Economic inequality in Central, East and Southeast Europe

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The article analyses the issue of economic inequality in the transition economies of Central, East and Southeast Europe. It consists of a literature review and a descriptive analysis as well as an econometric modelling exercise. In the first part we point at the fact that the rise in income inequality was triggered by the magnitude of transitional output loss and a reduction of formal employment. Rising wage inequality was at the core of total income dispersion, while government transfers had a redistributional function only in Central and Southeast European countries contrary to the CIS. In the econometric analysis it is found that for instance large scale privatisation has increased while small-scale privatisation has decreased inequality in transition. A high share of manufacturing valued added and of employment in industry are connected with less inequality. Among other things it is also found that the most developed transition countries still have not yet passed the peak of inequality.

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I. Introduction

There exists an enormous amount of economic literature on the general topic of inequality. A large variety of aspects of social and economic inequality have been looked at in great detail – such as for instance: inequality and growth (e.g. Kuznets, 1955; Ravallion, 2001; Benabou, 1996; Deininger/Squire, 1998; Alesina/Rodrik, 1994; or Aghion et al., 1999), inequality and trade liberalization (e.g. Milanovic/Squire, 2005; Bhatta, 2002), inequality and demography (e.g. Lam, 1986; or Chu/Jiang, 1997), inequality and health (e.g. Anand et al., 2005), inequality and migration (e.g. Black et al., 2005; Davies/Wooton, 1992; Stark, 2006), inequality and human capital (e.g. Chiu, 1998), inequality and technological change (e.g. Acemoglu, 2002), inequality and government policies (e.g. Davies, 1986; Lambert, 1993; Benedict/Shaw, 1995). These contributions highlight different notions of inequality (e.g. functional versus personal income) as well as a number of explanatory factors mutually related to inequality. In addition there exists a wide literature on the measurement and explanation of personal income distributions based on survey data (see Deaton, 1997, for an overview). A more recent overview publication on general inequality issues is presented by Atkinson/Bourguignon (2000).

When looking specifically into the literature on inequality with a focus on transition economics it can be stated that one of the main papers in this field was Branko Milanovic’s ‘Explaining the increase in inequality during transition’ (see Milanovic, 1999). He finds that the most important factors driving overall inequality upwards are to be found in the field of changing labour market outcomes. However, some authors argued that pre-transition Gini coefficients were not correctly measured and did not properly consider the inequality in a shortage economy. In any case, although severe changes in income and welfare distributions occurred in the region, it does not appear that inequality in transition economies increased that dramatically as it was predicted by some authors at the beginning of transformation. Przeworski (1991) expected a convergence of the transition economies to the extremely high level of inequality observed in Latin America.

Although a rise in inequality can be observed in the whole region (see Table 1), the situation differs from country to country, depending on the institutional heritages as well as the transition policies chosen. While the Gini coefficients reported for the Central European countries except Poland remained, although rising, in the rather low range of Sweden and Austria, the Baltic States, Bulgaria, Romania as well as Poland reached the level of Great Britain, being one of the Western European countries with the highest level of inequality. The Western Balkan countries except Serbia (and Montenegro) share a level of inequality comparable to the one of Austria, whereas Russia’s rising Gini coefficient as well as those of the CIS countries show a fast growing asymmetry in the distribution of income and wealth during transition.

We shall analyse the determinants of inequality in Central, East and Southeast Europe starting with factors influencing the changing distribution of wages, being at the core of economic inequality. Thereupon a broader view of the situation of income inequality of households shall be given.

1 Please note that there is a wide range of estimates of Gini coefficients and those presented in Table 1 are not the only ones.
The situation of wage disparities was shaped by enormous and still ongoing changes in the labour markets of the Eastern European countries, driven by transitional recessions and by enormous structural and sectoral shifts in the period of recovery from the mid 1990’s onwards. The way in which these changes were driven as well as accompanied by macro-economic policies (monetary and fiscal policies – on the revenue as well as on the expenditure side) affected the situation of the labour force. Furthermore, structural policies (e.g. in the field of Trade, FDI, etc.) influenced the transition paths in the region. Direct impacts on distributional outcomes are resulting from country specific modifications of labour market regulations, ranging nowadays from the almost non-existence of collective agreements in the Baltic states to continental European oriented labour market policies e.g. in Slovenia and the Czech Republic. Along with the liberalisation of labour market regulations socio-demographic factors (e.g. gender, ethnicity, education, etc.) regain importance in describing the emerging picture of wage distribution.

The broader view on income and wealth inequality as a whole directs the attention to structural policies in the field of privatisation as well as changes in the field of social transfer systems. Furthermore the privatisation of (formerly) public services in the field of pensions and reduced public expenditure in health care, education and other fields change the structure of provision of these services and are expected to influence future developments in income distribution.

The research is structured as follows. Chapter 2 provides a descriptive analysis and a literature review. In chapter 3 we estimate an econometric model explaining inequality in transition countries using a general to specific approach. A conclusion is provided in chapter 4.

II. Descriptive analysis and literature review

In this chapter we give an overview of the ongoing discussion on the development of income inequality in the transition countries and analyse the possible reasons for the observed increase of inequality.

II.1. Income distribution in the era of socialism

To qualify the changes in income inequality during the period of accelerated transition as well as the recent situation it seems appropriate to take a look at the dispersion of earnings at the point of departure in the 1980’s. Generally spoken in the post World War II period earnings dispersion fell until the beginning of the 1980’s in the Soviet Union and Central Europe. From that time on slight increases were reported for Hungary as well as the Soviet Union (Atkinson/Micklewright 1992).

Decile ratios\(^2\) in the Soviet union of monthly earnings had always been much higher compared to other COMECON countries. One reason was that average monthly earnings differed obviously between highly developed Soviet republics and economically backward ones. In 1989 average earnings in Estonia came up to 104% compared to Russia, while in Azerbaijan it made up only 69%.

\(^2\) Ratio of the relative wage of the individual who receives higher earnings than 90 percent of all individuals but less than the richest 10 percent and the relative wage of the individual with an earning higher than those of the lowest 10 percent and below the richest 90 percent of all individuals.
Earnings decile ratios at the end of the 1980’s in the Czech Republic as well as in Hungary were with about 2.5 in line with those in Germany, in Poland (2.8) somewhat lower than in France and in Russia (3.4) comparable to Britain at that time (Flemming/Micklewright 1999).

The picture of household incomes per capita reveals that the influence of fiscal instruments had a dampening influence on inequality in most of the socialist countries. In the mid-1980’s Gini coefficients for the individual distribution of per capita income were in Czechoslovakia and Hungary with 0.20 and 0.21 somewhat lower than those for Finland and Sweden, followed by Russia and Poland. Other Scandinavian and Benelux countries as well as Germany all had Gini’s below 0.30, while the USA was the OECD country with the largest income dispersion of 0.37. Within the Soviet Union the western republics of Ukraine, Belarus and Moldova had Gini coefficients of about 0.24, which were somewhat lower than those for Russia and the Baltic republics (0.27). Dispersion of per capita household incomes of most of the Central Asian republics as well as the Caucasian republics was only somewhat higher compared to Russia (except Armenia which had the same low level Gini as Moldova). However we have to keep in mind that the quality of the household surveys performed in Soviet republics was reported to be lower than in other COMECON states since a sample bias towards families of persons working in state enterprises and collective farms resulted in a reduction of variances (Atkinson/Micklewright 1992; Flemming/Micklewright 1999; World Bank 2000).

