

# Poverty in Western and Eastern Germany – A Detailed Comparison

In the time period spanning 1992 to 2000, we witnessed a low income inequality<sup>1</sup> in eastern Germany – a situation which remained essentially unchanged over the years. At the same time, fewer people in eastern Germany than in the west were affected by poverty – relative to a 'regionally defined' poverty line. In both the east and the west, around half the poverty phases that individuals entered during the survey period had come to an end one year later. In western Germany, people who have experienced poverty in the past were found to be more likely to re-enter poverty than their counterparts in eastern Germany. In both regions, however, the likelihood of renewed poverty decreases with every additional year not spent in poverty. Socio-political measures to alleviate poverty, therefore, ought not to be aimed exclusively at liberating people from poverty, but also at reducing (re-)entry rates into poverty.

Using data from the Socio-Economic Panel (SOEP)<sup>2</sup>, we examine the development of poverty rates over time, poverty duration as well as poverty entry and exit rates.<sup>3</sup> The term 'poor' refers to individuals whose income is less than half of the average income of the population living in private households.<sup>4</sup> The income used is disposable income,<sup>5</sup> also referred to as net household income. A needs-based weighting is used to translate this into a modified per-capita income value ('equiv-

alent income'), making the income situation of individuals in different-sized households comparable.<sup>6</sup>

The development of poverty was examined by means of two different indicators (see box). The poverty rate establishes the proportion of poor individuals within the population, whereas the poverty intensity is an index<sup>7</sup> which evaluates the poverty rate in relation to the average poverty gap. The poverty gap is the value reflecting the respective distance between income and poverty line; it is sensitive to changes in the income situation of the poor.

## Poverty in Germany

A comparison of the years 1992 and 2000 reveals that Germany experienced an increase in the poverty rate from 10.5% to 13% (cf. table 1). There was, however, relatively strong fluctuation in the rate during this period, with no clear trend apparent to indicate increased poverty intensity. In western Germany, the poverty rate saw a slight rise and poverty intensity likewise rose marginally against the 1992 level. With values of 6% to 9%, the poverty rates for eastern Germany were considerably lower than those measured in western Germany.<sup>8</sup> Poverty intensity, too, was considerably less severe in eastern Germany in 1992 (1.5) and in 2000 (1.1) than in

<sup>4</sup> For Germany as a whole, the reference value used to determine the poverty line is the average income of the overall population. Separate poverty values were also ascertained for eastern and western Germany, whereby the reference value used here is the respective average income for the region. When the poverty quotas in eastern Germany are calculated based on income in western Germany, they are significantly higher. See: Stephen P. Jenkins, Chris Schluter and Gert G. Wagner: 'Einkommensarmut von Kindern – Ein deutsch-britischer Vergleich für die 90er Jahre.' In: *Wochenbericht des DIW Berlin*, no. 5/2002.

<sup>5</sup> Income measurements are based on previous-year 'annual income', i.e. income after redistribution in accordance with the tax and transfer system. See also: Markus M. Grabka: 'Einkommensverteilung in Deutschland – Stärkere Umverteilungseffekte in Ostdeutschland.' In: *Wochenbericht des DIW Berlin*, no. 1/2002, p. 52 ff.

<sup>6</sup> To translate a household's net income into a per-capita income, it is divided by the sum of the individual need-based weightings. The resulting amount is then allocated to each member of the household and represents the welfare level of the household – with due consideration given to the composition of the household. For the purpose of need-based weighting, the so-called OECD equivalence scale has been applied according to which the head of the household is given a weighting of 1.0, each additional adult a weighting of 0.5 and children under the age of 15 a weighting of 0.3. See also: Jürgen Faik: *Equivalence Scales. Theoretical Discourse, Empirical Analysis and Distribution-Specific Application for the Federal Republic of Germany*. Berlin 1995.

<sup>7</sup> An index developed by J. Foster, J. Greer and E. Thorbecke. For a detailed description, see: A Class of Decomposable Poverty Measures. In: *Econometrica*, 52 (3), 1984, pp. 761–766.

<sup>1</sup> See German Council of Economic Experts. Annual Report 2002/2003, p. 350.

<sup>2</sup> The SOEP is a representative survey of households conducted annually in western Germany since 1984 and in eastern Germany since 1990. See SOEP Group: The German Socio-Economic Panel (GSOEP) after more than 15 years – Overview. In: Elke Holst and others (eds.): Proceedings of the 2000 Fourth International Conference of German Socio-Economic Panel Study Users (GSOEP 2000). In: Quarterly Journal of Economic Research, DIW Berlin, 1/2001, pp. 7–14; or <http://www.diw.de/deutsch/sop/>.

