DIW Weekly Report

A policy bulletin from the German Institute for Economic Research

17+18 2021

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125 Report by Markus M. Grabka

Income inequality in Germany stagnating over the long term, but decreasing slightly during the coronavirus pandemic

- Wage inequality decreases since 2015, income inequality remains largely stable
- Share of severely deprived persons cut in half between 2008 and 2019
- Inequality during the coronavirus pandemic decreasing slightly due to income losses among the self-employed

LEGAL AND EDITORIAL DETAILS

DIW BERLIN

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Volume 11 May 5, 2021

Sale and distribution
DIW Berlin Leserservice, Postfach 74, 77649 Offenburg
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Phone: +49 1806 14 00 50 25 (20 cents per phone call)

Layout
Roman Wilhelm, DIW Berlin

Cover design
© imageBROKER / Steffen Diemer

Composition
Satz-Rechen-Zentrum Hartmann + Heenemann GmbH & Co. KG, Berlin

ISSN 2568-7697

DIW Weekly Report 17+18 2021

AT A GLANCE

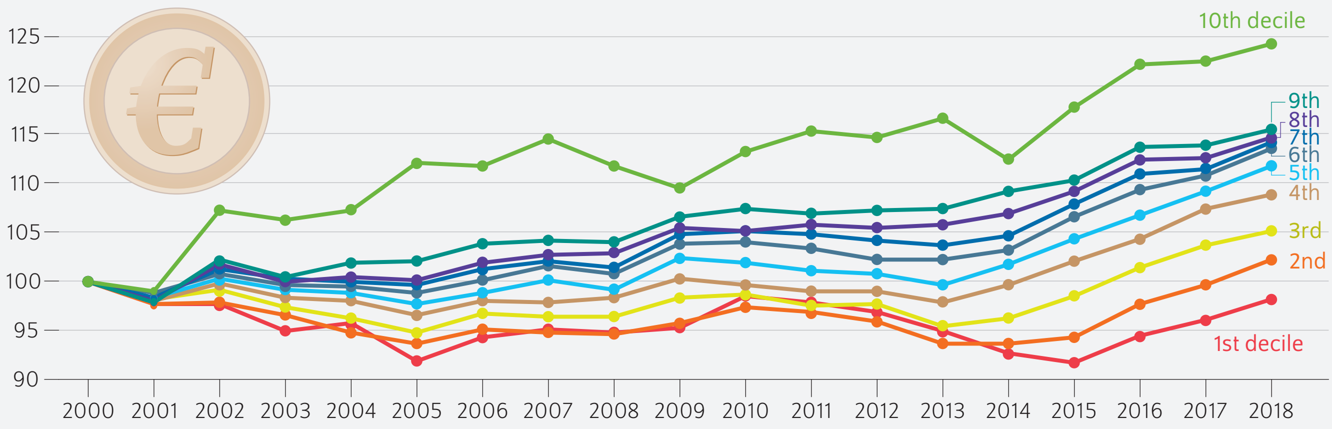
Income inequality in Germany stagnating over the long term, but decreasing slightly during the coronavirus pandemic

By Markus M. Grabka

- Inflation-adjusted hourly wages and household incomes increased by ten percent from 2013 to 2018
- Wage inequality has been decreasing since the introduction of the minimum wage; income inequality is stagnating at the 2005 level
- Low-income rate also stagnating at around 16 percent; severe material deprivation rate declined by half to 2.7 percent between 2008 and 2019
- Income inequality down slightly during the coronavirus pandemic; self-employed hit hardest by income losses
- To prevent insolvencies and growing unemployment, more efficient aid is needed for the self-employed and business owners

Real income has been increasing in all income groups since 2015

Development of disposable household income by decile in percent (2000 = 100)



Sources: SOEPv36; author's own calculations.

Notes: Real income in 2015 prices, only individuals in private households included, needs-adjusted annual income collected the following year, adjusted using the modified OECD scale.

FROM THE AUTHORS

"The financial crisis showed that income inequality decreases during times of crisis because incomes in the upper deciles fall more than incomes in the lower deciles. During the coronavirus pandemic, the declines in income experienced by the self-employed have had a particular impact on the distribution."

— Markus M. Grabka —

MEDIA

Audio Interview with Markus M. Grabka (in German)

www.diw.de/mediathek

Income inequality in Germany stagnating over the long term, but decreasing slightly during the coronavirus pandemic

By Markus M. Grabka

ABSTRACT

Both wages and needs-adjusted household income increased by ten percent between 2013 and 2018, benefiting all income groups. Wage inequality has been declining for many years and has now again reached the level of the early 2000s. At the same time, the low-wage sector shrank by two percentage points. Household income inequality, in contrast, has hardly changed for many years and the low-income rate is stagnating. However, the share of people in Germany who are affected by severe material deprivation sank to a low level in a European comparison. Income inequality in Germany has declined slightly since the beginning of the coronavirus pandemic, but this is likely primarily due to incomes decreasing among the self-employed. However, the pandemic poses the risk that an increasing number of insolvencies and unemployed people will cause incomes to fall again across the board. Financial assistance for the self-employed and business owners should not be ended too early and its targeting should be readjusted.

