

## Income

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in Germany since 1995

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»Regular employment continues to play important role«

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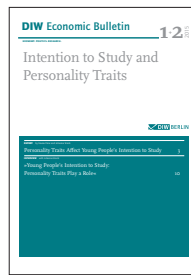
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## NEXT ISSUE OF DIW ECONOMIC BULLETIN

# Bank capital regulation

# Income groups and types of employment in Germany since 1995

By Peter Krause, Christian Franz and Marcel Fratzscher

This report examines how income groups and forms of employment in Germany have changed in the past two decades. Since the mid-1990s, inequality in disposable household income in Germany has generally increased. This trend was in effect until 2005. While fewer people had disposable incomes in the median range, the proportion of the population at both tails of the income distribution increased. At the same time, there were many changes in the labor market. Employment rose, working hours became increasingly differentiated, and starting in 2005, the unemployment rate fell. While the employment increase was spread across almost all income groups, it was reflected differently in each group. The proportion of people with low wages in the income groups below the median rose steadily during the two decades studied. At the same time, in 2014–15 more people in high income groups had regular types of employment than they did in the second half of the 1990s. In the groups in the median range, regular types of employment were recently as frequent as they were 20 years ago and unemployment also declined here. Further, in these groups the proportion of those with jobs paying low wages is higher.

In Germany, the distribution of disposable income and the structure of employment have changed considerably over the past two decades. The present study examines these changes, joining a number of German and international publications that attempt to identify long-term societal shifts along these dimensions.<sup>1,2</sup>

This study conflates the dimensions of income group and employment. This allows for a differentiated description of the reality of life in Germany that also illustrates the changes that have occurred along these dimensions over time. Our report supplements and enhances past DIW Berlin studies on trends in income distribution,<sup>3</sup> employment, and wages.<sup>4</sup> We do not attempt to explain the relationships causally. The empirical basis of the personal distribution analyses are the data collected as part of the Socio-Economic Panel (SOEP) longitudinal

<sup>1</sup> See Rakesh Kochhar, *Middle Class Fortunes in Western Europe*, (Washington, D.C.: Pew Research Center, 2017); OECD, *Employment Outlook 2017* (Paris: OECD Publishing, 2017); Judith Niehues, "Die Mittelschicht in Deutschland – Vielschichtig und stabil," *Vierteljahresschrift zur empirischen Wirtschaftsforschung* year 44, no.1 (2015); Marcel Fratzscher, "Verteilungskampf – Warum Deutschland immer ungleicher wird," (Munich; Hanser Verlag, 2015) and Peter Krause, "Einkommensungleichheit in Deutschland," *Wirtschaftsdienst* 95(8) (2015): 572–574.

<sup>2</sup> The global debate on income distribution focused on various permutations after the financial and economic crisis in 2008–2009: top 1 percent vs. bottom 99 percent, the "shrinking middle class," and warnings about the growing risk of descent into poverty. Given the more favorable economic trend in Germany, the discussion frequently turned on the rise in employment since 2008. At issue was the equality with which people in Germany participate in the positive turn of events.

<sup>3</sup> Markus M. Grabka and Jan Goebel, "Real Income Rose Significantly between 1991 and 2014 on Average—First Indication of Return to Increased Income Inequality," *DIW Wochenbericht* no. 5 (2016): 47–57; Markus M. Grabka et al., "Shrinking Share of Middle-Income Group in Germany and the US," *DIW Economic Bulletin* no. 18 (2016): 199–210 and Jan Goebel, Markus M. Grabka, and Carsten Schröder, "Income Inequality Remains High in Germany: Young Singles and Career Entrants Increasingly at Risk of Poverty," *DIW Economic Bulletin* no. 25 (2015): 325–339.

<sup>4</sup> See Karl Brenke and Alexander Kritikos, "Hourly wages in lower deciles no longer lagging behind when it comes to wage growth," *DIW Economic Bulletin* no. 21 (2017): 205–214 and Michael Arnold, Anselm Mattes, and Gert G. Wagner, "Typical employment subject to mandatory social security contributions remains the norm," *DIW Economic Bulletin* no. 19 (2012): 215–223.

Box 1

**SOEP data by period, 1995–2015**

SOEP is a representative longitudinal survey of the population in Germany. The SOEP data have been collected annually since 1984 in western Germany and nationwide since 1990. The present analyses are based on the overall German trends in survey years 1995 to 2015. We divided the annual results into five periods. In order to avoid methodological jumps caused by changes in response patterns upon the addition of new respondents, we included new samples only after the second survey wave.<sup>1</sup> The results were adjusted to the relevant weighting frame available. As a consequence of retrospective alignment to census results (as of 2011) and the detailed consideration of people with migration backgrounds (2010 and 2013), our methodology may have caused shifts in the demographic groups. However, due to the high number of cases, a shift would not adversely affect the fundamental developments presented in the present study.

Box 2

**Income groups**

The income groups in the present study are based on the annual net household income of the prior year. We calculated them by adding the individual income of all members living in the household at the time of the survey interview for the last calendar year and adding income components that affected the household as a whole. The adjustment according to household size in accordance with the OECD equivalence scale was also based on household composition at the time of the survey.<sup>1</sup> A comparison of monthly and annual net household income is presented in Box 4.

The income groups by proportional income categories (PICs) were created according to a parameter-controlled procedure with constant relative intervals between income thresholds. We selected the parameter such that the group with the median decile threshold (reference value) and the threshold of relative poverty (60 percent of median) matched.

$$pic(y[\mathcal{E}]) = p^z * z \text{ for}$$

z = Reference value for income y {median}

p = Relative interval, percentage rise in y between the thresholds {1.30}

$\mathcal{E}$  = Parameter for thresholds of income categories of y {-3, ..., 4}

The exact relative income interval p for identifying the poverty threshold (60 percent of median) is  $\exp[(\ln(0.6))/-2] = \sqrt{5/3} = 1.29099...$  For purposes of segmentation, we

<sup>1</sup> For a detailed description of the income measurement, see Markus M. Grabka and Jan Goebel, "Real Income Rose Significantly between 1991 and 2014 on Average – First Indication of Return to Increased Income Inequality", *DIW Economic Bulletin 5* (2017): 47–57.

Table

**Number of cases\***

Period	Observations		Observed individuals	
	Total	Ages 25–64	Total	Ages 25–64
1995–1999	83,765	48,105	19,214	11,346
2000–2004	125,242	70,265	19,493	11,676
2005–2009	120,645	65,732	27,703	15,823
2010–2013	126,487	63,132	22,527	12,402
2014–2015	74,233	36,506	40,760	20,148

\*With positive weighting factors; for new samples without first wave observations.