<sup>3</sup> For a variety of reasons, the results may differ from those of other studies, in particular from the results of calculations based on SOEP data. Depending on the income basis chosen (annual income in previous year, monthly income), on the poverty line used as a reference value (e.g. 50% of average, 60% of the median) and on the weighting used to define the needs of individual members of a household, the resulting poverty profiles for both regions of Germany may differ. See: *Lebenslagen in Deutschland. Der erste Armuts- und Reichtumsbericht der Bundesregierung*. Berlin 2001, pp. 154–155; Peter Krause and Roland Habich: *Einkommensverteilung und Armut*. In: Federal Statistical Office (ed.): *Datenreport 1999. Zahlen und Fakten für die Bundesrepublik Deutschland*. Bonn 1999, pp. 581–591.

### Definitions of the terms poverty rate, poverty gap and poverty intensity

The poverty rate is defined as the percentage of the population whose family income falls below an absolute level, the poverty line. The poverty gap describes the income deficit for those living in poverty, that is, the amount of money that would be required to lift all poor families to the poverty line. The poverty intensity accounts for the number who are poor, the depth of poverty and the inequality among the poor. Poverty intensity gives the strongest weighting to income distances experienced by the poorest of the poor. These three indicators can be calculated using the formula:

$$P_{\alpha}(y, z) = \frac{1}{n} \sum_{i=1}^q \left( \frac{z - y}{z} \right)^{\alpha}$$

where  $n$  stands for the number of individuals observed,  $q$  for the number of poor people,  $y$  for the equivalent income of poor individuals and  $z$  for the poverty line and  $\alpha$  is a weighing factor.

If  $\alpha$  is equal to zero, we get the poverty rate. If  $\alpha$  is equal to one, the resulting figure will represent the poverty gap (whereby the sum of all individual poverty gaps is divided by the number of observed persons). When calculating poverty intensity,  $\alpha$  is normally given a value of two (at all events a value which is larger than one).

This article only provides information on the poverty rate and poverty intensity.

the western part of the country (2.8 and 3.0, respectively). Using the regional poverty line, the income situation of poor people in eastern Germany was found to be more advantageous than that of poor people in western Germany, given that the poverty gap for the former group was distinctly smaller than that for poor people in western Germany.

The picture for eastern Germany changes when the figures are based on the national average income rather than on the regional average. Using this method of calculation, the scope of poverty in eastern Germany from 1992 to 1994 was in the proximity of that ascertained for western Germany (cf. table 2), with one in ten people in either region afflicted by poverty during this period. Until 1999, the poverty rate for eastern Germany (between 9% and 10%) remained consistently lower than that for western Germany (between 12% and 13%). In the year 2000, the poverty rate was the same in both regions again (13%). This is remarkable for the fact that the average economic capacity<sup>9</sup> of private households during this period was lower in eastern than in western

<sup>8</sup> See Irene Becker, Joachim R. Frick, Markus M. Grabka, Richard Hauser, Peter Krause and Gert G. Wagner: A Comparison of the Main Household Income Surveys for Germany: EVS and SOEP. In: Richard Hauser and Irene Becker (eds.): 'Reporting on Income Distribution and Poverty.' Berlin 2003, p. 55-90.

<sup>9</sup> 'Only as the result of a high level of transfers do disposable incomes in eastern Germany reach around 80% of the level for western Germany. In 1998, however, the economic capacity of households in eastern Germany – based on the market income achieved – only equalled 70% of the value for western Germany.' See: Markus M. Grabka and Birgit Otto: 'Angleichung der Markteinkommen privater Haushalte zwischen Ost- und Westdeutschland nicht in Sicht.' In: *Wochenbericht des DIW Berlin*, no. 4/2001.

Germany. Based on the national poverty line, poverty intensity in eastern Germany averaged around 1.7. In spite of the low level of economic capacity in the eastern part of the country, poverty intensity (for all years

Table 1  
Poverty Rates and Poverty Intensity in  
Germany<sup>1</sup> 1992 to 2000

Calculation based on regional averages

	East Germany		West Germany		Germany	
	Poverty rate	Poverty intensity	Poverty rate	Poverty intensity	Poverty rate	Poverty intensity
1992	7.4	1.45	11.0	2.75	10.5	2.48
1993	6.6	1.21	11.8	2.82	10.8	2.49
1994	7.6	1.10	12.0	2.69	11.3	2.37
1995	5.8	1.31	13.5	3.10	12.1	2.72
1996	7.4	1.41	13.1	3.01	11.7	2.69
1997	7.6	1.47	12.6	2.70	11.6	2.62
1998	8.8	1.89	13.1	3.54	12.0	3.22
1999	7.5	1.41	12.4	3.30	11.8	2.90
2000	7.3	1.14	14.4	2.95	13.0	2.58
Average	7.3	1.38	12.7	2.98	11.6	2.67

<sup>1</sup> The percentage of people in a given region who live in poverty. The poverty line is defined as 50% of the regional average based on annual net-equivalent income. Source: SOEP.