Throughout the article we try to use net-income-based Gini coefficients (as well as other inequality measures) instead of consumption-based measures. Income-based coefficients have the advantage that they are more easily available on a comparable basis. Furthermore income inequality measures are decomposable which provides the possibility to look into the driving forces of inequality development by population groups as well as income sources. Consumption based Gini-coefficients report somewhat higher inequality levels compared to income-based ones for Central European countries, since non-reported income is revealed in consumption figures. In some CIS-countries like Armenia, Georgia or Tajikistan the consumption-based Ginis are considerably lower than income-based ones. One important reason for this is that wages as a component of total income fell by large during transition in CIS countries. Since income from self-employment and other sources of non-wage income are prone to volatility as well as errors in measurement, consumption- and income-based Gini coefficients vary by large (World Bank 2000). An in-depth overview on methodological issues as well as pitfalls when working with inequality measures of transition countries is given by Flemming/Micklewright (1999).

**II.2. Recent picture of income inequality in the region**

In the following the recent situation of inequality in Central, East and Southeast Europe as well as its development since 1990 will be analysed taking into account the profound political, economic as well as social transitions having occurred in Eastern Europe from the breakdown of the communist regimes onwards.

Although a rise in inequality can be observed in the whole region, the situation differs from country to country, depending on the institutional heritages as well as the transition policies chosen. Looking at the development of average inequality in the three main country groups of the formerly socialist region analysed here, we see that in all of those the liberalisation of markets led to a sudden
rise in income dispersion (see Figure 1). The change was most dramatic in the CIS region, with Russia experiencing the strongest increases after the break-up of the Soviet Union.

Figure 1 here

Table 1 reveals the large divergence of inequality development within the country group. While Belarus and Ukraine remained quite equal, the Caucasus region experienced rising dispersion. For Central Asian CIS countries the situation is rather mixed. In the region as a whole the relatively stable development from 1993 onwards was followed by a further rise in the aftermath of the Ruble crisis, but after 2000 when GDP growth revived the situation of inequality improved too.

In the Central European region the Czech Republic and Slovenia experienced a slight rise in inequality although their Giniis are still low even when compared to Scandinavian countries. Hungary and the Slovak Republic, where the development in employment was less favourable, were affected by stronger but still modest increases, in contrast to Poland, where a high share of self employed, who work still by large in the agricultural sector, raises Gini coefficients. Yet most of the increase in the average inequality of the country group in Figure 1 is due to the fast rise in the Baltic States, which after gaining their national sovereignty adopted a quite liberal approach in restructuring their economy. Although the first jump in the Gini index in the first half of the nineties was followed by a rather stable development, we see a gradual but continuous rise of inequality in the group of countries that have joined the EU in 2004. A similar picture can be observed in the South East European countries. While Bulgaria and Romania also in part due to large agricultural sectors experienced a remarkable rise, in the Western Balkan region a striking stability can be found. Only in recent years the situation starts to change.

Table 1 here

In the following we are going to analyse the macroeconomic developments that influenced the inequality outcomes in the region. Furthermore we take a look at specific changes in the structure of labour markets. The overall inequality developments of household incomes per capita which are illustrated by the above presented Gini indices are shaped by tax and transfer policies differing from country to country as well as by further structural policies discussed below.

II.3. The process of transition

Following the fall of the communist regimes in Central Europe in 1989 as well as the break up of the Soviet Union in 1991 in all of the countries sooner or later a series of reforms with the aim to transform the economic systems from socialist planning to market regulation were introduced. These comprised the liberalisation of internal markets as well as of external trade and financial markets, the retreat of state influence from the production sphere via hardening the budget constraints of state owned enterprises as well as privatisation of those.

Although the political and economic process of transition always comprised a bundle of different and sometimes conflicting policies varying from country to country the problems to be
coped with were quite similar. The way in which politicians, advisers and analysts thought about the modes of transition policy to be optimally chosen diverged in particularly on the speed and depth of reforms to be taken at least in the period of early transition. The proponents of “shock therapy” argued for fast liberalisation and privatisation relying on market forces to establish nominal stability, which should subsequently foster growth via private investment.

Those who advocated for a gradualist approach pointed out that the adaptability of market agents (entrepreneurs as well as employees) is limited. The conversion of institutional capacities from a communist to a market economy, being necessary to guarantee sustainable growth, would take time. Therefore a fast break up of existing market structures should be avoided since this would lead to a substantial loss of output, jobs and thereby welfare in the short to medium run (Jeffries 2002, Gabrisch/Hölscher 2006). The ex-post analysis of more than a decade of transition shows that apart from the speed chosen concerning the liberalisation of prices, markets and property rights the building up of proper institutions establishing a market economy was of crucial importance especially for the achieved outcomes in income inequality.

**II.4. Loss in output**

Independent of the transition policies implemented however, in all Central, East and South East European countries the liberalisation of markets, triggering a massive reallocation of resources, led to a severe recession at least in the first half of the 1990’s. However the magnitude of output losses and the time period of GDP decline varied considerably. Looking at Figure 2 we can see that in Central European countries GDP growth already recovered between 1994-1995. This is except for Poland, which could experience an upswing as early as 1992. For the Baltic States being highly integrated in the production system of the Soviet Union before 1991, the break up of the USSR and the reorientation towards Northern and Western European markets led to a fall of GDP by almost 50 percent although the recovery already started in 1995-1996. In some of the CIS countries like Russia, Ukraine and Moldova yet the bottom of output decline was reached not until the end of the 1990’s with output losses of 45 percent on average. In the region of South East Europe, Bulgaria as well as Romania experienced an early recovery, which was yet followed by a further period of recession between 1994 and 1998. All republics of former Yugoslavia obviously suffered severely from the effects of the Balkan wars either directly or indirectly via the break up of trade and production linkages and subsequently (and partly still existing) investment barriers. The initial output loss of almost 55 percent in the region as a whole was followed by a growth performance, which was insufficient to reach the former level of GDP/capita.

Figure 2 here

In most of the Central European countries however the pre-transition level of GDP per capita was reached by the turn of the century, in Bulgaria, Romania as well as Croatia only by about 2005. In the CIS output still stagnated in the second phase of the 1990’s with weighted average yearly GDP growth rates of 1.5% in European states as well as 2.8% in the Central Asian region. From 2000 onwards a remarkable rebound of growth had been recorded. After the overcoming of the effects of
the Russian rouble crisis in 1998, supported by the rise in fuel prices as well as those for e.g. metals
the growth rates jumped to 6.5% (2000-2005) in European CIS countries as well as to 8.8% in those
of Central Asia. However only a few of the CIS countries managed to reach the GDP levels of 1990
again, especially Russia and Ukraine still lag behind.

