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## Inequality in income and satisfaction: A comparison of east and west Germans before and after unification

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Diskussionspapiere  
Discussion Papers

Discussion Paper No. 86  
**Inequality in Income and Satisfaction**  
**- a Comparison of East and West Germans**  
**before and after Unification**

from  
Richard Hauser<sup>\*</sup>, Joachim Frick<sup>\*\*</sup>, Klaus Müller<sup>\*</sup>  
Gert G. Wagner<sup>\*\*\*</sup>

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# **Deutsches Institut für Wirtschaftsforschung**

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**Inequality in Income and Satisfaction**  
**- a Comparison of East and West Germans**  
**before and after Unification**

from  
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**INEQUALITY IN INCOME AND SATISFACTION**  
**- A COMPARISON OF WEST AND EAST GERMANY BEFORE AND AFTER**  
**UNIFICATION**

**1. Selected Problems**

Inequality in the personal income distribution and changes in the distribution are important indicators of the impacts of the German Unification. Several issues are of interest to German policymakers:

1. How did the personal income distribution in the former GDR compare to that within the former FRG?
2. What changes in the personal income distribution were initiated by the system change of the GDR and which ones by unification with the FRG? What changes can we expect over the next years?<sup>1</sup>
3. What are the differences in the personal income distribution between east and west after the unification? This issue can be examined in at least two ways:
  - a. what are the differences between the population living on the one hand in the territory of the old states, and on the other hand in the area of the new states (without migrants to the former FRG) at a certain moment after the unification? This is the regional oriented view.

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<sup>1</sup> A completely correct analysis would find it necessary to separate the changes caused by the transformation of the system from those caused by the unification. However, this separation is very difficult in practice.

- b. what are the differences between those persons who lived in one of the territories before unification, regardless of whether they stayed there or whether they changed their residence after unification? This is the personal oriented view which focuses on changes due to integration and also due to individual mobility (processes of promotion and failure).

These basic problems are formulated in a general way so that they can be examined in reference to different definitions of income. These definitions include the following: first, the distribution of all primary incomes (market incomes) or single components of market income such as wage income. Second, the distribution of net income, which is determined by subtracting taxes and social security contributions and by adding the public transfer payments to primary income. Third, instead of nominal income or relations of nominal income, the point of issue can be examined using a comparison of the real income and the level of wealth (or their changes). And fourth, instead of relating to the objective dimensions of nominal or real incomes, the problems can also relate to the subjective dimension of "satisfaction" with the real income or the level of wealth.

The German Socio-Economic Panel (GSOEP) (Wagner et al., 1993) offers the possibility to examine all these problems carefully since the area of the GDR was included into the panel study before the currency reform was completed on July 1st, 1990. Nevertheless, we will limit our analysis to the following elements:

- a comparison of the nominal income distribution<sup>2</sup> in the old states and in

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<sup>2</sup> For this we use the variable "reported net income of the household in the previous month" (income screener) corrected by irregular payments like special benefits. Furthermore, for the old states we corrected by the net rental value for owner-occupied housing. For the former GDR and the new states we omitted this correction, since the level of rents there is so low, that in comparison with tenants we would have had to add negative instead of positive income. The authors know, that the monthly net income of the households is often underestimated. Anyhow, this underestimation should not seriously influence the distribution.

the former GDR before unification. Comparisons including some corrections for purchasing power differences across areas will also be provided.

- an intertemporal comparison of the distribution of nominal income between the former GDR and the new states of United Germany.
- a comparison of the level and distribution of the income satisfaction before unification in the old states and in the former GDR.
- an intertemporal comparison of the level and distribution of the income satisfaction between the former GDR and the new states.
- the impact of unemployment on the level and the distribution of income and satisfaction with income in the new and the old states.

There are three waves of the eastern sample of the GSOEP available for our analyses. The first wave was conducted in June 1990 on the eve of the economic unification of Germany. Waves two and three were surveyed in Spring 1991 and in Spring 1992, respectively. The second wave depicts the situation nine months after the unification. In order to get a richer picture of the transition crisis in East Germany we refer in most of our tables and figures to wave three which was conducted about one and a half years after unification.

In the intertemporal analyses we will include all persons who lived in the area of the former GDR before unification (personal concept). Therefore, both those who moved to and live in the old states and those who still live in the East but work in the West (commuters) will be included.

## 2. **A Comparison of the Personal Distribution of the Available National Income in the Old Federal Republic of Germany and the Former GDR before the Currency Union**

### 2.1. **The General Distribution<sup>3</sup>**

In socialist economies the government has much stronger influence and control over the distribution of wage income as compared to market economies. In general, in a socialist economy, the aim of income equality is primary and productivity related wage differences and then incentive effects are secondary. But often political leaders have many priorities. In the former GDR, social insurance concerning the risk of "unemployment" was guaranteed for by the government-run business sector since nobody was dismissed. Thus, no social transfers to unemployed persons were necessary. Investment incomes do not play a major role in socialist systems. Because of these differences which are mainly due to different economic systems, we can expect less inequality in the net income distribution in the former GDR in comparison to the old states (FRG).

Disregarding all methodological problems in the comparison of the distributions (e.g., differences in absolute incomes), the measures of distribution shown in Table 1 agree with our expectations. The Gini-coefficient as well as the Atkinson-measure suggest that inequality was lower in the former GDR than in the former FRG. This is true if we group the households by their net income as well as if we classify all persons by adjusted personal income (equivalent income).<sup>4</sup>

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<sup>3</sup> Data used in this chapter is from 1989 for West Germany and from 1990 for East Germany.

<sup>4</sup> Equivalent income is a need-weighted personal income which is a better indicator of well-being than pure personal income or the net income by household. For the determination of the equivalent income we take into account that running a larger household decreases common costs as well as age-related differences in need. In a pure measure of income per capita, the household net income is divided by the number of persons. For equivalent income it is divided by the sum of personal weights which result from the chosen equivalence scale. The household's head has the value 1, all others have values less than 1. The following equivalent scale results from proportions of the German Supplemental



But we have some doubt about the distribution of household net income in these two groups. We can see the problem even more clearly by examining the Lorenz Curve of household net income (Figure 1). The curves cross and therefore we cannot decide in which country the distribution of household net income was more unequal.

For methodological reasons we believe that it is not possible to refer to households by nominal income only, because in doing so we disregard the different number of persons that must be provided for from each household's income. For this reason we will focus in our further analyses on persons and their equivalent income.

Table 2 shows the distribution by relative income classes for both countries. Once again this table finds a lower degree of inequality in the former GDR and furthermore the corresponding Lorenz Curves do not cross (see figure 2). We can conclude that the GDR had less poverty as well as less richness than did the former FRG.

## **2.2. The Relative Income Position and the Distribution of Persons by Household Type and Age**

When we make statements about the general distribution of income we usually do not consider the relative position of different subgroups of persons nor the distribution of income within each group. Since we want to compare carefully the impacts of the labor market and the functioning of social security systems, we are especially interested in the differences between similar subgroups in both countries. To begin this analysis we examine persons in similar household types as well as children and old persons.

Previous studies (cf. Buechtemann and Schupp 1992) have found a higher fraction of women working, better opportunities for public child care and a lower degree of income inequality among households in the former GDR. Therefore, we can suppose

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Security Income system. A person aged 21 has a factor of 0.8 and children between 0.45 and 0.9 depending on age. For a basic discussion of the use of this equivalence scale, see Danziger and Taussig (1979). For an international view of a great number of equivalence scales and their influence on the results see Buhmann et al. (1988).

that families with children in the GDR had a relatively better income position compared to the FRG. Hypothetically, East German children grouped by their age and not by the type of household where they grew up, were relatively better off than those in the FRG.

The Social Security System of the GDR included quite low minimum retirement benefits. The variance in benefits was lower than in the FRG because of the very low base for social security contributions which was not adjusted continuously. In addition, there was no automatic indexing adjustment once benefits were received. Thus, the relative position of a pensioner cohort became worse at higher ages. Since minimum benefits were discretionarily increased several times, they approached the maximum benefits over time. Women usually had their own eligibility because they were gainfully employed or got homemaker credits. For instance, social security credits for bringing up children led to better rewards for GDR mothers as compared to those in the FRG. A choice between own and survivors benefits was not possible, so that only few survivor benefits were claimed.

Based on this brief explanation of the institutional rules of Social Security, we hypothesize:

1. The relative position of the elderly in the GDR should have been worse compared to the FRG. The relative income distance of GDR aged from the average should increase with the age of the cohort.
2. Most of the retired persons in the GDR should receive benefits lower than the average income. In the FRG, the overall position should be better. Otherwise we expect for the GDR a lower poverty rate for the elderly if we define a poverty line at 50 % the equivalent income<sup>5</sup>.
3. There should be no gender differences in the income position of retired persons in the GDR.
4. Separating by type of household, the relative disadvantage of the elderly

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<sup>5</sup> In this case the limit would be just underneath the minimum benefit.

should be visible especially in the case of the one-person households.

Tables 3 and 4 show the differences in the relative position of persons in the same household types. Both tables point out relative group differences by equivalent income. Table 3 differentiates by type of household with children, Table 4 by age, sex and number of children. The very right column of both tables contains the relative income position of each subgroup in percent of the respective country average (= 100 %). From these tabulations we can conclude:

1. The relative position of couples with children was much better in the GDR than in the FRG. The subgroup of couples with only one child had equivalence adjusted incomes even above the national average (Table 4). With an increasing number of children the relative position of couples worsened in both countries. In both of the countries the equivalence adjustment for families was not sufficient to compensate for the higher number of children.
2. Lone-parent-families did better in the GDR than in the FRG, especially when they had one child only.
3. One major distributional difference was that in the GDR the fraction of families with children in the lowest income group (below 50 % of the national average) was smaller than in FRG. Therefore, measuring relative poverty at the 50 percent limit, we can assume that poverty among children was much better avoided in the GDR than in the FRG.

Based on these three results we conclude that the relative position of families with children was better in the GDR as compared to the FRG. How much of this difference is based on a higher rate of working women as compared to a greater equalization of family incomes remains to be determined by further analyses.

By examining one-person-households over age 60 in Table 4 we get to know more about the relative position of older persons in both countries.

1. The relative position of persons aged 60 years and over was much worse in the GDR than in the FRG. A much higher share of the elderly had to get along with less than 75 percent of the average income. This agrees with our former hypothesis.
2. Older women in the GDR as well as in the FRG, were in a much worse position than were older men. The relative difference to men was 37 percent in the FRG and 15 percent in the GDR. Hence, despite higher numbers of working women in the GDR it was not possible to reach a complete equality in the income position of older women as compared to older men. This result contradicts our hypothesis.

Some subtle differentiations in economic well-being between children and old people can be found in Table 5.

