Luxembourg Income Study Working Paper Series

Working Paper No. 439

Inequality of Incomes on Both Sides of the Odra: The Contribution of the Regional Dimension

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June 2006

Luxembourg Income Study (LIS), asbl

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1. Introduction

The latest enlargement of the European Union has had the effect that people showing considerable differences in their standard of living have been united into a common social unit. The aim of this paper is to gain some insight about the extent to which social inequality in the EU has increased as a consequence of this enlargement. The empirical analysis focuses on the distribution of personal incomes in Germany and Poland. These countries constitute the largest representatives of the EU15 and the accession countries, respectively, in terms of population size. The relative welfare gap between them is quite similar to the welfare gap between the Eastern and the Western part of the EU after the enlargement. An additive decomposition of the Theil index and the mean logarithmic deviation allows to quantify the contribution of the cross-country difference in average incomes on the inequality of personal incomes as a whole. The analysis will reveal that this contribution is dramatically large although it has decreased since the middle of the 1990s.

The next section discusses why it is important to study income inequality in the EU from a cross-country perspective. In section 3, some theoretical assumptions and results from previous studies about the development of inequality in the EU15 and in Central Eastern Europe in the course of the 1990s will be presented. Section 4 describes the proceeding and the results of an empirical analysis of German and Polish household survey data. Section 5 concludes.

2. Why Does Cross-country Inequality in the EU Matter?

The process of integration within the European Union leads to increasing proximity of the citizens living in its member states. People increasingly transact with each other

across the national boarders, they are subjected to the same institutions, they are able to consume similar goods, and a feeling of European identity continuously evolves. The intensified social cohesion among European citizens has been empirically affirmed by an increased level of trust between inhabitants of different EU member states (Delhey 2005). Against this background it seems reasonable to measure social inequality not anymore separately for single countries. This can be theoretically justified from the viewpoint of different approaches that have often been employed to show that inequality has a negative impact on the social welfare of a community.

Runciman's (1966) theory of relative deprivation relies on the assumption that a person's well-being is partly determined by the social status of others. When the persons, with whom people compare their own situation, are better off than themselves, this will increase their feeling of being deprived. Accordingly, high social inequality among the members of a community will reduce that community's welfare. But with whom do individuals compare their social status? According to Runciman, people typically assign themselves to special groups to which the feel that they belong, the so-called 'membership reference group'. They also construct 'comparative reference groups' to which they do not belong but which have some characteristics in common with their membership reference group. When the comparative reference group is assigned with a higher social status than the membership reference group this makes the members of the latter group feed deprived. Thus, the way the reference groups are constructed influences the intensity of deprivation.

Runciman argues that the assignment to reference groups is not fixed. It can change in response to disruptions like wars, economic and institutional change or the diffusion of certain kinds of information (ibd.: 11-14, 23-25). It seems likely that such disruptions have been caused by the process of European integration. People find groups of people with whom they have a characteristics in common, and with whom they compare their social status, increasingly outside their country of origin, in the other member states of the European Union. The deprivation caused by such cross-country comparison of social status should be taken into account when assessing the social inequality in the European Union.

Atkinson (1970) employs the principle of diminishing transfers to show that inequality of incomes negatively affects the social welfare. This approach rests on the assumption that within a community, all persons' standard of living is determined by the same utility function which is characterized by decreasing marginal utility over income. A rich person thus faces a smaller increase of utility from an additional unit income he receives than a poorer one. Accordingly, each unit income transfer from a richer to a poorer person increases the sum of utility in the community. At given average income, the sum of utility is the higher the more equally income is distributed over the community members. The assumption that cross-country inequality would not influence the social welfare in the European Union cannot be uphold as long as all European citizens' utility levels are represented equally in European social welfare and the utility functions of inhabitants of different member states do not systematically differ.

Country-wise measurement of inequality is sometimes justified with the argument that the social status that can be achieved with a given income is highly dependent on the specific cultural values and perceptions incorporated in national societies (Sen 1983, Townsend 1979). However, as social cohesion in the EU continues, a person's social status can be assumed to be increasingly affected not only by the perceptions of their compatriots, but also of the EU citizens living abroad. Moreover, the cultural values people employ to evaluate the persons' lifestyles can be assumed to steadily equalize across countries.