Figure 3 here

Some authors yet claim that when comparing the pre- and post-communist output figures especially
of CIS countries one tends to overstate the welfare reductions having taken place. One of the greatest
problems hereby is that part of the economic activity reported for pre-transition periods had a
negative value added if inputs and outputs were priced at world market levels. The adjustment of
official data could therefore lead to a reduction of measured output losses by 30 to 50 percent (see
Havrylyshyn 2006). Nevertheless it is far from debatable that the break of the socialist system in
Eastern Europe was followed by severe reductions of average welfare in the region. Using official
data we can see in Figure 3\textsuperscript{3} the stronger severance but also difference in magnitude of the drop in
GDP per capita within countries in the CIS region compared to Central Europe. Moreover the
diverging growth performance in the second half of the 1990’s and thereafter resulted in widening of
the welfare gap between countries (see Figure 4).

Figure 4 here

Not very surprisingly a strong correlation between output loss in the early phase of transition and the
rise of inequality measures as the change of Gini coefficient is found in the literature. Although some
authors claim that this points to the correlation that the faster the liberalisation the lower the
inequality outcome in transition, this is far from conclusive. Some countries like the Baltic States
have transformed quite swiftly into liberal market economies accompanied with fast rising
inequality. Belarus on the other hand is one of the states in the region with the least will to transform
and experiences still, like some other CIS countries, relatively low levels of inequality (Grün/Klasen
2001).

\textbf{II.5. Reduction of employment}

The transition crisis described above was accompanied by a massive reduction of employment and
substantial underutilisation of labour in general (see Table 2). As a consequence open
unemployment, which didn’t exist as a mass phenomena in the socialist area, rose, coupled with the
emergence of different types of informal economic activity. In particular in the CIS the sharp and
persistent fall in labour demand of enterprises forced workers to move into low-productivity jobs in
the service sector or subsistence agriculture, since in many of those countries social protection is
lacking and the status of unemployment is not an affordable option. Moreover the prevalence of low-
productivity jobs in unrestructured enterprises in CIS countries can be seen as a further type of
underemployment.

\textsuperscript{3} For country codes used see Table 4 in the annex.
In the whole region a reduction of formerly high employment to population ratios took place (see Table 2), more rapid in the Central European countries, while in the CIS the prolonged process of enterprise restructuring resulted in a delayed fall of employment rates later on. In the whole region not only the demand but also labour supply was reduced, e.g. of elders taking advantage of early retirement schemes particularly in Central European countries as well as women, who had high employment rates compared to Western Europe in Socialist times, but with reduced job opportunities their share in the labour force shrank (World Bank 2005a). While men more often tried to prevent long-lasting stances of unemployment by moving into self-employment, especially low educated women were likely to drop out of the work force. However differences between male and female employment rates didn’t increase enormously and declined in the phase of output recovery (Heyns 2005).

Although a rebound of growth took place in the Central European States and the Baltics in the mid 1990’s this was not accompanied by a rise in employment figures for longer time (see Table 2). Strong productivity growth led to further falling or stagnant employment rates until about 2005 in general with the exception of Hungary and Slovenia. While in Russia, Ukraine and Belarus improvements from 2000 onwards are visible, labour markets in low-income CIS in many respects resemble those in low-income countries in other world regions with a dominant informal sector and wide spread underemployment (Worldbank 2005a).

### II.6. Changing structures of employment

The fall of labour demand as well as the liberalisation of labour market regulations was accompanied with the emergence of all kinds of less regulated forms of employment, may it be in the form of temporary contracts, part time work or self-employment in the sphere of the formal economy. The elimination of legal restrictions on private business activity and ownership gave rise to self-employment throughout former socialist countries. The magnitude and reasons for that were however very different. In Central European countries except for Poland and Western Balkan states it is mainly the emergence of small-scale entrepreneurial activities that led to a rise of the shares of self-employment in 2004 in between 12% in the Slovak Republic and 19% in the Czech Republic, a level comparable with Western European countries (15%). In Poland and Romania the large small scale farming sector is mirrored by a share of self-employment of about 29% and 46% at that time.

Contrary to Central Europe the severe recession in the CIS resulted in a much deeper collapse of jobs and wages in the formal sector, which forced employees to move into small scale farming or petty trade. These activities were often done in parallel to formal, low-paying or non-paying jobs. The latter was common in the CIS since in the course of delayed enterprise restructuring personnel was not laid off but instead just the payment of salaries suspended. A similar type of coping of enterprises with financial difficulties were wage arrears that have concerned a large part of employees in the private but also in the public sector up to the turn of the century (World Bank 2000, World Bank 2005a).
From figure 5 we can see that increases in inequality measures and differences of inequality levels between countries were strongly shaped by the changing structure of functional income distribution. The higher the share of wage earnings in countries of the region, the lower is the income dispersion in general. In addition between 1995 and 2002 the correlation of the share of compensation of employees in GDP and the Gini index has become more pronounced and negative throughout the period of transition.

Irrespective of the concrete liberalisation of labour market regulations, in most of the countries especially low skilled workers were affected by firm closures or by reductions of the labour force in the course of enterprise restructuring, the chance to find a job in the formal sector was pretty low. The effect was that many of those had to move into informal jobs thereby reducing their wage costs by avoiding the tax wedge. In the Central European countries and the Baltics the informal sector is estimated to comprise between 15% and 35% of the work force which is twice as large as in the economically advanced EU-15 region. Estimations for the South European countries range between 25% and 35%. Figures for the CIS countries where 35% to 55% of the labour force are expected to work in the informal sector reflect that large part of population had to recourse to subsistence agriculture to make a living (see World Bank 2005a).

II.7. Rising disparities in labour earnings

The situation of wage disparities was shaped by the enormous and still ongoing changes in the labour markets of the Eastern European countries, driven by transitional recessions and by outstanding sectoral and structural shifts in the period of recovery from the mid 1990’s onwards. Along with the liberalisation of labour market regulations factors like e.g. the educational attainment level, ethnicity or gender of the individual employees regained importance in describing the emerging picture of wage distribution.

As a result wage disparities rose above the average OECD level in most of the countries in the region. In the early phase of transition reported concentration coefficients for wages have risen from 0.23 (in the late 1980’s) to about 0.32 (in 1995) in Hungary, Poland, Slovenia and Bulgaria and from 0.25 to 0.50 in the countries of the Former Soviet Union (World Bank 2000). The disparities have also risen thereafter. While in the Czech Republic and Slovenia in 2002 the ratio of wages of the 9th decile to the 1st decile is with 3.5 the same as those of the OECD average, figures for Hungary and Poland are in between 4 and 5. Bulgaria, Romania as well as Lithuania and Estonia range between 5 and 6 like the Ukraine and Belarus. Almost all other CIS countries have much higher disparities with decile ratios between 7 and 14 and Russia exceeding a ratio of 10 (Worldbank 2005a).

Obviously wage decompression has had the largest impact on the increase of total income inequality in Central, East and South East Europe, which is underlined in the literature (Milanovic

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4 The concentration coefficient of wages measures how evenly they are distributed in relation to total income inequality. Negative values indicate that wages are reducing income inequality, positive values that wage inequality raises overall inequality.
Inequality not only rose between population groups reliant on their status in the labour market. Independent of the speed of reforms, labour earnings disparities rose in all transition countries (World Bank 2000).

