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# How Unemployment and Income Inequality Changed in East and West Germany Following Reunification

by Klaus Mueller, Gert G. Wagner,  
Joachim Frick and Richard Hauser

Three years after the monetary, economic and social reunification of East and West Germany, the East German economy is still in a dramatic crisis of transition with an unparalleled decline in output and employment. Due to the inefficiency of the "socialist economy" overall employment fell from over 9 million in the second quarter of 1990 to 6.4 million in the second quarter of 1992, and the number of registered unemployed increased in the same period from about 140,000 to 1.1 million. In such a situation it is important to ask if the unemployment insurance system is able to protect the unemployed and their families from falling into poverty.

In the three years after the fall of the Berlin Wall, the East German economy lost more than 2.5 million jobs, or about 25% of the entire labour force of 1990. On the other hand, registered unemployment increased only by 1 million. This divergence could be explained by the fact that after reunification employment was reduced by early retirement schemes, by persons who migrated to West Germany or commuted from East to West, and by persons who were either working on job-creation projects or who were participants in training and retraining programs.

Short-time work was also of great importance, especially in the second quarter of 1991 with nearly 2 million short-time workers<sup>1</sup>. But its importance has constantly decreased. In spring 1992 all in all over 2 million persons were affected in different ways by the loss of employment in East Germany.

This picture of the East German labour market is the background of our analysis, which will concentrate on the registered unemployed who were most adversely affected by unemployment.

## Data and Methods

Our empirical analysis is based on the first three waves of the German Socio-Economic Panel (GSOEP) for East Germany and on waves 7, 8 and 9 of the Socio-Economic Panel for West Germany. Our calculations of "net equivalent income" are based on the variable "net income of the household in the previous month" (this is the so-called income screener used in many surveys). Additionally we adjusted the net income for irregular payments like special benefits and for the net rental value of owner occupied housing (the latter was done only for West Germany, because the net rental value in East Germany is still relatively low due to the low level of rents). Our analysis is restricted to the period from June 1990 to March 1992. For our calculations for East Germany all persons who lived in the GDR before reunification are in the sample, including

those persons who now live in or commute to West Germany.

We calculated an "equivalent income" for each person in the sample based on household net income. We used an institutionally based equivalence scale, derived from the German social assistance scheme, which implies a weight of 1 for the household's head, a weight of 0.8 for each additional adult (21 years and older) and weights between 0.45 and 0.9 for each child depending on age. This implication assumes that income is equally shared within a household.

Our unit of analysis is the "individual within its household context". Studies of unemployment often focus only on the unemployed themselves, without considering the household in which the individual lives. This means that the possibility of intrafamilial transfers which could prevent a decrease of the living standard, or the possibility of the existence of persons indirectly affected by unemployment is totally neglected.

In our paper we only analyze relative income positions and not levels of income. The relative income position is defined as group-specific average equivalent income in percent of the overall average equivalent income.

## Empirical Results

### Cross-sectional Analysis

First we examine trends in overall income distribution in East and West Germany. Table 1 gives us a surprising picture.

In spite of the loss of employment overall income distribution in East Germany has not dramatically changed. The Gini coefficient increased from 0.185 before reunification to 0.2 in spring 1992. Compared to the well known stability of Gini coefficients in western countries, this is a significant change. But the extent of inequality in East Germany is still much less than in West Germany. For West Germany we estimate a Gini coefficient which is stable around 0.265.

A look at the quintile shares confirms this result. In East Germany the share of the lowest quintile decreased slightly from 11.82% to 11.09%, whereas in West Germany the lowest quintile has only around 9.5% of the whole income. The share of the highest quintile increases slightly in East Germany from 30.18% to 31.32%, whereas in West Germany this highest population-quintile has about 36% of the entire income in the three years considered.

Our results slightly differ from which Headey et al. report in this volume, although we both use the SOEP database. The difference is caused by different equivalent scales. Our

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<sup>1</sup> There is no such thing as a temporary layoff in Germany. Instead, when a German firm experiences a temporary shortage of work, it can switch employees to government subsidized "short-term work" (Kurzarbeit), meaning they work fewer than normal hours but remain on the payroll and retain up to 90% of their salary and their benefits.

