Income inequality and poverty in front of and during the economic crisis - An empirical investigation for Germany 2002-2010

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Abstract

Based on data from the German Socio-Economic Panel (SOEP), both income inequality and poverty are considered for Germany in front of and during the economic crisis 2008-2010. This comprises binary logistic regressions where it is tested whether a person is belonging to a certain income region or not. The units of analysis are differentiated by residential status, nationality, sex, age, household size/household type, employment status, etc. For instance, the likelihood of unemployed persons for being located in the low-income region weakly increased between 2007 and 2009. Those microeconomic calculations are correlated with the macroeconomic variables economic growth, inflation, and general unemployment. At the peak of the crisis – in 2009 – inequality dropped, and it increased afterwards. Poverty was not affected very much by economic developments during the crisis but at least an in-crease of persons, who stayed within the poverty region, occurred between 2008 and 2009 (compared with 2007/2008).

Keywords: Personal income distribution, welfare, inequality, poverty, economic crisis
JEL Classification: D30, D31, D60.

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1. Introduction

This paper deals with the economic crisis, which began in 2008 and reached its (preliminary?) peak in 2009. It examines effects of this crisis on income inequality and poverty in Germany. The observation period is from 2002 to 2010; the reasons for analysing this period are on one hand data restrictions and on the other hand the possibility of comparing the German recessions in 2003 and 2009 with each other.

To consider such aspects means analysing the relationship between macroeconomic developments and distributional, microeconomic aspects (concerning this topic see, on principle, Bourguignon, Bussolo, and Peirera da Silva 2008 and, referring to former crises, Aaberge et al. 2008 or Baldacci, de Mello, and Inchauste 2002). Most of the studies on the impact of the newest economic crisis on inequality and/or on poverty investigate the corresponding effects for developing countries (see, e. g., McCord and Vandemoortele 2009 or Habib et al. 2010) or for countries which are severely weakened by the crisis (like Greece; see, in this context, Matsaganis and Leventi 2011 or Matsaganis 2011).

Contrary to those analyses, this paper focuses on the distributional influences of the crisis in a highly industrialized, economically very developed country. This appears of interest insofar as the German economy is an export-oriented one so that it is very sensitive to international disturbances like those generated by the current global financial crisis. Because of that, for Germany, the question arises in which way such burdens of the crisis are distributed among the several social groups. In this context, it must be taken into account of what welfare state's type the German society currently is. If the presumption is true that Germany – despite a certain political break towards liberal ideas since the turn of the millennium – is still a corporatist welfare state, at least basically, then it may be predicted that Germany has compensated negative distributional consequences out of the crisis (i. e., more inequality, more poverty, etc.) at a high rate.

My paper is structured as follows. The macroeconomic framework during the observation period is sketched in Section 2. It follows, in Chapter 3, the description of the methodical and data framework. In Chapter 4 overall empirical findings for Germany 2002-2010 are presented. Chapter 5 exemplarily uses the findings of the preceding chapter with respect to structural aspects of the German income distribution. Finally, concluding remarks are the topic of Chapter 6.

2. Macroeconomic background

The macroeconomic background sketched in this paper refers to the main macroeconomic indicators inflation rate, growth rate, and unemployment rate (most of data presented in this section is from http://www.destatis.de; i. e., from the website of the German Statistical Office, the *Statistisches Bundesamt*, and from OECD 2011 and OECD Economic Outlook Database: http://www.oecd.org/document/61/0,3746,en_2649_34573_2483901_1_1_1_1,00.html; because of partly different definitions unemployment data diverge from each other to a small degree).
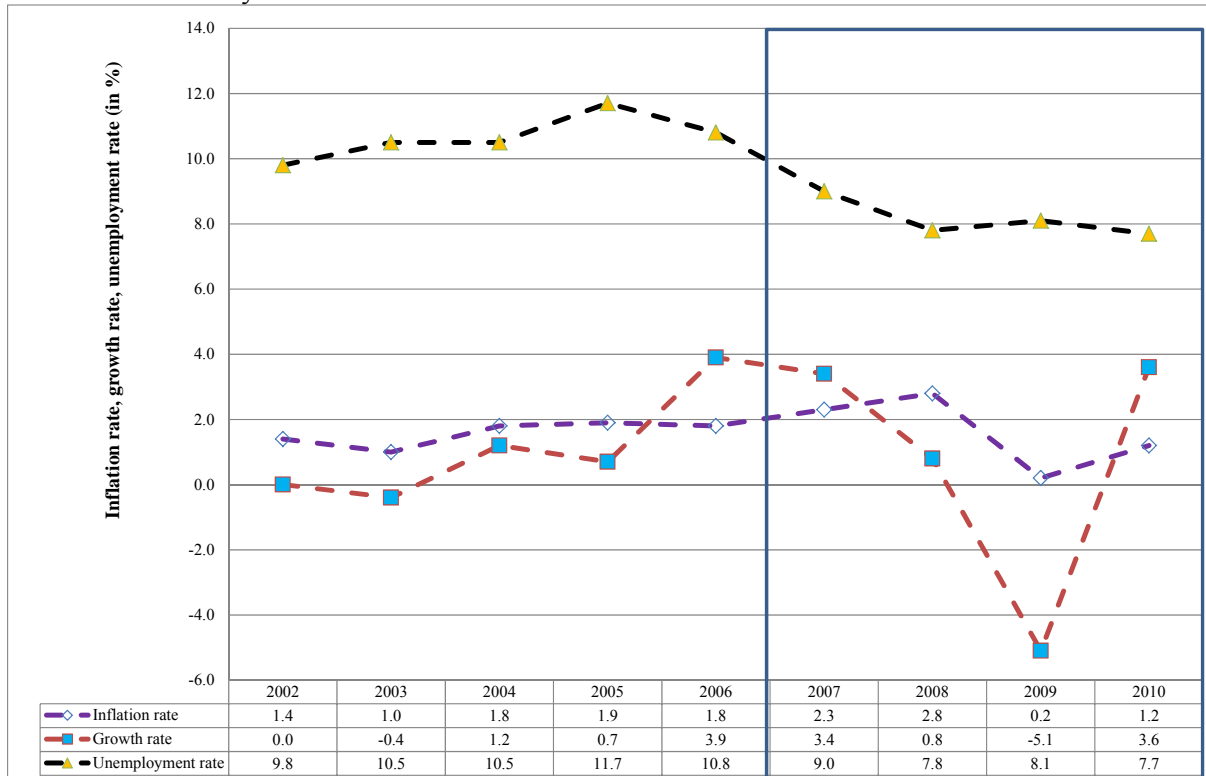
Figure 1 reveals with respect to the harmonised index of consumer prices (base year: 2005) that in Germany at first (from 2002 to 2005) the inflation rate fluctuated between +1.0 % and +1.9 % and that it then rose from +1.8 % in 2006 and +2.3 % in 2007 to +2.8 % in 2008. Afterwards, it dropped from 2008 to the peak of the crisis in 2009 from +2.8 % to +0.2 %; in 2010 the German inflation rate amounted to +1.2 %.

The decline in the macroeconomic price level between 2008 and 2009 was accompanied by a remarkable slump of the real gross domestic product (in prices of 2005): Between 2008 and 2009 the "growth" rate decreased in the amount of -5.1 %. This negative value – indicating a strong recession – was much more pronounced compared with other recessions after Second World War in Germany, e. g., compared with -0.4 % between 2002 and 2003. But already between 2009 and 2010 the German economy grew by +3.6 %.

The latter development – revealing a relatively good performance of the German economy during the crisis (on a macroeconomic level) – was reflected in the development of the number of unemployed persons (in the definition of the German Labour Office, i. e., related to the number of civil gainfully, dependently employed persons). Between 2002 and 2005 the unemployment rate grew by about two percentage points but from 2005 to 2008 it dropped by nearly four percentage points. Be-

tween 2008 and 2009 the unemployment rate only increased by 0.3 percentage points, and between 2009 and 2010 this rate decreased by 0.4 percentage points. Partly, this development was the result of short-time working in Germany, as is sketched below.

Figure 1: Development of inflation, growth, and unemployment rate
in Germany 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Inflation rate	1.4	1.0	1.8	1.9	1.8	2.3	2.8	0.2	1.2
Growth rate	0.0	-0.4	1.2	0.7	3.9	3.4	0.8	-5.1	3.6
Unemployment rate	9.8	10.5	10.5	11.7	10.8	9.0	7.8	8.1	7.7

Inflation rate: harmonised index of consumer prices (base year: 2005); growth rate: real gross domestic product (in prices of 2005); unemployment rate: definition of German Labour Office (% of all civil gainfully, dependently employed persons)

Sources: Present author's own illustration on the basis of http://www-genesis.destatis.de (access at 2012-02-07) and OECD (2011), pp. 216 and 224

Additionally, Table 1 also illustrates Germany's relatively good macroeconomic performance during the crisis in an international perspective where countries are crudely differentiated by Esping Andersen's (1990) scheme of welfare state regimes. At the peak of the crisis in 2009 the patterns of growth' development were approximately the same between the different welfare regimes: With the exception of Australia and New Zealand, all countries documented in Table 1 had to accept negative rates of change of the real gross domestic product. Furthermore, all countries were confronted with diminishing inflation rates for the2008-2009 transition compared to the 2007-2008 transition. Contrary to these findings, the countries of the conservative-corporatist welfare state type performed best concerning unemployment rates (by tendency) in front of and during the crisis – perhaps due to their modest level of decommodification and to a higher degree of governmental protection. Out of this group of countries, Germany reached the best results since it reduced its unemployment rates before and after the crisis markedly, and at the peak of the crisis in 2009 the German unemployment rate was broadly similar to the preceding year (only +0.1 percentage point according to the OECD definition of unemployment rates). This change distinctively contrasted to the development, e. g., in the United States (+3.5 percentage points), in the Euro area (+1.9 percentage points), or within the group of OECD countries (+2.2 percentage points) between 2008 and 2009.