Population: Individuals in private households.

Source: SOEPv32.

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<sup>1</sup> See Markus M. Grabka and Jan Goebel, "Real Income Rose Significantly between 1991 and 2014 on Average—First Indication of Return to Increased Inequality", *DIW Economic Bulletin 5* (2017): 47–57.

study, conducted annually by DIW Berlin in collaboration with Kantar TNS.<sup>5</sup>

<sup>5</sup> SOEP is a recurring annual representative survey of private households. It began in West Germany in 1984 and expanded in scope to include the new federal states in 1990. See Gert G. Wagner et al., "Das Sozio-oekonomische Panel (SOEP): Multidisziplinäres Haushaltspanel und Kohortenstudie für

In order to depict the long-term trend for the period 1995–2009 in five-year periods (1995–99, 2000–04, 2005–09) and for the most recent years, in two periods (2010–13 and 2014–15), we combined the results of the annually repeated measurements spanning 1995 to 2015.<sup>6</sup> As a consequence of the high number of cases

Deutschland – Eine Einführung (für neue Datennutzer) mit einem Ausblick (für erfahrene Anwender)," *ASTA Wirtschafts- und Sozialstatistisches Archiv 2* no. 4 (2008): 301–328.

<sup>6</sup> All persons currently living in the sampled households are included in the analyses. The results of current job market participation in the ongoing year are tied to the previous year's household income as recorded retrospectively (see Box 4). The majority of studies on income distribution with the same operationalization of household income (see Grabka and Goebel, "Real Income") report the current income year of the respective household composition at the time of

rounded the value to [p=1.30] and based the relative income intervals on that value. Due to the above rounding, the poverty line used in our segmentation is 0.59171... percent of the median.

PICs and deciles in comparison

Unlike decile segmentation, the threshold values for the income segments are not defined by constant population shares. Instead, they are based on constant relative income intervals.

Over time, changes in threshold values for income segments (PICs) depend on the reference value trend (median), while threshold values for the deciles are determined by population shares alone. In the decile presentation the population shares remain constant over time while the PIC presentation displays the population trend of the relevant income group (see Table).

In the income segmentation approach, people can descend into a lower income segment even if their income rose from one period to another. It is the case if their income rose less than the median income in the same timeframe; this lowers their participation in the general income trend. The median (equivalence weighted, for 2015 prices) rose by 7.1 percent over the observed period from 18,733 euros (1995-99) to 20,053 euros (2014-15). The rise did not occur across all periods. In 2005-09 and 2014-15 it stagnated in comparison to prior periods.<sup>2</sup>

<sup>2</sup> When interpreting the income trend, the weighting frame adjustment must also be considered. It takes census results (as of 2011) and differentiation among the population with migration backgrounds (as of 2010 and 2013) into account in greater detail.

at the observed points, this approach ensured that the results would be robust and permitted more in-depth differentiation when mapping long-term trends (see Box 1).<sup>7</sup>

collection as well as the current population structure significant to weighting. Our study used the survey year instead. Accordingly, the years specified have shifted by one year. All income information is price adjusted, expressed in 2015 prices.

<sup>7</sup> Despite continuously monitoring and regularly updating the sample, adjustments in the weighting frame have a methodological influence on long-term development. This is why revisions in the population forecast due to census results were not taken into consideration before 2011. From 2010 and 2013, further differentiation within the population with a migration background could also be included. In all analyses, the new samples were not included until the respective second survey wave.

Table

Comparing PICs and Deciles

Deciles (population groups)

2014-15	Population percentage	Threshold (max)	Relative income gaps
1st decile	10.00	10,479	-
2nd decile	10.00	13,295	1.27
3rd decile	10.00	15,567	1.17
4th decile	10.00	17,844	1.15
5th decile	10.00	med = 20,053	1.12
6th decile	10.00	22,598	1.13
7th decile	10.00	25,840	1.14
8th decile	10.00	30,165	1.17
9th decile	10.00	37,519	1.24
10th decile	10.00	-	-

PICs (income groups)

2014-15 (percent of median)	Population percentage	Threshold (max)	Relative income gaps
< 46	6.53	9,131	-
46 to <60	8.15	11,873	1.30
60 to <77	14.49	15,433	1.30
77 to <100	20.84	med = 20,053	1.30
100 to <130	21.07	26,081	1.30
130 to <169	14.96	33,900	1.30
169 to <220	8.09	44,083	1.30
220 to <286	3.97	57,197	1.30
≥ 286	1.90	-	-

Unlike decile segmentation, the threshold values for the income groups are not defined by constant population shares. Instead, they are based on constant relative income intervals.

Source: SOEPv32.

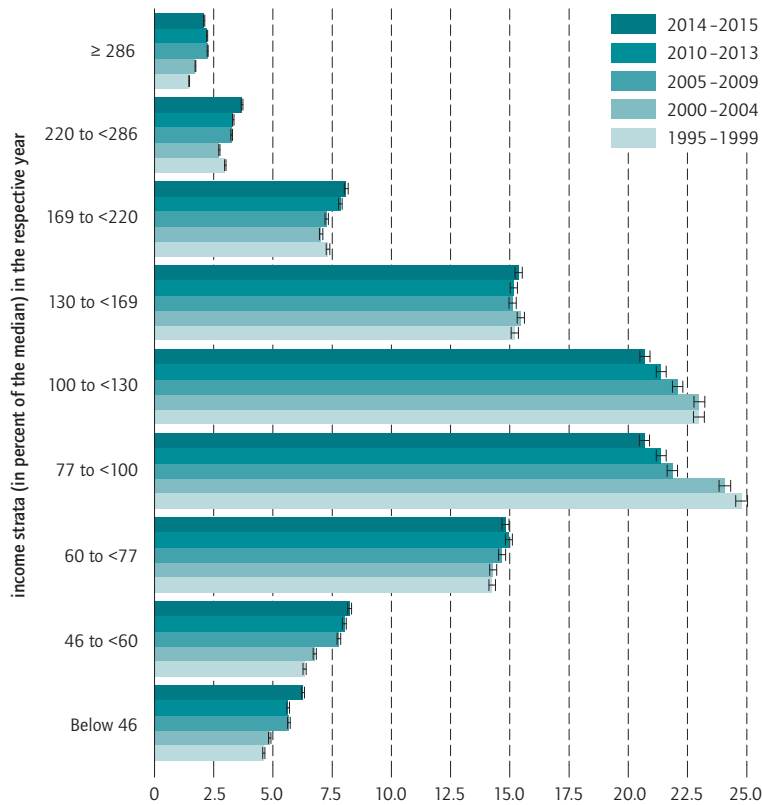
Income groups have shifted in the past 20 years

Populations can be divided into income groups based on a variety of methods. The classifications make specific assumptions about the number of people with low, middle, or high incomes. For the following analysis, the groups were created relative to the population's median income in the relevant year in question. The thresholds between groups are based on the median and take the poverty line (defined as 60 percent of the median net household income of the overall population) into consideration. The distances between income groups remain constant—but at the same time, the population propor-

Figure 1

**Changes in income groups<sup>1</sup>: population percentages 1995–2015**

Percentage of total population



<sup>1</sup> Income group thresholds rounded (1.30). Please see boxes 1 and 2 for a methodological description.

