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Measuring Income in Household Panel Surveys for Germany: A Comparison of EU-SILC and SOEP

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Measuring Income in Household Panel Surveys for Germany: A Comparison of EU-SILC and SOEP

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Abstract

Empirical analyses of economic inequality, poverty, and mobility in Germany are, to an increasing extent, using microdata from the German Federal Statistical Office's contribution to the European Union Statistics on Income and Living Conditions (EU-SILC) as well as data from the German Socio-Economic Panel (SOEP). In addition to their significance for national reporting, the EU-SILC data are of great international significance for comparative EU-wide measurement, description, and analysis in support of the European Commission's stated objective of fighting poverty and reducing social inequality through the European social cohesion process. It is therefore crucial to assess the quality of the German contribution to EU-SILC, particularly in view of evidence in the literature of methodological problems in this still relatively young survey with respect to the representation of specific social groups and the distribution of key educational characteristics that can have a considerable impact on the degree and structure of inequality and poverty (see Hauser 2008, Causa et al. 2009, Nolan et al. 2009). While previous papers have critically examined the German EU-SILC contribution in comparison to the cross-sectional data from the German Survey of Income and Expenditure (EVS), the present paper compares EU-SILC-based results about income trends, inequality, and mobility with results based on SOEP, a widely used alternate panel survey of private households in Germany. The—in some cases severe—differences identified are discussed in the context of the surveying and interviewing methods, post-data-collection treatment of the micro-data as well as sample characteristics of the two studies, all of which exert a major influence on the substantive results and thus on the core findings regarding the social situation of Germany in EU-wide comparison.

JEL Codes: D3, C8, I3

Keywords: Inequality, poverty, mobility, household panel, EU-SILC, SOEP

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1 Introduction

The Europe-wide fight against poverty and inequality has been high on the EU policy agenda for many years. At the same time, the EU is attempting to reduce income differences among the Member States. In line with the objective formulated at the March 2000 meeting of the European Council in Lisbon of making "crucial progress" to eliminate poverty by 2010, a statistical infrastructure was founded to analyze income and living conditions across the EU: the European Union Statistics on Income and Living Conditions (EU-SILC). The data contained in this survey follow in principle the same logic as those from the European Community Household Panel (ECHP), collected from 1994 to 2001 in the EU-15 countries. The data collected each year under EU-SILC serve to provide a comparative picture of the income and poverty situation (and changes therein) across the participating European countries. The objective is to identify effective methods of fighting poverty in specific countries ("best practice") that can be adapted to conditions in other countries in order to facilitate the process of social convergence among all Europeans ("open method of coordination"). It is therefore important to evaluate a survey of such great relevance in its earliest stages, assessing the quality and the international and intertemporal comparability of the data.

EU-SILC is important not just for comparisons across Europe, but also in the framework of national reporting. It is the main official survey used in the German federal government's Third Poverty and Wealth Report (BMAS 2008). The impact of such studies on political decision-making and media coverage underscore the importance of establishing the highest quality standards for the underlying database.

It is therefore useful to compare the EU-SILC results with similar surveys based on different data sources and examine reasons for any differences that may appear. An ideal survey for such a comparison in the German case is the Socio-Economic Panel (SOEP) study, the longest-running household panel survey in Europe, which covers virtually the same set of issues as EU-SILC and is well established in the academic research community. For a comparison of selected EU-SILC results for Germany with the official data from the Income and Expenditure Survey (EVS) and other (aggregate) statistics, see Hauser (2008).[1]

Analyzing the similarities and differences in income distribution results based on two independently drawn samples derived from the same population universe (residents of Germany) is certainly far more than just a "statistical exercise." At the same time, broad agreement

[1] For a similarly motivated comparison between EVS and SOEP, see Becker et al. (2003).

between the results of these analyses would serve as a robustness check and thus would increase acceptance of the study results, which would be helpful particularly if sweeping social and economic policy decisions are to be made based on these findings. Some first comparisons between EU-SILC and SOEP data on Germany indicate, however, vast differences in some areas of these two surveys regarding the main indicators of social inequality and poverty.[2]

Even more important than the simple computation of mean values and inequality measures on a purely cross-sectional basis are the dynamics of household and personal income and poverty—that is, the *longitudinal* component of a panel survey. Ideally, this entails surveying a representative sample at regular intervals (e.g., annually) starting from a base year, adhering to specific follow-up rules within the survey area, and using standardized and time-invariant instruments.

The SOEP study started in 1984 in West Germany and was expanded in June 1990 to the territory of the GDR, even before the currency, economic, and social union. As a long-running panel study, the sample includes some respondents who meanwhile have been surveyed for the twenty-fifth time. The longitudinal component of EU-SILC, on the other hand, is limited since the underlying sample was set up as a "rotation panel" in which 25% of the sample is replaced by a new subsample each year.

Taking these kinds of survey-specific characteristics into account, this paper compares the results of inequality, poverty, and mobility analyses based on the two data sources and explores possible reasons for deviations between them. Against this background, we evaluate the qualitative development of the EU-SILC data on Germany since its inception in 2005. At present, data are available from the first three waves of EU-SILC on a cross-sectional basis, that is, from 2005 to 2007. Only data from survey years 2005 and 2006 are currently available on a longitudinal basis for Germany (as of November 2009).[3] Selected technical aspects of ex-ante and ex-post quality analyses have been discussed in previous papers (e.g., Hauser 2008, Grabka et al. 2007). Some of the results presented in those studies will be discussed here as possible reasons for differences between the inequality and mobility figures derived from the EU-SILC and SOEP data.

Chapter 2 of this paper compares key characteristics of the two datasets with a particular emphasis on income measurement. Chapter 3 presents results of the empirical analysis of ine-

[2] See the German federal government's Third Poverty and Wealth Report (2008) as well as one of the advisory reports on which it was based, Grabka et al. (2007).

[3] As of September 2009, longitudinal data are available for most of the other EU-SILC countries up to 2007. The planned date of publication for the longitudinal data is March of the year t+2.

quality, poverty, and mobility in Germany based on EU-SILC and SOEP data, and discusses them in the broader EU context. Chapter 4 concludes with a summary of findings and implications.

2 Database

To accurately interpret the results of a comparative analysis of EU-SILC and SOEP data on Germany, we need to examine whether the two databases are similar enough in their main design features and survey methodologies to justify such a comparison. Sampling methodology, for example, can be assumed to exercise a major impact, especially on income mobility. Differences in the surveying methodology (face-to-face interviews, paper-and-pencil questionnaires, etc.) may explain some biases. Weighting methods and procedures for the imputation of missing values are also addressed in the following comparison of the two databases.

The question thus arises to what extent the two surveys (after weighting and imputation) adequately reflect the actual population structure of Germany, and whether particular groups within the population—particularly those found on the margins of the income distribution—are adequately represented. Households with many children, people with a migration background, and those with low qualifications are, *ceteris paribus,* more difficult to recruit for such surveys, and therefore require particular attention when drawing and weighting the sample.[4]

In the following, we describe central features of the two surveys and then compare the income data surveyed in the two databases.

2.1 The European Union Statistics on Income and Living Conditions (EU-SILC)

With the signing of the Treaty of Amsterdam on October 2, 1997, the heads of government of the European Union countries approved a set of changes to the Treaty on the European Union. Among other things, the Treaty states the goal of fighting poverty, which was finally formulated in concrete terms by the European Council in Lisbon in March 2000: By 2010, significant progress should be made in eliminating poverty and social exclusion.

As mentioned at the outset of this paper, the basic idea of EU-SILC is to observe the effect of social policy measures in all EU countries in the framework of the open method of coordination and to evaluate these measures for possible use in other countries. This was to be made

[4] This problem has been studied in depth by Hauser (2008). He compares the weighted values for Germany for different population and educational groups and nationalities in EU-SILC, SOEP, and various reference statistics (in particular, housing subsidy statistics, social security statistics, and the German Microcensus).

possible with the aid of the Laeken indicators[5] that were to be collected for comparison in all countries. To this end, the cross-sectional and longitudinal EU-SILC survey was developed, which is coordinated by the Statistical Office of the EU (Eurostat, Luxembourg) and has been conducted since 2004 by the national statistical offices of most of the EU-27 countries. In Germany, data collection was carried out by the Statistical Offices of the federal *Länder* for the first time in 2005 under the title "Living in Europe" (*Leben in Europa*). EU-SILC comprises a wide series of socio-demographic variables such as gender, age, income, health, and education of household members, as well as themes such as household composition, living situation, and non-monetary deprivation. In addition to these standard modules, each year there are additional topical modules of relevance to social policy that do not necessarily require an annual survey (e.g., financial situation in the parental household during childhood, leisure-time activities, debt, etc.).

To increase the comparability of results across all countries and to maintain minimum quality standards, a series of guidelines was developed by Eurostat on sample design and size, imputation, weighting, data processing, etc. Based on experience with the precursor study, ECHP, an input-harmonized survey with a common survey instrument whose rules had proven to be too rigid,[6] the rules for EU-SILC permitted survey methodologies and data processing to be adapted to national conditions (output-orientation).[7]

Eurostat requires all countries to collect a stratified random sample for EU-SILC.[8] For this purpose, Germany uses an "access panel" (*Dauerstichprobe*, see Körner et al. 2006). This panel has existed since 2004 and consists of households that had agreed to participate in future voluntary surveys after having participated in the Microcensus (in which participation is mandatory). Given their prior survey experience and expressed willingness to provide further information, one can assume that the data provided (particularly on income) in this part of the sample are *ceteris paribus* of relatively high quality. Amarov & Rendtel (2009), however, find strong indications of selection effects in the three levels of self-selection on the path to obtaining the sample used in EU-SILC: a) selection into the access panel (only 10% of participants in the Microcensus—comprising just 1% of the population—agreed to participate), b) remaining in the access panel over an extended period of time, and c) willingness to participate in special

[5] On the development of the Laeken indicators, see Atkinson et al. (2002).

[6] This was difficult or impossible to achieve in EU-SILC due to national differences in particular areas, such as basic social protection in the EU-27.

[7] Regulation (EC) No. 1177/2003 of the European Parliament and the Council of June 16, 2003, for the European Union Statistics on Income and Living Conditions (EU-SILC).

[8] For further information on the design of this sample, see Horneffer & Kuchler (2008).

surveys like EU-SILC (amounting in 2005 and 2006 to just 75% and 78% of the sample, respectively). It is mainly households in the middle income range that show a high willingness to participate in the access panel. Furthermore, there appears to be a tendency for households with married, employed, middle-aged household heads to participate. Households with a non-German head of household, on the other hand, tend to drop out of the sample relatively soon or to not agree to participate in any further surveys. Thus, the EU-SILC does not fulfill the demands of a (representative) random sample.

Furthermore, in 2005, the access panel of households that had agreed to participate was still too small and not representative of the population due to regional selection. As a result, around three-fourths of the households and individuals to be surveyed in EU-SILC were selected in an additional quota sample created by the Statistical Offices of the *Länder* corresponding to state population size and stratified according to specific characteristics. With inappropriate stratification or insufficient representation of important socio-demographic characteristics, this approach leads to systematic underestimation of certain (smaller) population groups—especially migrants who are less integrated and less successful economically—and thus to limited representativeness of the results. Hauser (2008) demonstrates that after weighting in EU-SILC, the share of foreigners is even higher than in the Microcensus but that this is due more to an overrepresentation of foreigners from the "old northern EU countries, while Turks in particular are greatly underrepresented. Foreigners from the old southern EU states are also underrepresented." (Hauser 2008).

It is also mainly people in the middle income range who agree to participate in such surveys. The resulting bias in the income distribution should thus play itself out in lower inequality values. In addition, sampling probabilities generally cannot be computed for quota samples. This makes it impossible to estimate confidence bands or sampling errors.

As stated above, a rotational panel design is used for the longitudinal component of EU-SILC. This means that every year, one-fourth of the households are replaced by new ones. Every participant is therefore surveyed for a maximum of four years. In Germany, in the first waves, part of the quota sample is replaced by respondents from the access panel of households that agreed to participate. This means that the first results for the required complete "random sample" will become available for survey year 2008—although with the aforementioned limitations regarding representativeness.[9]

[9] In 2008, the states of Bremen, Berlin, and Saxony-Anhalt still did not have large enough access panels of households agreeing to participate.. Instead of selecting a random sample of these cases, *all* households available in the access panel are used (see Horneffer & Kuchler 2008).

Survey respondents are all adults (17 years and older) in private households at their primary residence. In Germany in the survey year 2005, data were collected from approximately 13,100 households containing 31,300 persons, divided proportionally by population into the 16 states. The city-state of Berlin is counted together with the "new" German states formerly belonging to the GDR.

The survey is carried out entirely in written, postal form,[10] that is, the questionnaires are sent by the Statistical Office by mail, and have to be filled out by the survey respondents themselves without instructions from an interviewer and then sent back. Additionally, the survey often takes place in the form of proxy interviews, that is, approximately 20% of all individual interviews are provided by other household members. As is well known, this kind of interview entails the danger of false, missing, or biased answers to questions if the respondent has little or no experience or assistance in answering the questions, or is ill-informed about the income and living situation of the household members for whom he/she is providing answers.[11, 12]

Finally, in order to represent the total population of Germany weighting factors are provided adjusting EU-SILC results to the marginal distributions of key characteristics of the German Microcensus.[13]

2.2 The Socio-Economic Panel (SOEP)

The Socio-Economic Panel (SOEP) is an ongoing household panel survey conducted annually since 1984, representing the resident population of Germany (Wagner, Frick & Schupp 2007, and http://www.diw.de/soep). This longitudinal study is part of the international statistical and academic research infrastructure and is conducted by the survey institute TNS Infratest on behalf of the SOEP group at DIW Berlin (German Institute for Economic Research). The standard survey areas are demography and population, labor market and employment, income, taxes, social security, housing and neighborhood situation, health, (further) education and qualification, participation, basic attitudes, and integration. Key indicators on these areas are gener-

[10] Germany is the only country in the EU-SILC sample that deviates from the Eurostat guideline of conducting the survey with the help of interviewers.