1. Children, especially those aged 7 or less, had a much better relative position in the GDR as compared to the FRG. Also the share of children in poverty was much lower in the GDR. This evidence supports our hypothesis.
2. Differentiating the elderly according to gender and age groups (up to 70 years of age; 70 years and over) it becomes obvious, that persons in the FRG were better off in all subgroups than in the GDR. The position for men was much better than for women, worsening in all groups with increasing age.
3. For persons above 70 years of age we very clearly see the impact of the different social security systems. The relative position of this group in the GDR was worse than in the FRG by 24 percent for women and 32 percent for men. In contrast, the relative position of the younger elderly (age 61-69), was only worse by 12 to 15 percent. This agrees with our former supposition.

4. The relative position of older women relative to older men was equally as bad for both age groups in both countries. In contrast to our initial hypothesis, the GDR was not able to equalize the differences in income for men and women after retirement.
5. Because of sample size and multiple disaggregations, we cannot give any significant statements on those living in poverty.

### **3. Problems Comparing the Relative Positions of Persons Living in Countries with Different Economic Systems**

Comparing equivalent income distributions across countries with many differences in the political, economic and social security system and in the economic development is fraught with difficulties. One large problem is the question of how suitable is equivalent monetary income for comparing well-being. Another problem is the extent to which differences across nations are caused by the different systems as compared to how they are influenced by initial conditions and by the individual's behavior under the given conditions. As we continue with our analyses, we ask the reader to keep these restrictions and modifications in mind.

#### **3.1. Problems and Restrictions**

Some of the major differences between the systems to consider when comparing equivalent income are:

1. differences in the price and market system, in the availability of goods and the time necessary to purchase them;
2. differences in the availability and security of jobs as well as social security provided by employers;
3. differences in type and quantity of goods and services which are provided

by the government for free or below cost, as well as differences in eligibility to receive these goods;

4. differences in type and quantity of social security that one becomes eligible for through contributions.

First, we can generally establish that these differences are even more troublesome for comparisons of relative positions and distributions if the population is affected by them in different ways. A major problem in this sense is the existence of privileged groups in the GDR. Many of these persons had access to foreign currencies or they were well connected and therefore were able to buy goods that were generally not available to the public. These privileged persons were members of the "nomenklatura." (cf. Atkinson and Micklewright 1992, pp.36). They generally had an income above average (cf. Frick and Wagner 1993a). The group included middle-age persons as well as some retired persons. For instance, the retired nomenklatura (who normally had a nominal income below the overall average), had access to otherwise unavailable goods because they had the privilege to travel (especially to the west). Hence, they could reach a higher standard of living than shown by the equivalent income indicator. This difference cannot be further specified based on the available data. We suppose that together they had an effect of promoting inequality, because they are most likely to be in the higher income ranges to begin with. This would mean, that many of the differences between the distribution of the former FRG and the GDR at the upper end of the distribution were smaller than they appeared to be when examining uncorrected values of the equivalent income.

Second, the GDR had a completely different structure of prices, created largely by subsidies on basic need goods (e.g., rents, energy, food, transport, children's clothes) and high taxes on consumer durables, cars and luxury goods (Collier 1986). This system caused highly different proportions of the household budget being spent for important categories of goods and therefore affected differences in the stratum-specific level of purchasing power. In other words, subsidizing goods of basic need favored the lower income groups relatively more and led to a lesser diversification of the purchasing power

in comparison with the equivalent income. This impact should have increased the true difference in distribution of purchasing power between the FRG and the GDR.

Finally, there is a problem in using the same equivalence scale for both countries. We cannot safely assume that the savings for a couple that manages a household together and the differences in age-dependent needs were the same in both countries. If housing and other goods consumed particularly by children are subsidized to a greater degree in one country (here in the GDR) than in the other, a single set of equivalences will not capture this. Adjusting for this would probably further improve the relative position of families with children in the GDR.

### **3.2. An Attempt to Consider the Impact of Differences in the Purchasing Power (Dependent on Stratum and Size of Household) on the Distribution of the Equivalent Income**

In the following section, we will make an attempt to adjust for two of the previous problems which influence comparisons of relative positions between the two countries.

The problem of stratum-specific purchasing power can only be roughly included into the analyses, since the most actual comparisons of the purchasing power between the FRG and GDR are already some years old. Furthermore, only two indices were computed by this earlier study (Melzer and Vortmann, 1986).

In 1985 the relative purchasing power of the GDR-Mark based on the consumption structure in the GDR was computed at 1.45 for a two-person retired household and at 1.24 for a four-persons worker household, relative to the "Deutschmark" of the FRG. From this relationship, the ratio of the purchasing power of the two-person household to the four-persons-household of a current worker is 1.17. We incorporated this difference in purchasing power by multiplying the household net income of the "lower stratum" by this factor<sup>6</sup>.

To take account of differential savings from lower rents or higher subsidies on

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<sup>6</sup> The lower stratum was defined by an equivalent income of less than 75 percent of the average equivalent income of all persons. In this case we use a modified equivalent income measure.

goods for children (e.g., children's clothes, kindergarten), we employed a modified equivalence scale which gives lower weights to additional adult members of the household and children.<sup>7</sup> Using this scale we transform the household income, corrected by our purchasing power measure, into a "modified equivalent income" on which the following comparisons are based.

Tables 6, 7 and 8 present the results for the former GDR, using the modified equivalence scale and taking into account the stratum-specific differences in purchasing power. The measures of inequality using the modified data show a slight decrease in inequality compared to the earlier results (compare Tables 6 and 1), while the lower two equivalent income classes contain fewer persons (compare Tables 7 and 2). While the relative position of children seems to be improved using the modified income method, the position of the old slightly deteriorates. The fraction of children in the lowest income groups decreases clearly, while the fraction of the old slightly increases (compare Tables 8 and 5). This shift in well-being across the age distribution is caused by two competing changes. First, the average equivalent income, which is the point of reference for all calculations, increases because of the lower equivalence weights of additional household members in large families. Second, there is an increase in the well-being of large households relative to smaller households. Simultaneously, the structure of households in each class changes.

When making these rough calculations including differences in the price structure, the income distribution of the GDR becomes less unequal than it seemed to be when we used the original equivalent income. This also indicates an even larger difference in the purchasing power distribution between the GDR and the FRG.

Some more sensitivity checks show (cf. Frick and Wagner 1993b) that the impact of different income concepts (which can be calculated by means of the GSOEP-data)<sup>8</sup> on the overall income distribution is comparatively small because both ends of the

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<sup>7</sup> In this modified equivalence scale the head of the household has a weight of 1, the spouse and further persons over age 15 each 0.66 and children under age 15 each 0.33.

<sup>8</sup> It is also possible to impute the value of gifts (received from West Germany) and the value of the special possibilities of purchasing by the nomenklatura (following Collier 1986).



income distribution are affected positively: low income households by subsidies and high income households by privileges.

#### **4. An Intertemporal Comparison of the Personal Income Distribution and the Relative Income Position of Selected Groups between the Former GDR and the New States**

##### **4.1. Methodological Preface**

Because of the unification, a system transformation took place in the former GDR. Therefore, intertemporal comparisons of the distribution of the former GDR and of the new Eastern states must consider problems similar to those we found in our comparison of the GDR and the FRG prior to the union.

First, it is necessary to determine suitable purchasing power relations between the GDR-mark and the western Deutschmark before the currency union. In making this intertemporal comparison, we also have to consider the changes in the structure of prices and the larger availability of all goods after the union. Second, we have to take into account the different amount of time that is necessary to purchase the goods in the old and in the new system. Third, we have to consider the changes in household production, purchase in markets, and goods that were given free by enterprises. Fourth, changes in infrastructure, which are provided by the government, including environment quality, have to be taken into account. Fifth, we have to consider changes in eligibility for social benefits, and sixth, we need to consider different unemployment risks under the old versus the new system, but also the greater freedom of labor movement under the new system.

These six problem features can hardly be analyzed monetarily. Therefore, they lead to a large degree of skepticism when we compare real income and the level of well-being before and after the GDR system transformation.

In order to minimize these difficulties as far as possible, comparisons which follow are only based on relative positions, relative to the average in the former GDR or in the new states, respectively. We do not compare levels of nominal or real income. We can overcome most of the "hidden" problems of the income distribution when we

choose a limited interpretation of our results. The income distribution on the eve of the unification was the same than the distribution right at the beginning of the transition process after the unification. At this moment all subsidies and privileges disappeared and the nominal income figures are an indicator of the relative purchasing power in the same extent than in all Western economies.

#### **4.2. Changes of the Distribution in the New States after the Unification and the System Transformation**

Before examining the empirical results, we want to form hypotheses based on our expectations on probable changes in the income distribution brought about by the unification and the accompanying system transformation.

The following hypotheses relate to a point of time approximately twenty months after the unification. They characterize changes in the net income distribution of the population which was originally present in the former GDR. Migrants into the new states would require further considerations. The new eastern states (former GDR) will be in flux for the foreseeable future, and hence, its income distribution should change by more than in the old Western states (FRG). Hence, these hypotheses refer only to the twenty month period of change.

1. Changes in the structures of prices have reduced the price-equalizing factor created by income-specific differences in purchasing power. This adjustment process will have its full impact when rents, utilities and energy prices increased to open market levels.
2. The primary income distribution will be much more unequal. This process has already begun, but is not yet finished. Six factors contribute to this development:
  - a. high unemployment of GDR residents;
  - b. disproportional unemployment of women will lead to a decrease in the relative position of two-earner-households and of employed single

parents. Furthermore, a general decrease in the labor force participation rate of women with children is expected;

- c. a high number of new self-employed, where a high variance in primary income is to be expected;
  - d. greater diversification of the wage structure in the new states reflecting productivity differences;
  - e. persons with high skills are moving to the old states or working there while living in the new states (commuters);
  - f. larger investment incomes for those able to sell or rent plots of land, buildings or other valuable properties.
3. The net income distribution will also become more unequal due to the greater inequality of market incomes. On the other hand, four factors will counteract the trend to higher inequality:
- a. the introduction of a relatively generous income security program for the unemployed (Bundesminister fuer Arbeit und Sozialordnung, 1991);
  - b. government benefits for children on the western scale, which are more generous in comparison with the average income in the eastern states;
  - c. the introduction of the supplemental social income program which is more generous relative to the average income in the eastern states;
  - d. increases in pensions and social supplements which should greatly improve the relative position of the elderly.

These hypotheses are tested by using household income data which was obtained in the second and third wave of the GSOEP for East Germany. As a point of reference we again begin with the unadjusted personal equivalent income distribution.

Comparing the distribution measures in Table 9, we see that inequality of total equivalent income distribution has increased slightly, but it has not yet reached the Western level. This change is consistent with our hypothesized direction, but the small increase is surprising given the high unemployment in the eastern states. It appears that the social policies, such as unemployment assistance and short-time-compensation have been quite successful, at least for the observed period. In addition, income improvements among the retired greatly reduced inequality.

The small increase in income inequality is also surprising since we have included people working in or moving to the west in this analysis. The higher net income of this group should have increased the variation in equivalent income.<sup>9</sup>

On the other hand the increase in inequality in East Germany looks small, but it is significant in statistical terms (for the calculation see Appendix A). Beyond the statistical significance such a small increase seems to be important when we compare it to the well-known stability of cross sectional inequality measures in Western economies.

