Schmollers Jahrbuch 121 (2001), 59 – 82
Duncker & Humblot, Berlin

Unemployment, Retirement, Female Labor Market Participation and Income Inequality: A Decomposition Analysis for Germany[1]

By Martin Biewen

Abstract

This paper employs univariate and multivariate inequality decompositions by subgroup in order to investigate how changes in unemployment, retirement and female labor market participation are related to changes of income inequality in Germany. The results suggest that a considerable share of the inequality increase in East Germany between 1990 to 1995 can be explained by compositional effects of these variables. The corresponding analysis for West Germany shows that the less pronounced changes in these variables played only a minor role for the increase in inequality in West Germany from 1985 to 1995. The paper also provides some stylized facts about the incidence of unemployment, retirement and female labor supply for both parts of the country.

Zusammenfassung

Der Artikel betrachtet univariate und multivariate Zerlegungen von Ungleichheitsindizes, um zu untersuchen, wie sich Änderungen in den Variablen Arbeitslosigkeit, Verrentung und Frauenerwerbstätigkeit auf die Ungleichheit in der deutschen Einkommensverteilung auswirken. Die empirischen Ergebnisse deuten darauf hin, dass sich ein beträchtlicher Anteil des Anstiegs der Einkommensungleichheit in Ostdeutschland zwischen 1990 und 1995 durch kompositionelle Effekte dieser Variablen erklären lässt. Die entsprechende Analyse für Westdeutschland zeigt, dass die dort weniger ausgeprägten Änderungen dieser Größen nur eine geringe Rolle beim ohnehin nur schwach ausgeprägten Anstieg der Einkommensungleichheit zwischen 1985 und 1995 spielten. Der Artikel präsentiert außerdem einige stilisierte Fakten zur Inzidenz von Arbeitslosigkeit, Verrentung und Frauenerwerbstätigkeit im Ost- und im Westteil des Landes für den genannten Zeitraum.

JEL-Classification: D 31, D 63

---

[1] This paper was originally prepared for the Workshop on Growth, Inequality, and the Environment, October 16/17, 1998, in Heidelberg. I would like to thank the participants of this workshop, in particular Christoph M. Schmidt, Jaques Silber, Clive Bell as well as two anonymous referees and Gert G. Wagner for valuable comments. Financial support by the European Union through the TMR Network 'Living Standards, Inequality and Taxation' (Contract #ERBFMRXCT980248) is also gratefully acknowledged.

1. Introduction

It has been argued that increasing wage inequality in the United States and the United Kingdom on the one hand and rising unemployment in most Western European countries on the other hand are just two sides of the same coin, namely consequences of globalization and technological progress (see for example Blank (1995)). According to this view, economic policy can chose between the two evils rising wage inequality and rising unemployment. Like wage inequality, unemployment introduces inequalities into the income distribution. The interesting question that arises is how large such effects are empirically. Using aggregate time series data for Sweden, Björklund (1991) finds that unemployment may have adverse effects on the income distribution. Studies for the United Kingdom, the United States, Canada and Israel yielded similar results (compare Nolan (1989), Blinder / Esaki (1978), Buse (1982) and Achdut (1996)). According to these results, the effects of unemployment on income inequality seem to have been rather limited in the past. However, these estimates come from regressions on aggregate macroeconomic variables and it is unclear to which extent they are affected by omitted variables and aggregation problems.

Unemployment is not the only socio-economic variable with potential effects on the income distribution. In a series of papers v. Weizsäcker has studied the impact of a rising share of pensioners on the distribution of incomes (see v. Weizsäcker (1989,1995 and 1996). His models suggest that the pure compositional effects of an aging population on inequality will be positive, but that these effects may be overcompensated by an improving relative position of the otherwise poorer subpopulation of pensioners. This last effect however, depends on whether increasing public expenditures for pensions are financed through higher contribution rates or by adjusting the retirement benefit rate.

A third factor is the labor market participation of women. Numerous studies have examined the effect of wives' earnings on income inequality, especially for the United States. (For an overview, see Lam (1997), Treas (1987), and Cancian / Reed (1998). Also compare for example Jäntti (1997) for newer data from other countries.) Most of this research used decompositions of the coefficient of variation or the Gini coefficient by income source. The results are mixed and seem to depend on the employed methods and the country under investigation.

This paper employs the methodology of decomposable inequality measures to examine how changes in unemployment, retirement and female labor force participation are related to observed changes in income inequality in East and West Germany. The idea that aggregate inequality is somehow

composed of inequality *within* and inequality *between* population subgroups allows an explicit analysis of the mechanics of inequality as the composition of the population and the relative income positions of its subgroups change. Besides univariate partitions and in contrast to existing studies, this paper also considers partitions that account for all three factors simultaneously which permits to determine interaction effects and to assess the relative importance of the different variables. For the case of unemployment, the use of micro data avoids the problems of the above cited studies which regress inequality measures or income shares on macroeconomic variables. Moreover, the chosen setup allows exact quantitative statements on the inequality effects of the variables under consideration.

As a by-product, stylized facts on the incidence of inequality, unemployment, retirement and female labor supply can be studied for the German case. For a related presentation of such stylized facts for Germany, compare Hauser / Wagner (1996) and Frick / Hauser / Müller / Wagner (1993) for income and unemployment. The conditions to study inequality effects of these factors are particularly good for East Germany, where some of the underlying variables underwent extreme changes in the course of the transition from a state-planned to a market economy.

The rest of the paper is organized as follows. Section 2 will discuss the data, which was taken from the German Socio-Economic Panel (GSOEP), section 3 gives evidence on inequality trends in the data, section 4 presents the decomposition methods and section 5 provides the empirical results for East and West Germany as well as a comparison of both. Section 6 sums up and draws a conclusion.

2. The Data

The empirical analysis in the next sections uses cross-sectional data from the German Socio-Economic Panel (GSOEP) (for an introduction to the GSOEP, see Burkhauser / Kreyenfeld / Wagner (1997)). For West Germany, data is available from 1984 on, while for East Germany, this is not the case until 1990, the year of reunification. As the main interest lies in long-term developments, the years 1985, 1995 are chosen for West Germany and 1990, 1995 for East Germany.

The variables of interest are – apart from income – unemployment, retirement and female labor market participation. In the data used, an individual is counted as unemployed if she is officially registered as such. Pensioners are individuals receiving either old age pensions, widow pensions or both. Both full time and part time work are considered to decide whether a

sampled woman is counted as employed. In order to account for differing sampling probabilities, sample weights are used throughout the paper. Table 1 presents summary statistics for these variables.

Table 1

Summary Statistics:
Individual Data on Individual Characteristics

sample	East 1990	East 1995	West 1985	West 1995
number of observations	6046	4717	13878	12836
share of unemployed	0.003	0.102	0.038	0.044
share of pensioners	0.186	0.209	0.191	0.181
share of working women	0.248	0.175	0.152	0.158

Source: German Socio-Economic Panel (GSOEP), weighted data.

