

## Income Inequality and Risk of Poverty

corrected version



**REPORT** by Jan Goebel, Markus M. Grabka and Carsten Schröder

Income Inequality Remains High in Germany—  
Young Singles and Career Entrants  
Increasingly At Risk of Poverty

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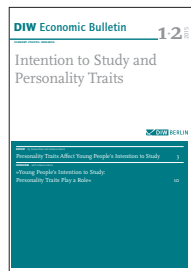
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## NEXT WEEK IN DIW ECONOMIC BULLETIN

# DIW Berlin's Summer Economic Forecast

# Income Inequality Remains High in Germany—Young Singles and Career Entrants Increasingly At Risk of Poverty

By Markus M. Grabka, Jan Goebel and Carsten Schröder

According to calculations based on the Socio-Economic Panel (SOEP) study, average disposable household income rose by five percent in real terms between 2000 and 2012. Only the highest earners have benefited from this development. While real income in the top ten percent rose by more than 15 percent, the earnings of the middle income groups stagnated, and even fell in the lower income groups. As a result, the inequality of disposable household income in Germany climbed sharply up until 2005 and has remained at the same high level ever since.

At the same time, the risk of poverty in Germany increased significantly between 2000 and 2009, and is currently at approximately 14 percent. The risk of poverty has risen significantly for young singles (up to the age of 35) in particular. Their at-risk-of-poverty rate increased by 12 percentage points since 2000 to just under 40 percent in 2012. Even being in gainful employment does not necessarily protect them from poverty: in particular, young adults (aged 25 to 35) who are just starting out in their careers are increasingly at risk of poverty.

Not only are income inequality and poverty socio-politically relevant but they are also economically relevant. A recent report by the OECD shows that increasing income inequality may affect a country's economic development. According to the OECD simulations, GDP in OECD countries could have been almost five percentage points higher from 1970 to 2010 if there had not been such a considerable rise in income equality observed over the same period.<sup>1</sup>

The present study updates previous studies by DIW Berlin on personal income inequality in Germany up to 2012 and extends them to include analyses of relative income poverty and material deprivation (see Box 1). These analyses of personal income distribution is complemented by a functional distributional analysis of income on the production factors (labor and capital).<sup>2</sup> The empirical basis for the personal distribution analysis is data from the longitudinal Socio-Economic Panel (SOEP) study collected by DIW Berlin in cooperation with the fieldwork organization TNS Infratest Sozialforschung.<sup>3</sup> The annual repetition of the study allows the estimation of consistent time series on the development of personal income distribution.<sup>4</sup> The functional income analy-

<sup>1</sup> OECD, *In It Together: Why Less Inequality Benefits All*, (Paris: OECD Publishing, 2015), <http://dx.doi.org/10.1787/9789264235120-en>

<sup>2</sup> See M. M. Grabka and J. Goebel, "Reduction in Income Inequality Faltering," *DIW Economic Bulletin*, no. 1 (2014).

<sup>3</sup> SOEP is an annual representative longitudinal survey of individual households conducted in West Germany since 1984 and also in eastern Germany since 1990, see G. G. Wagner, J. Goebel, P. Krause, R. Pischner, and I. Sieber, "Das Sozio-oekonomische Panel (SOEP): Multidisziplinäres Haushaltspanel und Kohortenstudie für Deutschland – Eine Einführung (für neue Datennutzer) mit einem Ausblick (für erfahrene Anwender)," *AStA Wirtschafts- und Sozialstatistisches Archiv* 2 (4) (2008): 301–328.

<sup>4</sup> In accordance with the first governmental Report on Poverty and Wealth (Federal Ministry of Labour and Social Affairs *Lebenslagen in Deutschland* (Life Situations in Germany) (2013) and a report by the Advisory Council assessing overall economic development (last annual report for 2014/2015: *Mehr Vertrauen in Marktprozesse* (More Confidence in Market Processes)) the present report indicates the respective income year. In the SOEP, annual incomes are retrospectively collected for the preceding calendar year but weighted according to the population structure on the survey date. Hence, the data for 2012 presented here were recorded in the 2013 survey wave.

sis is based on data from the German Federal Statistical Office's national accounts.

### Earnings Grow at Slower Rate than Corporate and Investment Incomes

The development of the two core production factors, labor (compensation of employees) and capital (corporate earnings and investment income), are analyzed in the functional income distribution. From 2000 to 2007, compensation of employees declined in real terms by just over five percent, while corporate earnings and investment income increased by more than 40 percent over the same period (see Figure 1). In the wake of the financial crisis of 2008/2009, corporate earnings and investment income fell markedly, however, and were still 13 percentage points below the 2007 level in 2014. Compensation of employees has developed positively, particularly since the end of the financial crisis and, in 2014, it was 6.6 percentage points above its 2000 level. Overall, real investment and corporate income has risen by about 30 percentage points since 2000—and is therefore four times higher than compensation of employees in the same period.

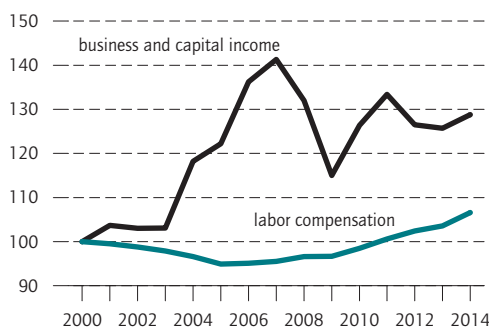
Another key indicator of the functional distribution analysis is the wage ratio.<sup>5</sup> This shows the ratio of employee compensation to total national income. It reached its

<sup>5</sup> The figure shown here is the uncorrected wage ratio. The corrected wage ratio takes into account changes in the employment structure.

Figure 1

#### Labour Compensation and Business and Capital Income

Index 2000 = 100



Source: Federal statistical office 2015, calculations of DIW Berlin  
<https://www.destatis.de/DE/ZahlenFakten/Indikatoren/LangeReihen/VolkswirtschaftlicheGesamtrechnungen/Irvg04.html>

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#### Box 1

#### Selected Alternative Concepts for Measuring Poverty

The concept of a relative poverty risk threshold (currently 60 percent of median income) has been criticized by various parties.<sup>1</sup> One major criticism is that the same percentage change in all income has no effect on the risk of poverty: for example, if the income of all households were to double, the risk of poverty would remain unaffected.

##### 1. At-Risk-Of-Poverty Rate with Fixed Poverty Risk Threshold

Some experts suggest<sup>2</sup> continuing to determine the risk of poverty threshold in a given year relatively but to adjust for inflation in subsequent years. The idea behind this approach is that the shopping cart, which corresponds to the risk of poverty threshold, remains unchanged. In this approach, if the real incomes of the lower income groups rise, relative poverty falls. If a fixed poverty risk threshold is used,<sup>3</sup> the risk of poverty in the mid-2000s would have been a good one percentage point higher and it has only decreased slightly since then (see figure).<sup>4</sup> In 2012, the risk of poverty with a fixed poverty threshold would have been approximately 0.6 percentage points lower than without a fixed poverty threshold. This is because the real level of income has increased only minimally in the lower income groups over that period.<sup>5</sup>

##### 2. Material Deprivation

The relative poverty concept has been repeatedly criticized because the everyday understanding of poverty corresponds more to a concept of absolute requirement. In recent years, therefore, an alternative poverty concept has gained ground, in particular as part of European social reporting, which attempts to measure the material deprivation of the population.<sup>6</sup>

<sup>1</sup> See Hans-Werner Sinn, "Der bedarfsgewichtete Käse und die neue Armut," *ifo Schnelldienst* 10 (2008): 14–16.

<sup>2</sup> The at-risk-of-poverty rate anchored at a fixed moment in time is one of Eurostat's standard indicators to describe poverty and social exclusion in the EU.

<sup>3</sup> The poverty risk threshold from 2000 is used here.

<sup>4</sup> The increase in poverty risk with a fixed threshold value is explained by the fact that the median, used as a reference figure, fell in the mid-2000s (see Figure 3).