Table 10 documents a slight increase in poverty (less than 50 percent of the average equivalent income) as well as in the highest income group (greater than twice the average). But this table does not tell us which groups rose and which declined.

Table 11 sheds some light on this issue. According to group averages (final column), the greatest relative gains were for one-person-households, while couples with or without children, one-parent households, and persons in other households without children, more or less held their own. Members of other households with at least one child had relative income positions which declined by a small amount. The movements in the range of poverty are mostly too few in numbers as to guarantee statistically significant results. Nevertheless, the decreasing fraction of couples without children in the lowest income classes is statistically significant. Again, unemployment seems to have only a small impact, especially small among families with children. This finding was

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<sup>9</sup> For a detailed analysis of west commuters, see Scheremet and Schupp (1992).

expected. Obviously, the social policy of income compensation has done its job.

In Table 12 we observe differences by age and gender for one-person-households: While single men under age 60 remain in the same position, single women under age 60 experience a loss. People over 60 have experienced a clear and distinctive income increase, which is greater for women than for men. Since the West German retirement system, which meanwhile is imposed in the East, rewards gainfull employment as well as child caring many widows receive payments because of their own employment biography plus widows compensation. Due to the high labor force participation of women in the GDR especially "younger widows" accumulate high own payments and compensation payments. Most clearly, the fraction of elderly with low incomes decreased.

Families with children were able to maintain their position with one exception: one-parent-households with two or more children fell behind in average terms.

Table 13 presents results for children and the elderly which are more clearly disaggregated by age. Among children no important change in relative position is visible. In contrast, each group of elderly persons advanced. Among the younger elderly (aged 60-70), women improved by relatively more than men, and so the gender gap decreased. The greatest improvement was among the very old. As a result, the income distance between the younger and the oldest decreased by a large amount.

We can conclude that the empirical results for the old agree with our expectations concerning the effects of changes in social security. The full impact of the change in the pension system should on one hand, lead to a higher variation in pension income, on the other hand to additional relative improvements for women as they become eligible for higher survivor benefits. To quantify the impact of unemployment on the income position Table 13a presents an East-West comparison of income distributions according to actual employment status and the extent to which a person is affected by unemployment (AU-Index). This index covers the period June 1990 till March 1992 and is defined by the aggregated number of months with unemployment relative to the number of months in the labor force for all household members.

Persons in households without gainfully employed household members, mostly pensioners, have income positions close to the average in the eastern as well as in the

western states. Persons, who were never struck by unemployment are above average, with slight advantages in the East. With an increasing AU-Index also the relative income position worsens; this is especially true for those actually unemployed in Spring 1992. In the latter case, the percentage share of those in poverty is much higher in the Western states, indicating a relatively higher income loss through unemployment compensation than in the eastern states.

## **5. A Comparison of Income Satisfaction in the New and the Old States and Its Changes During the Unification**

An additional measure of personal well-being may be obtained from the level of satisfaction that one experiences about his/her living conditions. Satisfaction, then, can be interpreted as an individual comparison of the aspiration level and the actual conditions under which one lives. Therefore, changes in satisfaction can be based on changes in the objective conditions of life as well as changes in demand levels experienced by individuals, or a combination of both. Empirical research has shown that one's perception of personal well-being and the conditions under which one lives are closely related. But it is possible that this relation holds true only under conditions of economic and social stability. If so, this relationship may rupture in the face of great economic and social change.

### **5.1. Methodological Preface**

Unification suddenly opened western markets to East Germans. This led, in a short period of time, to sharply increased aspiration levels among the GDR population. Therefore, discrepancies in demand levels and the objective condition of life in the east could have come about in spite of higher income levels.<sup>10</sup> Clearly the timing of responses is important in interpreting these findings.

Based on the data of the first two waves of the GSOEP-east, however, Krause

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<sup>10</sup> For an East-West comparison, the increase of the demand level could be equally interpreted as a loss of utility, which will not be eliminated until the West German standard of living is reached. But this will not be further discussed here.

(1992) finds that changes in nominal income among East Germans are positively correlated with changes in income satisfaction. Therefore, autonomous changes in the desired level of consumption should only have had a limited influence on the interpersonal results of our analysis.

If this is true, we can interpret changes in income satisfaction also in a broader sense, not only as changes in monetary net income, but also as the changes caused by eligibility rules, privileges (non-monetary costs of the purchase of goods) as well as subsidies to certain groups.

If subjective satisfaction with household income is a good indicator for the real income position (including hidden privileges, non-cash income and subsidies for prices) than the correlation between nominal income and satisfaction with income should have increased after unification because the hidden income disappeared. Table 13b supports this hypothesis. In the GDR the correlation between subjective and objective income indicators was much weaker than in the FRG. After the unification this correlation increased sharply above the West German level.

This result allows us to consider changes in income satisfaction as indicators of changes in real income, without the need to construct stratum-related price indices for the consumption goods for the periods before and after unification. At the very least, both methods of measurement could complement each other.

The SOEP contains measures of satisfaction with different areas of life. We use the question about satisfaction with income. The specific question is:

How satisfied are you today with the income of your household?

If you are completely satisfied, mark a value of "10"

If you are completely unsatisfied, mark a value of "0"

If you are somewhat satisfied, and somewhat not satisfied, give a value between these extremes.

This 11-level scale presents an odd number of values with the value five representing an "average" level of satisfaction. We interpret the values on the scale as metric units of cardinal utility; the gap between each set of values can then be regarded as measuring the same difference in utility. While this method can be criticized from a methodological

point of view, it has a great tradition in the field of social indicator research. With the help of these scales, averages can be calculated and differences can be treated as a measure of differences between groups. We will compare these values to create a measure that proxies an income distribution.

All adult members of households in the SOEP are asked for their satisfaction with household income. This allows us to determine an intra-familial dispersion of satisfaction as well. But this violates the assumption of an equal distribution of resources within households which is made in traditional calculations of income distribution. It is therefore assumed that the income of a household or consumer goods bought with it are distributed such that all household members reach an equal level of well-being. We continue simplifying by assigning each person in the household the satisfaction value of the household's head to avoid an additional bias from this dispersion.

## 5.2. Results

Table 14 shows a number of characteristics concerning level and distribution of income satisfaction. It relates most directly to table 1, but also includes the average level of satisfaction in east and west. In the FRG in 1989 the average income satisfaction of the entire population was much higher than it was in the GDR in May of 1990. But an average satisfaction level of 6.5 in the FRG is quite low compared to average satisfaction in other spheres of life (Landua 1993). Differences between household and person weights hardly exists.

The lower average income satisfaction level in the GDR is quite understandable since their level of real income was also much lower than in the FRG. Income satisfaction is also lower compared with satisfaction in other spheres of life in the GDR. This first result provides evidence that income satisfaction can be used as a proxy for real income.

While the inequality of measured nominal income in the GDR in comparison with the FRG was much lower, the distribution of income satisfaction was much more unequal in the GDR. This suggests that access to goods and services which were not available to the public, as well as differential subsidies, etc. may not have been as closely



linked to measured income as in the west. A similar result appears in Table 15. Here we find a lower level of average satisfaction and a higher proportion of very unsatisfied persons in the GDR. Figure 3 illustrates these differences in distribution using the Lorenz Curve.

The average relative income satisfaction of subgroups of the population can be found in Table 16 (last column). Here we see that older people (over age 60) in one-person-households in the GDR were less satisfied than their counterparts in the FRG. This matches the findings for the relative position of their equivalent income (see Table 4). But the discrepancy in subjective satisfaction is lower than it was the case for income. Here the importance of subsidies for rents and for basic goods, the social benefits of GDR companies for their former workers, and the opportunity to travel (which simplified the purchase of western goods) finds its expression. But it is also true that older people typically have lower levels of needs and higher levels of satisfaction than younger people, especially when holding income constant.

Couples with children have average satisfaction levels close to the average for the country. We found that differences in relative income satisfaction were lower for this group. Yet in the FRG this group had a worse position in terms of equivalent income (see Table 3). Obviously, couples with children in the FRG were on average more content with their equivalent income position while in the GDR, objective and subjective indicators were similar.

One-parent-households with children are clearly worse off in the FRG using both, objective and subjective measures (Tables 16 and 3). But on average their relative level of satisfaction was higher than their relative equivalent income position. In the GDR the level of satisfaction for this group almost reached the average of the country as a whole.

Table 17 presents a comparison of the satisfaction with income in May 1990 and Spring 1991 for those people which lived in the territory of the GDR before unification. It appears, that the average income satisfaction of the total population has greatly decreased in the first year after unification; in 1992 Table 17 shows a slight increase. This development is in remarkable contrast to the increase in monetary incomes in both, nominal and real terms.

This can be explained by two factors: a rapid increase in desired life style in line with West Germany, or a decrease of the real consumption opportunities. But more likely it is that desired incomes grew faster than real purchasing power.

Table 17 also shows that inequality of satisfaction with income, which was already higher in the new eastern states than in the FRG in 1990, increased in the first year of unification. We observe a clear outward movement of the Lorenz Curve (see Figure 4) from 1990 to 1991. Obviously the level of need and real income must have changed differently across income groups and the gap widens most among lower income groups. But again this development is reversed in the period 1991 to 1992. The inequality measures show a clear trend towards the west german average. Thus, for 1992 the Lorenz Curve shows a significant shift to the left.

In Table 18 we see that the proportion of persons completely content with their income (values of 8 to 10 on the scale) has greatly decreased. This decrease, from 23.4 percent to 11.9 percent in 1992, is extremely high when compared with the changes between the first and the second GSOEP-wave in the FRG (from 1984 to 1985). There the proportion decreased from 38 percent to 36.9 percent. The large increase in the group of those very unsatisfied in 1991 contributed to the increase in inequality. In the second year of unification this development has been partly offset. Extremely low satisfaction values of 0 to 2 were given by 17.1 percent of the households in 1991 and by only 13.3 percent one year later. Comparing the results of table 19 with those of tables 11 and 12, it shows that relative income satisfaction for almost all subpopulations moved in a parallel fashion to changes in the relative equivalent income position: The relative increase in satisfaction among those in one-person households as well as the decrease of other households with children are consistent with their relative income changes.

One exception to this is the group of single males over age 60: While their relative income position improved from 82 % in 1990 to almost the country average in 1992, their relative satisfaction position dropped from 95 % to 85 %. This might be explained by the 1991/92 changes in the pension payments system, which favored women more than men. Thus, it is not surprising that single women above age 60, experienced not only a large increase in their relative income position of 27 % points (from 67 % in 1990 to 94 % in 1992) but also a comparable increase in their satisfaction position 85 %

to 112 %. Hence, despite a few exceptions, income and satisfaction moved in similar directions. As is the case for income, it is interesting to see whether unemployment has an impact on satisfaction with income, too.