[11] For more details on differences between the German approach to sample selection and the Eurostat recommendations, see Clemenceau & Museux (2007), Bauer (2007) as well as the European Commission "Comparative Final EU Quality Report 2005 Version 2" (2008). At a conference in Helsinki in 2006, extensive discussion took place on differences between the various EU-SILC samples and the Eurostat guidelines (see Eurostat 2007). Hauser (2008) also discusses the problems resulting from postal surveys.

[12] To some extent, Germany diverges from the other participating Member States in how questions are formulated—for example, on the question of how respondents estimate their capacity to make it to the end of the month on the available income ("making ends meet"), which makes it difficult or impossible to use the German data for comparative studies in this area (see note 9 in Noll & Weick 2009).

[13] Further information on the database EU-SILC can be found in Körner et al. (2005).

ally measured each year. Furthermore, annual topical modules provide more in-depth information than what is collected in the standard questionnaire. Since the 2006 survey year, the SOEP consists of a total of eight subsamples.

Sample A represents mainly the (West) German population as well as those foreigners who were not included in Sample B, the "foreigner sample," which was also started in 1984, and oversamples labor migrants from the five main workers recruitment countries.[14] The expansion of the survey territory envoked by the fall of the Berlin Wall and German unification led to the establishment of Sample C in June 1990. In order to adequately represent the massive immigration to (West) Germany in the panel population during the early 1990s, another sample was added in the years 1994/1995. In Sample D, over 1,000 individuals from around 500 households were surveyed in 1995. With the aid of these subsamples, SOEP adequately represents the heterogeneity of individuals with a migration background in the population.[15] Finally, in the years 1998, 2000, and 2006, representative increases in the SOEP sample size took place (with Samples E, F, and H). In 2002, a supplementary sample of high-income households was added (Sample G) to better represent the top end of the income distribution[16] (see Schupp et al. 2009).

Using sample size increases (as regularly as possible) to include new, representative subsamples, SOEP is pursuing—and also achieving—three goals: a) to stabilize sample size in the medium to long term in the range of 10,000 to 12,000 households, b) to take into account interim changes in the underlying population (due to immigration), and c) to use the possibility to monitor potential survey or panel effects through systematic comparison of old and new samples.[17]

Based on the complete set of SOEP subsamples, around 11,000 households with approximately 25,000 members (adults and children) are surveyed annually. The main interview mode is face-to-face interviewing (using "paper and pencil" (PAPI) and "computer assisted interviewing (CAPI)); in some cases postal interviews are carried out after the interviewer has made contact by phone or in person. To reduce the risk of comprehension problems due to a lack of proficiency in German, and thus also to reduce the phenomenon of selective willingness

[14] This sample contains individuals from households whose household head is of one of the following nationalities: Turkish, former Yugoslavian, Spanish, Greek, or Italian. The other nationalities are taken into account through sample selection in Sample A and later in all other samples.

[15] Sample D consists of a purely random sample and a somewhat smaller snowball sample; since it is impossible to precisely compute the selection probability of the latter, the standard weighting factors are set to zero in these cases.

[16] Sample selection was done as a two-stage process, starting with screening over 100,000 households to identify those with a monthly net income of more than DM 7,500.

[17] See, e.g., Frick et al. (2006) for evidence of the increasing quality of income data after the first waves of a panel.

to participate in the survey, multilingual translation aids are offered for the various survey instruments. All household members over the age of 16 are interviewed personally; that is, there are no proxy interviews in which household members are asked to provide personal details (on income, health, life satisfaction, etc.) about others. One problem with this personal surveying method that has become more acute in recent years is the complexity of accurately measuring and defining household income if not all survey participants in a given household are willing or able to respond; in the current SOEP waves, this applies to approx. 5% of the target households. With all SOEP data releases starting in 2009, in the case of such incomplete household interviews ("partial unit-non-response"), corrections to the otherwise biased income measures are made retrospectively—that is, consistent over time—for all waves since 1984 (see also Section 2.3). This paper uses these newly calculated data.

The SOEP sample is weighted to represent the total population by taking into account marginal distributions from the German Microcensus data (for persons in private households at their primary residence). The city-state of Berlin (East and West) is considered as belonging entirely to the "new" German states.[18]

2.3 Comparing income measurement in EU-SILC and SOEP

The income construct used in welfare analyses and thus also in this paper is the equivalent income of a household and its members. To this end, the disposable household income[19] is divided by the "equivalent weight" of the household (as given in the modified OECD scale), which takes into account economies of scale for shared expenses in multiperson households.

Following the recommendations of the Canberra Group (2001) on comprehensive measurement of the income situation of private households, it is important to note that households in subsidized housing or living in their own properties have income advantages. Income should be supplemented by an estimated fictitious value corresponding to the amount the household would have had to pay for property rental in the absence of subsidies. This value, which is

[18] Further information on the SOEP survey method can be found in Haisken-DeNew & Frick (2005) and in Wagner et al. (2008).

[19] In both surveys, the previous year's disposable household income, which is of interest here, is derived from the sum of the gross income components surveyed on the individual or household level (labor income, capital income, private transfers, private pensions, public transfers, public pensions, etc.), deducting direct taxes and social insurance contributions. In EU-SILC, respondents are asked to state these deductions, while in SOEP they are simulated using complex procedures that take into account all of the standard parameters (definition of a tax unit, tax rate, contribution ceilings, etc.) as well as potential lump-sum tax deductions (including advertising costs) from the previous year (see Schwarze 1995). Under the assumption that potential tax deductions increase with taxable income, then *ceteris paribus* the inequality measured with EU-SILC would tend to be higher than with SOEP because of the possibility to consider actual rather than simulated taxes.

known as *imputed rent* (IR), was provided by only a few countries in EU-SILC up to 2006 but is mandatory starting in 2007. In deviation from this rule, however, this variable is not available for Germany. All of the following results based on EU-SILC are therefore presented without imputed rent.

In SOEP, an estimate of IR is one of the provided standard variables. Corresponding to the guidelines of the European Commission (EU Commission Regulation (EC) No. 1980/2003), a net value is computed after deduction of all relevant costs (especially financing costs) that contains both the rental value of owner-occupied housing and the income advantages of subsidized or rent-free housing (see Frick, Grabka & Groh-Samberg 2007a). In the analyses that follow, in some cases we present the SOEP results including imputed rent to show the differences that result from not taking these crucial non-monetary income components into account. In most cases, however, we use comparable income measures from both surveys without considering imputed rent.

Missing income information in EU-SILC is entirely imputed: this is true, for one, in cases where only single items are missing from otherwise completed questionnaires (item nonresponse, INR), and second, where one or more household members did not complete a questionnaire while all others did (partial unit nonresponse, PUNR). In the latter case, the income information provided by other household members is aggregated and then corrected using a correction coefficient derived from the income of similar households with fully completed interviews.[20] In the case of missing values due to INR, when income cannot be computed based on the variables directly linked to income (such as income taxes or social contributions), statistical procedures such as regression analyses are employed to make use of the existing income information from other, similar individuals or households. Income data from the previous year is used for plausibility checks.

The imputation of missing income data in SOEP is conducted following the internationally accepted procedure proposed by Little & Su (1989), which is also used in the Australian panel study HILDA (see Starick & Watson 2007). This "row and column" imputation procedure uses both cross-sectional and longitudinal information on all households and individuals whose income needs to be imputed (see Frick & Grabka 2005). Missing data due to partial unit nonresponse[21] have also been imputed since 2009 (retrospectively for all waves) in a complex, multistage process for six individual gross income components (labor income, pensions, and

[20] See also European Commission "Comparative Final EU Quality Report 2005 Version 2" (2008).

[21] This phenomenon was negligible in the first waves of SOEP due to successful completion of all interviews in the household and was therefore ignored in the imputation of missing income up to 2008.

government transfers in the case of unemployment, education/training, maternity leave/child-care benefits/parental benefits, and private transfers) also using longitudinal information, if at all available (see Frick, Grabka & Groh-Samberg 2009b). Using these values together with the income data provided by the other members of the household, the tax and/or social security contributions are simulated in the household context, resulting in the previous year's disposable household income that is of relevance for the analyses below.

For the following cross-sectional and longitudinal analyses, all income information in both surveys is given in 2000 prices for the sake of improved intertemporal comparability. A very few households in EU-SILC show negative incomes; they are not taken into account in the analyses presented here. The income given below for a specific year always relates to the previous calendar year; the computation of the equivalence scale is based on the household composition at the point in time of surveying.[22]

2.4 Indicators for analyzing inequality and mobility

In the following study of income inequality, we use two additional measures in addition to the Gini coefficient, which is considered robust and especially sensitive to the middle of the distribution. Those are sensitive to changes at the extremes of the income distribution – the top-sensitive half-squared coefficient of variation (HSCV) and the bottom-sensitive mean-log deviation (MLD).

Key indicators for poverty research have been provided with the metric introduced by Foster, Greer & Thorbecke (1984, sometimes referred to as FGT): the poverty aversion parameter α, with whose help the poverty rate (FGT(0)), the poverty gap (FGT(1)), and the inequality in the poverty distribution (FGT(2)) can be analyzed. The poverty threshold is defined here according to EU guidelines as 60% of a country's median income. The at-risk-of-poverty rate, together with the Gini coefficient and the S80/S20 ratio, which is the ratio of the total income received by the upper income quintile relative to the total income of the lower quintile, forms part of the Laeken indicators (see Atkinson et al. 2002). To illustrate the income distribution in graphic form, kernel density estimation is used.

Alongside these indicators based on cross-sectional data measuring income inequality at a single point in time or in a time series, the panel data collected in EU-SILC and other similar

[22] While this is the standard approach in income distribution analysis, it may lead to biased measures of equivalent income due to the different points in time referred to with income (previous year) and household composition (current interview month) (see Debels & Vandecasteele 2008). This effect should not, however, significantly affect the present study, whose aim is to analyze the comparability of distribution and mobility analyses based on EU-SILC and SOEP, since both surveys are equally affected.

surveys are also useful for analyzing income mobility: here the focus of interest is how much a person's income or relative income position within a country varies over time. Since confidence bands cannot be estimated due to the sample design of EU-SILC, several alternative measures are used for robustness checks in studies of income mobility (matrix mobility, Fields & Ok 1996, Shorrocks 1978a). Studies of poverty mobility compare the low income situation of survey respondents longitudinally over two consecutive years (here: balanced panel of survey years 2005 and 2006, that is, all respondents who were successfully surveyed in two subsequent interviews).

3 Empirical Analysis

To compare the empirical results of EU-SILC and SOEP, we start by examining the levels and trends in mean and median income as well as in inequality over the survey period 2005 to 2007. The dates cited in the following generally refer to the survey year; thus, in line with the method of income measurement described above, we analyze the respective previous year's income. The population of interest is, in each case, the total population living in private households.

All analyses on income levels and inequality are conducted examining both the cross-sectional populations and the longitudinal one. Comparing the results for the cross-sectional and longitudinal populations serves as a means to test the intertemporal consistency of the database in question and especially to control for possible selection effects in the EU-SILC rotation sample. This approach will also form the point of departure for mobility analyses, which can only be carried out based on longitudinal data (using at least two subsequent waves). Finally, the SOEP and EU-SILC results for Germany will be compared to those for the other EU-SILC countries. The hypothesis to be tested in this context is that analyses based on two samples selected independently from the same base population produce statistically indistinguishable results on inequality, poverty, and mobility.

In addition to the income analyses, this study also examines the distribution of selected socio-structural variables, which are generally correlated with the income situation. These include not only the educational and age structure of the samples, but also the regional distribution between the old and new German states. Not only can these kinds of variables bias the inequality results directly, for example, in the case of underrepresentation of low-skilled individuals. More so, in the framework of relative poverty measurement, they can also bias the median income and thus the relevant income threshold which is central to defining the relative poverty risk. If the value obtained for the median is too high—due, for example, to the overrep-

resentation of high-skilled individuals—the poverty threshold and thus, *ceteris paribus,* the poverty risk in the overall population most likely will be biased upwards as well.

3.1 Income levels and trends from 2005 to 2007 based on cross-sectional data

When comparing levels of real income over the period 2005 to 2007, wide variations appear in the EU-SILC data (see Table 1).[23, 24] After a significant decline of around 6% in price-adjusted income from approx. €17,100 (in 2005) to approx. €16,000 (in 2006), income levels increased significantly by almost 16%, or approx. €2,500, to €18,500 (in 2007). If we also take the median into consideration as the more robust measure, this picture does not change: the leaps are clearly visible here as well, which indicates that these results were not driven by a few outliers.[25]

Table 1: Equivalent incomes in EU-SILC and SOEP, cross-sectional population 2005–2007 (in euros)

	SOEP Total		SOEP West		SOEP East		EU-SILC Total	EU-SILC West	EU-SILC East	SOEP (without IR) in % of EU-SILC		
	without IR	with IR	without IR	with IR	without IR	with IR	without IR			Total	West	East
Mean 2005	18,041	18,973	18,779	19,812	15,196	15,736	17,100	17,615	15,350	105.5	106.6	99.0
Mean 2006	17,885	18,803	18,660	19,683	14,947	15,465	16,039	16,615	14,296	111.5	112.3	104.6
Mean 2007	17,964	18,902	18,725	19,750	15,007	15,606	18,549	n.v.	n.v.	96.8	n.v.	n.v.
Median 2005	15,791	16,598	16,407	17,216	13,843	14,460	15,387	15,816	14,076	102.6	103.7	98.3
Median 2006	15,470	16,337	16,043	16,914	13,546	14,125	14,443	14,841	13,364	107.1	108.1	101.4
Median 2007	15,482	16,241	16,004	16,869	13,579	14,394	16,160	n.v.	n.v.	95.8	n.v.	n.v.
N 2005 in Mill.	81.6		64.8		16.8		81.5	62.9	18.5	100.1	103.0	90.8
N 2006 in Mill.	81.6		64.6		17.0		81.2	61.1	20.2	100.5	106.2	82.7
N 2007 in Mill.	81.5		64.8		16.7		80.9	n.v.	n.v.	100.7	n.v.	n.v.