Table 1: Macroeconomic performance in front of and during the crisis, 2006-2010, for several groups of countries

Kind of welfare regime	Growth					Inflation					Unemployment				
	2006	2007	2008	2009	2010	2006	2007	2008	2009	2010	2006	2007	2008	2009	2010
Liberal welfare states:															
United States	2.7	1.9	-0.3	-3.5	3.0	3.2	2.9	3.8	-0.3	1.6	4.6	4.6	5.8	9.3	9.6
Great Britain	2.6	3.5	-1.1	-4.4	1.8	3.3	2.3	3.6	2.2	3.3	5.5	5.4	5.7	7.6	7.9
Canada	2.8	2.2	0.7	-2.8	3.2	2.0	2.1	2.4	0.3	1.8	6.3	6.0	6.1	8.3	8.0
Australia	2.5	4.7	2.4	1.5	2.5	3.5	2.4	4.3	1.8	2.9	4.8	4.4	4.2	5.6	5.2
New Zealand	2.0	3.4	-0.7	0.1	2.3	3.4	2.4	4.0	2.1	2.3	3.8	3.7	4.2	6.2	6.5
Conservative-corporatist welfare states:															
Germany	**3.9**	**3.4**	**0.8**	**-5.1**	**3.6**	**1.8**	**2.3**	**2.8**	**0.2**	**1.2**	**9.7**	**8.4**	**7.3**	**7.4**	**6.8**
Austria	3.6	3.7	1.2	-3.7	2.4	1.7	2.2	3.2	0.4	1.7	4.7	4.4	3.8	4.8	4.4
France	2.7	2.2	-0.2	-2.6	1.4	1.9	1.6	3.2	0.1	1.7	8.8	8.0	7.4	9.1	9.4
Italy	2.2	1.7	-1.2	-5.1	1.5	2.2	2.0	3.5	0.8	1.6	6.8	6.1	6.8	7.8	8.4
Social democratic ("Scandinavian") welfare states:															
Sweden	4.6	3.4	-0.8	-5.1	5.4	1.4	2.2	3.4	-0.5	1.2	7.1	6.1	6.2	8.3	8.4
Norway	2.3	2.7	0.7	-1.7	0.3	2.3	0.7	3.8	2.2	2.4	3.4	2.5	2.6	3.2	3.6
Denmark	3.4	1.6	-1.1	-5.2	1.7	1.9	1.7	3.4	1.3	2.3	3.9	3.6	3.2	5.9	7.2
Finland	4.4	5.3	1.0	-8.2	3.6	1.3	1.6	3.9	1.6	1.7	7.7	6.9	6.4	8.3	8.4
Euro area / Total OECD:															
Euro area	3.3	3.0	0.3	-4.2	1.8	2.2	2.1	3.3	0.3	1.6	8.2	7.4	7.5	9.4	9.9
Total OECD	3.2	2.8	0.1	-3.8	3.1	-	-	-	-	-	6.1	5.7	6.0	8.2	8.3

Growth:= change of real gross domestic product, inflation rate:= change of consumer price index, unemployment rate:= unemployed persons (due to the OECD definition) divided by all civil gainfully employed persons

Source: OECD (2011), pp. 216, 224, and 226

In absolute terms, the number of unemployed persons in Germany climbed between 2002 and 2005 but then it was reduced continuously until 2008 (see Table 2). Against the backdrop of the important productivity losses between 2008 and 2009 sketched above, the number of unemployed persons grew only in the amount of about 156,000 persons during both years which was – at least to some degree – the result of a rise of short-time working. Table 2 reveals that between 2008 and 2009 in Germany short-time working increased by a factor of more than 10 from about 100,000 persons to more than 1.1 Mio persons. In the succeeding years 2009 and 2010 the number of unemployed persons dropped from 3.4 Mio persons to 3.2 Mio persons which were accompanied by an approximately halving of the number of short-time workers. These results illustrate the relatively good performance of the German economy during the economic crisis by using fiscal programmes and, not least, by applying the socio-political measure of short-time working – the "German answer" to the economic crisis (see Brenke, Rinne, and Zimmermann 2011, p. 1).

The public instrument of short-time working helps companies to retain workers during economic recessions by compensating workers for losses of income through paying transfers; its scope was enlarged during the crisis, and its total costs increased from 0.42 Billion Euro in 2008 to 3.56 Billion Euro in 2009 (see, e. g., Eurofound 2010, pp. 1-9). The increase of short-time working allowances was one of the reasons that the general government total outlays – in percent of the (nominal) gross domestic product – rose by 4.0 percentage points between 2008 (44.1 %) and 2009 (48.1 %); this difference was in line with the corresponding developments in the Euro area (2008: 47.2 %, 2009: 51.2 %) and within the OECD countries (2008: 41.5 %, 2009: 45.2 %; see OECD Economic Outlook Database).

Table 2: Development of unemployment and short-time working
in Germany 2002-2010

Year	Unemployed persons*			Short-time workers		
	Number	Absolute change	Relative change (in %)	Number	Absolute change	Relative change (in %)
2002	4,061,345	.	.	206,767	.	.
2003	4,376,795	+315,450	+7.8	195,371	-11,396	-5.5
2004	4,381,281	+4,486	+0.1	150,593	-44,778	-22.9
2005	4,860,909	+479,628	+10.9	125,505	-25,088	-16.7
2006	4,487,305	-373,604	-7.7	66,981	-58,524	-46.6
2007	3,760,072	-727,233	-16.2	68,317	+1,336	+2.0
2008	3,258,451	-501,621	-13.3	101,540	+33,223	+48.6
2009	3,414,545	+156,094	+4.8	1,147,094	+1,045,554	+1,029.7
2010	3,238,421	-176,124	-5.2	502,694	-644,400	-56.2

* According to the definition of the German Labour Office (*Bundesagentur für Arbeit*)

Sources: http://www-genesis.destatis.de (access at 2012-02-07) and present author's own calculations

3. Methodical and data framework

The macroeconomic developments sketched in the preceding section constitute the framework for the paper's main part, for its microeconomic, distributional considerations with respect to inequality and poverty. Thereby, the paper focuses on *income* inequality and *income* poverty since income appears to be a suitable predictor for other welfare categories (see, in this context, already Townsend 1979, p. 253 and pp. 256-262). More specific, the equivalent household net incomes are weighted by the number of persons in each household.

The income and other microdata used in this paper is from the German Socio-Economic Panel (SOEP; see Wagner, Frick, and Schupp 2007) for the years 2002 to 2010. The SOEP, which is collected since 1984 in annual intervals, currently comprises approximately 10,000 households and 25,000 persons. Since there has been a fundamental extension of the database in 2002 by high-income receivers, which – obviously not fully captured by adequate grossing-up factors within the SOEP samples – has caused bias in the database, the analyses in the following start with the year 2002.

The SOEP offers information on monthly household income of the current year and on annual household income of the previous year. Despite the Canberra Group's guidelines in favour of annual income levels (see UN 2011, pp. 26-27) I decided to primarily use monthly, current household net income in my analyses below since the corresponding current income levels are more "fresh" in memories of interviewees than information on annual, retrospective income is.[1] Moreover, current monthly income belongs to the same period of time as socio-demographic characteristics while annual, retrospective income lags by one year compared with the socio-demographic variables. Another rather practical reason is that the SOEP time series for the annual incomes of the previous years, currently available for scientific purposes, ends in 2009 while monthly income additionally takes into account the year 2010 which – for purposes of comparison – provides further information on the evaluation of the economic crisis and its consequences in Germany.

In order to "normalize" household net incomes because of different household sizes and compositions, it is necessary to divide household net incomes by equivalence scales. Typically, in this context overall equivalence scales are used which assign the same scale values to households in different income regions. In contrast, there are good reasons for basing distributional analyses on variable, income-dependent equivalence scales since it might be argued, for example, that credit constraints for households in the bottom income range may shift the consumption bundles of these households towards lower expenditure shares of durables which are connected with relatively high economies of scale (see, e. g., Faik 2012).