<sup>5</sup> This was accompanied by a deviation in income, as shown in Figure 4, according to which the real income of the majority of the population has stagnated or even fallen since 2000.

<sup>6</sup> See also Silvia Deckl, "Armut und soziale Ausgrenzung in Deutschland und der Europäischen Union," *Wirtschaft und Statistik* 12 (2013): 893–906

Table

**Single Indicators for the Measurement of Material Deprivation<sup>1</sup>**

In Percent

	Cannot meet unexpected financial expenses	Cannot afford a week's holiday away from home	Cannot afford new furniture	Cannot afford inviting friends for dinner at least once a month	Cannot afford a car	house is not in good condition	no good residential area	Cannot afford a warm meal at least once in two days	Cannot afford a color TV	Share of materially deprived persons	For information only: Unable to save money
2001	17.2	18.7	16.8	8.9	6.3	4.3	3.2	1.3	0.2	12.9	36
2003	25.1	23.9	21.2	11.1	6.6	5.5	3.4	1.5	0.2	17.1	41
2005	27.5	26.6	24.5	12.3	7.5	5.4	3.7	2.3	0.2	19.8	40
2007	29.7	28.3	26.2	13.2	7.7	4.8	3.3	2.2	0.3	21.0	41
2011	23.9	22.0	20.7	11.2	5.7	4	2.6	1.4	0.2	15.9	36
2013	24.8	22.4	19.4	10.9	6.8	4.5	2.5	1.2	0.2	16.1	38

<sup>1</sup> Persons living in private households.

Source: SOEPv30, calculations of DIW Berlin.

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According to the convention of European Social Reporting, material deprivation occurs when three of nine everyday goods considered to be necessities cannot be purchased for financial reasons (see table).<sup>7</sup>

This was the case for 16 percent of all households in 2013. Between 2000 and 2007, material deprivation increased significantly in Germany and has only recently begun declining again. The long-term trend of the at-risk-of-poverty rate is therefore similar when using either concept.

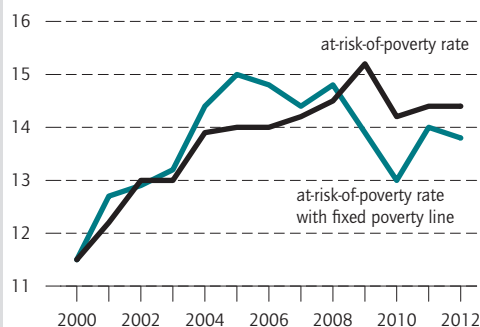
and Silvia Deckl, "Einkommen, Armut und Lebensbedingungen in Deutschland und der Europäischen Union," *Wirtschaft und Statistik* 3 (2013): 212–227. The content of some items used in the SOEP differs from that of the Federal Statistical Office because in the SOEP individuals did not ask about the financial problem of being able to heat their apartments adequately, or the lack of a washing machine or a telephone.

**7** One major problem with the concept of material deprivation is selecting items to be surveyed and their weighting. Ultimately, these are normative decisions, whether, for example, a television set can be regarded as a necessary everyday object and whether it has the same importance as, for instance, being able to afford a hot meal. Non-material resources such as an adequate level of education are not included in the concept.

Figure

**At-Risk-Of-Poverty Rate with a Fixed Poverty Line<sup>1</sup>**

In Percent



<sup>1</sup> Persons living in private households; equivalized annual incomes surveyed the following year, equivalized with the modified OECD-scales; share of persons with less than 60% of median net household income

Source: SOEPv30, calculations of DIW Berlin

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highest level for the period under observation here (2000 to 2012) in 2000 at 72.1 percent. As a result of wage restraints in the 2000s, it had fallen to below 64 percent by 2007.<sup>6</sup> Since then, the number of employed individuals has increased considerably and consequently—apart from during the financial crisis—the wage ratio stabilized again somewhat in 2014 at 68.1 percent.

The information content for the personal distribution analysis of developments in the aforementioned components (compensation of employees, corporate earnings and investment income, and wage ratio) is, however, limited. This is partly because households generate income from paid employment, entrepreneurial activities, capital investments, and government transfers. Households are also taxed differently on the various types of income (including income tax), so they only receive part of that income which, in turn, depends on the individual average tax rate. Furthermore, the shares of the various income types will depend on the level of household income. For instance, the share of transfer income in the lower band of the income distribution is considerably higher than in the upper band. The reverse applies, for example, to investment income or even to the tax and social security contributions of the individual household groups. Therefore, the findings of the personal income distribution are based on the SOEP micro data.

### High Incomes Outperform Low Incomes

The average needs-weighted<sup>7</sup> and inflation-adjusted market income<sup>8</sup> of individuals in households from 2000 to 2005 declined slightly (see Figure 2), which can be explained by the particularly high unemployment in Germany throughout this period (see Box 2 for a definition and measurement of income). Since then, both employment and real wages<sup>9</sup> have increased considerably contributed to a turnaround in personal income growth. From 2005 to 2012, the market incomes of households rose markedly by 7.5 percent. Overall, average market income has risen in real terms by around 1,000 euros since 2000 to 25,000 euros in 2012.

<sup>6</sup> Karl Brenke and Markus M. Grabka, "Schwache Lohnentwicklung im letzten Jahrzehnt," *DIW Wochenbericht*, no. 45 (2011): 3–15.

<sup>7</sup> See also the term "equivalent income" in the DIW glossary (in German only), [http://www.diw.de/de/diw\\_01.c.411605.de/presse\\_glossar/diw\\_glossar/aequivalenzeinkommen.html](http://www.diw.de/de/diw_01.c.411605.de/presse_glossar/diw_glossar/aequivalenzeinkommen.html)

<sup>8</sup> Market incomes are the sum of capital and earned income, including private transfers and private pensions.

<sup>9</sup> The real wage index shows an increase between 2007 and 2013 of 3.4 percentage points. This was preceded from the mid-1990s onwards by a long period of stagnating or even declining real wages (Federal Statistical Office, *Verdienste und Arbeitskosten*, 4. Vierteljahr 2014 (Fourth Quarter of 2014) (2015).

#### Box 2

#### Definitions, Methods, and Assumptions for Measuring Income

The analyses presented in this report are based on data from the longitudinal household survey the Socio-Economic Panel (SOEP) study and primarily based on annual incomes. In the survey year ( $t$ ), all the income components affecting a surveyed household as a whole, and all the individual gross incomes of the current members of the surveyed household are added together (market income from the sum of capital income and earned income, including private transfer payments and private pensions), all of these referring to the previous calendar year ( $t-1$ ). In addition, income from statutory pensions as well as social transfer payments (income support, housing assistance, child benefits, unemployment benefits, and others) are taken into account, and finally, annual net incomes are calculated employing a simulation of taxes and social security contributions—including one-off special payments such as a 13th or 14th month's salary for a given year, a Christmas bonus, and a vacation bonus.

The calculation of the annual burden of income taxes and social security contributions is based on a micro-simulation model<sup>1</sup> which generates a tax assessment incorporating all types of income in accordance with the Income Tax Act (*Einkommensteuergesetz, EStG*) as well as tax exemptions, income-related expenses, and extraordinary expenses. Since this model cannot simulate all the complexity of German tax law because of its numerous special provisions, income inequality measured in the SOEP is assumed to be underestimated.

Following the international literature,<sup>2</sup> fictitious (net) income components from owner-occupied housing (imputed rent) are added to income. In addition, non-monetary income components from subsidized rental housing (government-subsidized housing, housing with rents reduced by private owners or employers, households that do not pay rent) are taken into account in the following—as required by the EU Commission for EU-wide income distribution calculations based on EU-SILC as well.

<sup>1</sup> See J. Schwarze, "Simulating German income and social security tax payments using the GSOEP. Cross-national studies in aging," Program project paper no. 19 (Syracuse University, US, 1995).

<sup>2</sup> See J. R. Frick, J. Goebel, and M. M. Grabka, "Assessing the distributional impact of "imputed rent" and "non-cash employee income" in micro-data," in European Communities, ed., *Comparative EU statistics on Income and Living Conditions: Issues and Challenges*. Proceedings of the EU-SILC Conference, Helsinki, November 6–8, 2006, EUROSTAT 2006: 116–142.