Comparing personal incomes across countries is faced with analytical difficulties. Due to different tax and transfer systems it is difficult to assess the persons' disposable income on the base of a harmonized definition. Furthermore, these incomes have to be adjusted for the differences in the cost of living occurring between countries. Not surprisingly, cross-national studies on the distribution of incomes are rather scarce. Beblo and Knaus (2001) have carried out the only known study analyzing income inequality throughout EU citizens of different countries. Atkinson et al. (1995) and Smeeding (2000) study inequality in OECD countries by calculating separate inequality measures for each country. Milanovic (1999) follows a similar approach in his study of income inequality on Eastern and Central Eastern Europe. Also, the Laeken indicators published by Eurostat

refer to single countries and not to larger social units (for an overview see Atkinson, 2003).

Principally, income inequality in the EU could be derived simply by taking the average of within country inequality measures. This procedure would mean to neglect the differences of average incomes between the different EU countries. These differences, however, are large, especially between the EU15 and the accession countries in Central Eastern Europe (CEE). As a consequence of the enlargement in 2004, the gap between the average GDP per head of the EU and the least prosperous NUTS2 region has doubled from 30 to 60%. 92% of the accession countries' population lives in regions in which the GDP per capita is below 75% of the EU average, two thirds live in regions where the GDP per capita is less than 50% of the EU average (European Commission 2004: ix, 10-12). The aim of this paper is to gain deeper insight about the impact of this welfare gap between the eastern and the western part of the EU on the overall inequality of personal incomes. For this, the distribution of disposable incomes in Germany and Poland in the middle and the end of the 1990s will be analyzed and the overall inequality will be decomposed into its within-country and between-country components. Let us first derive some hypotheses about development of income inequality in CEE and Western Europe that we should expect.

3. The Development of Inequality in the EU15 and the Accession Countries

Three important forces can be assumed to have shaped the inequality of incomes within and between Western European and CEE countries in the course of the 1990s: the economic restructuring in CEE, economic integration between Western and Central Eastern Europe and the support provided by the EU on the base of the Phare program.

3.1. Some Hypotheses

In CEE, the transition from a planned to a market economy has created the preconditions for a greater diversification of personal incomes. The employees' wages and pensions have been increasingly determined by the demand and supply on the labour market and thus were more differenciated throughout the various categories of workers than before. Increasing unemployment lead to the emergence of a broad stratus of society with

incomes far below the average. Finally, the proportion of those labour market segments within which incomes have been most unequally distributed, the sector of the self-employed and the private economy, has grown (Milanovic 1999: 300-304). The higher efficiency in the allocation of goods and resources in a market compared to a planned economy can be expected to have lead to a higher growth of per capita incomes in CEE compared to the EU15.

Economic integration between CEE and Western Europe has been intensified right after the first steps of economic transition. In the early 1990s, agreements on trade liberalization and association treaties have been concluded between the EU and each of the later accession countries. These agreements lead to the removal of trade barriers, the deregulation of international capital flows, a harmonization of legal norms and a higher predictability of the economic environment in CEE. As a consequence, the trade and financial flows between the EU15 and the CEE considerably increased in the course of the 1990s (Kamm 1996; Dicke and Foders 2000: 95-99; Kaminski 1999; Eurostat 2000).

According to the Heckscher and Ohlin Model, trade liberalization leads to a convergence of regional per capita incomes because the economies specialize in the production of that goods for which they have a comparative advantage (factor price equalization theorem). Given the higher endowment of Western European countries with high-skilled workers, a shift of demand from the low-skilled to the high-skilled segments of the labour market should be observable there. In CEE by contrast, the demand for low-skilled workers should increase at the cost of the demand for high-skilled workers. Since low-skilled workers earn on average lower wages than high-skilled workers, the inequality of incomes can be expected to rise in Western Europe and to diminish in CEE.

Ricardo's Model predicts that free flow of capital leads to an equalization of regional wage levels, because goods will be produced at those locations where the factors of production are cheapest. New Growth Theories (Romer 1986; Lucas 1988) and the New Economic Geography (Krugman 1997), however, have shown that the opposite can be the case as well. Economies of scale and regionally limited external effects can have the effect that production is relocated into regions where the capital stock is already large, thereby increasing the regional differences in per-capita incomes.