Table 2

## Poverty Rates and Poverty Intensity in Germany<sup>1</sup> 1992 to 2000

Calculation based on the average value for Germany overall

	East Germany		West Germany		Germany	
	Poverty rate	Poverty intensity	Poverty rate	Poverty intensity	Poverty rate	Poverty intensity
1992	11.0	1.78	10.3	2.66	10.5	2.48
1993	10.5	1.51	10.8	2.73	10.8	2.49
1994	11.4	1.38	11.3	2.60	11.3	2.37
1995	9.1	1.47	12.9	3.01	12.1	2.72
1996	9.4	1.68	12.3	2.92	11.7	2.69
1997	9.7	1.70	12.0	2.83	11.6	2.62
1998	10.4	2.19	12.3	3.46	12.0	3.22
1999	10.6	1.63	12.0	3.20	11.8	2.90
2000	13.2	1.69	13.0	2.78	13.0	2.58
Average	10.6	1.67	11.9	2.91	11.6	2.67

<sup>1</sup> The percentage of people of a given region who live in poverty. The poverty line is defined as being 50% of the regional average based on annual net-equivalent income.

Source: SOEP.

examined) was only marginally higher than when it was based on the regional poverty line for eastern Germany.

## The Structure of the poverty experienced

Table 3 depicts the proportion of Germany's population that lived in poverty during the survey period either for one year, for several years<sup>10</sup> or long term (for nine years). The figures also enable us to deduce the proportion of the population not affected by poverty at all during this period. From 1992 to 2000, some 18% of the population of eastern Germany and 23% of the population of western Germany experienced poverty during at least one of these years. These figures are significantly higher than the poverty rate for any one specific point in time. While 9% of eastern Germans and 8% of western Germans experienced one-time poverty (one year of poverty), 9% of the population of eastern Germany and 13% of western Germans experienced several years of poverty (two to eight years), with only 1% of people in eastern Germany and 2% of people in western Germany remaining poor throughout the survey period. The

<sup>10</sup> This figure gives no indication, however, of whether the stated years of poverty were consecutive years or represent separate periods of poverty.

majority of the population (82% in the east and 78% in the west) was not affected by poverty during the survey period.<sup>11</sup> Since the length of the survey period influences the definition of long-term versus temporary poverty, these results allow only limited conclusions. Far more conclusive in nature are analyses on the duration of poverty after poverty entries and on the corresponding probability of exiting poverty.

## Duration of poverty and the probability of leaving it

This section refers to those individuals from the longitudinal population for whom a period of poverty<sup>12</sup> started in or after 1993.<sup>13</sup> Table 4 shows the duration of poverty for these individuals and also the probability of their leaving poverty behind.<sup>14</sup>

Around half the individuals in eastern Germany who entered poverty remained poor for at least two years. Close to one third of individuals experienced at least three years of poverty, and 15% of the poverty-affected

Table 3

## Duration of Poverty Within the Period 1992 to 2000<sup>1</sup>

Percentage of overall population

	East Germany	West Germany
Total	81.6	77.5
One year	8.8	7.9
Several years	8.5	12.8
Long term	1.1	1.8

<sup>1</sup> The percentage of people in a given region who live in poverty. The poverty line is defined as 50% of the regional average based on annual net-equivalent income.

Source: SOEP.