Table 20 shows - in comparison to table 13a - the distribution of satisfaction with income according to actual employment status and the unemployment experience (AU-Index). Again, the last column presents the average relative satisfaction position for different subgroups. With an increasing value of the AU-Index the relative satisfaction position clearly worsens, especially if actually struck by unemployment. Comparing the results for East and West Germany, it appears, that those actually unemployed (with an AU-Index above 15%), have a higher relative satisfaction position in the eastern states than in the West, despite the fact that a higher proportion is very dissatisfied. This is the result of the lower country average in the East.

## 6. Conclusions

The main results of our examination can be stated as follows:

- The distribution of the equivalent adjusted income was less unequal in the GDR than in the FRG before unification. After the unification, inequality increased in the new eastern states, without yet reaching the level of the former FRG.
- The average level of satisfaction with income in the former GDR was lower than in the old FRG. It continued to decrease in the eastern states in the first year of the unification, in the second year it started to increase slightly.
- The satisfaction with income was less equally distributed in the former GDR than in the old FRG. Moreover, inequality in income satisfaction increased substantially in the East after unification. Again, in the second year of unification there was a substantial reversal towards a more equal distribution of satisfaction.

- Taking the equivalent income as the indicator of well-being, couple households with children under age 18 were below average of income in the old FRG, while they were on an average level in the former GDR. After two years of unification, the position of this group did not change substantially. Taking average income satisfaction as the indicator of well-being, these groups have relatively the same position in both countries.
- According to both indicators, one-parent-households in the FRG (old states) have a clearly worse position than in the former GDR. Both indicators showed a decrease in the relative position of this group after unification in the eastern states.
- The relative well-being of people over age 60 as measured by their equivalent income was fundamentally worse in the GDR as was the case in the FRG. In both states, older women had a much worse position than did older men. Using the income satisfaction indicator, the gap was not as large as it was for income. After unification, the old, and especially those over age 70, substantially improved their position. This improvement in relative position can be seen using either an equivalent income or a satisfaction measure.
- Unemployment has an impact on both, the relative income position and the relative satisfaction position. When measured by the effect on satisfaction with income, unemployment benefits seem to do a better job of income loss compensation in the East than in the West.
- Generally, changes in relative equivalent income position were paralleled by changes in relative income satisfaction. But the average level of satisfaction with income decreased in the east after unification. Overall, it shows that relative changes in income satisfaction are a useful supplementary social indicator. Given the large upheaval in social and

economic systems in the former GDR, income satisfaction measures may provide a better measure of change in real economic well-being than do income changes per se.

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TABLE 1

INEQUALITY OF HOUSEHOLDS MONTHLY NET INCOME AND EQUIVALENT INCOME IN THE FRG AND THE GDR BEFORE UNIFICATION<sup>a,b</sup>

Inequality Measure	FRG		GDR	
	(1) Household Net Income	(2) Equivalent Income	(3) Household Net Income	(4) Equivalent Income
Gini Coefficient	0.314	0.274	0.292	0.185
Atkinson Value <sup>c</sup>				
$\epsilon = 1$	0.159	0.119	0.147	0.055
$\epsilon = 2$	0.310	0.226	0.300	0.109
Quintile Shares				
1. Lowest	7.36	9.29	6.56	11.82
2. Lower Middle	12.59	13.73	13.15	15.80
3. Middle	17.65	17.60	19.62	19.22
4. Upper Middle	23.79	22.65	25.55	22.92
5. Highest	38.61	36.73	35.13	30.24

<sup>a</sup> Monthly net household income is from March or April 1989 in the FRG and for May 1990 in the GDR. In the FRG monthly income was adjusted by one twelfth of the single payment (minus lump sums of charges) and net rental value of an apartment or house used by its owner.

<sup>b</sup> Equivalent income was determined by using a scale taken from the major FRG social welfare program.

<sup>c</sup> In case of individual data the formula for the Atkinson value is:

$$A = \begin{cases} 1 - \left[ \sum_{i=1}^n (y_i / \bar{y})^{1-\epsilon} f_i \right]^{1/1-\epsilon} & \text{for } \epsilon \neq 1 \\ 1 - \exp \left[ \sum_{i=1}^n f_i \log_e (y_i / \bar{y}) \right] & \text{for } \epsilon = 1 \end{cases}$$

$Y_i$  = income of the examined unit (household net income or personal equivalent income)

$\bar{Y}$  = average income of all units

$n$  = number of units

$f_i$  =  $1/n$

$\epsilon$  = this parameter has to be fixed normatively, it expresses the importance of the inequality

Source: Own calculations from SOEP-west, wave 6, 1989; SOEP-east, wave 1, 1990.

**TABLE 2**

**DISTRIBUTION OF PEOPLE ACROSS RELATIVE EQUIVALENT INCOME CLASSES  
IN THE FRG AND THE GDR BEFORE UNIFICATION<sup>a</sup>**  
(in percent)

<b>Equivalent Income as a Percent of the Population Average</b>	<b>0-50</b>	<b>50-75</b>	<b>75-100</b>	<b>100-125</b>	<b>125-150</b>	<b>150-200</b>	<b>Over 200</b>	<b>All</b>
Distribution of People:								
FRG	10.8	26.5	23.2	16.7	10.2	7.9	4.6	100
GDR	3.4	21.6	29.2	25.2	12.7	6.8	1.1	100

<sup>a</sup> The equivalent income was determined by using a scale taken from the major FRG social welfare program.

Source: Own calculations from SOEP-west, wave 6, 1989; SOEP-east, wave 1, 1990.



TABLE 3

**DISTRIBUTION OF PEOPLE IN DIFFERENT HOUSEHOLDS ACROSS RELATIVE EQUIVALENT INCOME BRACKETS  
IN THE FRG AND THE GDR BEFORE UNIFICATION<sup>a</sup>**  
(in percent)

Equivalent Income as a Percent of the Population Average	0-50	50-75	75-100	100-125	125-150	150-200	200 and over	All	Relation of the Group Average to the Population Average
Distribution of: People in one person household									
FRG	6.6	17.8	18.1	20.4	13.4	12.2	11.5	100	125.3
GDR	(6.1)	49.8	12.2	10.1	13.0	(6.9)	--	100	89.5
Couple households without children									
FRG	2.6	18.1	21.6	20.0	15.0	15.4	7.1	100	121.7
GDR	--	20.0	22.6	21.9	16.1	16.0	2.9	100	112.9
Couple households with children (all under age 18)									
FRG	10.9	38.3	25.8	13.0	7.0	3.6	1.3	100	84.5
GDR	(2.3)	20.5	38.0	28.0	8.1	(2.7)	--	100	94.7
One parent households with children (all under age 18)									
FRG	45.0	29.8	11.8	(7.4)	(3.5)	--	--	100	63.5
GDR	--	38.4	(27.5)	(17.3)	--	/	/	100	79.3
Other households with at least one child (under age 18)									
FRG	28.3	35.1	22.4	8.2	2.9	2.3	(0.8)	100	71.2
GDR	(7.0)	18.8	37.6	23.6	(11.4)	--	/	100	92.4
Other households without children under age 18									
FRG	5.3	20.7	27.4	22.1	13.0	7.9	3.6	100	102.9
GDR	--	9.1	22.3	33.7	20.4	10.7	(4.2)	100	112.5

<sup>a</sup> The equivalent income was determined by using a scale taken from the major FRG social welfare program.

Remark: / = no evidence; ( ) = sample size under 30; -- = sampling size under 10

Source: Own calculations from SOEP-west, wave 6, 1989; SOEP-east, wave 1, 1990.

TABLE 4

**DISTRIBUTION OF PEOPLE IN DIFFERENT HOUSEHOLDS ACROSS RELATIVE EQUIVALENT  
INCOME BRACKETS IN THE FRG AND THE GDR BEFORE UNIFICATION<sup>a</sup>**  
(in percent)

Equivalent Income as a Percent of the Population Average	0-75	75-125	125 and over	Relation of the Group Average to the Population Average
People in:				
One person households				
- female under age 60				
FRG	21.9	36.2	41.8	131.1
GDR	(15.6)	54.8	(29.5)	104.8
- male under age 60				
FRG	16.8	27.7	55.5	151.2
GDR	--	(22.6)	66.1	134.1
- female over age 60				
FRG	33.2	49.2	17.6	98.5
GDR	83.7	(14.2)	--	67.2
- male over age 60				
FRG	(18.4)	(34.6)	47.0	135.1
GDR	(7.2)	--	--	82.4
Couples with children all under age of 18				
- one child				
FRG	32.0	47.5	20.6	99.0
GDR	11.5	65.6	22.9	107.4
- two children				
FRG	51.7	38.9	9.4	81.2
GDR	23.2	72.1	(4.7)	89.7
- three or more children				
FRG	70.8	25.3	(3.9)	68.9
GDR	60.8	(37.0)	--	74.1
One parent households all children under age 18				
- one child				
FRG	76.6	(17.1)	--	66.2
GDR	(42.6)	(50.4)	--	84.3
- two or more children 18				
FRG	72.4	(22.1)	--	59.7
GDR	(67.7)	--	--	68.3

<sup>a</sup> The equivalent income was determined by using a scale taken from the major FRG social welfare program.

Remark: / = no evidence; ( ) = sampling size under 30; -- = sampling size under 10.

Source: Own calculations from SOEP-west, wave 6, 1989; SOEP-east, wave 1, 1990.

TABLE 5

**DISTRIBUTION OF CHILDREN UNDER AGE 18 AND PEOPLE OVER AGE 60 ACROSS RELATIVE  
EQUIVALENT INCOME BRACKETS IN THE FRG AND THE GDR BEFORE UNIFICATION<sup>a</sup>**  
(in percent)

Equivalent Income as a Percent of the Population Average	0-50	50-75	75-100	100-125	125-150	150-200	200 and over	All	Relation of the Group Average to the Population Average
All children under 18									
FRG	20.3	37.9	22.4	10.3	5.1	(2.8)	--	100	77.0
GDR	4.8	23.8	37.8	24.4	7.2	(1.8)	--	100	90.5
Children under 7									
FRG	16.9	36.2	25.2	11.3	5.0	4.1	--	100	78.8
GDR	(4.2)	22.5	35.8	28.1	7.9	--	--	100	92.2
Children age 7 to 11									
FRG	19.7	39.6	24.7	8.8	(4.5)	(2.4)	--	100	73.5
GDR	(4.1)	24.6	39.2	23.6	(6.1)	(2.7)	/	100	90.5
Children age 11 to 18									
FRG	24.1	38.6	18.4	10.3	5.5	--	--	100	73.9
GDR	(5.0)	24.7	39.1	20.8	7.1	(2.3)	/	100	88.7
All aged over 60									
FRG	5.7	27.1	26.3	18.2	9.3	9.0	4.5	100	102.9
GDR	4.8	48.9	26.0	12.8	4.0	(2.6)	--	100	81.8
Aged over age 60 to 70									
- male									
FRG	(3.0)	25.3	25.4	17.5	11.5	11.9	(5.4)	100	113.6
GDR	--	(19.1)	40.4	18.4	(9.6)	(9.3)	/	100	101.1
- female									
FRG	(6.4)	22.5	31.6	15.6	9.3	10.2	(4.4)	100	102.2
GDR	(4.3)	38.5	31.0	16.7	(5.9)	--	--	100	87.5
Aged 70 and over									
- male									
FRG	(4.8)	27.9	18.6	19.8	(10.7)	(11.6)	(6.6)	100	108.9
GDR	--	60.0	(24.3)	(12.6)	--	--	/	100	77.2
- female									
FRG	(7.2)	31.2	26.9	19.8	7.2	(4.8)	(2.9)	100	93.9
GDR	(8.2)	67.3	(15.6)	(7.0)	--	--	--	100	69.7

<sup>a</sup> The equivalent income was determined by using a scale taken from the major FRG social welfare program.