The attraction of foreign direct investments is highly dependent on modern infrastructure and a stable and favourable institutional environment. In this regard the CEE lags behind Western Europe. The aim of the Phare program was to address exactly this deficit. In the course of this program, EU funds have been invested into the improvement of the infrastructure, the restructuring of state enterprises and institutional reforms.

To summarize, the liberalization of international trade can be expected have had a positive impact on the inequality of incomes within Western European countries resulting from a decreasing demand for low-skilled workers. In Eastern Europe, the inequality should have risen because of the ongoing process of economic restructuring, whereas trade liberalization should have had a diminishing effect. Furthermore, it can be expected that the welfare gap between CEE and the EU15 has narrowed due to efficiency gains caused by the economic reforms in CEE and due to the liberalization of international goods and capital markets, assuming that the lacking infrastructure and an unstable economic environment has not prevented investments into that region.

3.2. Findings from Previous Studies

Smeeding (2000) reports indeed rising inequality of incomes, measured in terms of Gini coefficients, within seven out of eight EU15 countries from the late 1980s to the mid 1990s. For the time between 1997 and 2000, however, the distribution quintiles (the ratio of the income earned by the richest and the poorest quintile of persons in a country) reported by Eurostat (Newchronos Database) show a rather heterogeneous trend. The inequality measured in distribution quintiles has increased in Denmark, Finland, Luxembourg, the Netherlands, Belgium and the United Kingdom, while it has diminished in France, Austria, Germany, Italy, Spain, Ireland, Greece and Portugal. Milanovic (1999) has analyzed the development of income inequality in four out of the eight CEE accession countries during the first half of the 1990s. He shows that Slovenia, Hungary, Latvia and Poland started into the transition process with comparatively low Gini coefficients of personal income. In the course of the following years, inequality increased in all of these countries. In Latvia and Poland this increase was much steeper than in Slovenia and Hungary. Figures for the CEE countries in the second half of the 1990s are not available.

So far, the hypothesis that the inequality of incomes has risen within CEE and Western European countries can be confirmed for the first half of the 1990s. At the same time, the welfare gap between the accession countries and the EU15 has narrowed. Since the middle of the 1990s, the average annual growth of the GDP per capita was by 1.5 percentage points higher in CEE than in the EU15 (European Commission 2004: 4-9). The ratio of the GDP per capita in the Central Eastern European accession countries and the EU25 average has increased from 46% to 52% between 1995 and 2000 (Eurostat, Newchronos Database). It has been shown above that this development is in line with economic theory.

4. Evidence from Household Survey Data in Germany and Poland

While the inequality of incomes within and between CEE and Western Europe has been examined in previous studies, the size of the impact of the welfare gap between both parts of Europe on the overall inequality in the EU remains an obstacle. The following analysis shall shade some light on this. At present, there is no harmonized database of personal incomes available covering all the 25 EU member states. Thus, the study will focus on the two largest countries of the EU15 and CEE, Germany and Poland. Germany covers about a fifth of the EU15 population, Poland a half of the citizens that joined the EU in 2004. In both countries together incorporate a quarter of the population of the EU25. The German GDP per capita is 2.4 times higher than the GDP per capita in Poland; the GDP of the EU15 exceeds the one of the accession countries by around the same factor (Eurostat, Newchronos Database). Also because of the countries' geographical proximity, the findings obtained from an analyzing the German and Polish income distribution can be viewed as being highly representative for the EU25 as a whole.

4.1. Data and Definitions

The Luxembourg Income Study (LIS) provides data on disposable household income and household size collected from large representative interview surveys in Germany and Poland. On the base of the information given by the interviewed households about the gross income received from various sources, the tax payments, social security contributions and other deductions from income, the team of the LIS has generated a

variable of households' disposable income, reflecting the part of the income which households can use for consumption.[1] Household incomes have been transformed into personal incomes by dividing them through the square root of household size. This procedure has been proven to be a close approximation to the official equivalence scales used in many countries (Atkinson 1995) and allows to take into account the saving of cost of living when persons share a common habitation. The Polish households in the sample have been interviewed in 1995 and 1999, the German households in 1994 and 2000. In order to take into account differences in the cost of living between the survey years and between the countries, disposable incomes in Germany for 1994 and in Poland for 1999 have been multiplied by the annual inflation rate of the following year before recalculating them into purchasing power standards (PPS). One unit PPS reflects the cost of an average consumption basket equivalent to 1.1 Euro in Germany or 2.3 Polish sloty in Poland in the year 2000. The values of the regional and temporal price deflators have been obtained from Eurostat (Newchronos Database).