Note on the calculation of equivalent income: income always refers to the previous calendar year using the modified OECD scale in 2000 prices. IR = Imputed Rent.

Source: EU-SILC 2005–2007 (August 2009 version) and SOEP 2005–2007 (September 2009 version). Authors' calculations.

[23] The calculations are based on the EU-SILC data release of August 2009 (with the third version of the cross-sectional data from 2005, the second revised version from 2006, the first revised version from 2007, and the first revised version of the longitudinal data up to 2006) as well as the September 2009 version of the SOEP data. The latter contains an improved weighting scheme (see Kroh 2009) in addition to the improved imputation of incomes in the case of missing data in households with incomplete interviews (see Frick et al. 2009). For this reason, the levels of inequality and poverty reported here based on the SOEP data may deviate from previous publications; temporal trends remain by and large unaffected by these revisions.

[24] The empirical analyses were conducted with Stata (Version 10.1) using the procedures SHORMOB, FOKMOB, IMOBFLDS, IMOBSHOR, IMOBFOK and MATRXMOB by Philippe van Kerm (CEPS/Instead, Luxembourg) as well as POVDECO and INEQUAL7 by Stephen P. Jenkins (University of Essex, UK).

[25] These results are largely in agreement with Eurostat publications on the subject: http://nui.epp.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_di03&lang=en. The calculations presented here use only incomes >=0 in 2000 prices; while the Eurostat estimates also include incomes below zero. They are also expressed in nominal euro terms.

Although it is impossible to completely rule out that incomes in Germany followed this trend, external (as well as macroeconomic) variables—such as labor market trends and particularly unemployment trends during this period—would lead one to expect the income distribution to show a different development. These possibilities are discussed below following the comparison of the EU-SILC and SOEP results.

The study of income divided into the old and new German states leads to a similar conclusion: between 2005 and 2006, we see a significant decline of around € 1,000 in incomes in both parts of the country—from €15,400€ to €14,300 in the new states, and from €17,600 to €16,600 in the old states.

The corresponding SOEP income estimates for the same period remain relatively constant at between approx. €17,900 and €18,000. In 2005, they were 5% and in 2006 12% above the respective EU-SILC figures. In 2007, SOEP income was approx. 3% below EU-SILC income, but only because of the rather puzzling increase in income in EU-SILC. With respect to regional income comparisons, the SOEP shows 6-12% higher income in the old German states than EU-SILC does. At the same time, the correspondence between average incomes in the new German states is much higher: in 2005 mean income measured in SOEP was, at €15,200 approximately €150 below the comparison value in EU-SILC, which is a minor difference in light of the results for Germany as a whole. A replication of this comparison for 2007 is unfortunately impossible since the German Federal Statistical Office no longer provides regional data (differentiating between East and West) to EU-SILC.

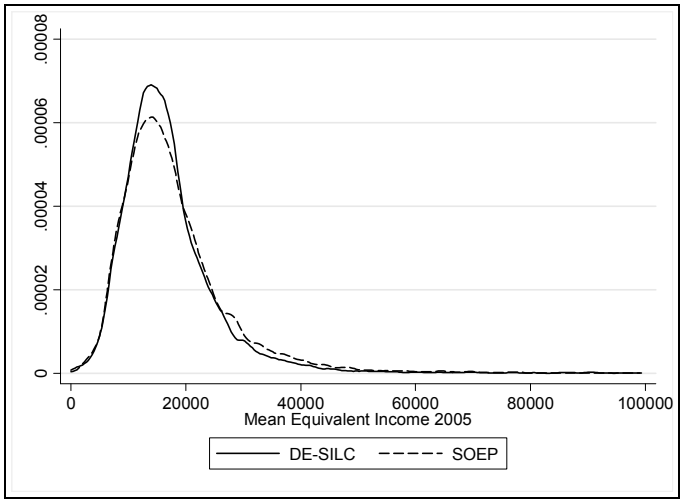
The inclusion of imputed rent in the SOEP income measure (as proposed by the Canberra Group 2001 and mandatory for EU-SILC starting in 2007 pursuant to a Regulation of the European Commission), would increase average income by another estimated €1,000.

3.2 Trends in income inequality from 2005 to 2007 based on cross-sectional data

When examining the income distribution using kernel density estimates, the differences between the results of the two samples for the years 2005 and 2006 appear especially marked. The EU-SILC income distribution is steeper than the SOEP distribution and more concentrated on the middle incomes (see Figure 1 to Figure 3).[26]

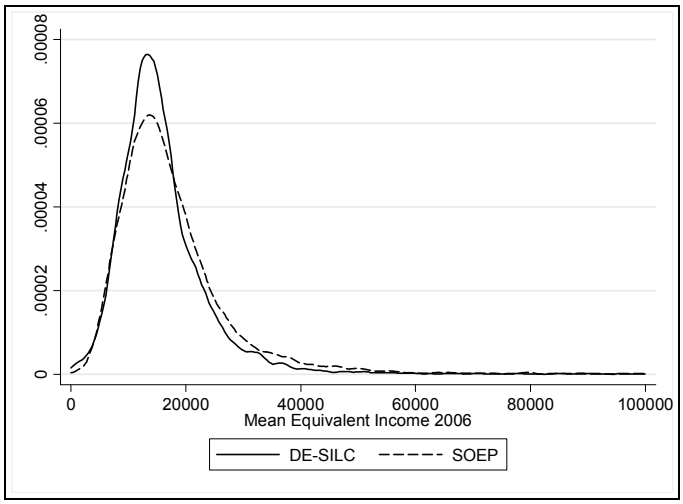
[26] In the following figures, the results from Germany based on the EU-SILC are denoted with the abbreviation "DE-SILC."

Figure 1: Kernel density estimates of equivalent income, cross-sectional population 2005



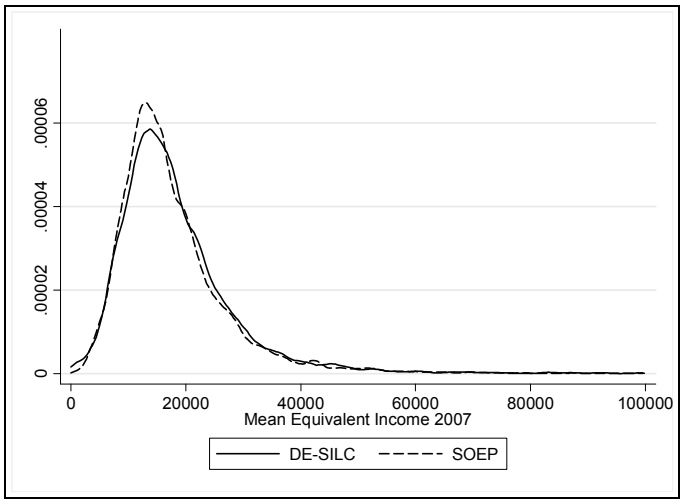
Source: EU-SILC 2005 (August 2009 version) and SOEP 2005 (September 2009 version). Authors' calculations.

Figure 2: Kernel density estimates of equivalent income, cross-sectional population 2006



Source: EU-SILC 2006 (August 2009 version) and SOEP 2006 (September 2009 version). Authors' calculations.

Figure 3: Kernel density estimates of equivalent income, cross-sectional population 2007



Source: EU-SILC 2007 (August 2009 version) and SOEP 2007 (September 2009 version). Authors' calculations.

In 2007, however, the picture changes: the EU-SILC distribution is now flatter than the SOEP distribution. These strong fluctuations in the EU-SILC distribution are in line with the changes in income levels reported in Table 1, whereas the SOEP figures and plots remain relatively constant over the years. This can be interpreted as an indication of problems in income measurement at the tails of the income distribution using the EU-SILC *quota* sample, which makes up the dominant part of the overall sample in the first two survey years. In 2005 only a quarter of all respondents came from a random sample of households that had agreed to participate and had previously taken part in the German Microcensus. Because of the rotation principle mentioned above, this percentage was already three-quarters in the survey year 2007.

The EU-SILC data for Germany show fairly stable results on inequality and poverty risk for the years 2005 and 2006: the at-risk-of-poverty rate (FGT(0)) hovers at around 12% of the total population; the Gini coefficient remains constant at around 26% (see Table 2). Only the half-squared coefficient of variation (HSCV) varies more widely: it drops from 25% in 2005 to less than 21% in 2006. It must be noted, however, that the HSCV is very sensitive to changes in the upper tail of the income distribution: even one extreme outlier can substantially affect its size. Such an outlier can also result from measurement errors. Large shifts in the HSCV only should therefore not be taken too seriously. The data for 2007, however, also show a sudden increase in the other, much more robust figures: the poverty rate increases from 12% to almost 15%, the Gini coefficient from 26% to almost 30%. The size of the increase in both figures within just a single year is exceptionally difficult to comprehend or explain based on the evolution of income inequality in Germany over the last few decades—particularly given the positive labor market conditions at the end of the period described here.

The SOEP data show a slight increase in poverty over the period 2005 to 2006 (from just below to just above 14%); these figures are around two percentage points above the EU-SILC figures. According to SOEP, this trend reversed itself by the year 2007, when the at-risk-of-poverty rate fell for the first time in many years (to 13.6%). Within the same three-year period, the Gini coefficient rose from 28% to 29%, and then fell again slightly to just below 29%.[27] Overall, the inequality measured by the 2005 and 2006 SOEP data is significantly higher than in EU-SILC: the deviation across the various measures ranges between 8% and

[27] Because of the aforementioned improvements in data processing in the SOEP (in income imputation and weighting) these at-risk-of-poverty rates are lower than the previously reported values of 16.7% for 2005, 18.0% for 2006 and 16.5% for 2007 (see Frick & Grabka 2008: 564). The Gini coefficients calculated based on past SOEP versions are also somewhat higher than those reported here: the previously published Gini coefficients were .306 for 2005, .323 for 2006 and .319 for 2007 (loc. cit.: 563f). The comprehensive revision of imputation and weighting in SOEP undertaken for the 2009 data release thus causes level effects in the measurement of both poverty and inequality, although precisely the same trends appear for the intertemporal development over the period 2005 to 2007 as those previously reported.

18%. In 2007, however, as with the income levels, a reversal took place: all inequality measures resulting from EU-SILC data (with the exception of HSCV) were considerably higher than the SOEP reference values.

Table 2: Income inequality in EU-SILC and SOEP, cross-sectional population 2005-2007

	SOEP without IR			SOEP with IR			EU-SILC			SOEP (without IR) in % of EU-SILC		
2005												
	Total	West	East	Total	West	East	Total	West	East	Total	West	East
FGT(0)	0.139	0.125	0.194	0.138	0.120	0.205	0.121	0.110	0.159	114.2	112.9	121.5
FGT(1)	0.032	0.029	0.043	0.032	0.028	0.048	0.029	0.027	0.035	110.0	106.8	122.1
FGT(2)	0.012	0.011	0.016	0.012	0.011	0.018	0.012	0.011	0.013	103.1	98.3	120.5
Gini	0.280	0.283	0.250	0.280	0.282	0.249	0.259	0.259	0.246	108.4	109.3	101.3
MLD	0.137	0.140	0.107	0.136	0.138	0.107	0.119	0.119	0.114	114.5	117.9	93.2
HSCV	0.967	1.094	0.152	0.893	1.003	0.147	0.250	0.212	0.404	387.2	515.0	37.6
S80/S20	4.121	4.155	3.540	4.131	4.159	3.521	3.718	3.732	3.468	110.8	111.3	102.1
n	25,520	19,092	6,428	25,520	19,092	6,428	31,233	24,797	6,436	81.7	77.0	99.9
N in Mill.	81.6	64.8	16.8	81.6	64.8	16.8	81.5	62.9	18.5	100.1	103.0	90.8
2006												
FGT(0)	0.143	0.128	0.201	0.142	0.127	0.198	0.124	0.114	0.152	115.8	112.1	131.8
FGT(1)	0.035	0.032	0.047	0.036	0.032	0.050	0.033	0.030	0.039	107.2	104.7	119.1
FGT(2)	0.013	0.013	0.016	0.014	0.013	0.018	0.015	0.014	0.017	89.0	87.4	96.6
Gini	0.292	0.297	0.255	0.292	0.296	0.251	0.261	0.264	0.237	112.2	112.1	107.3
MLD	0.148	0.153	0.109	0.147	0.152	0.108	0.127	0.130	0.109	116.7	117.8	100.8
HSCV	0.503	0.556	0.140	0.473	0.519	0.135	0.207	0.211	0.180	242.3	263.5	78.0
S80/S20	4.359	4.422	3.647	4.362	4.436	3.629	3.800	3.863	3.417	114.7	114.5	106.7
n	27,321	20,536	6,785	27,321	20,536	6,785	31,639	24,843	6,796	86.4	82.7	99.8
N in Mill.	81.6	64.6	17.0	81.6	64.6	17.0	81.2	61.1	20.2	100.5	105.7	84.2
2007												
FGT(0)	0.136	0.124	0.181	0.135	0.122	0.186	0.149	-	-	91.3	-	-
FGT(1)	0.033	0.030	0.044	0.033	0.030	0.045	0.041	-	-	79.0	-	-
FGT(2)	0.013	0.012	0.016	0.012	0.011	0.017	0.019	-	-	67.6	-	-
Gini	0.288	0.293	0.247	0.288	0.293	0.246	0.295	-	-	97.6	-	-
MLD	0.143	0.148	0.105	0.142	0.147	0.104	0.158	-	-	90.5	-	-
HSCV	0.291	0.312	0.125	0.281	0.299	0.122	0.255	-	-	114.2	-	-
S80/S20	4.255	4.341	3.495	4.269	4.341	3.528	4.517	-	-	94.2	-	-
n	25,385	19,007	6,378	25,385	19,007	6,378	31,514	-	-	80.6	-	-
N in Mill.	81.5	64.8	16.7	81.5	64.8	16.7	80.9	-	-	100.7	-	-

Note on the calculation of equivalent income: income always refers to the previous calendar year using the modified OECD scale in 2000 prices. IR = Imputed Rent.