Table 1

Inequality of Equivalent  
Income<sup>1)</sup> in East and West Germany 1990, 1991 and 1992

Inequality Measures:	East Germany			West Germany		
	1990	1991	1992	1990	1991	1992
<b>Gini-Coefficient</b>	0.185	0.198	0.200	0.268	0.263	0.264
<b>Quintile Shares in %</b>						
Lowest	11.82	11.32	11.09	9.43	9.51	9.48
Lower Middle	15.80	16.06	15.95	13.99	14.03	14.04
Middle	19.22	18.87	19.07	17.73	17.80	17.78
Upper Middle	22.92	22.31	22.54	22.55	22.79	22.80
Highest	30.18	31.22	31.32	36.30	35.87	35.91
<sup>1)</sup> The equivalent income was calculated by an equivalence-scale taken from the German social assistance scheme. Source: Own calculations from SOEP-West, wave 7, 8 and 9; SOEP-East, wave 1, 2 and 3 (1990, 1991, 1992).						

equivalent scale implies lower efficiency gains of bigger households than the scale used by Headey et al. This leads to higher inequality. The sample we used slightly differs from theirs. We consider in our analysis all persons who lived in the GDR before reunification, including those who now live or work in West Germany, while Headey et al. excluded persons who live now in West Germany from their analysis. However, the income of those who moved to West Germany is surely much higher than the income of those who remained in East Germany, which also leads to a higher inequality.

Table 2 reports cross-section results on the extent of unemployment and the income situation of persons living in households with at least one unemployed household member. The percentage of people affected directly by unemployment or living in a household with at least one unemployed person strongly increased in East Germany during the transition process from 1.5% to 27.2% in spring 1992. The percentage of persons affected by unemployment — directly or indirectly — must be higher than the official rate of unemployment, because most unemployed persons live together with others. On the other hand, the percentage of persons who are affected by unemployment in the household context is based on the entire population, while the official unemployment-rate is based only on the labour force. When the labour force participation is low, then our unemployment index will be smaller than the unemployment rate. This is the case in West Germany where the picture is completely different. The percentage of persons who are affected by unemployment in the household context was much lower, at a level of 6%. The percentage in West Germany is lower because the

unemployment rate is much lower and the labour force participation rate of women is also much lower in West Germany than in East Germany.

Table 2 provides looks at poverty in East and West Germany. We define the poverty line as 50% of the overall average equivalent income (see column 1 of table 2). The percentage of persons living in poverty increased in East Germany slightly — to 5.9% — whereas in West Germany the poverty population was almost stable at between 10% and 11%. Since government exercises greater control over wages in a centrally planned economy than in a market economy, and income equality is a more important goal than linking wages to productivity, these results are not surprising for the year 1990, but for the two years after reunification this development is noteworthy, especially considering the dramatic increase of unemployment.

The impact of unemployment on people's relative income positions becomes more apparent when we look at the percentage of people affected by unemployment in every income bracket. In 1990 only 5.5% of people in the lowest income bracket in East Germany were affected by unemployment, while in 1991 44.1% were affected and in 1992 it was 57.9%. The same trend can be seen for the next income bracket. In spring 1992 half of the persons in the two lowest income brackets were affected by unemployment. In West Germany the percentage of people in the lowest income bracket who were affected by unemployment increased, too, but only very slightly, from 15.3% to 18.3%. All in all one can say that in East Germany the poverty rate was lower than in West Germany, but unemployment seems to be one of the main reasons for becoming poor.

Table 2

**Distribution of People across Relative Equivalent Income<sup>1)</sup> and Household Unemployment in East and West Germany, 1990, 1991, and 1992 (in percent)**