Table 1 shows the summary statistics of the distribution of disposable personal equivalent incomes according to the LIS data separately for Germany and Poland as well as for both countries together.

Table 1: Summary statistics of the LIS data on personal disposable incomes (weighted)

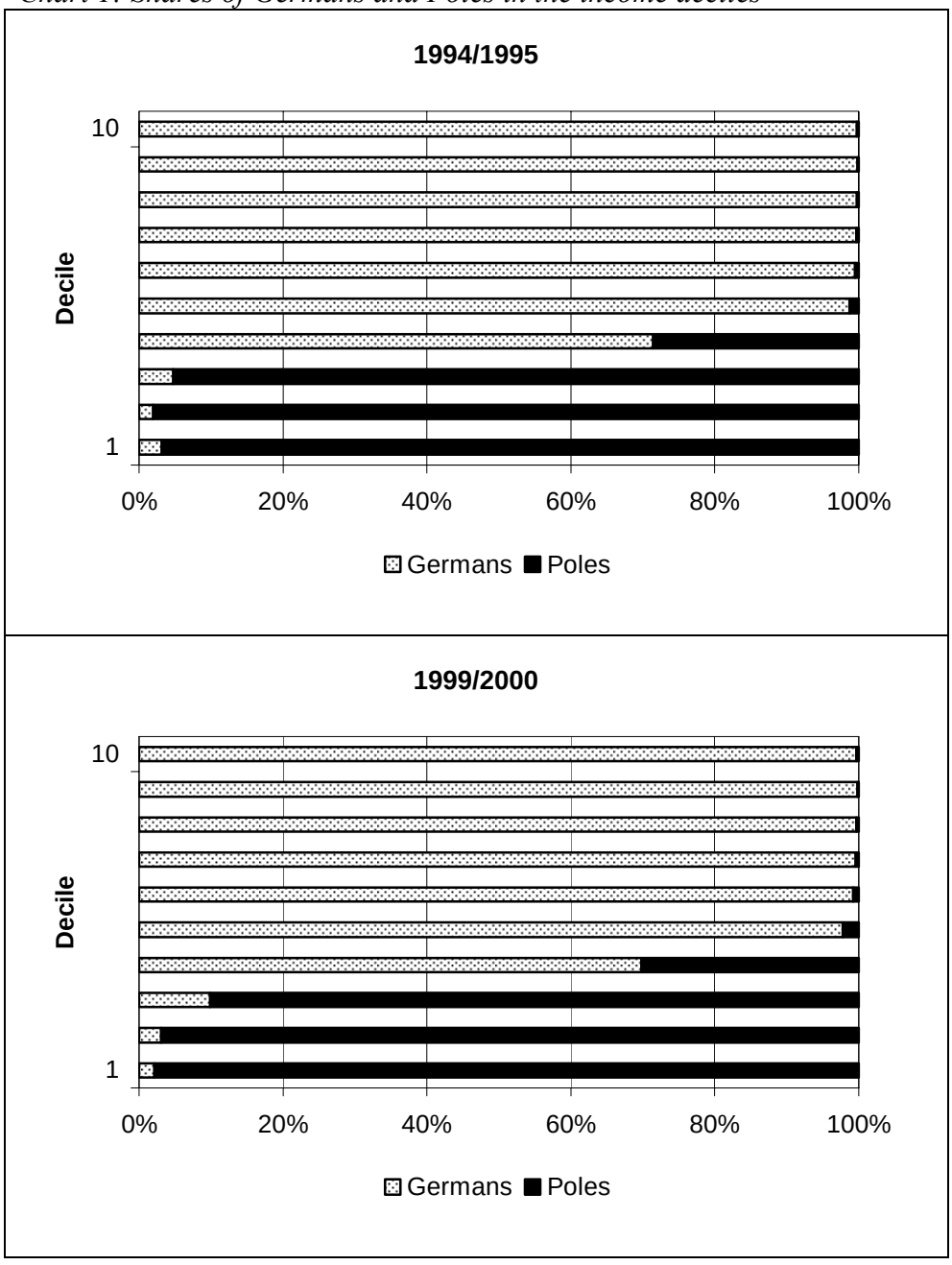
	Germany 1994 (PPS of 1995)	Poland 1995 (PPS of 1995)	Both (PPS of 1995)	Germany 2000 (PPS of 2000)	Poland 1999 (PPS of 2000)	Both (PPS of 2000)
Median	26,719	3,549	20,174	30,758	5,138	23,566
Mean	29,954	4,128	21,650	34,185	5,965	25,151
Std. Dev.	17,173	3,389	18,689	18,559	5,675	20,440
N of cases	6,367	31,562	37,929	10,979	31,375	42,354

