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Incomes in East and West Germany on the eve of union: Some results based on the German Socio-Economic Panel

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Diskussionspapiere
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Deutsches Institut für Wirtschaftsforschung

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Incomes in East and West Germany on the Eve of Union - Some Results Based on the German Socio-Economic Panel

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1. Introduction

Analysing the distribution of incomes in West and East Germany on the eve of their union requires one to compare two societies with widely differing political, economic and social systems. Not only do all the problems of comparisons between countries with similar systems and levels of development come up but so do questions concerning the comparability of a market economy with a socialist one.

Three different kinds of problems can be distinguished: First, can the same concept of income be used and can one interpret the statistical figures in the same manner as indicators of economic well-being? Second, can one account for the differences in the income distributions that heavily depend on the differences in the institutional arrangements and the functioning of the whole systems? And third, can one trust data collected during a time when the process of unification was changing from month to month²?

Ignoring these problems in our first approach, we can formulate some hypotheses about the differences in the income distributions of East and West Germany that are based on a priori reasoning about the objectives of a socialist economy and the institutional regulations of the labor market and the social security system:

1. The distribution of household income among households and of equivalence income among persons should be less unequal in East Germany than in West Germany because

- income from capital was unimportant

1. The authors would like to thank Richard Burkhauser for extremely helpful comments.
2. An extremely large number of regulations and laws were introduced or changed within a brief period. Therefore, we must assume that people were unable to fully adjust to them. Hence even if our results for East Germany derived for the month of May 1990 are correct, they may be out-dated a few months later, and the comparisons become inaccurate compared to our results for West Germany.

- wage differentials were kept small
- there was no unemployment
- differentials in social benefits were small.

2. The differences in average equivalence income among persons in middle aged families with children and in those without children were smaller in East Germany than in West Germany because social benefits for families were somewhat more generous, and because a much higher labor force participation of women with small children was made possible by child care facilities that were provided by the government or by the enterprises.

3. The difference in average equivalence income among persons in middle aged one-parent families and two-parent families was smaller in East Germany than in West Germany for the same reasons as in hypothesis 2.

4. The distribution of equivalence income among the aged was less unequal in East Germany than in West Germany because the pension differentials were smaller, and because there existed minimum pensions. On the other hand, the average living standard of the elderly compared to the country average was less favorable than in West Germany because of relatively lower pension levels.

The first part of the paper is arranged around these four hypotheses. We first describe the unification process at the time the data were collected (May 1990) in the German Democratic Republic. Since West German microdata for this period are not yet available, we use spring 1989 data assuming that structural changes in the Western part of Germany have been negligible³. We then compare the total distributions of income and the distributions among selected groups.

The second part of the paper discusses problems of comparing income distributions between East and West Germany in both a relative and an absolute sense. We provide some empirical evidence for the hypotheses that subsidies made the distribution of welfare more equal than the distribution of income. On the other hand the distribution of durables and some measures of housing quality are rather unequal. Also privileges related to time spent finding and purchasing better goods made the welfare distribution more unequal than the income

3 This may be surprising. But we used a unique data base which was gathered in 1990 in West as well as in East Germany. Because the results for East Germany are much more interesting than the - more or less - well known numbers for West Germany the eastern data was cleaned first. As a result the most recent western data was not available for our analysis.

distribution. We are unable to balance these countervailing effects. The problem of analyzing the causes of differences in the income distributions is left to another study.

2. The Stage of the Unification Process When the Data Were Collected (May 1990)

On November 9, 1989, the Berlin Wall fell. In the preceding months over 300 000 people had moved from East to West Germany. In the following four months they were joined by an additional 300 000 persons. Thus, during 1989 and the first six months of 1990 over 600 000 people or 4 percent of the East German population moved to the West. While at first the idea of a loose confederation between two independent countries with different economic systems and currencies was discussed, it quickly became clear that the movement of people could only be greatly reduced if the D-Mark was introduced in the GDR and a monetary union was formed. The decision to introduce a common currency on July 1, 1990, and to set the exchange rate at 1:1 (with some exceptions) was taken by the two governments on May 2, 1990. Preparations began immediately. Many laws were changed, thus it is difficult to specify exactly which laws were valid during the period the income measures refer to (May 1990) or during the time of the interviews that was in fact a period of more than one month (June 1990).

In general, the main structural differences between East and West Germany still existed in June 1990. With respect to a comparison of income distributions these differences are:

- The structure of prices for consumer goods was very different because of high subsidies for basic goods and high taxes on durables and high tech goods. Special goods for children were also relatively inexpensive.
- Apartment rents were extremely low even if one considers that the stock of housing in East Germany was in bad condition.
- The health care system could be used free of charge.
- Child care facilities were available for all children at very low cost.
- Homes for the elderly and even nursing homes for them were available at very low cost so that they could be afforded even by pensioners with minimum pensions.
- The range of goods that could be bought and the availability of goods was very limited.

- People who owned transferable currencies could buy imported goods in special stores but this was only a minority.
- Social security contributions for a completely unified system were low, but the pension rights that could be accumulated by contributions - partly mandatory, partly voluntary - were also low.
- The income tax was differentiated between various social groups.

These structural differences have to be kept in mind as we now compare total income distributions.

3. Data Basis: The All German Socio-Economic Panel (SOEP)

Our estimates are based on two subsamples of a survey that was gathered in both West and East Germany. The SOEP is a random survey of the West Germany population taken yearly since 1984. It is comparable in design to the Panel Study of Income Dynamics in the United States (cf. Projektgruppe Panel 1990). The panel method is ideal for describing and analyzing changes such as those triggered by developments in East Germany. Thus in 1990 the SOEP was expanded to capture the events in the forgoing GDR (cf. Schupp and Wagner 1990).

The SOEP is useful for economic, as well as, for sociological approaches. It has for instance, already been used to test hypotheses concerning human capital theory, unemployment duration, labor market segmentation and poverty issues.