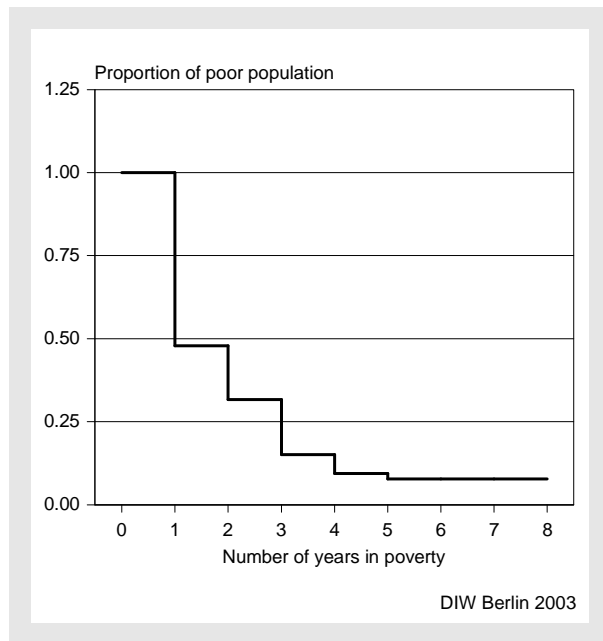
<sup>11</sup> See: Walter Hanesch, Peter Krause, Gerhard Bäcker, Michael Maschke and Birgit Otto: 'Armut und Ungleichheit in Deutschland.' Hans-Böckler-Foundation, Hamburg 2000, p. 106. The authors report that, in the period 1991 to 1997, 81.9% of the population of eastern Germany and 78.9% of the population of western Germany did not fall below the regional poverty threshold at all.

<sup>12</sup> It must be noted that multiple incidents of poverty meant that the individual concerned was correspondingly counted multiple times.

<sup>13</sup> Poverty phases extending back into the year 1992 cannot be taken into account, since it is not known when they actually began. Such phases of poverty are referred to as left-censored spells.

<sup>14</sup> Using Kaplan-Meier Survival Rates, we can establish the proportion of the population afflicted by poverty over a continuous period. This measure takes into consideration whether individuals exited poverty during the survey period or whether they were still living in poverty at the end of that period.

Figure 1  
**Duration of Poverty in East Germany**  
 Based on the Kaplan-Meier Survival Function



Source: SOEP.

population of eastern Germany experienced at least four years of poverty. A minimal proportion of the population suffered longer periods of poverty. The poverty profile for western Germany differs markedly from that for eastern Germany. In the western part of the country, more than half the poor population experienced a poverty phase which lasted for at least two years; for almost two fifths the poverty phase lasted at least three years; and for close to one third the poverty phase extended to a period of at least four years. The differences between east and west become more conspicuous with lengthening duration of poverty. The proportion of individuals in western Germany who experienced a six-year poverty phase (24%) was around three times as high as the corresponding figure for eastern Germany.

Such differences again become apparent, too, when we look at the figures representing the probability of exiting poverty. In eastern Germany the probability of exiting poverty after one year came close to 52%; after two years of poverty the likelihood was down to 34%; after three years it was back to 52%. In eastern Germany, the probability of exiting a poverty phase was not reduced until after four years of living in poverty. By contrast, the probability of exiting poverty in western Germany became lower (with one exception) with each additional year in the poverty phase. In this part of the country, the risk of being or becoming chronically poor is higher. And the probability of individuals' exit-

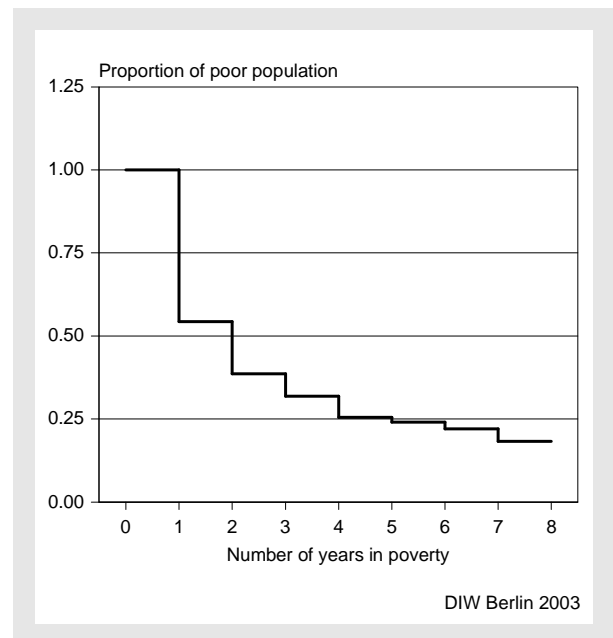
ing poverty after a one- or two-year poverty phase was also lower than in eastern Germany. Figures 1 and 2 illustrate both the similarities and the differences between eastern and western Germany in terms of poverty duration. In both regions, around half of all poverty phases observed during the survey period had ended after one year, though the proportion of the poor population who experienced a longer duration in poverty was considerably larger in the west than in eastern Germany.<sup>15</sup>

### Duration of non-poverty and the probability of re-entering poverty

Just as the duration in poverty and the probability of exiting poverty can be measured, we can measure the duration of non-poverty and the probability of entering renewed phases of poverty (cf. table 5). This requires looking at all people from the longitudinal population who exited a poverty phase in or after 1993.