In countries where the shares of employees in total employment fell by large like in the low-income CIS this was a major driving force since incomes derived from self-employment are as such more unequally distributed. Looking at the data for CIS countries in the years 1998-2003 a turnaround can be detected, since a rise in wage earners and the end of widespread wage arrears reduced income inequality (World Bank 2005c).

One of the most important factors that were driving the rise in wage inequalities in the Central European states is to be found in the increase in wage premiums to education especially in the emerging private sector (World Bank 2000). As a result returns to education nowadays tend to exceed those to be found in OECD countries, whereby the speed of reforms within countries has positively influenced the existing premium differences (Fleisher et al. 2004; Tonin 2006). For low skilled workers yet not only the probability of getting unemployed and remain in the labour force rose dramatically also compared to the situation of low skilled in the EU-15 (Landesmann/Vidovic 2006). In addition absolute income levels worsened substantially, whereas highly educated employees often experienced real wage growth early after the rebound of output growth. In the CIS where labour turnover in general and the growth of private sector employment was low, the rise in returns to education was more reluctant and set in only later (World Bank 2005a).

Although self-employment rose in total in all East European countries, its share in total income derived changed only slightly in the transition period in Central European countries, since here private economic activity could evolve already throughout the 1980’s. Milanovic (1999) reports a rise from 20 percent at the end of the 1980’s to 24 percent in 1995 on average. However in Former Soviet Union Republics where private entrepreneurs could start their business only later on the average share of income derived from self-employment rose dramatically in the same period from 9 to 25 percentage points. The concentration of incomes derived from self-employment rose only in some of the Central European countries, being only a negligible source of rising inequality, whereas especially in Russia as well as in other CIS countries concentration coefficients roughly tripled from 0.17 to 0.50 (Milanovic 1999).

II.8. The role of labour market institutions

The institutional setting of wage bargaining changed dramatically in the countries of Central, East and South East Europe. In the socialist era most workers in the region were automatically members of a union. In most transition countries union density and coverage rates of collective agreements declined substantially, although there are clear variations between countries. In CIS countries official density rates are reported to have remained high, between 55 and 90 percent of the work force in the early 2000’s, although these figures tend to be inflated (see Crowley 2005, World Bank 2005a).

In Central European countries and the Baltics density rates as well as coverage rates, which amounted to 85 and 90 percent in 1989 dropped to about 30 and 50 percent on average although individual countries like e.g. Lithuania with a coverage rate of about 12% and Slovenia were it amounts to more than 90% experienced substantially different developments. In general collective
bargaining coverage in Central and Eastern European countries being members of the EU nowadays is poor compared to Western Europe, with collective bargaining taking place mainly at the company level with only a minor role for industry or sector organisations. Extension mechanisms are reported to be weak, poorly enforced or non-existent (Lawrence/Ishikawa 2005).

Since the results of union activity as well as collective agreements on inequality outcomes is not always clear we tried to look at the relationship with respect to new EU member states as well as Croatia (see Figures 6 and 7). An extension to additional SEE countries and the CIS was not possible due to data availability.

Figure 6 here

Figure 7 here

We find a strongly negative linear correlation between union density and inequality in the countries of the 2004 EU accession round, which is reduced when the sample is extended by Bulgaria, Romania and Croatia. The correlation between coverage rates of collective agreements and inequality is as striking. Removing Slovenia from the sample even aggravates the negative correlation and raises the fit of the regression line (R2). When Bulgaria, Romania and Croatia are excluded the results remain very similar.

II.9. Regional dimension of wage inequality

Wide regional variations characterise the recent situation in labour markets in the CEE region. This is not only due to transitional recessions hitting regions at different magnitudes. In part it is routed in the planning mode of industrial production having prevailed in the command economies. Concentration of production and specialisation of regions on a handful of industries and products brought along disparities in regional production structures and value added, which was although not mirrored by differences in living standards, since redistribution via price and wage controls equalised incomes. With the liberalisation of prices and markets combined with the reduction of state intervention and subsidies an unbalanced adjustment process set in. Regions which were specialised in heavy industry or agricultural production or were oriented towards the Soviet market were hit hardest. In contrast capitals and other metropolitan areas, which benefited from the growth in service sectors could cope more easily with the ongoing transitions.

Furthermore those regions, which where specialised in the production of consumer goods or in sectors, which attracted FDI already early in transition and had the advantage of geographical proximity to western markets were better off. As a result regional disparities rose concerning employment and unemployment rates and to a lesser extent also wage rates of employees (see Tonin 2006, Mitra/Yemtsov 2006).

II.10. Gender inequality

Surprisingly wage differences narrowed between women and men during the 1990’s. One reason for that was that although high participation rates of both women and man were fostered in the socialist
era, women were underrepresented in heavy industry and other sectors, which were highly rewarded in COMECON countries. With the liberalisation of labour markets those skills acquired above-average by women like business qualification or the command of foreign languages turned out to pay off better than before. Sectoral employment shifts from industry to services favoured women, who prevailed in those sectors already in communist times. Another reason as already mentioned above was, that especially low skilled women dropped out of the labour force more likely than man, so that the ratio of average wages of women and men increased. As a consequence gender wage gaps narrowed (Heyns 2005). Although the reduction of earnings differences in transition made up only for part of the gender wage gap, we have to conclude that it has contributed negatively to the general rise in income inequality in the region.

### II.11. General income inequality and wealth inequality

The broader view on income and wealth inequality as a whole directs the attention to structural policies in the field of privatisation as well as changes in the field of social transfer systems. Different country experiences in the change of ownership of firms as well as land and real estate led to different outcomes in wealth (as well as wage) distribution. Furthermore the privatisation of (formerly) public services in the field of pensions, health care, education and other fields change the structure of provision of these services and are expected to have an influence on the future development of income distribution.

#### II.11.1. Transfers and tax policy

Government taxes and transfers have influenced the distribution of incomes in Central and Eastern European countries by large throughout transition. In Central European countries social transfers have dampened the rise in income inequality in general. Throughout the 1990’s public social spending as a share of GDP remained relatively stable at levels comparable to Western European states. At the end of the 1990’s the ratio of public expenditure to GDP amounted to 13.5% on social protection, 5% on education as well as 5% on health expenses (Klugman et al. 2002). In addition better targeting of social transfers had a reducing effect on total inequality. For the early period of transition Milanovic (1999) concludes that this was mostly due to the introduction of unemployment benefits, whereas in some countries the flattening of the pension schemes but also the possibility to leave the workforce via early retirement may have curbed the increase in inequality (Worldbank 2000). Analysing data of the Luxembourg Income Study (LIS) database on Central European countries as well as Romania and Estonia, Cerami (2003) states that poverty rates, measured as 60% of average income, would have almost doubled from about 15% to almost 30% in average given the absence of social transfers.