Chart 1 shows the proportion of Germans and Poles falling into each income decile. It reveals that both in the middle and at the end of the 1990s the bottom of the income distributions is almost completely made up of Poles. In 1994/1995, Poles were represented by less than 1% in the richer half of the society, and 97% of the poorest ten percent were Poles. In the course of the second half of the decade this picture has hardly changed. In the second, the third and the fourth decile, the share of Poles slightly

[1] 518 out of 80283 households have been removed from the database because they were assigned a zero or negative disposable income.

diminished. More Poles than before are found both in the richer as well as in the very poorest segments of society.

Chart 1: Shares of Germans and Poles in the income deciles



4.2. Measurement and Decomposition of Inequality

Generalized entropy indices are the only inequality measures that can be additively decomposed into population subgroups, what has been proven by Bourgignon (1979),

Cowell (1980) and Shorrocks (1980). These indices have also two other properties which makes them well suited for the analysis at hand: First, they are invariant to changes in scale, meaning that they do not change when all incomes are multiplied by the same factor (like for example inflation rates). Second, they correspond with the principle of diminishing transfers, which means that they report diminishing inequality when a unit income is transferred from a richer to a poorer person.

The most customary indicator of the generalized entropy family is the Theil index which is defined as the weighted average of logarithmic distances of the persons' incomes *(y_i)* from the mean *(μ)*, where the weights are equal to the income shares:

$$T = \frac{1}{N}\sum_{i=1}^{N}\frac{y_i}{\mu}\ln\left(\frac{y_i}{\mu}\right). \qquad (1)$$

N is the sum of persons living in all households. The mean logarithmic deviation (MLD) follows a similar logic, but, in contrast to the Theil index, equal weights are assigned to each person:

$$L = \frac{1}{N}\sum_{i=1}^{N}\ln\left(\frac{\mu}{y_i}\right). \qquad (2)$$

This has the effect that the MLD, compared to the Theil index, is more sensitive to the inequality that appears at the bottom of the income distribution. The Theil index and the MLD are zero if all incomes are equal.

Assuming that the *N* persons live in *R* regions, each of which has n_r inhabitants, then (1) can be rewritten as

$$T = \frac{1}{N}\sum_{r=1}^{R}\sum_{i=1}^{n_r}\frac{y_{r,i}}{\mu}\ln\left(\frac{y_{r,i}}{\mu}\right)$$

$$= \left[\sum_{r=1}^{R}\frac{n_r\mu_r}{N\mu}\frac{1}{n_r}\sum_{i=1}^{n_r}\frac{y_{r,i}}{\mu_r}\ln\left(\frac{y_{r,i}}{\mu_r}\right)\right] + \frac{1}{N}\sum_{r=1}^{R}\frac{n_r\mu_r}{\mu}\ln\left(\frac{\mu_r}{\mu}\right), \text{ with } \mu_r = \frac{1}{n_r}\sum_{i=1}^{n_r}y_{i,r}\ . \qquad (3)$$

