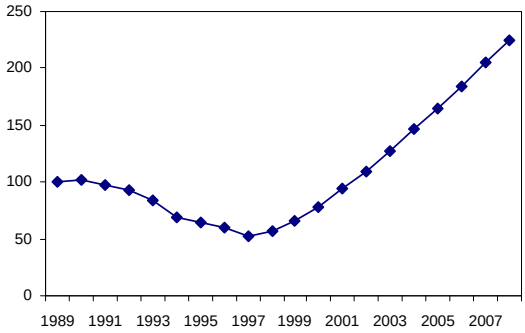
Slovenia



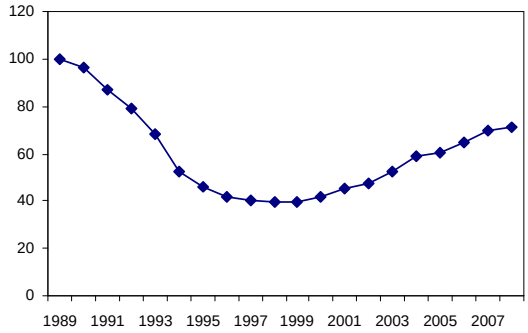
Tajikistan



Turkmenistan



Ukraine



Uzbekistan