In CIS countries the picture looks quite different. The fall in government revenues and subsequently expenditures to below 30% of GDP caused not only an absolute but also relative reduction of social expenditure to GDP. At the end of the 1990’s 7.5% of GDP was spent on social protection, about 4% on education and 3.5% on health in CIS countries on average, with much lower rates for most low income CIS countries (see Klugman et al. 2002). Subsequently the impact of transfers to reduce increased income inequality in the post Soviet region has been marginal, in some
countries especially in Russia the rising concentration of pensions had even an aggravating effect on income dispersion (see Worldbank 2000). Cerami reports that total social transfers reduced the inequality of incomes measured by Gini index by only 14% in Russia in 2000.

Information on the influence of changing tax structures on income inequality is less easily available. In all of the Central and East European countries at the beginning of the transition the tax systems relied heavily on direct taxation, which caused that tax incomes were reduced by large with the fall in output figures. A stabilisation of revenues was obtained with the introduction of Value added tax throughout the region, which made up a much larger share in total tax revenues of Central European countries at the end 1990’s compared to Western Europe (see Leibrecht/Römisch 2002). Although we know that indirect taxes have a regressive effect, it does not influence the dispersion of disposable income but only welfare levels. The effect of the Value added tax on welfare differences of income groups is however as far as we have seen not looked for in the literature on income inequality.

In the field of direct taxation for Central European countries, the Baltics as well as Bulgaria, Romania and Croatia a shift of the tax burden from enterprises towards individuals can be found. Furthermore many of the countries lowered the income tax rates of upper income brackets thereby reducing the redistributive effect of their tax system. Estonia was the first country to introduce a flat income tax system, followed by Lithuania and Latvia, after 2000 also by Russia, Ukraine, the Slovak Republic, Georgia and Romania. Since the shift towards a flat tax system is most often combined with the broadening of the tax base and an increase of the basic allowance, it is not that clear cut in advance how it changes the post-tax distribution especially between low and medium income earners, but high income earners are certainly better off. Furthermore the change in the distributional impact of the income tax can be of small magnitude compared to the one of an overall change of the revenue structure of the government (Keen et al. 2006). For the development of tax systems in Central and Eastern Europe in total, we can conclude that the redistributional effect has been reduced by the above described modifications. This can also be seen when looking at the progression of the tax wedge in the Central European and Baltic countries. While social contributions and taxes result in a burden of almost 40% for low wage earners (50% of the average wage in manufacturing) in these countries, in the EU-15 the load is with 35% in 2003 somewhat lower and the distributional effect of total labour taxation substantially higher (World Bank 2005b).

II.11.2. Privatisation and wealth inequality

The transition of the communist countries towards market economies implied a large-scale transfer of formerly publicly owned assets into private hands. The privatisation of small-scale enterprises, which started first, was finished by large in the mid 1990’s, while in general in the second half of the decade the privatisation of medium and large scale enterprises set in, coupled with the opening up towards foreign direct investors.

Privatisation was executed in different ways ranging from voucher-based privatisation towards the sale of enterprises at market value to strategic (also foreign) investors. Voucher privatisation was used as primary method in the Czech Republic, Russia, Latvia, Lithuania and most of the low-income CIS countries and should allow for a fast change of property rights and guarantee a broadly
based ownership of assets throughout the population, which was often only achieved in the beginning of transition. The sale to outsiders was done predominantly in Hungary and Estonia, while in Poland, the Slovak Republic, Slovenia, Macedonia and Croatia as well as Ukraine and Uzbekistan the buyouts to the Management and Employees was the primary method chosen (see World Bank 2000).

In the literature no clear evidence has been found concerning possible correlations between the privatisation methods chosen and effects on inequality. Rather a clear distinction can bee seen between Central European and former Soviet Union countries. The former succeeded in building up quite well functioning institutions shaping the interplay of market agents parallel to privatisation, which ended up in rather similar structures of ownership. In the latter the retreat of state influence led to a fast consolidation of property rights when assets changed hands from workers to managers or outside owners after privatisation. Furthermore the so-called loans-for-shares programme in Russia transferred the ownership of the mining sector to banks below the market value. All in all this brought along a dramatic rise in wealth inequality with the emergence of large business groups owned by a handful of entrepreneurs, which are known as oligarchs today (Guriev/Rachinsky 2006). Apart from enterprises also housing and land changed into private hands in the course of transition. At the end of the 1990’s the share of housing owned by private persons ranges between 60% in Russia and about 95% in Lithuania. The magnitude of private ownership is in general much higher compared to Western European countries. Most researchers argue that housing privatisation appears to have had a progressive distributional impact even in CIS countries (see World Bank 2000). Although, Yemtsov (2007) points out that the redistributional effect of housing privatisation has been overestimated in previous analysis. He argues that housing has been a usual fringe benefit prior to transition with those employees higher in the social hierarchy living in flats that realised higher market values after privatisation, when real estate prices began to rise and differentiate. He concludes that the give away of former state owned real estate under market value has entrenched or even aggravated the pre-transition divergence in housing wealth. Including imputed rents in the analysis would therefore worsen the picture of income inequality in the region.

However we should point out that since no comprehensive data exists on household wealth holdings in general it is not possible to assess in detail the magnitude of wealth inequalities resulting from the reallocation of property rights in the course of privatisation as well as the resulting effects they have on income inequalities in the region.

III. Econometric model

In the following we estimate an econometric model in order to analyse the determinants of inequality in transition countries with respect to three broad categories of variables, which are also prominent in the existing literature: Socio-demographic factors, Transitional/Structural change, Public policy. However it has to be said that many of the variables tend to be overlapping across these three groups and cannot be assigned strictly to one of the groups.
We defined our sample to include data for 28 transition economies\(^5\) for the period of 1989-2002, due to data availability. Our chosen indicator for income inequality is the Gini coefficient, taken from the WIDER database (for a detailed description of all the variables and their sources see Appendix 1). For almost all the transition economies data is only available up to the year 2002.

With regard to public policy variables we found the following EBRD indicators on: Large-scale privatisation, Small-scale privatisation, Enterprise restructuring, Price liberalisation, Trade and foreign exchange system, Banking reform and interest rate liberalisation, Infrastructure reform, General government expenditure (in % of GDP), Subsidies and current transfers (in % of GDP). From the World Development Indicators (WDI) 2006 database we took the following variables: General government final consumption (in % of GDP), Inflation, Real interest rate. We expect the first seven liberalisation indicators to be rather positively correlated with inequality. This is based on the idea of a trade-off between efficiency and equity during the process of reallocation of resources in transition. However, it is theoretically possible that reallocation can coexist with different distributions. In the case of the three government expenditure variables we clearly expect a negative correlation with the Gini coefficient. For the two monetary policy indicators inflation and real interest rate we rather assume a positive correlation with inequality. At least the latter should serve the few capital owners and thereby increase inequality. Moreover high real interest rates tend to hamper economic growth and credit availability to small business, which again should rather increase inequality.