I refer to this approach with variable equivalence scales since it allows, amongst others, a needs-related allocation of inequality developments to different income regions before and during the crisis. In this context I, mainly, assume the following income regions:

- *Poverty region:* for single persons poverty line at 50 % of their mean net incomes, and for multi-person households[2] calculation of poverty lines on the basis of the (approximate) old OECD scale, i. e.: on the basis of $\theta = 0.8$ (in the Buhmann et al. formula[3]);

- *Low-income region:* for single persons low-income line at 70 percent of their mean net incomes, and for multi-person households calculation of low-income lines on the basis of the (approximate) old OECD scale, i. e.: on the basis of $\theta = 0.8$;

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[1] Nevertheless, alternative calculations on the basis of annual income values are available from the author on request, which, on principle, do not contradict to the main findings of the income concept used in this article.
[2] The article's calculations are restricted to single- to six-person households since the number of cases for household sizes with seven and more persons within the SOEP database is too low for statistical reasons.
[3] Buhmann et al.'s equivalence scale formula is as follows: $m_h = S^\theta$ $(0 \leq \theta \leq 1)$; see Buhmann et al. 1988, p. 119

[m_h: equivalence scale value of household type h (with respect to the reference household type, in this case a single-person household), S: household size, θ: elasticity of the equivalence scale with regard to household size (and therefore also reflecting the degree of economies of scale)].

- *Middle-income region:* for single persons middle-income lines 70 or more percent up to (be-low) 200 % of their mean net incomes, and for multi-person households calculation of middle-income lines on the basis of $\theta = 0.8$ for the lower boundary and of $\theta = 0.7$ for the upper boundary (i. e., "deflating" incomes within the middle-income region by $\theta = 0.7$);

- *High-income region:* for single persons high-income line at 200 % of their mean net incomes, and for multi-person households calculation of high-income lines on the basis of $\theta = 0.7$ but (approximately) "deflating" incomes within the high-income region via new OECD scale, i. e., by $\theta = 0.6$.

For the measurement of equivalent household net income's inequality, the mean logarithmic deviation, an entropy indicator proposed by Theil, and the normalized coefficient of variation (= half the square of the coefficient of variation) are used as inequality indicators, and in the field of poverty measurement the headcount and the poverty gap ratio are the preferred poverty indicators.

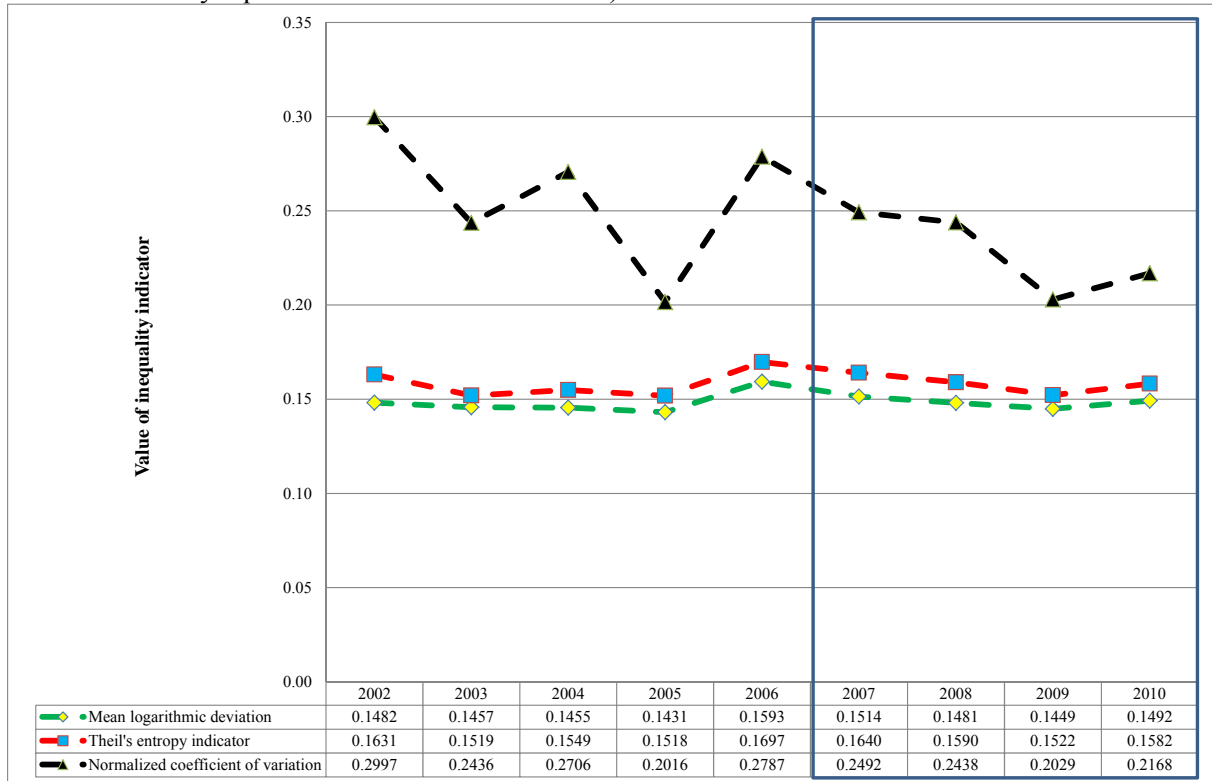## 4. Inequality and poverty findings for Germany 2002-2010

4.1 Inequality

4.1.1 Descriptive findings

The basic (cross-sectional) inequality results for Germany 2002-2010, arising from three different inequality indicators, are shown in Figure 2. Especially from 2006 to 2009 a tendency towards decreasing income inequality occurred in Germany as a whole. At least partly and by tendency, this seems to be a reflection of the diminished unemployment rates in Germany during this period (reported in Section 2). With respect to the economic crisis 2007/08-2010 this means equalizing effects in Germany in front of and during the crisis. In 2010 a slight increase in inequality occurred, indicated by all used indicators. However, compared with the high-income sensitive normalized coefficient of variation, the mean logarithmic deviation and Theil's measure of entropy – both not as sensitive to changes in high-income regions as the normalized coefficient of variation – reveal a rather smoothed "inequality curve" over time. This finding points to distributional effects resulting from changes within the upper income ranges.

Comparing the recessions of 2003 and of 2009 with each other, one may observe nearly the same reductions in inequality during both recessions. For instance, using the normalized coefficient of variation, inequality decreased between 2002 and 2003 by about 19 % and between 2008 and 2009 by nearly 17 %. After the peaks of the crises in 2003 and in 2009 an increase in inequality took place in the next year 2004 and 2010 (with the exception of the mean logarithmic deviation for the transition from 2003 to 2004, stating a very small, statistically non-relevant diminishment of -0.1 %). In summary, both crises are comparable insofar as at the peak of each crisis income inequality decreased and afterwards, typically, increased. Therefore, the German ("conservative-corporatist") welfare state's system, which is characterized by at least medium strength redistribution (see, e. g., Eberharter 2008, p. 173), is, intrinsically, not very prone to a crisis with respect to income inequality.

Figure 2: Income inequality in Germany as a whole 2002-2010 SOEP
    on the basis of mean logarithmic deviation, Theil's entropy indicator,
    and normalized coefficient of variation (variable equivalence scales,
    monthly equivalent household net income)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mean logarithmic deviation	0.1482	0.1457	0.1455	0.1431	0.1593	0.1514	0.1481	0.1449	0.1492
Theil's entropy indicator	0.1631	0.1519	0.1549	0.1518	0.1697	0.1640	0.1590	0.1522	0.1582
Normalized coefficient of variation	0.2997	0.2436	0.2706	0.2016	0.2787	0.2492	0.2438	0.2029	0.2168

Mean logarithmic deviation (MLD): $MLD = \dfrac{1}{n} \cdot \sum\limits_{i=1}^{n} ln\left(\dfrac{\mu}{Y_i}\right)$;

Theil's entropy measure (T): $T = \dfrac{1}{n} \cdot \sum\limits_{i=1}^{n}\left[\dfrac{Y_i}{\mu} \cdot ln\left(\dfrac{Y_i}{\mu}\right)\right]$;

Normalized coefficient of variation (NCV): $NCV = \dfrac{1}{2} \cdot \dfrac{\mu^2}{\sigma^2}$;

with: Y_i = equivalent income for person i, μ = arithmetic mean of equivalent incomes, σ = standard deviation of equivalent incomes

Source: Present author's own calculations

The overall development of inequality can be decomposed into three elements: into population shares, relative income positions, and group-specific inequality changes within different income groups. In this context, tendentially, the observed strengthening of the population shares of the middle class and – to a minor degree – of the upper income classes tended, ceteris paribus, to increase German inequality between 2006 and 2009 since especially the upper income class had a higher degree of within-group inequality (see Table 3). In the opposite direction the development of relative income positions has acted: That means, also ceteris paribus, a leveling at least between 2006 and 2008 and only small contrary effects between 2008 and 2010. Concerning group-specific normalized coefficients of variation, the values within the low-income and within the middle-income region remained approximately constant during the period 2006-2010 while the normalized coefficient of variation within the high-income region decreased by tendency so that, on balance, the entire within-group inequality dropped during this period of time. The same happened with respect to between-group inequality (as a consequence of the levelling effects of the relative income positions which seem to over-compensate the – small – oppposite effects of the population shares). Altogether, these developments led to declining

overall income inequality between 2008 and 2009. Summarizing and roughly speaking, concerning monthly equivalent household net incomes, this diminishment of overall inequality was primarily caused by levelling effects of the relative income positions and of the normalized coefficients of variations within the high-income region.

