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Country Studies: Inequalities in Europe and North America

A parallel study to the IFS Deaton Review

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Inequality in Germany: 1983–2020

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Contents

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1. Executive summary

Employment, wages, hours and individual earnings

The most significant trends in the German labour market in the past decades relate to the increasing labour market participation of women. Since 1983, Germany has seen a steady and sustained rise in the employment rate for prime working-age women (aged 25–60), increasing the employment in this age group from little more than 50% in the early 1980s to more than 80% before the beginning of the COVID pandemic. Employment rates among men have remained close to constant at high levels, so that the gender employment gap still amounts to 7 percentage points in 2019. However, as younger cohorts no longer display a strong difference in male and female employment rates, it is likely that due to cohort-driven composition effects female employment among all prime working-age women will continue to grow, further narrowing the gender employment gap in the future. Overall, the major trend of increased female labour market participation has led to a steady increase in employment also in the overall population of working-age individuals.

The expansion of higher education promoted a large rise in educational attainment for both men and women. In 2021, almost 32% of prime working-age people had high levels of education, and just 10% had little or no education, compared to 10% and 25% respectively in 1984.

Over the last forty years, Germany has seen prolonged periods of poor wage growth. Median hourly wages for employees declined with the German reunification, stagnated in the following decades and have been growing only in the last pre-pandemic years. This decade-long stagnation is observed for both men and women and in all education groups.

Inequality in real gross hourly wages increased moderately between 1995 and 2005 and remained relatively stable before and after that period. Looking separately at the 90:10 ratio and the lower half of the distribution (as captured by the 50:10 ratio), we see that inequality in some of these statistics even fell in the years preceding the COVID pandemic. This development was mainly driven by real wage growth at the bottom of the income distribution.

Average hours worked by employees have remained very stable, with a small difference between men (working slightly fewer hours) and women (working slightly more hours) over the decades investigated. Consequently, the gender gap in working hours is closing very slowly. The participation of women in the labour market has increased. However, the increasing labour supply of women has mainly favoured part-time employment.

Combining trends in gross hourly wages and hours worked, inequality in individual earnings has become more severe in Germany following reunification. Moreover, the lack of substantial increases in real wages at the median means that large parts of the labour force no longer profit from economic growth, which has been weak in Germany during this period. This means that the moderate increase of median individual earnings in the last 20 years has been driven by increased employment, rather than by hours worked, and hourly wages have remained constant. However, earnings inequality as measured by the Gini coefficient or the 90:10 ratio has declined in recent years.

Labour market institutions

Collective bargaining is still the norm in many sectors of the Germany economy, with the majority of workers covered by collective bargaining agreements. However, this share has been steadily declining from 85% in the 1980s to roughly 55% in the years before the COVID pandemic. A statutory uniform minimum wage was introduced in 2015 and its bite has not changed much during the last five years. However, this may change with the substantial increase to €12 in 2022.

The share of self-employed people has been relatively low in the last decades, at around 7%, and has fallen in recent years, while the share of employees has risen steadily from 66% in 1983 to more than 80% in 2019 among prime working-age individuals.

The German social transfer and unemployment benefit system has seen a strong transformation with the Hartz reforms, implemented from 2001 to 2004. Prior to 2005, unemployment benefit replacement rates differed little with respect to duration of unemployment. Since then, unemployment benefits for long-term unemployed have been substantially reduced.

Household incomes

Two main factors have affected the way in which inequality in individual gross earnings translates into inequality in household incomes: patterns of assortative matching and changes in the tax and benefit system.

Assortative matching has become even more common in Germany over the past three decades. First, the relationship between individual earnings and the likelihood of being in a couple is now stronger than before. In lower-education groups of prime-age workers, the share of singles has increased. Second, high-earning individuals are now more likely to have a partner who works than before. Third, for couples in which both partners work, the positive correlation between partners' earnings is now stronger than before.

The rise in assortative matching means that the catch-up of women with men over the last four decades has largely reduced earnings inequality within, rather than across, households. Coupled with the increase in inequality in male earnings, which remain the dominant source of household earnings, this led to a sharp increase in earnings inequality among working households, especially in the 1980s, up until the Great Recession of 2008–09.

The tax and benefit system somewhat dampened the rise in household earnings inequality between 1991 and 2007, but the effect was far from complete. Aggregate inequality measures, such as the Gini coefficient and the 90:10 ratio, have increased markedly since 2000. In addition, the Hartz reforms have redistributed funds from transfer recipients to working households, tending to decrease earnings inequality but increase inequality in disposable household income.

Overall, though, most indicators of income inequality have stabilised since 2005. The reasons for this development are still hotly debated and are likely manifold, potentially including the impressive decline in unemployment in the years after the Hartz reforms, the better performance of the German economy after the Financial Crisis, compositional shifts in the labour force, and the introduction of the federal minimum wage in 2015. Whatever the reason, it is clear that the period between 2005 and the COVID pandemic saw little movement in household income inequality.