In the field of transitional and structural change we have found variables such as: Private sector share in GDP, Change in labour productivity in industry (both from the EBRD), Manufacturing value added (in % of GDP), Employment in industry (in % of total employment). The first two indicators can be assumed to be associated with a rise in inequality given the efficiency-equity trade-off, while the latter two (both are from the WDI 2006) rather with a fall since employees in industry tend to have a higher degree of trade union density than in the other sectors. We also included the WDI variables: Exports of goods and services (in % of GDP), Fuel exports (in % of merchandise exports). If one believes globalisation to increase inequality then a high trade share should be related to a high Gini index. Though one might believe that transition economies’ workforce might actually gain from more trade openness given the countries’ relatively stronger labour intensity. In the case of fuel exports it is the monopolistic character of that good that allows enormous rents for a few, especially in some of the Former Soviet Union countries. Including the Squared GDP per capita at PPP (from the Penn World Table database) variable should allow us to check for the Kuznets curve theory (Kuznets, 1955) whereby inequality increases with per capita income and then at a critical point begins to decrease again. Therefore we would expect the squared term to be negatively correlated with inequality. The last two variables from this group are again from the EBRD database: Unemployment (in % of total labour force), Non-performing loans (in % of total loans).

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\(^5\) This includes 8 countries from Central and Eastern Europe (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia), 7 countries from Southeast Europe (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Romania, Serbia and Montenegro), 12 Former Soviet Union countries (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Russia, Tadjikistan, Turkmenistan, Ukraine, Uzbekistan) and Mongolia.
The first should be related with more inequality, while the latter might be assumed to be correlated negatively with the Gini index, as financial crisis tend to hurt owners of income from capital.

Finally we turn to the group of socio-demographic factors. Both variables are taken from the WDI: Fertility rate, Age dependency ratio. Here the assumption is that both indicators should be associated with high inequality given that the share of persons with income is smaller. Especially in this group we wanted to add several variables more, such as for instance indicators for gender, ethnicity, education and migration issues. However, the chosen set of countries and years does not allow to create a proper and somewhat exhaustive data set for these variables. In any case the set of variables presented above appears to be well enough to estimate an econometric model explaining at great part of inequality in transition countries using a general to specific (GETS) approach.

With respect to finding the right specification to estimate the determinants of inequality in transition we have to acknowledge that most probably the large dataset at hand suffers from most of the possible shortcomings a panel data set in levels can have. We assume the data to be suffering from non-stationarity, endogeneity, multicollinearity, heteroskedasticity and autocorrelation. The Im-Pesaran-Shin panel unit root test shows that the Gini variable and most of the explanatory variables are not integrated of order one but a few (e.g. the age dependency variable) are. In any case many of the variables appear to be near-non-stationary. Similarly the Wooldridge test for serial correlation and a likelihood-ratio test for heteroskedasticity seem to confirm our initial doubts about autocorrelation and heteroskedasticity in the panel. This is probably the reason why, to our knowledge, nobody so far has tried to estimate a similarly large inequality explaining macroeconomic model on level panel data. Others try to overcome problems by estimating e.g. the change of inequality instead of the level (see Lopez, 2003) or confine themselves to a limited set of variables (e.g. Jäntti/Jenkins, 2001).

In order to remedy the deficiencies described above we suggest to use a Generalised Method of Moments (GMM) dynamic panel estimator which is based on Arellano/Bover (1995) and Blundell/Bond(1998). Apart from the explanatory variables described above we introduce on the right hand side of the equation also the lagged variable of the left hand side (i.e. the lagged Gini coefficient) following the logic of the model used. Moreover this set of right hand side variables is also used as bases for the "GMM-style" instrument sets. Here we employ for each time period all available lags of the specified variables in levels dated t-1 or earlier as well as the contemporaneous first differences as instruments. In addition to that we specify a set of variables to serve as standard instruments. These should be strictly exogenous regressors. Thus we use time and country dummies. Finally we estimate the regression assuming heteroskedasticity and autocorrelation within the panels. As for the results only the coefficients of the levels are being reported. In our approach to estimate from general to specific we start with all the explanatory variables described above and eliminate step-wise the least significant variable of each estimation.

Table 3 here

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6 Here we use the Sata software command xtabond2 (see Roodman, 2006).
Table 3 shows the results for the specification where all the estimated coefficients are at least significant at the 10% significance level. Out of 15 explanatory variables 13 are at least significant at the 5% level. Unsurprisingly one of them is the lagged Gini coefficient itself, which explains a big chunk of current inequality. The pseudo-R² of the model is at 96%. Due to many holes in the dataset the number of countries in the present regression has shrunk to 16 countries\(^7\) with an average of 6 years\(^8\) per country. This makes a total of 96 observations in our regression.

As expected the large-scale privatisation indicator showed to be positively correlated with the Gini coefficient as it is probably related a lot to increased unemployment and a loss of egalitarian wage structures in former large state owned companies. On the other hand we find the small-scale privatisation indicator to be negatively related to inequality. One explanation might be that here a lot of former management and employees took a chance in the privatisation process and this might have had a positive influence on equity in the respective firms as compared to privatisation in the large industries. Similarly to the large-scale privatisation indicator the infrastructure reform index shows a positive coefficient. Commercialisation in the sensitive sectors of electricity, railways, roads, telecommunications, water and wastewater has led to an increase in inequality.

Contrary to what globalisation critics think we find a negative coefficient of the trade and foreign exchange liberalisation indicator. This is also one of the biggest coefficients. The interpretation is as follows. A one per cent increase in the trade and foreign exchange system liberalisation index leads \textit{ceteris paribus} to a decrease of the Gini coefficient of 0.4%. Thus it seems that globalisation has left the average transition country with less inequality. This is most probably due to the relatively more labour intensive structure of the transition economies’ industry as compared to its western trade partners. However, maybe this is rather a proxy variable for EU accession and the step-wise take-over of EU regulations and standards, which might have a positive influence on equity. Also the coefficient of the share of exports of goods and services in GDP is negatively correlated with the Gini. Export based growth seems to be a strong job creator. This could also be a proxy for small countries, which might tend to be more egalitarian for a number of reasons. Nevertheless the share of fuel exports in total merchandise exports appears to be positively associated with inequality. This comes less as a surprise as this indicator might represent some of the countries of the Former Soviet Union where a few oligarchs and their clans have taken over the highly profitable oil industry.

The following two indicators (employment in industry and manufacturing value added) seem to represent pretty much the same one would believe. However they are not that heavily correlated (0.65). In any case both coefficients are negatively correlated with the Gini index. Our interpretation is that all the three sub-sectors of the overall industry sector, namely: mining and quarrying, manufacturing, and electricity, gas and water supply, display a high level of trade union density and might thereby contribute to more equity. From the plain data we can observe that those countries, which were able to preserve a large industry share in their economy during the transition, such as

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\(^7\) The sample includes now still all the 8 countries from Central and Eastern Europe (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia), only 3 countries from Southeast Europe (Bulgaria, Croatia, Macedonia) and only 5 Former Soviet Union countries (Armenia, Azerbaijan, Georgia, Kyrgyz Republic, Ukraine).

\(^8\) The sample includes now only data from the period 1994-2002.
e.g. the Czech and the Slovak Republic, tend to have relatively low and stable levels of economic inequality. This is probably because also the wage structure within the industry was preserved or at least changed only slowly.