Source: EU-SILC 2005–2007 (August 2009 version) and SOEP 2005–2007 (September 2009 version). Authors' calculations.

Given the overall economic development and the peak in unemployment due to recession in 2005 and to changes in the system of public transfers in Germany (particularly the introduction of *Arbeitslosengeld II*, or unemployment benefit II) the SOEP results reported here

appear plausible.[28] Since the income figures for a given year always relate to the previous year's income, inequality can indeed be expected to increase in 2006. In 2007, inequality and poverty risk can be expected to decrease with economic and especially labor market recovery. This explains why the SOEP data indicate considerably higher inequality in 2005 and 2006 but lower inequality in 2007 than the EU-SILC data.

A more technical reason for the low poverty rates found with the EU-SILC for 2005 and 2006 lies in the implausible weighting results for the regional division between East and West Germany. Measured with the German Microcensus, which provides the weighting framework for both SOEP and EU-SILC, EU-SILC overestimates the number of people living in the new states by around two million in 2005 and by almost four million in 2006 (amounting to over 20% of the population residing there according to the German Microcensus).[29] This over-weighting of the (comparatively low) incomes in the new states leads, *ceteris paribus*, to a low poverty threshold for Germany as a whole (60% of national median income). Thus, individuals whose incomes lie above the low threshold "slip out" of the low income category. This is also reflected in the considerably lower poverty rate in the new states in EU-SILC (16% in 2005 and 15% in 2006) than in SOEP (19% in 2005 and 21% in 2006).

A further problem appears when examining the various EU-SILC weighting factors more closely. Because of the implausible results resulting from the use of standard weighting factors for the educational structure in Germany, the imputation procedure was revised starting in 2006 to take further restrictions into account.[30] Since then, a different concept has been used for the integrated household and individual weighting factor for the total population including children than for survey respondents over the age of 16. While the former factor is used for studies dealing with the total population, such as the income inequality and poverty analyses in this paper, the latter is useful for analyses dealing only with the adult population such as educational or employment analyses. For the survey year 2006, however, these weighting factors have a correlation coefficient of just 0.31 although they should ideally be identical for the adult population.[31] As expected, serious differences emerge in educational structure. Hauser (2008) identifies an underrepresentation of the lowest educational category (ISCED 1) of 1.9% in EU-

[28] The recession of 2005 led to a further increase in unemployment. On the relationship between unemployment and poverty see Frick & Grabka (2008).

[29] One reason for this is that in creating the individual weighting factor used for poverty analysis, the characteristic "federal state" was not included in the weighting scheme (see Horneffer & Kuchler 2008).

[30] Details on the revised imputation method and calibration adjustments for the individual factors are found in Horneffer & Kuchler (2008).

[31] In most of the other EU-SILC countries, the correlation is very close to or even exactly 1, only Ireland and Poland deviate slightly from this (0.95 and 0.85, respectively).

SILC (2005) compared with the Microcensus (3.2%). The second-highest educational category (ISCED 5), at almost 31.6%, is overrepresented by 12 percentage points. Hauser therefore suspects a strong influence of these biases on the Laeken indicators. The SOEP also shows a slight overrepresentation compared to the Microcensus, with 23.8% for ISCED 5; the same is true for the lowest educational category with 4.4%.

In Nolan et al. (2009), with reference to a study for the OECD (Causa et al. 2009) on intergenerational social mobility (IGM) in Europe,[32] the quality of the EU-SILC data is repeatedly called into question. Germany was excluded entirely from the OECD analyses due to the questionable validity of the educational variables. Causa et al. (2009) explain this as follows: "Germany is not included in either because inspection of the dataset revealed a sizeable discrepancy between EU-SILC data on educational attainment by cohort and official statistics of the population's educational attainment, as reported in the OECD Education at a Glance database, as well as in the German Socio-Economic Panel. While there are a number of reasons to expect discrepancies across different sources, their size in the case of the EU-SILC database was considered to be too high for it to be reliable enough for statistical inference purposes."

The reliability of the German EU-SILC data was also questioned by Helbig & Nikolai (2008), who refer to a study by the European Commission suggesting that Germany has the fairest school system of any OECD country[33]—which is in stark contrast to other studies on the subject, particularly those based on PISA data (see, e.g., Baumert & Schümer 2001).

Consequently, the computation of EU-SILC weighting factors for adult respondents since 2006 takes educational attainment into account. This has resulted since then in a much more plausible distribution of educational categories than when using the standard weighting factor for the total population. In the following, we study how the use of the two weighting factors influences mean and median income as well as the degree of inequality. We examine only the year 2007 (see Table 3). WF 1 refers to the use of the standard individual weighting factor for the total population as provided with the EU-SILC data, while WF 2 was constructed solely for the purpose of this sensitivity analysis: for all persons above the age of 16, this is the additional weighting factor available for the adult population, while all other individuals are

[32] These analyses are based on a special module of the EU-SILC (2005) survey aimed at studying how parental social status and education affect their children's social situation.

[33] The authors criticize in particular that the survey population in Germany cannot be compared with those of the other countries, which is an indication of methodological problems in the survey. See in particular the discussion in Müller (2008).

still assigned the first weighting factor (this applies de facto only to children who have yet not reached respondent age).

Table 3: The impact of using different weighting factors when analyzing income inequality

	EU-SILC 2007	
	WF 1	WF 2
Mean equivalent income	18,549	17,923
Median equivalent income	16,160	15,799
Poverty line	9,696	9,480
FGT(0)	0.149	0.141
FGT(1)	0.041	0.039
FGT(2)	0.019	0.018
Gini	0.295	0.283
N in Mill.	80.9	80.9

Note on the calculation of equivalent income and income inequality: income always refers to the previous calendar year using the modified OECD scale in 2000 prices.

Source: EU-SILC 2007 (August 2009 version). Authors' calculations.

Since WF 2 more accurately reflects the educational structure of Germany, as intended, (that is, highly educated persons are weighted lower than with WF 1), the average income drops using WF 2—as expected—by over €600. At the same time, the median income and thus the income threshold for the computation of relative poverty drops as well. Whether inequality and poverty in the population increase or decrease when using WF 2 depends on which of the two effects is dominant: on the one hand, the (generally lower) incomes of lower-skilled persons are weighted higher, but on the other, lowering the poverty threshold allows some households to "slip" *ceteris paribus* out of relative poverty risk. In the case at hand, the latter effect apparently prevails. When using the "corrected" weighting factor WF 2, which has been adjusted for bias in the educational distribution, both poverty and inequality decline (the Gini coefficient by more than one percentage point).

In other words, the use of the standard weighting factor (WF 1) depicts the income situation of the population rather differently than when using a weighting concept that adjusts for educational effects.[34] Obviously such revisions may be necessary from time to time in "living" studies. The revision of the SOEP weighting scheme in the 2009 data release exerts an inde-

[34] Refer to the results of ongoing studies by various authors in the EU-funded project EQUALSOC (2009) on the educational variables in EU-SILC (http://www.equalsoc.org/2). They identify serious problems in the collection of these variables, arguing that the one-digit ISCED-97 classification is too crude. Particularly ISCED category 3 shows high heterogeneity especially regarding the measurement of opportunities for advancement on the labor market. In total, these crude variables increase the risk of potential misinterpretations in educational analyses. Furthermore, educational degrees and their distribution in ISCED in the EU-SILC countries are not defined in a uniform manner and lead to problems of comparability. On this basis, it is to be assumed that not just the neglect of educational variables in creating the weighting factors poses a problem, but also that the inclusion of inadequately differentiated data can lead to biases (although at a relatively low level).

pendent influence on the distribution results, especially in connection with the improved income imputation. This improvement in SOEP does not apply just to the last (and future) years but is also applied—in contrast to the EU-SILC procedure—retrospectively to all previous waves of data. Thus, with SOEP, consistent time series are guaranteed with respect to the set-up of the weighting factors.

3.3 Income distribution results based on longitudinal data from 2005 to 2006

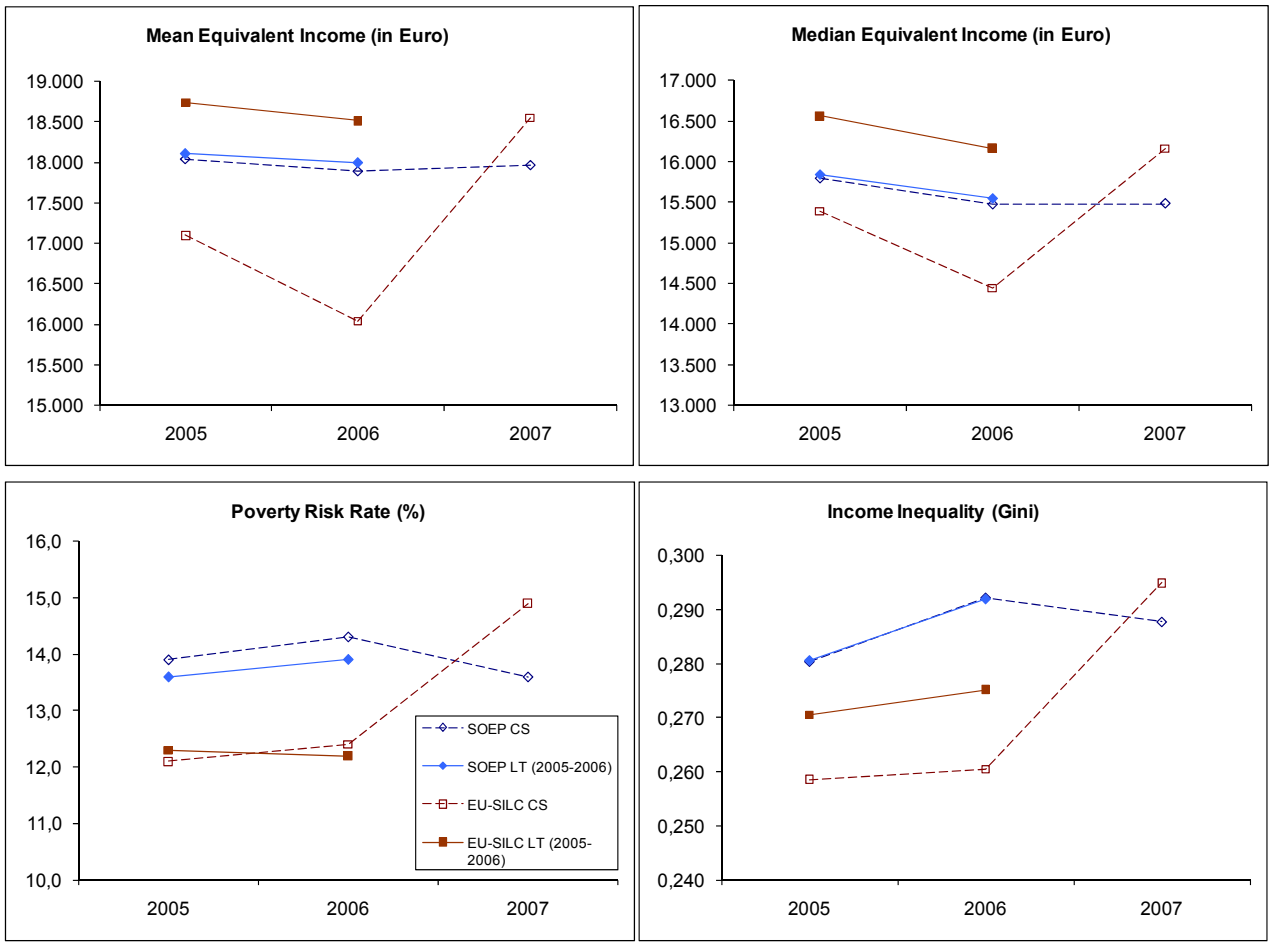
The results obtained when studying income based on a longitudinal population comprised of two subsequent survey years (waves) should not differ substantially from the results for the cross-sectional population. Although the individuals not included in this type of "balanced panel" do constitute a certain selection due to demographic events (death, birth, immigration, emigration), these only affect a very few individuals within this short time span. However, representative measures of income and population in this kind of longitudinal population are crucial for any mobility analyses based on it (as well as for the definition of the Laeken indicators of poverty and income mobility). In principle, panel mortality—that is, respondents exiting the sample between wave *t* and wave *t+1*—can be expected to be fairly low. But since the rotating panel design of EU-SILC means that for methodological reasons one-fourth of the sample is replaced by new respondents in each wave, it remains to be examined what influence this has on the consistency of the results.