Note: Disposable annual household net-income, deflated (2015), OECD-equivalent weights. Population: Individuals in private households.

Reading example: On average, 24.1 percent of the total population had disposable household incomes between 77 percent and the median income of all households.

Source: SOEPv32.

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Income groups around the median decreased, income groups at the tails increased.

tions vary (see Box 2). Presenting the situation based on income groups has an advantage over using deciles: the change in the number of people in a given income group can be illustrated.

**Swelling tails and fewer households earning median income**

Grouping the overall population by price-adjusted disposable household income yields three findings (see Figure 1). First, the proportion of the population living in households with an income clustered around the median

(77 to 130 percent of the median in the respective year) has declined. At the end of the 1990s, 48 percent of the German population was in that income group. By 2014–15, the proportion had fallen to around 41.4 percent. The proportion of the population with incomes over 77 percent and below 100 percent of the median income decreased in the same period from 24.8 to 20.7 percent.

Second, a larger proportion of the German population lived in a household with a relatively lower income in 2014–15. The proportion of the population of the two groups below the poverty line was around 3.6 percentage points higher in the period 2014–15 than in the second half of the 1990s.<sup>8</sup> A closer look reveals that within the population at risk of poverty, the number of people in dire poverty (less than 46 percent of the median income) has also clearly risen since the end of the 1990s.

Third, the proportion of people who earn more than 169 percent of the median income has risen steadily since the mid-2000s. In 2014–2015, just under 14 percent of the German population belonged to this group (1995–99: 11.8 percent).

All in all, the picture is one of rising inequality: both the bottom and top income groups have grown. At the same time, increasingly fewer people in Germany earned a household income around the median. In the income groups between the tails and those around the median, the population proportions have remained virtually the same.

This trend was consistent over the entire period, only reversing for the households with the highest income and the group with incomes from 60 to below 77 percent of the median income between 2010–13 and 2014–15 (this reversal was only statistically significant for the highest income group). In the group directly below the median income, we observed a marked shift in population proportions—particularly in the mid-2000s.

For the approach used here, the extent to which growing inequality in disposable household income affects

<sup>8</sup> According to the income groups in this study, the proportion of the population below the poverty line was 11 percent in the period 1995–99 and 14.5 percent in 2014–15. The at-risk-of-poverty rate implied by the income groups used in this study is slightly different to related calculations published previously on the at-risk-of-poverty rate based on SOEP data. See Grabka and Goebel, “Real Income,” and Federal Ministry of Labor and Social Affairs (BMAS), *Lebenslagen in Deutschland – Der Fünfte Armuts- und Reichtumsbericht der Bundesregierung*, (PDF, BMAS, Berlin, 2017) (available online). There are two equally important reasons for this: on the one hand, we used household income without taking income benefits from owner-occupied homes (imputed rent) into account. On the other hand, when creating the groups, we rounded the relative distance between incomes to 1.30 (instead of using the exact value of  $\sqrt{5/3}$ ). As a result, the poverty line for our grouping is a somewhat lower value of 59.171 percent of the median (see Box 2). And the values per period are shown as mean values.

income groups depends on both the trend of the reference value—here, median income—and trends in income relative to the reference value (see Box 2). For real disposable household income, the value rose from around 18,733 euros to 20,053 euros between 1995–99 and 2014–15—an increase of 7.1 percent. When the reference value (median) rises, the thresholds between income groups shift upward accordingly.

The change in the population's household structure is another issue much discussed with regard to the growing inequality in disposable household income. However, the latest research results on the transition into poverty in adulthood indicate that in four out of five cases, lower household income due to lower employment intensity in the household triggered the descent into poverty.<sup>9</sup>

### Inequality of market income

Household market incomes reflect if and how people are able to ensure their household's livelihood through their own work and that of the other members of the household. Starting at beginning of the 1990s, there was a significant rise in the inequality of household market incomes (before taxes and transfers). The trend continued until the mid-2000s and initially plateaued at a high level (see Table 1). Even if pensions are not included, the trend is still observable. Current analyses indicate a recent slight increase in income inequality.

Redistribution benefits through taxes and social security contributions, which also play a key role in disposable income in Germany, continue to be relatively high by international comparison but became somewhat lower during the period of analysis. All in all, they probably did not play a decisive role in raising the level of inequality among net household incomes. The increase in income inequality has much more to do with profound changes in the job market.

### Changes in the labor market: higher participation, shift in earned income, and working hour differentiation

In the past 20 years, the job market has experienced major changes with regard to participation, working hours, and wage structure.

<sup>9</sup> See for example Goebel, Grabka, and Schröder, "Income Inequality Remains High"; Martin Biewen and Steffen Hillmert, "Aktuelle Entwicklungen der sozialen Mobilität und der Dynamik von Armutsrisiken in Deutschland (Follow Up-Studie zur Armuts- und Reichtumsberichterstattung) – Abschlussbericht," (Tübingen: Institute for Applied Economic Research, 2015); Martin Biewen and Andos Juhasz, "Understanding Rising Inequality in Germany, 1999/2000–2005/06," *Review of Income and Wealth* 58 (2012): 62–647.

### Labor force participation has increased

Measured by the employment rate, the labor force participation of people in the 25-to-64 age group rose steadily between 1995–99 and 2014–15—from just under 70 percent to around 80 percent (see Table 2). Among men, the rate went from 79 percent to 84 percent, and it rose disproportionately for women: from 57 to 75 percent. However, the rise in participation is not only due to the greater number of working women. Differentiation by age group showed a disproportionate rise in employment among older age groups in particular. Among 55- to 64-year-olds, labor force participation rose from around 41 percent to 64 percent between 1995 and 2013 and to 70 percent in 2015.