Inequality during the pandemic

Like many other countries in Europe, the German economy was hit severely by the COVID pandemic, with a reduction in output more severe than during the Financial Crisis. The government reacted quickly to the adverse conditions and introduced a large set of stabilising measures. Next to an economic stimulus program and a €750 billion rescue package for small and medium-sized firms, the main pillar of the response of the German government to the pandemic was an augmented version of the pre-existing short-term work agreements. From February to May 2020, more than 10 million employees had been registered for short-term work, and numbers continued to be at historically high levels for the following months (Bundesagentur für Arbeit, 2024c).

In consequence, unemployment increased only little during the pandemic, as most employees were effectively shielded from job losses. According to official statistics, the number of people in employment fell by merely 0.8% in 2020, but the self-employed or marginally employed were significantly more affected (Statistisches Bundesamt, 2024b). The number of people in marginal employment (i.e. 'mini-jobbers') fell by more than 7% compared to the previous year (Bundesagentur für Arbeit, 2024b). Furthermore, due to the extensive use of short-time work, the number of hours worked by employees in 2020 fell sharply by 4,2% compared to the previous year, according to the national accounts of the Federal Statistical Office (Statistisches Bundesamt (Destatis), 2024b). This was also reflected in lower gross wages and salaries for employees, although a considerable part of the income lost by short-time workers was offset by the state short-time working allowance or voluntary supplements to the short-time allowances by the employer. At 0.1%, the aggregate year-over-year decline in gross wages and salaries per employee was low compared to the decline in hours worked. This can be explained by the continued rise in collectively agreed wages in 2020 and a composition effect caused by the disproportionately sharp decline in marginally employed workers (Schmidt et al., 2021).

While official statistics provide data on aggregate hours and income measures for Germany, it is still difficult to estimate the distributional effects of the pandemic for Germany given the available data sources. This report is based on the latest version (v38.1) of the German Socio-Economic Panel (SOEP), a representative household survey which covers the survey year 2021 and enables an analysis of income data for 2020 (Socio-Economic Panel, 2023). However, due to the pandemic-related contact restrictions, the data collection could not be carried out as usual, which unfortunately led to a significant drop in the number of cases for the 2021 survey year/2020 data year. In addition, analyses suggest that the standard questions in the SOEP do not adequately capture the extent and effects of short-time work in terms of hours worked, earnings and related variables (Schröder, et al., 2023). As a consequence, the results of this survey wave are subject to greater uncertainty. Whatever the short-term distributional effects of the COVID pandemic, many other aspects of the pandemic, such as prolonged school closures, are likely to have lasting effects that will take many years to materialise.

2. Institutional background

Provision of the welfare state

Germany today is characterised by a comprehensive welfare state system. Since the days of Otto von Bismarck, who over the years 1883–91 introduced health, accident, disability and old age insurance, the German welfare state has undergone significant changes in response to social, economic and political developments. Following World War II, the welfare state was further expanded to include a broader range of social programmes, including unemployment insurance and housing assistance. In the decades since, the system has continued to evolve, with reforms aimed at reducing public spending and promoting greater efficiency.

Before 2005, the unemployment benefit system in Germany was based on a replacement ratio relative to the previous net income when last employed. Unemployment benefits were lower in the long term, however, both the short-term unemployment benefit (Arbeitslosengeld) and the long-term unemployment benefit (Arbeitslosenhilfe) were based on a replacement ratio. In addition, a subsistence benefit was made available (Sozialhilfe).

The most important transformation of the German welfare state in recent decades, known as the Hartz reforms, took place in the early 2000s. The aim of the Hartz reforms was to increase the efficiency and flexibility of the labour market, reduce unemployment, and make the welfare system more responsive to the needs of individuals. The reforms included changes to unemployment benefits, job placement services, and labour market regulations, as well as the creation of new forms of employment, such as part-time and low-wage jobs. The legislation aimed to create a more dynamic and competitive labour market, while also providing greater support and opportunities for job seekers. As part of the Hartz IV package, the old long-term unemployment benefit (Arbeitslosenhilfe) was merged with the subsistence benefit (Sozialhilfe) into unemployment benefit II, at the level of the former subsistence benefit.

Since the Hartz reforms, unemployed individuals under the age of 65 who are generally able to work at least 15 hours per week are entitled to unemployment benefits if they have paid contributions to the unemployment insurance for at least 12 months within the 2 years preceding the unemployment spell. Unemployment benefits are non-means-tested benefits. They amount to 60% of previous net earnings for childless individuals and to 67% for individuals with at least one child. The duration of entitlement to ‘unemployment benefits’ depends on the individual’s age and number of months contributions were in the previous 5 years. Additional child benefit is paid if households receive an income that covers the parents’ needs according to social assistance (citizen’s benefit), but not the needs of children younger than 25 who live in the same household.