In the East German sample, the share of unemployed persons drastically increased, the share of pensioners moderately rose, while the share of women participating in the labor market considerably fell in the period under investigation. These changes were largely triggered by the change of regime in 1990, when market conditions were introduced in the formerly socialist part of the country. This led to mass redundancies in the then state owned companies which manifested themselves in rising unemployment and early retirement. Also, many of the state or company provided kindergartens were shut down, which made many women retreat from the labor market. For West Germany, changes were less dramatic. Here, the share of unemployed persons and working women slightly increased, whereas the share of pensioners in the sample – surprisingly – fell from 1985 to 1995.

All decomposition analyses in the next sections will be carried out in terms of equivalent income. Equivalent income $y = h/e(\theta)$ is calculated from household income h by the means of an equivalence scale $e(\theta)$, where θ is the household type. In the following, the so-called "old" OECD-scale is used. According to this scale, the household head gets a weight of 1, whereas any other member of the same household gets a weight of 0.7, if 15 years or older and a weight of 0.5 otherwise. $e(\theta)$ is then the sum of these weights. This scale accounts for economies of scale of living together in a household as well as for the fact that children may reach the same level of individual welfare with less income.

It should be noted that the use of an equivalence scale is not without problems. The equivalization procedure implies that the same amount of income is of different worth to different household types. This may create a

problem for the interpretation of changes in income inequality as examples can be constructed where regressive transfers, i.e. transfers from rich to poor, increase rather than decrease inequality[2]. Despite this disadvantage, equivalence scales are widely used and no convincing alternative is available.

The monthly net household income variable ("income screener") in the GSOEP serves as the basis for all income calculations. This variable is the answer to a direct survey question and comprises the income of all household members inclusive of transfers and exclusive of taxes and social security contributions. Observations, where sampled individuals refused to answer were deleted from the sample. Household income is expressed in prices of the respective base year.

Equivalent income depends on household income, which in turn depends on the characteristics of the household in which an individual lives. In order to study the effect of socio-economic characteristics on the distribution of equivalent income, individual data on individual characteristics has to be transformed into individual data on household characteristics. In the present context, this means that the number of unemployed, the number of pensioners and the number of working women who live in a household are attributed to each of its members. This specification seems to be much more appropriate than the traditional one, which attributes the socio-economic status of the household head to each of its members (see for example Achdut (1996)). The reason is that not only changes in status of the household head but also changes in status of other household members will affect equivalent income. Table 2 presents summary statistics for the transformed data.

Table 2

Summary Statistics: Individual Data on Household Characteristics

sample	East 1990	East 1995	West 1985	West 1995
equivalent income[a]	781.91	1130.05	1338.52	1602.26
number of unemployed[ab]	0.024	0.276	0.104	0.119
number of pensioners[ab]	0.349	0.385	0.361	0.318
number of working women[ab]	0.763	0.506	0.423	0.400
average household size	2.46	2.34	2.34	2.29

[a] mean
[b] in the household of the individual in question
Source: German Socio-Economic Panel (GSOEP), weighted data.

2 I thank an anonymous referee for pointing out this problem.

In 1990 for example, a person from East Germany lived in a household with 0.76 working women on average. More detailed information on the distribution of this data is given in the next sections. Note that the numbers in Table 2 are the product of two tendencies, i.e. the movements in unemployment, retirement and female labor market participation on the one hand and changing living arrangements, e.g. falling household sizes on the other.

3. Static and Dynamic Decompositions

The inequality analysis in this paper focuses on the mean logarithmic deviation, which is defined as[3]

$$mld(\hat{F}) = \int_x \log\left(\frac{\mu(\hat{F})}{x}\right) d\hat{F}(x) \,, \tag{1}$$

with mean income

$$\mu(\hat{F}) = \int_x x d\hat{F}(x) \tag{2}$$

and the distribution function of equivalent income $\hat{F}(\cdot)$. In order to take account of differing sampling probabilities $P(i \in S)$, this distribution function was calculated as

$$\hat{F}(x) = \frac{\sum_{i \in S} I\{x_i \leq x\}/P(i \in S)}{\sum_{i \in S} 1/P(i \in S)} \,, \tag{3}$$

where S is the sample and $I\{\cdot\}$ the indicator function.

For a partition $(S_j)_{j=0}^J$ (with $S_i \cap S_j = \emptyset \; \forall i \neq j$ and $S = \bigcup_{j=0}^J S_j$) the mean logarithmic variation can be decomposed in within-group and between-group components as

$$mld(\hat{F}) = \underbrace{\sum_{j=0}^{J} p_j mld(\hat{F}^{(j)})}_{within-group} + \underbrace{\sum_{j=0}^{J} p_j \log \frac{\mu(\hat{F})}{\mu(\hat{F}^{(j)})}}_{between-group} \,, \tag{4}$$

[3] The mean logarithmic deviation is defined only for strictly positive incomes. This did not pose a problem here, since no individual had a household income of zero.

where

$$\hat{F}^{(j)}(x) = \frac{\sum_{i \in S_j} I\{x_i \leq x\}/P(i \in S)}{\sum_{i \in S_j} 1/P(i \in S)} \tag{5}$$

is the income distribution function of subgroup j and

$$p_j = \frac{\sum_{i \in S_j} 1/P(i \in S)}{\sum_{i \in S} 1/P(i \in S)} \tag{6}$$

is the population shares of subgroups $j = 0, \ldots, J$. The first term on the right hand side of (4) represents the combined contribution of inequality within each cell while the last term captures inequality between the cells (see Shorrocks (1980) or Cowell (2000)).

In the next section, a decomposition of the change in mean logarithmic deviation developed by Mookherjee / Shorrocks (1982) will be used (compare Jenkins (1995), Jäntti (1997) and Grabka / Schwarze / Wagner (1999) for similar analyses). This dynamic decomposition is based on the static decomposition (4).

$$\begin{aligned} \triangle mld(\hat{F}_t) \cong & \underbrace{\sum_{j=0}^{J} \bar{p}_j \triangle mld(\hat{F}_t^{(j)})}_{\text{within-group}} \\ & + \underbrace{\sum_{j=0}^{J} \overline{mld(\hat{F}^{(j)})} \triangle p_{jt}}_{\text{shares/within-group}} \\ & + \underbrace{\sum_{j=0}^{J} \left(\overline{\left[\frac{\mu(\hat{F}^{(j)})}{\mu(\hat{F})} \right]} - \overline{\left[\log \frac{\mu(\hat{F}^{(j)})}{\mu(\hat{F})} \right]} \right) \triangle p_{jt}}_{\text{shares/mean incomes}} . \\ & + \underbrace{\sum_{j=0}^{J} \left(\overline{\left[\frac{p_j \mu(\hat{F}^{(j)})}{\mu(\hat{F})} \right]} - \bar{p}_j \right) \triangle \log \mu(\hat{F}_t^{(j)})}_{\text{mean incomes}}, \end{aligned} \tag{7}$$

where $\triangle$ is the difference operator and the bars indicate averages over periods t and $t-1$. Decomposition (7) involves the approximation $\log(1+x) \cong x$, which worked very well in practice (see next section). Every component on the right hand side of (7) has its own intuitive interpretation.