The SOEP has targeted eight main analytical areas:

- Demography and Population
- Labor Market and Unemployment
- Income, Taxation, and Social Security
- Housing
- Health
- Education and Training
- Economic Output of Private Households

- Basic Orientation and Values.

It is a standard procedure of the SOEP to transcribe in uncoded text each individual's occupation and industry sector and code these variables later on. This procedure proved extraordinarily useful in avoiding classification problems with the East German survey. Registering the respondents' information in uncoded text makes the most sense because this allows the most flexibility in re-coding when a standard classification scheme for the former GDR comes up. Up to now no comparable and reliable international classification schemes were available for the GDR.

For the majority of topics in the SOEP, information on objective living conditions as well as subjective perceptions are gathered. This is important because it not only allows one to analyze from income distribution but also to estimate more direct information about perceived well-being.

The western subsample of the SOEP for 1989, its sixth wave, covers 4690 households with 9710 interviewed persons of age 16 years and older. The eastern subsample, whose first wave was gathered in the GDR on the eve of union in June 1990, covers 2179 households with 4453 respondents. The response rate in the GDR was higher than in the first wave of the SOEP in 1984 (70 percent compared to 60 percent). Both samples are reweighted.

Except for the census conducted in the GDR the eastern sample of the SOEP was the only major survey of the entire population in East Germany⁴. There was an Income Survey of Blue and White Collar Workers but it covered only households of employees and excluded within this group the so called "nomenclatura" (leaders of parties and unions, high ranked bureaucrats, members of military and secret services, policemen)⁵.

4 In the GDR the last census was gathered in 1980. These microdata are not available for scientific research up to now.

5 For a description of the "Employee Income Survey 1988", the most recent and last survey of this kind, cf. Frick et al. (1991). The microdata file of this survey is available for scientific research within the German Institute of Economic Research (Deutsches Institut fuer Wirtschaftsforschung), Berlin-West.

4. A Comparison of the Total Income Distribution

Our basic income variable is the selfreported monthly household net income as it was stated by the respondents as a basic variable⁶. The data for East Germany refer to the month of May 1990⁷, the data for West Germany refer to the months of March or April 1989 because the corresponding data for 1990 are not yet available. We present three different distributions⁸: The first one shows the distribution of household income. The second one describes the distribution of equivalence income among persons using an equivalence scale derived from the West German social assistance regulations. This scale assigns high weights to further members of the household, namely 1 for the head of household, 0.8 for the spouse, and weights between 0.45 and 0.9 for children according to their age. Since these weights seem high compared to other countries, we additionally use an alternative scale assigning - arbitrarily - weights of 0.66 to other adults and 0.33 to children up to the age of 15 in the household. The third distribution is based on equivalence income of persons using this second equivalence scale; cross comparisons of the results for West Germany by the the first scale and the results for East Germany by the second scale are of special interest.

Tables 1 and 2 present our first results. As can be gathered from the Gini coefficients, the Atkinson measures and the quintile shares of income in Table 1, the distribution of household income among households, and the distributions of both types of equivalence income among persons were less unequal in East Germany than in West Germany as we hypothesized in the beginning. The use of the alternative equivalence scale 2 makes less difference in the East than in the West. Table 2 gives additional information about the three distributions from a different angle. The distributions of households and persons are shown over brackets of multiples of average household income or equivalence income respectively. We can see that in East Germany the lowest bracket below 50% of mean equivalence income

6 Such a basic variable is a so called income screener. It is well known that it underestimates the "true income" of households slightly, this is especially true for big households.

7 In the personel questionnaire of the SOEP detailed questions on various kinds of income are asked not only for May 1990 but also for the previous year, i.e. May 1989. Based on this data it is possible to add up the personnel incomes to a "household income" which lacks only some income sources as capital income and social assistance. In the GDR both kinds of these incomes were unimportant. Thus the retrospective data allows to compare the "household incomes" of May 1989 and May 1990 for the subgroup of households without any change of demographical and employment composition. This was done by Frick et al. (1991a) who found out that the differences of income distribution were small.

8 Cf. Bedau and Vortmann (1990) who came up with a distribution for 1988 which was compiled from aggregated data of the statistical Bureau of the GDR. The gains and pitfalls of these artificial distributions are discussed in comparison to the SOEP by Bedau and Vortmann (1991).

contains a much smaller percentage of households than in West Germany. The same is the case in the highest bracket above twice the average. Obviously, in East Germany equivalence income at the person level was considerably more concentrated between 50% and 150% of the mean.

5. A Comparison of the Income Distributions Among Selected Groups

Differences between countries in the total distributions of equivalence income are usually accompanied by differences in the relative positions of various social groups, and by differences in the within-group distributions. These differences are mainly determined by differences in labor force participation rates, wage differentials, and different social security systems and benefit levels. Tables 3 and 3a show results for some household types. Without going into details we can state with reference to our initial hypotheses 2 and 3:

In East Germany the situation of couples with children, all of whom are under 18, was worse than the situation of couples without children but the difference in West Germany was considerably greater. The alternative equivalence scales do make a difference but the less favorable situation of families with children in West Germany remains.

Our hypothesis 3 which supposed that the relative distance in well-being of one-parent families to two-parent families would be greater in West Germany than in East Germany was not clearly supported by the data. The relative distance is about the same with both equivalence scales.

Tables 4 and 4a emphasize the situation of children and of the elderly in a comparative perspective. Both groups are classified according to their age and their equivalence income using both equivalence scales alternatively. We find:

- In East Germany the percentages of children and of elderly persons who are below 50% of the average are smaller than in West Germany if equivalence scale 1 is used. If the calculations are based on equivalence scale 2 the percentage of the elderly in East Germany who are below 50% of average equivalence income increases. This, presumably, results from the increase in average equivalence income of the total population that is caused by the lower weights of equivalence scale 2 in connection with the fact, that a high percentage of East German pensioners receive a fixed minimum pension which in this case falls just below the 50%-line.