Table 3: Decomposition of income inequality in Germany 2002-2010 by income regions

Year	Population shares			Relative income positions*			Normalized coefficients of variations			Between-group inequality in %**
	Low	Middle	High	Low	Middle	High	Low	Middle	High	
2002	0.449	0.515	0.035	0.573	1.203	3.458	0.028	0.032	0.264	53.1
2003	0.422	0.542	0.036	0.557	1.195	3.259	0.029	0.033	0.179	59.5
2004	0.423	0.541	0.036	0.559	1.192	3.298	0.028	0.034	0.238	54.3
2005	0.447	0.518	0.036	0.565	1.223	3.216	0.029	0.033	0.086	69.9
2006	0.444	0.516	0.039	0.552	1.207	3.348	0.032	0.034	0.189	59.3
2007	0.429	0.530	0.041	0.548	1.194	3.198	0.031	0.033	0.158	61.7
2008	0.418	0.541	0.041	0.546	1.188	3.152	0.031	0.032	0.167	60.6
2009	0.413	0.549	0.038	0.544	1.192	3.156	0.030	0.033	0.083	70.0
2010	0.394	0.568	0.037	0.528	1.179	3.239	0.030	0.035	0.099	67.8

* Relation between group-specific arithmetic mean of equivalent incomes and entire arithmetic mean of equivalent incomes

** Weighted sum of group-specific values of normalized coefficient of variation with population shares and group-specific relative income positions as weighting factors

Source: Present author's own calculations

4.1.2 Micro-simulations

In order to consider the preceding decompositions and their development more comprehensive, several micro-simulations are undertaken. These micro-simulations are performed as static shift-share calculations. Concretely, they rest on constant population shares, constant mean incomes within the differentiated (age) groups, and constant income deviations (inequality) within the several (age) groups (referring to a base year). Table A.1 in the Appendix gives an overview about the fundamental data concerning population shares, mean incomes, income inequality, and group-specific poverty within the several age groups for Germany 2002-2010.

In order to elaborate the development during crisis 2008-2010, the base year of micro-simulations is 2007 so that shift-share decompositions are as follows:

(1) Constant population shares:

$$NCV_t = \sum_{g=1}^{G} v_{g,t}^2 \cdot w_{g,BASE}^{-1} \cdot NCV_{g,t} + \frac{1}{2} \cdot \left\{ \left[\sum_{g=1}^{G} w_{g,BASE} \cdot \left(\frac{\mu_{g,t}}{\mu_t} \right)^2 \right] - 1 \right\}$$

(2) Constant relative income positions:

$$NCV_t = \sum_{g=1}^{G} v_{g,BASE}^2 \cdot w_{g,t}^{-1} \cdot NCV_{g,t} + \frac{1}{2} \cdot \left\{ \left[\sum_{g=1}^{G} w_{g,t} \cdot \left(\frac{\mu_{g,BASE}}{\mu_{BASE}} \right)^2 \right] - 1 \right\}$$

(3) Constant group-specific normalized coefficients of variation:

$$NCV_t = \sum_{g=1}^{G} v_{g,t}^2 \cdot w_{g,t}^{-1} \cdot NCV_{g,BASE} + \frac{1}{2} \cdot \left\{ \left[\sum_{g=1}^{G} w_{g,t} \cdot \left(\frac{\mu_{g,t}}{\mu_t} \right)^2 \right] - 1 \right\}$$
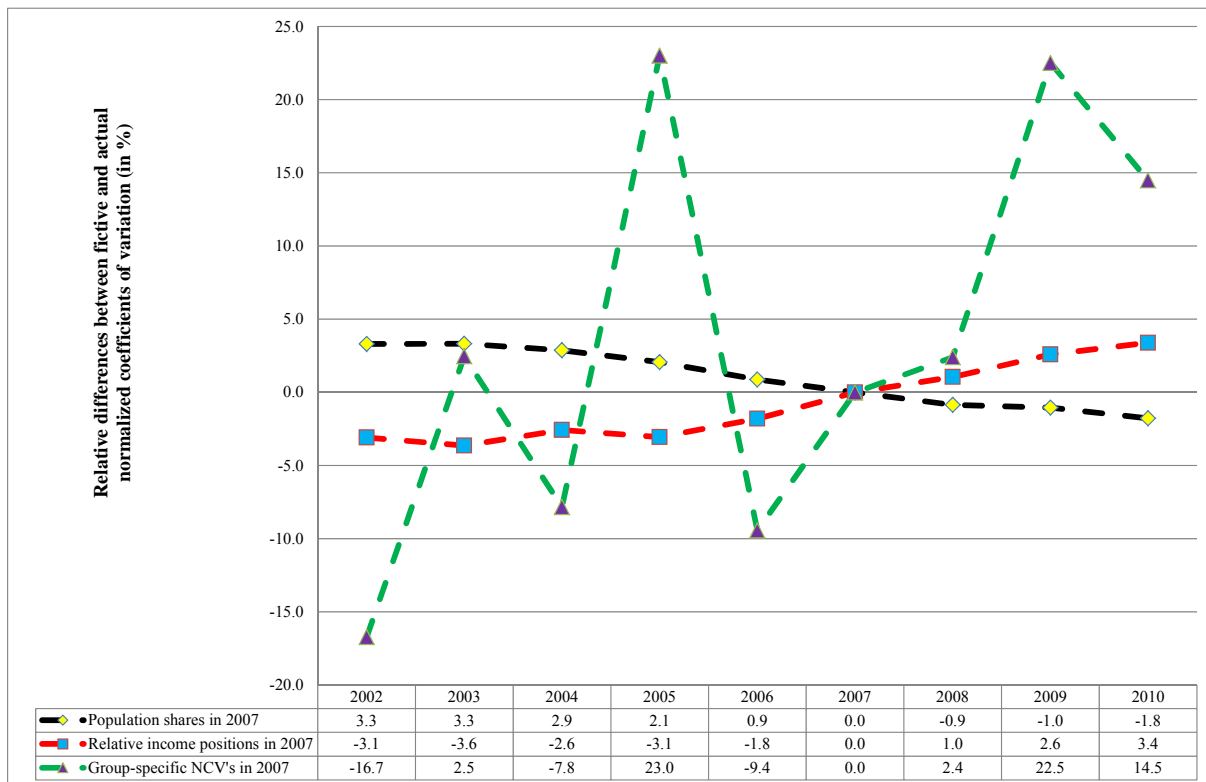
[NCV: normalized coefficient of variation, t: period of time (2002, 2003, …, 2010), g: age group g (until 9 years, 10-19 years, 20-29 years, 30-39 years, 40-49 years, 50-59 years, 60-69 years, 70-79 years, 80 years and older), v: relative income position, w: population share, μ: mean equivalent household net income, BASE: base year (2007)]

Figure 3 reveals lower fictive inequality values – measured by the normalized coefficient of variation – during the business-cycle 2008-2010 if the population structure would not have changed compared to the base year 2007. In other words: The changes concerning population structure from 2007 to 2008-2010 led ceteris paribus to higher inequality levels than otherwise. This is caused by decreasing population weights of younger persons which, by tendency, had a more regular within-group distribution of individual incomes. Since overall income inequality has decreased during crisis, thus, in accordance with Section 4.1.1, the sketched effect of population shares was over-compensated by other effects which will be discussed in the following.

Keeping group-specific relative income positions constant (at the level of 2007), generates higher inequality values during the crisis (2008-2010) than before. Because of that, the changes of group-specific relative income positions over time tended to reduce income inequality via levelling effects between the relative income positions of the several age groups, even during the economic crisis.

Finally, constant group-specific normalized coefficients of variation on the basis of 2007 would have led ceteris paribus to higher income inequality during crisis. In summary, the levelling of group-specific means and standard deviations caused inequality decreasing effects during the economic crisis 2008-2010 which confirms the conclusions derived in Section 4.1.1.

Figure 3: Relative inequality differences in Germany 2002-2010
caused by changing population shares, by different relative income positions,
and by different group-specific inequality (base year: 2007)