Remark: / = no evidence; ( ) = sampling size under 30; -- = sampling size under 10.

Source: Own calculations from SOEP-west, wave 6, 1989; SOEP-east, wave 1, 1990.

**TABLE 6**  
**INEQUALITY MEASURES USING MODIFIED EQUIVALENT INCOME**  
**IN THE GDR BEFORE UNIFICATION**

Measures of Distribution	Modified Equivalent Income
Gini coefficient	0.161
Atkinson value	
$\epsilon = 1$	0.047
$\epsilon = 2$	0.083
Quintal shares	
1. Lowest	12.96
2. Lower Middle	16.39
3. Middle	19.28
4. Upper Middle	22.54
5. Highest	28.83
<p>Note: Modified equivalent income is calculated by using an equivalence scale where the head of the household has the weight of 1, further persons 0.66 and children under 16 years the weight 0.33; corrected for purchasing power differences.</p> <p>Source: Own calculations from SOEP-west, wave 6, 1989; SOEP-east, wave 1, 1990.</p>	

**TABLE 7**  
**DISTRIBUTION OF PEOPLE ACROSS RELATIVE INCOME CLASS USING MODIFIED<sup>a</sup>**  
**EQUIVALENT INCOME IN THE GDR BEFORE UNIFICATION**  
**(in percent)**

Modified Equivalent Income as a Percent of the Population Average	0-50	50-75	75-100	100-125	125-150	150-200	200 and over	All
People	2.1	14.5	38.3	26.9	12.5	5.2	(0.5)	100

<sup>a</sup> Modified equivalent income is calculated by using an equivalence scale where the head of the household has the weight of 1, further persons 0.66 and children under 16 years the weight 0.33; corrected for purchasing power differences.

Source: Own calculations from SOEP-west, wave 6, 1989; SOEP-east, wave 1, 1990.

**TABLE 8**

**DISTRIBUTION OF CHILDREN UNDER AGE 18 AND PEOPLE OVER AGE 60 BY RELATIVE INCOME USING THE MODIFIED<sup>a</sup> EQUIVALENT INCOME IN THE FRG AND THE GDR BEFORE UNIFICATION  
(in percent)**

<b>Modified Equivalent Income as a Percent of the Population Average</b>	<b>0-50</b>	<b>50-75</b>	<b>75-100</b>	<b>100-125</b>	<b>125-150</b>	<b>150-200</b>	<b>200 and over</b>	<b>All</b>	<b>Relation of the Group Average to the Population Average</b>
All children under age 18	(1.5)	11.9	46.0	26.8	10.5	3.1	--	100	97.6
- children under age 7	(1.6)	13.9	48.6	24.7	9.2	(2.0)	--	100	95.0
- children from age 7 to age 11	--	9.6	43.7	29.7	11.7	(4.0)	--	100	100.0
- children from age 11 to age 18	(2.0)	10.8	42.6	27.2	12.3	(4.9)	--	100	99.9
All persons aged over age 60	5.8	41.2	38.9	8.4	(3.7)	(1.4)	--	100	79.0
aged over age 60 to under 70									
- male	--	(9.2)	56.0	(18.4)	(9.3)	--	--	100	95.5
- female	--	34.7	46.4	(8.7)	(5.1)	--	--	100	83.6
aged over 70									
- male	--	47.6	44.2	--	--	/	/	100	75.4
- female	(12.2)	59.3	23.1	(4.1)	--	/	/	100	67.9

<sup>a</sup> Modified equivalent income is calculated by using an equivalence scale where the head of the household has the weight of 1, further persons 0.66 and children under 16 years the weight 0.33; corrected for purchasing power differences.

Remark: / = no evidence; ( ) = sampling size under 30; -- = sampling size under 10.

Source: Own calculations from SOEP-west, wave 6, 1989; SOEP-east, wave 1, 1990.

**TABLE 9**  
**INEQUALITY MEASURES OF EQUIVALENT INCOME<sup>a</sup>**  
**AMONG PEOPLE IN EAST GERMANY BEFORE AND AFTER UNIFICATION**

Measures of Distribution	1990	1991	1992
Gini Coefficient	0.185	0.198	0.200
Atkinson Value <sup>b</sup>			
$\epsilon = 1$	0.055	0.067	0.066
$\epsilon = 2$	0.109	0.136	0.133
Quintal Fractions			
1. Lowest	11.82	11.32	11.09
2. Lower Middle	15.80	16.06	15.95
3. Middle	19.22	18.87	19.07
4. Upper Middle	22.92	22.31	22.54
5. Highest	30.24	31.44	31.35

<sup>a</sup> Equivalent income was determined by using a scale taken from the major FRG social welfare program.

<sup>b</sup> See Table 1.

Source: Own calculations from SOEP-east, wave 1, 1990; SOEP-east, wave 2, 1991; SOEP-east, wave 3, 1992.

**TABLE 10**  
**DISTRIBUTION OF PEOPLE ACROSS RELATIVE EQUIVALENT INCOME BRACKETS IN EAST GERMANY BEFORE AND AFTER UNIFICATION<sup>a</sup>**  
(in percent)

Equivalent Income as a Percent of the Population Average	0-50	50-75	75-100	100-125	125-150	150-200	200 and Over	All
People:								
Before 1990	3.4	21.6	29.2	25.2	12.7	6.8	1.1	100
After 1991	4.4	17.9	34.8	22.3	12.1	6.4	2.2	100
1992	5.4	18.7	31.3	23.5	11.7	6.7	2.3	100

<sup>a</sup> The monthly household net income corresponds in the GDR to May 1990 and in the new eastern states to May/June 1991. The equivalent income was determined by using a scale taken from the major FRG social welfare program.

Source: Own calculations from SOEP-east, wave 1, 1990; SOEP-east, wave 2, 1991; SOEP-east, wave 3, 1992.



TABLE 11

**DISTRIBUTION OF PEOPLE IN DIFFERENT HOUSEHOLDS ACROSS RELATIVE EQUIVALENT  
INCOME BRACKETS IN EAST GERMANY BEFORE AND AFTER UNIFICATION<sup>a</sup>**  
(in percent)

Equivalent Income as a Percent of the Population Average	0-50	50-75	75-100	100-125	125-150	150-200	200 and over	All	Relation of the Group Average to the Population Average
People in one person household									
Before 1990	(6.1)	49.8	12.2	10.1	13.0	(6.9)	--	100	89.5
After 1992	(2.9)	16.9	34.2	21.5	13.9	7.0	--	100	105.4
Couple households without children									
Before 1990	--	20.0	22.6	21.9	16.1	16.0	2.9	100	112.9
After 1992	--	9.2	30.3	30.6	16.0	8.8	3.5	100	110.3
Couple households with children (all under age 18)									
Before 1990	(2.3)	20.5	38.0	28.0	8.1	(2.7)	--	100	94.7
After 1992	(6.2)	21.7	36.3	21.8	8.7	(4.2)	--	100	93.7
One parent household with children (all under age 18)									
Before 1990	--	38.4	(27.5)	(17.3)	--	/	/	100	79.3
After 1992	(19.5)	(33.9)	30.1	(12.3)	--	--	/	100	77.2
Other households with at least one child (under age 18)									
Before 1990	(7.0)	18.8	37.6	23.6	(11.4)	--	/	100	92.4
After 1992	(13.1)	26.5	32.6	15.9	(8.2)	--	--	100	87.2
Other households without children under age 18									
Before 1990	--	9.1	22.3	33.7	20.4	10.7	--	100	112.5
After 1992	(3.8)	14.7	20.3	28.1	16.4	13.5	(3.3)	100	112.1

<sup>a</sup> The equivalent income was determined by using a scale taken from the major FRG social welfare program.

Remark: / = no evidence; ( ) = sampling size under 30; -- = sampling size under 10.

Source: Own calculations from SOEP-east, wave 1, 1990; SOEP-east, wave 3, 1992.

**TABLE 12**  
**DISTRIBUTION OF PEOPLE IN HOUSEHOLDS ACROSS RELATIVE INCOME**  
**BRACKETS IN THE EAST BEFORE AND AFTER UNIFICATION**  
(in percent)

Equivalent Income as a Percent of the Population Average	0-75	75-125	125-u.m.	Relation of the Group Average to the Population Average
People in:				
One person households				
- female under age 60				
Before 1990	(15.6)	54.8	(29.5)	104.8
After 1992	27.4	50.0	22.6	99.9
- male under age 60				
Before 1990	--	(22.6)	66.1	134.1
After 1992	--	(34.9)	52.3	132.9
- female over age 60				
Before 1990	83.7	(14.2)	--	67.2
After 1992	20.9	67.3	--	94.4
- male over age 60				
Before 1990	(72.2)	--	--	82.4
After 1992	--	69.3	--	99.1
Couples with children all under age 18				
- one child				
Before 1990	11.5	65.6	22.9	107.4
After 1992	14.4	65.0	20.6	104.9
- two children				
Before 1990	23.2	72.1	(4.7)	89.7
After 1992	28.7	59.9	11.4	91.3
- three or more children				
Before 1990	60.8	(37.0)	--	74.1
After 1992	62.5	31.1	--	72.0
One parent household all children under age of 18				
Before 1990	(42.6)	(50.4)	--	84.3
After 1992	(38.2)	(57.0)	--	84.5
two or more children under age of 18				
Before 1990	(67.7)	(32.3)	/	68.3
After 1992	(85.2)	--	--	62.1

Note: The equivalent income was determined by using a scale taken from the major FRG social welfare program.

Remark: / = no evidence; ( ) = sampling size under 30; -- = sampling size under 10.

Source: Own calculations from SOEP-east, wave 1, 1990; SOEP-east, wave 3, 1992.