The components of the first sum reflect changes in within-group inequality. An increase (decrease) in within-group inequality in group j will in-

crease (decrease) overall inequality. The magnitude of this increase (decrease) will be the higher the larger group j is on average.

The components of the second term capture changes in inequality induced by changing population shares interacted with the level of inequality within cells. An increasing (decreasing) population share of cell j leads to a positive (negative) contribution to the change in overall inequality, which will depend on average inequality within this cell.

The third sum represents inequality changes driven by changes in population shares which are connected with the relative position $\mu(\hat{F}^{(j)})/\mu(\hat{F})$ of the cell in question. Growing cells with very high or very low relative positions (on average) will both increase inequality but the increase will be much larger for cells with low relative positions. This reflects the fact that the mean logarithmic deviation is particularly sensitive to inequality movements in the lower tail of the income distribution (see Cowell (1995), pp. 139 / 140, for the sensitivity of inequality indices with respect to redistribution in different parts of the distribution).

Components of the last sum on the right hand side of (7) stand for changes in inequality induced by growth of mean income $\triangle \log \mu(\hat{F}_t^{(j)})$ in cell j. Income growth in cells which are relatively rich on average will increase inequality, while income growth in relatively poor cells will lead to a reduction in inequality. In this context, a cell is called relatively rich, if its income share $p_j\mu(\hat{F}^{(j)})/\mu(\hat{F})$ exceeds its population share p_j and relatively poor otherwise.

In principle, an inequality decomposition by income source would have been an alternative to the methodology employed here. However, Shorrocks (1983) has shown that such decompositions yield to arbitrary results unless restrictive assumptions are imposed. Moreover, these decompositions do not have clear intuitive interpretations along the lines developed above and they do not allow an intertemporal analysis similar to the one presented in this section.

4. Empirical Results

The empirical evidence on the inequality effects of unemployement, retirement and female labor market participation consists of two parts. First, static decompositions are carried out for a univariate population partition into individuals living in households with no unemployed / pensioner / working woman, one such person or at least two such persons. Second, static and dynamic decompositions for a simultaneous partition of the three variables are analyzed.

Before turning to the presentation of the decomposition results, Table 3 gives an account of income inequality in East Germany for the years 1990 and 1995, and in West Germany for the years 1985 and 1995. (A more detailed description of inequality can be found in Becker / Hauser (1997) or Biewen (2000).) In the period under consideration, all inequality indices increased for both East and West Germany. Using the criterion of Blackburn (1989) for the Gini coefficient, the increase from 1990 to 1995 in the East can be compared to a redistribution of 4.3 % of Eastern mean income in 1990 from every individual having less than median income to every individual with income higher than the median. The corresponding figure for West Germany is 2.3 %.

Table 3

Inequality in Equivalent Income: East and West Germany

sample	East 1990	East 1995	West 1985	West 1995
Gini	0.182	0.210	0.264	0.275
Theil	0.053	0.075	0.123	0.145
coefficent of variation	0.330	0.415	0.562	0.674
Atkinson $\varepsilon = 0.5$	0.026	0.037	0.058	0.065
Atkinson $\varepsilon = 2$	0.106	0.145	0.214	0.220
logarithmic variance	0.114	0.160	0.247	0.258
mean logarithmic deviation	0.054	0.075	0.118	0.129

Source: German Socio-Economic Panel (GSOEP), weighted data.

4.1 East Germany

Table 4 presents the results for the univariate decompositions. For example, the first partition consists of individuals in households without any unemployed members, individuals from households with exactly one and individuals from households with at least two unemployed members. Analogous partitions are carried out for the number of pensioners and working women in a person's household.

Judged by the negligible contribution of the between-group contribution in the fourth row of Table 4, unemployment played no role in explaining overall inequality in the former GDR. This is of course due to the fact that there was virtually no unemployment in East Germany at the eve of reunification. This changed until 1995, where already 24.2 % of East Germans were affected by unemployment (see third and fourth column of Table 4). This change was accompanied by a deteriorating relative position of this

group (see columns five to seven of Table 4). As a consequence of these changes, about 8.1 % of inequality in 1995 could be explained by the fact that some individuals were affected by unemployment and others not.

Table 4

Univariate Decompositions: East Germany

	sample shares			relative positions			within[b]	between[c]
number of	0	1	≥ 2	0	1	≥ 2	inequality	
1990								
unemployed[a]	0.977	0.021	0.001	1.001	0.940	1.021	1.000	0.000
pensioners[a]	0.740	0.171	0.088	1.039	0.889	0.878	0.956	0.044
working women[a]	0.308	0.656	0.037	0.863	1.058	1.107	0.919	0.081
1995								
unemployed[a]	0.758	0.210	0.032	1.059	0.824	0.749	0.919	0.081
pensioners[a]	0.727	0.164	0.108	0.988	1.014	1.053	0.997	0.003
working women[a]	0.511	0.472	0.017	0.913	1.083	1.282	0.945	0.055

[a] in the household of the individual in question
[b] within-group component of inequality
[c] between-group component of inequality

Source: German Socio-Economic Panel (GSOEP), weighted data.

The partition for retirement shows that in 1990, i.e. in the almost socialist society, over 4.4 % percent of inequality could be accounted for by the income gap between the individuals directly or indirectly affected by retirement and those not affected. In contrast, the number of pensioners did not play any role in explaining overall inequality in 1995, despite the fact that their numbers increased, mainly due to early retirement during the transition of the economy from state-planned to market conditions. The reason for the diminishing importance of retirement is the drastically improving relative position of the affected subgroups. Individuals who were or who lived together with pensioners tended to have incomes lower than average in 1990 and higher than average in 1995. The corresponding population shares changed only very slightly over the period 1990 to 1995. More individuals were affected by retirement in 1995 and there was a slight shift from households with only one pensioner to households having at least two pensioners as its members.

Table 4 also shows the massive labor force attachment of women in the former GDR. In 1990, only 30.8 % of the population lived in households without working women. This changed drastically over the period 1990 to

1995. In 1995, already 51.1 % of the individuals in East Germany were not affected by female labor supply. With 8.1 % in 1990, inequality was to a larger extent characterized by the fact that households in which women work enjoy a higher relative position than households in which this is not the case. The relative importance of this between-component diminished to a level of 5.5 %.

All these univariate decompositions probably reflect very well the main inequality tendencies in the data. But as they only use the marginal distribution of one socio-economic factor, interaction-effects between the factors might be overlooked. In order to tackle this problem and in order to assess the relative importance of the different factors, simultaneous static and dynamic decompositions are presented in Table 5. As the dynamic decomposition requires non-empty cells in each period, and in order to avoid very small cells, subgroups were combined in a suitable manner.