The income situations of households of different sizes and compositions are made comparable by converting a household's entire income into equivalent incomes (per capita incomes modified according to needs) in accordance with international standards. Household incomes are thereby converted employing a scale proposed by the Organisation for Economic Co-operation and Development (OECD) and generally accepted in Europe. The calculated equivalent income is allocated to each household member on the assumption that all household members benefit from the joint income equally. The head of household is given a needs weighting of 1; additional adults each have a weighting of 0.5, and children up to 14 years of age weightings of 0.3.<sup>3</sup> In other words, cost degression is assumed in larger households. That means, for example, that household income for a four-person household (parents, a 16-year-old, and a 13-year-old) is not divided by four as is the case in a per-capita calculation ( $= 1 + 1 + 1 + 1$ ), but by 2.3 ( $= 1 + 0.5 + 0.5 + 0.3$ ).

In all population surveys, a particular challenge is how to take proper account of missing values for individual people surveyed, especially concerning questions considered sensitive, such as those about income. The incidence of missing values is often selective, with households with incomes far above or below the average refusing to respond.

In the SOEP data analyzed here, missing values are replaced using an elaborate imputation procedure that is both cross-sectional and longitudinal.<sup>4</sup> This also applies to missing values for individual household members refusing to answer any questions in households otherwise willing to participate in the survey. In these cases, a multi-stage statistical procedure is applied to six individual gross income components (earned income, pensions and transfer payments in case of unemployment, vocational training/tertiary-level study, maternity benefits/child-raising allowance/parental leave benefits, and private transfer payments).<sup>5</sup> For each new data collection, all missing values are always imputed again retrospectively because new information from the surveys can be used to

impute missing data from the previous year. This can result in changes to earlier evaluations. As a rule, however, these changes are minor.

In order to avoid methods-based effects in the time series of calculated indicators, the first survey wave of the individual SOEP samples was excluded from the calculations. Studies show that there are more changes in response behavior which cannot be attributed to differences in willingness to participate in the survey.<sup>6</sup>

After taking weighting factors into account, the SOEP micro-data on which these analyses are based (version v30 based on the 30th survey wave in 2013) show a representative picture of the population in households and thus permit inferences about the entire population. The weighting factors allow for differences in the sampling designs of the various SOEP samples as well as in the respondents' participation behavior. Populations living in institutions (for example, in retirement homes) are generally not taken into account.

Besides updates in the context of adjusted imputation of missing values for income in the previous year, a targeted revision of weighting factors was carried out. In order to increase compatibility with official statistics, these factors are adjusted to currently available framework data from the official microcensus. This is the first time new information about population structure from the 2011 census will be included in the 2013 survey year. These data were first adjusted for the SOEP in the 2013 survey year as there is still no revised information from the German Federal Statistical Office for previous years.

Further revisions are expected in the upcoming data version SOEPv31, first because revised framework data from the 2010 to 2012 microcensuses will then be available and, second, a large additional SOEP sample of Families in Germany (FiD) will then be retrospectively integrated into user-friendly processed data structures. This also requires a fundamental revision of the weighting variables from 2010—also differentiating according to the migrants' year of immigration.

<sup>3</sup> See B. Buhmann, L. Rainwater, G. Schmaus, and T. Smeeding, "Equivalence Scales, Well-Being, Inequality and Poverty," *Review of Income and Wealth* 34 (1998): 115–142.

<sup>4</sup> J. R. Frick and M. M. Grabka, "Item Non-response on Income Questions in Panel Surveys: Incidence, Imputation and the Impact on Inequality and Mobility," *Allgemeines Statistisches Archiv* 89 (1) (2005): 49–61.

<sup>5</sup> J. R. Frick, M. M. Grabka, and O. Groh-Samberg, "Dealing with incomplete household panel data in inequality research," *Sociological Methods & Research* 41 (1) (2012): 89–123.

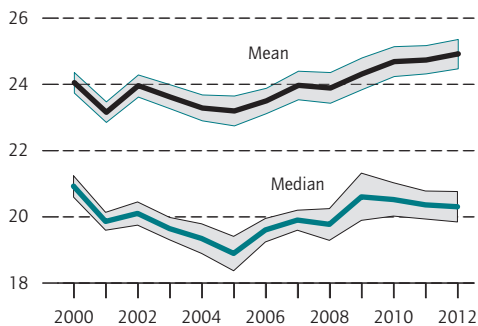
<sup>6</sup> J. R. Frick, J. Goebel, E. Schechtman, G. G. Wagner, and S. Yitzhaki, "Using Analysis of Gini (ANOGI) for Detecting Whether Two Subsamples Represent the Same Universe. The German Socio-Economic Panel Study (SOEP) Experience," *Sociological Methods & Research* 34 (4) (2006): 427–468, doi: 10.1177/0049124105283109.



Figure 2

**Real Household Market Income<sup>1</sup>**

In 1,000 Euros



1 Persons living in private households; equivalized annual income surveyed the following year; real incomes in prices of 2010, market household income including a fictitious employer's contributions for civil servants; Lower/upper bound indicate a 95-percent confidence band.

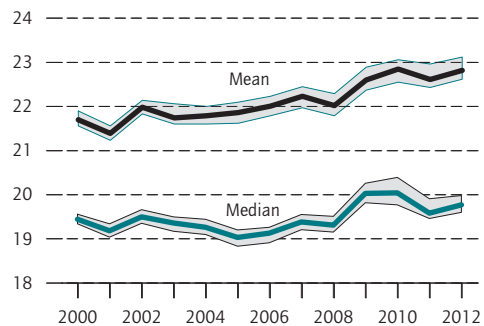
Source: SOEPv30, calculations of DIW Berlin.

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Figure 3

**Real Household Net Income<sup>1</sup>**

In 1,000 Euros



1 Persons living in private households; real incomes in prices of 2010, equivalized annual incomes surveyed the following year, equivalized with the modified OECD-scale; Lower/upper bound indicate a 95-percent confidence band.

Source: SOEPv30, calculations of DIW Berlin.

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However, this positive trend does not apply to median real market income.<sup>10</sup> The median household income declined between 2000 and 2005 from approximately 21,000 euros per annum to around 18,900 euros per annum. Despite a subsequent increase, this figure was only 20,300 euros in 2012, still below its level at the turn of the millennium.

The development of disposable household income has been more positive overall (see Figure 3).<sup>11</sup> Measured against the arithmetic mean, households had 1,100 euros more real income in 2012 than at turn of the millennium. This represents a percentage increase of approximately five percent. However, using the median, the increase is considerably weaker at a little over 300 euros (1.7 percent).<sup>12</sup>

<sup>10</sup> The median of the income distribution is the value that separates the richer half of the population from the poorer half. See also the term "median income" in DIW Berlin's glossary (in German only), [http://www.diw.de/de/diw\\_01.c.413351.de/presse\\_glossar/diw\\_glossar/medianeinkommen.html](http://www.diw.de/de/diw_01.c.413351.de/presse_glossar/diw_glossar/medianeinkommen.html)

<sup>11</sup> Disposable household income comprises market income, statutory pensions, and government transfers such as child benefit, housing benefit, and unemployment benefit, less direct taxes and social security contributions.

<sup>12</sup> One reason for the poor growth of household income measured using the median is the weak development of pensions in statutory pension insurance because these were not adjusted for inflation throughout the 2000s so there was no pension increase in 2010 and an increase of only 0.99 percent in 2011. Therefore, income has fallen when adjusted for inflation. Looking at the trends in eastern and western Germany, real household income as a share of the median has increased by approximately 1.5 percent in both parts of the country since 2000. Household incomes in eastern Germany were only 85 percent of their western German counterparts.

