Accounting for imputed and capital income flows in inequality analyses

by Joachim R. Frick[*,1,2,3] *& Markus M. Grabka*[1,2]

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[1] SOEP at DIW Berlin, [2] TU Berlin [3] IZA Bonn
* Corresponding author <jfrick@diw.de>
Mail Address: c/o DIW Berlin, Department SOEP, Mohrenstr. 58, 10117 Berlin, Germany.

Abstract:

Using representative and consistent microdata from the German SOEP from 1985-2007, we illustrate that capital income (CI) and imputed rent (IR) have become increasingly important sources of economic inequality in Germany over the last two decades. While both of these components represent some kind of return on alternative private investments (CI = return on financial investments in general, IR = return on investments in owner-occupied housing), we find that they do not coincide in their impacts on income inequality and income mobility. In line with the literature, *net* IR tends to exert a dampening effect on inequality and relative poverty, very much driven by the increasing share of outright ownership among the elderly. As the German public pension scheme gradually loses its ability to maintain people's living standards into retirement, we find these effects to increase over time. Decomposition by factor component reveals a much stronger role of CI in the overall increasing inequality over recent years—even after applying a 1% top-coding for sensitivity purposes. Comparing results from income mobility analyses including and excluding IR and CI give indications of a stabilization effect, especially among high incomes. Again, this effect is more pronounced in more recent times.

Summing up, the analyses presented here make a clear case for the joint consideration of all components of private investment income for the purpose of welfare analysis, be they of a monetary or non-monetary nature. This appears to be relevant in at least three dimensions of comparative research: (1) across time; (2) across space, regions, welfare regimes; (3) across the individual life course, thus analyzing the impact of investment income on intrapersonal mobility patterns.

Keywords: Income Inequality, Mobility, Decomposition, Capital Income, Imputed Rent, SOEP

JEL-Codes: D31, D33, I31

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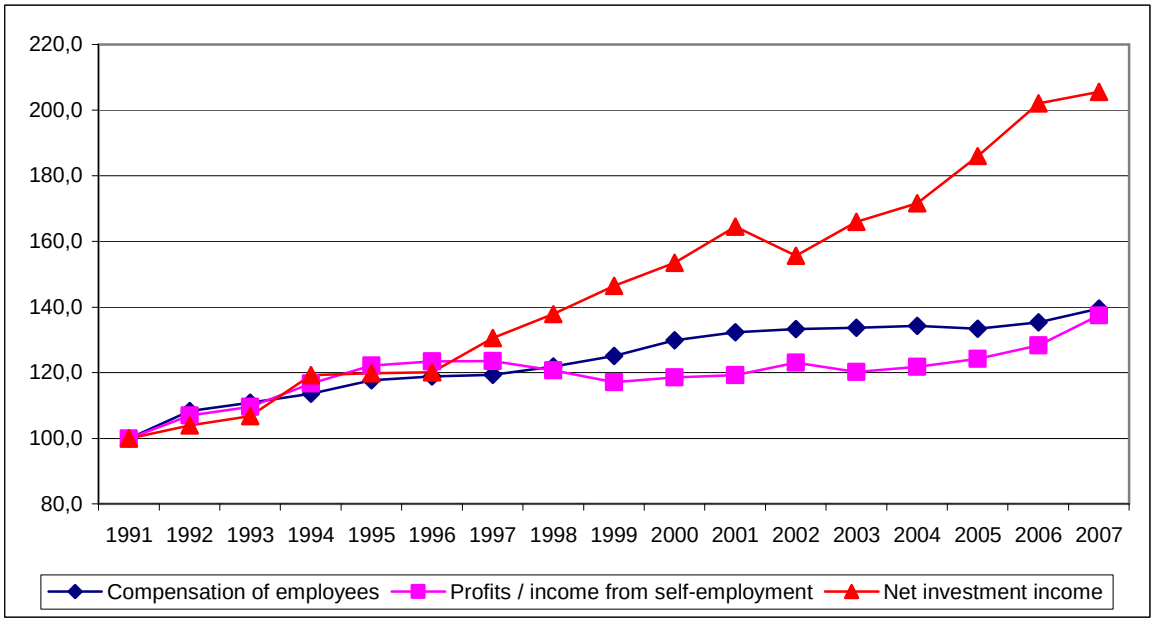
1 Motivation

Income inequality has clearly increased in the majority of OECD countries over the past 20 years (see OECD 2008). Various factors have contributed to this general trend, such as increasing unemployment, growing wage inequality induced by skilled-based technological change (see Card and DiNardo 2002) and immigration (for the US, see, e.g., Borjas 2006). Recent literature on growing inequality focussing on the upper tail of the distribution (Atkinson and Piketty 2007) has shown that, e.g., the superstar phenomenon (i.e., the compensation for CEOs) had an independent effect on increased inequality (Bebchuk and Grinstein 2005). Above and beyond such processes on the labor market, changing demographic structures also exert an independent effect on the income distribution: these include increasing shares of single-person households and lone-parent families, and the ageing phenomenon, together with selective mortality and lower fertility rates (see Reed 2006 for an analysis of the British case).

While the impact of increased earnings inequality on overall inequality has been described in depth, less is known about the impact of other specific income components, in particular investment income. This research gap is considerable, given that returns on investment and income from self-employment have clearly increased in importance compared to labour's share in domestic income in nearly all OECD countries over the past 20 years (OECD 2008). In Germany, this development was clearly in favour of net investment income(see Figure 1). Existing literature on the increasing importance of investment income (at the micro-level) includes Jäntti (1997) for Great Britain and the USA as well as Frässdorf et al. (2008) and Becker (2000) for Germany. All of these authors consistently report that the impact of property income on overall inequality is about two to three times higher than its contribution to overall income. However, all those papers consider only monetary returns on investments, thus ignoring (fictitious) income advantages arising from investments in owner-occupied housing. This appears to be inconsistent with the fact that buying one's own home is just an alternative to reaping benefits from investments in the capital market, i.e., receiving interests and dividends. However, there is a separate strand of literature focusing on the impact of non-monetary income components on income inequality, not at least in order to improve cross-national comparability of inequality analyses (see Canberra Group 2001). Imputed rent for owner-occupied housing is the most prominent example (see, e.g., Yates 1994

for Australia, Frick & Grabka 2003 for the USA, UK and Germany)[1]. Typically the *net* value of imputed rent increases in age due to the nature of the mortgage repayment schemes, thus yielding a decrease in income inequality and especially in relative income poverty among the elderly, and providing an effective means of old-age provision.

Figure 1: The development of income aggregates in the German System of National Accounts (SNA) (1991=100)



Source: own calculations based on SVR 2007/08.

Nevertheless, there appears to be no comprehensive analysis to date on the joint impact of monetary and non-monetary returns on capital investments. This lack appears even more crucial given that increased income inequality is typically accompanied by increased wealth inequality (see Frick and Grabka 2009). Both economic outcome measures interact, with high income earners typically having higher saving rates and thus accumulating more wealth than low income groups, i.e., wealth and financial wealth in particular can be a distinct source of income itself. One might hypothesize that this interaction is of specific relevance in ageing societies. Although the standard life-cycle theory (Jappelli and Modigliani 2005) predicts a consumption of capital in old age, (significant) dissaving cannot be observed in many

[1] The EU-funded project "Accurate Income Measurement for the Assessment of Public Policies (AIM-AP) provides a series of papers on the distributional impact of non-cash incomes from private sources (including imputed rent) as well as from public provision of services (in the domains of health, housing and education) for a variety of EU countries (see http://www.iser.essex.ac.uk/research/euromod/aim-ap-project). All of those empiri-

countries including Germany, where the median elderly household showed a saving rate of above 4% (savings defined as additions to the physical capital stock, see Börsch-Supan et al. 2003). Thus elderly individuals tend to remain in a preferable wealth position, thus continuously receiving returns on their investments.[2] At the same time, elderly home-owners tend to profit above average from the consideration of imputed rent.

The increased importance of investment income can partly be explained by a shift in favour of a private coverage of old-age insurance, particularly in non-liberal welfare systems. Due to the significant reduction in benefits from the statutory pension insurance, employees increasingly need to participate in occupational and private pensions schemes. As a consequence of this reorientation of the public old-age insurance system, individuals in general will enjoy higher claims from investment income, although most likely in a rather unequal manner.

The aim of this paper is give a comprehensive view of the joint impact of the two components of investment income, namely "(monetary) capital income (CI)" and "(non-monetary) imputed rent (IR)". We make use of more than 20 waves of consistently measured income data from the German Socio-Economic Panel (SOEP). After describing the microdata used and the methods applied to investigate the impact of investment income on overall inequality and mobility in Section 2, Section 3 presents the empirical findings with respect to the incidence and relevance, separately, of the two components of investment income, CI and IR. We consider these components in our "full" income concept relative to a "baseline" income concept net of investment income in order to investigate their respective impacts on inequality and poverty . Decompositions by subgroup and by income component are used to quantify the contribution of investment income to overall inequality. Finally, making full use of the panel nature of the underlying microdata, we analyze the relevance of CI and IR for smoothing income mobility. Section 4 concludes.

cal analyses clearly support the claim of considering non-cash incomes in the measurement of economic well-being.

2 However, the empirical analyses of the process of "dissaving" should not be evaluated simply on the basis of repeated cross-sectional and cohort specific data but rather using panel data in order to effectively control for selectivity in mortality (see DeNardi et al. 2009). In other words, comparing wealth endowments across age cohorts in a given point in time and inferring from this how well-off the future elderly will be may not adequately reflect the process of individual (dis)saving behaviour.

2 Data and Methods

2.1 The German Socio-Economic-Panel (SOEP)

The German Socio-Economic Panel (SOEP) is a representative longitudinal survey of individuals living in private households in Germany (Wagner et al. 2007). The survey was started in 1984 in West Germany and was extended to East Germany in June 1990, somewhat more than half a year after the fall of the Berlin Wall. The initial sample included over 12,000 respondents, with everyone aged 17 and over in sample households being interviewed. In recent years, new sub-samples have been drawn, which approximately doubled the initial sample size. Due to the high concentration of economic resources (income and wealth) at the top of the distribution, welfare analyses based on representative population surveys are often confronted with the lack of information on rich individuals. In order to overcome this problem, the SOEP introduced a high income sample in 2002, over-representing the top 3% of the income distribution—this sample is thus included in the more recent years of our time series. The sample analyzed in Section 3 employs all available observation years up to survey year 2007.

One of the main problems when asking for (specific) income and wealth information in any population survey is non-response, and SOEP is no exception to this rule. Due to the rather irregular and volatile nature of capital income, questions targeted at this income component are severely hampered by such measurement problems, clearly imposing a threat to the explanatory power and validity of the data. Making effective use of the panel nature of SOEP, any item non-response is corrected for by applying longitudinal (and cross-sectional) imputation techniques, thus at least reducing eventual bias arising from the above-mentioned selectivity (see Frick and Grabka 2005).

Another problem in the empirical assessment of the impact of capital income on inequality lies in the volatility of this income component (even before the recent financial crisis). Single cross-sectional analyses of capital income can suffer from discretionary changes and fluctuations in the value of an asset and the implicit returns. Thus it seems crucial to use repeated and consistently surveyed information about capital income over a longer period to isolate the independent effect of that income component on overall inequality. Again, the time

series information collected in SOEP from the very same households does help to assess the quality of the income information, including possible measurement error.

Finally, it should be noted that all of the following analyses refer to the population in private households only, i.e., we exclude individuals living in institutions such as nursing homes.

2.2 Definition of income measures

2.2.1 Baseline income

We assess the impact of CI and IR on inequality by simply comparing results from a more comprehensive (or "full") income concept, including these two components, with results derived from a baseline income excluding any investment income. For analyses focusing on economic well-being *after* redistribution through government and social security schemes, we apply an equivalent annual post-government income, or "welfare," approach. We also add a "market perspective" by comparing results based on baseline versus and full equivalent pre-government income.[3]

In order to correct for different income needs of households with different sizes and age compositions, we calculate equivalent incomes by applying the modified OECD scale, which assigns a value of 1 to the head of household, 0.5 to all adult household members aged 14 and over, and a value of 0.3 to children below 14 years of age.

In order to allow for comparability across time, all incomes are expressed in euros (introduced only in 2002) and all measures are deflated to 2000 prices (including a correction of purchasing power differences between East and West Germany).