- The distribution among the elderly in East Germany is less unequal than in West Germany as we expected from our initial hypothesis 4.
- The relative difference between the average living standard of the elderly and the average of the total population is greater in East Germany than in West Germany as we expected.

6. Some Problems of Comparing Income Distributions Between East And West Germany in a Relative Sense

Comparing income distributions in a relative sense means that we compare the income of persons or groups of persons within the same country, and that we then compare relative positions between countries. This approach leads to meaningful results if the circumstances under which people do their economic transactions are the same for the whole population in each of the countries. For example, if in one country everybody has to queue two hours a day to buy the necessary goods for everyday life, nobody has an advantage compared to his fellow countrymen, and it does not bias the comparison even if there is much less queuing in the other country. If, on the contrary, in one country there exists a group of privileged people who can buy goods in special stores without queuing, the same amount of income for them indicates a higher level of well-being than for the underprivileged group. In this case the comparison with another country is biased if no such privileges existed there. The same is true if everybody does not have the same opportunity to use the public health system, the educational system, or other goods that are provided free of charge by government. It is well known that in East Germany there existed privileges for members of the military, the civil service, the police force, the secret service, and others. In general, this was not the case in West Germany although some rationing existed with respect to public housing, and possibly, education.

The second problem arises if there are differences in the structure of consumption between the various groups, and if these differences differ between East and West Germany because of the great differences in the price structures. If, e.g., the income share spent for the necessary goods of everyday life (food, clothing, housing) is higher for low income groups than for high income groups, and if this difference is not the same in both countries, because of subsidies or rationing, income as an indicator of economic well-being is biased.

A third problem comes up, if part of real income does not show in monetary income. While in West Germany barter trade of services or of private work or of illegally acquired goods

does not play an important role, it is generally known that it did so in East Germany, and presumably in a differential manner by social stratification. On the other hand, the use value of owner occupied housing is of considerable importance for part of the population in West Germany while this fact seems negligible in the East until October 1991⁹.

Finally, a problem results from the use of the same equivalence scale for both countries since we cannot be sure whether the completely different price structure requires different equivalence scales. This problem can only be solved if equivalence scales were derived for both countries by the same methodology. Since equivalence scales always imply some normative judgement this presupposes that we could agree on a methodology based on a priori reasoning.

7. **Some Problems of Comparing the Levels of Income Between East and West Germany**

Comparisons of absolute income levels are much more difficult than comparisons of distributions or relative positions. In addition to the problems mentioned in the previous section the following questions arise (cf. Vortmann and Schwartz 1985):

(1) Which exchange rate is to be used if there are various administered rates, and also a black market rate that diverges by far from the official rates? A natural solution would be to define a "basket of goods" for the average consumer, to calculate its value by using the national price structures, and to transform the equivalence incomes of the people in each country into real incomes as measured in units of the previously defined basket of goods. But this procedure poses two problems: which basket of goods is to be chosen, the West German one or the East German one, and what is there to be done with the fact that not all the goods in the basket were available for purchase by ordinary citizens in East Germany at the time of the survey.

(2) A lesser problem that also has to be considered are differences in the "time-costs" that have to be incurred to purchase goods.

(3) Another problem results from quality differences of the available goods that cannot easily be transformed into price surcharges or reductions.

9 The use value of owner occupied housing in the West was estimated and added to monetary net household income. For East Germany this value was neglected because rent for renters was extremely low.

The problems mentioned up to now concern comparisons of the real purchasing power that a given income provides. But in a very different economic and social system additional problems arise that stem from different principles with respect to the provision of free public goods and merit goods by the state, with respect to the guaranteeing of social security in a wider sense, and with respect to restrictions of free movement.

A detailed analysis is required to determine which goods of a public or merit character were offered free of charge in the East that had to be paid for in West Germany. But by adding an estimated value of these goods to the individual incomes of the East Germans, differences in quality also should be considered. With such an exercise, obviously, a high degree of arbitrariness will always be associated.

A perhaps even more serious problem arises if one asks whether deductions from gross earnings imply the same rights to social security benefits in both countries. Obviously, this was not the case, but it seems an insoluble task to calculate the differences, and to correct them. These differences in the rights to social security benefits provided by the state could partly be compensated for by social benefits that customarily are provided by employers, irrespective of whether they are private or state owned companies. Therefore, both governmental and industry based benefits must be taken into account.

A well known difference between East and West Germany was the right to work in the East, a right that does not exist in the West. This right implied high job security and income stability for the employed persons, and much easier access to the labor market for women. Therefore, no unemployment insurance existed, and, as many observers suppose, work was less strenuous. It seems impossible to quantify these differences. Another effect that may result from this different organization of the labor market is a more stable income stream in the East than in the West. That means that monthly net income may be a better proxy for permanent income in the East than in the West. If this assumption is correct, our comparisons overestimated the difference in income inequality between East and West Germany.

In our view, comparisons of absolute income levels pose so many additional conceptual and data problems, and the unavoidable degree of arbitrariness remains so high that it is not reasonable to pursue them. Thus we compare income distributions and relative income positions.

8. Some Additional Empirical Evidence

In this section we first provide a correction of our income calculations using price indicators. Thereafter we expand our measure of well-being to include other input in addition to income. One is a time expenditure measure, a second one is the distribution of durables, and some housing quality indicators.

8.1 Correction for Differences in Real Income

In comparison to that in West Germany the price structure in East Germany was of a totally different nature. It was caused by subsidies for goods of basic needs (like rent, energy, food, transport services, children articles) on one hand and by high taxes on quality consumer goods on the other hand. This concept led to significant differences in respect to the budget shares of the household for the categories of important goods and thus to differences between the countries in respect to the class specific levels of purchasing power. The lower income class gained relatively more from these subsidies than the upper class which resulted in the fact that the purchasing power was less inequally distributed than the net income.