In 1990, the East German population was dominated by two large subgroups. The largest group with a population share of 72.3 % consisted of individuals living in households without unemployed persons or pensioners (cells (0,0,0), (0,0,1) and (0,0,2+), where the first two digits denote the number of unemployed and pensioners whereas the third gives the number of working women in the respective household). The other group with a share of 17.6 % was made up of individuals being or living together with pensioners in households without unemployed persons or working women (cells (0,1,0) and (0,2+,0)). From 1990 to 1995 however, this distribution was changed substantially by the emergence of a new subgroup, i.e. individuals from households with one or more unemployed persons, but without pensioners (mainly cells (1+,0,0) and (1+,0,1)). The population share of this new group amounted to over 21 % in 1995. It grew in size mainly at the expense of the subgroup with individuals from "normal" households (cells (0,0,0), (0,0,1) and (0,0,2+), i.e. households without any unemployed persons or pensioners, the share of which has shrunk to 52.4 %. Moreover, the population share of households mainly consisting of retired individuals (cells (0,1,0) and (0,2+,0)) slightly increased to 21.4 %. Also note that these latter cells decisively improved their relative income positions.

The share of inequality accounted for by the given partition rose from 9.9 % in 1990 to 14.9 % in 1995, which means inequalities between socio-economic subgroups became more important over the period 1990 to 1995. A close look at the static decomposition in 1995 reveals that the figure for 1990 is dominated by the between-group contribution of individuals from households which were affected by unemployment, but not by retirement or female labor force participation. In other words, overall inequality in 1995

Table 5: **Decompositions of Trend and Level of Income Inequality 1990 – 1995: East Germany, by Household Type**

household type	(0,0,0)	(0,0,1)	(0,0,2+)	(0,1,0)	(0,1,1+)	(0,2+,0)	(0,2+,1+)	(1+,0,0)	(1,+0,1)	(1+,0,2+)	(1+,1,0)	(1+,1,1+)	(1+,2+,0+)	total
1990														
population share	0,122	0,575	0,027	0,100	0,066	0,076	0,011	0,006	0,010	0,001	0,002	0,003	0,001	1,000
mean income	729,82	829,90	890,37	610,43	817,39	672,38	785,92	661,16	760,70	738,09	712,03	857,43	739,23	781,90
mld	0,068	0,044	0,043	0,065	0,048	0,033	0,046	0,071	0,078	0,001	0,052	0,112	0,017	0,054
relative position	0,933	1,061	1,139	0,781	1,045	0,860	1,005	0,846	0,973	0,944	0,911	1,097	0,945	1,000
income share	0,114	0,610	0,030	0,078	0,069	0,066	0,011	0,005	0,010	0,001	0,002	0,003	0,001	1,000
Static Decomposition 1990: Absolute Contributions														
within-group	0,008	0,025	0,001	0,006	0,003	0,003	0,000	0,000	0,001	0,000	0,000	0,000	0,000	0,049
between-group	0,008	-0,034	-0,003	0,025	-0,003	0,012	0,000	0,001	0,000	0,000	0,000	0,000	0,000	0,005
Static Decomposition 1990: Relative Contributions														
within-group	0,153	0,465	0,021	0,119	0,058	0,047	0,009	0,008	0,014	0,000	0,002	0,005	0,000	0,901
between-group	0,155	-0,628	-0,064	0,454	-0,054	0,212	-0,001	0,019	0,005	0,001	0,004	-0,004	0,001	0,099
1995														
population share	0,118	0,392	0,014	0,107	0,026	0,097	0,005	0,158	0,043	0,003	0,025	0,007	0,007	1,000
mean income	1051,39	1242,75	1228,67	1152,84	1316,51	1211,43	987,92	827,47	1087,46	2400,73	1020,27	860,46	1045,25	1130,05
mld	0,093	0,065	0,045	0,040	0,062	0,026	0,089	0,079	0,066	0,374	0,047	0,047	0,088	0,076
relative position	0,930	1,100	1,087	1,020	1,165	1,072	0,874	0,732	0,962	2,124	0,903	0,761	0,925	1,000
income share	0,109	0,431	0,015	0,109	0,030	0,104	0,004	0,115	0,041	0,007	0,022	0,005	0,006	1,000
Static Decomposition 1995: Absolute Contributions														
within-group	0,011	0,026	0,001	0,004	0,002	0,003	0,000	0,012	0,003	0,001	0,001	0,000	0,001	0,065
between-group	0,008	-0,037	-0,001	-0,002	-0,004	-0,007	0,001	0,049	0,002	-0,002	0,003	0,002	0,001	0,011
Static Decomposition 1995: Relative Contributions														
within-group	0,145	0,337	0,008	0,057	0,021	0,033	0,006	0,164	0,037	0,016	0,015	0,004	0,008	0,851
between-group	0,112	-0,491	-0,015	-0,028	-0,052	-0,089	0,009	0,648	0,022	-0,031	0,033	0,025	0,007	0,149
Dynamic Decomposition 1990 - 1995: Absolute Contributions														
within-group	0,003	0,010	0,000	-0,003	0,001	-0,001	0,000	0,001	0,000	0,001	0,000	0,000	0,000	0,012
mean incomes	-0,003	0,015	0,001	-0,006	0,002	-0,001	0,000	-0,005	0,000	0,002	0,000	0,000	0,000	0,003
shares/within-group	0,000	-0,010	-0,001	0,000	-0,002	0,001	0,000	0,011	0,002	0,000	0,001	0,000	0,000	0,003
shares/mean incomes	-0,005	-0,183	-0,013	0,007	-0,041	0,021	-0,005	0,156	0,033	0,002	0,023	0,004	0,006	0,004
total shares	-0,005	-0,193	-0,014	0,007	-0,043	0,021	-0,006	0,167	0,035	0,003	0,024	0,005	0,006	0,008
Dynamic Decomposition 1990-1995: Relative Contributions														
within-group	0,131	0,442	0,002	-0,110	0,028	-0,027	0,015	0,027	-0,013	0,035	-0,003	-0,013	0,013	0,526
mean incomes	-0,129	0,650	0,034	-0,272	0,075	-0,048	-0,003	-0,210	-0,015	0,089	-0,020	0,000	-0,004	0,148
shares/within group	-0,017	-0,431	-0,025	0,015	-0,097	0,026	-0,016	0,493	0,102	0,017	0,048	0,015	0,013	0,145
shares/mean incomes	-0,205	-7,926	-0,567	0,297	-1,780	0,892	-0,238	6,755	1,419	0,105	0,987	0,192	0,251	0,182
total shares	-0,222	-8,358	-0,592	0,312	-1,877	0,918	-0,254	7,248	1,521	0,122	1,036	0,207	0,265	0,326

Source: German Socio-Economic Panel (GSOEP), weighted data.

was characterized to a much larger extent by the income gap between individuals who were directly or indirectly affected by unemployment and those who were not.

These tendencies are explored in detail by the dynamic decomposition. 52.6 % of the increase in overall inequality are accounted for by rising inequality within cells. Note that inequality rose particularly fast in the first two cells, which were not affected by unemployment or retirement. This and the fact that the major contributions to the within-component in the dynamic decomposition came from these cells supports the hypothesis that this part of the increase in overall inequality was due to rising wage inequality. Wage inequality in East Germany rose drastically from 1990 to 1991, but stayed constant in the subsequent years. (Exact figures are given in Hauser / Wagner (1996), Table 5. For example, wage inequality measured by the Gini coefficient increased from 0.198 in 1990 to 0.228 in 1991.) In contrast, inequality within the cells of pensioners not living together with any unemployed persons or working women (0,1,0) and (0,2+,0) diminished considerably, exerting a mitigating effect on the rise in overall inequality.