The positive trend in mean compared to median household disposable income indicates that not all income groups have benefited equally from this development. If the income groups are divided into deciles<sup>13</sup> and the average income of each decile in 2000 indexed, this shows that income growth was highest in the upper income range and lowest or negative in the lower income range (see Figure 4). Real disposable income in the highest income group (top decile) rose by almost 17 percent from 2000 to 2012<sup>14</sup> while the eighth and ninth deciles increased by five and seven percent, respectively. Real disposable income in the fifth decile stagnated and in the lowest four deciles declined by up to four percent compared to 2000.<sup>15</sup>

<sup>13</sup> Deciles are calculated by sorting the population according to level of income and then dividing these data into ten equal groups. The bottom (top) decile shows the income situation of the poorest (richest) ten percent of the population. It should be noted that individuals can change their income position over time due to income mobility and do not always remain in the same decile. Therefore, the statements relate to average changes in the ten income groups.

<sup>14</sup> In the SOEP surveys, the top income earners are under-represented. The actual development of these incomes is most likely underestimated here (see Bach and Stefan; Giacomo Corneo and Viktor Steiner, "From bottom to top: The Entire Income distribution in Germany, 1992–2003," *Review of Income and Wealth* 55 (2009): 303–330.)

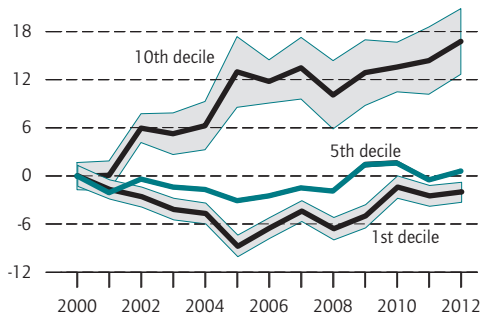
<sup>15</sup> This structural change is also evident in the majority of other OECD countries, see OECD, *In it together*.



Figure 4

### Net Household Income<sup>1</sup> by Income Deciles

Changes Compared to 2000 in Percent



<sup>1</sup> Persons living in private households; real incomes in prices of 2010, equivalized annual incomes surveyed the following year, equivalized with the modified OECD-scale; Lower/upper bound indicate a 95-percent confidence band.

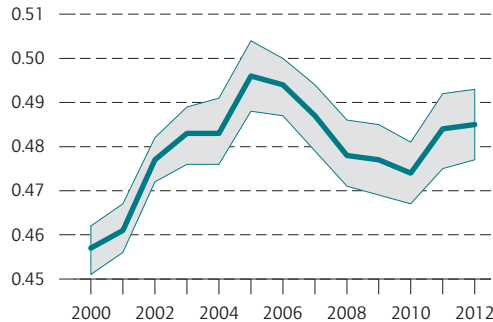
Source: SOEPv30, calculations of DIW Berlin.

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Figure 5

### Inequality of Household Market Income<sup>1</sup>

Gini Coefficient



<sup>1</sup> Persons living in private households; equivalized annual income surveyed the following year; market household income including a fictitious employer's contributions for civil servants; Lower/upper bound indicate a 95-percent confidence band.

Source: SOEPv30, calculations of DIW Berlin.

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The expansion of the low-wage sector,<sup>16</sup> the insufficient adjustment of social benefits to inflation,<sup>17</sup> and the weak development of retirement income, among other things, are likely to be responsible for the real loss of income in the lowest income groups. At the same time, rising incomes, especially in the top decile, from investment and self-employment have led to rises in income (see Figure 1). In addition, labor force participation is particularly relevant: not only has the share of individuals receiving income from employment increased across the income deciles, but the participation rate in the upper income groups has developed more dynamically over time. While the participation rate in the lowest decile remained almost constant at about 32 percent between 2005 and 2012, it rose again from 69 percent to 74 percent in the top decile.<sup>18</sup> The high real income losses in the first decile of more than 10 percent in 2005 have subsequently decreased considerably.

<sup>16</sup> T. Kalina and C. Weinkopf, "Niedriglohnbeschäftigung 2012 und was ein gesetzlicher Mindestlohn von 8,50 € verändern könnte," *IAQ Report 2014-02*, University of Duisburg-Essen (2014). Differing effects are noticeable here because, on the one hand, more (additional) employment can be created by expanding the low-wage sector but, on the other hand, it can also lead to displacement processes if, for instance, a full-time job is converted into a number of temporary jobs.

<sup>17</sup> One example of this is child benefit. Child benefit remained the same from 2010 to 2014, resulting in a loss of value in real terms of more than six percent.

<sup>18</sup> In addition to poverty in old age, the problem of long-term unemployment is also likely to be a relevant aspect in the first decile.

## High Inequality in Household Disposable Income Since 2005

The most commonly used measure of income inequality is the Gini coefficient. It can have values between 0 and 1.<sup>19</sup> The higher the value, the greater the inequality. The development of the Gini coefficient shows that inequality in market incomes increased considerably between 2000 and 2005 and then fell markedly by 2010 (see Figure 5). This decline was probably mainly due to significant improvements in the labor market situation.<sup>20</sup> Since then, measured inequality stagnated and is slightly below the level seen in the mid-2000s.

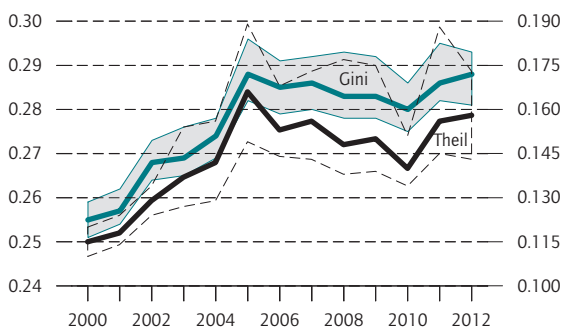
The inequality of disposable household income increased considerably between 2000 and 2005, as did market income (see Figure 6), with the Gini coefficient rising from 0.255 in 2000 to 0.288 in 2005. In contrast to market income, however, the inequality of household

<sup>19</sup> See also the term Gini coefficient in DIW Berlin's glossary (in German only), [http://www.diw.de/de/diw\\_01.c.413334.de/presse\\_glossar/diw\\_glossar/gini\\_koeffizient.html](http://www.diw.de/de/diw_01.c.413334.de/presse_glossar/diw_glossar/gini_koeffizient.html). In addition, two inequality indicators from the generalized entropy index, the Theil index and mean log deviation (MLD) are also shown. MLD responds, in particular, to changes in the lower half of the income distribution, while the Theil index responds more to changes in the middle of the distribution, similar to the Gini coefficient.

<sup>20</sup> The average annual number of employed rose by 3.3 million to 42.6 million from 2005 to 2014 (Federal Statistical Office (2015)), <https://www.destatis.de/DE/ZahlenFakten/Indikatoren/Konjunkturindikatoren/Arbeitsmarkt/karb811.html>.

Figure 6

### Inequality of Net Household Income<sup>1</sup> Coefficients



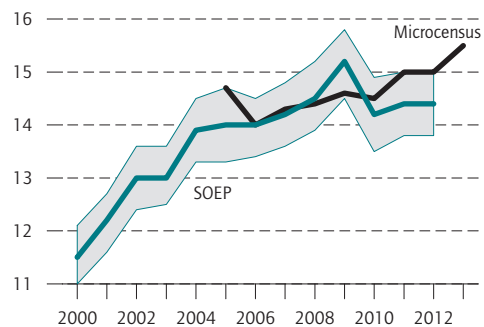
1 Persons living in private households; equivalized annual incomes surveyed the following year, equivalized with the modified OECD-scale; Lower/upper bound indicate a 95-percent confidence band.

Source: SOEPv30, calculations of DIW Berlin.

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Figure 7

### At-Risk-Of-Poverty rate<sup>1</sup> In Percent



1 Persons living in private households; equivalized annual incomes surveyed the following year, equivalized with the modified OECD-scale; share of persons with less than 60% of median net household income; Lower/upper bound indicate a 95-percent confidence band.

Source: SOEPv30. Data for microcensus: Federal statistical office (2015): Sozialberichterstattung der amtlichen Statistik. <http://www.amtliche-sozialberichterstattung.de/Tabellen/Excel/tabelleA11.xls>, calculations of DIW Berlin.

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incomes has not declined since 2005.<sup>21</sup> In addition, the last two years under review indicate a renewed increase in inequality, but this is not statistically significant.