### Inequality in earned income increased until 2005

After 2005, the individual earnings and wages of 25- to 64-year-olds showed a decline but began rising again in 2010 (see Table 3). Between 1995 and 2015, the average (arithmetic mean) monthly earned income of 2,810 euros rose to 2,815 euros after experiencing a decline. With temporary fluctuations, the median income dropped from 2,566 euros to 2,500 euros. In the same period, wages temporarily fell from an average of 17.84 euros per hour to 17.32 euros per hour. By 2015, they were back up to 17.78 euros per hour. Inequality of earnings (and wages) increased during the period, going from a Gini index of 0.31 (0.29) to 0.37 (0.31). The proportion of low-income earners rose steadily from 24.4 percent to 33.7 percent, and the proportion of low-wage earners went from 16.7 percent to 24.5 percent. However, the increasing inequality in gross hourly wages has moderated somewhat in recent years, as analyses for the period between 2010 and 2015 indicate.<sup>10</sup> The proportion of the low wage sector also stopped rising in approximately 2007 and has hovered in the 23.5 to 25.0 percent range since then.<sup>11</sup>

### More flexible, finely differentiated working hours

While the proportion of full-time employees (here: over 30 hours per week) remained high, working time arrangements have become more flexible and finely differentiated (see Figure 2). For example, the proportion of 25- to 64-year-old employees who worked for up to 30 hours per week rose from 17.2 percent to 33.5 percent of all employees in the age group between 1995 and 2015. The proportion of those with marginal employment of

<sup>10</sup> Brenke and Kritikos, "Hourly wages in lower deciles."

<sup>11</sup> Thorsten Kalina and Claudia Weinkopf, "Niedriglohnbeschäftigung 2013: Stagnation auf hohem Niveau," *IAQ Report* 2015-03 (2015) (available online).



Table 1

**Development of inequality in household incomes between 1995 and 2015**

In euro

	1995-1999	2000-2004	2005-2009	2010-2013	2014-2015
<b>Disposable household income</b>					
Mean	20,955	22,075	22,413	22,986	23,021
Median	18,733	19,724	19,600	20,052	20,053
Gini	0.25	0.26	0.28	0.28	0.29
<b>Market household income without pensions</b>					
Mean	23,813	24,470	24,239	25,135	25,239
Median	21,049	21,108	20,176	21,014	20,781
Gini	0.46	0.48	0.50	0.50	0.51
<b>Market household income with pensions</b>					
Mean	27,740	28,812	28,471	29,420	29,614
Median	23,878	24,243	23,575	24,459	24,404
Gini	0.35	0.36	0.39	0.38	0.39
<b>Inequality reduction due to redistribution (in percent)</b>					
Gini (w/o pensions)*	45.1	46.2	43.8	43.0	42.8
Gini (w. pensions)*	27.0	27.9	26.6	25.6	25.7

\*  $((\text{Gini-Market-Income} - \text{Gini-Disposable-Income}) / \text{Gini-Market-Income}) * 100$

Note: Disposable annual household net-income, deflated (2015), OECD-equivalent weights. Population: Individuals in private households.

Source: SOEPv32.

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Table 2

**Employment rate<sup>1</sup> for different age groups, 1995 to 2015 (age 25 to 64)**

		1995-1999	2000-2004	2005-2009	2010-2013	2014-2015
25-64	total	68.49	71.17	75.12	78.50	79.53
	male	79.31	79.56	82.33	83.68	84.12
	female	57.41	62.62	67.86	73.31	74.93
25-34	total	74.22	75.29	76.23	77.28	77.82
	male	85.98	85.44	83.77	80.98	82.30
	female	61.87	64.78	68.58	73.54	73.20
35-54	total	79.22	80.82	82.21	85.16	84.82
	male	89.81	88.93	88.95	90.40	89.78
	female	68.39	72.56	75.32	79.84	79.80
55-64	total	40.76	44.90	55.52	64.46	70.12
	male	50.61	51.96	63.10	70.52	73.78
	female	30.91	37.85	48.21	58.66	66.60

<sup>1</sup> Employment rate (proportion of employes to all individuals of the corresponding age group).

Note: Population: Individuals in private households.

Source: SOEPv32.

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less than 15 hours per week rose from 4.4 percent to 8.6 percent in the same period. This type of marginal employment cannot be equated a priori with problematic income situations in the affected households. In financially secure households, it could also take the form of paid jobs on the margins of the job market—for example, during an apprenticeship, after reaching retirement age, as supplementary household income, or in order to remain active in the job market.

**Altered significance of specific types of employment**

In order to conflate income groups in the overall population with the employment situation, we divided the overall population—not just the 25- to 64-year-olds—into five groups based on their participation in the job market. In turn, the groups could be divided into three categories each (see Box 3): (1) *Regular employees* with full-time (over 30 hours per week) or part-time (15 to 30 hours per week) positions (including civil servants, excluding temporary workers) plus independent contractors working at least 15 hours per week; (2) *Atypical employees*: temporary workers, regular or atypical employees with low wages (hourly wages of less than 66 percent of the median of all full-time employees),<sup>12</sup> plus all forms of marginal employment with less than 15 hours per week, including odd jobs or sideline jobs, including assistants (for unemployed persons or employed persons without information on hours worked); (3) *Unemployed*, including special employment forms defined by social policy arrangements (maternity leave/parental leave, military or civil service, semi-retirement models, reduced hours) and unemployed persons with active ties to the job market (potential labor force); (4) *In training*, the majority of whom have employment at least 20 hours per week (apprenticeship, intern, dual education system), students and trainees primarily occupied with training and supplementary employment less than 20 hours per week or without employment; and (5) *Non-active*, including children and young persons under 18 or seniors older than 65.

Demographic shifts have left their mark on the long-term trend (see Figure 3): the proportion of people over 65 has increased and that of those under 18 has decreased. More 18- to 64-year-olds are participating in the job market. The proportion of unemployed persons rose until 2006 but fell afterward. In all areas (temporary, low-wage, and marginal employment), the proportion of atypical employment increased over the period. The proportion of regular employees—and particularly the group with “normal”

<sup>12</sup> Based on the OECD definition, low wages are defined as gross hourly wages that are below two-thirds of the national median gross wage of all full-time employees (over 30 hours per week).



employment (full-time employees—decreased until 2006 and increased afterward, but remained slightly below the level of 1995, the beginning of the period examined. These findings are in line with earlier studies on regular employment.<sup>13</sup>

### Mobility between types of employment now lower than 20 years ago

When labor force participation is rising while regular employment has plateaued, and low-wage employment is rising at the same time, the implication is that the boundaries among employment types are shifting. Based on the five basic types of employment outlined above, there are signs of shifts between regular employees and persons with atypical employment (see Table 4). The stability rates of both groups rose in comparison to the second half of the 1990s. Within three years, around 84 percent of regular employees remained in that group (1995–99: 80.5 percent). As expected, the stability rate is considerably lower for atypical employment than it is for regular employment, but it went from 50 percent to 56 percent during the period studied. After three years, a good one-quarter of the people in atypical employment took up regular employment. This indicates that atypical employment has become an important stop on the way to regular employment. As a consequence of the increase in labor force participation, atypical employees are now less likely to descend into unemployment than they were earlier. However, they are more likely to do so than regular employees. The majority of unemployed persons now tend to secure atypical forms of employment instead of making a direct transition into regular employment. And upon completing their training, the majority of people who attended university or had apprenticeships at age 25 and over found regular employment within three years.