Income inequality has been a hotly debated topic in Germany for many years. While it increased sharply during periods of high unemployment between 2000 and 2005, the financial crisis of 2008/2009 briefly contributed to a slight reduction in income inequality, mainly due to declines in capital income and the income of the self-employed. Since the financial crisis, it has often been said that inequality in Germany is increasing, but studies indicate that it has stabilized over the course of strong economic development.[1] Now, however, the coronavirus pandemic is fueling concerns that inequality could increase again due to the economic distortions.

The present study investigates how wages, household incomes, and inequality have developed over the last years. In addition, it updates previous DIW Berlin studies on the development of hourly wages, household income distribution, and low income in Germany from 2000 to 2019.[2] For this, income data (Box) of the Socio-Economic Panel (SOEP)[3] at DIW Berlin is used, which was collected together with Kantar. This report also presents initial analyses on the impact of the coronavirus pandemic on the development of net household incomes during the second lockdown, which were conducted using data from the SOEP-CoV special survey in January/February 2021.[4] In addition to the low-income rate, this report also examines the development of the share of the population suffering from severe material deprivation, meaning they lack certain durable goods and must forego essential needs for financial reasons. For this purpose, data collected by the Federal Statistical Office as part of the

1 Cf. Dietrich Creutzburg, "Wahrnehmung vs. Wirklichkeit: Armut im Land sinkt – Angst vor Armut steigt," *Frankfurter Allgemeine Zeitung*, April 4, 2021 (in German; available online. Accessed on April 16, 2021. This applies to all other online sources in this report unless stated otherwise).

2 Cf. most recently: Markus M. Grabka and Jan Goebel, "Real incomes increasing, low-income rate decreasing in individual age groups," *DIW Wochenbericht* no. 17/18 (2020): 232–239 (available online); Alexandra Fedorets et al., "Lohnungleichheit in Deutschland sinkt," *DIW Wochenbericht*, no. 7 (2020): 91-97 (in German; available online).

3 SOEP is an annual representative survey of private households. It began in West Germany in 1984 and expanded its scope to include the new federal states in 1990; cf. Jan Goebel et al., "The German Socio-Economic Panel (SOEP)," *Journal of Economics and Statistics* 239, no. 29 (2018): 345–360, DOI: https://doi.org/10.1515/jbnst-2018-0022.

4 The SOEP-CoV project, financed by the Federal Ministry of Education and Research *(Bundesministerium für Bildung und Forschung*, BMBF), is a joint project of Bielefeld University and SOEP at DIW Berlin. For more information, see www.soep-cov.de.

DOI: https://doi.org/10.18723/diw_dwr:2021-17-1

Box

Assumptions for income measurement

In line with international standards, the income situations of households of different sizes and compositions are made comparable by converting the total income of a household into an equivalent income. Household incomes were converted using a scale generally accepted in Europe and recommended by the OECD. Every household member was assigned an equivalent income calculated in this manner, under the assumption that all household members benefit from their shared income equally. In the process, the head of household receives a weight of one; the other adults in the household and children 14 and over receive a weight of 0.5. Children under 14 receive a weight of 0.3. We thus assumed a cost degression in larger households.

In all population surveys, properly considering missing information from individual respondents presents a specific challenge, such as in the case of income. In the SOEP data analyzed here, missing information is replaced using elaborate, cross-sectional, and longitudinal imputation methods. 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, we applied a multi-stage statistical method to six individual gross income components (earned income, pensions, and transfer benefits in the case of unemployment, training/university, maternity leave/parental allowance/parental benefit and private transfers). The process included newly imputing all missing values in retrospect after each new data collection period, since new information from surveys can be used to add the data missing from prior years. This can lead to small changes in earlier analyses.

To avoid method effects in the times series for the indicators calculated, the first survey wave of each new SOEP sample was excluded from the calculations. Studies show that multiple adjustments in survey behavior occur during the first two survey waves, and they are not due to varying willingness to participate.

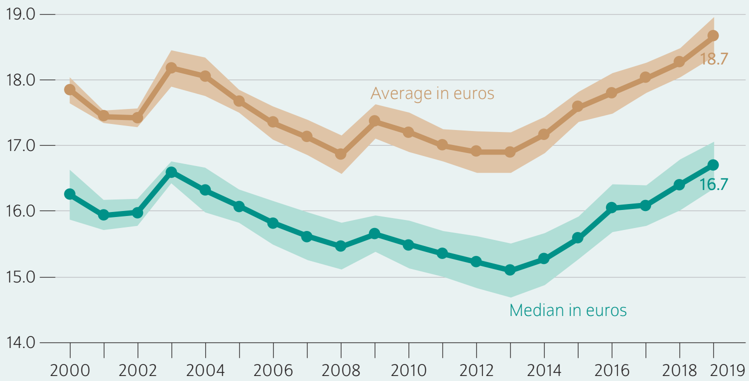
German section of the EU Statistics on Income and Living Conditions (EU-SILC) survey is used.