When comparing the distribution results based on cross-sectional and longitudinal data in SOEP and EU-SILC (see Figure 4), we see, first, that the SOEP results (mean, median, at-risk-of-poverty rate, Gini coefficient) are very consistent for the cross-sectional and longitudinal populations, and second, that the temporal development from 2006 to 2007 shows the expected slight decrease in inequality and poverty, in line with other relevant economic indicators for this period (e.g., unemployment). The corresponding results for EU-SILC diverge markedly from this picture: both the longitudinal mean income and inequality measures are significantly higher than the cross-sectional measures.

The problem with failing to adequately capture the bottom end of the income distribution is generally exacerbated with longitudinal populations due to the balanced panel design, that is, only those individuals who took part in the survey in both 2005 and 2006 are taken into account in the analysis. Thus individuals born after the first wave and those who died before the second interview are lost from the survey population. Furthermore, immigrants and emigrants cannot be fully observed over this time period: these population groups tend to be more affected by poverty and low incomes but are not well represented in longitudinal samples. Furthermore,

there is a high risk of self-selection in the German EU-SILC population due to the quota sample on which it is based: individuals with a low level of education and thus a *ceteris paribus* low income often show a lower probability of participating in the first wave of such longitudinal studies as well as a higher dropout probability from the second wave on (see, e.g., Watson & Wooden 2009). This is expressed in a higher average income and lower inequality in the longitudinal population.

Figure 4: Key findings on distribution analysis based on SOEP and EU-SILC, cross-sectional and longitudinal populations 2005–2007



Note on the calculation of equivalent income: income always refers to the previous calendar year using the modified OECD scale in 2000 prices.

Source: EU-SILC 2005-2007 (August 2009 version) and SOEP 2005-2007 (September 2009 version). Authors' calculations.

A further reason for the underrepresentation of lower incomes lies in the method of postal surveying with a survey instrument that is only available in German, without the involvement of interviewers. Comprehension problems—particularly for persons with limited knowledge of German—as well as potentially complicated questions regarding income and monetary transfers increase the risk of measurement error and often lead to declining motiva-

tion to continue participating in the survey. It should be possible, however, to compensate for this selectivity by estimating the individual attrition probability and the resulting longitudinal weighting factor (this is standard procedure in determining the longitudinal weights in the SOEP, see Kroh & Spieß 2008). In EU-SILC, as far as we know, no correction is made through selection probabilities (at least so far).

Against the backdrop of these inconsistent distribution results based on the cross-sectional and longitudinal populations within EU-SILC, we will now analyze income and poverty mobility based on the identically defined panel data (balanced panel of the survey years 2005 to 2006). The focus here is no longer on comparing the distributions at two subsequent points in time but on the individual dynamics of income over the period under examination.

3.4 Income and poverty mobility

In order to obtain a robust picture of income and poverty mobility, we calculate various mobility measures in the following.[35] This strategy is helpful in obtaining robust results since EU-SILC's sample design (quota sample) does not allow adequately estimating sample errors or confidence bands.

Table 4: Income mobility in SOEP and EU-SILC 2005/2006

	SOEP	EU-SILC	SOEP in % of EU-SILC
Shorrocks Mobility Index (1978a), Gini	0.032	0.058	54.0
Fields & Ok (1996)			
. Per capita mobility (in euros)	3449	4859	71.0
. Percentage mobility	19.16	26.240	73.0
Fields (2000)	0.050	0.067	74.6
Shorrocks Equalisation Measure (1978b)	0.088	0.160	55.0
Fields & Ok (1999), non-directional	0.193	0.253	76.3
Quintile matrix mobility			
. Average jump	0.461	0.664	69.4
. Normalised average jump	0.184	0.266	69.2
N	23,084	22,288	103.6
N in Mill.	79.2	79.8	99.2

Note on the calculation of equivalent income: income always refers to the previous calendar year using the modified OECD scale in 2000 prices.

Source: EU-SILC 2005-2006 (August 2009 version) and SOEP 2005-2006 (September 2009 version). Authors' calculations.

[35] For the mobility analyses, only those individuals are analyzed who had an equivalent weighted household net income larger than zero in both years.

Even without looking at the individual results or interpretations of these single measures in detail, the overall results of the comparison are striking: the income mobility calculated with the SOEP data for the period 2005 to 2006 is 20% to 45% lower for all of the indicators used than with the EU-SILC data (see Table 4). As a result of the differences in income levels, the Fields and Ok (1996) measure arrives at a €1,400 higher average per capita income mobility with EU-SILC than with SOEP. Examining matrix mobility between income quintiles results in a normalized average jump between quintiles in EU-SILC of 0.27 quintiles, but in SOEP of just 0.18.

Poverty mobility is also higher in EU-SILC than in SOEP (see Table 5). SOEP shows a two percentage point higher proportion of individuals who were poor in both 2005 and 2006. The percentage of people whose income was below the poverty threshold in only one of the two years under investigation (and who therefore experienced poverty mobility) is 9.3% in SOEP but 11% in EU-SILC. The percentage of individuals who did not experience poverty in both years in SOEP was, at close to 82%, about the same as according to EU-SILC.

Table 5: Poverty mobility in SOEP and EU-SILC, 2005/2006

	SOEP			SOEP incl. IR			EU-SILC	SOEP (without IR) in % of EU-SILC
	Total	West	East	Total	West	East	Total	
Not poor in both years (%)	81.6	83.4	74.6	81.7	83.7	74.1	82.2	99.2
Poor in 2006 (%)	4.8	4.4	6.6	5.0	4.7	6.0	5.5	87.2
Poor in 2005 (%)	4.5	4.0	6.4	4.6	4.0	6.9	5.6	81.1
Poor in both years (%)	9.0	8.1	12.5	8.8	7.7	13.0	6.7	135.7
Sum	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
n	23,084	17,217	5,867	23,084	17,217	5,867	22,288	103.6
N in Mill.	79.2	62.7	16.5	79.2	62.7	16.5	79.8	99.2

Note on the calculation of equivalent income: income always refers to the previous calendar year using the modified OECD scale in 2000 prices. IR = Imputed Rent.

Source: EU-SILC 2005-2006 (August 2009 version) and SOEP 2005-2006 (September 2009 version). Authors' calculations.

An important cause for the higher mobility measured using the EU-SILC data may be the change in the analysis population when moving from a cross-sectional to a longitudinal population, as mentioned above. Along with the percentage of respondents who exit the sample (through death or emigration, i.e., demographic attrition) or who refuse to continue participating (panel attrition), EU-SILC also replaces 25% of the sample in each wave following the rotation

principle. For Germany, there is the additional phenomenon that from 2005 to 2006 a large part of the quota sample, which is probably selective regarding income, left the survey. Under the assumption that the individuals in this group were more likely to be clustered around the middle of the income distribution, then an artificially higher mobility of the remaining population may result. Unfortunately this aspect cannot be tested with the EU-SILC data available to external users, since the cross-sectional and longitudinal data cannot be linked.

In addition, the interview mode used in the EU-SILC survey in Germany, where a high proportion of interviews—over 20%—are proxy interviews, affects the mobility results. It can be assumed not only that the people providing data on others often do not have complete information, but also that when an interview has been conducted successfully with someone for whom a proxy interview was carried out the year before, when comparing the proxy information from the year *t-1* and the information from year *t* will tend to artificially inflate the mobility measure—even when the true underlying values remain constant. The percentage of missing income data in SOEP due to partial unit non-response—at around 6% of all individuals of survey age—is also problematic, but this percentage is still considerably lower than the 20% proxy interviews in EU-SILC. Even more important, this missing data in SOEP is imputed in a consistent way for all missing income data, if at all available, taking into account the longitudinal information on the same person from past or subsequent waves. Also the SOEP imputation method is well documented (see Frick, Grabka, and Groh-Samberg 2009b), while little to nothing is known about the potentially differential response behavior that can be expected of the household members in EU-SILC who provide the proxy information.[36]

Another source of higher mobility may lie in the imputation procedure used to correct missing values due to item non-response in otherwise completed questionnaires. The results of studies from a series of household panels clearly show higher quality imputation results when using longitudinal data in the imputation process (see, e.g., Rässler & Riphahn 2006, Starick & Watson 2007, Spieß & Goebel 2005, Frick & Grabka 2010). The German Federal Statistical Office mainly uses cross-sectional data to impute the income values in EU-SILC, as mentioned in Section 2.3 – however, one should note that up to now, due to the limited number of waves as well as the rotational design, there is not much longitudinal data available to begin with. When data on taxes and social security contributions are missing, the legal regulations are applied to simulate the missing piece of information (as in the SOEP simulation model) and model-based assumptions are made about social transfers such as child and housing subsidies.

[36] For a detailed examination of the influence of proxy interviews on income mobility, see Frick & Krell (2009).

For missing income components that cannot be imputed in this way, the Federal Statistical Office uses statistical (hot-deck) procedures based on the analysis of completed interviews, thus taking into account similarities among the different cases within the sample. Longitudinal information on a household is used for plausibility checking if income data appears questionable. Through this procedure, in which the contemporary economic situation exercises a (strong) influence on the cross-sectional imputation of missing values, imputed income values can suggest higher mobility than actually is the case. The main income earner may not have experienced any change in income but is assigned a higher income in "his" population group because of increased average incomes.

The extent to which imputation affects income mobility is presented in Table 6 comparing results for the two databases. Here, selected indicators for the group of individuals in households with no income imputation at both points in time (2005 and 2006) are compared to those where at least one income value had to be imputed due to a missing item. For better comparison, households with proxy income variables are considered as imputed for the German EU-SILC sample.[37] Here it should be kept in mind that due to the aggregation of individual income across all household members, the income construct of interest here, equivalent household net income for *all* of the individuals in the household, is affected by imputation as soon as even a single component of one household member's data has to be imputed in one of the two years.[38]

First, due to the high proportion of proxy interviews in EU-SILC, the measure of household income is affected much more heavily by imputation in the household context: two-thirds of the total population of EU-SILC is affected, as compared to just above 30% in SOEP. *Grosso modo*, the expected picture emerges: the measured mobility is consistently higher with imputation than without; this is true in both data sets and for all indicators used.[39] Nevertheless, in EU-SILC, even the mobility of households that were not affected by imputation or proxy interviews was considerably higher than in SOEP. Thus the question arises as to further factors increasing

[37] Data imputation in SOEP was identified via the variable I11202$$, which refers to all households with at least one imputed value due to INR or PUNR. In the EU-SILC data, proxy data are identified via the variable RB260 and cases of imputation via the variable HY020_I (in the case of INR) or HY025 (in the case of PUNR).

[38] Without attempting to present a comprehensive description of the determinants of refusal to answer survey questions, we refer here to the extensive international literature researching non-response behavior (an overview is found in Watson & Wooden 2009). This research provides abundant evidence that the probability of missing income data is correlated not only with numerous personal characteristics (such as age, occupation, education, migration background, etc.) but also with the respondent's survey experience (e.g., number of previously completed interviews) and the survey method used (see Frick & Grabka 2009) as well as with the complexity of the construct under examination (see Hill & Willis 2001), the number of income components measured, the wording of the question, and numerous other characteristics (see also De Leeuw & De Heer 2002, Riphahn & Serfling 2005; Groves 2006).

[39] In fact, when using multiply imputed income data, one should expect mobility measures to be even higher reflecting the higher degree of uncertainty (i.e., variation) embedded in the imputation process.

mobility in addition to the rotating sample design (and in this context, the weighting method), the survey mode (use of proxy interviews) and the imputation procedure.

Table 6: Income mobility in SOEP and EU-SILC 2005/2006 by imputation status*

	SOEP			EU-SILC		
	Total	without imputation in both years	with imputation in at least one year	Total	without imputation in both years	with imputation / proxy-interviews in at least one year
Shorrocks mobility index (1978a), Gini	0.032	0.025	0.040	0.058	0.052	0.062
Fields & Ok (1996)						
Per-capita mobility	3449	2732	4441	4859	4048	5252
Percentage mobility	19.16	15.34	24.31	26.24	23.43	27.47
Fields (2000)	0.05	0.041	0.061	0.067	0.043	0.078
Shorrocks (1978b) Equalisation Measure	0.088	0.07	0.106	0.16	0.142	0.17
Fields & Ok (1999), non-directional	0.193	0.156	0.244	0.253	0.236	0.262
Quintile matrix mobility						
Average Jump	0.461	0.374	0.58	0.664	0.599	0.701
Normalised Average Jump	0.184	0.15	0.232	0.266	0.239	0.28
n	23,084	14,552	8,532	22,288	7,455	14,833
N in mill.	79.2	55.3	23.9	79.8	26.0	53.8
in %	100	69.8	30.2	100	32.6	67.4

* For EU-SILC only those cases are identified as imputed in which more than 2% of the income amount contained in household income is from imputed data. Without this limitation, around 87% of individuals (rather than the 67% shown here) would be affected by imputation or proxy interviews in the household. At the same time, it must be pointed out that the simulation of direct taxes and social security contributions in SOEP is not treated here as imputation.

Note on the calculation of equivalent income: income always refers to the previous calendar year using the modified OECD scale in 2000 prices.

Source: EU-SILC 2005-2006 (August 2009 version) and SOEP 2005-2006 (September 2009 version). Authors' calculations.