Another 14.7 % of this rise is related to changes in mean incomes. The largest contribution came from the cell with one participating women, but no unemployed or retired individuals (0,0,1). This cell is relatively rich on average and the effect of its increasing mean income overcompensated the effects of income growth in the rather poor cells (0,0,0), (0,1,0) and (1+,0,0) leading to a net increase in overall inequality. An explanation for this tendency is that it was more likely for women with low incomes to lose their job than for women with high incomes. On the other hand, the relative position of individuals from retired households improved from a level considerably below the population average to a level slightly above the average. It is a well known fact, that East German pensioners benefited most from reunification. They all have long, uninterrupted employment histories, which lead to high pensions benefits under the West German social insurance system. Many East German pensioniers even fare better than their Western counterparts, especially women. However, the figures in Table 7 reveal that the striking increase in the relative position of retired households, which would decrease overall inequality, was dominated by the income effects of female labor participation, the relative returns of which further increased.

Another 14.5 % of the inequality increase can be attributed to changing population shares in interaction with inequality levels within the cells. This part is mainly composed of the positive contribution by the largest cells with unemployed individuals (1+,0,0) and (1+,0,1) on the one hand and the negative contribution of the most important cell with female labor participation (0,0,1) on the other. Inequality within the unemployed cells (1+,0,0)

and (1+,0,1) was much larger than in (0,0,1) so that the inequality increasing effects of rising unemployment were not offset by the otherwise inequality decreasing fall in female labor participation.

The same is true for the contribution of changing shares interacted with mean incomes. Here, the effects of the falling population share of the main cells with female labor market participation (0,0,1) and (0,1,1+), which have a high relative income position, was overcompensated by the effects of the low income cells of unemployed, (1+,0,0) and (1+,0,1), resulting in an inequality increasing contribution of 18.2 %.

4.2 West Germany

Table 6 presents the results for univariate partitions of the West German population. In 1990, 9.4 % of the West Germans were affected by unemployment in one form or another. Unemployment increased only very slightly in the years 1985 to 1995. Due to systematically lower incomes in affected cells (see columns five to seven), the impact of unemployment on overall inequality was discernible and its contribution rose from 3.4 % in 1985 to 4.8 % in 1990.

Table 6

Univariate Decompositions: West Germany

	sample shares			relative positions			within[b]	between[c]
number of	0	1	≥ 2	0	1	≥ 2	inequality	
1985								
unemployed[a]	0.906	0.083	0.019	1.025	0.778	0.582	0.966	0.034
pensioners[a]	0.713	0.215	0.071	1.010	0.977	0.965	0.999	0.001
working women[a]	0.620	0.341	0.039	0.929	1.116	1.124	0.966	0.034
1995								
unemployed[a]	0.895	0.092	0.013	1.032	0.765	0.491	0.952	0.048
pensioners[a]	0.754	0.176	0.070	0.983	1.077	0.984	0.995	0.005
working women[a]	0.616	0.359	0.014	0.924	1.120	1.124	0.966	0.034

[a] in the household of the individual in question
[b] within-group component of inequality
[c] between-group component of inequality

Source: German Socio-Economic Panel (GSOEP), weighted data.

In 1985, 71.3 % of West Germans lived in households without any retired individuals. From 1985 to 1995, this share increased to 75.4 %, which is sur-

prising in view of discussions about ageing societies. The falling share of *retired individuals* (as opposed to individuals living together with pensioners) in the sample may be part of an explanation (see Table 1). However, the change from 19.1 % pensioners to 18.1 % pensioners in 1995 is too small to account for the sharp increase from 71.3 % to 75.4 % in the share of individuals who were not affected by retirement at all.

On the contrary, these figures suggest that other tendencies are important. An explanation could be that in 1995, it was less common for pensioners to live in the households of their children. This is consistent with the fact, that the share of households with three or more members has been considerably falling since 1985, while that of small households with one or two members has been increasing (compare Statistisches Bundesamt (1985, 1997)). In sum, this means that even if the population ages and the share of pensioners increases, fewer individuals might be affected by retirement with all implications for the income distribution. Individuals from households with pensioners improved their relative income from slightly below average to a position considerably higher than average.

The corresponding figures for female labor supply reveal that in both years about 62.0 % of West Germans lived in households without any labor force attachment of women. From 1985 to 1995 the group with exactly one working woman in the household gained in size mainly at the expense of the group with at least two working women. This probably reflects the trend toward smaller households noted above, since the share of the cell without any labor force attachment of women fell only slightly and the share of working women in the sample increased from 15.2 % to 15.8 % (compare Table 1). The amount of inequality explained by the existence of female labor market participation was with 3.4 % in both years relatively small. In view of a considerable gap between the average income of individuals benefiting and those not benefiting from female labor market earnings, this is a rather surprising finding.

These hypotheses can be studied in more detail in the simultaneous decomposition in Table 7. In 1985, the West German population is composed of three major groups. The largest subgroup, which was exposed to the conditions of the labor market more than any other group, had a population share of 63.2 % (cells (0,0,0), (0,0,1) and (0,0,2+)). With a share of 22.6 % the second largest group, cells (0,1,0) and especially (0,2+,0) mainly represented the subpopulation of individuals from retired households. The main groups affected by unemployment were cells (1,0,0) and (1,0,1+), the shares of which add up to 7.0 %. Again, extraordinarily high relative positions were reached by individuals from households with working women (cells (0,0,1), (0,0,2+) and (0,1,1+)), while individuals who were directly or indirectly affected by

unemployment (cells (1,0,0) and (1,0,1+)) enjoyed a rather low income position.

This individualized distribution of household types experienced only small changes in the period under investigation. The main changes were the growth of the "normal" household cell (0,0,0) from 32.9 % to 34.6 %, the increase in share of the largest cell affected by unemployment (1,0,0) from 4.9 % to 5.7 % and the considerable gain for the cell with one working women (0,0,1) from 27.8 % to 30.6 %. This last change is contrasted by the fall of the population share of the cell with at least two working women (but no unemployed or retired persons) (0,0,2+) from 2.5 % to 1.1 %. In contrast to Table 6, Table 7 provides the additional information that the above noted change in living arrangements mainly occurred in "normal" households, i.e. households without unemployed or retired persons. However, in view of the external effects inflicted upon co-residents of an individual who changes her status or moves out of a household, no simple interpretation of these figures in terms of individual flows is possible. Finally, the cell with persons from households with exactly one pensioner but no unemployed individuals or working women (0,1,0) experienced a sharp drop from 16.4 % to 12.5 %, which is similar in magnitude to the corresponding drop in Table 6.