Real hourly wages continue to rise

Since earned income makes up the majority of disposable household income, the development of the real[5] contractual gross hourly wages of employees in main employment is first examined.[6] The average real gross hourly wage decreased slightly between 2000 and 2013, declining from 17.85 euros in 2000 to 16.90 euros in 2013 (Figure 1). This is in part due to the fact that the share of part-time workers increased, especially among women, who usually earn lower hourly wages. However, the general wage restraint in collective bargaining also had a negative impact. Nevertheless, a reversal in the trend could be observed beginning in 2013: From 2013 to 2019 the average gross hourly wage increased by a good ten percent. The development was similar when measured against the median,[7] albeit at a lower level. This means that employees in the lower and middle segments of the wage distribution benefited from the increases in real wages to a comparable extent as employees in the upper segment of the distribution. This was likely due to the general economic upturn before the coronavirus pandemic and the introduction of the minimum wage in 2015.[8]

Figure 1

Real contractual gross hourly wages in main employment
In euros



Notes: Employees in main employment in private households, not including apprentices, interns, or the self-employed, adjusted for inflation in 2015 prices. The shaded areas indicate the 95-percent confidence band.

Sources: SOEPv36; author's own calculations.

Real contractual gross hourly wages have been increasing significantly again since 2013.

The recent development in the low-wage sector, which includes employees whose gross hourly wage is less than two-thirds of the median wage, is positive (Figure 2). The development can be divided into three phases: Between 2000 and 2007, the share of employees in the low-wage sector grew noticeably from around 19 percent to almost 24 percent. This development is likely in part due to the labor market reforms introduced by the German government at the time, especially Hartz I to III. After the introduction, the

5 Adjusted for inflation and converted using the Federal Statistical Office's consumer price index in 2015 prices.

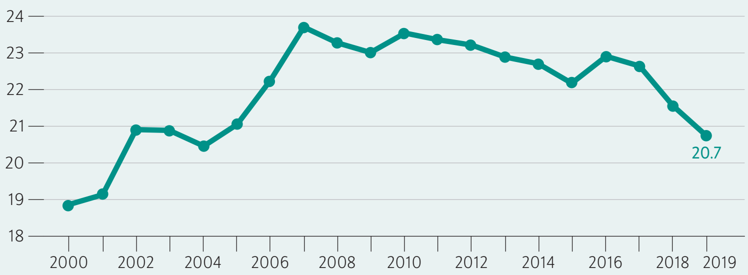
6 This does not include the self-employed, apprentices, interns, and those performing military or civilian service.

7 The median wage is the wage at which there is an equal number of people with higher wages and lower wages. If the population was sorted according to their wage and divided into two equal-sized groups, the person exactly in the middle of this distribution would have the median wage. The median is more robust than the average against outliers in a sample.

8 The unions' wage demands have also recently been more closely aligned with productivity gains.

Figure 2

Development of the low-wage sector
Share of low-wage earners of all employees in percent



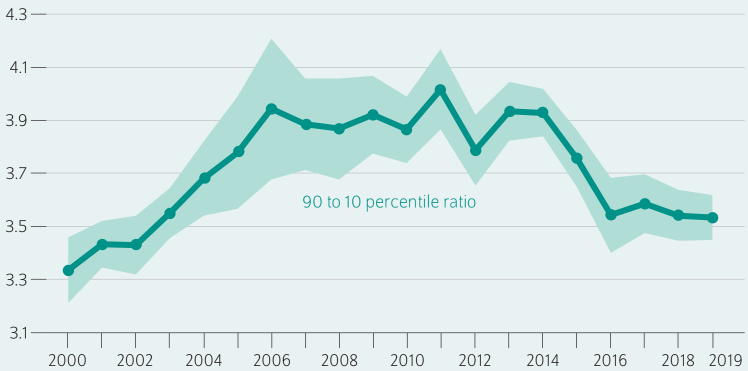
Note: Employees in main employment in private households, not including apprentices, interns, or the self-employed.

Sources: SOEPv36; authors' own calculations.

The low-wage sector has been shrinking since 2010 and has returned to its 2003 level.

Figure 3

Contractual gross hourly wage inequality
Ratio of 90th percentile wage to 10th percentile wage



Note: Employees in main employment in private households, not including apprentices, interns, or the self-employed. The shaded area indicates the 95 percent confidence interval.

Sources: SOEPv36; authors' own calculations.

Wage inequality has significantly decreased since 2013 and has now returned to its 2003 level. In 2019, the top percentile earned 3.5 times as much as the lowest.

share of low-wage employees stagnated until around 2012 and subsequently successively declined to 20.7 percent in 2019. According to SOEP, however, a good 7.4 million employees in main employment were still in the low-wage sector.

Hourly wage inequality back at early 2000s level

The ratio of lower to upper hourly wages is analyzed to evaluate the distribution of the contractual gross hourly wages. This is done by means of the 90:10 percentile ratio, the ratio of the person with the lowest wage from the 90th percentile[9] to the person with the highest wage from the 10th percentile. Thus, the ratio describes how much more the higher end of the wage distribution earns than the lower end.