	Relative Equivalent Income <sup>1)</sup>							Household <sup>2)</sup> Unemployment
	0—50	50—75	75—100	100—125	125—150	150—200	over 200	
<b>East Germany 1990</b>	3,4	21,6	29,2	25,2	12,7	6,8	1,1	
Household Unemployment <sup>2)</sup>	5,5	2,5	1,2	1,5	0,0	0,9	0,0	1,5
<b>East Germany 1991</b>	4,4	17,9	34,8	22,3	12,1	6,4	2,2	
Household Unemployment <sup>2)</sup>	44,1	29,8	20,1	12,6	11,8	11,2	0,0	19,2
<b>East Germany 1992</b>	5,9	18,7	31,3	23,5	11,7	6,7	2,3	
Household Unemployment <sup>2)</sup>	57,9	48,5	26,7	16,1	15,5	10,2	4,0	27,2
<b>West Germany 1990</b>	10,9	25,2	23,6	18,6	9,0	8,2	4,4	
Household Unemployment <sup>2)</sup>	15,3	6,4	6,3	3,9	4,0	3,0	2,4	6,2
<b>West Germany 1991</b>	10,7	24,9	23,8	18,0	9,7	8,6	4,2	
Household Unemployment <sup>2)</sup>	17,1	6,6	5,8	3,6	3,7	2,1	3,6	6,2
<b>West Germany 1992</b>	10,1	25,3	25,2	16,9	9,7	9,0	4,0	
Household Unemployment <sup>2)</sup>	18,3	6,6	5,8	3,2	2,3	1,4	1,1	5,9

<sup>1)</sup> Household size adjusted income was calculated by an equivalence-scale taken from the German social assistance scheme. —

<sup>2)</sup> Persons in households in which at least one member is unemployed at some time over the period (AU-index is positive).

Source: Own calculations from SOEP-West, wave 7, 8, and 9; SOEP-East, wave 1, 2, and 3 (1990, 1991, 1992).

### Longitudinal Analysis

For our longitudinal analysis we constructed an index which shows the relative extent and duration of unemployment in a given household. This AU-Index (Affected by Unemployment-Index) measures the number of months unemployed divided by the number of months of potential employment for all household members in the period under investigation ("potential employment" is defined as the sum of registered unemployment and gainful employment).

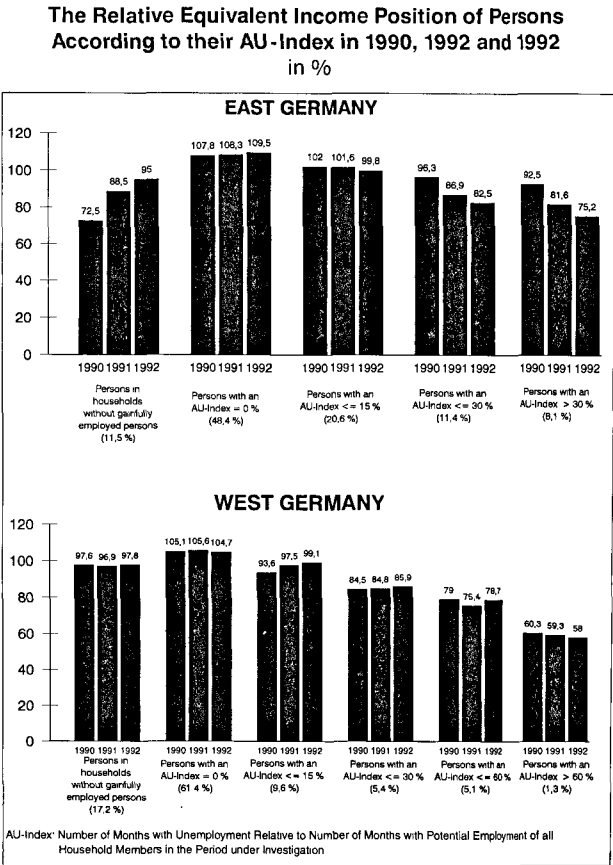
This index is calculated for each member of the household using monthly employment status information. The experience of each member of the household is then summed and this household value is assigned to each member of the household. The index ranges from zero to one. All persons living in a household in which no member is unemployed during the whole observation period are given an AU-Index of zero. For persons living in households in which no person is either employed or unemployed the AU-Index is not defined, and we analyze these persons separately. We distinguish between five (East Germany) or six (West Germany) groups of persons: persons in households in which no one is employed or unemployed during the whole period; persons with an AU-Index of zero,

less than or equal to 15%, less than or equal to 30%, or more than 30%. To take into account the fact that the unemployment spells in West Germany are left censored, we divided this last group into two subgroups, less than or equal to 60% and more than 60%.