While inequality between the groups of this partition explained 7.4 % of total inequality in 1985, this share rose to 9.2 % in 1995, suggesting that changes in unemployment, retirement and female labor supply contributed to the change in overall inequality. Regarding this change, 68.4 % can be attributed to inequality changes within the cells. In contrast to the East German case, the major contributions did not come from the labor market cells (0,0,0) and (0,0,1) but from the main cells with retired or unemployed individuals (0,1,0) and (1,0,0). Inequality within the first cell even tended to decrease over the period 1985 to 1995, which is consistent with the finding that – in contrast to many other industrialized countries – the level of wage inequality was very stable over the last ten years (see for example Steiner / Wagner (1998)). In sharp contrast, within-group inequality rose from 0.101 to 0.155 in cell (0,1,0) and from 0.151 to 0.228 in cell (1,0,0), which means that the already remarkably high level of inequality among individuals who were affected by unemployment even further increased. This can be explained by changes in the composition of this subpopulation. The share of long-term unemployed – i.e. individuals having been unemployed for more than one year – increased from 31 % in 1985 to 33 % in 1995. Similarly, the share of elderly unemployed rose from 13 % to 23 % and that unemployed with foreign nationality from 12 % to 17 % (compare Statistisches Bundesamt (1985,1997)).

Table 7: **Decompositions of Trend and Level of Income Inequality 1985 – 1995: West Germany, by Household Type**

household type	(0.0.0)	(0.0.1)	(0.0.2+)	(0.1.0)	(0.1.1+)	(0.2+.0)	(0.2+.1+)	(1.0.0)	(1.0.1+)	(1.1+.0)	(1.1+.1+)	(2+.0+.0)	(2+.0+.1+)	total
1985														
population share	0,329	0,278	0,025	0,164	0,039	0,063	0,008	0,049	0,022	0,010	0,003	0,007	0,004	1,000
mean income	1271,93	1546,51	1543,76	1262,43	1461,21	1293,09	1331,43	959,63	1009,13	1402,06	1413,18	694,05	918,85	1338,52
mld	0,120	0,096	0,077	0,101	0,151	0,076	0,096	0,151	0,114	0,258	0,048	0,065	0,055	0,118
relative position	0,950	1,155	1,153	0,943	1,092	0,966	0,995	0,717	0,754	1,047	1,056	0,519	0,686	1,000
income share	0,313	0,321	0,029	0,155	0,043	0,060	0,008	0,035	0,016	0,010	0,003	0,003	0,003	1,000
Static Decomposition 1985: Absolute Contributions														
within-group	0,040	0,027	0,002	0,017	0,006	0,005	0,001	0,007	0,002	0,003	0,000	0,000	0,000	0,109
between-group	0,017	-0,040	-0,004	0,010	-0,003	0,002	0,000	0,016	0,006	0,000	0,000	0,004	0,002	0,009
Static Decomposition 1985: Relative Contributions														
within-group	0,335	0,226	0,016	0,140	0,050	0,040	0,007	0,062	0,021	0,021	0,001	0,004	0,002	0,925
between-group	0,142	-0,340	-0,030	0,081	-0,029	0,018	0,000	0,137	0,052	-0,004	-0,001	0,037	0,013	0,075
1995														
population share	0,346	0,306	0,011	0,125	0,037	0,066	0,003	0,057	0,021	0,012	0,002	0,011	0,003	1,000
mean income	1439,72	1846,30	1871,89	1765,28	1738,48	1574,08	1690,75	1176,21	1288,61	1343,53	1272,76	725,59	1013,47	1602,26
mld	0,113	0,108	0,048	0,155	0,086	0,066	0,116	0,228	0,082	0,130	0,038	0,087	0,059	0,129
relative position	0,899	1,152	1,168	1,102	1,085	0,982	1,055	0,734	0,804	0,839	0,794	0,453	0,633	1,000
income share	0,311	0,352	0,013	0,138	0,040	0,065	0,004	0,042	0,017	0,010	0,002	0,005	0,007	1,000
Static Decomposition 1995: Absolute Contributions														
within-group	0,039	0,033	0,001	0,019	0,003	0,004	0,000	0,013	0,002	0,002	0,000	0,001	0,000	0,117
between-group	0,037	-0,043	-0,002	-0,012	-0,003	0,001	0,000	0,018	0,005	0,002	0,001	0,008	0,001	0,012
Static Decomposition 1995: Relative Contributions														
within-group	0,302	0,255	0,004	0,150	0,025	0,034	0,003	0,100	0,013	0,012	0,001	0,007	0,001	0,907
between-group	0,286	-0,335	-0,014	-0,094	-0,023	0,009	-0,001	0,136	0,035	0,016	0,004	0,064	0,010	0,093
Dynamic Decomposition 1985 - 1995: Absolute Contributions														
within-group	-0,002	0,004	-0,001	0,008	-0,002	-0,001	0,000	0,004	-0,001	-0,001	0,000	0,000	0,000	0,008
mean incomes	-0,003	0,008	0,001	0,001	0,001	0,000	0,000	-0,003	-0,001	0,000	0,000	0,000	0,000	0,002
shares/within-group	0,002	0,003	-0,001	-0,005	0,000	0,000	0,000	0,002	0,000	0,000	0,000	0,000	0,000	0,001
shares/mean incomes	0,017	0,028	-0,014	-0,039	-0,002	0,004	-0,005	0,009	-0,001	0,002	-0,001	0,005	-0,001	0,001
total shares	0,019	0,031	-0,015	-0,044	-0,003	0,004	-0,005	0,010	-0,001	0,002	-0,001	0,005	-0,001	0,002
Dynamic Decomposition 1985 - 1995: Relative Contributions														
within-group	-0,220	0,320	-0,048	0,704	-0,222	-0,057	0,011	0,366	-0,061	-0,124	-0,002	0,016	0,001	0,685
mean incomes	-0,287	0,715	0,050	0,052	0,053	-0,029	0,002	-0,264	-0,103	0,003	0,001	-0,018	-0,010	0,165
shares/within-group	0,175	0,254	-0,077	-0,445	-0,025	0,024	-0,044	0,141	-0,006	0,032	-0,004	0,027	-0,006	0,046
shares/mean incomes	1,504	2,513	-1,252	-3,485	-0,213	0,336	-0,415	0,780	-0,065	0,168	-0,083	0,429	-0,111	0,105
total shares	1,679	2,766	-1,329	-3,930	-0,238	0,360	-0,459	0,922	-0,071	0,200	-0,087	0,456	-0,117	0,150

Source: German Socio-Economic Panel (GSOEP), weighted data.

16.5 % of the change in overall inequality are to be attributed to income gains for the relatively rich group with female labor market participation (0,0,1), which more than offset the effects of income growth for the relatively poor groups of individuals from normal households (0,0,0) and from households with exactly one unemployed person (1,0,0).

A contribution of 4.6 % came from the fact that the growth of cells (0,0,0), (0,0,1) and (1,0,0), which were characterized by a relative high level of within-group inequality, outweighed the effects of the decreasing share of cell (0,1,0). In other words, the inequality increasing effects of growing numbers of "normal" households, households with exactly one working woman and – to a smaller extent – households with unemployed members were stronger than the inequality decreasing effects of the shift away from households, where one of the members was a pensioner.

Finally, 10.5 % of the overall change can be accounted for by movements of population shares in connection with income position. Again, the inequality increasing effects of rising shares of "normal" households, households with one working woman and households with unemployed members outweighed the inequality decreasing effects of the households with one pensioner. Judged by the magnitude of its contribution, unemployment seems to have played a minor role in this context. If one accepts the view that the considerable growth of cell (0,0,1) and the decreasing share of (0,1,0) at least partly reflects changes in living arrangements rather than increasing female labor participation or falling numbers of pensioners, up to 15.1 % of the change in overall inequality can be explained by changes in the household structure.