Inequality increased significantly between 2000 and 2006: While a person in the 90th percentile earned 3.3 times as much as a person in the 10th percentile in 2000, they earned nearly four times as much in 2006. Inequality stagnated at this high level until 2014, when it returned to the level of the early 2000s (Figure 3). In 2019, employees in the 90th percentile of the wage distribution earned around 3.5 times as much as employees in the 10th percentile.

Real household incomes also developing positively since 2014

The next question is how the increasing wages have impacted needs-adjusted household incomes[10] (Box). In contrast to the individual hourly wages, the needs-adjusted annual incomes of all household members are considered, such as capital income, pensions, and government transfers. Unlike the wage observation, in which only the wages of the employed are analyzed, this observation includes the entire resident population.[11] Income is differentiated between household market income[12] (before taxes and social security payments) and disposable household income (after taxes and social security payments). No market income is indicated with a value of zero in the analyses.

Between 2000 and 2014, the average real household market income grew by around three percent (Figure 4) while the disposable household income increased by around 4.5 percent. Both types of income increased significantly between 2014 and 2019: market income by almost 12 percent and disposable household income by around nine percent. The economic upswing following the slump caused by the financial market crisis of 2008/2009 was delayed in reaching households. This increase was spurred on by several sources, primarily including a significant decrease in unemployment, increasing real wages, and—related to this—increasing real retirement income.

9 Employees are sorted according to wages and divided into 100 equal groups to form the percentiles.

10 Cf. the term "Äquivalenzeinkommen" in the DIW Berlin Glossary (in German; available online).

11 In each case, the income year is shown when annual income is used in accordance with the conventions in the German Federal Government's Report on Poverty and Wealth (Bundesministerium für Arbeit und Soziales, *Lebenslagen in Deutschland* (2013)) and the appraisal of the German Council of Economic Experts (for example, the 2016/2017 Annual Report). SOEP collects annual income data in retrospect—for the previous calendar year—but it is weighted according to the population structure at the time of the survey. Thus, the data for 2018 presented here were collected in the 2019 survey wave.

12 Market income equals the sum of capital and earned income, including private transfers, private pensions, and the rental value of owner-occupied properties before taxes, social security contributions, and monetary social benefits.

All income deciles benefiting from increase in real income

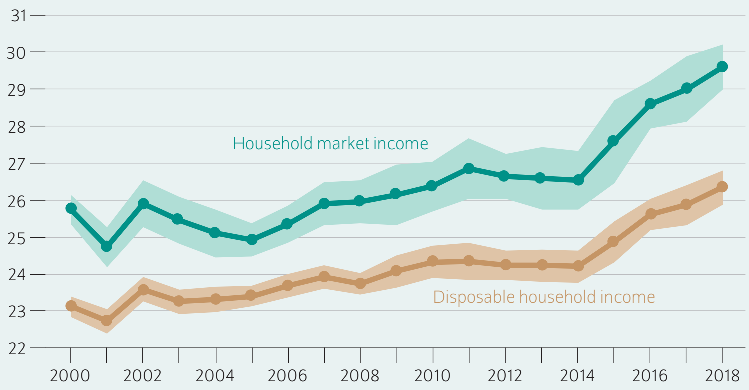
Since the average income trend does not yet reveal information about the income distribution, the following section examines the income deciles to determine if the income gap is widening. Sorting the population by income level and dividing it into ten groups of equal size creates ten deciles. The lowest decile indicates the income situation of the poorest ten percent of the population and the top decile indicates the income situation of the richest ten percent. [13]

When comparing average incomes in the deciles from 2000 onward (Figure 5), real disposable household incomes grew weakly overall until 2013. Only in the top decile did real incomes grow disproportionately strongly until 2007, when they began increasing somewhat more slowly. Excluding the first decile, real disposable income has been increasing over all income groups since 2014,[14] amounting to between six and ten percent across the deciles. At the current margin, incomes in the top decile were about 24 percent higher in real terms than in 2000.

Development in the lowest decile was different. According to current calculations, the poorest ten percent began experiencing an increase in 2015, the year the statutory minimum wage was introduced.[15] Thus, the lowest decile has returned to its 2000 level.

Figure 4

Real household market income and disposable income
Average in thousand euros



Note: Real income in 2015 prices, only individuals in private households included, needs-adjusted annual income surveyed the following year, market household income includes a fictive employer's contribution for civil servants, adjusted using the modified OECD scale. The shaded areas indicate the 95-percent confidence band.

Sources: SOEPv36; author's own calculations.

Disposable household incomes have increased by almost 14 percent on average since 2000. Since 2014 alone, they have increased by almost nine percent.