Expectedly budget subsidies and current transfers as a share in GDP display a negative coefficient. However this is only significant at the 10% level. This is probably the case because the variable is only a bad proxy for general government social expenditure, which is not included here. Another two variables that behaved as expected are the unemployment rate and the age dependency ratio. Both stand for an increase in inequality. Though again the last variable is only significant at the 10% level.

Now we turn to a set of monetary and financial indicators. The coefficient of the inflation rate variable turns out to be positive. This is something that central bankers have propagated for a long time. This might be explained by the fact that persons with high income have more bargaining power and possibilities to adapt to an increasing price level. On the other hand we also find a high real interest rate to be associated with high inequality. High real interest rates can be a sign of a very tight monetary policy and a constraint to job creating growth. In any case a high real interest rate would favour the few capital owners over the many owners of labour only and thereby increasing the level of inequality. The share of non-performing loans in total loans is also a crisis indicator, which represents those years in the second half of the 1990s where several transition economies passed through a banking crisis. It appears that the respective coefficient is negatively correlated with the Gini index. This supports our assumption that financial crisis would rather hurt the rich.

Finally, the coefficient of the squared GDP per capita at PPP variable has a positive sign. This unfortunately seems to suggest that the most developed transition countries still have not yet passed the peak of inequality in their development process. This is if one assumes the Kuznets curve theory to be valid. Thus one might deduce that we have not yet explained the determinants of inequality over the whole transition period\(^9\), but further research has to be conducted once longer time series are available. Also is has to be said that we wanted to include apart from the squared also the plain GDP per capita in the regression. However those two variables are perfectly correlated and thus cannot be included together. Therefore the results have to be analysed with caution.

We have also checked our specification for robustness. Unfortunately it seems that the relationship is not extremely robust and multicollinearity could still be a problem. The model is rather sensitive to the inclusion and exclusion of variables. We have estimated on several specifications and sub-samples and found at least the manufacturing and industry share variables in most cases significant. This hints at the possibility that rather structural variables might determine inequality than policy variables.

\section*{IV. Conclusion}

\(^9\) This and some of the other conclusions of our study seem to be quite consistent with the results of one of the central overview papers in the field of transition inequality research done by Mitra/Yemtsov (2006).
The analysis of income developments in Central, Eastern and South East Europe has shown that the severe transitional recession at the beginning of the 1990’s not only had a direct impact on average per capita welfare, but also on income distribution. The stronger the output loss, the more considerable was the rise in income inequality. The reduction of employment was accompanied by an increase in open unemployment in Central and South East Europe, whereas in most CIS countries informal activities spread in agriculture and petty trade. The expected correlation between the share of compensation in GDP and the level of inequality in countries has been confirmed. Nevertheless the main reason for the increase in total inequality to be found in the literature especially in Central European countries is the decompression of wage structures. Wage dispersion has risen especially by educational attainment levels as well as by region by large. One reason for rising wage inequality can be found in the changing institutional setting of wage bargaining. We found a strong correlation between coverage rates of collective agreements and the Gini coefficient as well as for union density and the Gini for New EU-Member States. State transfers had a dampening effect on total inequality in Central and South East Europe during transition in general, while in the CIS the fall in total transfers as a share in GDP and the reduced progression of transfers affected total inequality negatively. No clear evidence is available on how different methods of privatisation have influenced the picture of inequality, except that those countries which managed not only to transfer former state property into private hands but also to build up functioning institutions establishing a market economy ended up with lower inequality measures.

Our econometric analysis of the determinants of inequality in transition showed an eclectic picture. Several public policy related indicators proofed to be significant. Inequality enhancing factors were large-scale privatisation, infrastructure liberalisation, inflation and the real interest rate. On the other hand an other set of policy variables showed to be negatively correlated with inequality. These were small-scale privatisation, trade and foreign exchange liberalisation, as well as subsidies and current transfers. Among the transitional/structural change related variables we find exports of goods and services, employment in industry, manufacturing value added and non-performing loans negatively related to inequality. The coefficients of fuel exports, and unemployment had positive signs. Similarly our socio-demographic indicator of age dependency ratio is positively correlated with inequality. This is also true for the squared GDP per capita. This seems to suggest that the most developed transition countries still have not yet passed the peak of inequality in their development process. This is if one assumes the Kuznets curve theory to be valid.
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Appendix 1

List of variables

Inequality

Gini: The Gini coefficients for the respective countries and years were taken from different surveys. It was tried to prefer surveys that analysed disposable income, net earnings or consumption. However in some cases also data from surveys on gross earnings and gross income had to be taken. Missing values of up to three years were interpolated. Source: United Nations University – World Institute for Development Economics Research (UNU-WIDER) World Inequality Database Version 2.0a (WIID 2a)

Public policy

Large-scale privatisation: The EBRD Large-scale privatisation indicator is one of the EBRD’s Overall transition indicators. It ranges from 1 (Little private ownership) to 4.33 (Standards and performances typical of advanced industrial economies: more than 75 per cent of enterprise assets in private ownership with effective corporate governance.). Source: The European Bank for Reconstruction and Development (EBRD)

Small-scale privatisation: The EBRD Small-scale privatisation indicator is one of the EBRD’s Overall transition indicators. It ranges from 1 (Little progress) to 4.33 (Standards and performances typical of advanced industrial economies: no state ownership of small enterprises; effective tradability of land). Source: The European Bank for Reconstruction and Development (EBRD)

Enterprise restructuring: The EBRD Governance and enterprise restructuring indicator is one of the EBRD’s Overall transition indicators. It ranges from 1 (Soft budget constraints (lax credit and subsidy policies weakening financial discipline at the enterprise level); few other reforms to promote corporate governance) to 4.33 (Standards and performances typical of advanced industrial economies: effective corporate control exercised through domestic financial institutions and markets, fostering market driven restructuring). Source: The European Bank for Reconstruction and Development (EBRD)

Price liberalisation: The EBRD Price liberalisation indicator is one of the EBRD’s Overall transition indicators. It ranges from 1 (Most prices formally controlled by the government) to 4.33 (Standards and performance typical of advanced industrial economies: complete price liberalisation with no price control outside housing, transport and natural monopolies). Source: The European Bank for Reconstruction and Development (EBRD)

Trade and foreign exchange system: The EBRD Trade and foreign exchange system indicator is one of the EBRD’s Overall transition indicators. It ranges from 1 (Widespread import and/or export controls or very limited legitimate access to foreign exchange) to 4.33 (Standards and performance norms of advanced industrial economies: removal of most tariff barriers;
membership in WTO). Source: The European Bank for Reconstruction and Development (EBRD)

**Banking reform and interest rate liberalisation:** The EBRD Banking reform and interest rate liberalisation indicator is one of the EBRD’s Overall transition indicators. It ranges from 1 (Little progress beyond establishment of a two-tier system) to 4.33 (Standards and performance norms of advanced industrial economies: full convergence of banking laws and regulations with BIS standards; provision of full set of competitive banking services). Source: The European Bank for Reconstruction and Development (EBRD)