2.2.2 Components of investment income

In the following section, we briefly describe the two types of investment income which are at the heart of the empirical analyses in Section 3, namely capital income (CI) and imputed rent (IR).

3 When analysing CI in the context of disposable equivalent income (i.e., after taxes and public transfers), we use a *net* measure of CI by simply applying the individual average tax rate of the household to the originally collected gross measure of CI.

2.2.2.1 Capital Income (CI)

The definition of capital income is anything but clear-cut, and reconciling macro- and micro-data requires harmonisation of measurement concepts. In the system of national accounts (SNA), capital income is being used as synonym for investment income and property income, and covers income derived from a resident entity's ownership of domestic and foreign assets. The most common types of investment income are income on equity (dividends, distributed income of corporations, branch profits, reinvested earnings, etc.) and income on debt (interest), as well as income from rentals and leasing, and royalties. Investment income includes the components direct investment income, portfolio investment, and other investment income (OECD 2007), and also covers income imputed to households from net equity in life insurance reserves and in pension funds. A complication comes with the fact that rent from land (less expenses from rentals) is counted as investment income in the SNA, whereas rental housing or equipment is regarded as a production activity, and the respective income received is treated as part of *mixed* income (as recommended in the 1968 SNA).

However, an investment in real estate rather than in the capital market yields the same level of return for the investor, thus this separation raises the question of whether the measurement of capital income may be biased when considering rent from land only. This general problem also applies to the fictitious imputed rental value for owner-occupied housing (IR). Again, in the SNA-imputed rents are counted as a production activity, although all household members enjoy a fictitious income advantage from this investment. If the same household had invested in the capital market rather than in real estate, a direct income flow of capital income would have been observed as part of the household's investment income.

This—from a layman's point of view artificial—differentiation hampers the analysis of capital income and its impact on overall inequality on the basis of population surveys. Obviously, the various subcomponents of investment income mentioned above are subject to specific measurement problems, especially for comparative research. A typical simplification is to lump together rent from land and other rental income. For example, in order to enhance comparability across various national datasets, the Luxembourg Income Study (LIS) does not separate these income types, and includes income from renting as part of property income.

Information about investment income in SOEP is collected at the household level for all household members. At first, SOEP asks separately for income from renting and leasing

and for accompanying expenses. The final measure of total capital income is net of any expenses which are related to rentals.[4] SOEP does not differentiate between rentals from land and other rental income as the SNA does, but instead follows the procedure employed in LIS.

Each household also has to specify whether any assets are held by any household member such as saving accounts, building savings contracts, life insurance policies, bonds, stocks or business assets. Each household also has to report the sum of all returns on the various investments received over the previous year. If the exact amount is not known, the respondents can give a rough assessment in six income categories—these values are transformed into metric information for the analyses to follow.[5] Other property incomes such as royalties are not covered by the SOEP questionnaire.

Another problem when trying to collect information about capital income in population surveys is the lack of detailed information about imputed income from investments, e.g., in life insurance reserves. While investors regularly (typically on an annual basis) receive information about the accumulated stock on their investments, this information usually does not report the portion attributable to interest only. Thus respondents are not able to provide information about the return on that investment. This is one reason why population surveys typically underestimate investment income compared to the SNA. The measure of capital income in SOEP thus also does not cover income imputed to households from net equity in life insurance reserves and pension funds.

According to Smeeding and Weinberg (2001), it is advisable to extend the concept of capital income to returns on private retirement pensions—as is done in the SNA—given that this income component represents an alternative investment in insurance plans instead of in the capital market. However, the concept "private retirement income" can consist of various forms of old-age provision. A "private" pension can be interpreted as differing from a "statutory" pension in that it comprises not only annuities and other private pensions, but also pensions from previous employers. While income from private pensions such as annuities (cash-

4 Due to the specific way in which this information is collected in SOEP, there is a lower limit of zero; thus, possible losses from renting and leasing are not considered.

5 Although SOEP collects information on irregular income inflows (windfall income), such as one-time transfers, winnings, inheritances, gifts of money or goods, these are not considered in the measure of capital income employed below.

value life insurance contracts) or voluntary pension schemes[6] representing one form of capital income, pensions from previous employers can be interpreted as deferred labour compensation. However, some occupational pension schemes—at least in Germany—allow employees to make voluntary contributions to a pension account, thus also yielding returns on private investment. It is therefore difficult to separate the pure "private" portion from the deferred labour compensation. Although SOEP tries to collect detailed information about pension incomes, it still faces this separation problem. Thus we refrain from considering income derived from private pensions in the measure of capital income.

When dealing with capital income, one might also think of capital gains. The Canberra Group (2001: 17) argues that "the theoretical argument for including capital gains in an extended measure of income is that this would be in line with the definition of income leaving a household as well off at the end of the accounting period as at the beginning. Capital gains or losses do have an effect on the economic behaviour of households and may affect their decisions on consumption." However, capital gains are not included in disposable income in the SNA, and the Canberra Group also does not recommended that they be considered (2001). While earnings on capital (such as dividends) are counted as income from an SNA perspective, capital gains and losses are not. Households almost certainly consider capital gains as a form of implicit saving. Furthermore, capital gains are not regarded as the result of a productive activity that affects GNP or total household income, but as a change in the value of an asset. Given that we are not interested in changes in net worth, we refrain from considering capital gains in this paper, following the recommendation of the Canberra Group (2001: 28).

2.2.2.2 Imputed Rent (IR)

When dealing with income advantages derived from housing, the COMMISSION REGULATION (EC) No. 1980/2003 defines imputed rent as follows: "The imputed rent refers to the value that shall be imputed for all households that do not report paying full rent, either because they are owner-occupiers or they live in accommodation rented at a lower price than the market price, or because the accommodation is provided rent-free. The imputed rent shall be estimated only for those dwellings (and any associated buildings such a garage) used as a main residence by the households. The value to impute shall be the equivalent market rent that would be paid for a similar dwelling as that occupied, less any rent actually paid (in

6 Both types of pensions are very comman as old-age provision among the self-employed in Germany.

the case where the accommodation is rented at a lower price than the market price), less any subsidies received from the government or from a non-profit institution (if owner-occupied or the accommodation is rented at a lower price than the market price), less any minor repairs or refurbishment expenditure which the owner-occupier households make on the property of the type that would normally be carried out by landlords. The market rent is the rent due for the right to use an unfurnished dwelling on the private market, excluding charges for heating, water, electricity, etc."[7]

According to this definition, potential beneficiaries of IR include owner-occupiers, rent-free tenants and tenants with below-market rent, including those who live in public or social housing as well as those who have been granted a rent reduction by their respective landlord (e.g., relatives or employer).

The SOEP made an approximation of this fictitious income advantage following along the lines of the EC regulation and using the *Opportunity Cost Approach*,[8] which includes advantages of living in subsidized rented accommodation or living rent-free (the latter group may indeed include former owner-occupiers (often outright owners), who hand over the deeds to their property to their children in turn for a usufructuary right to remain in their current dwelling).

The opportunity cost approach applied in the SOEP is based on a regression of gross rent per square meter (not including heating costs) actually paid by main tenants in the private market. Independent variables include the year of construction, condition of dwelling, size of dwelling, length of occupancy, community size, and disposable income. Applying these regression coefficients to the population of otherwise comparable owner-occupiers and individuals living in households with reduced rent yields a gross measure of imputed rents. After deducting all owner-related costs such as operating, maintenance, and interest payments on mortgages, as well as property taxes, one arrives at a net value of IR that can be interpreted as the income advantage of owner-occupied housing. For rent-free households and persons living in households with below-market rent, no further deductions have to be made. The most

7 COMMISSION REGULATION (EC) No 1980/2003 of 21 October 2003 implementing Regulation (EC) No 1177/2003 of the European Parliament and of the Council concerning Community statistics on income and living conditions (EU-SILC) as regards definitions and updated definitions.

8 Other methods to derive IR, such as the market-value approach and the self-assessment approach, as well as differences in the final outcome measure of IR arising from the choice of the method used to derive IR, are described in detail in Frick and Grabka (2001) and Frick and Grabka (2003).

important owner-specific costs are interest payments on mortgages. Assuming a standard (German) mortgage with regular payments over a period of 30 years, we find an increasing income advantage for owners over the entire period. At the beginning of the payment period, interest payments clearly exceed the mortgage payments. As times goes by, the share of the mortgage that is paid off increases, leaving an increasing income advantage from owner-occupied housing (for more details on the imputation of IR in SOEP, as well as for sensitivity analyses showing the variation in the distributional impact by the choice of the method used to derive IR, see Frick et al. 2007).

Imputed rents are approximated both in the SNA as well as in population surveys. While IR in the SNA is counted as a production activity, thus not as investment income, population surveys typically provide IR as a separate piece of fictitious income information. Thus a user can decide whether IR should be counted as investment income or not. In the following, we describe the impact of the monetary component of investment income (CI) separately from the non-monetary, fictitious income advantage (IR) on the overall inequality.

2.3 Methodology

2.3.1 Measures of inequality and relative poverty

Following standard procedures in inequality research and in order to check the robustness and sensitivity of our findings, we employ various indicators of inequality: the Gini coefficient, the MLD (mean log deviation), which is more sensitive to changes at the lower end of the income distribution, as well as the half-squared coefficient of variation (HSCV) which is more sensitive to changes at the top end of the income hierarchy.

Relative income poverty is calculated based on a threshold given by 60% of the national median of equivalent disposable income. We employ the family of poverty measures described by Foster, Greer, and Thorbecke (1984) using three different values for the poverty aversion parameter α, thus giving different weights to the individual's poverty intensity. This allows us to control for whether the incorporation of investment income impacts differently on individuals living in different proximities to the poverty line.

2.3.2 Mobility Measures

Making use of the longitudinal nature of the SOEP data and not restricting our results to short-term (i.e., year-to-year) changes only, we run income mobility analyses over five-year periods drawing on matrix mobility based on annual income quintiles in *t* and in *t-4*. Additionally, we employ Shorrock's mobility measure (using the Gini coefficient) to make explicit use of all five income measures during the respective analysis period. This will allow us to assess what impact the consideration of investment income may have on either reducing or increasing individual income variation over time.

2.3.3 Decomposition analysis

a) Decomposition by subgroup

In order to analyze which population subgroups are most affected by the consideration of investment income in the final (full) outcome measure of disposable income, we make use of the decomposition by subgroups as described in Shorrocks (1984), based on the Mean Log Deviation (MLD). The MLD also belongs to the family of generalised entropy measures and is sensitive to changes at the lower tail of the income distribution. The MLD is also referred to as the I0-Measure.

b) Decomposition by income component

In order to analyze the impact of investment income on overall inequality, we apply the factor decomposition method proposed by Shorrocks (1982) using the HSCV, which exhibits the desirable feature of additive decomposability. The HSCV (or I2) belongs to the class of the generalised entropy measures and is defined as.

$$I_2(y) = \frac{C(y)^2}{2} = \left(\frac{1}{2n\mu^2}\right)\sum_{i=1}^{n}(y_i - \mu) \quad (1)$$