### Change in types of employment within income groups

Overall, the proportion of regular employment in Germany has remained constant, but there were different trends within the individual income groups (see Figure 4). By conflating our classification of employment types and income groups, we were able to show the extent to which the changes in the labor market affected the respective groups (see Table 5).

In the group with the highest income, the proportion of people with regular employment rose over the monitored period. In the groups with incomes below the median, however, the proportion of people with regular employment fell between 1995–99 and 2014–15 (from

Table 3

### Development of earned incomes and wages from 1995 to 2015

In euro

	1995-1999	2000-2004	2005-2009	2010-2013	2014-2015
<b>Earned incomes</b>					
Mean	2,814.31	2,880.54	2,798.63	2,758.47	2,815.42
Median	2,565.51	2,595.47	2,540.54	2,464.07	2,500.00
Gini	0.31	0.34	0.36	0.36	0.37
Low income <sup>1</sup> (percent)	24.43	28.74	32.46	32.43	33.68
<b>Hourly wages</b>					
Mean	17.84	17.88	17.45	17.32	17.78
Median	15.52	16.06	15.64	15.27	15.58
Gini	0.29	0.28	0.30	0.31	0.31
Low wages <sup>2</sup> (percent)	16.72	19.56	22.54	23.73	24.54

1 Low income: Earnings equal or less of 66 percent median earnings for all fulltime employes (>30 hours per week).

2 Low wages: Hourly wages equal or less of 66 percent median wages of all fulltime employes (>30 hours per week).

Note: Real earnings and wages (at prices of 2015). Population: Individuals in private households..

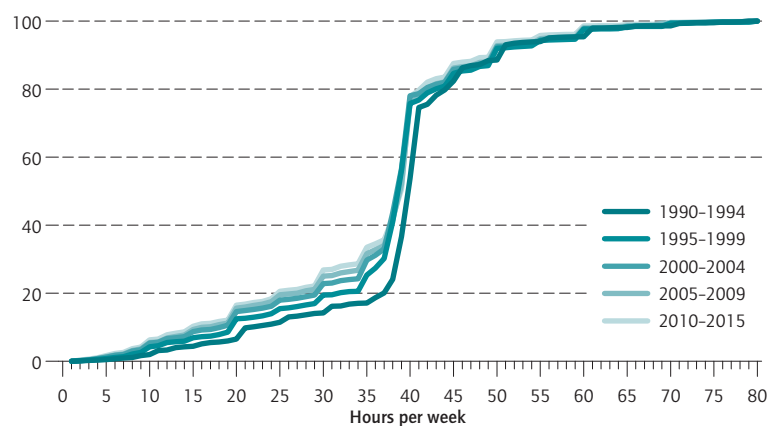
Source: SOEPv32.

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Figure 2

### Development of average weekly working hours 1990 to 2015

In percent



Note: Population: Individuals in private households with weekly working time > 0.

Source: SOEPv32.

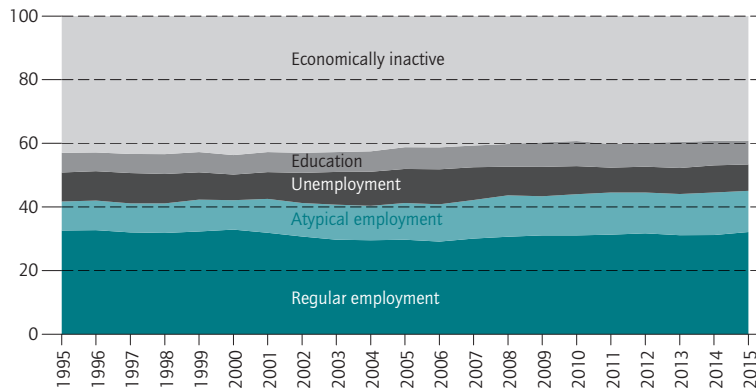
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Differentiation of working time arrangements.

13 Arnold et al., "Typical employment."

Figure 3

**Types of employment for the total population 1995-2015**  
Percentage of total population



Note: Population: Individuals in private households, s. box 3.

Source: SOEPv32.

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Share of individuals in atypical working types has increased.

Table 4

**Transition matrix for types of employment (age 25 to 64)**

Status after three years

	Regular employment	Atypical employment	Unemployment	Education	Economically inactive	
<b>Regular employment</b>						
1995-1999	80.5	6.3	7.0	1.1	5.2	100
2000-2004	79.2	7.8	8.1	1.0	4.0	100
2005-2009	83.7	7.4	5.3	0.7	2.9	100
2010-2013	83.9	7.1	5.5	1.0	2.5	100
<b>Atypical employment</b>						
1995-1999	26.2	49.6	12.6	0.9	10.7	100
2000-2004	22.0	52.9	14.5	1.3	9.3	100
2005-2009	25.1	57.5	10.0	1.4	6.1	100
2010-2013	25.2	55.9	10.9	1.4	6.6	100
<b>Unemployment</b>						
1995-1999	17.5	17.0	39.8	3.0	22.8	100
2000-2004	13.5	18.7	47.0	1.8	19.0	100
2005-2009	15.1	23.4	44.6	1.2	15.7	100
2010-2013	15.3	20.4	46.1	3.0	15.3	100
<b>Education</b>						
1995-1999	47.1	10.1	12.7	28.7	1.4	100
2000-2004	42.9	13.1	15.0	25.9	3.1	100
2005-2009	47.7	12.7	10.3	28.3	1.1	100
2010-2013	47.5	15.4	11.2	24.6	1.3	100
<b>Economically inactive</b>						
1995-1999	1.1	6.3	3.6	0.5	88.5	100
2000-2004	0.9	5.8	5.0	0.2	88.2	100
2005-2009	1.0	6.8	4.5	0.4	87.2	100
2010-2013	1.0	6.6	4.2	0.5	87.7	100

Population: Individuals in private households, age 25-64, s. box 2.

Reading example: On average 80.5 percent of all people aged 25 to 64, who were in regular employment in the period 1995-99, were still regularly employed three years later.