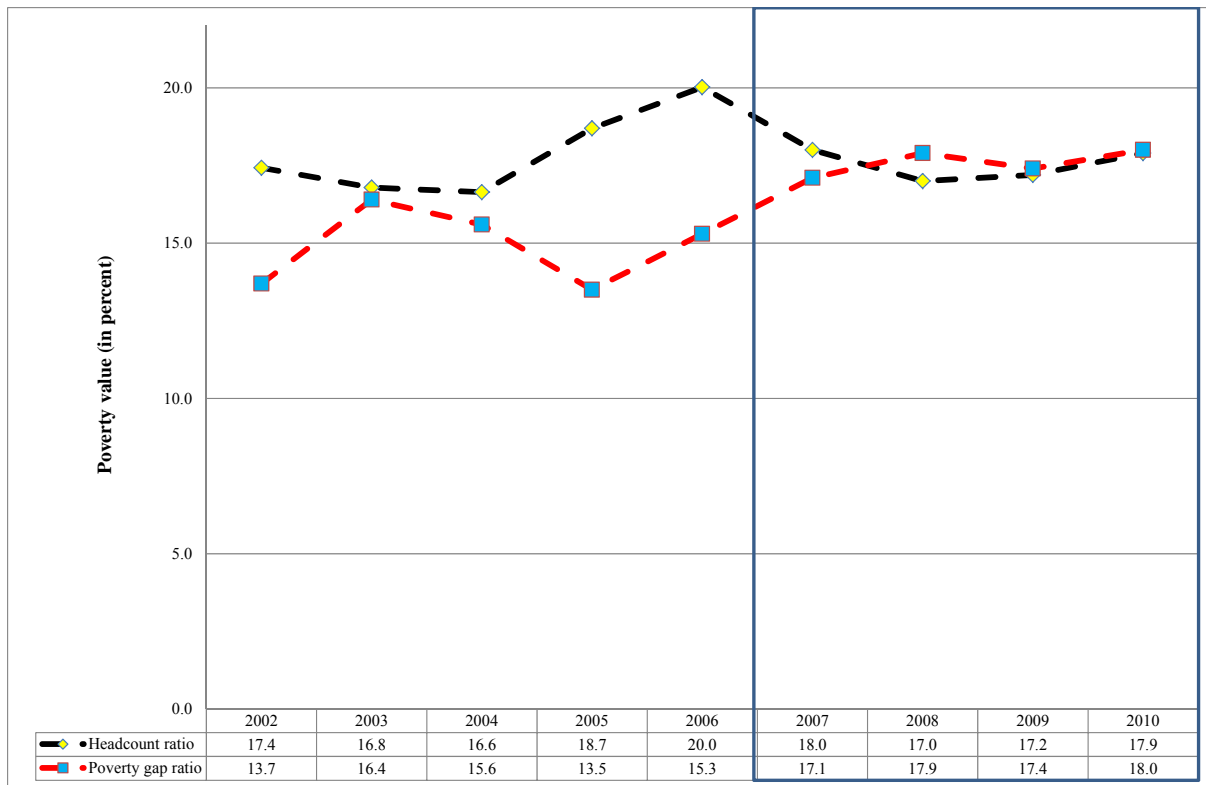|	2002	2003	2004	2005	2006	2007	2008	2009	2010
●Population shares in 2007	3.3	3.3	2.9	2.1	0.9	0.0	-0.9	-1.0	-1.8
●Relative income positions in 2007	-3.1	-3.6	-2.6	-3.1	-1.8	0.0	1.0	2.6	3.4
●Group-specific NCV's in 2007	-16.7	2.5	-7.8	23.0	-9.4	0.0	2.4	22.5	14.5

NCV: Normalized coefficient of variation

Source: Present author's own calculations on the basis of Table A.1 in the Appendix

4.2 Poverty

Using the headcount ratio in the field of (relative) poverty as a poverty indicator, a tendency towards diminishing poverty has occurred in Germany since 2006. Interestingly, this means that the relative number of the poor have decreased in front of and during the crisis in Germany (see Figure 4). In 2010 a small increase in relative poverty numbers emerged (but at a lower level of approximately -2 percentage points, exemplarily, compared with headcount ratio in 2006). Once more comparing the recession of 2003 with the recession of 2009, leads to an analogy insofar as both 2002-2004 and 2008-2010 poverty – in terms of poor persons – did not change very substantial so that German poverty – in a per-head perspective – was not affected very much by the recessions of 2003 and 2009. This coincides with the socio-political conclusions drawn in Section 4.1, there with respect to income inequality: It indicates that relatively large redistributive activities, connected with the German welfare state's system and amongst other things, seem to prevent an enlargement of the (relative) number of the poor during the several periods of both crises.

The picture is different with respect to the indicator poverty gap ratio which measures the intensity of poverty. The poverty gap ratio indicated an increase of poverty's intensity between 2005 and 2008 and a diminishment from 2008 to 2009, followed by a further rise in values from 2009 to 2010. But, on balance, during crisis 2007/2008-2010 the values of this alternative poverty indicator also did not vary considerably. Thus, both the relative number of the poor and poverty's intensity were not influenced very much by the crisis 2008-2010.

Figure 4: Headcount and poverty gap ratios in Germany 2002-2010 SOEP
(Buhmann et al. scale with θ = 0.8, base poverty line: 50 % of mean single-person
households' net income)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Headcount ratio	17.4	16.8	16.6	18.7	20.0	18.0	17.0	17.2	17.9
Poverty gap ratio	13.7	16.4	15.6	13.5	15.3	17.1	17.9	17.4	18.0

Headcount ratio: number of the poor divided by population's number; poverty gap ratio: one minus relation of poor's arithmetic mean and value of poverty line

Source: Present author's own calculations

4.3 Macroeconomic variables versus income inequality and poverty

As can be seen by Table 4, between 2002 and 2010 the correlations between macroeconomic variables and distributional indicators have been positive. For these years, this indicates that inflation, growth, and unemployment (statistically) operated in the same direction as inequality and poverty did. The correlation within the distributional indicators was very small and nearly zero so that higher (lower) degrees of inequality were not accompanied by aligned developments in the field of poverty, and, at least partly, this finding points to changes in other income regions than in the poverty region affecting entire income inequality, as was already discussed in Section 4.1.

Table 4: Pearson's correlation coefficients for the connections between income inequality
and poverty, and macroeconomic variables in Germany 2002-2010

Macroeconomic and inequality variables	2002-2010	
	Inequality (NCV)	Poverty (H)
Inflation	+0.2924	+0.1749
Growth	+0.3418	+0.5141
Unemployment	+0.2488	+0.3622
Inequality (NCV)	-	+0.0408

NCV: normalized coefficient of variation, H: headcount ratio

Sources: Present author's own calculations (based on SOEP data)

Additionally, Table 5 summarizes the developments of macroeconomic variables as well as of inequality and poverty indicators during the crises 2002-2004 and 2008-2010. For the macroeconomic variables, typical business-cycle movements occurred (quite expected). Moreover, in the field of inequality the developments of the different indicators were coherent between both crises: Up to the peak of each crisis, inequality increased, and afterwards it decreased. The picture concerning poverty was much obscurer. All one can conclude is that poverty did not change severely so that economic crises did not affect poverty conspicuously in Germany.

Table 5: Development of macroeconomic versus inequality and poverty variables
during the German crises 2002-2004 and 2008-2010

Variable	Crisis 2002-2004		Crisis 2008-2010	
	2002/03	2003/04	2008/09	2009/10
Inflation rate	↓ (-0.4 p.)	↑ (+0.8 p.)	↓ (-2.6 p.)	↑ (+1.0 p.)
Growth	↓ (-0.4 p.)	↑ (+1.6 p.)	↓ (-5.9 p.)	↑ (+8.7 p.)
Unemployment rate	↑ (+0.7 p.)	↑↓ (0.0 p.)	↑ (+0.3 p.)	↓ (-0.4 p.)
Inequality (NCV)	↓ (-5.6 p.)	↑ (+2.7 p.)	↓ (-4.1 p.)	↑ (+1.4 p.)
Inequality (MLD)	↓ (-0.2 p.)	↑↓ (0.0 p.)	↓ (-0.3 p.)	↑ (+0.4 p.)
Inequality (T)	↓ (-1.1 p.)	↑ (+0.3 p.)	↓ (-0.7 p.)	↑ (+0.6 p.)
Poverty (H)	↓ (-0.6 p.)	↓ (-0.2 p.)	↑ (+0.2 p.)	↑ (+0.7 p.)
Poverty (I)	↑ (+2.7 p.)	↓ (-0.8 p.)	↓ (-0.5 p.)	↑ (+0.6 p.)

NCV: normalized coefficient of variation, MLD: mean logarithmic deviation, T: Theil's entropy indicator, H: headcount ratio, I: poverty gap ratio (all indicators multiplied by 100 in order to obtain percent values); p.: percentage points

Sources: Present author's own calculations (based on Figures 1-3)

5. Stratification of the German income distribution 2002-2010

In this chapter, the analysis of the socio-demographic structures within several income regions in Germany in front of and during the crisis is realised in a cross-sectional perspective by processing binary logistical regressions as well as in a longitudinal perspective by computing transition matrices.

5.1 Binary logistical regressions

The descriptive findings of Chapter 4 are supplemented by a binary logistical regression's model. In Table A.2 in the Appendix it becomes evident that within that framework small households – defined as such with two persons at the maximum – have significant parameter values in all three regions with the expected negative algebraic sign in the low-income region and with positive signs in the middle- and in the high-income region (which was expected as well). Furthermore, the estimates presented in Table A.2 indicate significantly higher levels of well-being for German and for male household members as well as for persons living in western Germany. Furthermore, the estimates show (at most) significantly higher levels of well-being for married persons and for very qualified persons compared with the corresponding reference groups.

Contrasting old household members ("60 years and older") and young household members ("until 29 years") against the reference (dummy) group "30-59 years", reveals that young and older persons have higher likelihoods for being within the low-income region and lower likelihoods for being located within the middle- and within the high-income region.

Concerning the variable "unemployed" the parameter is strongly positive in the low-income region and strongly negative in the middle- and in the high-income region, indicating – on average – a relatively low well-being level for unemployed persons in Germany 2002-2010. In front of and at the peak of the economic crisis – i. e., between 2007 and 2009 – the parameter of unemployed persons for belonging to the low-income region increased slightly, and their parameters for belonging to the high-income region decreased by tendency. Thus, the well-being position of unemployed persons in Germany was reduced directly before and during the economic crisis weakly (afterwards the corresponding likelihoods fell as well in the low- as in the high-income region; see Figure 5). Again, in Germany economic crises seem to have certain but rather minor effects on the well-being position of crucial social groups like the unemployed.