$I_2(y)$ is defined for negative incomes and factor incomes amounting to zero. The relative contribution of an income component to income inequality s_k results from the absolute contribution of that component to overall inequality S_k

$$S_k = \sum_i a_i(y) y_{ik} \quad (2)$$

divided by total inequality $I(y)$:

$$s_k = \frac{S_k}{I(y)} \quad (3)$$

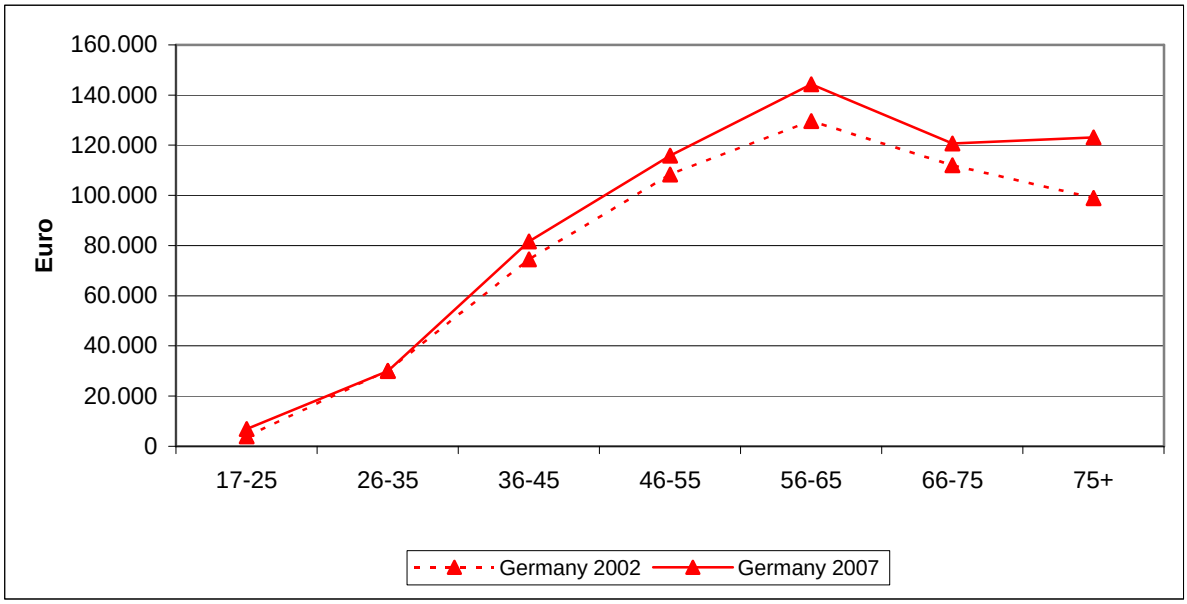
3 Empirical results

Above and beyond describing what has been going on with respect to different types of investment income in Germany since the mid-1980s, we are especially interested to see which subgroups of the population might be affected most by these types of income. The German pay-as-you-go (PAYG) public pension system is clearly under pressure to cut back, and a range of publicly co-funded financial instruments (e.g., *Riester-Rente*) are increasingly driving people to invest in private old age provision. Thus, age is a crucial structural variable in the following analyses. Among other issues, we will address the question of whether inequality decomposition by age (within/between-group inequality) have also changed over time due to the inclusion of CI and IR. At least for IR, this is to be expected from the literature (e.g., Yates 1994). However, the picture for CI may be less clear. On the one hand, the elderly are typically more risk-averse and "conservative" in their investment behaviour, which should yield lower interest. On the other hand, due to their longer periods of accumulation, their financial holdings (wealth stock) should be higher, thus also improving their chances for risk diversification. Indeed, using wealth data from the SOEP for 2002 and 2007, Frick & Grabka (2009) give clear empirical evidence of the strong relationship between (financial and property) wealth and age in Germany (see Figure 2).

The following section contains time-consistent estimates for Germany based on annual income data from the German Socio-Economic Panel (SOEP). The time series shown in the following tables refer to the year of the observation; thus, the income refers to the previous calendar year. That is, the most recent measure used here is from 2007 and gives the annual income as of 2006. Due to the sweeping changes in the income distribution in the early years after the end of the GDR, annual incomes for the East German subsample of the SOEP can only be provided starting with income year 1991. Thus all time series on income, inequality,

poverty and mobility give results based on West Germany only until 1991, and results for unified Germany thereafter.[9]

Figure 2: The age profile of individual wealth in Germany, 2002 and 2007



Source: Frick and Grabka (2009).

3.1 Incidence and Relevance of IR and CI

The "incidence" of a given income component is simply measured by the share of individuals receiving a given income component (here IR and CI), whereas the "relevance" of IR and CI is defined as the percent of each in baseline income. Table 1 reveals that by and large, there appears to be a rather stable share of about 40 % of the population receiving IR. There is an expected dip after German unification caused by the considerably lower share of owner-occupiers in the new federal states of East Germany. Similarly, the share of individuals receiving some type of capital income ranges between 80 and nearly 90 % over the entire period, with a slight reduction in the years since 2000.

-- here Table 1 --

9 All empirical analyses have been conducted using Stata, Version 9.2. For the analyses of inequality and mobility, we drew heavily on the add-ons SHORMOB and MATRXMOB provided by Philippe van Kerm (CEPS, Instead); for decomposition of inequality and poverty by subgroup as well as by factor, we employed Stata add-ons provided by Stephen P. Jenkins (Univ of Essex) INEQFAQ, INEQDECO and POVDECO. See Jenkins 1995 for an application of the factor decomposition.

Obviously, these figures do not reveal how much of a given income source a person actually receives. Thus, the right panel of Table 1 gives the relevance of both income sources when using a "welfare approach," i.e., looking at equivalent annual post-government income, and when following a "market approach" based on equivalent annual pre-government income. Separating in both cases IR and CI from the baseline income reveals that these two components doubled from the mid-1980s to 2007. This is true in absolute as well as in relative terms. For example, IR as a share of baseline disposable income went from 2.9% in 1985 to more than 5% in 2007; similarly, the relevance of CI increased from 3.4% to 5.7%. The rise in magnitude of both income components is in line with macro-statistics revealing a clear reduction in the share of GDP coming from labour income (this share peaked in 1993 at almost 68% and sunk to 61% in 2007, see Frick & Grabka 2008).

3.2 Income inequality

Turning to the effects of IR and CI on (disposable and market) income inequality, Table 2 compares Gini and HSCV for baseline income with augmented income measures including IR, CI, and both at the same time.

-- here Table 2 --

Looking first at disposable income, we observe a consistent inequality-reducing effect arising from the consideration of IR which is in line with the literature for (see Yates 1994 for the case of Australia, Frick & Grabka 2003 for the US, UK as well as Germany and Frick, Grabka, Smeeding, Tsakloglou (forthcoming) for various EU countries), although one should keep in mind that our baseline income measure does not include capital income as typically is the case! The incorporation of IR into the baseline equivalent disposable income reduces income inequality according to the Gini coefficient by about 1-2% while the top-sensitive HSCV shows a considerably larger inequality reduction effect. This might come as a surprise given that home-owners tend to be higher up in the income hierarchy, however, due to the nature of the typical mortgage repayment schemes, the *net* IR measure—which we apply

here—is supposedly more concentrated among the elderly, who are typically associated with somewhat lower baseline incomes.

A very different finding arises for CI, where disposable income inequality is clearly rising due to the inclusion of this income component. First, as expected, this increase is much stronger when looking at the top-sensitive HSCV than in case of the Gini. Second, the change resulting from the incorporation of CI—although volatile—does increase over time.

Due to rising shares of the population with zero or little market income (exacerbated, e.g., by rising unemployment, more lone-parent families, as well as societal ageing, which by definition is producing a higher percentage of pensioners in the population), inequality in market incomes is consistently higher than inequality in disposable incomes. Nevertheless, we do find a dampening effect once we include IR. In contrast, the consideration of CI slightly reduces baseline market income inequality as given by the Gini coefficient. The latter effects are even stronger when measuring inequality by means of the HSCV, although in more recent years there appears to be a major concentration of CI among people with higher baseline incomes.

Summing up, both disposable and market income inequality in Germany have increased significantly from the mid-1980s to the most recent years. Using a comprehensive disposable income measure (including IR and CI), the Gini moves up from around .25 to more than .31. This increase in inequality has been paralleled by shrinking incomes among the middle class (see Grabka & Frick 2008). Irrespective of an overall inequality reduction effect arising from imputed rent, there was a massive pro-rich growth of capital income during the financial boom period of the late 1990s to 2007, which overall has yielded an increasing income concentration.

3.3 Relative Poverty

Throughout the period under investigation, and in line with the above-mentioned development of inequality, the relative poverty risk rate in Germany reached record levels in 2006 (about 18%), followed by a minor reduction in 2007, which was mainly due to improved labour market conditions and reduced unemployment in the economic upswing till 2008 (see Frick & Grabka 2008). In order to adequately show the effect on poverty of incorporating IR

and CI into the income measure, we need to dynamically adjust the poverty threshold when including each of the aforementioned income components (see Table 3).

-- here Table 3 --

With respect to the inclusion of IR, our results are strongly supportive of the inequality-dampening effect of imputed rent: the poverty reduction effect as measured by the change in the respective FGT index (see Foster, Greer & Thorbecke 1984) is evident and positively related to the value of the poverty aversion parameter α, thus indicating that poverty intensity (α =2) is reduced even more due to IR than to the simple head count ratio (α =0) and the poverty gap (α =1).

Including CI in the income measure also exerts a poverty-reduction effect, although somewhat less pronouncedly than in case of IR. Again, the reduction effect is increasing in α.

Given the similar implications of including IR and CI, the overall effect is also a clear poverty reduction. However, it should be noted that these reduction effects appear to dwindle over time: for example, up to the end of the last century, the poverty-reduction effect for FGT2 was in the range of 20%, whereas this effect was only 10% in more recent years.

3.4 Subgroup analyses

3.4.1 Investment income by income quintile and age groups

Having analysed these time trends on the basis of the entire population in private households, we now turn to the question of where in the income distribution these effects matter most, as well as which socio-economic characteristics are likely to be affected most by the inclusion of IR and CI. Thus, we compare the incidence and relevance of IR and CI across baseline disposable income quintiles (Table 4a) as well as across age groups (Table 4b). Due to the above-mentioned changes over time, we run these analyses separately for 1997 and 2007.

-- here Table 4a --

While the share of the population with IR is modified only slightly across baseline income quintiles, there is a pronounced positive relationship between CI and baseline income (see top panel in Table 4a). For both income components, we see that these relationships become stronger from 1997 to 2007.

Adding IR and CI to baseline income (second panel in Table 4a) and analysing the relative change (third panel in Table 4a) shows for 1997, each of the two components adds about 5% to baseline income, although this increase is much stronger among the poorest quintile (plus 20% once we add IR and CI), whereas the richest quintile increases its baseline income only by less than 10%. However, for the latter, this is due to the higher baseline income and masks the fact that the absolute average amount of IR and CI added in each quintile is in principle positively correlated with baseline income. The only exception appears to be the very lowest income group: this is most likely a reflection of the higher probability of poor people enjoying the fictitious income advantage of subsidized social housing, which is included in our measure of IR. When looking at the absolute figures for CI and IR, one observes that in 1997, the highest income quintile had 1.7 times more investment income than the poorest quintile, and that by 2007 this ratio had more than doubled, showing the former to have 3.5 times more investment income than the latter (€ 4,208 vs. 1183 €).

The lowest panel in Table 4a reports the share of overall income held per income quintile more comprehensively for each of the four income specifications: While in 1997 the poorest fifth of the population had only 9.1% of baseline income, the richest were possessed over 34.9%. Adding IR to baseline income made the distribution slightly less unequal, whereas adding CI again increased the inequality somewhat. Considering both components of property income at the same time yielded more or less the same picture. Apparently, for all indicators shown in this table, there is a consistent change from 1997 to 2007 towards rising inequality. This can be exemplified by the even more pronounced increase in CI among the highest income groups, the reduced (increased) share of property income among the poorest (richest), and finally by the fact that in 2007, 39.3% of full disposable income was in the hands of the top 20%, as compared to only 37.8% of baseline income.

Table 4b reports similar information for age groups rather than for income quintiles. There is the expected positive relationship between the probability of enjoying IR, on the one hand, and age, on the other—with the exception of the youngest age group: their somewhat

higher share of IR recipients does not so much reflect early home-ownership as it does young adults still living with their parents. On the other hand, we do not find a strong correlation between age and the probability of getting returns on CI (top panel of Table 4b).

-- here Table 4b--

Nevertheless, for those with IR from owner-occupied housing, we see the well-known strong increase in that type of income across age groups, which simply reflects the degree to which mortgages are paid off and equity is increased. For example, in 1997, 25-40-years-olds had €468 in IR on average, while those aged 65 and over had about three times this amount (€1,324). In line with the age profile of wealth given in Figure 2, the absolute amount of CI peaked among the 50-65-year-olds (1997: €1,222) and diminished slightly in the oldest cohort (€999) due to transfers to younger generations, among other things. However, considering both types of income together, the oldest enjoy the highest average amount of (all types of) investment income. Comparing again the situation in 2007 with the situation ten years earlier, it appears that the oldest profited most from the aforementioned increase in inequality: while considering IR and CI pushed baseline incomes of those aged 65 and over up 17% in 1997, their incomes rose further to almost 24% in 2007, compared to a much lower impact among the middle age groups.