Indeed it is difficult to include this aspect in the comparison of distributions since the latest comparisons between the GDR and the FRG concerning purchasing power were done for 1985¹⁰ and only the indices for two different groups were ascertained. Using the relation of the GDR-index of pensioner households and socially assisted households with two persons and the GDR-index of a worker family with four persons with a medium income it is possible to convert the results of tables 1, 2, 4 and 4a under the assumption that the lower class is marked off at 75% of the average equivalent income 2. Since the smaller weights for children in equivalent scale 2 could also be interpreted in such a way that they consider the subsidies for children clothing and kindergartens etc., the basis for this conversion is the equivalent income 2 only. The result is shown in tables 5, 5a and 5b. The inequality measures show a slight reduction of inequality and the person shares in the two lower equivalent income classes are smaller. Whereas the relative position of children does not change at all,

10 See also Melzer and Vortmann (1986). The relative purchasing power of the East German Mark for the year 1985 was calculated with 1.24 on the basis of the consumption structure in East Germany of a four-person-worker household and with 1.45 of a two-person-pensioner household. The result is a relation of the purchasing power of the lower class (under 75% of the equivalent income 2) to the purchasing power of the middle and upper class of 1.17. The lower incomes were multiplied by this factor in order to find out a distribution which is corrected for purchasing power differences.

the position of the elderly improves slightly. There is a clear decrease of the portions of the elderly and children in the lower classes.

With all caution which is advised when using such a rough method it can be established that the differences between the FRG and the GDR in the inequality of the distribution of purchasing power were still a little higher than they appeared in the comparison of net equivalent incomes when the differences in the price structure were not taken into account.

8.2 Time Expenditure

As pointed out in section 6 queuing on one hand and special stores for privileged people on the other hand were common in the GDR. Data from the SOEP can also be used to calculate some rough estimates of the amount and the distribution of time that was spent for shopping and doing repairs. We find that a) in the GDR more time was spent on both activities than in the FRG; b) in the GDR higher educated people spent less time on shopping than less educated people. The last result indicates that the welfare situation in East Germany was more unequal than the distribution of income indicates. Further research is required to find out whether these differences in the distribution of time expenditures are due to different preferences or to different opportunities for purchasing goods and services. In households with two and more persons shopping, repairing, and neighbourhood help of persons are activities which are not independent from each other. An analysis within a joint decision context would be the first best approach. This is not yet possible. In our second best analysis we control for different household situations by concentrating on married women in the labor force. All respondents within this group face more or less the same constraints. Unfortunately it is not possible to identify members of the most privileged class with the SOEP data. That is why we chose the availability of a telephone at home as a proxy for being privileged¹¹.

For illustrative purposes table 6 shows the percentage of people aged 16 and over performing specific tasks. Two points are noteworthy. The first is the much higher employment rate of females in East Germany. The second is the very high percentage of males who spent time for shopping. Because shopping is not that important in West Germany, time spent in this activity was not a separate category in the western subsample of SOEP. But there were more men in the East doing shopping than there were men occupied with either shopping or housekeeping in West Germany. This is not true for females but this may be an effect of the

11 Only less than 25 percent of the East German households had a telephone at home.

higher labor force participation rates. A second indicator of consumption problems in the GDR is the high percentage of men who spent time on repairs on Sunday. Do-it-yourself activities might have been of much higher significance in the East because there were no markets for those activities. The same seems to be the case for the relatively high rate of "neighbourhood-help".

Table 7 presents the distribution of hours spent on shopping in East Germany¹². Shopping was primarily an activity of women. Very few women could avoid shopping but 20 percent of males did so. There is another clear difference between sexes: less than 30 percent of males but almost 50 percent of females spent at least two hours on shopping on a regular work day.

The last two columns in table 7 indicate a difference between married women who were employed and those who were non-employed. Non-employed women spent much more time on shopping. But this is not a clear indicator that this group of women and their families were worse off than families with two earners because different allocation of time could have been a rational choice in order to optimize well-being. Different shopping patterns are indicators of welfare loss only if the differences result from rationing. This is difficult to measure. As a first approach we tried to control for variables which might explain different time allocations (e.g. age, number of children, labor force status, sex). We assume that if there is a "residual" effect of income with respect to shopping time this can be interpreted as an indicator for shopping privileges.

In table 8a we estimate the probability of spending two or more hours on shopping on a regular work day by means of a logit-model¹³. For the whole population aged 16 and older the estimates show highly significant effects of hours of work, sex, and age on our dependent variable. The effect of age is non-linear. Those aged 49 and younger have a higher probability of spending above-average time on shopping. After controlling for working hours there are no statistically significant effects of being married or of the number of children. Finally, there is a highly significant effect of being well-educated (the German

12 Because doing repairs may be considered a form of leisure, we only look at shopping in detail in this section. Unfortunately it is not possible to control for the possibility that it was possible in the GDR to do some shopping during working hours. This bias is not very likely in our data because the multivariate analysis (table 8a, b) shows a strong negative relationship between hours of work and shopping time.

"Abitur"-level is approximately equal to the "11 plus level" in Great Britain). A higher education decreases the probability of spending more time in shopping activities. This is also true for people with 9 and 10 years of schooling but it is not significant. We used the level of education instead of income because pension income of retired people may not be a good measure of their former privileges.

Because of this concern we also estimate the model only for employed respondents because this group is more homogeneous. Doing this with males and females the coefficient as well as the significance of the educational indicators increase. In this second model the monthly earnings are highly significant with the expected negative sign. Age loses its influence. The estimates for the homogeneous group of married women who are employed are best for controlling different preferences and constraints. Earnings and education continue to be significant.

Introducing a dummy variable for the availability of a telephone gives the results which are reported in table 8b. The availability of a telephone indicates a lower probability of shopping time above the average. But for the homogeneous group of married women in the labor force there is no clear additional influence of the telephone dummy because the correlation between educational status, income and a telephone is high. However, the coefficient of this dummy is as expected and it becomes significant when the earnings indicator is dropped.