4.3 Comparison of East and West Germany

A comparison for 1995 makes clear that there are still considerable differences between the socio-economic structures of the formerly socialist Eastern part and the larger Western part of Germany. In East Germany (compare Table 4), the share of individuals affected by unemployment is more than twice as high as in West Germany (Table 6). As a consequence, income inequality in the East is much more characterized by unemployment than in the West. While the share of persons directly or indirectly hit by unemployment is much higher in the East, their relative income position is not as low as in West Germany. An explanation could be that in East Germany, unemployment of one household member is often compensated by the earnings of another person, for example by the earnings of the spouse (see above). Another reason could be the generous level of unemployment benefits when compared to East German average income.

The incidence of retirement in the East is very similar to that in the West. In both parts of Germany, about three quarters of the population are not affected by retirement. However, the share of persons living in households with two or more pensioners seems to be higher in the East. In general, the income position of individuals being or living together with pensioners is higher than average, but this is not enough to touch the fact that retirement plays no role in explaining overall inequality in either East or West.

Although labor market participation rates of women have drastically fallen in the East, they are still considerably higher than in the West. As the existence of households with different degrees of female labor market participation tends to increase inequality, contributions of female labor earnings to overall inequality remain higher in the East than in the West. Households with working women enjoy a clearly higher relative position, which increases with the number participating women, especially in East Germany.

More details on the household structure of both populations can be gained from the simultaneous partitions (Tables 5 and 7). The most important subgroups in East Germany are cells (0,0,1) with 39.2 %, (1+,0,0) with 15.8 %, (0,0,0) with 11.8 %, (0,1,0) with 10.7 % and (0,2+,0) with 9.7 %. For West Germany they are (0,0,0) with 34.6 %, (0,0,1) with 30,6 %, (0,1,0) with 12.0 %, (0,2+,0) with 6.6 % and (1,0,0) with 5.7 %. Their sizes reflect the differences in unemployment, retirement and female labor participation discussed above. The most striking difference is the high share of the main cell of individuals from households with unemployed in East Germany, reaffirming the view that unemployment is an important phenomenon in the East German society. Figures for the cells with pensioners are very close together in East and West, but with 9.7 %, more East Germans live in households with at least two pensioners (and without unemployed persons or working women) which probably represent the subpopulation of retired couples. The fact that the typical individual in East Germany lives in an household with one working woman, whereas the typical West German comes from an household where this is not the case, confirms the differing importance of female labor participation in both parts of the country.

5. Summary and Concluding Remarks

The evidence for East Germany can be summed up as follows. The period from 1990 to 1995 was characterized by rising income inequality, drastically increasing unemployment, strongly falling labor market participation of women and by a slightly increasing share of individuals directly or indirectly affected by retirement.

The rise in inequality in East Germany is the complex product of countervailing tendencies. With over 52.5 %, most of the change was probably related to rising wage inequality. Another 14.7 % can be accounted for by changing mean incomes, where the inequality increasing effects of a further improving income position of households with working women dominated the otherwise inequality reducing effects of income growth in households with retired or unemployed individuals. 32.6 % of the rise in inequality can be attributed to compositional shifts, where the inequality reducing effect of decreasing female labor market participation was more than offset by the inequality increasing effects of rising unemployment and – to a much smaller extent – retirement.

A long-term comparison for West Germany shows that income inequality, unemployment, retirement and female labor market participation changed only slightly from 1985 to 1995. In the period under investigation, income inequality rose moderately and the share of individuals affected directly or indirectly by unemployment increased slightly. In 1995, fewer individuals were affected in one form or another by retirement, which seems – at least partly – to be a consequence of more pensioners living outside the households of their children. While female labor market attachment increased only very slightly, there was a shift in the incidence of female labor force participation from households with two working women towards households with only one working woman, reflecting decreasing household sizes.

68.5 % of the increase in overall inequality in West Germany are related to rising inequality within groups, mainly in households affected by unemployment or retirement. A contribution of 16.5 % is due to the fact that income grew faster for the already relatively rich individuals benefiting from female labor earnings than for other poorer subgroups, e.g. individuals affected directly or indirectly by unemployment. Only 15.0 % of the inequality increase can be attributed to compositional changes, parts of which were probably caused by changing living arrangements, i.e. by pensioners or young working women who tend to move out of the households of their children or parents. Rising unemployment exerted only a minor influence on the increase in income inequality.

A comparison between East and West shows that there are still differences between the two parts of Germany. The impact of unemployment on the distribution of equivalent income in East Germany is much stronger than in West Germany. The same is true for the effect of female labor market participation, but here, the difference is not as pronounced. In contrast to unemployment or female labor supply, retirement does not contribute to overall inequality in either part of the country.

In their study on the evolution of the East German income distribution, Hauser / Wagner (1996) focus on a related topic, namely the relative positions of socio-economic subgroups. Differences in relative income positions or between-group inequality are an important constituent of overall income inequality but they do not tell the whole story. The results in this paper show that a large part of overall inequality is inequality *within* rather than inequality *between* subgroups. On the other hand, Hauser and Wagner's findings on the between-group components of inequality are very similar to the results presented here. They also find that unemployment plays an important role in explaining rising inequality in East Germany, but their setup does not allow to draw quantitative conclusions. In particular, they seem to underestimate the role of increasing wage inequality.

It is unclear whether the results presented in this paper are in contrast to Björklund (1991) who finds that unemployment increases inequality in individual gross income but not in disposable family income. Equivalent income is based on family income, but the differences between the Swedish and the German Welfare System may be too big to allow a direct comparison. Similar difficulties arise if one compares the time series evidence for Israel in Achdut (1997). Achdut finds that a one percentage point rise in the unemployment rate increases the Gini coefficient by 0.003. For East Germany this would mean that the Gini coefficient should have risen by 0.045 as a consequence of the increase in unemployment from 0 % in 1990 to 14.9 % in 1995. This is clearly more than implied by the above analysis as it even exceeds the total increase in inequality, which is 0.028.

However, the results presented here and those of the cited studies are consistent in that they notice adverse effects of unemployment on inequality. These effects seem to be of a limited nature unless unemployment changes very drastically. In Europe, well working unemployment insurance systems with high replacement rates seem to prevent that the families of unemployed individuals slip into poverty. On the other hand, the sharp unemployment increase in East Germany following the transition from a state-planned to a market economy was large enough to contribute substantially to an increase in income inequality.

v. Weizsäcker (1996) predicts negative compositional effects on inequality, if the share of pensioners in the population rises. As his model does not analyze equivalent income and as he uses the coefficient of variation as a measure of inequality, his results are not directly comparable to the ones presented here. However, his prediction that individuals who are affected by retirement will improve their relative position at the expense of the subpopulation of workers is confirmed by the data. (This is true only for West Germany. The strongly improving relative position of pensioners in the East

is caused by the fact that pensions were adjusted more quickly to the Western level than wages.) It is very likely that this was the consequence of rising contribution rates for working individuals. The German pensions reform act of 1992 was an attempt to stop this trend of further increasing relative positions of pensioners compared to that of working individuals. In any case, the share of pensioners in the population seems to change too slowly to exert any important compositional effect on income inequality.