3.4.2 Inequality decomposition by subgroup

The extent to which these differences across subgroups impact on income inequality can be assessed by means of inequality decomposition analysis. Based on the mean log deviation (MLD), which exhibits the necessary criteria of being an additively decomposable inequality measure, Table 5 gives the respective results for decomposition by household/family type, socio-economic status, and educational level attained by the household head as well as by individual age. The latter appears to be an important structural variable in light of our hypothesis on the increasing relevance of returns on private investment (i.e., CI and IR) as an alternative income source in old age. As such, in order to provide evidence of possible changes over time, we repeat this analysis for the years 1997 and 2007.

-- here Table 5 --

The inclusion of IR and CI increases the baseline income measure by about 10% in 1997 and by more than 12% in 2007. This increase however is not evenly spread, but clearly over proportional among the elderly (especially due to IR), the well educated (due to both, IR and CI), for individuals living in households headed by pensioners (due to IR) and by self-employed (mostly due to CI). Again, young adults who are still living at home profit from their parents' IR and CI (due to the standard assumption of pooling and sharing of resources across all household members). In line with the results mentioned in earlier sections, all those effects are much stronger in 2007.

With respect to inequality the change induced by investment income in the overall MLD is 15.6% in 1997 and 47.4% in 2007. This huge change may be an indication for the volatility of CI and we also can not rule out the relevance of measurement error in capturing this income component. Nevertheless, one can assume that there is an own standing change in the inequality contribution of this income component which will have to be identified by means of factor decomposition (see next section).

One of the advantages of inequality decomposition by subgroup is the opportunity to evaluate changes of within- and between-group inequality, here caused by the incorporation of both sources of investment income. In general, we find that within-group inequality increases significantly when considering returns on private investments in absolute as well as in relative terms. On the other hand, the contribution of between-group inequality declines when considering investment income – and it drops even in absolute terms when decomposing by household / family type. This is mostly driven by the fact that households with household heads aged 60 and over, who represent about one-quarter of the population, exhibit a rather low baseline inequality. In 2007, the MLD for this group was 0.151 compared to 0.204 in the overall population; however, for the full income measure, the MLD was 0.314 as compared to 0.301—this over-proportional change causes the share of aggregate inequality that can be attributed to this group to increase from 18% in the baseline model to 26% in the full model. Similarly, persons in households headed by a self-employed person make up less than 8% of the population, but they contribute more than 13% of aggregate inequality. In other words, for all subgroups where we observe an above-average incidence of investment income, the group-specific inequality also shows an above-average increase.

3.5 Factor decomposition

Our analyses up to now clearly reveal a significant impact of IR and an even greater impact of CI on overall inequality. For 2007, the Gini coefficient for equivalent disposable income changes from 0.297 in the baseline model to 0.313 when including IR and CI. As can be expected due to the positive relationship of investment income and baseline income, the corresponding change in the top-sensitive HSCV is even more pronounced: this value increases by almost 50% from 0.204 to 0.301.

In Table 6 we present consistent time series of the relative contribution of IR and CI as well as of all other income components captured in our baseline income to the full equivalent disposable income measure. This is to be compared to the respective relative contribution to inequality as measured by the HSCV (see left panel of Table 6). In order to provide some indication for the sensitivity of the results to the well-known volatility of CI, we present similar results after applying a 1% top-coding of CI (see right panel of Table 6).

-- here Table 6 --

While the overall income share stemming from both IR and CI has been rising in a similar magnitude from 3–3.5% in 1985 to about 5.5% in 2007 (see left panel of Table 6, right column), the relative contribution of these income components to overall inequality developed quite differently. The inequality contribution of IR barely exceeded 4% and was almost always lower than its relative contribution to full income. On the other hand, inequality caused by CI was long in the range of 15-20% and even rose to about one-third in the 2000s, i.e., the period with the highest inequality levels.

The robustness check implemented by the rather rigid 1% top-coding of CI (right panel of Table 6) gives strong evidence of the impressive volatility of this income component: the relative contribution of CI on overall inequality is clearly reduced, but is still “responsible” for almost 10% of inequality, and thus does not change the principle finding described before.

3.6 Income mobility

Following the results so far, one may hypothesize that IR and CI should differ in their effects on intragenerational income mobility. Especially IR, due to the rather smooth repayment schemes for mortgages and the resulting small incremental increases per year, appears to be less volatile than CI which, *ceteris paribus*, might be affected more by business cycles and the trading behaviour of holders of financial assets. Thus, one may expect IR to have a stabilizing effect and CI to be more closely related to mobility. On the other hand, we showed CI to be strong positively correlated with baseline income, which tends to argue for higher stability among top income households.

Putting numbers to these considerations, Table 7 presents matrix mobility results based on income quintiles in *t* and *t-4* for the three time periods 1993-97, 1998-2002, and 2003-2007, and using four different income concepts (baseline income in the top matrix for each period, followed by baseline income plus IR / plus CI, and finally our "full" income measure in the bottom matrix). There is a consistent picture of individuals in the lowest (highest) income position being less likely to move upward (downward) than those in the middle of the distribution.

-- here Table 7 --

While this is partly a statistical artefact because both groups of individuals can move in only one direction, it is apparent that income stability is more common in the upper tail of the distribution. Above and beyond this finding, the more interesting questions with respect to the aims of this paper concern the potential impact of investment incomes on these patterns, and the question of whether these patterns do change over time.

With respect to the time trend, we see indications of a decrease in income mobility over the three periods no matter what income definition is applied (baseline income in the top matrix, baseline income plus IR / plus CI, and full income in the bottom matrix). For example, according to the average jump, which gives some aggregate information on the overall degree of matrix mobility, we find a decrease from 0.790 in the baseline income matrix for the period 1993-97, which drops to 0.684 in the most recent period.

Staying within each given period and focusing on the impact of IR and CI on income mobility does not show much of an impact of investment income over the first two periods. However, in line with other findings above, which indicated an increased relevance of those income components in more recent years, we can indeed identify an increase in the probability of staying in the top quintile due to IR and CI. While in the baseline income scenario, "only" 65% of the richest quintile remained in that favourable income position over a five-year period, this is true for almost 70% when using the full income model. Mobility among all other income quintiles does not seem to be affected.

Although covering a time span of five years, these matrix mobility measures do not make effective use of the income throughout the entire period under investigation but compare the income position in the first and last year of observation only. Overcoming these problems, Table 8 presents results from the Shorrocks (1978) mobility measure, using the Gini coefficient to measure individual inequality over time in the various income specifications excluding and including investment income. Results for disposable income are given in the left panel of Table 8 and for those for market income in the right panel.

-- here Table 8 --

For disposable income (left panel), IR exerts basically no relevant impact at all on income mobility, while CI shows a consistent picture of reduced mobility, i.e., a stabilizing effect, which is in line with the higher matrix stability among individuals in the top income quintile shown in Table 7. The joint effect of CI and IR is a reduction of mobility in the magnitude of 5-10%, mostly driven by CI. Using market income (right panel), the stabilizing effect of investment income is much stronger. Here we find a reduction in the Shorrocks index by about 10% when incorporating IR and about 20% when considering CI in the income measure. The joint effect when including both components is a 20% reduction as compared to results obtained from the baseline market income. Much of this stronger effect in market income comes from the significant share of elderly individuals with a baseline market income near zero due to missing labour income after retirement.

4 Conclusions

There have been a number of papers trying to explain the general trend of increased income inequality in the majority of the OECD countries. This literature focuses on (structural) changes in labour income, such as the impact of the skill-based technological change. However, it does not show in detail either the individual impacts of monetary capital income and, even more important, investment income derived from owner-occupied housing, or their joint impact.

Using representative microdata from the German SOEP, the incorporation of capital income and imputed rent (for owner-occupied housing as well as for rent-free and otherwise subsidized tenants) into the measure of investment income clearly indicates the increasing relevance of these income sources for economic inequality in Germany over the last two decades. While the two components can be commonly defined as returns on alternative private investments (CI = return on financial investments, IR = return on investments in owner-occupied housing), we find that they do not necessarily show similar impacts on income inequality and income mobility. We find that, in line with the literature, whereas IR tends to exert a dampening effect on inequality and relative poverty, CI tends to accentuate inequality. And in recent years, as the German public pension scheme has proven itself ever less capable of maintaining people's living standards into retirement, we find these effects to be of increasing magnitude.

Both incomes, IR and CI, are strongly related to age. In case of *net* IR—the most prevalent means of old-age provision outside the public pension system—this effect simply results from the increasing share of outright ownership among the elderly. For CI, there is a savings-related accumulation of capital in higher age groups, supported by the increased probability of inheritances around the age of 50 to 60. This process again yields higher financial returns, such as interest and dividends—however, one should also consider that the investment behaviour of the elderly most likely is more risk-averse due to the smaller chances for recuperating from large financial losses by means of alternative incomes.

Another important issue from a social policy standpoint is that income decomposition by subgroup confirms the established fact for most western countries that private investment in owner-occupied housing is a very effective means of reducing the risk of old-age poverty as well as inequality (see Zaidi et al. 2006). Factor decomposition reveals a much stronger

impact of returns on financial investments for the overall increasing inequality over recent years. Even after applying a 1% top-coding for sensitivity, this is a consistent and very robust result. However, this exercise also points to the pronounced volatility in investment incomes (including the phenomenon of measurement error in those estimates in population surveys).

Comparing results from income mobility analyses including and excluding IR and CI gives indications of a stabilization of income, especially among those at the upper end of the income distribution. Again, this effect is more pronounced in more recent times.

Summing up, the analyses presented here make a clear case for the joint consideration of all components of private investment income (this should also systematically include income from private pensions, which are currently included in our baseline income measure) for the purpose of welfare analysis, be they of a monetary or non-monetary nature. This appears to be relevant in at least three dimensions of comparative research: (1) across time; (2) across space and welfare systems, thus also accounting for differences in the incentive structure to choose from different sorts of private investments (e.g., self-employed vs. dependent employed employees); and (3) across the individual life course, thus analyzing the impact of investment income on intrapersonal mobility patterns. Against the background of ageing societies and a shift from the PAYG old-age pension systems to increased private coverage—in non-liberal welfare regimes in particular—returns on investment income are likely to yield higher levels of income inequality in the near future.

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Tables

Table 1: Incidence and Relevance of Imputed Rent and Capital Income

	Incidence		Relevance															
	Population share holding ...		Disposable Income (absolute)				Market Income (absolute)				Disposable Income (in %)				Market Income (in %)			
	Imputed Rent (%)	Capital Income (%)	Baseline Disp. Income in €	Imputed Rent in €	Capital Income in €	Total in €	Baseline Market Income in €	Imputed Rent in €	Capital Income in €	Total in €	Baseline Disp. Income in €	Imputed Rent in €	Capital Income in €	Total in €	Baseline Market Income in €	Imputed Rent in €	Capital Income in €	Total in €
1985	40	84	14.086	431	519	15.035	15.955	431	597	16.982	93,7	2,9	3,4	100,0	93,9	2,5	3,5	100,0
1986	43	89	14.033	499	581	15.114	16.063	499	672	17.235	92,8	3,3	3,8	100,0	93,2	2,9	3,9	100,0
1987	43	84	14.810	496	566	15.873	16.778	496	665	17.939	93,3	3,1	3,6	100,0	93,5	2,8	3,7	100,0
1988	43	88	15.183	523	579	16.285	17.358	523	663	18.545	93,2	3,2	3,6	100,0	93,6	2,8	3,6	100,0
1989	43	87	15.671	566	575	16.811	18.019	566	664	19.249	93,2	3,4	3,4	100,0	93,6	2,9	3,4	100,0
1990	41	88	15.920	578	624	17.122	18.753	578	727	20.058	93,0	3,4	3,6	100,0	93,5	2,9	3,6	100,0
1991	40	87	16.387	646	701	17.734	18.660	646	792	20.098	92,4	3,6	4,0	100,0	92,8	3,2	3,9	100,0
1992	39	78	15.794	585	623	17.002	17.803	585	721	19.109	92,9	3,4	3,7	100,0	93,2	3,1	3,8	100,0
1993	38	89	15.989	656	651	17.296	18.090	656	754	19.500	92,4	3,8	3,8	100,0	92,8	3,4	3,9	100,0
1994	40	89	15.806	665	753	17.225	17.696	665	834	19.196	91,8	3,9	4,4	100,0	92,2	3,5	4,3	100,0
1995	39	87	15.599	692	797	17.088	17.651	692	898	19.242	91,3	4,0	4,7	100,0	91,7	3,6	4,7	100,0
1996	39	88	15.663	732	775	17.170	18.004	732	892	19.628	91,2	4,3	4,5	100,0	91,7	3,7	4,5	100,0
1997	39	87	15.714	768	786	17.268	17.649	768	899	19.316	91,0	4,4	4,6	100,0	91,4	4,0	4,7	100,0
1998	43	87	15.626	876	758	17.260	17.487	876	860	19.222	90,5	5,1	4,4	100,0	91,0	4,6	4,5	100,0
1999	42	85	15.878	908	824	17.609	17.690	908	935	19.533	90,2	5,2	4,7	100,0	90,6	4,6	4,8	100,0
2000	43	86	16.563	910	910	18.383	18.598	910	1.019	20.527	90,1	5,0	5,0	100,0	90,6	4,4	5,0	100,0
2001	42	83	16.623	952	861	18.436	18.225	952	980	20.157	90,2	5,2	4,7	100,0	90,4	4,7	4,9	100,0
2002	42	81	16.597	958	961	18.516	17.998	958	1.100	20.056	89,6	5,2	5,2	100,0	89,7	4,8	5,5	100,0
2003	42	81	17.175	1.009	1.015	19.200	18.677	1.009	1.155	20.842	89,5	5,3	5,3	100,0	89,6	4,8	5,5	100,0
2004	43	84	16.914	1.038	1.000	18.952	18.305	1.038	1.158	20.502	89,2	5,5	5,3	100,0	89,3	5,1	5,6	100,0
2005	42	83	16.832	989	957	18.779	17.893	989	1.091	19.974	89,6	5,3	5,1	100,0	89,6	5,0	5,5	100,0
2006	42	82	16.759	992	1.059	18.811	17.690	992	1.214	19.896	89,1	5,3	5,6	100,0	88,9	5,0	6,1	100,0
2007	41	82	16.856	990	1.075	18.921	17.915	990	1.222	20.127	89,1	5,2	5,7	100,0	89,0	4,9	6,1	100,0