**Infrastructure reform:** The EBRD Infrastructure reform indicator is one of the EBRD’s Infrastructure transition indicators. The ratings are calculated as the average of five infrastructure reform indicators covering electric power, railways, roads, telecommunications, water and waste water. Source: The European Bank for Reconstruction and Development (EBRD)

**General government expenditure:** General government expenditure is calculated in per cent of GDP. Data for the general government, including local government and extra-budgetary funds, incorporated where available. Data for most countries are from IMF country reports. Budget balance data can differ from official estimates due to different budgetary accounting, in particular with respect to privatisation revenues and foreign lending. Source: The European Bank for Reconstruction and Development (EBRD)

**Subsidies and current transfers:** Budgetary subsidies and current transfers are calculated in per cent of GDP. Budgetary transfers to enterprises and households are excluding social transfers. Source: The European Bank for Reconstruction and Development (EBRD)

**General government final consumption:** General government final consumption expenditure is calculated as a share of GDP. General government final consumption expenditure (formerly general government consumption) includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defense and security, but excludes government military expenditures that are part of government capital formation. Source: World Development Indicators 2006 (WDI 2006)

**Inflation:** Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a fixed basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used. Source: World Development Indicators 2006 (WDI 2006)

**Real interest rate:** Real interest rate is the lending interest rate adjusted for inflation as measured by the GDP deflator. Source: World Development Indicators 2006 (WDI 2006)

**Transitional/Structural change**

**Private sector share:** Private sector share in GDP represent rough EBRD estimates, based on available statistics from both official (government) sources and unofficial sources. The underlying concept of private sector value added includes income generated by the activity of private registered companies, as well as by private entities engaged in informal activity in those
cases where reliable information on informal activity is available. Source: The European Bank for Reconstruction and Development (EBRD)

Labour productivity in industry: The change in labour productivity in industry in per cent is provided. Labour productivity is calculated as the ratio of industrial production to industrial employment. Changes in productivity are calculated on the basis of annual averages. Source: The European Bank for Reconstruction and Development (EBRD)

Manufacturing value added: Manufacturing value added is calculated as a share in GDP. Manufacturing refers to industries belonging to ISIC divisions 15-37. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3: World Development Indicators 2006 (WDI 2006)

Employment in industry: Employment in industry is calculated as a share of total employment. Employees are people who work for a public or private employer and receive remuneration in wages, salary, commission, tips, piece rates, or pay in kind. Industry corresponds to divisions 2–5 (ISIC revision 2) or tabulation categories C–F (ISIC revision 3) and includes mining and quarrying (including oil production), manufacturing, construction, and public utilities (electricity, gas, and water). Source: World Development Indicators 2006 (WDI 2006)

Exports of goods and services: Exports of goods and services are calculated in per cent of GDP. Exports of goods and services represent the value of all goods and other market services provided to the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. They exclude labor and property income (formerly called factor services) as well as transfer payments. Source: World Development Indicators 2006 (WDI 2006)


Squared GDP per capita at PPP: The variable is calculated using the square of real GDP per capita at Purchasing Power Parities in year 2000 international dollars (rgdpl). Source: Penn World Table Version 6.2 (PWT 6.2)

Unemployment: Unemployment is calculated using end-year unemployment data as a share of total labour force. For most countries, data reflect official employment records from the labour registries. In many countries, small enterprises are not recorded by official data. A number of countries have moved towards ILO-consistent labour force surveys in recording changes in labour force, employment and unemployment. Where available these data are presented. Source: The European Bank for Reconstruction and Development (EBRD)

Non-performing loans: Non-performing loans are calculated in per cent of total loans. Non-performing loans include sub-standard, doubtful and loss classification categories of loans, but excludes loans transferred to a state rehabilitation agency or consolidation bank, end-of-year. Source: The European Bank for Reconstruction and Development (EBRD)
Socio-demographic factors

**Fertility rate**: Total fertility rate represents the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with current age-specific fertility rates. Source: World Development Indicators 2006 (WDI 2006)

**Age dependency ratio**: Age dependency ratio is the ratio of dependents - people younger than 15 or older than 64 - to the working-age population - those ages 15-64. For example, 0.7 means there are 7 dependents for every 10 working-age people. Source: World Development Indicators 2006 (WDI 2006)
Appendix 2

Figure 1

Development of Inequality in CE & Baltics, SEE and CIS, 1989-2002
unweighted averages of Gini coefficients

Source: UNU-WIDER: World Inequality Database Version 2.0a, own calculations.

Figure 2

Development of GDP in Transition countries
Index: 1990=100

Source: EBRD database, own calculations.
Table 1

**Income inequality in Transition countries**
Gini indices

<table>
<thead>
<tr>
<th>Country</th>
<th>1990</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech Republic</td>
<td>19.0</td>
<td>23.4</td>
</tr>
<tr>
<td>Hungary</td>
<td>21.7</td>
<td>26.7</td>
</tr>
<tr>
<td>Poland</td>
<td>26.8</td>
<td>35.3</td>
</tr>
<tr>
<td>Slovak Republic</td>
<td>18.0</td>
<td>26.7</td>
</tr>
<tr>
<td>Slovenia</td>
<td>23.2</td>
<td>23.5</td>
</tr>
<tr>
<td>Central Europe</td>
<td>21.7</td>
<td>27.1</td>
</tr>
<tr>
<td>Estonia</td>
<td>24.0</td>
<td>39.3</td>
</tr>
<tr>
<td>Latvia</td>
<td>24.0</td>
<td>35.8</td>
</tr>
<tr>
<td>Lithuania</td>
<td>24.8</td>
<td>35.7</td>
</tr>
<tr>
<td>Baltics</td>
<td>24.3</td>
<td>36.9</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>23.7</td>
<td>37.0</td>
</tr>
<tr>
<td>Romania</td>
<td>22.7</td>
<td>34.9</td>
</tr>
<tr>
<td>Albania</td>
<td>.</td>
<td>28.1</td>
</tr>
<tr>
<td>Bosnia and Herzegovina</td>
<td>32.9</td>
<td>26.1</td>
</tr>
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Source: UNU-WIDER: World Inequality Database Version 2.0a
Figure 3

Changes in GDP per capita in transition countries, in % of 1990
GDP measured in constant 2000 international $ PPP


Figure 4

Development of GDP per capita in transition countries
in constant 2000 international $ PPP

### Labour markets in Central, East and Southeast Europe in transition

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**Sources:** TransMONEE database 2007, wiw database.
Figure 5

Correlation of functional distribution and inequality in transition countries
CE & Baltics, SEE and CIS

Sources: AMECO database, CIS STAT database, UNU-WIDER: World Inequality Database Version 2.0a.

Figure 6

Correlation of union density and inequality in transition countries, 2001

Figure 7

Correlation of coverage rate of collective agreements in transition countries, 2001

### Table 3

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<thead>
<tr>
<th>Independent variables</th>
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Pseudo $R^2$ 0.955

Number of observations: 96
Number groups: 16
Average observation per group: 6
Table 4

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Abbreviations of regions used

CE: Central Europe
SEE: South East Europe
CIS: Commonwealth of Independent States