SOEP results from earlier years can help in attempting a methodological explanation: when comparing SOEP Subsample F, which was first collected in 2000, with the then older Samples A to E, Frick et al. (2006) find indications of measurement problems in the first wave of a panel, which decrease substantially over the course of subsequent waves due to positive panel effects (learning effects in responding to income questions). The percentage of rounded answers and especially of item non-response is often much higher in the first few waves of a panel, which also improves over the course of the survey; this is the case not just with SOEP but also, for example, with the Australian HILDA study and the UK-BHPS (see Frick and Grabka 2009). This is not least of all because of the structure of the personal relationship between interviewer and respondent, although this argument cannot apply to EU-SILC for Germany due to the sole use of postal questionnaires.

3.5 A European comparison based on EU-SILC and SOEP

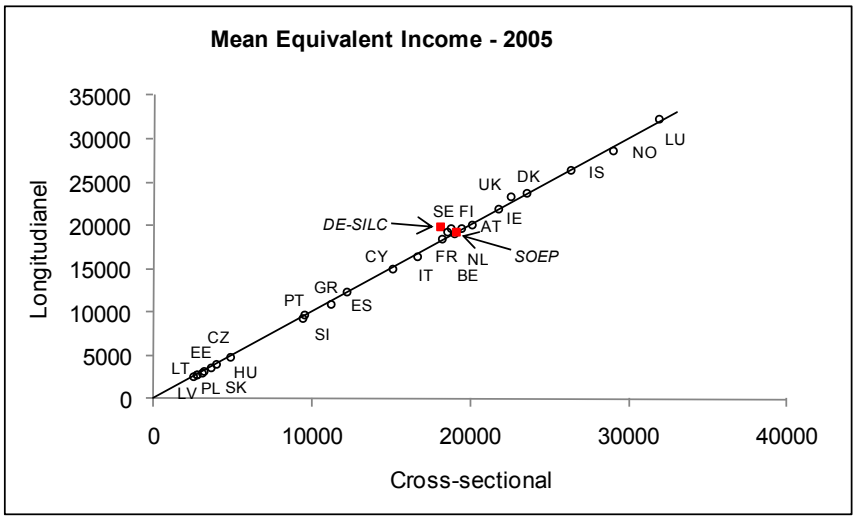
Given the differences identified between two independently drawn samples from the same underlying population, it appears useful to also compare these results for Germany to the respective ones of the other EU-SILC countries—particularly since most of these countries' surveys are more similar to SOEP than to the German EU-SILC in how they apply the Eurostat guidelines on sampling procedure and interview mode.[40]

In the following figures, we compare results for various measures (on income levels, inequality and poverty) obtained from cross-sectional and longitudinal populations in the EU-SILC countries as well as in the SOEP data. Ideally, the cross-sectional results for a country should correspond to the results based on the longitudinal data. In the following figures, this is expressed by the values that lie on the diagonal. The countries further away from the diagonal show lower consistency in the results, which can be interpreted *ceteris paribus* as an indication of poor data quality. In the following figures results for Germany based on EU-SILC are indicated with the abbreviation "DE-SILC."

In fact, one of the most marked deviations between the longitudinal and cross-sectional data on mean equivalent income is found for EU-SILC Germany (see Figure 5 and Figure 6): in 2005 the percentage deviation from the arithmetic mean was 13% and from the median 11%. Aside from Sweden, in 2005 the incomes in both populations were essentially equal in all of the other EU-SILC countries and in SOEP.

[40] Nevertheless, major differences in the data production processes used in EU-SILC should be noted. The use of survey or register data to generate income information is left up to each national data producer, which leads to problems of comparability (see Lohmann 2009).

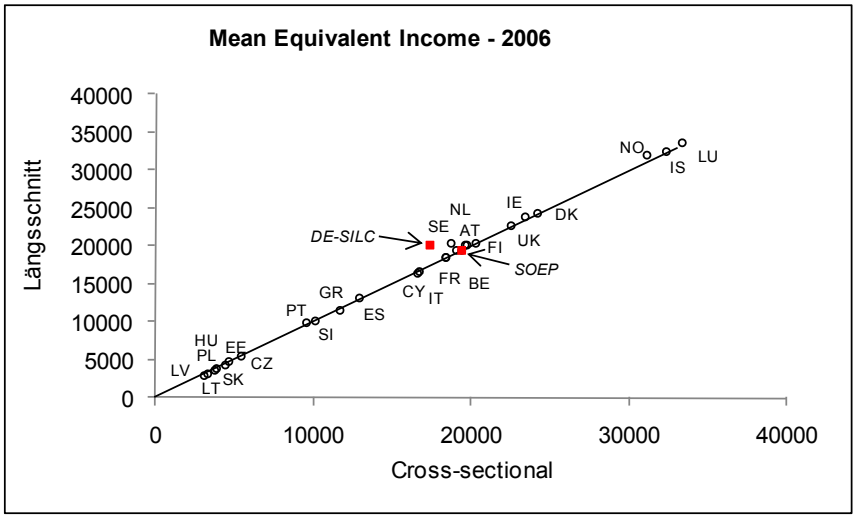
Figure 5: Consistency of income measurement in SOEP and EU-SILC, cross-sectional and longitudinal populations 2005



Note on the calculation of equivalent income: income always refers to the previous calendar year using the modified OECD scale in 2000 prices.

Source: EU-SILC 2005-2006 (August 2009 version) and SOEP 2005-2006 (September 2009 version). Authors' calculations.

Figure 6: Consistency of income measurement in SOEP and EU-SILC, cross-sectional and longitudinal populations 2006

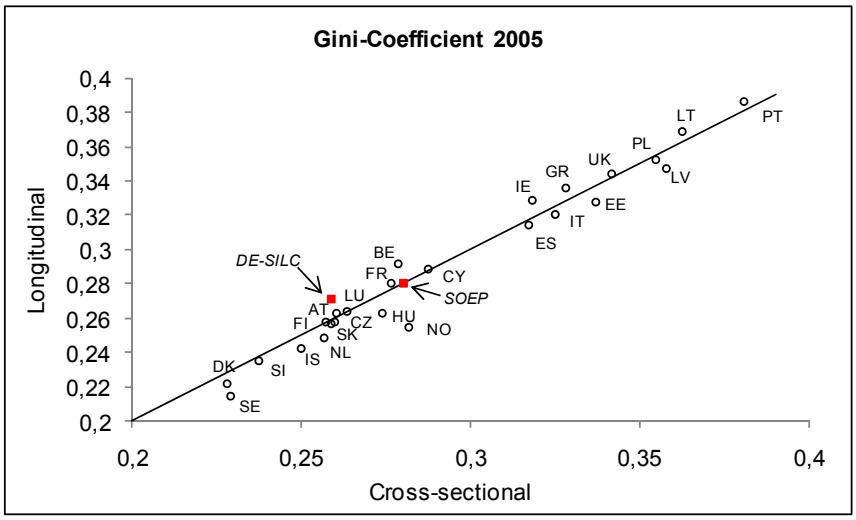


Note on the calculation of equivalent income: income always refers to the previous calendar year using the modified OECD scale in 2000 prices.

Source: EU-SILC 2005-2006 (August 2009 version) and SOEP 2005-2006 (September 2009 version). Authors' calculations.

With the Gini coefficients a different picture emerges. Here too, the longitudinal results for EU-SILC Germany 2005 diverge by around 5% from the cross-sectional results (see Figure 7 and Figure 8). However, other EU-SILC countries also provide less consistent results. The Scandinavian countries (especially Sweden and Norway) show large differences. It is interesting to note that EU-SILC Germany is not alone in showing, rather implausibly, higher inequality based on the longitudinal data than on the cross-sectional data: Ireland, Belgium, Portugal, and Slovakia also lie above the diagonal in at least one of the two years.

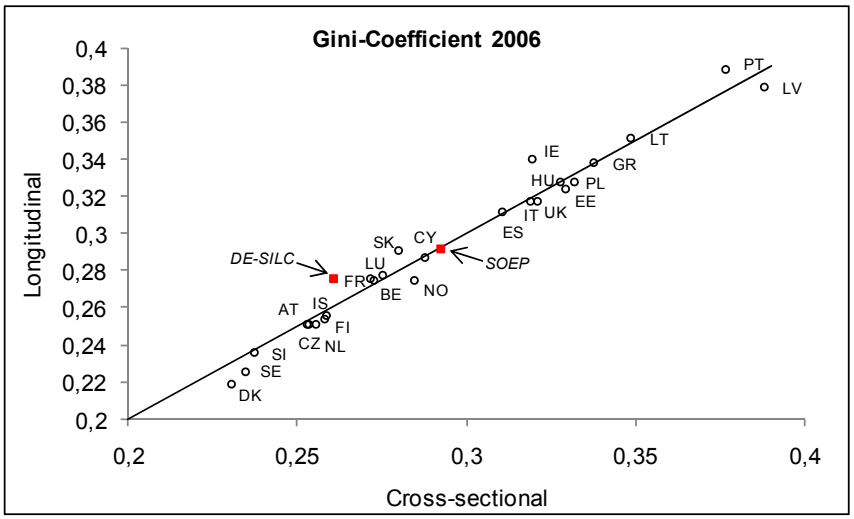
Figure 7: Consistency of Gini coefficient in SOEP and EU-SILC, cross-sectional and longitudinal populations 2005



Note on the calculation of equivalent income: income always refers to the previous calendar year using the modified OECD scale in 2000 prices.

Source: EU-SILC 2005-2006 (August 2009 version) and SOEP 2005-2006 (September 2009 version). Authors' calculations.

Figure 8: Consistency of Gini coefficients in SOEP and EU-SILC, cross-sectional and longitudinal populations 2006



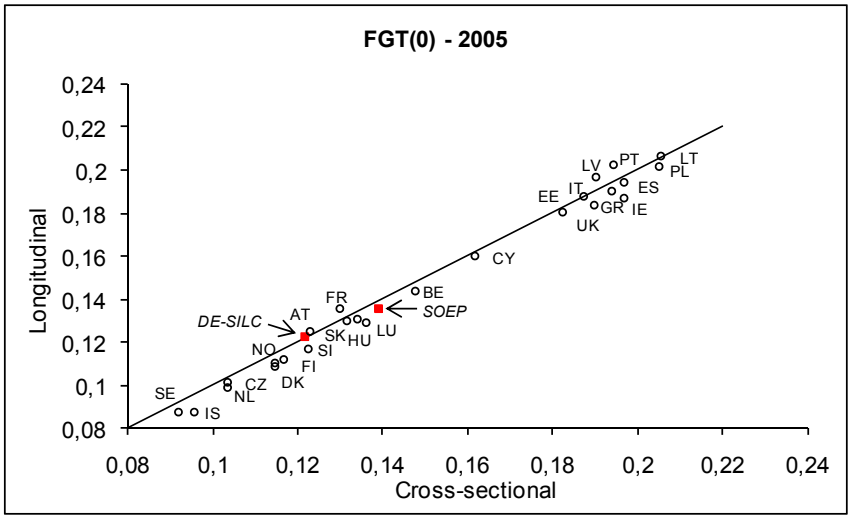
Note on the calculation of equivalent income: income always refers to the previous calendar year using the modified OECD scale in 2000 prices.

Source: EU-SILC 2005-2006 (August 2009 version) and SOEP 2005-2006 (September 2009 version). Authors' calculations.

With regard to poverty rates, the EU-SILC data for Germany (compared to the other EU-SILC countries, but also to SOEP) show almost no deviations between the cross-sectional and longitudinal results (see Figure 9 and Figure 10). As with inequality, however, the poverty rate should be somewhat lower in the longitudinal than in the cross-sectional population, since low income often accompanies specific demographic changes that lead to exclusion from the balanced panel (mortality, fertility, emigration, immigration between the two points of observation). And in fact, only a few EU-SILC countries lie very close to the diagonal, and Norway,

Sweden, and Denmark lie substantially below it. Given the sharp spike in the poverty rate in EU-SILC Germany in the cross-sectional population in 2007, it remains to be seen whether the data consistency will be maintained when EU-SILC longitudinal data become available for Germany in 2007.

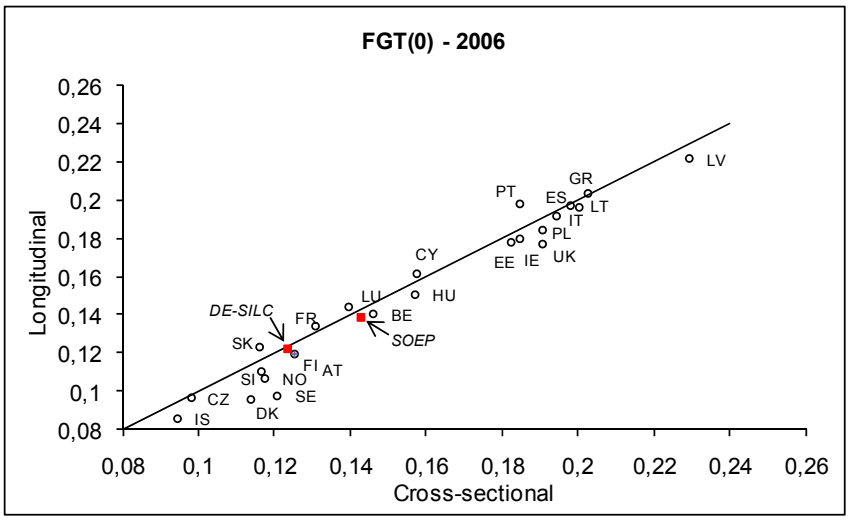
Figure 9: Consistency in poverty risk rates in SOEP and EU-SILC, cross-sectional and longitudinal populations 2005



Note on the calculation of equivalent income: income always refers to the previous calendar year using the modified OECD scale in 2000 prices.