Source: SOEPv32.

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7.8 to five percent) but the downward trend was not constant. The greatest changes occurred between 1995-99 and 2000-04.

In these income groups, the proportion of people with atypical employment, those with jobs with low wages in particular, rose over the 20-year period. The groups below the median income recorded a sharp rise over time. The income groups in the median range showed a more moderate trend in the recent past.

The proportion of employed and unemployed persons was lower in almost all income groups in 2014-15 than it was in 1995-99. The income group with income below 60 percent of the median income is the only exception. In comparison to 1995-99, the people in this group were more frequently unemployed in 2014-15—although the situation temporarily improved.

Overall, the trends in the groups below the median (less regular employment, rising proportion of jobs with low wages) indicate that the life for the people in these income groups has become more difficult.

**Conclusions**

Our methodological approach was designed to conflate and present two key economic trends of the past 20 years: increased income inequality and employment growth. In the process, we examined the issue of whether a detailed examination of employment growth by type of employment would pinpoint any differences among income groups.

The proportion of employees who receive low wages has indeed risen, particularly in the income groups below the median. The overall level of regular employment has remained constant, but there have been shifts between income groups. Fewer people in “the middle” work in regular jobs than was the case 20 years ago.

The descriptive findings presented here do not provide a conclusive answer to the question of the role the changes in the labor market play in the general increase in income inequality. Instead, our results imply a complex interaction with some countercurrents. Employment types in Germany have become more finely differentiated, which has certainly contributed to establishing new transitions to higher labor force participation. In turn, higher participation has enabled people to benefit more from their existing earning power and enjoy higher joint income standards for households. On the other hand, precarious lower-paying types of employment seem to have tightened their grip on Germany’s lower income groups.

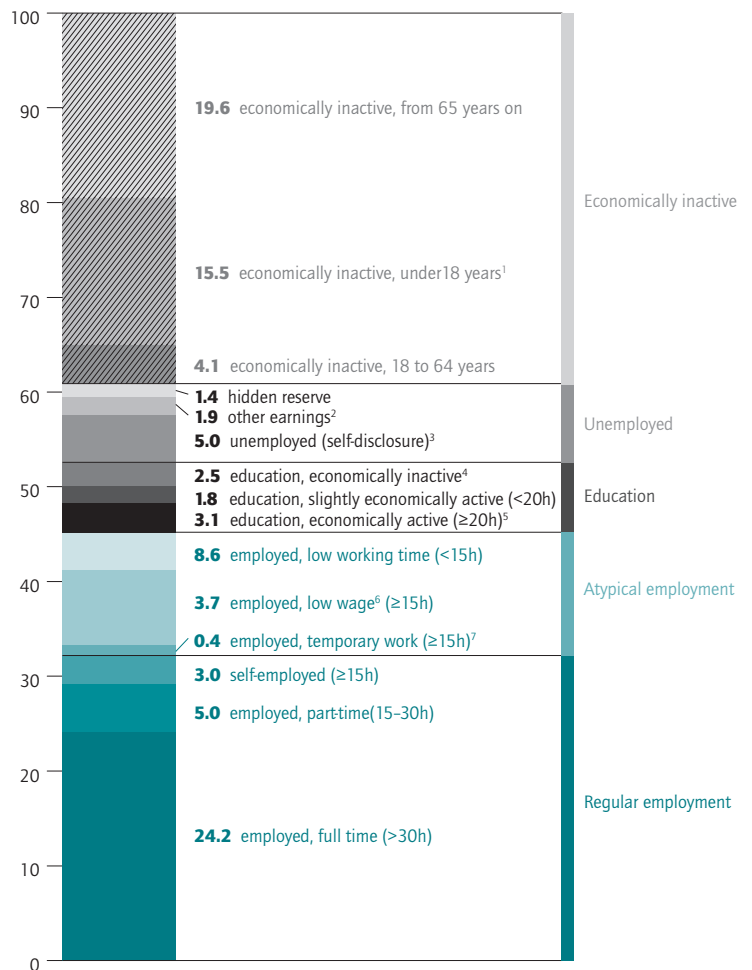
Box 3

**Detailed description of employment typology**

The employment typology used in the present study (see figure) encompasses the entire population. It enabled us to depict inactive persons, persons active in the labor force, and employed persons in a typology and explicitly included phases of training/education, as well as "marginal forms" of employment and the lack thereof (employment alongside/as part of an apprenticeship, sideline jobs, atypical employment, unemployment, etc.). We differentiated between regular and atypical forms of employment. Regular employment includes employees who contribute to the social insurance system, civil servants with full- or part-time positions who are not temporary workers, and independent contractors. Positions with low hourly wages and those involving few working hours (below 15 hours per week) are not classified as regular employment. Therefore, regular employment is an expanded definition of the standard employment contract in Germany, which takes both the criteria of working hours and remuneration into consideration. As a rule, atypical forms of employment are those that deviate from conventional employment as described above. In the present typology, atypical forms of employment are different from regular forms with regard to working hours, remuneration, and type of contract (temporary work). Other boundary lines (for example, those in *Armut- und Reichtumsbericht der Bundesregierung*,<sup>1</sup> the German government's report on poverty and wealth, or the ones used by the German Federal Statistical Office (*Statistisches Bundesamt*)) refer to working hours, type of contract (temporary work), contract limit, and job scope (whether they pay less than or equal to 450 euros per month or last for three months per year). Unlike the definitions mentioned above, the typology in the present study differentiates the overall population into non-overlapping basic and subgroups and does not refer to people with employment alone.