Notes: Until 1991 West Germany, only.
All incomes are equivalized according to the OECD scale and deflated to 2000 prices.
Imputed Rent incl. Income advantages from subsidized rents.
Capital Income (excl. Capital gains) including income from renting and leasing.
Population: Individuals in private households.

Source: SOEP; authors' calculations.

Table 2: The Impact of Imputed Rent and Capital Income on Income Inequality

	Gini				Change in **Disposable** Income Inequality due to inclusion of IR			HSCV				Change in **Disposable** Income Inequality due to inclusion of IR and CI		
	Baseline Disposable Income excl. IR and CI	Baseline Disp. Income plus IR	Baseline Disposable Income plus CI	Full Disposable Income incl. IR and CI	IR	CI	IR and CI	Baseline Disposable Income excl. IR and CI	Baseline Disp. Income plus IR	Baseline Disposable Income plus CI	Full Disposable Income incl. IR and CI	IR	CI	IR and CI
1985	0,2628	0,2579	0,2689	0,2644	-1,9	2,3	0,6	0,1932	0,1838	0,2038	0,1950	-4,9	5,5	0,9
1986	0,2484	0,2442	0,2576	0,2541	-1,7	3,7	2,3	0,1276	0,1224	0,1624	0,1566	-4,1	27,3	22,7
1987	0,2440	0,2405	0,2513	0,2483	-1,4	3,0	1,8	0,1115	0,1083	0,1397	0,1361	-2,9	25,3	22,1
1988	0,2464	0,2424	0,2527	0,2494	-1,6	2,5	1,2	0,1165	0,1131	0,1345	0,1312	-2,9	15,5	12,6
1989	0,2520	0,2486	0,2559	0,2535	-1,3	1,6	0,6	0,1433	0,1382	0,1602	0,1551	-3,6	11,8	8,2
1990	0,2539	0,2506	0,2603	0,2578	-1,3	2,5	1,5	0,1601	0,1539	0,1751	0,1692	-3,9	9,4	5,7
1991	0,2527	0,2482	0,2588	0,2559	-1,8	2,4	1,3	0,1341	0,1283	0,1485	0,1439	-4,3	10,7	7,3
1992	0,2565	0,2530	0,2610	0,2584	-1,4	1,8	0,7	0,1291	0,1247	0,1492	0,1448	-3,4	15,6	12,1
1993	0,2609	0,2561	0,2658	0,2621	-1,8	1,9	0,5	0,1374	0,1318	0,1544	0,1501	-4,1	12,4	9,2
1994	0,2613	0,2564	0,2701	0,2662	-1,9	3,3	1,9	0,1332	0,1286	0,1600	0,1553	-3,5	20,1	16,5
1995	0,2686	0,2627	0,2782	0,2736	-2,2	3,6	1,9	0,1482	0,1417	0,1832	0,1768	-4,4	23,5	19,2
1996	0,2644	0,2583	0,2728	0,2679	-2,3	3,2	1,3	0,1414	0,1340	0,1744	0,1666	-5,2	23,4	17,8
1997	0,2562	0,2524	0,2668	0,2646	-1,5	4,1	3,3	0,1298	0,1246	0,1536	0,1501	-4,0	18,3	15,6
1998	0,2533	0,2487	0,2629	0,2600	-1,8	3,8	2,6	0,1273	0,1220	0,1544	0,1496	-4,2	21,3	17,5
1999	0,2518	0,2473	0,2637	0,2604	-1,8	4,7	3,4	0,1170	0,1124	0,1466	0,1421	-4,0	25,3	21,4
2000	0,2556	0,2513	0,2677	0,2646	-1,7	4,7	3,5	0,1270	0,1226	0,1554	0,1514	-3,4	22,3	19,2
2001	0,2598	0,2564	0,2692	0,2672	-1,3	3,6	2,8	0,1381	0,1326	0,1637	0,1587	-4,0	18,6	15,0
2002	0,2722	0,2674	0,2850	0,2818	-1,7	4,7	3,5	0,1484	0,1431	0,1985	0,1921	-3,6	33,7	29,4
2003	0,2790	0,2760	0,2934	0,2918	-1,1	5,2	4,6	0,1620	0,1585	0,2442	0,2370	-2,2	50,7	46,3
2004	0,2784	0,2757	0,2930	0,2915	-1,0	5,2	4,7	0,1633	0,1585	0,2850	0,2721	-3,0	74,5	66,6
2005	0,2880	0,2861	0,3014	0,3006	-0,7	4,7	4,4	0,1698	0,1667	0,2669	0,2590	-1,8	57,2	52,6
2006	0,3030	0,2994	0,3195	0,3173	-1,2	5,4	4,7	0,2445	0,2337	0,3934	0,3727	-4,4	60,9	52,4
2007	0,2970	0,2942	0,3147	0,3129	-0,9	6,0	5,4	0,2042	0,1978	0,3138	0,3010	-3,1	53,7	47,4

	Gini				Change in **Market** Income Inequality due to inclusion of IR			HSCV				Change in **Market** Income Inequality due to inclusion of IR and CI		
	Baseline **Market** Income excl. IR and CI	Baseline **Market** Income plus IR	Baseline **Market** Income plus CI	Full **Market** Income incl. IR and CI	IR	CI	IR and CI	Baseline **Market** Income excl. IR and CI	Baseline **Market** Income plus IR	Baseline **Market** Income plus CI	Full **Market** Income incl. IR and CI	IR	CI	IR and CI
1985	0,4589	0,4470	0,4546	0,4433	-2,6	-0,9	-3,4	0,4589	0,5761	0,5946	0,5647	25,5	29,6	23,0
1986	0,4351	0,4219	0,4339	0,4217	-3,0	-0,3	-3,1	0,4351	0,3561	0,4033	0,3812	-18,2	-7,3	-12,4
1987	0,4249	0,4130	0,4234	0,4122	-2,8	-0,4	-3,0	0,4249	0,3024	0,3435	0,3264	-28,8	-19,2	-23,2
1988	0,4266	0,4149	0,4234	0,4126	-2,7	-0,8	-3,3	0,4266	0,3143	0,3376	0,3217	-26,3	-20,9	-24,6
1989	0,4335	0,4209	0,4272	0,4158	-2,9	-1,4	-4,1	0,4335	0,3867	0,4147	0,3924	-10,8	-4,3	-9,5
1990	0,4275	0,4156	0,4241	0,4132	-2,8	-0,8	-3,3	0,4275	0,4362	0,4660	0,4414	2,0	9,0	3,3
1991	0,4173	0,4027	0,4120	0,3994	-3,5	-1,3	-4,3	0,4173	0,3285	0,3609	0,3392	-21,3	-13,5	-18,7
1992	0,4297	0,4170	0,4248	0,4133	-2,9	-1,1	-3,8	0,4297	0,3264	0,3766	0,3567	-24,0	-12,3	-17,0
1993	0,4395	0,4240	0,4340	0,4199	-3,5	-1,2	-4,4	0,4395	0,3440	0,3857	0,3634	-21,7	-12,2	-17,3
1994	0,4468	0,4306	0,4436	0,4289	-3,6	-0,7	-4,0	0,4468	0,3456	0,4022	0,3780	-22,7	-10,0	-15,4
1995	0,4581	0,4406	0,4550	0,4394	-3,8	-0,7	-4,1	0,4581	0,3747	0,4448	0,4172	-18,2	-2,9	-8,9
1996	0,4663	0,4466	0,4619	0,4441	-4,2	-0,9	-4,8	0,4663	0,3907	0,4687	0,4350	-16,2	0,5	-6,7
1997	0,4700	0,4510	0,4662	0,4495	-4,0	-0,8	-4,3	0,4700	0,3871	0,4383	0,4083	-17,6	-6,7	-13,1
1998	0,4748	0,4526	0,4696	0,4498	-4,7	-1,1	-5,3	0,4748	0,3888	0,4536	0,4178	-18,1	-4,5	-12,0
1999	0,4750	0,4524	0,4711	0,4509	-4,8	-0,8	-5,1	0,4750	0,3581	0,4154	0,3817	-24,6	-12,5	-19,6
2000	0,4779	0,4560	0,4727	0,4533	-4,6	-1,1	-5,1	0,4779	0,3873	0,4336	0,4010	-19,0	-9,3	-16,1
2001	0,4866	0,4631	0,4786	0,4578	-4,8	-1,7	-5,9	0,4866	0,4209	0,4702	0,4312	-13,5	-3,4	-11,4
2002	0,4945	0,4708	0,4894	0,4687	-4,8	-1,0	-5,2	0,4945	0,4110	0,4817	0,4443	-16,9	-2,6	-10,2
2003	0,5055	0,4823	0,4997	0,4799	-4,6	-1,1	-5,1	0,5055	0,4708	0,5607	0,5201	-6,8	10,9	2,9
2004	0,5090	0,4845	0,5033	0,4823	-4,8	-1,1	-5,2	0,5090	0,4790	0,6935	0,6363	-5,9	36,3	25,0
2005	0,5165	0,4933	0,5109	0,4910	-4,5	-1,1	-4,9	0,5165	0,4777	0,6240	0,5780	-7,5	20,8	11,9
2006	0,5291	0,5048	0,5259	0,5052	-4,6	-0,6	-4,5	0,5291	0,6073	0,8202	0,7555	14,8	55,0	42,8
2007	0,5215	0,4983	0,5190	0,4992	-4,4	-0,5	-4,3	0,5215	0,5321	0,6776	0,6266	2,0	29,9	20,2

Notes: Until 1991 West Germany, only.
All incomes are equivalized according to the OECD scale and deflated to 2000 prices.
Imputed Rent incl. Income advantages from subsidized rents.
Capital Income (excl. Capital gains) including income from renting and leasing.
Population: Individuals in private households.

Source: SOEP; authors' calculations.