The results support the hypothesis that there was a social difference in the access to goods and services in the GDR. But it is still possible that the differences in shopping reflect only a process of different search. In western countries it is well known that people with long working hours and higher incomes spend less time on searching for lower prices. This is a process which equalizes welfare between income classes because people with a lower income buy cheaper. But in the GDR the prices for official goods and services were approximately the same in all regions and cities, the searching for low prices was not as important as in western countries.

13 Since our number of cases is not large enough to use highly detailed cross tabulations for such a multivariate analysis, it is necessary to use a model and estimate its parameters. It is quite a difficult task to find the proper model for the distribution of hours spent on purchasing. The distributions would allow to do this with a linear model, estimated by OLS. Some test regressions showed plausible and expected parameters. A

8.3 Distribution of Durables and Housing Quality

Welfare can also be measured by consumption patterns that tell us "What money can buy" (cf. Heyns 1991). The SOEP contains some very rough measures of the consumption level of households in East Germany based on a few selected durables and a few indicators of the quality of housing. The distribution of these items can be used for an East-West comparison as well as for a comparison within the income distribution in the GDR. It is obvious that with a rising share of households being equipped with a certain good, the inequality in the distribution of this good is reduced. Besides this, it is remarkable that in the GDR the distribution of some of the analyzed items is more unequal than the distribution of income.

Table 9 shows significant differences in the ownership of selected durables between households in East and West Germany¹⁴. Since the data was collected in June 1990, before economic, monetary, and social union, it represents a clear picture of the GDR, before the massive buy-outs started in the second half of 1990. Our data provides little information on the quality of East German durables but it is likely that they were inferior to West German ones, both in quality and variety.

The distribution of some durables in East German households according to income quintiles reveals a higher degree of inequality than in the distribution of income which is reported in the very right column of the table. This holds especially true for the ownership of cars and telephones¹⁵.

East Germans had a much smaller share of privately owned houses and apartments (27 percent vs. 43 percent) than West Germans. And renters had worse living conditions than private owners. Table 10 shows the distribution of household quality measures. While West Germans at all income levels lived in homes with a bathroom and a toilet, about 30 percent of East German households in the lowest income quintile lived in homes without at least one of those two furnishings. Central heating was provided for only 40 percent in the lowest but for almost 70 percent in the highest quintile in East Germany, compared with 75 percent and more than 90 percent, respectively, in West Germany.

non-linear model for the probability of spending time on shopping which is above the average is possible, too, and from a methodological point of view more adequate.

14 Information on household durables has never been asked in the SOEP-West. Thus the figures for the West Germany are taken from tables of the statistical bureau's "Income and Expenditure Survey" from 1988. Unfortunately we had no access to the microdata, so no further analysis could be done.

15 One has to bear in mind that the ownership of a telephone was also a political issue.

9. Some Final Remarks

This paper shows the richness of the SOEP data for studies of economic well-being. But much more can be done. For instance, the SOEP allows the use of subjective indicators of well-being to measure the influence of income on well-being. In addition, the SOEP allows more sophisticated work in the field of time allocation, especially activities in the black market. It is also possible to model the time allocation process within households and families as a simultaneous process.

A public use file of the SOEP micro data is available on request, free of charge¹⁶. In 1992 the SOEP data (East and West) will be available within the data base of the Luxembourg Income Study.

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Table 1: The Distribution of monthly net household income among households and equivalence income ¹⁾ among persons in East and West Gemany (1990/1989) as characterized by various measures.

Measures	West Germany			East Germany		
	Household income	Equivalence income 1	Equivalence income 2	Household income	Equivalence income 1	Equivalence income 2
Mean	DM 3141	DM 1610	DM 1828	M 1564	M 776	M 900
Median	DM 2553	DM 1325	DM 1548	M 1415	M 705	M 838
Gini-coefficient	0.314	0.274	0.257	0.291	0.197	0.193
Atkinson-measures ²⁾						
ε = 1	0.159	0.119	0.106	0.145	0.062	0.061
ε = 2	0.310	0.226	0.205	0.294	0.120	0.120
Quintiles						
1. Quintil	7.36%	9.29%	9.81%	6.68%	11.60%	11.32%
2. Quintil	12.59%	13.73%	14.25%	13.14%	15.50%	15.89%
3. Quintil	17.65%	17.60%	17.89%	19.51%	19.04%	19.36%
4. Quintil	23.79%	22.65%	22.48%	25.42%	22.78%	22.89%
5. Quintil	38.61%	36.74%	35.57%	35.25%	31.08%	30.54%

1) Equivalence income 1 is calculated by using an equivalence scale derived from the West German social assistance regulation; equivalence income 2 is calculated by using smaller weights as explained in the text.

2) The formula for the Atkinson-measure is

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

Y_i denotes the income of those in the i th income range;

f_i denotes the proportion of the population with incomes in the i th range;

\bar{Y} denotes the mean income

(Atkinson, 1983, p. 57). We calculated the Atkinson-measures with ungrouped data.

Source : Own calculations from SOEP-West, wave 6, 1989, SOEP-Ost, wave 1, 1990

Table 2: The distribution of West German and East German households and of persons into income brackets defined by percentages of mean monthly net household income ¹⁾ or mean monthly net equivalence income ²⁾

- in % -

from ... until under ... % of mean	0 50	50 75	75 100	100 125	125 150	150 200	200 and more	all
Household Household income:								
West Germany	18.4	22.1	18.3	14.5	10.1	11.0	5.6	100
East Germany	19.0	17.2	15.6	16.6	15.0	13.0	3.6	100
Persons Equivalence income 1								
West Germany	10.8	26.5	23.2	16.7	10.2	7.9	4.6	100
East Germany	3.5	23.9	28.2	23.9	12.2	6.8	1.5	100
Persons Equivalence income 2								
West Germany	8.7	25.5	26.5	17.5	9.6	8.3	3.9	100
East Germany	4.3	21.2	27.6	26.1	13.0	6.8	1.1	100

¹⁾ The data for West Germany refer to the months of March and April 1989, the data for East Germany refer to the month of May 1990. The self-reported monthly household net income was corrected for East and West Germany by 1/12 of one-time payments (reduced by generalized fiscal charges) and additionally for West Germany by the net rental value of owner-occupied housing.