Figure 1 shows the relative equivalent income position of these AU-index groups. Those living in households in which no one is employed or unemployed, including most older retired households, experienced the greatest increase in their relative income position — an increase from 72.5% to 95%. This sharp increase reflects the generous adjustment of the old-age pensions. Persons with an AU-Index of zero had the highest relative income position, and their income position slightly increased within the period considered. The income position of those with some unemployment decreased, but not directly in relation to the extent of their unemployment. Those with an AU-Index of greater than 30% experienced the sharpest decline — a decrease from 92.5% to 75.2%.

Figure 2 shows that in general the relative income position of the families of unemployed persons are substantially better in East than in West Germany. A similar picture can be seen also when we look at poverty rates (Figure 3). Each

Figure 1



group in West Germany is affected more by poverty than the respective group in East Germany. But in East Germany the percentage of persons who are below the poverty line has increased, especially the percentage of unemployed persons. Over 20% of persons with an AU-Index greater than 30% and currently affected by unemployment were in poverty in 1992. But in comparison to West Germany, these figures are relatively low. In West Germany over 37% of persons with an AU-Index between 30% and 60% and about 56% of persons with an AU-Index greater than 60% were in poverty in 1992. Even persons with a relatively low AU-Index, 15% or less, had poverty rates of about 25% in West Germany, much higher than in East Germany.

Another question of importance is the extent of individual income mobility in East Germany. Although the overall income distribution was relatively stable, one may expect that, in an economy which is still in a transition process, the income mobility at the individual level is considerable. Income mobility was measured by the relative change in the household size adjusted relative income position of East Germans between 1990 and 1992.

When we concentrate on "big" changes, an increase or decrease in a person's relative income position of more than 30%, we find 16% of East Germans experienced a "big" drop and 20% a "big" rise in their income position

Figure 2 **The Relative Equivalent Income Position of Persons According to their AU-Index in 1990, 1991, 1992 At least one Household Member is unemployed in the Month of the Interview in %**

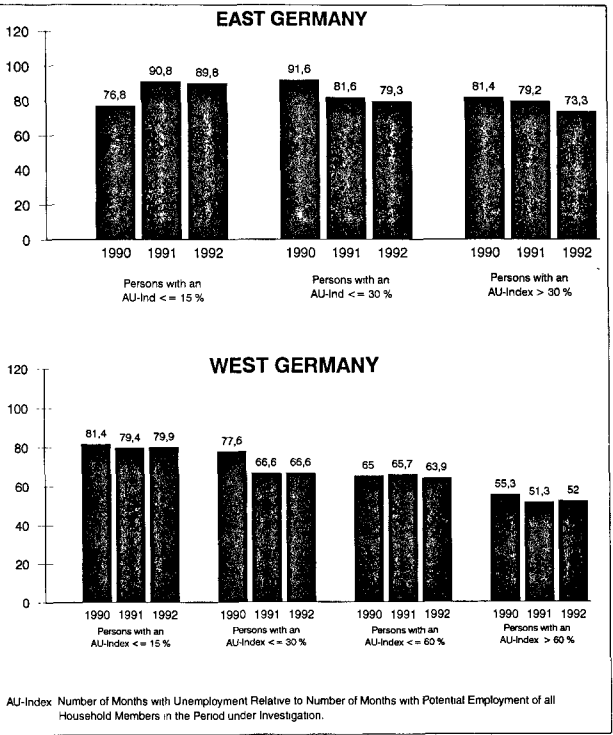


Figure 3 **Percentage of Persons Below the Poverty Line According to their AU-Index in 1990, 1991 and 1992 At least one Household Member is unemployed in the Month of the Interview in %**