Table 3: The Impact of Imputed Rent and Capital Income on Relative Income Poverty

	Baseline **Disposable** Income excl. IR and CI			Baseline **Disposable** Income plus IR			Baseline **Disposable** Income plus CI			**Disposable** Income incl. IR and CI		
	FGT0	FGT1	FGT2	FGT0	FGT1	FGT2	FGT0	FGT1	FGT2	FGT0	FGT1	FGT2
1985	13,5	3,5	1,7	13,2	3,3	1,5	13,2	3,4	1,6	13,0	3,2	1,4
1986	12,5	3,3	1,6	11,5	3,0	1,4	12,1	3,1	1,4	11,7	2,9	1,3
1987	11,9	3,2	1,6	11,6	3,0	1,4	11,9	3,0	1,4	11,6	2,8	1,3
1988	12,2	3,4	1,6	11,4	3,1	1,5	12,0	3,2	1,5	11,2	2,9	1,3
1989	12,1	3,4	1,7	11,6	3,1	1,5	12,3	3,2	1,5	11,9	3,0	1,4
1990	11,7	3,5	1,9	10,9	3,1	1,6	11,8	3,4	1,7	11,1	3,1	1,5
1991	12,1	3,4	1,7	12,2	3,2	1,5	12,9	3,3	1,5	12,3	3,1	1,4
1992	13,0	3,8	1,9	12,6	3,5	1,7	13,0	3,6	1,7	12,6	3,3	1,5
1993	13,0	4,0	2,2	12,8	3,6	1,8	13,2	3,8	1,9	13,0	3,5	1,7
1994	13,0	3,9	2,0	12,6	3,6	1,7	12,9	3,7	1,8	12,9	3,5	1,6
1995	13,8	4,5	2,5	13,2	4,1	2,2	14,0	4,3	2,3	13,5	4,0	2,0
1996	14,2	4,5	2,4	13,4	3,9	2,0	13,8	4,2	2,2	13,4	3,8	1,9
1997	13,1	4,1	2,2	12,5	3,7	1,9	13,0	3,9	2,0	12,7	3,7	1,8
1998	13,1	4,0	2,1	12,1	3,6	1,7	12,7	3,8	1,9	12,3	3,6	1,7
1999	11,9	3,6	1,9	11,8	3,3	1,6	11,8	3,4	1,7	11,7	3,3	1,5
2000	12,0	3,8	2,1	12,1	3,4	1,7	12,2	3,6	1,8	12,0	3,4	1,5
2001	13,5	4,2	2,1	13,1	3,9	1,8	13,3	4,0	1,9	13,3	3,8	1,8
2002	15,0	4,6	2,3	14,6	4,3	2,0	15,1	4,5	2,2	15,1	4,3	2,0
2003	15,5	4,6	2,2	15,0	4,2	1,9	15,4	4,5	2,1	15,4	4,3	1,9
2004	16,2	4,8	2,3	16,1	4,5	2,0	16,2	4,7	2,1	16,4	4,5	2,0
2005	17,0	5,1	2,4	16,6	4,8	2,2	17,3	5,0	2,3	16,8	4,8	2,1
2006	18,2	5,4	2,6	17,5	5,1	2,4	17,9	5,3	2,5	18,1	5,2	2,3
2007	16,9	5,1	2,5	16,3	4,9	2,3	17,3	5,1	2,4	16,6	4,9	2,2
				Change in **Poverty** due to inclusion of **IR**			Change in **Poverty** due to inclusion of **CI**			Change in **Poverty** due to inclusion of **IR and CI**		
				FGT0	FGT1	FGT2	FGT0	FGT1	FGT2	FGT0	FGT1	FGT2
1985				-1,9	-6,4	-11,6	-1,9	-4,1	-8,4	-3,4	-9,8	-17,7
1986				-7,6	-9,8	-14,3	-2,9	-7,3	-9,9	-6,3	-11,6	-18,2
1987				-2,3	-6,9	-11,1	0,1	-7,0	-11,9	-2,2	-11,8	-19,7
1988				-6,7	-8,0	-10,9	-2,0	-6,2	-9,1	-8,9	-13,7	-17,7
1989				-4,1	-7,3	-10,2	1,7	-4,7	-9,8	-1,8	-11,0	-17,6
1990				-6,8	-10,0	-13,0	0,6	-3,9	-8,1	-5,7	-12,0	-18,4
1991				0,4	-4,3	-12,1	6,0	-2,5	-9,2	1,0	-7,9	-19,2
1992				-2,8	-9,2	-12,8	-0,3	-6,4	-11,1	-3,0	-12,8	-19,6
1993				-1,4	-8,8	-15,4	1,7	-5,1	-10,9	-0,3	-12,1	-22,8
1994				-3,1	-7,8	-14,8	-1,0	-4,5	-9,6	-0,9	-10,4	-20,1
1995				-3,8	-9,5	-14,3	2,0	-4,0	-8,5	-1,6	-12,0	-19,2
1996				-5,9	-13,1	-19,2	-3,2	-5,8	-8,8	-5,6	-15,7	-23,3
1997				-4,5	-8,9	-14,2	-0,6	-3,9	-7,6	-2,5	-9,2	-17,2
1998				-7,9	-10,4	-16,8	-3,6	-6,2	-9,2	-6,3	-11,2	-19,5
1999				-1,3	-8,1	-14,8	-1,3	-6,0	-11,9	-1,6	-10,7	-19,6
2000				1,0	-9,0	-19,6	2,1	-5,5	-11,7	0,4	-11,3	-24,7
2001				-2,7	-7,1	-12,5	-1,2	-4,1	-8,5	-1,4	-8,6	-16,1
2002				-2,6	-6,5	-13,5	0,7	-2,5	-6,7	0,4	-6,1	-15,3
2003				-3,5	-6,9	-12,1	-0,6	-2,1	-5,7	-0,8	-6,6	-13,1
2004				-0,4	-5,9	-12,9	-0,3	-1,9	-6,2	1,0	-5,6	-14,8
2005				-2,3	-6,0	-10,9	1,6	-1,9	-5,0	-1,4	-6,6	-13,3
2006				-3,8	-4,5	-9,3	-1,8	-1,6	-5,7	-1,0	-3,0	-10,0
2007				-3,4	-4,3	-8,4	2,2	-0,5	-5,9	-1,9	-4,1	-11,4

Notes: Until 1991 West Germany, only.
All incomes are equivalized according to the OECD scale and deflated to 2000 prices.
Imputed Rent incl. Income advantages from subsidized rents.
Capital Income (excl. Capital gains) including income from renting and leasing.
Relative Poverty Line at 60% of median equivalent income (PL is dynamically adjusted when including IR and CI, respectively)
Population: Individuals in private households.

Source: SOEP; authors' calculations.

Table 4a: The Impact of Imputed Rent and Capital Income by Baseline Income Quintile

	Population Share holding ...			
	1997		2007	
Quintile	IR	CI	IR	CI
1 (bottom)	38	69	35	60
2	37	86	38	76
3	37	91	42	86
4	42	95	44	91
5 (top)	42	95	49	96
All	39	87	41	82

	Equivalent Income (absolute)							
	1997				2007			
Quintile	Baseline Disposable Income	IR	CI	IR & CI	Baseline Disposable Income	IR	CI	IR & CI
1 (bottom)	7140	724	726	1450	6661	690	494	1183
2	11638	625	386	1012	11468	778	581	1359
3	14416	681	461	1142	14871	879	627	1506
4	17937	815	834	1650	19466	1055	1012	2067
5 (top)	27467	995	1524	2519	31826	1548	2659	4208
All	15714	768	786	1554	16856	990	1075	2064

	Equivalent Income (absolute)							
	1997				2007			
Quintile	Baseline Disposable Income	Baseline Disposable Income plus IR	Baseline Disposable Income plus CI	Disposable Income incl. IR & CI	Baseline Disposable Income	Baseline Disposable Income plus IR	Baseline Disposable Income plus CI	Disposable Income incl. IR & CI
1 (bottom)	7140	7864	7866	8590	6661	7351	7155	7845
2	11638	12263	12024	12649	11468	12246	12049	12827
3	14416	15096	14877	15558	14871	15750	15498	16377
4	17937	18752	18771	19587	19466	20521	20478	21533
5 (top)	27467	28462	28991	29986	31826	33375	34485	36034
All	15714	16482	16501	17268	16856	17846	17931	18921

	Income from IR & CI as a % of Baseline Income							
	1997				2007			
Quintile	Baseline Disposable Income	Baseline Disposable Income plus IR	Baseline Disposable Income plus CI	Disposable Income incl. IR & CI	Baseline Disposable Income	Baseline Disposable Income plus IR	Baseline Disposable Income plus CI	Disposable Income incl. IR & CI
1 (bottom)	/	10,1	10,2	20,3	/	10,4	7,4	17,8
2	/	5,4	3,3	8,7	/	6,8	5,1	11,9
3	/	4,7	3,2	7,9	/	5,9	4,2	10,1
4	/	4,5	4,7	9,2	/	5,4	5,2	10,6
5 (top)	/	3,6	5,5	9,2	/	4,9	8,4	13,2
All	/	4,9	5,0	9,9	/	5,9	6,4	12,2

	Income Share							
	1997				2007			
Quintile	Baseline Disposable Income	Baseline Disposable Income plus IR	Baseline Disposable Income plus CI	Disposable Income incl. IR & CI	Baseline Disposable Income	Baseline Disposable Income plus IR	Baseline Disposable Income plus CI	Disposable Income incl. IR & CI
1 (bottom)	9,1	9,3	9,0	9,1	7,9	8,1	7,7	7,8
2	14,8	14,8	14,5	14,4	13,6	13,6	13,1	13,1
3	18,4	18,4	18,0	18,0	17,7	17,7	17,1	17,2
4	22,9	22,8	22,6	22,7	23,1	23,0	22,7	22,6
5 (top)	34,9	34,7	35,9	35,8	37,8	37,6	39,4	39,3
All	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0

Notes: Until 1991 West Germany, only.
All incomes are equivalized according to the OECD scale and deflated to 2000 prices.
Imputed Rent incl. Income advantages from subsidized rents.
Capital Income (excl. Capital gains) including income from renting and leasing.
Population: Individuals in private households.

Source: SOEP; authors' calculations.

Table 4b: The Impact of Imputed Rent and Capital Income by Age Group

	Population Share holding ...			
	1997		2007	
Age group	IR	CI	IR	CI
less than 25	35	86	34	79
25-<40	28	88	25	82
40-<50	38	88	36	83
50-<65	49	89	54	82
65 and more	53	87	61	83
All	39	87	41	82

	Equivalent Income (absolute)							
	1997				2007			
Age group	Baseline Disposable Income	IR	CI	IR & CI	Baseline Disposable Income	IR	CI	IR & CI
less than 25	14320	529	583	1112	14865	619	675	1293
25-<40	16130	468	465	933	16803	527	583	1109
40-<50	17642	675	853	1528	18445	668	1036	1704
50-<65	17130	1061	1222	2283	19881	1428	1442	2871
65 and more	14027	1324	999	2323	15254	1810	1788	3598
All	15714	768	786	1554	16856	990	1075	2064

	Equivalent Income (absolute)							
	1997				2007			
Age group	Baseline Disposable Income	Baseline Disposable Income plus IR	Baseline Disposable Income plus CI	Disposable Income incl. IR & CI	Baseline Disposable Income	Baseline Disposable Income plus IR	Baseline Disposable Income plus CI	Disposable Income incl. IR & CI
less than 25	14320	14849	14903	15432	14865	15483	15540	16158
25-<40	16130	16598	16595	17063	16803	17330	17386	17912
40-<50	17642	18317	18495	19170	18445	19113	19481	20149
50-<65	17130	18190	18352	19412	19881	21309	21324	22752
65 and more	14027	15352	15026	16350	15254	17064	17042	18852
All	15714	16482	16501	17268	16856	17846	17931	18921

	Income from IR & CI as a % of Baseline Income							
	1997				2007			
Age group	Baseline Disposable Income	Baseline Disposable Income plus IR	Baseline Disposable Income plus CI	Disposable Income incl. IR & CI	Baseline Disposable Income	Baseline Disposable Income plus IR	Baseline Disposable Income plus CI	Disposable Income incl. IR & CI
less than 25	/	3,7	4,1	7,8	/	4,2	4,5	8,7
25-<40	/	2,9	2,9	5,8	/	3,1	3,5	6,6
40-<50	/	3,8	4,8	8,7	/	3,6	5,6	9,2
50-<65	/	6,2	7,1	13,3	/	7,2	7,3	14,4
65 and more	/	9,4	7,1	16,6	/	11,9	11,7	23,6
All	/	4,9	5,0	9,9	/	5,9	6,4	12,2

Notes: Until 1991 West Germany, only.
All incomes are equivalized according to the OECD scale and deflated to 2000 prices.
Imputed Rent incl. Income advantages from subsidized rents.
Capital Income (excl. Capital gains) including income from renting and leasing.
Population: Individuals in private households.