Figure

**Indication of population in Germany by types of employment, 2015**  
In percent of total population



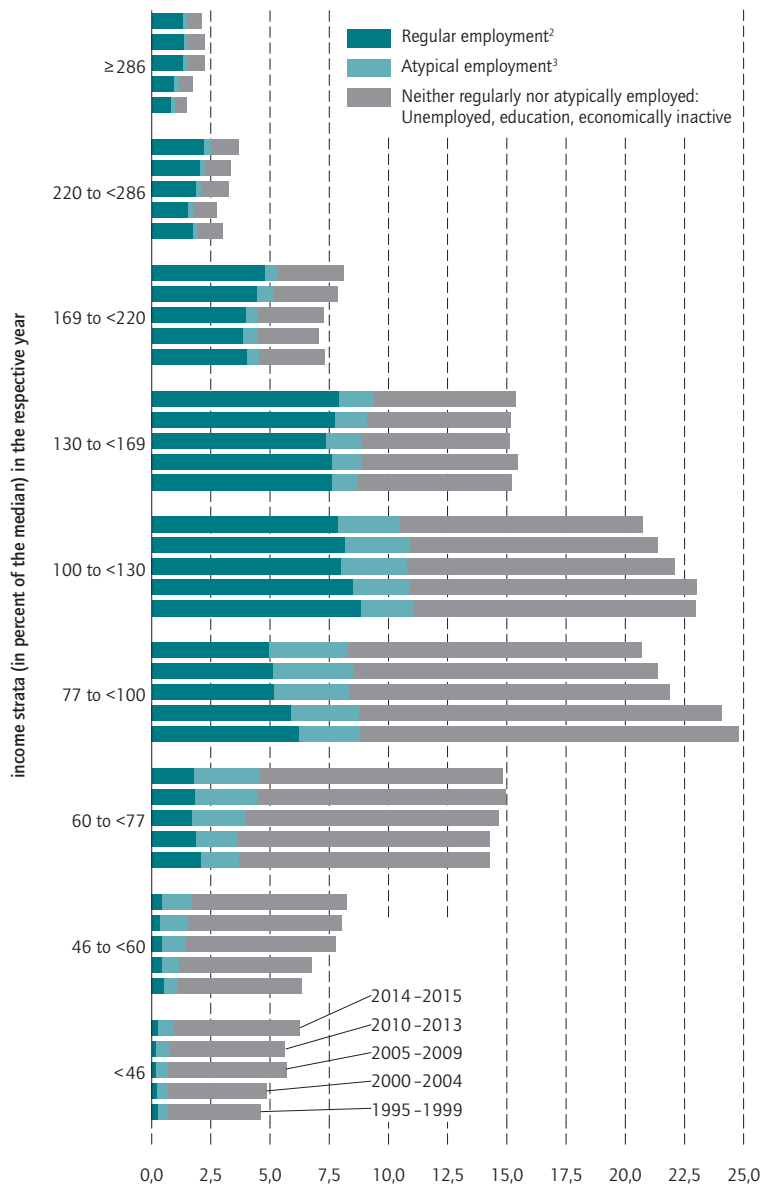
1 All children and young persons under 18.  
 2 Including maternity leave, parental leave, military or civil service, semi-retirement models.  
 3 All persons, currently registered as unemployed according to their own accounts. The self-report also includes persons, who are not yet or not anymore officially registered as unemployed by the Federal Labor Office.  
 4 Students and trainees from 18 years on.  
 5 Including internship and trainees.  
 6 Included since 2001.  
 7 Wages are defined as [Gross earnings (per month) / working time (hours per week) \* [13/3]]. Low wages are defined as hourly wages equal or less of 66 percent median wages of all fulltime employees (>30 hours per week).

Source: SOEPv32.

<sup>1</sup> <http://www.armuts-und-reichtumsbericht.de/DE/Bericht/Der-fuenfte-Bericht/der-bericht.html>, in German only.

Figure 4

**Selected types of employment<sup>1</sup> by income groups**  
In percent of the total population



These trends highlight the fact that the positive rise in employment in the past years has not benefitted all income groups to the same extent and on its own will probably not be able to facilitate prosperity and participation in society for all. Policy measures targeted to the specific groups in the lower half of the income distribution who are threatened by poverty (e.g., single parents) could be implemented to give more people the opportunity to improve their earnings. Expanding daycare programs and assuring their quality in order to give parents the opportunity to raise their incomes could be one policy target. Another would be to qualify people in middle and lower income groups beyond their current job experience in order to create improved opportunities for transitioning from atypical to regular jobs.

1 Please see box 3 for a detailed description of the typology of employment types.

2 Full-time, part-time, and self employed.

3 Low wages, marginal employment and temporary contract.

Note: Income groups based on disposable annual household net-income, deflated (2015, OECD-equivalent weights). Population: Individuals in private households. Please see box 2 for a methodological description of the income grouping.

Source: SOEPv32, own calculations.

Table 5

**Types of employment for income groups, 1995–2015**

In percent of individuals at income groups (household net income) and periods

	Regular employment		Atypical employment				Unemployment		Education	Econ. Inactive	Total
	total	NAB	total	ZAB	NIL	GEZ	total	ALO	total	total	
<b>≥ 169%</b>											
1995–1999	56.2	40.1	7.6	0.0	3.1	4.4	4.9	3.0	4.0	27.2	100.0
2000–2004	55.7	36.7	8.1	0.3	3.6	4.2	4.6	1.6	4.6	27.0	100.0
2005–2009	56.6	39.1	7.4	0.4	3.2	3.9	4.2	1.4	5.1	26.7	100.0
2010–2013	58.8	42.5	8.0	0.5	3.5	4.0	3.1	0.9	5.3	24.9	100.0
2014–2015	60.2	43.0	7.2	0.2	3.1	3.9	3.7	0.8	4.9	24.0	100.0
<b>130 to &lt; 169%</b>											
1995–1999	50.2	40.9	7.3	0.0	3.7	3.6	5.4	3.0	5.8	31.4	100.0
2000–2004	49.2	39.1	8.4	0.4	4.5	3.5	5.3	2.6	5.0	32.1	100.0
2005–2009	48.9	38.7	9.7	0.6	5.2	3.9	5.5	2.0	5.5	30.5	100.0
2010–2013	51.0	39.3	9.1	0.6	4.8	3.7	3.8	1.1	6.6	29.4	100.0
2014–2015	Tab.6	41.4	9.6	0.4	5.5	3.7	4.0	1.0	5.9	29.0	100.0
<b>100 to &lt; 130%</b>											
1995–1999	38.5	32.3	9.7	0.0	5.9	3.8	7.3	4.4	5.7	38.7	100.0
2000–2004	37.0	29.7	10.4	0.5	6.3	3.6	7.1	3.6	5.7	39.8	100.0
2005–2009	36.2	29.1	12.6	0.7	7.7	4.2	6.8	3.0	6.2	38.2	100.0
2010–2013	38.3	30.7	12.8	0.6	8.0	4.2	5.2	2.2	7.2	36.5	100.0
2014–2015	38.2	29.8	12.5	0.5	8.3	3.7	5.0	1.9	7.3	37.0	100.0
<b>77 to &lt; 100%</b>											
1995–1999	25.1	20.6	10.5	0.0	6.9	3.6	8.9	5.0	5.8	49.7	100.0
2000–2004	24.5	20.2	12.0	0.4	7.9	3.7	9.2	4.7	5.9	48.5	100.0
2005–2009	23.7	18.9	14.3	0.8	9.3	4.3	8.5	4.1	6.4	47.1	100.0
2010–2013	24.0	19.1	15.9	0.5	10.4	5.0	7.2	3.3	7.6	45.3	100.0
2014–2015	24.0	18.4	16.1	0.4	10.7	5.0	6.4	3.0	7.1	46.4	100.0
<b>60 to &lt; 77%</b>											
1995–1999	14.8	12.4	11.0	0.0	7.6	3.4	12.2	7.1	6.1	55.9	100.0
2000–2004	13.0	9.9	12.3	0.2	8.6	3.4	12.1	7.3	6.7	55.9	100.0
2005–2009	11.6	8.4	15.6	0.5	11.1	4.0	12.3	8.2	7.9	52.6	100.0
2010–2013	12.2	8.8	17.7	0.7	12.1	4.9	9.4	6.0	7.7	53.0	100.0
2014–2015	12.1	8.2	18.8	0.5	13.8	4.5	10.1	6.2	7.6	51.4	100.0
<b>&lt; 60% of median</b>											
1995–1999	7.8	5.0	8.8	0.0	5.5	3.3	19.3	13.9	10.4	53.7	100.0
2000–2004	5.8	3.4	10.2	0.2	6.7	3.3	21.1	15.4	10.7	52.2	100.0
2005–2009	4.7	2.8	11.2	0.3	8.0	2.9	26.0	21.2	12.2	45.9	100.0
2010–2013	4.0	2.3	12.9	0.3	9.1	3.4	22.9	19.3	12.6	47.7	100.0
2014–2015	5.0	2.7	13.4	0.2	9.5	3.7	23.6	19.1	12.7	45.3	100.0