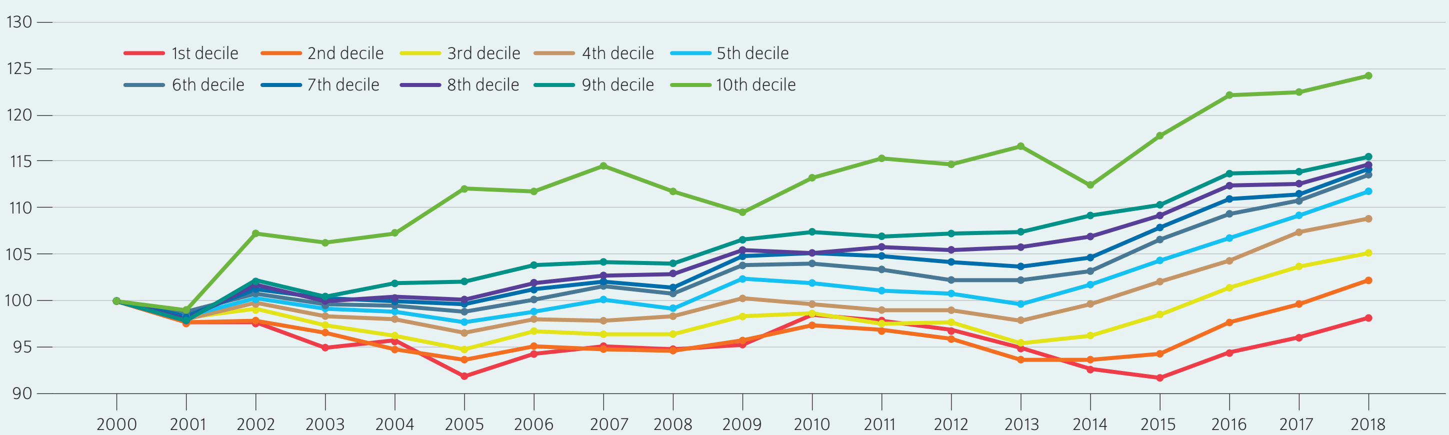
13 It should be noted that the decile a person belongs to can change over time if their income position changes due to income mobility.

14 However, the overall positive trend in real income growth across the population neglects the fact that the welfare trend differs for tenant and homeowner households. Thus, over the long term, the living costs for homeowner households have either stayed the same or have even decreased as a result of falling interest rates for mortgage loans while tenant households, especially in urban areas, do not necessarily have to have more income available for private consumption when housing costs have been taken into account.

15 However, households in higher deciles also benefited from the minimum wage. Cf. Fedorets et al., "Lohnungleichheit in Deutschland sinkt".

Figure 5

Development of disposable household income by decile
In percent (2000 = 100)



Notes: Real income in 2015 prices, only individuals in private households included, needs-adjusted annual income surveyed the following year, adjusted using the modified OECD scale.

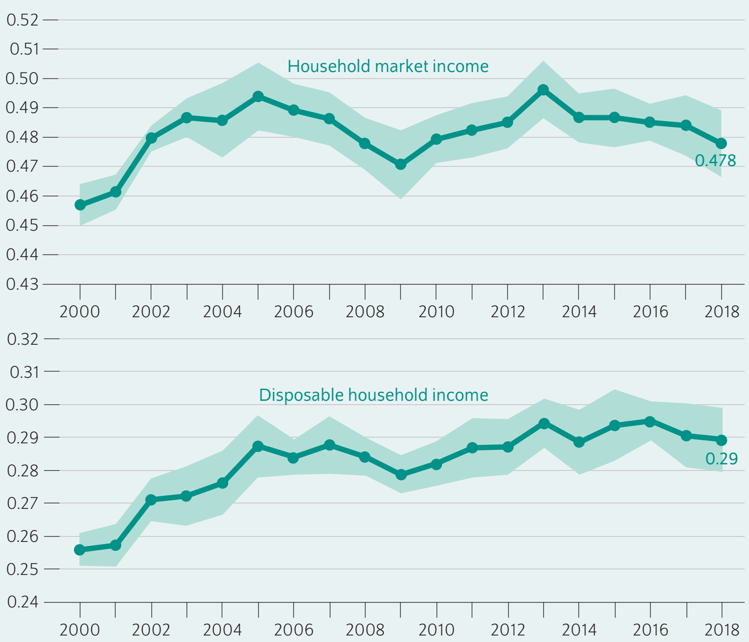
Sources: SOEPv36; author's own calculations.

The lowest income decile has been benefiting from increases in real income since 2015. Income increased by six percent between 2015 and 2018.

Figure 6

Household market income and disposable household income inequality

Gini index on a scale of 0 to 1 (very high inequality)



Note: Real income in 2015 prices, only individuals in private households included, needs-adjusted annual income surveyed the following year, adjusted using the modified OECD scale. The shaded areas indicate the 95-percent confidence band.

Sources: SOEPv36; author's own calculations.

Disposable household income inequality has barely changed since 2005.

Real income losses were observed in the lowest decile, especially in the phase between 2010 and 2015. To understand these losses, it must be considered that the foreign population increased by around 3.9 million to 10.6 million between 2010 and 2017.[16] Immigrants required time to integrate into the labor market, facing issues such as language barriers and administrative hurdles (work permits, diploma recognition) in particular. Thus, their incomes were correspondingly low shortly after immigrating.[17] However, integration seems to be gradually succeeding, and, as a result, incomes in the lowest decile have increased in real terms since 2015.[18]

Disposable household income inequality unchanged since 2005

The Gini index is used as a standard measure to quantify income inequality.[19] The higher the value between 0 and 1, the higher the measured inequality. There was initially an increase in disposable household income inequality from almost 0.26 in 2000 to almost 0.29 in 2005 (Figure 6), which stagnated over the further course. Thus, the Gini index confirms the findings of the previous section. In 2018, the Gini index remained around 0.29 in Germany, which is lower than the OECD average (0.31) in an international comparison.[20] Household market income inequality also remains largely stable.