In eastern Germany, close to 93% of all individuals who exited a poverty phase remained above the poverty line the following year. In western Germany, the corre-

Figure 2  
**Duration of Poverty in West Germany**  
 Based on the Kaplan-Meier Survival Function



Source: SOEP.

<sup>15</sup> The values of the Kaplan-Meier Survival Function show a significantly lower number of people remaining in poverty for an eight-year phase in eastern than in western Germany.

Table 4

## Duration of Poverty and Probability of Leaving It Behind

Number of years of poverty since the commencement of poverty	East Germany		West Germany	
	Duration of poverty	Probability of exiting poverty	Duration of poverty	Probability of exiting poverty
1	100.0	–	100.0	–
2	47.9	52.2	54.3	45.7
3	31.6	34.0	38.7	28.6
4	15.1	52.1	31.8	18.0
5	9.4	37.4	25.5	19.6
6	7.8	17.8	24.1	5.6
7	7.8	0.0	22.0	8.6
8	7.8	0.0	18.3	16.8

These estimates are based on all non-left censored poverty spells.  
Source: SOEP.

spending proportion was only 87%. The survey recorded a seven-year phase of non-poverty for 83% of eastern Germans who had formerly lived in poverty, while only 67% of poor people living in western Germany shared a similar fortune. The probability, therefore, that formerly poor individuals will enter renewed poverty is higher in the west than in the east. A common tendency in both regions is that (with one exception in eastern Germany) the probability of renewed poverty is reduced considerably with every additional year spent in non-poverty.

## Conclusion

We could not observe a clear trend in terms of the development of poverty in Germany from 1992 to 2000. There are indications of a rising tendency with respect to the poverty rate for western Germany, coupled with a lower level of deterioration of the income situation of impoverished individuals. During all the surveyed years, the poverty rate and poverty intensity in eastern Germany were significantly lower than those in the western part of the country. This profile changes when the national

Table 5

## Duration of Non-poverty and Probability of Its Ending

All individuals for whom a poverty phase ended

Number of years of non-poverty since exiting poverty	East Germany		West Germany	
	Duration of non-poverty	Probability of ending	Duration of non-poverty	Probability of ending
1	100.0	–	100.0	–
2	92.6	7.4	86.7	13.3
3	87.3	5.7	78.3	9.7
4	84.6	3.1	74.3	5.2
5	83.1	1.8	70.3	5.4
6	83.1	0.0	67.6	3.8
7	83.1	0.0	66.6	1.6
8	76.5	7.9	66.6	0.0

These estimates are based on all non-left censored poverty spells.  
Source: SOEP.

average income level is used as a basis for calculating the poverty line rather than using the average income level for eastern Germany – in which case the values for east and west assume similar levels. The poverty rate for eastern Germany does, however, remain below the values for western Germany for most years, and poverty intensity is even (markedly) lower in all cases than the values ascertained for western Germany.<sup>16</sup>

What is remarkable about this situation is that both the scope and intensity of poverty remained relatively unchanged over all the survey years despite the fact that income levels in the east have gradually moved towards levels corresponding with those in western Germany. Hence, the growing market-income disparity in eastern Germany during the course of the transformation process has not resulted in any perceptible increase in the number of people affected by poverty.

The proportion of people affected by poverty during the period of the survey (1992 to 2000) was significantly higher than the annual poverty rates for any one specific year. Less than 2% of the population experienced long-term poverty. Of the individuals who entered poverty during this time, a little under half of those living in eastern Germany remained poor for at least two years, as against more than half of their counterparts in western Germany. Only quite a small fraction of the population suffered longer periods of poverty.

The probability of formerly poor people re-entering poverty was considerably higher in western Germany than in eastern Germany, and the probability of re-entering poverty decreased in both regions with each additional year spent living above the poverty line. These findings clearly emphasise that, to help overcome poverty, the focus needs to be not only on increasing the frequency of exit from poverty, but also on preventing (renewed) poverty.

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<sup>16</sup> Research based on monthly income and on the German national poverty line does, however, lead to the conclusion that the scope of poverty in eastern Germany is more extensive than in the western part of the country, though the authors point out that this finding was not verifiable once the statistics were based on annual rather than monthly incomes. See: Jan Goebel, Roland Habich and Peter Krause: 'Einkommensverteilung und Armut.' In: Federal Statistical Office (ed.): Datenreport 2002. Bonn, pp. 580–596.