Each summand within the brackets is a regional Theil index multiplied by the regions' share in total income. The term right of the brackets is a Theil index measuring the inequality between the regional per capita incomes. In the following, the former group of

indices will be called the within-Theil indices *(T_r),* the latter will be called the between-Theil index *(T^B)*. Accordingly, defining

$$T_r = \frac{1}{n_r}\sum_{i=1}^{n_r}\frac{y_{r,i}}{\mu_r}\ln\left(\frac{y_{r,i}}{\mu_r}\right),\ T^B = \frac{n_r}{N}\sum_{r=1}^{R}\frac{\mu_r}{\mu}\ln\left(\frac{\mu_r}{\mu}\right) \text{ and } s_r = \frac{n_r\mu_r}{N\mu},$$

leads to

$$T = \left[\sum_{r=1}^{R} s_r T_r\right] + T^B. \tag{4}$$

The MLD given in (2) can be additively decomposed in an analogous way:

$$L = \frac{1}{N}\sum_{r=1}^{R}\sum_{i=1}^{n_r}\ln\left(\frac{\mu}{y_{r,i}}\right)$$

$$= \left[\sum_{r=1}^{R}\frac{n_r}{N}\frac{1}{n_r}\sum_{i=1}^{n_r}\ln\left(\frac{\mu_r}{y_{r,i}}\right)\right] + \sum_{r=1}^{R}\frac{n_r}{N}\ln\left(\frac{\mu}{\mu_r}\right). \tag{5}$$

$$= \left[\sum_{r=1}^{R}\frac{n_r}{N}L_r\right] + L^B \text{ with } L_r = \frac{1}{n_r}\sum_{i=1}^{n_r}\ln\left(\frac{\mu_r}{y_{r,i}}\right) \text{and } L^B = \sum_{r=1}^{R}\frac{n_r}{N}\ln\left(\frac{\mu}{\mu_r}\right). \tag{6}$$

Note that for aggregation the within-MLDs *(L_r)* are weighted by population shares *(n_r/N)*, while the within-Theil indices have to be weighted by income shares *(s_r)*..

4.3. Results

Table 2 shows the results of the decomposition of the overall income inequality measured throughout German and Polish households into its national and cross-national components for the middle and the end of the 1990s. In 1999/2000, the overall inequality, calculated for Germans and Poles together, accounted for 0.30 points of the Theil index, 0.39 points of the MLD. This amount of inequality is exceptionally high compared with many countries of the world. For example, Shorrocks and Wan (2004) present MLDs of twelve different countries in the 1990s, the values of which range between 0.08 (Finland) and 0.28 (Canada). The Theil indices calculated by Beblo and Knaus (2001) for the countries of the Eurozone take values between 0.15 and 0.25. However, table 2 reveals

that the inequality within Germany and within Poland was much lower. The German Theil index (0.12) was less than half, the Polish Theil index (0.15) less than two thirds of the overall index. The overall MLD exceeded the German one (0.13) by two, the Polish one (0.16) by one and a half times. The finding of higher inequality within Poland than within Germany is well in line with other studies on this topic.[2]

Table 2: Spatial decomposition of income inequality in Germany and Poland

	Disposable Income		Population		Theil		MLD	
	per head (PPS)	(%)	(1000)	(%)	Value	(%)	Value	(%)
1994/1995								
Germany	29,954	93.9	81,438	67.8	0.1313	36.5	0.1356	19.9
Poland	4,128	6.1	38,595	32.2	0.1914	3.5	0.1764	12.3
Between	/	/	/	/	0.2032	60.1	0.3126	67.8
Together	21,650	100.0	120,033	100.0	0.3382	100.0	0.4613	100.0
1999/2000								
Germany	34,240	92.4	82,341	68.1	0.1211	37.4	0.1262	22.2
Poland	5,980	7.6	38,640	31.9	0.1816	4.6	0.1542	12.7
Between	/	/	/	/	0.1738	58.0	0.2515	65.0
Together	25,214	100.0	120,981	100.0	0.2995	100.0	0.3867	100.0

The numbers in the seventh and ninth column of the table show the percentage by which the within and between components of the inequality measures contribute to the overall inequality. In 1999/2000, 58% of the overall Theil index and 65% of the overall MLD were caused by the huge income gap occurring between the countries. In other words, if the average incomes of Germany and Poland would be equalized without affecting the inner-country distribution of incomes relative to the mean, the inequality throughout Germans and Poles would diminish by 58% or 65% respectively.