Source: EU-SILC 2005-2006 (August 2009 version) and SOEP 2005-2006 (September 2009 version). Authors' calculations.

Figure 10: Consistency in poverty risk rates in SOEP and EU-SILC, cross-sectional and longitudinal populations 2006



Note on the calculation of equivalent income: income always refers to the previous calendar year using the modified OECD scale in 2000 prices.

Source: EU-SILC 2005-2006 (August 2009 version) and SOEP 2005-2006 (September 2009 version). Authors' calculations.

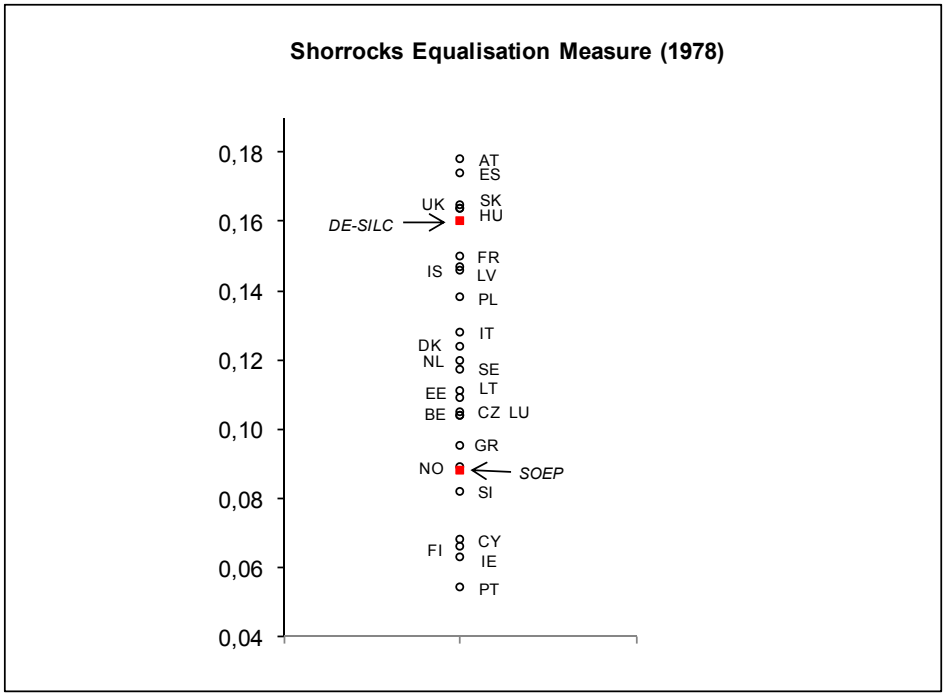
In summary, it can be concluded that only a few of the countries in EU-SILC (e.g., Poland) show high consistency between cross-sectional and longitudinal poverty results in both

years. Furthermore, in some countries, there is no improvement in consistency over time. Quite to the contrary, in Denmark and Sweden, the differences were even larger in 2006.

The differences described in Section 3.4 on income and poverty mobility between the results for Germany based on EU-SILC and SOEP are so pronounced that the great majority of EU-SILC countries lie in between (see Figure 11 and Figure 12 for selected mobility indicators). Given that SOEP and EU-SILC in Germany (should) represent the same base population, this result is quite surprising. It is especially difficult to interpret these widely diverging results since the EU-SILC results on measured income mobility place Germany in a group with transition countries (such as Slovakia, Hungary, and Baltic States) or liberal welfare regimes (like the UK), while the SOEP results on Germany are in line with the Scandinavian countries (Norway, Sweden) and other continental European countries (Netherlands, Luxemburg), which also closely echoes the findings in the relevant literature (for an overview, see Burkhauser & Couch 2009).

The high income mobility identified using the EU-SILC data appears less plausible in light of the long-term development of the German labor market with rather high job stability and relatively low degree of fluctuations. The finding that Germany is among the European countries with the highest measured income mobility is thus improbable and also not compatible with the results based on other survey samples (including the SOEP).

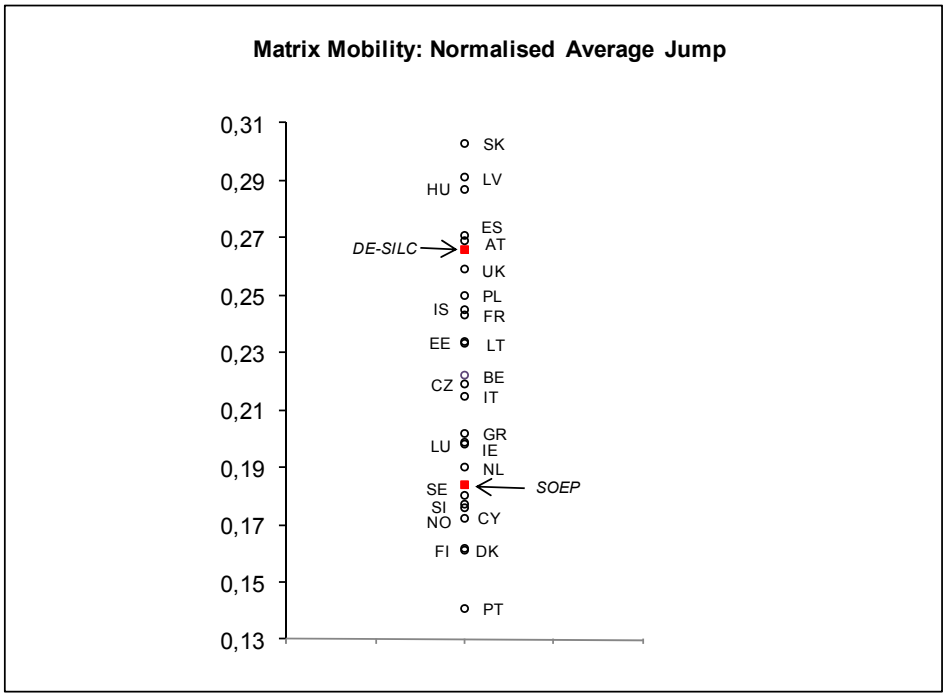
Figure 11: Shorrocks (1978b) Equalisation Measure in EU-SILC and SOEP, longitudinal population 2005/2006



Note on the calculation of equivalent income: income always refers to the previous calendar year using the modified OECD scale in 2000 prices.

Source: EU-SILC 2005-2006 (August 2009 version) and SOEP 2005-2006 (September 2009 version). Authors' calculations.

Figure 12: Matrix mobility in EU-SILC and SOEP, longitudinal population 2005/2006



Note on the calculation of equivalent income: income always refers to the previous calendar year using the modified OECD scale in 2000 prices.

Source: EU-SILC 2005-2006 (August 2009 version) and SOEP 2005-2006 (September 2009 version). Authors' calculations.

4 Conclusion

For analyses of the personal income distribution in Germany, there are two representative household panel surveys available—in addition to the cross-sectional Income and Expenditure Survey (EVS) conducted by the Federal Statistical Office once every five years—which, thanks to their longitudinal design, provide the basis for conclusions about the determinants and degree of income and poverty mobility. This provides an outstanding basis for national reporting on income distribution, since the SOEP and EU-SILC samples are independently drawn from the same population universe, and both surveys containing questions on similar themes, thus serving in mutual validation or robustness checks on specific questions.[41] Contrary to expectations, however, marked differences are found in (a) the level of measured inequality and poverty (in SOEP these measures are higher in 2005 and 2006 than according to EU-SILC), (b) in the development over time (particularly between 2006 and 2007) and (c) in the degree of income and poverty mobility, which is higher when measured with EU-SILC than with SOEP data.

The differences between the results based on SOEP and those based on EU-SILC can be explained by the problems in EU-SILC previously identified in the literature and not yet completely corrected (particularly regarding sample design, the representation of certain social groups such as migrants, large families, and individuals with low education, as well as the income measurement). Remarkably, some of the differences in the area of income mobility are so great that the majority of comparison values for the 26 countries currently covered by the EU-SILC dataset lie between the two results for Germany.

Since there are also marked differences in the distribution of relevant population characteristics between the EU-SILC data and other official databases that claim to be representative, such as the EVS and the German Microcensus (see Hauser 2008), the EU-SILC data for Germany in their present form still need methodological improvements to meet the demands of a central database for (inter)national poverty and inequality reporting. This is seen, for example, in the distribution of the highest level of completed education, but also in the regional representation of West and East Germany, irrespective of the possibility to adjust the data to the Microcensus—obviously aspects that are correlated with income levels and income inequality.

Of course, every survey—SOEP included—faces surveying and measurement problems in the collection of sensitive information like income. Furthermore, assumptions always have to be made when processing such data—for example, when imputing missing values and develop-

[41] Ideally, if similar enough indicators were surveyed, the data from both samples could be pooled for analysis in order to increase case numbers and the statistical power for smaller groups.

ing weighting schemes—which imply normative decisions and are therefore open to critique. These should be documented as transparently as possible and should be compared to results derived under alternative assumptions.[42]

In general, the measurement of income as a measure of economic well-being in surveys claiming representativeness must be seen as still requiring improvement in many respects. The problem of how to adequately capture the upper end of the income distribution, for example, was first tackled in SOEP with the introduction of Sample G in 2002 (see Schupp et al. 2009).[43]

The still unresolved problem of adequately capturing (very) low incomes should also be seen in the context of defining the study population, since households in the lowest income bracket generally slip out of surveys focusing on private households, due to homelessness or unstable rental situations.

The consideration of non-cash incomes—in line with the international discussion on the inadequacy of monetary income as a comprehensive income measure—is an important extension that has been partially applied to SOEP through the inclusion of imputed rent. The variable also contains the fictive income advantage of living in subsidized rental housing (e.g., in social housing). Providing variables on other non-cash components derived, for example, from private production of goods and services for own use ("home production," see Frick, Grabka, and Groh-Samberg 2009a) or from public educational subsidies are currently under preparation (see Frick, Grabka, and Groh-Samberg 2007b).

Ultimately, we address some additional proposals put forward by Hauser (2008) for ex-post consistency checking of EU-SILC, SOEP, EVS, and other relevant surveys. Potentially useful methods include comparative (sensitivity) analyses on the correspondence between income aggregates or population shares and the corresponding administrative statistics (e.g., welfare statistics, statistics on recipients of unemployment benefit II, housing subsidy statistics, student aid statistics, and income tax statistics) or macroeconomic aggregates of the German national accounts (*Volkswirtschaftliche Gesamtrechnung*, VGR) (e.g., total wages and salaries, total income from entrepreneurial activity and assets, total transfer payments received, total

[42] See the comparison of inequality and mobility effects arising from different procedures to correct for partial unit non-response (PUNR) in SOEP in Frick, Grabka & Groh-Samberg (2009b). The robustness checks and sensitivity analyses presented there show significant differences when dealing with PUNR in the following different ways: a) use of different equivalence scales, b) deleting households with PUNR and adjusting the weight of completely observed cases, and c) complex (longitudinal) imputation.

[43] However, we should also mention the oversampling of persons with a migration background in SOEP, which took the heterogeneity of this population into account as early as 1984 through a subgroup-specific sampling design, as well as the immigrant sample of 1995.

income tax payments, total available income of the household sector excluding non-profit organizations). Here it should be kept in mind that these aggregate data from the German national accounts or Bundesbank statistics may also contain errors or be measured as residual categories (e.g., income from self-employment) and thus may not always represent a perfect reference measure. At the same time, aggregates derived from comparison of the aforementioned micro-databases provide the basis for important conclusions about the quality of the underlying data and the extent to which they can claim to be representative. It is not just the totals or mean values that serve as important benchmarks for comparison, but especially the results on the distribution. In this context it is also important to comparatively evaluate sample selection methods, interview modes, and procedures used in the different surveys for weighting and imputation: ultimately, reliable and cross-sectional measurements that are consistent over time constitute the key preconditions for valid measurement of socio-economic mobility, which should be the focus of empirical analyses of panel surveys like EU-SILC and SOEP.

Hauser (2008) recommends modifying surveying and imputation procedures in EU-SILC that he identifies as problematic—the conversion of the individual weights in 2006 to better represent the educational distribution of the adult population confirms this need. Other than that, this revision was not carried out either on the previous wave or for weighting across the population, with the result of major intra- and intertemporal inconsistencies.

Hauser also advocates making a quick transition to a true random sample. The study results presented here underscore such demands—it should be seen as positive that the German EU-SILC as of 2008 will no longer include households from the quota sample due to the planned rotation. However, there are reasonable doubts regarding the sample characteristics of the access panel on which EU-SILC is based, which does not adequately meet the demands of a "true" random sample (see Amarov & Rendtel 2009). In addition to Hauser's proposals, the sole use of the postal survey mode should be reconsidered for future rotation samples included in EU-SILC; additions could include the use of interviewer-supported modes, at least for the initial interview, as well as translation aids for those with language comprehension problems in migrant households.

As regards the distribution of the data, the longitudinal data for Germany should ideally be released by Eurostat as quickly as possible (keeping pace with the other EU-SILC countries) so that the unique value of these official panel data can be exploited more quickly in international comparisons of intragenerational social mobility—one of the major purposes for which they are intended.

Furthermore, the analyses presented here clearly show that it is important not just to provide EU-SILC data in a harmonized manner, but for the Federal Statistical Office to release the *original* data from the German SILC study for free scholarly research—for projects dealing both with substantive questions and with survey methodology.[44] This approach to data provision is not only customary in some other European countries (e.g., Austria), but is also necessary to better analyze survey methodological phenomena addressed here. At present it is neither possible to differentiate the households in the quota and in the random sample nor to analyze the connection between cross-sectional and panel populations including the effect of rotation. The latter aspect is important particularly for international comparative studies of substantive and methodological issues with the other EU-SILC countries.