### At-Risk-of-Poverty Rate Has Stagnated at around 14 Percent

The following sections of the present study consider individuals whose incomes are below the poverty risk threshold and are therefore of particular socio-political significance.<sup>22</sup> This threshold is defined as 60 percent of the median net household income of the total population.<sup>23</sup>

<sup>21</sup> Only the Theil index showed a statistically significant decline (confidence intervals with 90 percent certainty). The Gini coefficient and MLD (more sensitive to changes in the lower half of the distribution) show no significant decline, however. Against the background of the financial crisis and the largest economic downturn in terms of GDP in Germany since World War II, it can be considered positive that inequality has not increased markedly. Since then, in other OECD countries, inequality has increased considerably in the wake of the financial crisis and subsequent reforms, see OECD, *In it together*.

<sup>22</sup> See also the term "poverty," in DIW Berlin's glossary (in German only), [http://www.diw.de/de/diw\\_01.c.411565.de/presse\\_glossar/diw\\_glossar/armut.html](http://www.diw.de/de/diw_01.c.411565.de/presse_glossar/diw_glossar/armut.html)

<sup>23</sup> The at-risk-of-poverty threshold is relative. This key figure for poverty risk describes the share of the population below the at-risk-of-poverty threshold. In contrast, the term absolute poverty is used in terms of individuals claiming basic social security benefits such as social assistance or unemployment benefit II (*Arbeitslosengeld II*). However, the size of the population living in poverty is usually underestimated due to individuals not claiming the basic social security they are entitled to, also known as hidden poverty (see Irene Becker, "Der Einfluss verdeckter Armut auf das Grundsicherungsniveau," *Hans Böckler Foundation Working Paper*, no. 309 (Düsseldorf: 2015).

In 2012, the threshold was 1,029 euros per month based on the SOEP sample for a single-person household.<sup>24</sup>

Since the turn of the millennium, the risk of poverty has increased considerably among the German population (see Figure 7). While around 12 percent were at risk of poverty in 2000, this figure had grown to around 15 percent by 2009; this represents an increase of more than 2.8 million to 12.25 million individuals affected. In subsequent years (2010 to 2012), the risk of poverty stabilized at just over 14 percent—around 11.5 million individuals. The findings based on the German Microcensus conducted by the Federal Statistical Office indicate that the risk of poverty has recently increased further: the figure for 2013 is 15.5 percent.<sup>25</sup>

Considerable differences in the risk of poverty can be found between the former West and East German states: at 13 percent, the at-risk-of-poverty rate in western Germany is around seven percentage points lower than in eastern Germany, where over 20 percent of the population are at risk of poverty. This is particularly remarka-

<sup>24</sup> Compared to social figures reported by the Federal Statistical Office which are based on the microcensus (see [www.amtliche-sozialberichterstattung.de](http://www.amtliche-sozialberichterstattung.de)), the figures shown here indicate a higher at-risk-of-poverty threshold because, as is common practice internationally, the rental value of owner-occupied housing is taken into account when calculating income. For other methodological differences to official social reports, see Markus Grabka, Jan Goebel, and Jürgen Schupp: "Höhepunkt der Einkommensungleichheit in Deutschland überschritten?", DIW Wochenbericht no. 43 (2012): 3–15.

<sup>25</sup> See [www.amtliche-sozialberichterstattung.de](http://www.amtliche-sozialberichterstattung.de).

Table 1

**At-Risk-Of-Poverty Rate<sup>1</sup> by Age Group**

In Percent

	< 10 yrs.	10–18 yrs.	18–25 yrs.	25–35 yrs.	35–45 yrs.	45–55 yrs.	55–65 yrs.	65–75 yrs.	75 yrs. and more	Total
2000	14.7	15.0	17.7	12.6	8.2	6.9	10.9	11.4	13.2	11.6
2006	15.2	17.2	23.5	17.2	11.0	11.1	12.2	11.7	13.1	14.0
2012	17.0	17.4	21.6	17.8	10.5	10.1	14.1	13.6	14.1	14.4
Difference 2000/12	2.3	2.4	3.9	5.3	2.3	3.1	3.2	2.2	0.9	2.8
2000										
with labor income	–	–	15.4	9.6	5.6	3.9	4.2	8.6	3.9	7.1
without labor income	–	–	25.3	28.0	27.6	24.2	18.7	11.7	13.4	16.3
2012										
with labor income	–	–	17.0	13.2	7.2	5.8	7.5	6.0	3.5	8.9
without labor income	–	–	33.6	46.5	39.4	43.2	32.7	15.2	14.5	21.0

<sup>1</sup> Persons living in private households; equivalized annual incomes surveyed the following year, equivalized with the modified OECD-scale; share of persons with less than 60% of median net household income.

Source: SOEPv30, calculations of DIW Berlin.

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ble given that the labor market in eastern Germany has developed positively since 2009.<sup>26</sup> One possible explanation could be that it is households above the at-risk-of-poverty threshold that have mainly benefited from the improved labor market situation in eastern Germany. Indeed, there is a strong increase in employment among individuals aged between 55 and 65 years (also in western Germany). This group, in particular, has a below-average risk of poverty.<sup>27</sup>

**Young Adults Most At Risk of Poverty**

The at-risk-of-poverty rate for children under the age of ten is 17 percent. Those who are most at risk of poverty in Germany, however, are young adults aged 18 to 25 (see Table 1). Their at-risk-of-poverty rate in 2012 was over 21 percent because at least half of the individuals in this group were in vocational training or studying.

This shows that even socially desirable developments, such as increased efforts to take up education, can have a negative impact on poverty statistics.<sup>28</sup>

Adults aged 25 to 35 are equally at risk of poverty, with a rate of almost 18 percent. This is surprising inasmuch as these individuals are of working age and should benefit from the favorable employment situation. As a general rule, the risk of poverty among individuals with earned income is well below the average for the total population. While 86 percent of 25- to 35-year-olds in 2012 had a job, nevertheless, the at-risk-of-poverty rate of these career entrants—if they were employed—was just over 13 percent. One reason for this is likely to be the typically low wages at the start of their working lives which usually increase by at least the second third of the employment phase.<sup>29</sup>

It is also notable that the number of 55- to 65-year-olds at risk of poverty has fallen by 3.2 percentage points since 2000. This is surprising since labor market participa-

<sup>26</sup> Consequently, employment subject to compulsory social security contributions in eastern Germany rose by 5.4 percent between December 2009 and December 2013. Even more remarkable is the decline in registered unemployment which fell by almost 60 percent in eastern Germany between February 2005 and June 2015. See IAB, *Arbeitsmarkt in Zeitreihen* (2015).

<sup>27</sup> However, employment subject to social security contributions in western Germany also increased during the same period (December 2010 to December 2013) by more than 1.7 million (7.7 percent) without the at-risk-of-poverty rate declining sustainably (Federal Employment Agency 2015, *Länderreport über Beschäftigte – Deutschland, Länder*, [http://statistik.arbeitsagentur.de/nn\\_31966/SiteGlobals/Forms/Rubrikensuche/Rubrikensuche\\_Suchergebnis\\_Form.html?view=processForm&resourceId=210358&input\\_=&pageLocale=de&opicId=17362&ion=&year\\_month=201312&year\\_month.GROUP=1&search=Suchen](http://statistik.arbeitsagentur.de/nn_31966/SiteGlobals/Forms/Rubrikensuche/Rubrikensuche_Suchergebnis_Form.html?view=processForm&resourceId=210358&input_=&pageLocale=de&opicId=17362&ion=&year_month=201312&year_month.GROUP=1&search=Suchen)).

<sup>28</sup> In the current cross-sectional analysis, most trainees and students are poor if they do not live in their parents' home, although later in life this is rarely the case.

<sup>29</sup> Another reason may be the increase in atypical employment, which is particularly common among young workers: <https://www.destatis.de/DE/ZahlenFakten/GesamtwirtschaftUmwelt/Arbeitsmarkt/Erwerbsstaetigkeit/TabellenArbeitskraefteerhebung/AtypKernerwerbErwerbsformZR.html>. However, the share of 25- to 35-year-olds teaching, studying, or in vocational training has increased considerably by seven percentage points to 16 percent since 2000.