²⁾ Equivalence income 1 is calculated by using an equivalence scale derived from the West German social assistance regulation; equivalence income 2 is calculated by using smaller weights as explained in the text.

Source: Own calculations from SOEP-West, wave 6, 1989 SOEP-Ost, wave 1, 1990.

Table 3: Share of persons in various household types of total population and ratios of average equivalence income (1) of groups to the average equivalence income of total population

- in % -

Persons in Householdtypes	share of persons in household in total population	ratio of average equivalence income of groups to total average equivalence income	
		Equivalence income 1	Equivalence income 2
One-person household			
West Germany	15.9	125.3	110.5
East Germany	10.3	87.3	75.3
Couples without children			
West Germany	18.9	121.7	116.4
East Germany	17.7	110.1	102.8
Couples with children all under 18			
West Germany	24.3	84.5	93.4
East Germany	35.5	92.9	98.9
One-parent Families with all children under 18			
West Germany	2.8	63.5	71.8
East Germany	2.2	78.7	83.2
Other households with at least one child under 18			
West Germany	14.2	71.2	79.4
East Germany	13.0	92.7	98.9
Other households			
West Germany	23.9	102.9	102.4
East Germany	21.3	117.5	114.7

(1) Equivalence income 1 is calculated by using an equivalence scale derived from the West German social assistance regulation; equivalence income 2 is calculated by using smaller weights as explained in the text.

Source : Own calculations from SOEP-West, wave 6, 1989 SOEP-Ost, wave 1, 1990

Table 3a: The distribution of West German and East German persons from various household types into brackets defined by percentages of mean monthly net equivalence income ¹⁾.

- in % -

Equivalence income from ... until under ... % of mean	0 50	50 75	75 100	100 125	125 150	150 200	200 and more	all
One-Person-Household								
- Equival. income 1: West	6.6	17.8	18.1	20.4	13.4	12.2	11.5	100
East	(7.0)	49.8	12.7	11.0	11.7	(6.1)	-	100
- Equival. income 2: West	10.7	20.8	22.9	17.3	9.7	10.7	7.9	100
East	17.9	47.0	11.0	14.6	(4.6)	(4.3)	-	100
Couples without children								
- Equival. income 1: West	2.6	18.1	21.6	20.0	15.0	15.4	7.1	100
East	-	22.3	20.0	24.9	17.3	12.4	2.4	100
- Equival. income 2: West	3.9	20.2	24.1	18.0	13.2	14.9	5.8	100
East	-	28.4	20.1	24.3	15.5	8.9	(1.9)	100

Table 3a continued:

Equivalence income from ... until under ... of mean	0	50	75	100	125	150	200	all
	50	75	100	125	150	200	and more	
	- in % -							
Couples with children								
all under 18								
- Equival. income 1: West	10.9	38.3	25.8	13.0	7.0	3.6	1.3	100
East	(2.5)	24.3	38.2	24.3	7.9	(2.5)	.	100
- Equival. income 2: West	6.2	30.7	30.9	16.8	7.0	6.3	2.1	100
East	(2.0)	16.7	36.3	29.0	11.5	4.0	.	100
One-parent families with								
all children under 18								
- Equival. income 1: West	45.0	29.8	11.8	(7.4)	(3.5)	.	.	100
East	.	42.0	(28.3)	(13.8)	.	/	/	100
- Equival. income 2: West	34.8	33.5	12.0	(7.4)	(5.6)	(5.5)	.	100
East	.	41.5	(29.1)	(15.3)	.	.	/	100

Table 3a continued:

Equivalence income from ... until under ... of mean	0	50	75	100	125	150	200	all
	50	75	100	125	150	200	and more	
	- in % -							
Other households with at least one child under 18								
- Equival. income 1: West	28.3	35.1	22.4	8.2	2.9	2.3	(0.8)	100
East	(6.5)	21.4	32.6	25.1	(12.3)	-	/	100
- Equival. income 2: West	17.1	35.6	27.8	11.5	4.0	2.8	(1.2)	100
East	(6.0)	15.2	31.2	26.8	(15.5)	(5.4)	/	100
Other households without children under 18								
- Equival. income 1: West	5.3	20.7	27.4	22.1	13.0	7.9	3.6	100
East	-	10.7	23.3	29.6	16.1	13.4	(4.2)	100
- Equival. income 2: West	5.5	20.2	27.3	23.2	13.5	7.0	3.3	100
East	(3.3)	10.7	24.6	29.3	17.1	12.3	-	100

1) Equivalence income 1 is calculated by using an equivalence scale derived from the West German social assistance regulation; equivalence income 2 is calculated by using smaller weights as explained in the text.

Source: Own calculations from SOEP-West, wave 6, 1989 SOEP-Ost, wave 1, 1990.

() = 10 to 29 unweighted cases; - = 1 to 9 unweighted cases; / = no unweighted cases.

Table 4: Share of children and of elderly persons in the total population and ratios of average equivalence income⁽¹⁾ of children and of the elderly to average equivalence income of the total population

- in % -

Persons	share of persons in total population	ratio of average equivalence income of children and elderly to total average equivalence income	
		Equivalence income 1	Equivalence income 2
Children under 18			
West Germany	18.0	77.1	86.5
East Germany	22.0	89.6	96.1
Elderly over 60			
West Germany	21.3	102.9	95.8
East Germany	16.8	81.3	74.7

Source : Own calculations from SOEP-West, wave 6, 1989 SOEP-Ost, wave 1, 1990

(1) Equivalence income 1 is calculated by using an equivalence scale derived from the West German social assistance regulation; equivalence income 2 is calculated by using smaller weights as explained in the text.