Population: Individuals in private households.

See box 2 and 3.

Source: SOEPv32, own calculations.

Rates of atypical employment increased in the lower half of income distribution.

Box 4

**Socio-demographic differentiation for annual income from previous year**

The income components reflected in the “annual net household income” measurement are related to the period of the previous calendar year. The resulting aggregated income information adjusted for household size refers to the household composition at the time of the survey (see Box 2). The survey date is also decisive for our differentiation by employment type. As a result of conflating socio-demographic differentiations at the time of surveying and the income information referring to the previous year, changes within the year may result in deviations from the current household income level. This principally applies to the short-term changes in employment status that occur in the case of unemployment or during periods of transition into and out of employment. The monthly net household income statistic offers greater temporal consistency with regard to income components,

household composition, and type of employment. However, it does not take income components and trends for entire years into consideration. Socio-demographic differentiation of income groups by monthly income refers back to the momentary household income situation at the time of the survey more directly. Whereas using the prior years’s annual income refers to the more long-term, underlying material income group, which basically describes the material background before even looking at the socio-demographic groups. For example, monthly information sheds more light on the relationship of currently unemployed persons to lower income groups and poverty than the prior year’s income does. The two approaches are empirically different in detail only.

Table

**Sociodemographic differentiation for annual incomes with previous year's information**

Income groups and types of employment, in percent

Annual income							
Percent of median	Population percentage	Regular employment	Atypical employment	Unemployment	Education	Economically inactive	
≥ 169	14.0	59.6	7.1	3.7	4.8	24.8	100
130 to < 169	15.0	52.7	9.5	3.5	5.5	28.8	100
100 to < 130	21.1	39.2	11.9	4.7	7.2	36.9	100
77 to < 100	20.8	24.5	16.3	6.2	7.4	45.7	100
60 to < 77	14.5	11.9	19.3	10.0	7.0	51.8	100
< 60	14.7	5.7	12.5	23.9	12.5	45.4	100
	100						
Monthly income							
Percent of median	Population percentage	Regular employment	Atypical employment	Unemployment	Education	Economically inactive	
≥ 169	13.8	59.8	6.2	3.0	4.4	26.6	100
130 to < 169	14.7	51.2	8.7	3.4	6.2	30.5	100
100 to < 130	21.6	38.0	12.0	4.3	5.7	40.1	100
77 to < 100	22.0	24.8	17.1	5.2	7.2	45.7	100
60 to < 77	13.2	13.6	18.6	10.8	8.5	48.7	100
< 60	14.8	6.6	13.6	26.4	13.2	40.3	100
	100						

Source: SOEPv32, own calculations.

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JEL: D31, I31, I32, J62

Keywords: Income inequality, Labour market participation, Precarious living conditions, SOEP



## INTERVIEW WITH PETER KRAUSE AND CHRISTIAN FRANZ

## »Regular employment continues to play important role«



Dr. Peter Krause is a Research Associate at the German Socio-Economic Panel Study (SOEP) at DIW Berlin

Christian Franz is an Advisor in the Executive Board Department at DIW Berlin

1. Mr. Krause, you took a close look at income groups in Germany. What did you hope to accomplish? Peter Krause: We wanted to bring together two discussion threads in our study. One thread has to do with the long-term trend in inequality of household income distribution and the other, with changes in labor force participation. Until the mid-2000s, inequality in disposable household income increased and has plateaued on the same high level ever since. At the same time, labor force participation has risen rapidly: many more people have jobs now than 20 years ago. The question here is: how have employment types changed in the respective income groups?
2. What is special about your study's methodology? Christian Franz: We successfully managed to conflate two perspectives – the income dimension on the one hand and employment and its myriad forms on the other. There are numerous studies examining income groups in detail, but none of them show the concurrent development in types of employment, especially over the rather long period of 1995 to 2015.
3. How have the low, middle, and high income groups changed in the past 20 years? Christian Franz: We found that the groups surrounding the median income have shrunk. The trend was the strongest in the mid-2000s but is still very much present in the most recent surveys. The middle is shrinking, but at the same time we see swelling at the tails – in both the lower income groups below the poverty line and those at the top. There are more people in these groups than there were in 1995.
4. What does the picture look like in numbers? Peter Krause: The middle income groups shrunk by around six percent between 1995 and 2015. At the upper tail, we see a solid two percent increase in the same period, and the lower tail grew by 3.5 percent.
5. Were the changes in income groups over the past 20 years gradual, or were there abrupt changes? Peter Krause: I would not call them abrupt changes, but there were some marked shifts in the income groups, especially in the mid-2000s. After that, we saw a certain level of stabilization and deceleration in the process, and inequality continued at a high level. And when we looked at how employment types in Germany changed during that time we saw that regular employment (full- and part-time) is still very important. However, in income groups below the median, the number of low-wage earners increased. In income groups with higher incomes, the increase is not necessarily a problem insofar as the employment of household partners can compensate for it. For households in lower income groups, the increase can cause problems because these earnings represent a greater share of household income. At the same time, the proportion of those with regular employment in that income group decreased until 2013.

Interview by Erich Wittenberg



To hear the recorded interview in German, visit [www.diw.de/interview](http://www.diw.de/interview)