Thus, declining wage inequality was not reflected in household incomes. This suggests that other income components, such as capital income and retirement income, ran counter to wage development.

Share of low-income households remains largely unchanged since 2015

The relative risk-of-poverty rate (referred to more precisely in this report as the low-income rate) is frequently used to determine how widespread the poverty risk is in Germany. This is done by establishing the share of people whose needs-adjusted net household income is less than 60 percent of the median net household income.

Using data from the SOEP sample, the low-income threshold for a one-person household in 2018 was 1,216 euros net per month in nominal terms.[21] In 2000, 11 to 12 percent of the population in Germany was beneath this threshold (Figure 7). The share increased to around 16.5 percent by 2015 and has since stagnated. Official Microcensus data and data from the European Union Statistics on Income and Living Conditions (EU-SILC) from the Federal Statistical Office describe a comparable trend.[22]

Share of people with severe material deprivation has declined by half since 2008

Whether the low-income ratio is suitable for describing poverty in a country is controversial. For this reason, the concept of severe material deprivation used in European social

16 Statistisches Bundesamt, *Ausländische Bevölkerung 2005, 2010 und 2014 bis 2018 nach Bundesländern* (2020) (in German; available online).

17 Cf. Markus M. Grabka and Jan Goebel, "Income Distribution in Germany: Real Income on the Rise since 1991 but More People with Low Incomes," *DIW Weekly Report* no. 21, 449–459 (in German; available online).

18 Herbert Brücker, Yuliya Kosyakova, and Eric Schuß, "Fünf Jahre seit der Fluchtmigration 2015. Integration in Arbeitsmarkt und Bildungssystem macht weitere Fortschritte," *IAB-Kurzbericht* 4 (2020) (in German).

19 Cf. the entry for the Gini index in the DIW Berlin Glossary (in German; available online).

20 Cf. OECD Income Distribution Database (available online).

21 Compared to the German Federal Statistical Office's system of social reporting in official statistics based on the Microcensus (see www.amtliche-sozialberichterstattung.de), the risk-of-poverty threshold we use here is higher. As per international convention, we include the rental value of rental property used by owners as income in our income calculation. Cf. for further methodical differences in official social reporting, Markus M. Grabka, Jan Goebel, and Jürgen Schupp, "Höhepunkt der Einkommensungleichheit in Deutschland überschritten?" *DIW Wochenbericht*, no. 43 (2012): 3–15 (in German).

22 The SOEP also provides an alternative indicator for measuring the low-income rate. It is the current net household income captured in the survey month. This income concept is virtually identical to that of the Microcensus. Income components that are earned sporadically during the year, such as vacation pay, tend to be underestimated and the rental value of owner-occupied homes, unlike annual income in the SOEP, is not taken into consideration.

reporting is used here as a supplement.[23] It identifies individual deficiency situations in which relevant basic needs or significant aspects of integration are not met.[24] Material deprivation is measured using nine items, including various financial issues such as being able to pay rent, mortgages, or utility bills on time; to keep the home adequately warm; and to be able to afford meat, fish, or an equivalent vegetarian meal every second day. Severe material deprivation occurs when four of the nine areas cannot be covered due to financial reasons.[25]

The share of people affected by material deprivation was initially significantly lower than the low-income rate. Moreover, the trend in the observation period from 2008 to 2019 was different from that for the low-income rate. While the share of people with severe material deprivation was 5.5 percent in 2008, it decreased by half to 2.7 percent by 2019. In a European comparison, Germany ranked very well, having a similarly low level of material deprivation as Denmark (2.6 percent) or Finland and the Netherlands (2.4 percent each).[26] Bulgaria, in last place, had a rate of 19.9 percent.

Differentiating the share of people with severe material deprivation by household type shows that single parents had the highest scores, followed by individuals living alone. Couples with two children recorded one of the lowest scores overall (Figure 8). While the rate for couples with two children stagnated almost unchanged at a low two to three percent, it fell by nearly four percentage points to 6.9 percent by 2019 for those living alone and by as much as about 13 percentage points to 6.6 percent for single parents. As parental benefits, children's allowance, and educational and integration packages—from which all single parents could have benefited in principle—were introduced before the observation period, it can be assumed that, in addition to the expansion of childcare facilities, the improved labor market situation has also contributed to a decline in material deprivation among single parents.