Table 4a: The distribution of West German and East German children and elderly persons into brackets defined by percentages of mean monthly net equivalence income (1)

- in % -

Persons in house- holds	from until under %		0 %	50 %	75 %	100 %	125 %	150 %	200 %	All and more
	of mean		50 %	75 %	100 %	125 %	150 %	200 %		
Children under 18										
Equivalence 1 West			20.3	37.9	22.4	10.3	5.1	2.8	(1.2)	100
East			4.6	27.1	36.5	22.0	7.7	(1.9)	-	100
Equivalence 2 West			12.5	32.8	28.5	13.8	5.5	5.2	(1.7)	100
East			(3.7)	19.1	36.0	26.2	11.0	3.9	-	100
Elderly over 60										
Equivalence West			5.7	27.1	26.3	18.2	9.3	9.0	4.5	100
East			5.5	50.0	23.5	13.2	5.0	(2.1)	-	100
Equivalence West			11.7	24.9	27.0	20.7	8.4	5.2	2.1	100
East			11.6	51.1	20.1	11.0	4.2	(1.6)	-	100

Source : Own calculations from SOEP-West, wave 6, 1989 SOEP-Ost, wave 1, 1990

(1) Equivalence income 1 is calculated by using an equivalence scale derived from the West German social assistance regulation; equivalence income 2 is calculated by using smaller weights as explained in the text.

() = 10 to 29 unweighted cases; - = 1 to 9 unweighted cases;
/ = no unweighted cases.

Table 5: The Distribution of equivalence income 2 among persons in East Germany with consideration of differences in purchasing power as characterized by various measures.

measures	equivalence income 2	
	without consideration of purchasing power	with consideration of purchasing power
Mean (M)	900	923
Median (M)	838	838
Gini-coefficient	0,193	0,171
Atkinson-measures		
$\epsilon = 1$	0,061	0,047
$\epsilon = 2$	0,120	0,091
Quintiles		
1. Quintil %	11,32	12,84
2. Quintil %	15,89	16,20
3. Quintil %	19,36	18,87
4. Quintil %	22,89	22,31
5. Quintil %	30,54	29,77

Source : Own calculations from SOEP-West, wave 6, 1989; SOEP-Ost, wave 1, 1990

Table 5a: The distribution of East German persons into income brackets defined by percentages of mean monthly net equivalence income 2 with consideration of differences in purchasing power

- in % -

from... until under ... % of mean	0	50	75	100	125	150	200 and more	All
persons Equivalence income 2								
- without consideration of purchasing power	4,3	21,2	27,6	26,1	13,0	6,8	1,1	100
- with consideration of purchasing power	2,2	15,3	40,5	23,7	11,3	6,1	(0,8)	100

() = 10 to 29 unweighted cases; - = 1 to 9 unweighted cases;

/ = no unweighted cases.

Source : Own calculations from SOEP-West, wave 6, 1989; SOEP-Ost, wave 1, 1990

Table 5b:

The distribution of East German children and elderly persons into brackets defined by percentages of mean monthly net equivalence income 2 with consideration of differences in purchasing power and ratios of average equivalence income 2 of them to the average equivalence income 2 of total population

- in % -

Equivalence income 2 . from... until under ... % of mean	0 50	50 75	75 100	100 125	125 150	150 200	200 and more	All	ratio of average equivalence income of them to total avg. equiv. income
Children under 18									
equivalence income 2 without consideration of purchasing power	(3,7)	19,1	36,0	26,2	11,0	3,9	-	100	96,1
equivalence income 2 with consideration of purchasing power	(1,5)	13,8	47,9	24,1	9,6	2,9	-	100	96,1
Equivalence income 2 from... until under ... % of mean	0 50	50 75	75 100	100 125	125 150	150 200	200 und mehr	All	ratio of average equivalence income of them to total avg. equiv. income
Elderly over 60									
equivalence income 2 without consideration of purchasing power	11,6	51,1	20,1	11,0	4,2	(1,6)	-	100	74,7
equivalence income 2 with consideration of purchasing power	5,9	41,0	39,1	8,3	(3,7)	(1,7)	-	100	78,8

() = 10 to 29 unweighted cases; - = 1 to 9 unweighted cases; / = no unweighted cases.

Source : Own calculations from SOEP-West, wave 6, 1989; SOEP-Ost, wave 1, 1990

**Table 6: Percentage of People Performing Tasks on Workdays and Sundays
Among the Population and Sex -
Comparison (GDR May 1990/FRG Spring 1989)**

	Total		Men		Women	
	workday ¹⁾	Sunday	workday ¹⁾	Sunday	workday ¹⁾	Sunday
Employment						
GDR	70,4	13,1	80,6	18,9	61,4	8,1
FRG	54,0	11,1	68,3	14,6	41,2	7,9
Shopping/Housekeeping						
Shopping GDR	81,8	1,3	72,4	1,9	90,1	0,8
Housekeeping GDR	78,5	69,3	61,2	52,1	93,9	85,4
Shopping plus Housekeeping FRG	81,6	70,9	66,0	50,7	95,5	89,1
Child Care						
GDR	27,9	28,8	22,6	25,2	32,5	31,9
FRG	23,2	22,4	18,7	20,4	27,3	24,2
Repairwork House/Garden						
GDR	52,1	45,6	68,6	59,5	37,4	33,2
FRG	54,8	27,9	64,7	34,9	45,9	21,7

1) Monday through Friday

Sources: SOEP-East (1990), SOEP-West (1989); Weighted calculations by Elke Holst.