Table 2

**At-Risk-Of-Poverty Rate<sup>1</sup> by Household Type**

In Percent

	1 person household < 35 yrs.	1 person household 35–59 yrs.	1 person household 60 yrs. and older	couple without children	Lone par- ent 1 child	Lone parent 2 and more children	Couple with 1 child	Couple with 2 children	Couple with 3 and more children	Other house- holds
2000	27.1	13.8	20.2	7.0	25.6	44.1	6.4	6.5	15.3	9.2
2006	36.2	19.4	18.4	8.5	32.1	43.2	10.2	6.9	16.5	15.3
2012	39.1	20.9	21.9	8.4	27.3	41.0	6.2	8.5	21.9	12.4
<b>Difference 2000/12</b>	<b>12.0</b>	<b>7.1</b>	<b>1.7</b>	<b>1.4</b>	<b>1.7</b>	<b>–3.1</b>	<b>–0.2</b>	<b>2.1</b>	<b>6.6</b>	<b>3.2</b>

<sup>1</sup> Persons living in private households; equivalized annual incomes surveyed the following year, equivalized with the modified OECD-scale; share of persons with less than 60% of median net household income.

Source: SOEPv30, calculations of DIW Berlin.

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Table 3

**Correlates of Poverty-Risk<sup>1</sup> in Germany, Selected Years**

	2000, 2006, 2012		2006, 2012	
	Marginal Effect	Standard Error	Marginal Effect	Standard Error
<b>Main Variables</b>				
Sex: Women	0.2699	0.1035***	0.1595	0.2368
Household type (Reference group: couple without children < 65 yrs.)				
Single ≤ 25 yrs.	2.4722	0.3257***	3.4287	0.8313***
Single 26–64 yrs.	1.6702	0.1657***	1.9196	0.4082***
Single 65 yrs. and more	–1.1849	0.2975***	–1.8089	0.7294**
Couple 65 yrs. and more without children	–1.5408	0.2806***	–2.2365	0.7032***
Couple with children > 16 yrs.	0.2217	0.1948	0.8428	0.4585
Couple with 1 child ≤ 16 yrs.	0.5447	0.2185**	0.4468	0.5682
Couple with 2 children ≤ 16 yrs.	0.7368	0.2059***	–0.0097	0.5526
Couple with 3 children ≤ 16 yrs.	1.5242	0.2298***	0.1600	0.6346
Lone parent	3.0371	0.2236***	2.5166	0.5478***
Other households	0.2148	0.3311	1.0471	0.8818
Age of household head (Reference group < 25 yrs.)				
26–65 yrs.	–0.9904	0.2129***	–0.7866	0.5470
65 yrs. and more	–0.3238	0.2604	–0.5926	0.6281
Work intensity index (Reference group: not employed)				
1–49%	–0.1401	0.1481	–0.7192	0.3599**
50%	–1.9832	0.1578***	–2.0587	0.4147***
51–99%	–3.1751	0.1792***	–4.0161	0.4720***
100% employed	–4.6401	0.2003***	–5.5574	0.4907***
Highest educational level in household	–1.1618	0.0835***	–1.3221	0.1910***
Household with migrants	0.9396	0.1276***	1.2139	0.3137***
Living in East Germany	0.7812	0.1086***	1.2338	0.2499***
Municipal size 100,000 inhabitants and more	–0.1320	0.0981	–0.1868	0.2337
Household head with bad health	0.3248	0.1068***	0.1665	0.2596
Home owner	–1.8091	0.1176***	–1.2304	0.2633***
Household with a person in need of care	–0.7084	0.2291***	–0.8262	0.5491
Income year (Reference group: 2000)				
2006	0.0805	0.1782		
2012	0.1775	0.3401	0.0402	0.3714

tion in this age group has risen considerably since the turn of the millennium—by 20 percentage points.<sup>30</sup>

Nevertheless, gainful employment typically lowers the risk of poverty. Those with no earned income in 2012 had an at-risk-of-poverty rate of 21 percent—five percentage points higher than in 2000.<sup>31</sup> The at-risk-of-poverty rate for those in gainful employment was nine percent

in 2012. Not every job protects against poverty, however, particularly in the low-wage sector. In addition to hourly wages and number of hours worked, it also depends on the household constellation as to whether the level of income is sufficient to exceed the at-risk-of-poverty threshold.<sup>32</sup>

**30** The participation rate of older workers (aged 55 to 65) has risen 20 percentage points from 54 percent in 2000 to 74 percent in 2012. This is most likely due to incentives to take early retirement having been discontinued in the wake of pension reforms.

**31** There are a growing number of non-recipients of unemployment benefit. In 2013, 234,692 of the 969,598 unemployed individuals covered by statutory unemployment insurance received no benefits—this represents a share of one-quarter (DGB, *Arbeitsmarkt aktuell*, no. 4 (July 2014)). Non-recipients are

individuals registered as unemployed but not entitled to Unemployment Benefit I or II.

**32** A regional analysis of poverty cannot be conducted using SOEP data due to the limited number of cases. This can only be done using data from the microcensus. This shows, among other things, that the at-risk-of-poverty rate of individuals aged 65 and over (as in the SOEP) is also below average overall. However, there are notable regional differences. For example, the risk of poverty in old age in Bavaria is 17 percent, well above the average for the total population (see [www.amtliche-sozialberichterstattung.de](http://www.amtliche-sozialberichterstattung.de)).

Table 3 *Continuation*

	2000, 2006, 2012		2006, 2012	
	Marginal Effect	Standard Error	Marginal Effect	Standard Error
<b>Interactions</b>				
Sex: Women	-0.1181	0.0670	-0.0526	0.1374
Household type (Reference group: couple without children < 65 yrs.)				
Single ≤ 25 yrs.	-0.3835	0.2315	-0.8721	0.4981
Single 26–64 yrs.	-0.0646	0.1120	-0.1245	0.2391
Single 65 yrs. and more	0.4701	0.2133**	0.7860	0.4455
Couple 65 yrs. and more without children	0.3559	0.2040	0.7158	0.4303
Couple with children > 16 yrs.	-0.0175	0.1344	-0.3676	0.2756
Couple with 1 child ≤ 16 yrs.	-0.3328	0.1507**	-0.2815	0.3326
Couple with 2 children ≤ 16 yrs.	-0.1507	0.1383	0.2915	0.3168
Couple with 3 children ≤ 16 yrs.	-0.1088	0.1545	0.6969	0.3631
Lone parent	-0.3352	0.1519**	0.0735	0.3227
Other households	0.0459	0.2074	-0.3726	0.4884
Age of household head (Reference group < 25 yrs.)				
26–65 yrs.	0.0660	0.1477	-0.1029	0.3235
65 yrs. and more	-0.2183	0.1892	-0.1213	0.3889
Work intensity index (Reference group: not employed)				
1–49%	0.2076	0.1060**	0.5599	0.2206**
50%	0.3324	0.1141***	0.3186	0.2539
51–99%	0.4002	0.1245***	0.7762	0.2777***
100% employed	0.4519	0.1329***	0.8068	0.2833***
Highest educational level in household	-0.0211	0.0515	0.0114	0.1075
Household with migrants	-0.1608	0.0814**	-0.2718	0.1779
Living in East Germany	0.1333	0.0724	-0.0762	0.1470
Municipal size 100,000 inhabitants and more	-0.0323	0.0649	-0.0119	0.1363
Household head with bad health	0.0373	0.0736	0.1531	0.1546
Home owner	-0.1872	0.0770**	-0.6214	0.1579***
Household with a person in need of care	0.2501	0.1547	0.3063	0.3230
Number of observations		36,684		25,068
Pseudo R <sup>2</sup>		0.3429		0.3333

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

1 Private households; equivalized annual incomes surveyed the following year, equivalized with the modified OECD-scale; share of persons with less than 60% of median net household income.

Source: SOEPv30, calculations of DIW Berlin, pooled information of income years 2000, 2006 and 2012.