The results suggest that female labor market participation contributes to income inequality in the sense that individuals who benefit from it enjoy a higher relative income position than those who do not. This is in line with previous studies for the effects of *spouses'* earnings based on inequality decompositions by income source like Jäntti (1997), Achdut (1996) and Karoly / Burtless (1995). However, the evidence on this question is mixed and other authors come to different conclusions. For example, Blackburn / Bloom (1987) and Cancian / Danziger / Gottschalk (1993) find that spouses' earnings tend to equalize the distribution of incomes. (Also compare the discussion in Cancian / Reed (1998).)

To sum up, the decomposition analysis for Germany presented in this paper suggests that a considerable part of the increase of inequality in East Germany can be attributed to the very pronounced changes in unemployment, retirement and female labor force participation during the transition period. For West Germany these factors seem to have played only a minor role in explaining inequality movements. The results also show that – for both parts of the country – most of the observed inequality changes are related to factors that affect inequality *within* population subgroups. The most important of these factors in East Germany seems to have been rising wage inequality, while in West Germany increased heterogeneity in the subpopulations of the unemployed and retired led higher levels of inequality within these subgroups.

References

Achdut, L. (1996): Income Inequality, Income Composition and Macroeconomic Trends: Israel, 1979 – 93, Economica 63, S1 – S27.

Becker, I. / *Hauser,* R. (1997): Einkommensverteilung und Armut, Frankfurt / M.: Campus.

Biewen, M. (2000): Income Inequality in Germany During the 1980s and 1990s, Income Inequality in Germany during the 1980s and 1990s, Review of Income and Wealth, Series 46 (1).

Björklund, A. (1991): Unemployment and Income Distribution: Time-Series Evidence from Sweden, Scandinavian Journal of Economics 93, pp. 457 – 465.

Blank, R. M. (1995): Changes in inequality and unemployment over the 1980s, Comparative cross-national responses, Journal of Population Economics 8, pp. 1 – 21.

Blackburn, McK. L. (1989): Interpreting the Magnitude of Changes in Measures of Income Inequality, Journal of Econometrics 42, pp. 21-25.

Blackburn, McK. / *Bloom,* D. (1987): Earnings and Income Inequality in the United States, Population and Development Review 13, pp. 575-609.

– (1987): Earnings and Income Inequality in the United States, Population and Development Review 13, pp. 575-609.

Blinder, A. / *Esaki,* H. (1978): Macroeconomic activity and income distribution in the postwar United State, Review of Economics and Statistics 60, pp. 604 – 609.

Burkhauser, R. V. / *Kreyenfeld,* M. / *Wagner,* G. G. (1997): The German Socio-Economic Panel: A Representative Sample of Reunited Germany and its Parts, DIW Vierteljahreshefte zur Wirtschaftsforschung 1 / 97, pp. 7-15.

Buse, A. (1982): The cyclical behaviour of the size distribution of income in Canada, Canadian Journal of Economics 40, pp. 189 – 204.

Cancian, M. / *Danziger,* Sh. / *Gottschalk,* P. (1993): Working Wives and the distribution of family income, in: Danziger, Sh. and P. Gottschalk (eds.), Rising Tides: Rising Inequality in America, New York, pp. 195 – 221.

Cancian, M. / *Reed,* D. (1998): Assessing the effects of wives' earnings on family income inquality, Review of Economics and Statistics Vol. LXXX, pp. 73 – 80.

Cowell, F. (1995): Measuring Inequality, 2nd ed., Prentice Hall, London etc.

– (2000): Measurement of Inequality, in: Atkinson, A.B. and F. Bourguignon (ed.): Handbook of the Income Distribution, Elsevier, Amsterdam.

Frick, J. / *Hauser,* R. / *Müller,* K. / *Wagner,* G. (1993): Die Auswirkungen der hohen Unterbeschäftigung in Ostdeutschland auf die personelle Einkommensverteilung, in: Neubäumer, R. (ed.): Arbeitsmarktpolitik kontrovers – Analysen und Konzepte für Ostdeutschland, Darmstadt, pp. 204 – 228.

Grabka, M. M. / *Schwarze,* J. / *Wagner,* G. G. (1999): How unification and immigration affected the German income distribution, European Economic Review (43)4-6, pp. 867-878

Hauser, R. / *Wagner,* G. (1996): Die Einkommensverteilung in Ostdeutschland – Darstellung, Vergleich und Determinanten für die Jahre 1990 bis 1994, in: Kleinhenz, G. and R. Hauser (1996) (eds.): Sozialpolitik im vereinten Deutschland, Schriften des Vereins für Socialpolitik, Bd. 208, S. 79 – 128.

Jäntti, M. (1997): Inequality in Five Countries in the 1980s: The Role of Demographic Shifts, Markets and Government Policies, Economica 64, pp. 415 – 440.

– (1997): Inequality in Five Countries in the 1980s: The Role of Demographic Shifts, Markets and Government Policies, Economica 64, pp. 415 – 440.

Jenkins, S. P. (1995): Accounting for Inequality Trends: Decomposition Analyses for the UK, 1971 – 86, Economica 62, pp. 29-63.

Karoly, L. A. / *Burtless,* G. (1995): The Effects of Rising Earnings Inequality on the Distribution of U.S. Income, Demography 32, pp. 379-406.

Lam, D. (1997): Demographic variables and income inequality, in: Rosenzweig, M.R. and O. Stark: Handbook of Population and Family Economics.

Mookherjee, D. / *Shorrocks,* A. F. (1982): A decomposition analysis of the trend in UK income inequality, Economic Journal 92, pp.886 – 902.

Nolan, B. (1989): Macroecomic conditions and the size distribution of income. Evidence from the United Kingdom, Journal of Post Keynesian Economics 11.

Shorrocks, A.F . (1980): The class of additively decomposable inequality measures, Econometrica 48, pp. 613 – 625.

– (1983): The Impact of Income Components on the Distribution of Family Incomes, Quarterly Journal of Economics, pp. 311-326.

Statistisches Bundesamt (1985): Datenreport 1985 / 86, Landsberg am Lech.

Statistisches Bundesamt (1997): Datenreport 1995 / 96, Landsberg am Lech.

Steiner, V. / *Wagner,* K. (1998): Has Earnings Inequality in Germany Changed during the 1980s?, Zeitschrift für Wirtschafts- und Sozialwissenschaften 118.

Treas, J. (1987): The Effects of Women's Labor Force Participation on the Distribution of Income in the United States, Annual Review of Sociology 13, pp. 259 – 288.

v. Weizsäcker (1989): Demographic Change and Income Distribution, European Economic Review 33, pp. 377 – 388.

– (1995): Public pension reform, demographics, and inequality, Journal of Population Economics 8, pp. 205 – 221.

– (1996): Distributive Implications of an aging society, European Economic Review 40, pp. 729 – 746.