Table 7: Distribution of "Shopping Hours" (percentages) on Workdays in May 1990 in GDR - 16 Years or Older Respondents

Hours	Total			Married (living together with spouse)		Females (16-59)	
	Total	Males	Females	Males	Females	Employed	Non-employed
0	12,0	19,4	5,5	20,8	3,2	1,8	3,7
1	42,5	43,9	41,2	42,8	41,9	49,2	23,7
2	26,3	19,2	32,6	18,7	34,9	33,1	41,5
3	6,2	3,6	8,5	3,9	8,4	6,2	14,8
4 +	6,7	5,6	7,8	5,1	7,7	6,9	12,4
missing	6,3	8,3	4,4	8,7	3,9	2,8	3,9
total	100	100	100	100	100	100	100
N	4453	2114	2339	1528	1545	1165	186

Source: SOEP-East (1990); own calculations (weighted).

Table 8a: Logistic Regression of Shopping Time -
 Dependent Variable: $\ln(Y/1-Y)$; $Y=0$, if zero or 1 hour; $Y=1$, if 2 or more hours

	all respondents		Employed respondents							
	B	t	all		all		married women			
			B	t	B	t	B	t	B	t
9 and 10 years of education	-0,1500	1,76	-0,3199	3,25	-	-	-	-	-0,5089	3,03
11 + years of education	-0,0658	5,84	-0,8266	6,10	-	-	-	-	-0,9980	4,33
monthly earnings	-	-	-	-	-0,0004	4,00	-0,0007	3,50	-	-
hours of work	-0,0853	8,53	-0,0721	3,55	-0,0548	2,47	-0,0272	0,745	0,0745	2,26
female	0,7132	10,35	0,7800	9,78	0,6613	7,60	-	-	-	-
married	0,0721	0,83	-0,0221	0,21	-0,0400	0,39	-	-	-	-
no. of children	0,0319	0,76	0,0356	0,71	0,0019	0,37	0,0216	0,25	0,0462	0,53
age	0,0681	5,04	0,0175	0,67	0,0189	0,70	-0,000	0,00	-0,0155	0,30
age ²	-0,0007	7,00	-0,0002	0,67	-0,0002	0,67	0,0002	0,33	0,0002	0,33
constant	-1,5797	5,67	-0,3595	0,70	-0,3405	0,66	0,5453	0,51	1,1873	1,11
-2 log likelihood										
Baseline		5657,7		3823,7		3847,7		1500,1		1500,1
Modell		5285,4		3663,3		3688,9		1465,7		1471,4
N		4189		3082		2928		1084		1084

Source: SOEP-East (1990); own calculations

Table 8b Logistic Regression of Shopping Time -
 Dependent Variable: $\ln(Y/1-Y)$; $Y=0$, if zero or 1 hour; $Y=1$, if 2 or more hours

	all respondents		Employed respondents					
	B	t	all		married women			
			B	t	B	t	B	t
9 and 10 years of education	-0,1339	1,56	-	-	-	-	-	-
11 + years of education	-0,06534	3,29	-	-	-	-	-	-
telephone	-0,1260	1,58	-0,1512	1,57	-0,1414	0,96	-0,2493	1,73
monthly earnings	-	-	-0,0004	4,00	-0,0007	3,50	-	-
hours of work	-0,0848	8,48	-0,0549	2,48	-0,0277	0,76	-0,0852	2,60
female	0,7138	10,36	0,6736	7,71	-	-	-	-
married	0,0732	0,85	-0,373	0,35	-	-	-	-
no. of children	0,0264	0,63	0,0022	0,04	0,0208	0,24	0,0104	0,16
age	0,0699	5,14	0,0202	0,75	0,0047	0,09	-0,0243	0,47
age ²	-0,0007	7,00	-0,0002	0,67	0,0001	0,17	0,005	0,83
constant	-1,6074	5,75	-0,3437	0,74	0,4329	0,41	0,8255	0,78
-2 log likelihood								
Baseline		5657,7		3847,7		1500,1		1500,1
Modell		5283,0		3686,4		1470,5		1482,9
N		4189		2928		1084		1084

Source: SOEP-East (1990); own calculations

Table 10 Living Conditions of Households by Quintiles of Equivalence Household Income

	Bathroom		Toilet		Central Heating		Equivalence Income Index mean=100
	in %	Index	in %	Index	in %	Index	
Total							
East	86,6	100	84,2	100	53,2	100	100
West	97,6	100	97,4	100	84,5	100	100
First Quintile							
East	69,8	81	70,9	84	40,1	75	55
West	95,6	98	95,9	98	74,0	88	50
Second Quintile							
East	88,5	102	84,1	100	50,1	94	77
West	97,6	100	98,0	101	81,2	96	72
Third Quintile							
East	89,5	103	86,6	103	52,6	99	98
West	96,9	99	96,6	99	83,1	98	90
Fourth Quintile							
East	90,5	105	89,1	106	54,9	103	116
West	98,8	101	97,6	100	89,7	106	111
Fifth Quintile							
East	93,7	108	89,4	106	67,8	127	152
West	98,7	101	98,7	101	93,6	111	175

Source: SOEP-East (1990) and SOEP-West (1989); own calculations (weighted).

Table 9 Availability of Selected Durables in Households by Quintiles of Equivalence Household Income (percentages)

	Automobile		Telephone		Color TV		Freezer		Equivalence Income
	in %	Index	in %	Index	in %	Index	in %	Index	Index mean=100
Total									
West	67,8	-	93,2	-	87,4	-	70,4	-	-
East	51,2	100	20,5	100	71,6	100	60,8	100	100
East by Quintiles									
First	16,0	31	9,4	46	52,5	73	39,7	65	55
Second	43,3	84	14,1	69	71,6	100	61,0	100	77
Third	60,8	119	19,0	93	75,7	106	60,8	100	98
Fourth	59,6	116	21,1	103	74,6	104	65,3	107	116
Fifth	75,2	147	38,7	189	82,4	115	75,8	125	152

Source: SOEP-East (1990); Income and Expenditure Survey (1988) of Statistical Bureau; own calculations (weighted).