## Box 3

**Effect of a New Additional Sample of Immigrants**

Net migration in Germany has been positive since 2010, meaning that the number of immigrants exceeds that of emigrants (see figure). In particular, many immigrants came to Germany at the beginning of the 1990s, shortly after the fall of the Berlin Wall. From the mid-1990s, their number fell sharply and only since 2010 did considerably more migrants decide to come to Germany again. As a result of EU eastward

enlargement, the composition of immigrants has changed in the last decade. Panel studies such as the SOEP are faced with the global challenge that migration can only be adequately considered in the design of the study if immigrants move into households already being surveyed (for example, in reunited families), or if additional samples are drawn to survey newly arrived immigrants and to complement existing samples. In 2013, an additional SOEP sample was taken again in cooperation with the Institute for Employment Research (Institut für Arbeitsmarkt und Berufsforschung, IAB) after 1994/95 to allow for the increased numbers of immigrants.<sup>1</sup> In total, an additional 4,964 migrants with 2,481 children from approximately 2,700 households were surveyed in 2013. No new additional sample was drawn for the analyses of income levels and inequality presented in this report because individuals often do not answer all the questions in an initial survey. This is partly because respondents are familiar with neither the content of the study nor the interviewer. From the second wave of the survey, these methodological problems are reduced so that the additional samples in the SOEP are also used in the trend analyses on income (see Box 2).

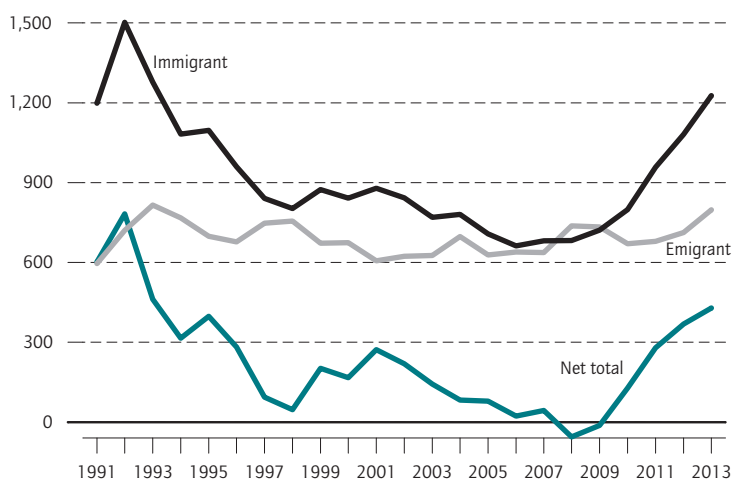
Initial analyses of the new SOEP subsample confirm the assumption that newly surveyed migrants have below-average incomes compared to the overall population (see table). If this additional sample is taken into account in the analysis, the median of household disposable income in the general population falls by around 1.1 percent. With the mean value,

<sup>1</sup> In the past, there was a large additional sample in the SOEP from the beginning of the study which surveyed particular migrants. In 1994/95, there was a special sample in order to adequately simulate, in particular, the influx of ethnic German repatriates in the SOEP. In addition, random samples have been taken in recent years where attempts have been made to include in the survey households with foreign names disproportionately to account for the migration phenomenon.

Figure

**Migration to Germany and Abroad<sup>1</sup> 1991 to 2013**

In 1,000 Persons



Source: Federal statistical office 2015, <https://www.destatis.de/DE/ZahlenFakten/GesellschaftStaat/Bevoelkerung/Wanderungen/Tabellen/WanderungenAlle.html>.

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**Couple Households Are Rarely Affected by Poverty**

The at-risk-of-poverty rate of couples without children is far below the average for the population as a whole (see Table 2). The same applies to couples with one or two children. Children per se are therefore not a poverty risk. What matters is the overall household constellation: The at-risk-of-poverty rate for both single parents and couples with three or more children is frequently above average. In general, the more children living in a household, the more it is at risk of poverty. Conse-

quently, in 2012, single parents with one child had an at-risk-of-poverty rate of 27 percent. When they had two or more children, the rate rose to more than 40 percent.

For young people living alone (up to the age of 35), in particular, the risk of living below the poverty line has increased significantly in recent years. Twenty-seven percent of single-person households were at risk of poverty in 2000, but this rate rose significantly to 39 percent in 2012.<sup>33</sup>

<sup>33</sup> This development has contributed to the share of young adults living alone increasing by five percentage points to 22 percent since 2000.

Table

**Impact of a New Sub-Sample on Income and Poverty-Risk<sup>1</sup> by Country of Origin**

	lower bound	born in Germany	upper bound	lower bound	born abroad	upper bound	lower bound	Total population	upper bound
<b>Median in Euro</b>									
SOEP 2012	19,975	20,178	20,380	15,407	15,877	16,348	19,602	19,766	19,980
SOEP 2012 with sub-Sample M	19,917	20,139	20,361	15,232	15,589	15,947	19,365	19,543	19,722
<b>Mean in Euro</b>									
SOEP 2012	23,059	23,343	23,627	18,048	18,623	19,197	22,621	22,822	23,117
SOEP 2012 with sub-Sample M	23,004	23,284	23,565	17,685	18,219	18,753	22,255	22,510	22,765
<b>At-Risk-Of-Poverty rate in Percent</b>									
SOEP 2012	12.5	13.1	13.8	21.7	25.0	28.4	13.8	14.4	15.0
SOEP 2012 with sub-Sample M	12.9	13.4	13.9	26.3	28.3	30.4	14.9	15.5	16.1
<b>Population in Million</b>									
SOEP 2012		70.465			8.600				
SOEP 2012 with sub-Sample M		67.501			11.095				
<b>Population Share in Percent</b>									
SOEP 2012		88.46			10.80				
SOEP 2012 with sub-Sample M		84.74			13.93				

<sup>1</sup> Persons living in private households; equivalized annual incomes surveyed the following year, equivalized with the modified OECD-scale; share of persons with less than 60% of median net household income.

Source: SOEPv30, calculations of DIW Berlin.

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this difference is 1.4 percent. At the same time, the risk of poverty rises markedly from 14.4 to 15.5 percent. This is due in particular to the lower income of the new migrants compared to the old sample: although the poverty line falls slightly, the income of many migrants lies below this threshold (especially in the new sample). The poverty risk of migrants increases from 25 to 28.3 percent. Also, the risk of poverty for individuals born in Germany increased slightly when the additional sample was taken into account.

The fall in the poverty threshold would have led to a lower risk of poverty in itself. Of course, the weighting scheme in

the SOEP had to be modified to include the additional sample. This means that the projected number of individuals born outside Germany will vary. The modified weighting scheme, which, for the first time, takes into account the results of the 2011 Census, assumes a total of approximately 11.1 million migrants instead of the current 8.6 million. Correspondingly, the number of those born in Germany falls from approximately 70.5 million to 67.5 million. All longer-term trend series, which include migration-related issues, are affected by this revision. A retrospective revision from 2010 will take this aspect into account in the next data version of SOEPv31 (see Box 2).

## What Factors Affect the Risk of Poverty?

The determinants of poverty risk can be established using a multivariate regression analysis (see Table 3). Three income years (2000, 2006, and 2012) were included in the logistic model in order to identify changes in the at-risk-of-poverty rate over time.<sup>34</sup> This occurs

with the relevant interaction effects of the explanatory variables with a time variable.

The Table reports marginal effects. The marginal effects for binary variables (such as gender) indicate how the probability of being at risk of poverty varies if the binary variable is 1 (female) instead of 0 (male)—assuming that the values of all other explanatory variables remain constant. Accordingly, the risk of poverty is 26 percentage points higher if the head of the household is female rather than male (see column 1 in Table 3). Consequently, the marginal effects for continuous variables (such

<sup>34</sup> A pooled logit model is used as a regression method. The dependent variable is a dummy. This is set at 1 when people are classified as at risk of poverty.



as income) indicate the immediate impact on the risk of poverty.<sup>35</sup>

Broken down by household types, younger people living alone (aged up to 35), single parents, and couples with children under the age of 16 are significantly more at risk of poverty than couples with no children of working age. Both older people living alone and couples of retirement age have a lower risk of poverty. The risk of poverty among single parents is, as expected, particularly high, more than three times higher than that of the reference group.