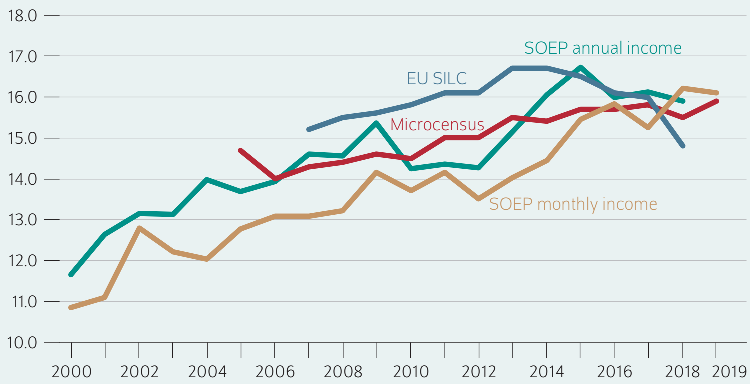
Dampening effect on the coronavirus pandemic's impact on income distribution

Lastly, the question of how the coronavirus pandemic is currently impacting the net household income of private households is investigated. For this purpose, the concept of current monthly net household income is used instead of annual income to be able to describe the situation in January/February 2021.[27] The amount of current net household income is described using three points on the distribution: the 10th, 50th, and 90th percentile, which each describe the amount of income in the lower, middle, and upper areas of the distribution. The data is nominal, as there is not yet a consumer price index for 2021 available.

Accordingly, net monthly household incomes at all three points on the distribution increased almost continuously between 2010 and 2019. At the beginning of 2021, there was

Figure 7

Low-income rate[1]
In percent



Notes: Individuals in private households, SOEP annual income: needs-adjusted annual income surveyed the following year; SOEP monthly income: needs-adjusted household income of the previous month; adjusted using the modified OECD scale. The shaded areas indicate the 95-percent confidence band.

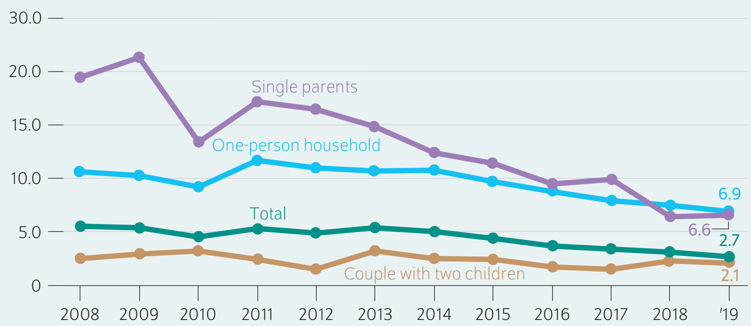
1 People whose disposable income is less than 60 percent of the median

Sources: SOEPv36; author's own calculations. Data from the Microcensus and EU SILC, Federal Statistical Office, Sozialberichterstattung der amtlichen Statistik (2021) (in German).

The share of low-wage earners has stabilized at 15 to 16 percent.

Figure 8

Severe material deprivation by household type
Share of the affected persons per household type in percent



Source: EU SILC.

The share of people with severe material deprivation deceased by half between 2008 and 2019.

23 Cf. the website of Eurostat for more on material deprivation and living conditions.

24 Material deprivation describes the lack of certain durable goods and involuntarily foregoing select needs due to financial reasons. The nine areas, in addition to the three already described, are: the ability to incur unexpected expenses; to be able to afford a one-week vacation in a different location; and to be able to afford to own a car, a washing machine, a color television, or a telephone.

25 The problem with the use of this indicator is that it is based on normative selection standards and the weighting of the goods and services considered.

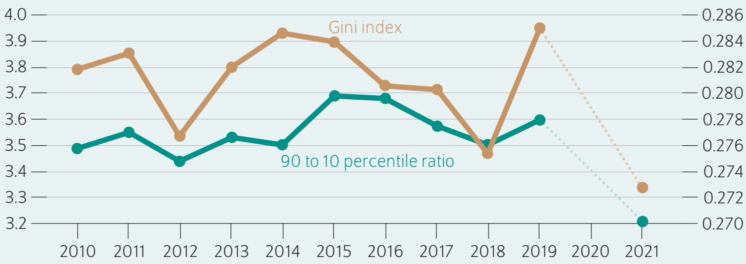
26 Cf. the website of Eurostat for more on material deprivation.

27 The data is taken from the information in the special survey SOEP-CoV, which was conducted at the beginning of 2021 among selected households from the SOEP survey.

Figure 9

Development of income inequality during the coronavirus pandemic

Percentile ratio and Gini index on a scale of 0 to 1 (very high)



Notes: Private households, nominal income data, needs-adjusted using the modified OECD scale.

Sources: SOEPv36 and SOEP-CoV 2021; author's own calculations (preliminary weighting and imputation).

Income inequality decreased during the second lockdown compared to 2019.

another slight increase in the lower and middle areas of the distribution while the incomes in the 90th percentile declined slightly. Measured by the Gini index and the 90 to 10 percentile ratio, income inequality decreased slightly at the beginning of 2021 (Figure 9).

To uncover the reasons for this finding, the following section analyzes the income situations of different household types more closely. Here, the occupational status of the head of household is fixed to 2019 and incomes in 2019 and 2021 are compared. There are six groups of professional status: the non-employed, people in retirement (retired or pensioned), laborers and apprentices, the self-employed, salaried employees, and civil servants. It should be noted that professional status could have changed between 2019 and 2021: employees could have lost their job, or the unemployed could have found a job. However, changes to the employment situation should be reflected in income.