TABLE 13

**DISTRIBUTION OF CHILDREN UNDER AGE 18 AND PEOPLE OVER AGE 60 ACROSS RELATIVE EQUIVALENT  
INCOME BRACKETS IN EAST GERMANY BEFORE AND AFTER UNIFICATION**  
(in percent)

<b>Equivalent Income as a Percent of the Population Average</b>	<b>0-50</b>	<b>50-75</b>	<b>75-100</b>	<b>100-125</b>	<b>125-150</b>	<b>150-200</b>	<b>200 and over</b>	<b>All</b>	<b>Relation of the Group Average to the Population Average</b>
Children under age 7									
Before 1990	(4.2)	22.5	35.8	28.1	7.9	--	--	100	92.2
After 1992	9.5	24.0	31.0	20.5	9.0	(5.0)	--	100	91.5
Children from 7 to 10									
Before 1990	(4.1)	24.6	39.2	23.6	(6.)	(2.7)	/	100	90.5
After 1992	(9.2)	25.8	37.6	16.4	(8.0)	--	--	100	88.6
Children from 11 to 18									
Before 1990	(5.5)	24.7	39.1	20.8	7.1	(2.3)	/	100	88.7
After 1992	10.6	27.2	34.7	17.7	(6.0)	(2.8)	--	100	86.6
Aged over 60 to age 70									
- male									
Before 1990	--	(19.1)	40.4	18.4	(9.6)	(9.3)	--	100	101.1
After 1992	--	(11.7)	28.3	38.5	(15.8)	--	--	100	102.5
- female									
Before 1990	(4.3)	38.5	31.0	16.7	(5.9)	--	--	100	87.5
After 1992	--	10.5	38.7	34.5	(11.0)	--	--	100	98.6
Aged 70 and over									
- male									
Before 1990	--	60.0	(24.3)	(12.6)	--	--	/	100	77.2
After 1992	--	--	44.6	30.8	--	--	/	100	97.1
- female									
Before 1990	(8.2)	67.3	(15.6)	(7.0)	--	--	--	100	69.7
After 1992	(1.1)	18.4	44.6	(21.7)	(11.6)	--	--	100	95.2

Note: The equivalent income was determined by using a scale taken from the major FRG social welfare program.

Remark: / = no evidence; ( ) = sampling size under 30; -- = sampling size under 10.

Source: Own calculations from SOEP-east, wave 1, 1990; SOEP-east, wave 3, 1992.

TABLE 13a

**DISTRIBUTION OF PEOPLE IN HOUSEHOLDS ACROSS SELECTIVE EQUIVALENT INCOME BRACKETS IN EAST AND WEST GERMANY 1992  
ACCORDING TO THEIR ACTUAL EMPLOYMENT STATUS AND AU-INDEX**

Actual Employment Status and AU-Index			Equivalent Income as a Percent of the Population Average (in %)						All	Relation of the Group Average to the Population Average	
			< 50%	50-75%	75-100%	100-125%	125-150%	150-200%			> 200%
Persons in households without gainfully employed persons		East	1.9	13.8	45.0	29.2	8.9	1.1	--	100	95.0
		West	8.6	26.2	26.6	20.5	6.7	8.5	3.0	100	97.8
Persons without unemployment in the period under investigation (AU-Index = 0%)		East	2.4	11.7	30.4	28.6	13.9	10.0	3.0	100	109.2
		West	8.7	24.3	24.0	17.1	10.3	10.7	4.9	100	104.7
Persons with AU-Index = 1-15%	with actual unemployment <sup>a</sup>	East	6.7	28.8	36.6	13.6	9.0	4.6	0.8	100	89.8
	without actual unemployment <sup>b</sup>		3.3	13.9	22.3	25.6	18.6	10.0	6.3	100	115.5
	with actual unemployment <sup>a</sup>	West	21.3	27.9	30.0	11.3	5.4	2.7	1.4	100	79.9
	without actual unemployment <sup>b</sup>		2.9	20.8	31.2	14.4	16.7	9.7	4.3	100	107.1
Persons with AU-Index = 16-30%	with actual unemployment <sup>a</sup>	East	12.5	38.5	23.0	18.6	6.7	0.8	--	100	80.2
	without actual unemployment <sup>b</sup>		18.4	12.9	32.0	18.4	14.4	2.8	1.0	100	89.1
	with actual unemployment <sup>a</sup>	West	37.5	28.0	22.8	6.8	1.5	2.9	0.5	100	66.6
	without actual unemployment <sup>b</sup>		14.4	21.7	27.0	17.6	12.6	5.6	1.1	100	91.7
Persons with AU-Index > 30%	with actual unemployment <sup>a</sup>	East	20.9	40.5	27.9	6.9	0.8	3.0	--	100	71.1
	without actual unemployment <sup>b</sup>		9.9	41.8	21.2	23.5	3.6	--	--	100	80.9
	with actual unemployment <sup>a</sup>	West	45.4	23.9	22.0	6.9	1.7	0.1	--	100	58.8
	without actual unemployment <sup>b</sup>		15.8	33.4	28.8	13.2	4.6	3.2	1.0	100	79.7

Note: AU-Index = Number of months in unemployment relative to number of months in potential employment for all household members in the period under investigation.

<sup>a</sup> At least one household member is unemployed in the month of the interview.

<sup>b</sup> Household is not affected by unemployment in the month of the interview.

Remark: -- = sampling size under 10

Source: • Own calculations from SOEP-west, waves 7-9; SOEP-east, waves 1-3, 1990-1992 (longitudinal dataset).

**TABLE 13b**

**CORRELATION BETWEEN RELATIVE EQUIVALENT INCOME AND  
SATISFACTION WITH INCOME IN GERMANY BEFORE AND AFTER  
UNIFICATION**

	<b>East Germany</b>	<b>West Germany</b>
Before 1990	0.23	0.29
After 1991	0.36	0.32
1992	0.38	0.33

Source: Own calculations from SOEP-east, waves 1 to 3; SOEP-west, waves 7-9, 1990-1992.

**TABLE 14**  
**INEQUALITY MEASURES OF SATISFACTION WITH INCOME IN THE FRG AND**  
**THE GDR BEFORE UNIFICATION<sup>a</sup>**

Measures of Distribution	FRG		GDR	
	(1) Households <sup>b</sup>	(2) People <sup>c</sup>	(3) Households <sup>b</sup>	(4) People <sup>c</sup>
Mean Average	6.53	6.54	5.45	5.53
Gini Coefficient	0.194	0.188	0.259	0.246
Atkinson Value <sup>d</sup>				
$\epsilon = 1$	0.066	0.063	0.094	0.087
$\epsilon = 2$	0.160	0.155	0.219	0.203
Quintile Shares				
1. Lowest	9.54	9.85	6.30	6.73
2. Lower Middle	16.50	16.61	16.27	16.69
3. Middle	20.92	20.98	19.70	19.69
4. Higher Middle	24.33	24.27	25.44	25.34
5. Highest	28.71	28.29	32.29	31.55

<sup>a</sup> The satisfaction scale ranges from "0" (completely unsatisfied) to "10" (completely satisfied).

<sup>b</sup> Here, only the satisfaction with income value of the head is considered.

<sup>c</sup> The satisfaction with income of the head was assigned to all members of the household. Each household is weighted by its number of persons.

<sup>d</sup> See Table 1.

Source: Own calculations from SOEP-west, wave 6, 1989; SOEP-east, wave 1, 1990.

**TABLE 15**

**DISTRIBUTION OF HOUSEHOLDS AND PEOPLE ACROSS SATISFACTION WITH INCOME IN THE FRG AND THE GDR BEFORE UNIFICATION<sup>a</sup>**  
(in percent)

Values of Satisfaction with Household Income	0 to 2	3	4	5	6	7	8 to 10	All
Household								
FRG	5.6	5.3	5.5	15.9	11.2	17.7	38.9	100
GDR	12.8	9.1	7.4	23.3	12.0	12.0	12.0	100
People								
FRG	5.1	5.2	5.5	15.6	11.4	18.5	38.7	100
GDR	11.7	8.5	7.2	23.6	12.1	13.4	23.4	100

<sup>a</sup> The satisfaction scale ranges from "0" (completely unsatisfied) to "10" (completely satisfied).

Source: Own calculations from SOEP-west, wave 6, 1989; SOEP-east, wave 1, 1990.

TABLE 16

**DISTRIBUTION OF PEOPLE IN HOUSEHOLD TYPES ACROSS SATISFACTION WITH INCOME  
IN THE FRG AND THE GDR BEFORE UNIFICATION<sup>a</sup>**  
(in percent)

Satisfaction with Household Income	0 to 2	3 to 7	8 to 10	Relation of the Group Average to the Population Average
People In:				
one person household				
FRG	7.1	57.0	35.9	96.7
GDR	19.7	61.0	19.3	88.0
- females under age 60				
FRG	8.5	54.9	36.6	93.0
GDR	(16.8)	(65.3)	(17.9)	85.5
- males under age 60				
FRG	10.5	59.0	30.5	89.3
GDR	(14.1)	67.0	(18.9)	95.1
- females over age 60				
FRG	(4.5)	58.3	37.2	101.7
GDR	23.9	56.9	19.2	84.6
- males over age 60				
FRG	--	50.5	44.1	106.5
GDR	--	(62.1)	--	94.6
couples without children under age 18				
FRG	3.0	49.3	47.7	108.6
GDR	7.3	63.1	29.6	109.1
couples with children all under age 18				
FRG	3.2	56.3	40.5	102.1
GDR	12.2	66.1	21.7	98.4
one parent household all children under age 18				
FRG	23.1	59.3	17.6	74.7
GDR	(15.4)	57.0	(27.6)	98.3
other household minimum one child (under age 18)				
FRG	8.0	57.7	34.3	94.5
GDR	10.0	66.8	23.2	102.2
other household without children under age 18				
FRG	3.5	60.4	36.1	99.1
GDR	11.0	66.5	22.5	99.8

<sup>a</sup> The equivalent income was determined by using a scale taken from the major FRG social welfare program.

Remark: / = no evidence; ( ) = sampling size under 30; -- = sampling size under 10.

Source: Own calculations from SOEP-west, wave 6, 1989; SOEP-east, wave 1, 1990.



**TABLE 17**  
**INEQUALITY MEASURES OF SATISFACTION WITH INCOME IN EAST GERMANY BEFORE AND AFTER UNIFICATION<sup>a</sup>**

Measure of Distribution	1990 <sup>b</sup>	1991 <sup>b</sup>	1992 <sup>b</sup>
Mean	5.53	4.79	4.94
Gini Coefficient	0.246	0.281	0.202
Atkinson Value <sup>c</sup>			
$\epsilon = 1$	0.087	0.100	0.084
$\epsilon = 2$	0.203	0.225	0.207
Quintal fraction			
1. Lowest	6.73	5.65	9.72
2. Lower Middle	16.69	14.60	16.10
3. Middle	19.69	20.68	20.20
4. Upper Middle	25.34	25.54	24.41
5. Highest	31.55	33.53	29.57

<sup>a</sup> The satisfaction scale ranges from "0" (completely unsatisfied) to "10" (completely satisfied).

<sup>b</sup> The household's head satisfaction with income was assigned to all members of the household. Each household is weighted with its number of persons.

<sup>c</sup> See Table 1.