Source: SOEP; authors' calculations.

Table 5: The Inequality Decomposition by Subgroup

Characteristic of household or household head	1997												2007											
	A	B		C		D	E	F	G	H	I		A	B		C		D	E	F	G	H	I	
	Pop. share in %	Mean		Income position		% increase in mean	Mean Log Deviation (MLD)		% change in	% contribution to aggregate inequality			Pop. share in %	Mean		Income position		% increase in mean	Mean Log Deviation (MLD)		% change in	% contribution to aggregate inequality		
		Baseline	Including IR & CI	Baseline	Including IR & CI	Including IR & CI	Baseline	Including IR & CI	Including IR & CI	Baseline	Including IR & CI			Baseline	Including IR & CI	Baseline	Including IR & CI	Including IR & CI	Baseline	Including IR & CI	Including IR & CI	Baseline	Including IR & CI	
Household / Family type																								
Single =<60	9,1	15931	17823	101	103	11,9	0,1789	0,2671	49,3	12,5	16,2		10,7	16899	18427	100	97	9,0	0,2086	0,3826	83,4	10,9	13,6	
Couple no kids <=60	13,6	19870	21494	126	124	8,2	0,1060	0,1179	11,2	11,1	10,7		14,1	21340	23407	127	124	9,7	0,2549	0,3335	30,8	17,6	15,6	
HH with children up to 17	38,7	14668	15736	93	91	7,3	0,1332	0,1482	11,2	39,7	38,2		36,9	15729	17018	93	90	8,2	0,1865	0,2339	25,4	33,7	28,7	
HH with adult children	15,4	16517	18075	105	105	9,4	0,1012	0,1113	10,0	12,0	11,4		13,8	17238	19138	102	101	11,0	0,1766	0,2440	38,2	11,9	11,2	
HH head aged >60	23,2	14390	16579	92	96	15,2	0,1088	0,1259	15,7	19,5	19,5		24,5	15739	19293	93	102	22,6	0,1513	0,3135	107,2	18,2	25,5	
% Within groups inequality	./.	./.	./.	./.	./.	./.	0,1231	0,1440	17,0	94,9	96,0		./.	./.	./.	./.	./.	./.	0,1978	0,2950	49,2	96,9	98,0	
% Between groups inequality	./.	./.	./.	./.	./.	./.	0,0067	0,0060	-9,8	5,1	4,0		./.	./.	./.	./.	./.	./.	0,0064	0,0059	-7,2	3,1	2,0	
Socioeconomic group of HH head																								
Blue collar worker	19,8	14121	14828	90	86	5,0	0,0567	0,0597	5,4	8,7	7,9		16,9	13984	14872	83	79	6,3	0,0651	0,0704	8,1	5,4	3,9	
White collar worker	33,8	18859	20367	120	118	8,0	0,1090	0,1169	7,3	28,4	26,3		35,2	20071	21702	119	115	8,1	0,1234	0,1426	15,6	21,3	16,7	
Self-employed	7,1	21001	24046	134	139	14,5	0,1393	0,1542	10,7	7,6	7,3		7,9	26104	30729	155	162	17,7	0,3315	0,5115	54,3	12,8	13,4	
Unemployed	7,6	11862	12679	75	73	6,9	0,1080	0,1087	0,6	6,3	5,5		7,6	9985	10439	59	55	4,5	0,1756	0,1901	8,3	6,6	4,8	
Pensioner	23,7	13957	16282	89	94	16,7	0,1071	0,1645	53,5	19,6	26,0		23,5	15047	18350	89	97	21,9	0,1184	0,2199	85,8	13,6	17,2	
Other	8,0	10494	11420	67	66	8,8	0,1476	0,1549	4,9	9,0	8,2		8,8	11987	13826	71	73	15,3	0,2928	0,7147	144,1	12,7	21,0	
% Within groups inequality	./.	./.	./.	./.	./.	./.	0,1098	0,1295	17,9	84,6	86,3		./.	./.	./.	./.	./.	./.	0,1720	0,2669	55,2	84,3	88,7	
% Between groups inequality	./.	./.	./.	./.	./.	./.	0,0200	0,0205	2,9	15,4	13,7		./.	./.	./.	./.	./.	./.	0,0321	0,0340	5,9	15,7	11,3	
Educational level of HH head																								
Tertiary education	18,6	20876	23186	133	134	11,1	0,1307	0,1503	14,9	18,7	18,6		22,6	22720	26056	135	138	14,7	0,2208	0,3660	65,7	24,4	27,5	
Upper secondary education	13,4	16403	18198	104	105	10,9	0,0835	0,1054	26,3	8,6	9,4		15,8	17480	19187	104	101	9,8	0,1254	0,1311	4,5	9,7	6,9	
Lower secondary education	49,5	14578	15949	93	92	9,4	0,1040	0,1248	20,0	39,7	41,2		46,9	14930	16717	89	88	12,0	0,1522	0,2168	42,5	35,0	33,8	
Primary education or less	18,5	13042	14145	83	82	8,5	0,1267	0,1254	-1,0	18,1	15,5		14,7	12640	13863	75	73	9,7	0,1242	0,1355	9,0	8,9	6,6	
% Within groups inequality	./.	./.	./.	./.	./.	./.	0,1156	0,1344	16,3	89,1	89,6		./.	./.	./.	./.	./.	./.	0,1821	0,2757	51,4	89,2	91,6	
% Between groups inequality	./.	./.	./.	./.	./.	./.	0,0142	0,0156	10,3	10,9	10,4		./.	./.	./.	./.	./.	./.	0,0221	0,0253	14,5	10,8	8,4	
Age of HH member																								
Below 25	26,9	14320	15432	91	89	7,8	0,1352	0,1496	10,7	28,0	26,8		25,7	14865	16158	88	85	8,7	0,1919	0,2441	27,2	24,2	20,8	
25-<40	23,4	16130	17063	103	99	5,8	0,1059	0,1092	3,0	19,1	17,0		19,8	16803	17912	100	95	6,6	0,1509	0,1722	14,2	14,6	11,3	
40-<50	13,9	17642	19170	112	111	8,7	0,1169	0,1401	19,8	12,5	13,0		16,5	18445	20149	109	106	9,2	0,1696	0,2958	74,4	13,7	16,2	
50-<65	19,8	17130	19412	109	112	13,3	0,1422	0,1778	25,1	21,7	23,5		18,8	19881	22752	118	120	14,4	0,2765	0,3757	35,9	25,5	23,5	
65 and more	16,0	14027	16350	89	95	16,6	0,1225	0,1418	15,8	15,1	15,1		19,2	15254	18852	90	100	23,6	0,1524	0,3149	106,6	14,3	20,1	
% Within groups inequality	./.	./.	./.	./.	./.	./.	0,1259	0,1459	15,9	97,0	97,2		./.	./.	./.	./.	./.	./.	0,1978	0,2938	48,6	96,9	97,6	
% Between groups inequality	./.	./.	./.	./.	./.	./.	0,0039	0,0041	5,6	3,0	2,8		./.	./.	./.	./.	./.	./.	0,0064	0,0072	12,3	3,1	2,4	
ALL	100,0	100,0	100,0	100	100	9,9	0,1298	0,1501	15,6	100,0	100,0		100,0	100,0	100,0	100	100	12,2	0,2042	0,3010	47,4	100,0	100,0	
Mean (Total)		**15714**	**17268**											**16856**	**18921**									

Columns:
A: Population share;
B and C (mean equivalent income relative to the national mean; distributions A and B);
D: % increase in mean equiv. Income;
E and F: inequality index (mean log deviation – known as 2nd Theil index - distributions A and B);
G: % change in inequality;
H and I: % contribution to aggregate inequality (distributions A and B);

Notes:
All incomes are equivalized according to the OECD scale and deflated to 2000 prices.
Imputed Rent incl. Income advantages from subsidized rents.
Capital Income (excl. Capital gains) including income from renting and leasing.
Population: Individuals in private households.

Source: SOEP; authors' calculations.

Table 6: Inequality Decomposition by Income Component

	Inequality Measure: HSCV, no top-coding								
	Relative Contribution of Income Component to Inequality				Relative Contribution of Income Component to Full Income				**Full Disposable** Income incl. IR and CI
	Baseline **Disposable** Income excl. IR and CI	IR	CI	**Full Disposable** Income incl. IR and CI	Baseline **Disposable** Income excl. IR and CI	IR	CI	**Full Disposable** Income incl. IR and CI	Inequality (HSCV)
1985	89,3	1,1	9,7	100,0	93,7	2,9	3,4	100,0	0,1950
1986	77,4	2,1	20,5	100,0	92,8	3,3	3,8	100,0	0,1566
1987	77,1	2,4	20,5	100,0	93,3	3,1	3,6	100,0	0,1361
1988	83,0	2,6	14,5	100,0	93,2	3,2	3,6	100,0	0,1312
1989	86,0	2,4	11,6	100,0	93,2	3,4	3,4	100,0	0,1551
1990	85,1	2,3	12,6	100,0	93,0	3,4	3,6	100,0	0,1692
1991	84,7	2,8	12,5	100,0	92,4	3,6	4,0	100,0	0,1440
1992	83,1	2,6	14,3	100,0	92,9	3,4	3,7	100,0	0,1448
1993	82,9	3,2	13,9	100,0	92,4	3,8	3,8	100,0	0,1501
1994	78,8	3,1	18,1	100,0	91,8	3,9	4,4	100,0	0,1553
1995	76,0	3,0	21,0	100,0	91,3	4,1	4,7	100,0	0,1768
1996	75,7	2,8	21,5	100,0	91,2	4,3	4,5	100,0	0,1666
1997	77,0	4,4	18,6	100,0	91,0	4,4	4,6	100,0	0,1501
1998	77,5	4,6	17,8	100,0	90,5	5,1	4,4	100,0	0,1496
1999	74,8	4,8	20,4	100,0	90,2	5,2	4,7	100,0	0,1421
2000	76,0	4,6	19,4	100,0	90,1	5,0	5,0	100,0	0,1514
2001	78,0	4,7	17,4	100,0	90,2	5,2	4,7	100,0	0,1587
2002	70,5	4,4	25,1	100,0	89,6	5,2	5,2	100,0	0,1921
2003	61,4	4,5	34,1	100,0	89,5	5,3	5,3	100,0	0,2370
2004	57,6	3,9	38,4	100,0	89,2	5,5	5,3	100,0	0,2721
2005	63,0	4,5	32,6	100,0	89,6	5,3	5,1	100,0	0,2591
2006	64,6	3,1	32,3	100,0	89,1	5,3	5,6	100,0	0,3727
2007	62,2	3,8	34,0	100,0	89,1	5,2	5,7	100,0	0,3010

	Inequality Measure: HSCV, using 1% top-coding								
	Relative Contribution of Income Component to Inequality				Relative Contribution of Income Component to Full Income				**Full Disposable** Income incl. IR and CI
	Baseline **Disposable** Income excl. IR and CI	IR	CI	**Full Disposable** Income incl. IR and CI	Baseline **Disposable** Income excl. IR and CI	IR	CI	**Full Disposable** Income incl. IR and CI	Inequality (HSCV), Top Coding
1985	95,5	1,0	3,5	100,0	94,4	2,9	2,7	100,0	0,1841
1986	92,0	2,3	5,7	100,0	93,8	3,3	2,9	100,0	0,1269
1987	91,4	2,6	6,0	100,0	94,1	3,2	2,8	100,0	0,1131
1988	91,2	2,7	6,1	100,0	93,8	3,2	3,0	100,0	0,1179
1989	92,7	2,5	4,8	100,0	93,7	3,4	2,9	100,0	0,1410
1990	93,3	2,4	4,4	100,0	93,7	3,4	2,9	100,0	0,1558
1991	90,7	2,7	6,5	100,0	92,9	3,7	3,4	100,0	0,1336
1992	92,4	2,8	4,8	100,0	93,5	3,5	3,0	100,0	0,1269
1993	91,1	3,0	5,9	100,0	93,0	3,8	3,2	100,0	0,1367
1994	88,7	3,3	8,0	100,0	92,4	3,9	3,8	100,0	0,1372
1995	88,6	3,1	8,4	100,0	92,0	4,1	3,9	100,0	0,1516
1996	89,8	3,1	7,1	100,0	92,0	4,3	3,7	100,0	0,1403
1997	87,3	4,2	8,6	100,0	91,7	4,5	3,8	100,0	0,1340
1998	86,7	4,9	8,4	100,0	91,1	5,1	3,7	100,0	0,1311
1999	85,0	5,2	9,8	100,0	90,8	5,2	4,0	100,0	0,1232
2000	84,4	5,0	10,6	100,0	90,6	5,0	4,4	100,0	0,1345
2001	86,9	5,0	8,1	100,0	90,8	5,2	4,0	100,0	0,1396
2002	85,7	5,0	9,2	100,0	90,5	5,2	4,2	100,0	0,1530
2003	85,0	5,7	9,3	100,0	90,4	5,3	4,3	100,0	0,1704
2004	85,6	5,7	8,6	100,0	90,3	5,5	4,2	100,0	0,1692
2005	85,8	5,9	8,3	100,0	90,6	5,3	4,1	100,0	0,1777
2006	87,7	4,4	7,8	100,0	90,3	5,3	4,3	100,0	0,2452
2007	86,4	5,1	8,5	100,0	90,4	5,3	4,3	100,0	0,2102

Source: SOEP, authors' calculations.