Figure 5: Odd-ratios for unemployed persons within different income regions
                in Germany 2002-2010 SOEP
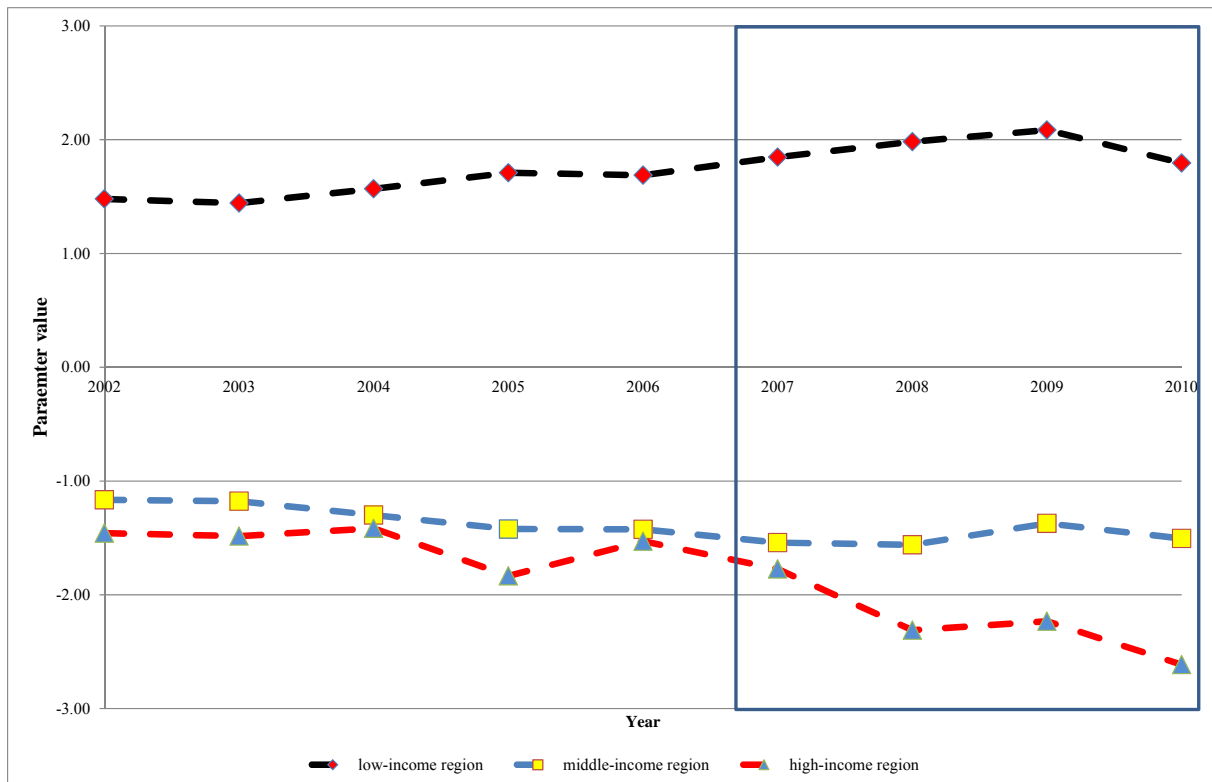
Source: Present author's own illustration based on estimates of Table A.2 in the Appendix

5.2 Transition matrices

Behind all cross-sectional findings presented hitherto the longitudinal perspective is concealed. However, the consideration of temporal transitions between the different income regions is instructive to cover income dynamics. Thus, in Table A.3 in the Appendix year-to-year transitions between 2002 and 2010 are reported.

In extension to the former differentiations and to investigate transitions in more detail, the bottom income region is split into "poverty region" (poverty line at 0.5 times mean of single-person households' net incomes and $\theta = 0.80$) and into "low-income region" (up to 0.7 times mean of single-person households' net incomes and $\theta = 0.75$), and the medium part of income distribution is divided into "middle-income region" (up to 1.5 times mean of single-person households' net incomes and $\theta = 0.70$) and into "wealthiness region" (up to twice mean of single-person households' net incomes and $\theta = 0.65$). The fifth class is "richness region" (twice and more than mean of single-person households' net incomes; $\theta = 0.60$).

As can be seen by Table A.3, there was only small dynamics in the sense of movements from bottom income regions towards upper income regions. For instance, between 2008 and 2009 only about 10 % of persons moved upwards from the poverty region into the middle-income region or higher, and from 2009 to 2010 this value still decreased to the amount of approximately 6 %. Another finding is the increasing share of stayers in the poverty region (by 5 percentage points) comparing the transitions 2007/08 and 2008/09 with each other (and subsequently the share of stayers remained approximately at this level from 2009 to 2010). This indicates a "hardening" within the poverty region during the crisis.

Especially the ups and downs out of and into the lower income regions appear interesting in our context. In this sense, Figure 6 contains ups and downs where those between 2007 and 2010 are particularly important. Only one striking development emerges, namely that of diminishments for the ups out of poverty. Hence, during the crisis an upwards movement of the members of the low-income classes became difficult which is in accordance with the finding of increased shares of stayers within the poverty region during the crisis.

Figure 6: Ups out of and downs into poverty and low-income region
                in Germany 2002/03-2009/10 SOEP
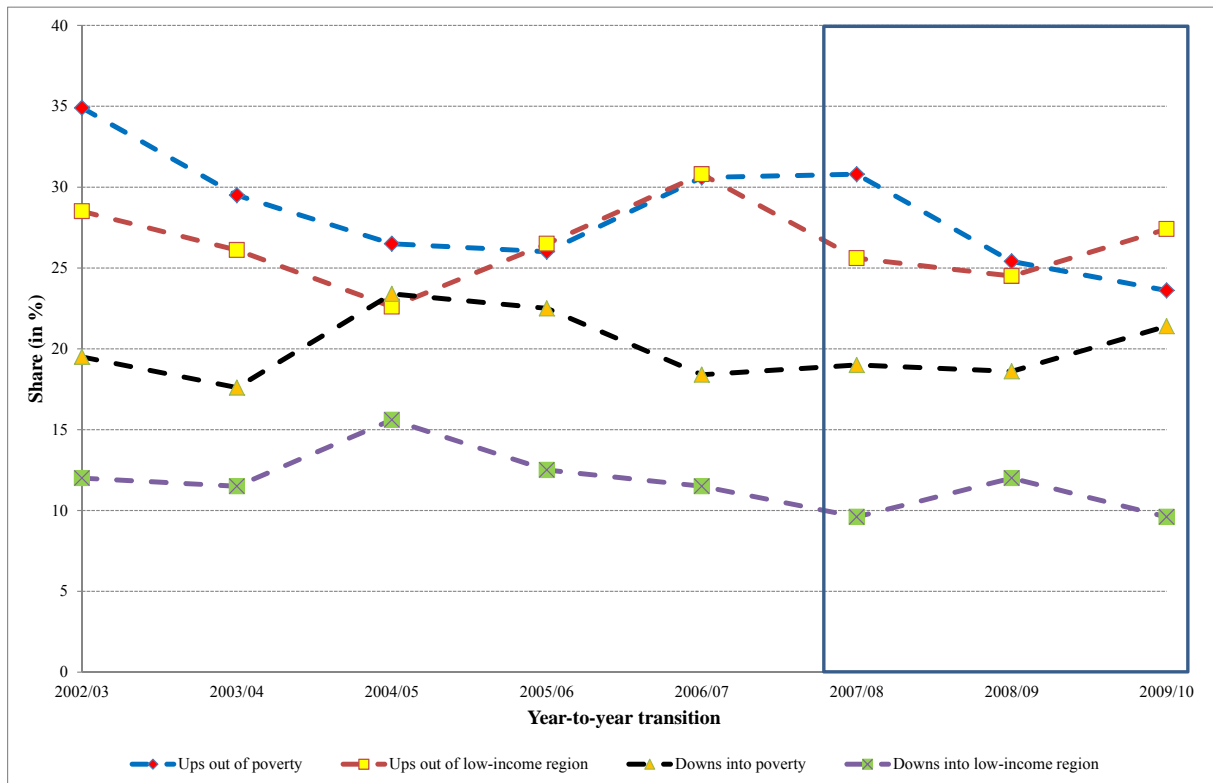
Source: Present author's own illustration on the basis of calculations of Table A.3 in the Appendix

6. Concluding remarks

The paper's main findings concerning crisis 2008-2010 in Germany are:

- Macroeconomic indicators showed that the German economy has handled the economic crisis at the end of the first decade of the 21st century relatively well. For instance, there was only a weak increase in the number of unemployed persons in Germany between 2008 and 2009 (despite a notable reduction of the real German gross domestic product).

- Inequality of (monthly) incomes decreased as well as income poverty (in a per-head perspective) did up to the peak of the crisis in 2009 (by tendency).

- The well-being position of unemployed persons became worsened, and the relative number of upwards movements out of lower income regions into higher well-being classes decreased; this indicates a "hardening" of the relatively bad well-being situation of the less privileged in the German society during the crisis.