The fact that the overall Theil index is lower than the overall MLD indicates that most of the inequality occurs at the bottom of the income distribution. The poorest persons in the database are indeed the Poles (see chart 1) whose incomes have been found to be distributed comparatively unequally. The within-inequality of Poland contributes to the overall Theil index by only 5% because Poland has a only a small share in the total

[2] According to Eurostat (Newchronos Database) the distribution quintile, which measures the ratio between the income of the richest and the poorest quintile of a country, was 3.5 for Germany and 4.7 for Poland in 2000. Smeeding (2000) has calculated a Gini coefficient of 0.300 for Germany in 1994, Milanovic (1999) a Gini coefficient of 0.356 for Poland in 1995.

income (s_r = 8%). Poland's contribution to the MLD is much stronger because it is dependent not on the country's income share but its population share. Accordingly, the Poland is represented in the overall MLD to a much greater extent than in the overall Theil index.

The income difference between the countries has decreased during the second half of the 1990s. In 1994/1995, the average income in Germany had been on by more the seven times higher in than in Poland. In 1999/2000 it exceeded the Polish one by less than six times. Accordingly, the between-Theil has decreased from 0.20 to 0.17, the between-MLD from 0.31 to 0.25. This is in line with the convergence of average incomes in CEE and the EU15, reported by the European Commission (see above). The extent to which this income gap contributes to the overall inequality has been slightly reduced as well.

Diminishing inequality of incomes can be observed not only between but also within the countries. This is equivocally indicated by the Theil index and the MLD, showing that the trend of rising income inequality during the first half of the 1990s has been reversed at least in Germany an Poland. The reduction of inequality in Germany and other EU15 countries is indicated also by the development of the distribution quintiles reported by Eurostat (see above).

How does the income gap between Germany and Poland compare with the regional disparities that can be found within the countries? This question will be addressed in the following by continuing the spatial decomposition of each country's inequality on a lower regional level: the *Bundesländer* in Germany and the Voyevodships in Poland. Table 3 reveals that the differences of regional average incomes have hardly an impact on the inequality of personal incomes within the countries. Around 98% of the Theil-index and 99% of the MLD is attributed to income inequality occurring within the regions. Regional disparities are slightly higher in Poland than in Germany both in absolute and relative terms.

Table 3: Spatial decomposition of income inequality on the sub-national level

	Disposable Income per head (PPS)	(%)	Population (1000)	(%)	N	Theil Value	(%)	MLD Value	(%)
Germany 2000									
Berlin	34,140	4.1	3,386	4.1	443	0.1701	5.8	0.1537	5.0