Table

Net monthly household income in 2019 and 2021 according to the professional status of the head of household

Average and difference in euros, change in percent

	2019	2021	Difference	Relative change
Self-employed	2859	2402	−457	−16
Civil servant	2837	2992	155	5
Salaried employees	2244	2357	113	5
Retired	1794	1815	21	1
Laborers, apprentices	1695	1693	−2	0
Non-employed	1379	1368	−11	−1

Notes: Private households, nominal income data, needs-adjusted using the modified OECD equivalence scale, head of household data fixed in 2019.

Sources: SOEPv36 and SOEP-CoV 2021; author's own calculations (preliminary weighting and imputation).

In 2019, the self-employed and civil servants earned the highest net household incomes at over 2,800 euros, as expected. They were followed by salaried employees (2,240 euros) and retirees (around 1,800 euros). In contrast, laborers (1,700 euros) and the non-employed (1,380 euros) earned the least (Table).

Compared to 2019, some significant changes are evident for 2021. While the incomes of the non-working, retirees, and laborers stagnated on average, the incomes of civil servants and salaried employees increased by five percent.[28] General pay increases are likely to have contributed significantly to this improvement. The situation was different for the self-employed, whose needs-adjusted incomes sank on average by 460 euros or 16 percent, as sales and profits markedly declined due to coronavirus containment measures enacted in certain economic sectors.[29]

Lower inequality in household income at the beginning of 2021 can probably be explained by the fact that it is mainly the self-employed, who tend to be found in the upper half of the income distribution, who lose income during the pandemic. The income of people from the lower half of the distribution remains stable on average.[30]

The Federal Government's expansive economic aid thus contributed to the fact that many jobs were able to remain due to short-time work allowances or aid given to the self-employed and business owners, and that many people in Germany only had to endure minimal net household income losses so far.

Conclusion: increase aid for the self-employed and businesses to avoid possible insolvencies

Wages and incomes of private households in Germany grew between 2013 and 2018, rising across the entire income distribution. It is encouraging to note that wage inequality—quantitatively the most important component of household income—has been declining for several years and has returned to the early 2000s level. Nevertheless, net household income inequality has been stagnating for around 15 years and the low-income rate has been for many years as well. However, due to higher real incomes, the share of people affected by severe material deprivation decreased by half between 2008 and 2019.

28 It should be noted that the average development per group can conceal considerable individual variation.

29 Self-employed women are particularly affected, cf. Johannes Seebauer, Alexander S. Kritikos, and Daniel Graeber, "Warum vor allem weibliche Selbstständige Verliererinnen der Covid-19-Krise sind," *DIW Wochenbericht* no. 15 (2021): 261–269 (in German; available online); Alexander S. Kritikos, Daniel Graeber, and Johannes Seebauer, "Corona-Pandemie wird zur Krise für Selbstständige," *DIW aktuell* 47 (2020) (in German; available online).

30 The finding indicating declines in net household income inequality is not an isolated finding, but is found in other studies in other countries as well. See, for example, Andrew E. Clark, Conchita D'Ambrosio, and Anthony Lepinteur, "The Fall in Income Inequality during COVID-19 in Five European Countries," Working Paper 565, ECINEQ, Society for the Study of Economic Inequality (2020). For a country comparison of the development of income inequality, cf. Stefanie Stantcheva, *Inequalities in the Times of a Pandemic* (Harvard: 2021) (available online; accessed on April 19, 2021).

The current development during the coronavirus pandemic shows that income inequality tends to decline during a crisis situation, as it did during the financial market crisis. Government support programs (including short-time working allowances, financial aid to the self-employed and businesses) have played a key role in ensuring that incomes have remained largely stable on average for large sections of the population to date. For the self-employed, however, losses in net household income on average were observed, as the economic aid granted only covered fixed costs and not income losses.

However, this is only a short-term finding. If the pandemic continues long into 2021 and the containment measures are tightened once more, this could result in an increase in insolvency figures and unemployment, and worsen the income situation across the distribution. Therefore, the Federal Government should not end support by means of short-time work allowances and emergency aid too early and should provide financial support to the self-employed and medium-sized companies in as targeted a manner as possible to prevent insolvencies and business closures. This appears to be the most effective way to counteract increasing unemployment.

Since government aid for the self-employed generally does not provide funding for living expenses,[31] their reserves continue to shrink. Thus, the danger increases that they will give up their business, which would threaten their affected employees with unemployment. Therefore, the Federal Government should also consider granting self-employed persons affected by the pandemic partial coverage of their living expenses.

The targeting of public support programs should also be reviewed, for example whether it is necessary to continue to help companies with substantial profits and dividend payouts by means of short-time working allowances at the expense of the public sector.

31 Caroline Stiel et al., "Soforthilfe für Selbstständige wirkt vor allem positiv, wenn sie rasch gewährt wird," *DIW aktuell* 60 (in German; available online).

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JEL: D31, I31, I32

Keywords: Income inequality, poverty, SOEP