Germany as a member of Esping-Andersen's conservative-corporatist welfare state regime is characterized by a kind of social policy which is, by tendency, designed to guarantee a high extent of income inequality and relatively low poverty rates (see, e. g., Eberharter 2008, p. 173, who has empirically compared German redistribution policy with the one in the United States). The latter became very obvious during the crisis of 2008-2010 since the German income distribution (monthly incomes) became more regular than before, especially – and analogous to the crisis of 2002-2004 – at the top of the crisis. Concerning the "new" crisis and besides fiscal programmes, this was, primarily, generated by benefit payments (especially as payments for short-time workers) and by income losses within the upper income regions.

Appendix

Table A.1: Fundamental inequality and poverty elements in Germany 2002-2010

Year	Age group								
	Until 9 years	10-19 years	20-29 years	30-39 years	40-49 years	50-59 years	60-69 years	70-79 years	80 years and older
Population shares:									
2002	0.085	0.108	0.107	0.157	0.149	0.123	0.135	0.097	0.038
2003	0.086	0.104	0.108	0.150	0.156	0.121	0.138	0.094	0.042
2004	0.084	0.108	0.110	0.141	0.158	0.123	0.141	0.093	0.043
2005	0.082	0.108	0.116	0.138	0.165	0.128	0.130	0.090	0.043
2006	0.083	0.102	0.121	0.131	0.168	0.134	0.126	0.091	0.044
2007	0.080	0.101	0.121	0.129	0.167	0.135	0.129	0.094	0.044
2008	0.079	0.098	0.119	0.128	0.169	0.138	0.126	0.097	0.045
2009	0.078	0.097	0.122	0.124	0.167	0.140	0.125	0.100	0.046
2010	0.075	0.094	0.121	0.125	0.165	0.145	0.121	0.106	0.048
Relative income positions:[a]									
2002	0.750	0.827	0.928	0.964	1.064	1.234	1.086	1.014	1.043
2003	0.750	0.833	0.913	0.972	1.043	1.233	1.110	1.031	0.993
2004	0.765	0.807	0.931	0.970	1.049	1.213	1.111	1.016	1.033
2005	0.756	0.792	0.928	0.988	1.036	1.212	1.123	1.027	1.018
2006	0.744	0.815	0.919	0.968	1.045	1.217	1.107	1.021	1.045
2007	0.762	0.821	0.922	0.997	1.037	1.190	1.106	0.995	1.050
2008	0.776	0.805	0.916	1.007	1.043	1.182	1.096	0.991	1.055
2009	0.778	0.822	0.924	1.025	1.069	1.141	1.083	0.986	1.010
2010	0.773	0.827	0.927	1.021	1.057	1.138	1.106	0.994	0.959
Group-specific normalized coefficients of variation:									
2002	0.223	0.411	0.238	0.214	0.268	0.329	0.321	0.291	0.223
2003	0.173	0.305	0.218	0.155	0.219	0.298	0.275	0.194	0.108
2004	0.183	0.233	0.179	0.162	0.359	0.336	0.293	0.166	0.182
2005	0.190	0.175	0.153	0.166	0.201	0.210	0.245	0.176	0.097
2006	0.196	0.215	0.254	0.178	0.281	0.303	0.389	0.207	0.137
2007	0.174	0.251	0.181	0.175	0.362	0.241	0.197	0.252	0.199
2008	0.184	0.207	0.153	0.172	0.228	0.325	0.304	0.155	0.225
2009	0.163	0.188	0.182	0.154	0.219	0.231	0.186	0.150	0.249
2010	0.170	0.217	0.186	0.179	0.204	0.247	0.223	0.224	0.134
Group-specific headcount ratios:									
2002	0.322	0.287	0.212	0.180	0.151	0.113	0.108	0.108	0.092
2003	0.310	0.258	0.246	0.166	0.150	0.106	0.094	0.092	0.106
2004	0.300	0.274	0.213	0.172	0.153	0.113	0.089	0.103	0.087
2005	0.338	0.308	0.241	0.186	0.174	0.127	0.095	0.119	0.106
2006	0.376	0.296	0.263	0.227	0.180	0.137	0.109	0.119	0.088
2007	0.325	0.293	0.225	0.188	0.166	0.129	0.097	0.115	0.098
2008	0.312	0.281	0.219	0.175	0.157	0.129	0.091	0.105	0.081
2009	0.303	0.283	0.242	0.156	0.148	0.137	0.102	0.102	0.108
2010	0.322	0.295	0.216	0.194	0.156	0.148	0.113	0.099	0.120

a) Group-specific mean equivalent household net income divided by overall mean equivalent household net income

Source: Present author's own calculations

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Table A.2: Binary logistical regression's parameters due to different income regions in Germany 2002-2010 (SOEP)
based on variable equivalence scales

Covariates (0/1 dummies) and statistical information	Low-income region (dependent variable: "being a member of this income region", 0/1 dummy)								
	2002	2003	2004	2005	2006	2007	2008	2009	2010
Absolute term	+0.979***	+0.922***	+1.034***	+1.301***	+1.296**	+1.142***	+1.082***	+1.218***	+1.145***
Living in western Germany	-0.497***	-0.495***	-0.511***	-0.595***	-0.539***	-0.564***	-0.563***	-0.574***	-0.623***
Male household member	-0.106***	-0.123***	-0.091***	-0.127***	-0.111***	-0.084***	-0.095***	-0.125***	-0.115***
German household member	-0.942***	-0.947***	-1.039***	-1.059***	-1.083***	-1.009***	-0.994***	-1.100***	-1.108***
Person living in a small household (not more than two persons)	-0.788***	-0.675***	-0.767***	-0.803***	-0.737***	-0.744***	-0.657***	-0.655***	-0.615***
Until 29 years	+0.361***	+0.442***	+0.449***	+0.401***	+0.419***	+0.444***	+0.402***	+0.429***	+0.440***
60 years and older	+0.286***	+0.184***	+0.170***	+0.173***	+0.169***	+0.214***	+0.235***	+0.242***	+0.214***
Unemployed household member[1]	+1.478***	+1.443***	+1.567***	+1.709****	+1.688***	+1.846***	+1.858***	+1.981***	+1.794**
Married person	+0.026	+0.026	+0.020	-0.049	-0.041	-0.014	-0.080**	-0.060*	-0.040
Non-qualified person[2]	+0.563***	+0.849***	+0.850***	+0.817***	+0.818***	+0.877***	+1.094***	+1.063***	+1.016***
Very qualified person[3]	-1.554***	-1.565***	-1.503***	-1.471***	-1.509***	-1.492***	-1.389***	-1.409***	-1.424***
Number of observations (dependent dummy = 1)	11,329 persons	10,523 persons	10,214 persons	10,351 persons	11,094 persons	9,996 persons	8,989 persons	9,597 persons	7,304 persons
Nagelkerke's coefficient of determination	0.174	0.178	0.191	0.203	0.197	0.194	0.178	0.187	0.180

(Table A.2 continued:)

Covariates (0/1 dummies) and statistical information	Middle-income region (dependent variable: "being a member of this income region", 0/1 dummy)								
	2002	2003	2004	2005	2006	2007	2008	2009	2010
Absolute term	-0.588***	-0.538***	-0.621***	-0.884***	-0.907***	-0.755***	-0.709***	-0.836***	-0.784***
Living in western Germany	+0.175***	+0.174***	+0.165***	+0.278***	+0.229***	+0.240***	+0.243***	+0.261***	+0.302***
Male household member	+0.058**	+0.084***	+0.059**	+0.100***	+0.080***	+0.060**	+0.053**	+0.079***	+0.083***
German household member	+0.730***	+0.741***	+0.847***	+0.840***	+0.908***	+0.812***	+0.822***	+0.944***	+0.938**
Person living in a small household (not more than two persons)	+0.341***	+0.306***	+0.389***	+0.434***	+0.405***	+0.387***	+0.312***	+0.315***	+0.347***
Until 29 years	-0.360***	-0.437***	-0.469***	-0.400***	-0.442***	-0.444***	-0.391***	-0.438***	-0.441***
60 years and older	-0.083**	-0.042	-0.061	-0.072*	-0.057	-0.090**	-0.106***	-0.107***	-0.123***
Unemployed household member[1]	-1.166***	-1.178***	-1.299***	-1.422***	-1.424***	-1.542***	-1.551***	-1.689***	-1.505**
Married person	-0.086***	-0.063	-0.078**	+0.008	-0.042	-0.034	+0.022	-0.005	-0.011
Non-qualified person[2]	-0.394***	-0.718***	-0.719***	-0.695***	-0.640***	-0.722***	-0.929***	-0.909***	-0.847***
Very qualified person[3]	+0.384***	+0.412***	+0.282***	+0.382***	+0.435***	+0.376***	+0.296***	+0.351***	+0.322***
Number of observations (dependent dummy = 1)	16,261 persons	15,509 persons	15,048 persons	14,020 persons	14,703 persons	14,132 persons	13,580 persons	14,301 persons	12,166 persons
Nagelkerke's coefficient of determination	0.062	0.073	0.081	0.092	0.092	0.085	0.074	0.085	0.079

(Table A.2 continued:)