The present paper shows the importance of independently conducted surveys for the measurement of household income, inequality, poverty, and mobility. Not only is it statistically difficult to survey incomes of private households; it is also impossible to carry out reliable, valid, and intertemporally consistent analyses of income inequality and mobility without the necessary *post-data-collection treatment* of the surveyed data through weighting of observations and imputation of missing values. These, too, are highly demanding methodological tasks that must be subjected to ongoing quality control—ideally in connection with pertinent substantive analyses. The SOEP data, which are widely used both nationally and internationally, have recently been improved further through full imputation of income in the case of partial unit non-response. EU-SILC now has the opportunity to develop long-term solutions to its current problems by building on these and similar experiences from other existing household panel surveys.

5 References

Amarov, B. and Rendtel, U. (2009): The Access Panel of German Official Statistics. An Analysis of Recruitment, Panel Attrition and Survey Nonresponse, Freie Universität Berlin: mimeo.

Atkinson, A., Cantillon, B., Marlier, E., Nolan, B. (2002): Social Indicators. The EU and Social Inclusion, Oxford.

Becker, I., Frick, J. R., Grabka, M. M., Hauser, R., Krause, P., Wagner, G. G. (2003): A Comparison of the Main Household Income Surveys for Germany: EVS and SOEP, in: Hauser, R., Becker, I. (eds.), Reporting on Income Distribution and Poverty. Perspectives from a German and a European Point of View, Berlin, pp. 55-90.

Burkhauser, R.V. and K. Couch (2009): Intergenerational inequality and intertemporal mobility. in: Salverda, W., B. Nolan and T. M. Smeeding (eds): The Oxford Handbook of Economic Inequality. Oxford University Press, pp. 522-548.

[44] It would also be conceivable to provide access to the original German EU-SILC data through the Research Data Centers of the official statistical agencies.

Bauer, M. (2007): EU-SILC (community statistics on income and living conditions: challenges for member states), in: Eurostat (eds): Comparative EU statistics on Income and Living Conditions: Issues and Challenges. Proceedings of the EU-SILC Conference, Helsinki, 6.-8. November 2006, European Communities: Luxembourg, pp. 37-41.

Baumert, J. and Schümer, G. (2001): Familiäre Lebensverhältnisse, Bildungsbeteiligung und Kompetenzerwerb, in: Baumert, J. et al. (Hrsg.) (2001): PISA 2000. Basiskompetenzen von Schülerinnen und Schülern im internationalen Vergleich. Opladen: Leske + Budrich, pp. 323-407,

BMAS, Bundesministerium für Arbeit und Soziales (2008): Der 3. Armuts- und Reichtumsbericht der Bundesregierung, Bonn.

Canberra Group, Expert Group on Household Income Statistics (2001): Final Report and Recommendations, Ottawa.

Causa, O., Dantan, S., Johansson, Å. (2009): Intergenerational Social Mobility in European OECD Countries, Economic Department Working Papers No. 709.

Clemenceau, A., Museux, J.-M. (2007): EU-SILC (community statistics on income and living conditions: general presentation of the instrument), in: Eurostat (Eds.): Comparative EU statistics on Income and Living Conditions: Issues and Challenges. Proceedings of the EU-SILC Conference, Helsinki, 6.-8. November 2006, European Communities: Luxembourg, pp. 11-36.

De Leeuw, E. D., De Heer, W (2002): Trends in Household Survey Nonresponse – A Longitudinal and International Comparison, in: R. M. Groves, D. A. Dillman, J. L. Eltinge, R. J. A. Little (eds.), Survey Nonresponse, pp. 41–54, New York: Wiley.

Debels, A. and Vandecasteele, L. (2008): The Time Lag in Annual Household-Based Income Measures – Assessing and Correcting the Bias, Review of Income and Wealth, 54(1), pp. 71-88.

EQUALSOC (2009): Data Quality Issues in the EU-SILC Intergenerational Modules (with contributions by B. Maître, C. Whelan, S. Schneider, W. Müller, T. Van Rie, K. Van den Bosch, D. Watson, L.-A. Vallet, P. Barbieri, S. Carossa, and B. Nolan). http://www.equalsoc.org/uploaded_files/regular/DataQualityIssuesinTheEU_SILCINTMOD.pdf (download 8.10.2009).

Eurostat (2007): Comparative EU Statistics on Income and Living Conditions: Issues and Challenges. Proceedings of the EU-SILC conference (Helsinki, 6.-8. November 2006), Luxembourg.

Fields, G. S., Ok, E. (1996): The Meaning and Measurement of Income Mobility, in: Journal of Economic Theory, (71), pp. 349-377.

Fields, G. S., Ok, E. (1999): Measuring Movements of Income, in: Economica, 66, S 477-471.

Fields, G. S. (2000): Does income mobility equalize longer-term incomes? New measures of an old concept. Unpublished paper. Cornell University.

Foster, J., Greer, J., Thorbecke, E. (1984): A class of decomposable poverty measures, in: Econometrica, 52 (3), pp. 761-765.

Frick, J. R., Goebel, J., Schechtmann, E., Wagner, G. G., Yitzhaki, S. (2006): Using Analysis of Gini (ANoGi) for detecting whether two sub-samples represent the same universe: The German Socio-Economic Panel Study (SOEP) Experience, in: Sociological Methods & Research, 34 (4) pp. 427-468.

Frick, J. R., Grabka, M. M. (2005): Item-non-response on income questions in panel surveys: incidence, imputation and the impact on inequality and mobility, in: Allgemeines Statistisches Archiv, 89(1), pp. 49-60.

Frick, J. R., Grabka, M. M., and Groh-Samberg, O. (2007a): Estimates of Imputed Rent and Analysis of Their Distributional Impact. (National Report. Research project "Accurate Income Measurement for the Assessment of Public Policies" (AIM-AP), funded by European Commission, 6th Framework Programme, 2006-2009).

Frick, J. R.; Grabka, M. M., Groh-Samberg, O. (2007b): Economic Gains from Publicly Provided Education in Germany, IZA Discussion Paper No. 2911, July 2007, Bonn: IZA. ftp://ftp.iza.org/dps/dp2911.pdf

Frick, J. R., Grabka, M. M. (2008): Niedrigere Arbeitslosigkeit sorgt für weniger Armutsrisiko und Ungleichheit, in: DIW-Wochenbericht 38/2008, pp. 556-566.

Frick, J. R., Grabka, M. M. (2010): Item Non-Response and Imputation of Annual Labor Income in Panel Surveys from a Cross-National Perspective, in: J.A. Harkness et al. (eds): Multinational, Multicultural and Multiregional Survey Methods, Wiley & Sons. (in press).

Frick, J. R.; Grabka, M. M., Groh-Samberg, O. (2009a): The impact of home production on economic inequality in Germany. IZA Discussion Paper No. 4023, February 2009, Bonn: IZA. http://ftp.iza.org/dp4023.pdf.

Frick, J. R., Grabka, M. M., Groh-Samberg, O. (2009b): Imputation of annual income in panel surveys with partially non-responding households, Präsentation, Konferenz der European Survey Research Association (ESRA), 29. Juni – 3. Juli 2009, Warschau/Polen.

Frick, J. R., Krell, K. (2009): Einkommensmessungen in Haushaltspanelstudien für Deutschland – ein Vergleich von EU-SILC und SOEP, SOEPpaper No. 237, November 2009, DIW Berlin.

Grabka, M. M., Westerheide, P., Hauser, R., Becker, I. (2007): Integrierte Analyse der Einkommens- und Vermögensverteilung, Abschlussbericht zur Studie im Auftrag des Bundesministeriums für Arbeit und Soziales; http:/www.bmas.de/portal/27418/property=pdf/a369__forschungsprojekt.pdf

Groves R. M. (2006): Nonresponse Rates and Nonresponse Bias in Household Surveys, in: Public Opinion Quarterly, 70(5) Special Issue, pp. 646–675.

Haisken-DeNew, J. P., Frick, J. R. (2005): Desktop Companion to the German Socio-economic Panel (SOEP), DIW Berlin.

Hauser, R. (2008): Problems of the German Contribution to EU-SILC – A research perspective, comparing EU-SILC, Microcensus and SOEP, in: SOEPpapers on Multidisciplinary Panel Data Research, 86, Berlin.

Helbig, M., Nikolai, R. (2008): Wenn Zahlen lügen – Vom ungerechtesten zum gerechtesten Bildungssystem in fünf Jahren, WZBrief Bildung, Wissenschaftszentrum Berlin für Sozialforschung.

Horneffer, B., Kuchler B. (2008): Drei Jahre Panelerhebung EU-SILC, in: Wirtschaft und Statistik 8/2008, pp. 650-657.

Hill, D., Willis, R. J. (2001): Reducing Panel Attrition: A Search for Effective Policy Instruments, in: Journal of Human Resources, 36, pp. 416-438.

Körner, T., Meyer, I., Minkel, H., Timm, U. (2005): Leben in Europa – Die neue Statistik über Einkommen und Lebensbedingungen, in: Wirtschaft und Statistik 11/2005, pp. 1137-1152.

Körner, T., Nimmergut, A., Nökel, J., Rohloff, S. (2006): Die Dauerstichprobe befragungsbereiter Haushalte. Die neue Auswahlgrundlage für freiwillige Haushaltsbefragungen, in: Wirtschaft und Statistik 5/2006, pp. 451-467.

Kroh, M., Spieß, M. (2008): Documentation of Sample Sizes and Panel Attrition in the German Socio Economic Panel (SOEP) (1984 until 2007), DIW Data Documentation 39.

Kroh, M. (2009): Short-Documentation of the Update of the SOEP-weights, 1984-2008. DIW Berlin: mimeo.

Lohmann, H. (2009): Comparability of EU-SILC survey and register data – The relationship of employment, earnings and poverty. Revised version of paper presented at European Labour Force Survey (EU-LFS) and European Union Statistics on Income and Living Conditions (EU-SILC), European User Conference, Mannheim/ Germany, 5-6 March 2009

Little, R. J. A., Su, H.-L. (1989): Item Non-Response in Panel Surveys, in: D. Kasprzyk, G. Duncan and M. P. Singh (eds.) – Panel Surveys, New York: John Wiley.

Müller, W. (2008): Schein oder Sein: Bildungsdisparitäten in der europäischen Statistik. Eine Illustration am Beispiel Deutschlands, in: Schmollers Jahrbuch 128 (4), pp. 511 – 543.

Nolan, B., Esping-Andersen, G., Whelan, C. T., Maitre, B., Wagner, S. (2009): The Role of Social Institutions in Intergenerational Mobility, Paper for Conference on IGM, Institute for Research on Poverty, Madison.

Noll, H.-H., Weick, S. (2009): Große Disparitäten im Auskommen mit dem Einkommen, in: Informationsdienst Soziale Indikatoren (ISI) 42, pp. 6-10.

Riphahn, R. T., Serfling, O. (2005): Item Non-response on Income and Wealth Questions, Empirical Economics, 30 (2), S 521-538.

Rässler, S., Riphahn, R. T. (2006): Survey Item Non-Response and its Treatment, in: Allgemeines Statistisches Archiv, 90, pp. 213-228.

Schupp, J.; J. R. Frick; J. Goebel; M. M. Grabka; O. Groh-Samberg and G. G. Wagner (2009): Zur verbesserten Erfassung von Nettohaushaltseinkommen und Vermögen in Haushaltssurveys, in: Druyen, T.; Lauterbach, W.; Grundmann, M. (Hrsg.): Reichtum und Vermögen. Zur gesellschaftlichen Bedeutung der Reichtums- und Vermögensforschung, VS Verlag für Sozialwissenschaften, pp. 85-97.

Schwarze, J. (1995): Simulating German Income and Social Security Tax Payments Using the GSOEP. Cross-National Studies in Aging, Program Project Paper No. 19. Syracuse University, USA.

Shorrocks, A. (1978a): Income Inequality and Income Mobility, in: Journal of Economic Theory, 19(2), pp. 376-393.

Shorrocks, A. (1978b): The Measurement of Mobility, in: Econometrica, 46(5), pp. 1013-1024.

Spieß, M., Goebel, J. (2005): On the Effect of Item Nonresponse on the Estimation of a Two-Panel-Waves Wage Equation, in: Allgemeines Statistisches Archiv, 1, pp. 63-74.

Starick, R., Watson, N. (2007): Evaluation of Alternative Income Imputation Methods for the HILDA Survey. HILDA Project Technical Paper Series No. 1/07, Melbourne Institute of Applied Economic and Social Research, University of Melbourne.

Wagner, G. G., Frick, J. R., Schupp, J. (2007): The German Socio-Economic Panel Study (SOEP): Scope, Evolution and Enhancements, in: Schmollers Jahrbuch 127 (1), pp. 139-170.

Wagner, G. G., Goebel, J., Krause, P., Pischner, R., Sieber, I. (2008): Das Sozio-oekonomische Panel (SOEP) – Multidisziplinäres Haushaltspanel und Kohortenstudie für Deutschland: eine Einführung (für neue Datennutzer) mit einem Ausblick (für erfahrene Anwender), in: AStA Wirtschafts- und Sozialstatistisches Archiv 2 (4), pp. 301-328.

Watson N, Wooden M (2009): Identifying factors affecting longitudinal survey response, in: P. Lynn (ed.), Methodology of Longitudinal Surveys. London: John Wiley and Sons, pp. 157-169.