Table 7: The Impact of Imputed Rent and Capital Income on Income Matrix Mobility

1993-97

Baseline Disposable Income

	bottom	2.	3.	4.	top	Total
1 (bottom)	**49,1**	24,7	14,6	5,3	6,3	100
2	21,7	**40,7**	22,2	11,2	4,3	100
3	9,0	23,3	**36,1**	24,8	6,7	100
4	7,0	10,5	21,3	**42,1**	19,2	100
5 (top)	3,5	2,8	8,6	19,2	**66,0**	100
Avg. Jump / Avg. Normalized Jump	0,790 / 0,316					

Baseline Disposable Income plus IR

	bottom	2.	3.	4.	top	Total
1 (bottom)	**47,6**	24,0	16,0	6,6	5,8	100
2	23,0	**39,4**	21,3	12,2	4,2	100
3	9,1	22,5	**36,6**	23,9	7,8	100
4	6,2	11,6	21,6	**39,7**	20,9	100
5 (top)	4,0	3,5	7,9	19,6	**65,0**	100
Avg. Jump / Avg. Normalized Jump	0,813 / 0,325					

Baseline Disposable Income plus CI

	bottom	2.	3.	4.	top	Total
1 (bottom)	**48,4**	25,2	15,1	5,6	5,8	100
2	21,9	**40,6**	22,5	11,1	3,9	100
3	11,0	25,2	**34,5**	21,6	7,7	100
4	5,6	9,1	21,8	**43,8**	19,7	100
5 (top)	3,5	2,9	7,9	19,5	**66,3**	100
Avg. Jump / Avg. Normalized Jump	0,784 / 0,314					

Baseline Disposable Income incl. IR and CI

	bottom	2.	3.	4.	top	Total
1 (bottom)	**46,9**	25,3	16,5	7,1	4,3	100
2	23,2	**39,4**	21,2	12,9	3,3	100
3	9,6	22,7	**35,4**	23,5	8,8	100
4	5,6	10,5	24,2	**39,1**	20,5	100
5 (top)	3,8	3,3	6,4	21,1	**65,4**	100
Avg. Jump / Avg. Normalized Jump	0,803 / 0,321					

1998-2002

Baseline Disposable Income

	bottom	2.	3.	4.	top	Total
1 (bottom)	**55,6**	25,4	9,6	7,2	2,2	100
2	14,9	**39,2**	27,3	14,8	3,8	100
3	11,5	21,2	**39,3**	20,6	7,5	100
4	5,9	13,1	23,4	**36,5**	21,2	100
5 (top)	3,1	5,0	7,4	22,4	**62,1**	100
Avg. Jump	0,782 / 0,315					

Baseline Disposable Income plus IR

	bottom	2.	3.	4.	top	Total
1 (bottom)	**53,1**	26,6	11,6	6,6	2,2	100
2	19,7	**39,9**	22,7	13,9	3,9	100
3	10,1	25,6	**34,6**	21,6	8,2	100
4	4,1	9,6	28,9	**34,8**	22,6	100
5 (top)	2,8	3,3	11,5	22,5	**59,8**	100
Avg. Jump	0,787 / 0,315					

Baseline Disposable Income plus CI

	bottom	2.	3.	4.	top	Total
1 (bottom)	**54,6**	24,8	11,6	7,2	1,8	100
2	18,4	**38,7**	25,3	14,1	3,5	100
3	11,0	22,9	**38,3**	20,2	7,6	100
4	4,4	12,2	23,6	**38,8**	21,0	100
5 (top)	2,9	2,9	8,7	22,4	**63,0**	100
Avg. Jump	0,784 / 0,306					

Baseline Disposable Income incl. IR and CI

	bottom	2.	3.	4.	top	Total
1 (bottom)	**52,0**	27,3	12,4	6,3	2,0	100
2	20,8	**39,7**	23,1	12,9	3,5	100
3	11,4	23,5	**34,9**	22,6	7,5	100
4	3,7	9,0	28,2	**38,8**	20,4	100
5 (top)	2,0	3,5	7,3	24,0	**63,3**	100
Avg. Jump	0,678 / 0,302					

2003-2007

Baseline Disposable Income

	bottom	2.	3.	4.	top	Total
1 (bottom)	**57,9**	27,9	8,2	4,3	1,8	100
2	21,6	**44,9**	21,8	8,4	3,3	100
3	9,3	19,9	**43,2**	19,9	7,8	100
4	4,9	9,0	21,7	**44,4**	20,1	100
5 (top)	3,4	2,4	9,5	19,7	**65,0**	100
Avg. Jump	0,684 / 0,274					

Baseline Disposable Income plus IR

	bottom	2.	3.	4.	top	Total
1 (bottom)	**57,1**	28,6	7,8	4,8	1,8	100
2	20,7	**44,1**	24,2	7,8	3,1	100
3	7,8	22,9	**39,5**	22,6	7,2	100
4	5,0	7,5	23,0	**44,1**	20,3	100
5 (top)	3,5	2,6	7,2	19,0	**67,7**	100
Avg. Jump	0,679 / 0,272					

Baseline Disposable Income plus CI

	bottom	2.	3.	4.	top	Total
1 (bottom)	**58,0**	28,0	7,7	4,6	1,8	100
2	22,1	**45,5**	21,5	7,9	3,1	100
3	8,0	20,5	**43,3**	21,3	7,0	100
4	4,8	8,6	23,5	**43,8**	19,4	100
5 (top)	3,2	2,5	7,8	19,6	**66,9**	100
Avg. Jump	0,668 / 0,267					

Baseline Disposable Income incl. IR and CI

	bottom	2.	3.	4.	top	Total
1 (bottom)	**57,6**	29,1	7,4	4,0	1,8	100
2	20,8	**42,6**	24,7	8,6	3,3	100
3	7,2	22,2	**41,5**	23,0	6,1	100
4	5,3	8,1	23,9	**43,2**	19,6	100
5 (top)	3,1	2,7	6,8	18,0	**69,4**	100
Avg. Jump	0,670 / 0,268					

Notes:
Until 1991 (starting year of 5-year period) West Germany, only.
All incomes are equivalized according to the OECD scale and deflated to 2000 prices.
Imputed Rent incl. Income advantages from subsidized rents.
Capital Income (excl. Capital gains) including income from renting and leasing.
Population: Individuals in private households.

Source: SOEP; authors' calculations.

Table 8: The Impact of Imputed Rent and Capital Income on Five-Year Income Mobility

	Shorrocks Mobility over 5 years, using Gini				Shorrocks Mobility over 5 years, using Gini			
	Baseline **Disposable** Income excl. IR and CI	Baseline **Disposable** Income plus IR	Baseline **Disposable** Income plus CI	**Disposable** Income incl. IR and CI	Baseline **Market** Income excl. IR and CI	Baseline **Market** Income plus IR	Baseline **Market** Income plus CI	**Market** Income incl. IR and CI
1986-90	0,101	0,101	0,099	0,099	0,102	0,087	0,082	0,079
1987-91	0,097	0,098	0,096	0,095	0,096	0,084	0,079	0,077
1988-92	0,100	0,101	0,097	0,097	0,100	0,087	0,082	0,080
1989-93	0,095	0,097	0,093	0,094	0,097	0,084	0,079	0,077
1990-94	0,093	0,096	0,089	0,090	0,093	0,084	0,080	0,079
1991-95	0,095	0,096	0,091	0,092	0,095	0,084	0,080	0,079
1992-96	0,097	0,097	0,092	0,092	0,097	0,088	0,080	0,080
1993-97	0,097	0,098	0,090	0,091	0,096	0,086	0,077	0,076
1994-98	0,094	0,096	0,086	0,087	0,093	0,084	0,075	0,074
1995-99	0,091	0,095	0,084	0,086	0,088	0,078	0,072	0,070
1996-2000	0,093	0,095	0,084	0,086	0,089	0,080	0,072	0,071
1997-2001	0,087	0,088	0,079	0,079	0,085	0,076	0,068	0,068
1998-2002	0,082	0,081	0,074	0,073	0,084	0,073	0,062	0,062
1999-2003	0,079	0,080	0,074	0,073	0,083	0,072	0,063	0,063
2000-2004	0,078	0,079	0,073	0,072	0,079	0,071	0,064	0,063
2001-2005	0,080	0,079	0,075	0,073	0,080	0,068	0,063	0,062
2002-2006	0,080	0,078	0,076	0,074	0,077	0,066	0,062	0,061
2003-2007	0,075	0,074	0,069	0,067	0,074	0,063	0,060	0,059
	Change due to inclusion of IR and CI				Change due to inclusion of IR and CI			
	Baseline **Disposable** Income excl. IR and CI	Baseline **Disposable** Income plus IR	Baseline **Disposable** Income plus CI	**Disposable** Income incl. IR and CI	Baseline **Market** Income excl. IR and CI	Baseline **Market** Income plus IR	Baseline **Market** Income plus CI	**Market** Income incl. IR and CI
1986-90	n.d.	0,7	-1,7	-2,1	n.d.	-14,0	-18,9	-22,3
1987-91	n.d.	0,3	-1,7	-2,3	n.d.	-12,3	-17,3	-19,8
1988-92	n.d.	0,7	-2,8	-3,1	n.d.	-12,8	-18,0	-20,0
1989-93	n.d.	2,0	-2,6	-2,0	n.d.	-13,7	-18,5	-20,1
1990-94	n.d.	2,8	-4,3	-2,9	n.d.	-9,6	-13,9	-15,3
1991-95	n.d.	1,0	-4,0	-3,6	n.d.	-11,6	-16,0	-16,3
1992-96	n.d.	0,2	-5,0	-5,4	n.d.	-9,6	-17,0	-17,5
1993-97	n.d.	0,9	-7,1	-6,6	n.d.	-9,9	-19,4	-20,2
1994-98	n.d.	1,5	-8,6	-7,8	n.d.	-9,0	-19,4	-20,8
1995-99	n.d.	4,1	-8,1	-5,5	n.d.	-11,3	-19,0	-20,6
1996-2000	n.d.	2,4	-9,1	-7,0	n.d.	-10,5	-19,4	-20,3
1997-2001	n.d.	0,4	-9,1	-9,2	n.d.	-9,7	-20,0	-19,9
1998-2002	n.d.	-0,2	-9,7	-10,9	n.d.	-13,3	-25,9	-25,9
1999-2003	n.d.	0,6	-7,2	-8,1	n.d.	-13,2	-23,2	-23,8
2000-2004	n.d.	0,2	-6,9	-8,2	n.d.	-10,3	-19,5	-20,3
2001-2005	n.d.	-0,9	-6,2	-8,4	n.d.	-14,7	-21,1	-22,0
2002-2006	n.d.	-1,4	-5,0	-7,3	n.d.	-14,4	-19,4	-20,5
2003-2007	n.d.	-2,1	-8,1	-10,4	n.d.	-14,7	-18,9	-21,0

Notes: Until 1991 (starting year of 5-year period) West Germany, only.
All incomes are equivalized according to the OECD scale and deflated to 2000 prices.
Imputed Rent incl. Income advantages from subsidized rents.
Capital Income (excl. Capital gains) including income from renting and leasing.
Population: Individuals in private households.

Source: SOEP; authors' calculations.