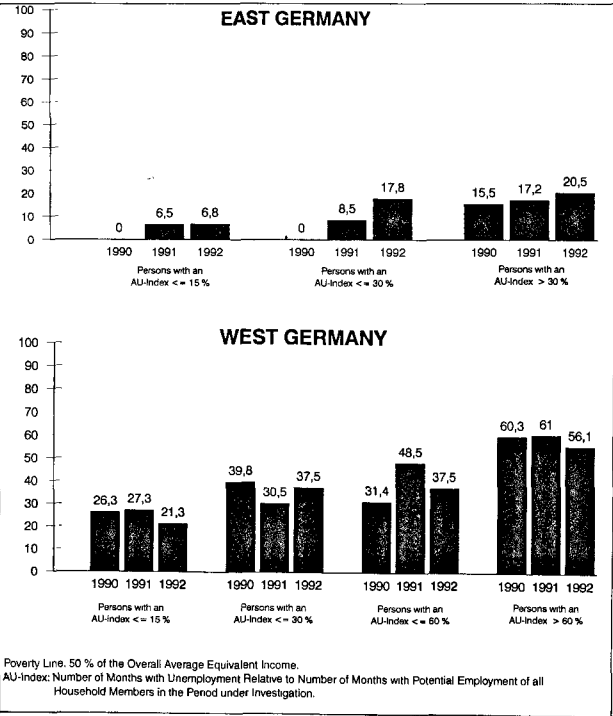
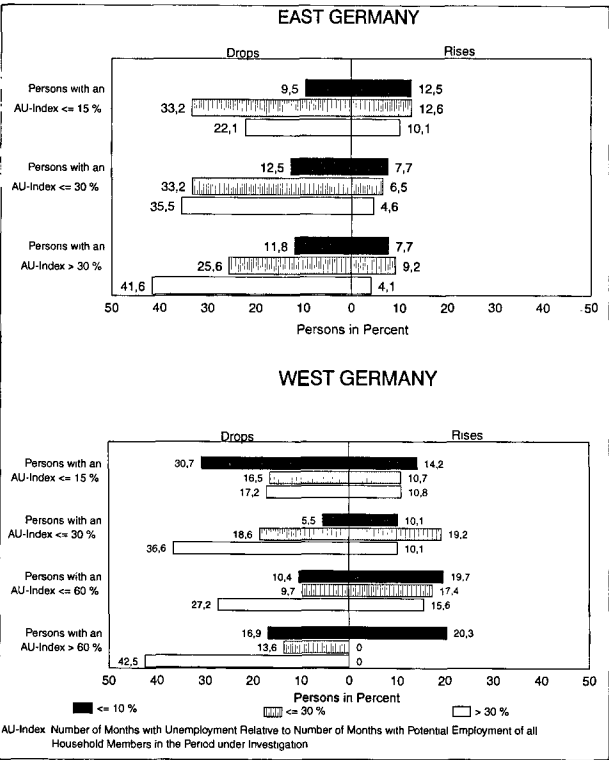


Figure 4

**Relative Change of the Relative Income Positions of Individuals from 1990 to 1992 According to their AU-Index**  
At least one Household Member is unemployed in the Month of the Interview



(white bars). In West Germany 15% of the population experienced a "big" rise and 9% a "big" drop. Hence we find much more income mobility in East Germany.

Figure 4 shows increases and decreases in the relative income positions of persons living in households affected by unemployment. Most suffered a "big" drop, both in East and West Germany. For example, 40% of those with an AU-Index of greater than 30% suffered a "big" drop and only 4% experienced a "big" rise in East Germany.

In western market economies unemployment is more prevalent among groups with restricted economic abilities. Figure 5 (lower part) shows that West Germans who have positive AU-Indices in 1991 or 1992 were already worse off in 1990 before unemployment occurred. Persons with positive AU-Indices in both, 1991 and 1992, had a relative income in 1990 that was only 75% of the average.

Much more surprising are the figures for East Germany (upper part of Figure 5). In the German Democratic Republic open unemployment was not possible by definition. But hidden unemployment existed and Figure 5 shows that low skills and income below the average were correlated with later unemployment in the market economy of the unified Germany. All persons who lived in families with positive AU-Indices in 1991, in 1992, or in both years already

had a weak economic position in 1990, a relative income position of approximately 90% of the average.

**Conclusion**

Our results show that income inequality increased somewhat in East Germany since reunification but is far below the level of inequality in West Germany. Most persons who lived in a household in which some member experienced unemployment suffered a drop in their relative income position. In contrast, those East Germans living in households in which all members were not in the labour force — mostly retired people — experienced the biggest rise in their relative income position.

Poverty is increasing in East Germany, especially among those living in the households of the unemployed, but it has not yet reached the West German levels. Persons living in households with unemployed members after reunification lived in below average income households before reunification.

Our findings suggest that the unemployment insurance system in East Germany is fulfilling its income security goals for the most part, especially in comparison to West Germany, but it has not been able to prevent an increase in poverty among the unemployed.

Figure 5  
**Relative Income Position of People Living in Households with at least one Unemployed Person in the Month of the Interview in 1990, 1991 and 1992**  
in %