Covariates (0/1 dummies) and statistical information	High-income region (dependent variable: "being a member of this income region", 0/1 dummy)								
	2002	2003	2004	2005	2006	2007	2008	2009	2010
Absolute term	-5.352***	-5.744***	-5.562***	-5.876***	-5.550***	-5.349***	-5.239***	-5.470***	-5.167***
Living in western Germany	+1.187***	+1.378***	+1.419***	+1.299***	+1.323***	+1.205***	+1.199***	+1.273***	+1.203***
Male household member	+0.068	+0.039	-0.001	-0.033	+0.006	-0.015	+0.058	+0.059	+0.003
German household member	+0.821***	+0.908***	+0.665***	+1.041***	+0.635***	+0.703***	+0.533***	+0.477***	+0.485***
Person living in a small household (not more than two persons)	+1.161***	+1.121***	+1.048***	+1.147***	+1.034***	+1.037***	+1.051***	+1.129***	+0.782***
Until 29 years	-0.121	-0.085	-0.020	-0.169*	-0.047	-0.097	-0.219**	-0.118	-0.099
60 years and older	-0.461***	-0.384***	-0.269***	-0.283***	-0.323***	-0.311***	-0.329***	-0.374***	-0.224***
Unemployed household member[1]	-1.458***	-1.484***	-1.416***	-1.834***	-1.530***	-1.772***	-2.311***	-2.348***	-2.614***
Married person	+0.314***	+0.260***	+0.319***	+0.248***	+0.401***	+0.278***	+0.266***	+0.332***	+0.248***
Non-qualified person[2]	-2.033***	-1.012***	-0.862**	-0.903**	-1.505***	-0.927**	-0.996**	-1.027**	-1.311**
Very qualified person[3]	+1.624***	+1.734***	+1.853***	+1.784***	+1.748***	+1.728***	+1.744***	+1.801***	+1.798***
Number of observations (dependent dummy = 1)	2,131 persons	1,755 persons	1,802 persons	1,600 persons	1,718 persons	1,744 persons	1,612 persons	1,571 persons	1,310 persons
Nagelkerke's coefficient of determination	0.184	0.188	0.199	0.200	0.186	0.181	0.189	0.195	0.176

*: significant at 10-percent level; **: significant at 5-percent level; ***: significant at 1-percent level

[1] unemployed and non-working, [2] no school-leaving qualification achieved, [3] university degree (or the like) achieved

Source: Present author's own calculations

Table A.3: Transition matrices in Germany 2002/03-2008/09 SOEP based on
variable equivalence scales (monthly equivalent household net incomes)

Well-being position in period t	Well-being position in period t+1				
	PR	LIR	MIR	WR	RR
2002/2003:					
PR	65.2 %	24.2 %	10.0 %	0.2 %	0.5 %
LIR	15.2 %	56.4 %	28.1 %	0.2 %	0.2 %
MIR	3.0 %	9.4 %	82.0 %	4.1 %	1.5 %
WR	0.6 %	1.7 %	37.0 %	47.1 %	13.7 %
RR	0.7 %	0.9 %	11.7 %	19.3 %	67.3 %
2003/2004:					
PR	70.6 %	20.3 %	9.0 %	0.1 %	0.1 %
LIR	14.5 %	59.4 %	25.6 %	0.3 %	0.2 %
MIR	2.2 %	10.2 %	82.2 %	4.3 %	1.1 %
WR	0.1 %	0.9 %	34.7 %	46.4 %	17.9 %
RR	0.8 %	0.4 %	15.6 %	18.5 %	64.8 %
2004/2005:					
PR	73.6 %	20.5 %	5.7 %	0.1 %	0.2 %
LIR	18.1 %	59.3 %	22.2 %	0.3 %	0.1 %
MIR	3.2 %	12.1 %	80.0 %	3.6 %	1.2 %
WR	0.8 %	0.8 %	38.1 %	47.1 %	13.2 %
RR	1.3 %	2.7 %	13.9 %	17.9 %	64.2 %
2005/2006:					
PR	74.1 %	18.8 %	5.8 %	0.6 %	0.8 %
LIR	18.6 %	55.0 %	25.6 %	0.6 %	0.3 %
MIR	3.0 %	9.0 %	82.9 %	4.0 %	1.1 %
WR	0.4 %	2.1 %	30.6 %	51.1 %	15.9 %
RR	0.5 %	1.4 %	16.0 %	16.0 %	66.1 %
2006/2007:					
PR	69.5 %	21.5 %	8.6 %	0.3 %	0.2 %
LIR	12.5 %	56.8 %	30.2 %	0.4 %	0.2 %
MIR	2.3 %	8.6 %	84.6 %	3.6 %	1.0 %
WR	0.9 %	1.5 %	31.7 %	50.6 %	15.3 %
RR	2.7 %	1.4 %	12.5 %	15.7 %	67.6 %
2007/2008:					
PR	69.2 %	22.8 %	7.8 %	0.0 %	0.2 %
LIR	15.4 %	59.0 %	25.3 %	0.2 %	0.1 %
MIR	2.3 %	8.1 %	85.0 %	3.8 %	0.8 %
WR	0.3 %	1.4 %	28.6 %	51.6 %	18.1 %
RR	1.0 %	0.1 %	11.5 %	15.6 %	71.8 %
2008/2009:					
PR	74.6 %	15.5 %	9.1 %	0.5 %	0.3 %
LIR	15.7 %	59.7 %	24.2 %	0.3 %	0.0 %
MIR	2.3 %	9.8 %	82.9 %	4.1 %	1.0 %
WR	0.2 %	1.7 %	32.8 %	51.5 %	13.8 %
RR	0.4 %	0.5 %	10.6 %	20.1 %	68.3 %
2009/10					
PR	76.4 %	17.5 %	5.6 %	0.3 %	0.2 %
LIR	18.3 %	54.4 %	26.8 %	0.4 %	0.2 %
MIR	2.6 %	8.1 %	83.2 %	4.9 %	1.2 %
WR	0.5 %	1.0 %	33.3 %	52.2 %	13.1 %
RR	0.0 %	0.5 %	14.3 %	14.7 %	70.5 %

t = 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009; t+1 = 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010; PR: poverty region, LIR: low-income region, MIR: middle-income region, WR: wealthiness region, RR: richness region

Source: Present author's own calculations

References

Aaberge, R., A. Björklund, M. Jäntti, P. J. Pedersen, N. Smith, and T. Wennemo (2000): Unemployment Shocks and Income Distribution: How did the Nordic Countries Fare During their Crises. *Scandinavian Journal of Economics*, 102, pp. 77-99.

Baldacci, E., L. de Mello, and G. Inchauste (2002): *Financial Crises, Poverty, and Income Distribution*, Working Paper 02/4, International Monetary Fund, Washington (D. C.).

Bourguignon, F., M. Bussolo, and L. Pereira da Silva (eds.; 2008): *The Impact of Macroeconomic Policies on Poverty and Income Distribution*, Washington (D. C.).

Brenke, K., U. Rinne, and K. F. Zimmermann (2011): *Short-Time Work: The German Answer to the Great Recession*, IZA Discussion paper No. 5780, Bonn.

Buhmann, B., et al. (1988): Income, Well-Being, Poverty, and Equivalence Scales: Sensitivity Estimates Across Ten Countries Using the LIS Database. *Review of Income and Wealth*, 34, pp. 115-142.

Eberharter, V. V. (2008): Intergenerational Income Inequality, and Dynastic Poverty Persistence – Germany and the United States Compared. In: Bishop, J. and B. Zheng (eds.): *Research on Economic Inequality*, Volume 16, Amsterdam and San Diego, pp. 157-175.

Esping-Andersen, G. (1990): *The Three Worlds of Welfare Capitalism*, Cambridge and Oxford.

European Foundation for the Improvement of Living and Working Conditions (Eurofound; 2010): *Germany: Short-Time Working Allowance*, Dublin.

Faik, J. (2012): Variable Equivalence Scales and Trends in German Income Inequality. In: Bishop, J. A., and R. Salas (eds.): *Research on Economic Inequality*, Volume 20, Amsterdam and San Diego (forthcoming).

Habib, B., A. Narayan, S. Olivieri, and C. Sanchez-Paramo (2010): *The Impact of Financial Crisis on Poverty and Income Distribution: Insights from Simulations in Selected Countries*, VOX, 19th of April 2010 [http://voxeu.org/index.php?q=node/4905; access at 2012-02-18].

Matsaganis, M. (2011): The Welfare State and the Crisis: The Case of Greece. *Journal of European Social Policy*, 21, pp. 501-512.

Matsaganis, M., and C. Leventi (2011): *Inequality, Poverty and the Crisis in Greece*, ETUI Policy Brief. European Economic and Employment Policy, Issue 5/2011.

McCord, A., and M. Vandemoortele (2009): *The Global Financial Crisis: Poverty and Social Protection. Evidence from 10 Country Case Studies*, odi (Overseas Development Institute), Briefing Paper 51, London.

OECD (2011): *Economic Outlook*, Paris.

Townsend, P. (1979): *Poverty in the United Kingdom. A Survey of Household Resources and Standards of Living*, London.

United Nations Economic Commission for Europe (UN; 2011): *Canberra Group Handbook on Household Income Statistics*, 2nd edition, Geneva.

Wagner, G. G., J. R. Frick, and J. Schupp (2007): The German Socio-Economic Panel Study (SOEP) – Scope, Evolution and Enhancements. *Schmollers Jahrbuch*, 127, pp. 139-169.