Source: Own calculations from SOEP-east, waves 1 to 3, 1990-1992.

**TABLE 18**  
**DISTRIBUTION OF PEOPLE ACROSS SATISFACTION WITH INCOME IN EAST GERMANY**  
**BEFORE AND AFTER UNIFICATION<sup>a</sup>**  
(in percent)

Values of Satisfaction Concerning the Income of the Household	0 to 2	3	4	5	6	7	8 to 10	All
People: <sup>b</sup>								
Before 1990	11.7	8.5	7.2	23.6	12.1	13.4	23.4	100
After 1991	17.1	13.0	10.8	21.9	12.1	11.3	13.9	100
1992	13.3	12.3	13.0	22.2	13.1	14.1	11.9	100

<sup>a</sup> The satisfaction scale ranges from "0" (completely unsatisfied) to "10" (completely satisfied).

<sup>b</sup> The household's head satisfaction with income was assigned to all members of the household. Each household is weighted with its number of persons.

Source: Own calculations from SOEP-east, waves 1 to 3, 1990-1992.

TABLE 19

**DISTRIBUTION OF PEOPLE IN DIFFERENT HOUSEHOLDS BY SATISFACTION  
WITH INCOME IN EAST GERMANY BEFORE AND AFTER UNIFICATION<sup>a</sup>**  
(in percent)

Values of Satisfaction Concerning the Income of the Household	0 to 2	3 to 7	8 to 10	Relation of the Group Average to the Population Average
People In:				
one person household				
Before 1990	19.7	61.0	19.3	88.0
After 1992	13.2	73.8	13.0	101.9
- females under age 60				
Before 1990	(16.8)	65.3	(17.9)	85.5
After 1992	21.9	70.9	--	85.9
- males under age 60				
Before 1990	(14.1)	67.0	(18.9)	95.1
After 1992	(13.9)	79.0	--	98.5
- females over age 60				
Before 1990	23.9	56.9	19.2	84.6
After 1992	--	75.6	18.6	111.8
- males over age 60				
Before 1990	--	(62.1)	--	94.6
After 1992	--	71.2	--	84.5
couples without children under age 18				
Before 1990	7.3	63.1	29.6	109.1
After 1992	12.9	73.4	13.7	98.7
couples with children all under age 18				
Before 1990	12.2	66.1	21.7	98.4
After 1992	13.1	73.9	13.0	103.6
one parent household all children under age 18				
Before 1990	(15.4)	57.0	(27.6)	98.3
After 1992	(24.7)	66.7	(8.6)	88.4
other household with at least one child (under age 18)				
Before 1990	10.0	66.8	23.2	102.2
After 1992	13.7	76.7	10.2	96.5
Other household without children under age 18				
Before 1990	11.0	66.5	22.5	99.8
After 1992	12.3	78.6	9.1	97.8

<sup>a</sup> The equivalent income was determined by using a scale taken from the major FRG social welfare program.

Remark: / = no evidence; ( ) = sampling size under 30; -- = sampling size under 10.

Source: Own calculations from SOEP-east, wave 1, 1990; SOEP-east, wave 3, 1992.

TABLE 20

**DISTRIBUTION OF PEOPLE ACROSS SATISFACTION WITH INCOME IN EAST AND WEST GERMANY 1992  
ACCORDING TO THEIR ACTUAL EMPLOYMENT STATUS AND AU-INDEX**

Actual Employment Status and AU-Index			Satisfaction with Household Income (in %)			All	Relation of the Group Average to the Population Average
			0 to 2	3 to 7	8 to 10		
Persons in households without gainfully employed persons		East	7.8	70.5	21.7	100	108.8
		West	4.5	46.0	49.5	100	103.7
Persons without unemployment in the period under investigation (AU-Index = 0%)		East	8.9	77.9	13.2	100	107.1
		West	2.7	56.1	41.1	100	101.1
Persons with AU-Index = 1-15%	with actual unemployment <sup>a</sup>	East	20.6	73.5	5.9	100	84.8
	without actual unemployment <sup>b</sup>		7.4	78.0	14.6	100	107.5
	with actual unemployment <sup>a</sup>	West	6.3	62.8	30.9	100	92.4
	without actual unemployment <sup>b</sup>		2.2	55.7	42.1	100	100.7
Persons with AU-Index = 16-30%	with actual unemployment <sup>a</sup>	East	18.9	75.1	6.0	100	84.6
	without actual unemployment <sup>b</sup>		18.8	73.9	7.2	100	91.4
	with actual unemployment <sup>a</sup>	West	17.3	72.2	10.5	100	77.6
	without actual unemployment <sup>b</sup>		1.0	57.0	42.1	100	99.1
Persons with AU-Index > 30%	with actual unemployment <sup>a</sup>	East	31.5	59.4	9.1	100	76.7
	without actual unemployment <sup>b</sup>		15.8	75.6	8.6	100	85.6
	with actual unemployment <sup>a</sup>	West	26.3	54.9	18.7	100	61.0
	without actual unemployment <sup>b</sup>		5.2	55.6	39.2	100	95.7

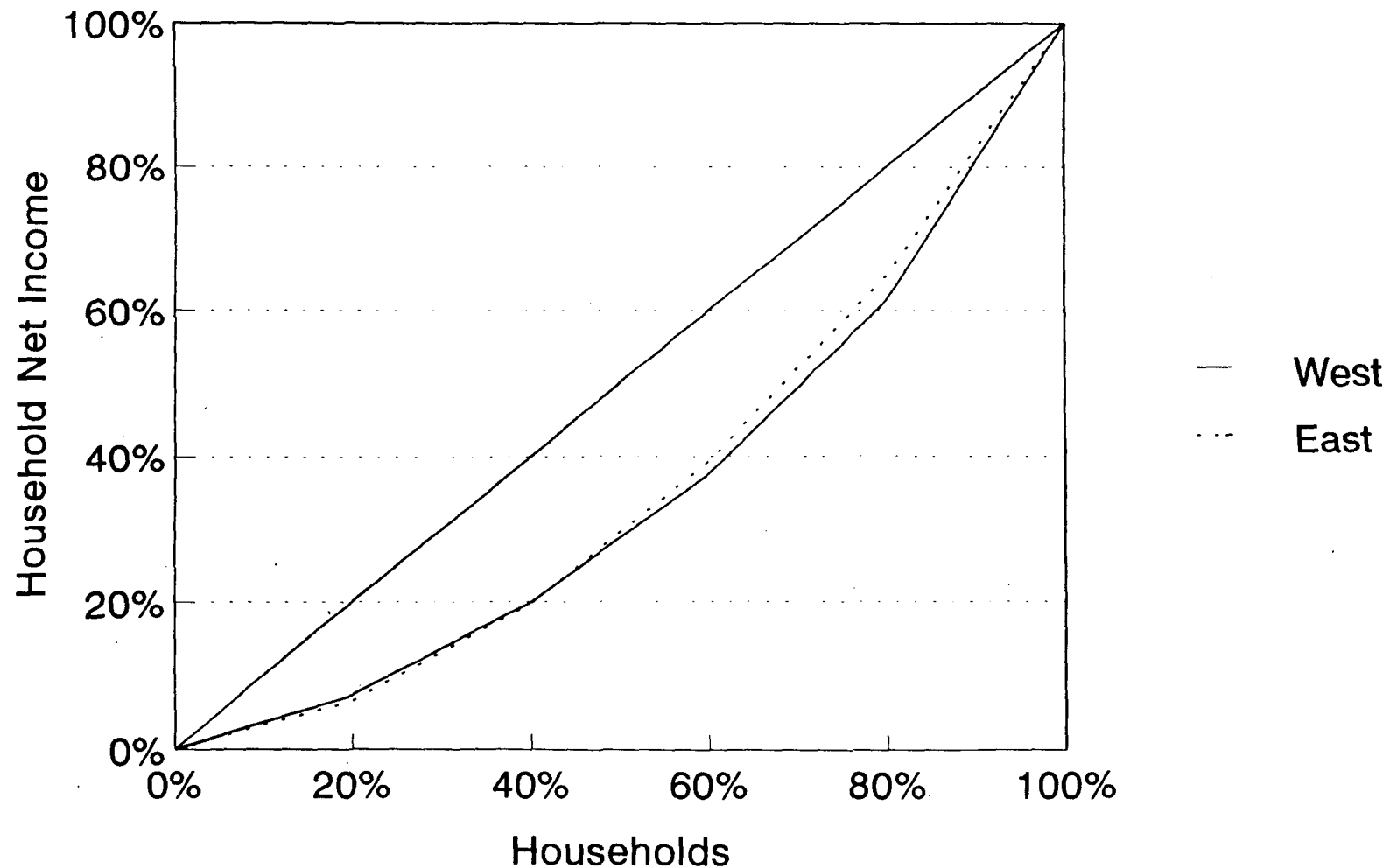
Note: AU-Index = Number of months in unemployment relative to number of months in potential employment for all household members in the period under investigation.

<sup>a</sup> At least one household member is unemployed in the month of the interview.

<sup>b</sup> Household is not affected by unemployment in the month of the interview.