Bremen	32,890	0.8	660	0.8	94	0.1565	1.0	0.1424	0.9
Hamburg	34,868	2.1	1,721	2.1	173	0.1514	2.7	0.2010	3.3
Hessen	37,588	8.1	6,073	7.4	742	0.1421	9.5	0.1480	8.6
Niedersachsen	35,209	9.9	7,940	9.6	891	0.1326	10.9	0.1289	9.8
Schleswig-Holstein	36,448	3.6	2,796	3.4	342	0.1253	3.7	0.1413	3.8
Nordrhein-Westfalen	34,852	22.3	18,027	21.9	2,331	0.1225	22.5	0.1275	22.1
Bayern	36,095	15.7	12,280	14.9	1,514	0.1192	15.5	0.1452	17.2
Rheinl.-Pf. + Saarland	31,700	5.7	5,108	6.2	663	0.1027	4.9	0.1173	5.8
Baden-Württemberg	35,648	13.4	10,561	12.8	1,259	0.1008	11.1	0.1080	11.0
Meckl.-Vorpommern	28,254	1.8	1,768	2.1	281	0.0968	1.4	0.1005	1.7
Brandenburg	30,867	2.8	2,597	3.2	469	0.0889	2.1	0.0893	2.2
Sachsen-Anhalt	29,333	2.7	2,598	3.2	475	0.0831	1.9	0.0883	2.2
Sachsen	29,248	4.6	4,405	5.3	825	0.0829	3.1	0.0811	3.4
Thüringen	27,773	2.4	2,421	2.9	477	0.0788	1.6	0.0808	1.9
Between	/	/	/	/	/	0.0030	2.5	0.0013	1.0
Together	34,240	100.0	82,341	100.0	10,979	0.1211	100.0	0.1262	100.0
Poland 1999									
Wielkopolskie	6,464	9.4	3,363	8.7	2,656	0.3288	17.0	0.1978	11.2
Mazowieckie	7,034	15.4	5,075	13.1	4,055	0.2190	18.6	0.1939	16.5
Zachodniopomorskie	5,984	4.5	1,735	4.5	1,320	0.2064	5.1	0.1683	4.9
Opolskie	5,890	2.8	1,083	2.8	836	0.2053	3.1	0.1817	3.3
Kujawsko-Pomorskie	5,832	5.3	2,100	5.4	1,723	0.1876	5.5	0.1643	5.8
Pomorskie	5,956	5.7	2,202	5.7	1,680	0.1652	5.2	0.1505	5.6
Świętokrzyskie	5,135	2.9	1,321	3.4	959	0.1617	2.6	0.1564	3.5
Warmińsko-Mazurskie	5,063	3.2	1,469	3.8	1,330	0.1590	2.8	0.1460	3.6
Lubelskie	5,522	5.3	2,230	5.8	1,780	0.1560	4.6	0.1576	5.9
Łódzkie	6,098	7.0	2,638	6.8	2,661	0.1553	6.0	0.1435	6.4
Podlaskie	5,574	2.9	1,221	3.2	883	0.1542	2.5	0.1509	3.1
Małopolskie	5,847	8.2	3,238	8.4	2,307	0.1435	6.5	0.1395	7.6
Dolnośląskie	5,833	7.5	2,971	7.7	2,482	0.1431	5.9	0.1434	7.1
Podkarpackie	5,210	4.8	2,130	5.5	1,588	0.1270	3.4	0.1225	4.4
Lubuskie	5,695	2.5	1,024	2.7	889	0.1151	1.6	0.1106	1.9
Śląskie	5,973	12.5	4,840	12.5	4,226	0.1096	7.5	0.1054	8.6
Between	/	/	/	/	/	0.0039	2.1	0.0012	0.8
Together	5,980	100.0	38,640	100.0	31,375	0.1816	100.0	0.1542	100.0

Germany shows a high variation of inequality within the regions. The inequality is highest within the city states *(Stadtstaaten),* Berlin, Bremen and Hamburg, while the states located on the territory of the former GDR *(the "Neue Länder")* show considerably low inequality of incomes, also compared to Poland. In Poland, incomes are most unequally distributed in the regions incorporating the major poles of economic growth, like Warsaw in Mazowieckie and Poznan in Wielkopolskie. The high inequality in Zachodnio-Pomorskie may be the result of a boarder effect: The area of Szczecin

benefits from foreign direct investments while economic development drags behind in the other parts of the Voyevodship.

5. Conclusion

The income gap between Germany, the largest EU15 country, and Poland, the largest CEE country, accounts for two thirds of the overall inequality of incomes earned in Germany and Poland, measured in terms of the mean logarithmic deviation (MLD). This impact is a slightly weaker (58%) when the Theil index is employed. The between-country inequality has diminished since the middle of the 1990s, which is in line with the convergence of per-capita incomes between the EU15 and CEE reported by the European commission. The analysis at hand reveals that not only the size of the between-inequality but also its impact on the overall inequality of personal incomes has diminished over time, but incomes have become more equally distributed also within the countries. The latter finding indicates a reversal of the trend of rising within-country inequality which has been observed for most EU15 and CEE countries during the first half of the last decade. A more detailed analysis would be necessary to examine the causes of this phenomenon. Probably the effects of economic integration in Europe and economic restructuring in CEE, that have pushed the income inequality in EU15 and CEE countries in the beginning of the decade, are not so strong anymore.

For 1999/2000 the Theil index reports an income inequality of 0.30 points for Germany and Poland together. The value of the MLD is higher, because the incomes at the bottom of the income distribution, which are predominantly assigned to Poles and which are relatively unequally distribution among them, are stronger represented in the MLD than in the Theil index. With 0.39 points the overall MLD, calculated for Germany and Poland together, is much higher than in most countries all over the world. Given the fact, that the distribution of incomes within and between Germany and Poland is not so different from the distribution of incomes within and between the EU15 and CEE, the EU25 should be viewed as a social unit with exceptionally high social inequality. This constitutes a big challenge especially for the regional policy, because the largest part of this inequality results from the welfare gap between the East and the West of the EU.

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