As previously mentioned, the risk of poverty depends, inter alia, on labor force participation (see Table 1).<sup>36</sup> The higher the participation rate of the household, the lower the risk of poverty. For households that have spent only six months of a potential working year in employment, the risk of poverty declines sharply compared to jobless households, and the effect is more pronounced if they are in full-time employment. As expected, there is also a negative correlation between the level of education and the risk of poverty: the higher the education level, the lower the risk of poverty. In contrast, all households with at least one person born outside Germany (see Box 3) and eastern German households have a considerably greater risk of poverty. If the head of the household suffers from a medical condition (and receives a disability pension, for example), the risk of poverty increases by 32 percent. Real estate owners generally have a lower risk of poverty compared to tenants because the income advantage of owner-occupied housing protects against poverty. Even in households with care recipients, the poverty risk is reduced since they frequently receive financial transfers from nursing care funds.

The interaction effects<sup>37</sup> of the analysis also show that the risk of poverty has increased markedly for retired people living alone. This probably reflects the weak performance of retirement income in Germany. Fortunately, the risk of poverty has declined both in single-parent families and in those with a child aged under the

age of 16. There is a need for further analyses to show whether parental allowance was able to, at least partially, compensate for the loss of income from the birth of a child. It is striking that the risk of poverty increased during the observation period despite rising employment in all four work intensity groups.<sup>38</sup>

The risk of poverty for migrant households has decreased in the past few years, with recent migrants having different characteristics than those from the traditional guest-worker countries who have lived in Germany for some time. These include different procedures for recognizing educational qualifications acquired abroad.<sup>39</sup> The risk of poverty for real estate owners has declined further. This is probably due to their financial status being better than that of tenant households.<sup>40</sup>

In addition, the model was reduced to the income years 2006 and 2012 to verify whether, in particular, the improved labor market situation since the mid-2000s had affected the determinants of poverty risk (see column 2 in Table 3). The key findings of this analysis are similar. However, in contrast, the risk of falling below the poverty risk threshold despite (full-time) employment has increased over time. The reason for this is likely to be, among other things, the poorer wages of low-skilled occupations rather than the change in household structures.<sup>41</sup>

## Conclusion

Real disposable household incomes have risen in Germany by an average of five percent since 2000. At the same time, the gap between rich and poor has widened. Real incomes in the top decile of income distribution increased by more than 15 percent between 2000 and 2012, while income in the middle of the distribution stagnated and, in the lowest 40 percent, incomes fell in real terms. In sum, the inequality of disposable household income remains unchanged since 2005.

<sup>35</sup> They are only meaningful for small changes in the explanatory variables (for example, changes by one percentage point) because the relationships are often nonlinear. Therefore, it is also possible that the absolute value of the marginal effect is greater than 1, although the probability of being at risk of poverty cannot be above 1 (i.e., 100 percent).

<sup>36</sup> The labor market participation of a household is measured here as the proportion of time spent working in the previous year to the potential number of working hours of all those of working age living in the household. People in households in which all employed persons were in full-time employment for the whole of the previous year received an index score of 100, with part-time employment being weighted at 50 percent. In extreme cases, when none of the potential labor force participants are in fact working, the index assumes a value of 0.

<sup>37</sup> The interaction effects were created by multiplying the annual dummies in 2012 by the covariate values.

<sup>38</sup> Two alternative models were estimated to check the robustness of these findings: the first was a simple pooled logistic model (with cluster effects to control for individuals being surveyed multiple times) and the other was a fixed effects model. The first confirmed the findings from the random effects model. In the fixed effects model, the effects are no longer significant. One possible explanation for this is that there are only three instances where the intrapersonal variation is relatively small.

<sup>39</sup> See Herbert Brücker, Ingrid Tucci, Simone Bartsch, Martin Kroh, Parvati Trübawetter, and Jürgen Schupp, "Neue Muster der Migration," *DIW Wochenbericht*, no. 43 (2014): 1126-1135.

<sup>40</sup> However, this important economic factor cannot be considered here since it was not surveyed every year in the SOEP.

<sup>41</sup> See M. Biewen and A. Juhasz, "Understanding Rising Inequality in Germany, 1999/2000 - 2005/06," *Review of Income and Wealth*, vol. 58 (2012): 62-647.

The risk of poverty among the population grew considerably from 2000 to 2009 and has stagnated since then at around 14 percent. Young people aged 25 to 35 and living alone, in particular, are increasingly at risk of poverty. Their at-risk-of-poverty rate rose by 12 percentage points to just under 40 percent in 2012. This is especially remarkable considering the majority of these people are in work—a factor that, in the past, would have protected them from income poverty. In other age groups, too, the risk of poverty in households with labor force

participation has increased since 2000. This might explain why the risk of poverty has stagnated for several years, although employment reached record highs during the same period. Whether the minimum wage introduced in 2015 can help reduce the risk of poverty for the employed depends, in particular, on how targeted its effects are (whether individuals with low hourly wages tend to be more in the lower deciles of the income distribution) and how the number of paid hours worked by these individuals develop.

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## EIGHT QUESTIONS TO MARKUS GRABKA

# »Income Inequality Remains High«

1. Dr. Grabka, you have analyzed income inequality in Germany. Does your research show that the gap between rich and poor has widened even further? If we look at the development of income inequality since 2000, it is clear that the gap between the richer and the poorer income groups has widened further. During this period, real income gains of more than 15 percent were recorded among the top ten percent of earners, while real income in the broad middle class stagnated and the bottom 40 percent even suffered income losses in real terms.
2. How can this development be explained? There is no single reason for this development. For the top income earners, capital income and income from entrepreneurial activities play a key role. Compared with compensation for employees, these forms of income have increased significantly. For example, in the bottom income group pensions have not been adequately adjusted to reflect the development of inflation for some years now, which has led to income losses in real terms.
3. How have disposable household incomes developed? On average, disposable household incomes have followed an upward trend—since 2000, we have observed an increase of more than five percent. However, if the income bands are divided into deciles, that is, into ten equal-sized population groups, the development of disposable income varies greatly since the lowest income band in particular has suffered real income losses since 2000.
4. How high is the poverty risk in Germany? In Germany, the risk of poverty increased dramatically from over 10 percent to almost 15 percent between 2000 and 2005, and then stabilized at around 14 percent in recent years. However, if we take an alternative dataset such as the microcensus conducted by the German Federal Statistical Office, we can see that, since 2006, there has been a further increase in the poverty risk with current values as high as 15 percent.
5. Are there any differences between the federal states of the former East and West Germany? Yes, in eastern Germany, the risk of poverty is considerably higher with values persisting at around 20 percent.
6. Which population groups are most at risk of poverty? In Germany, those most likely to face poverty are single parents and the unemployed. Young adults in particular, that is, people just starting out in their careers, are increasingly at risk of poverty. Specifically, the poverty risk of young adults up to the age of 35 and living alone has increased by more than 12 percentage points since 2000.
7. What was the most surprising finding of your study? Between February 2005 and May 2015, the number of unemployed in eastern Germany fell by almost 60 percent. Usually an increase in employment goes hand-in-hand with a decline in poverty risk, or at least that had always been the case in previous years. Yet the risk of poverty in eastern Germany remains at around 20 percent. What is also interesting is the 55 to 65 age group which particularly caught our attention. The employment rate in this group has actually increased by 20 percentage points since 2000 but, despite this development, this group's risk of poverty rose by three percentage points.
8. What is the significance of the poverty risk in Germany from an economic and socio-political perspective? Our study did not analyze this separately but here we can refer to the experiences of the OECD which has just published a new report. The main conclusion of this report is that increasing income inequality may have a negative impact on economic growth. In the selection of OECD countries analyzed in the study, the bottom 40 percent of income earners invested less in their own education and that of their children. This has a negative impact on economic growth in the medium to long term.

Interview by Erich Wittenberg