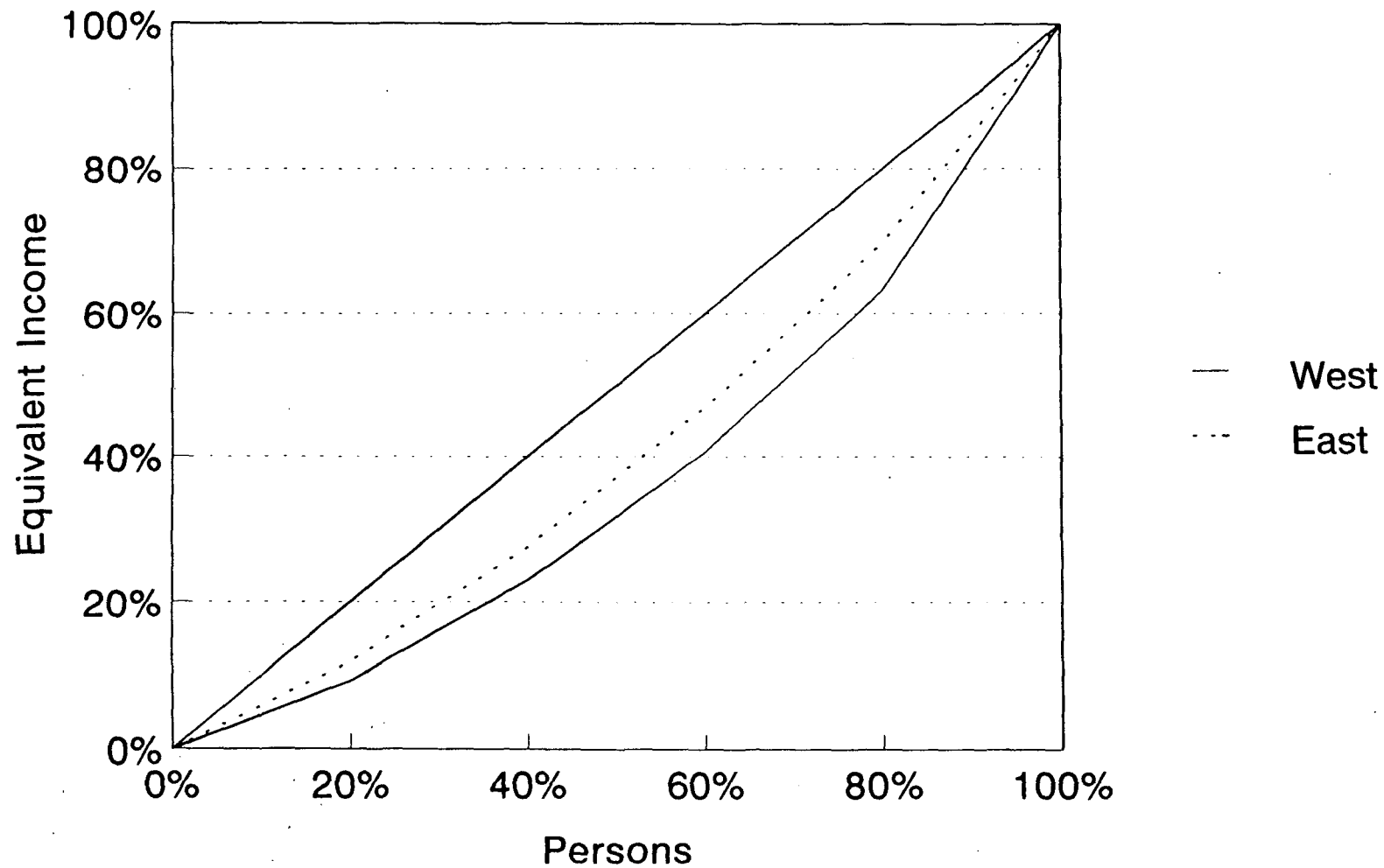
Source: Own calculations from SOEP-west, waves 7-9; SOEP-east, waves 1-3, 1990-1992 (longitudinal dataset).

Figure 1:  
Distribution of Household Net Income in East and West Germany  
before Unification  
Lorenz Curve



Source: Own calculations from GSOEP 1990.

Figure 2:  
Distribution of Equivalent Income in East and West Germany  
before Unification  
Lorenz Curve

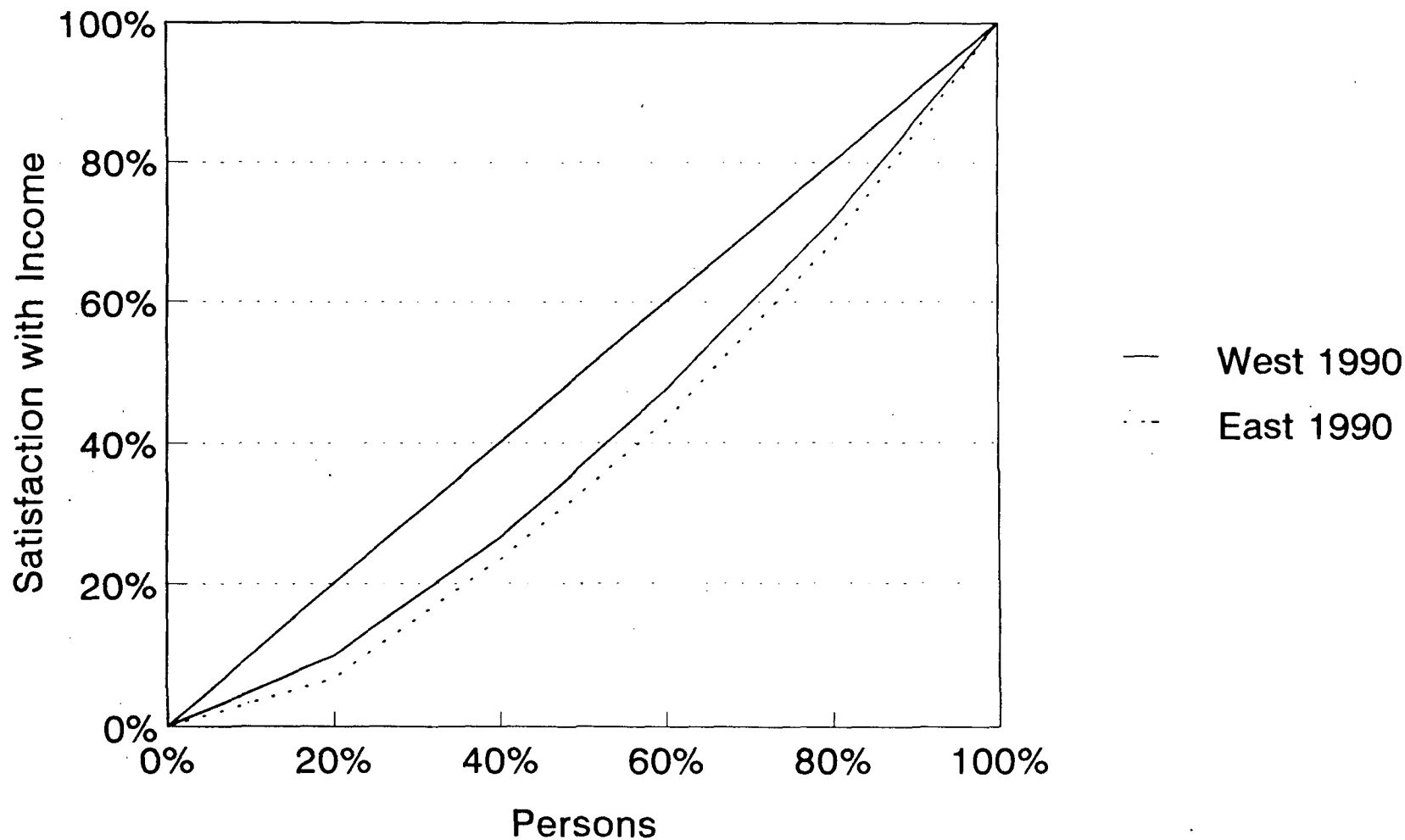


Source: Own calculations from GSOEP 1990.

Figure 3:

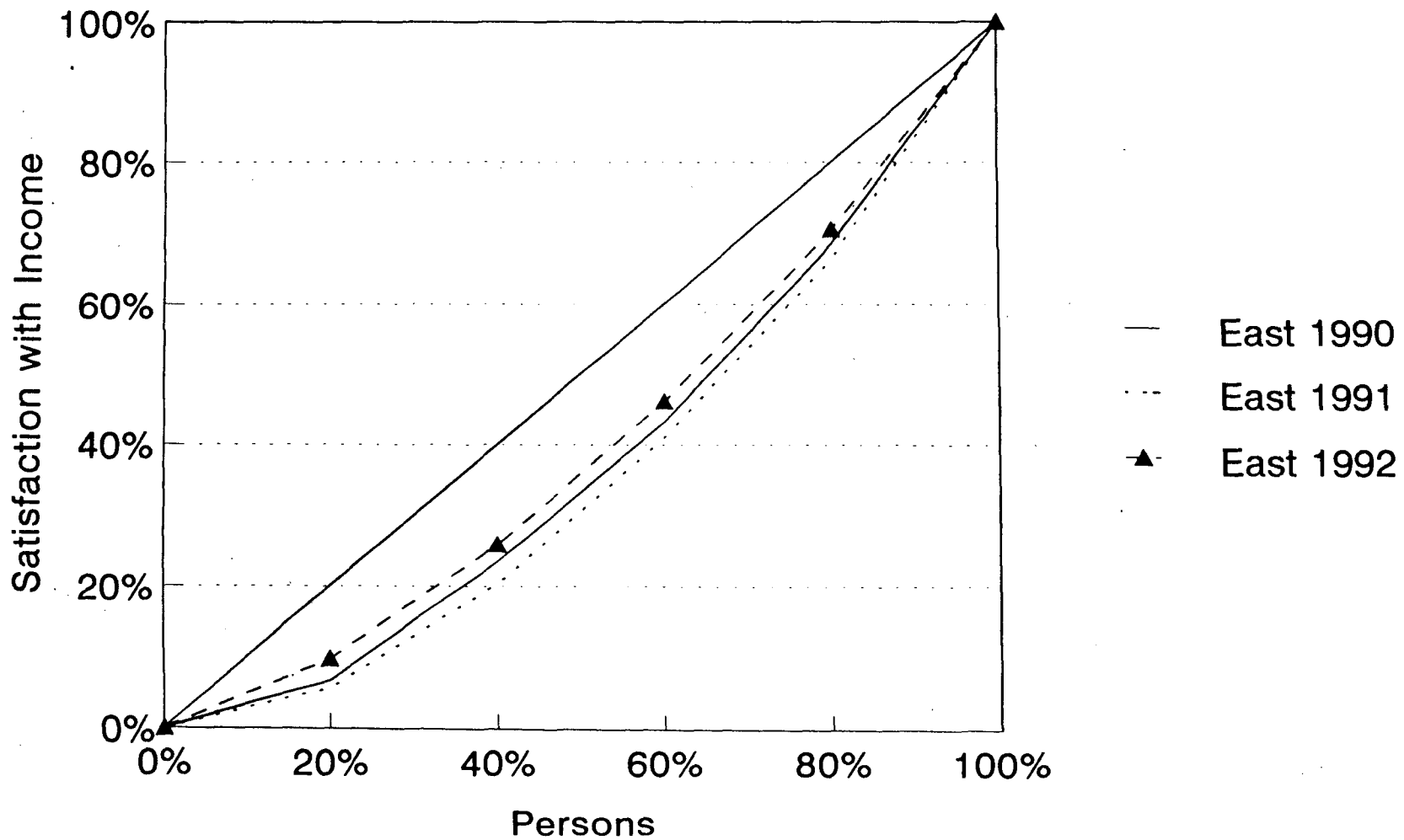
Distribution of Satisfaction with Income in East and West Germany  
before Unification

Lorenz Curve



Source: Own calculations from GSOEP 1990.

Figure 4:  
Distribution of Satisfaction with Income in East Germany  
under Transition  
Lorenz Curve



Source: Own calculations from GSOEP 1990-1992.



## APPENDIX A

### Sampling Variance Estimation for Ginicoefficients for East Germany (1990 and 1992) by Random Group Means

	Entire Sample	Randomized Sample by Groups							
		1	2	3	4	5	6	7	8
1990	0.18503	0.17817	0.18261	0.19350	0.18628	0.18203	0.19717	0.18599	0.16879
1992	0.20045	0.21439	0.18614	0.19865	0.19280	0.19620	0.21384	0.20440	0.19008
1992-1990	0.01542	0.03622	0.00353	0.00515	0.00652	0.01417	0.01841	0.01667	0.02129

Difference of Ginis 1992-1990: 0.01542  
 Confidence Interval: 0.01136; 0.01948  
 Level of Significance:  $p \leq 0.07$