All individuals aged between 15 and their pensionable age, who are able to work for at least 3 hours per day are eligible for citizen’s benefit (formerly unemployment benefits II). Citizen’s benefit is means tested with respect to income and wealth and they are determined by the needs of the family. In addition to the basic benefits, costs for housing and heating are covered. Individuals who are not able to work at least 3 hours per day – either because they are aged 65 or older, or because they are aged 18–65 and physically not able to work – are entitled to social assistance to secure a minimum income for everybody. These benefits are again means tested with respect to income and wealth and they are determined by the needs of the entire household.

All individuals insured by the statutory health insurance are entitled to sickness benefits (healthcare costs are directly covered by the health insurance system). These are generally employees and recipients of unemployment benefits I, but not recipients of citizen’s benefit. If sickness prevents them from working, the employer is obliged to continue salary payment for 6 weeks. Afterwards, sickness benefits are paid for by the statutory health insurance.

Parents with dependent children are eligible for child benefits, paid up to the age of 18 in general or up to the age of 25 if the child is in school or in training. Parental leave benefits were implemented in 2007. They are non-means-tested benefits that generally replace between 65% and 67% of parents' forgone net labour earnings if they suspend employment due to the birth of a child. Parental leave benefits are paid – in addition to child benefits – for a period of up to 12 months following the birth of the child. Further benefits include subsidies for housing costs, the provision of social housing, various kinds of educational benefits and savings bonuses for employees.

Social insurance contributions are paid as fixed shares of gross income up to a contribution assessment ceiling. Gross income above this ceiling is disregarded. Employees who earn more than the assessment ceiling for statutory pension insurance may opt out of statutory pension insurance completely. Concerning statutory health insurance, a different threshold (i.e. the threshold for compulsory health insurance) determines who may opt out. Employees who earn salaries above this threshold may choose private health insurance instead.

In general, most benefits in Germany go untaxed. However, a specific element of the German tax and transfer system is the progression clause. The clause is relevant for some types of income which are not directly subject to income tax (e.g., unemployment benefits I). Even though these incomes are not included in the tax base, they are included in the base used to determine the tax bracket of the progressive income tax schedule. These benefits may therefore increase the income tax rate applied to the other income sources which are subject to the income tax.

Provision of public services

Health and education are partially subsidised and partially provided for free by the government in Germany. Health insurance is mandatory for all residents, and individuals can choose between public and private insurance options. Public insurance is partially subsidised by the government, with both employers and employees contributing to the system. Co-payments are required for some medical treatments, but these are generally low. Primary, secondary and tertiary education is provided free of charge by the government, and only a small proportion of students attend private schools and universities.

In Germany, public services are provided by both local governments and the federal government. Municipality governments are responsible for providing many public services, such as public transportation, waste management, local police and fire services. The responsibility for the education system falls entirely under the jurisdiction of the German states. The resulting large variation in the design of the public education system was mandated by the Allies following World War II and has persisted ever since. Also, cultural institutions are mostly funded by either the states or the municipalities. The national/federal government, on the other hand, is responsible for providing services such as national defence, foreign affairs, and monetary policy. Overall, the division of responsibilities between regional and national government entities is a key aspect of Germany's constitutional system.

Tax system

The major taxes in Germany are levied by the federal government, with income tax and value-added tax (VAT) ranking first and second in terms of tax revenues. Income tax is levied on a progressive basis, with tax rates ranging from 0% to 42%, and an extra bracket of 45% for incomes above €277,826 per year. There are numerous allowances and deductions in place. For example, individuals with low incomes may be eligible for deductions such as the basic allowance or the child allowance.

In the German income tax system in general, married couples are taxed jointly with full income splitting, that is, the tax function is applied to half of the sum of the spouses' taxable incomes, and then the resulting tax amount is doubled. In 2000–03, a bigger income tax change was implemented, with deeper income tax cuts for higher incomes (top marginal income tax rates decreased from 53% to 42%). Up to 2021 there was a surcharge of 5.5% on the income tax paid, which was originally intended to be put towards the costs of the German reunification. In 2021, the solidarity surcharge was partly abolished and as of now only taxpayers with taxable income above €96,802 are fully subject to the solidarity surcharge.

The main tax levied on consumption is VAT, set at a standard rate of 19% and with a reduced rate of 7% for certain goods and services. The federal government is furthermore responsible for levying the corporate income tax and various excise taxes, in particular on electricity and gasoline. Revenue from most federal taxes is distributed jointly among the federal government, the states, and the municipalities, with the states receiving the majority of revenues.

While the German states play an import role in the legislative system, their ability to raise tax revenues is very limited. States mainly levy the property acquisition tax, a tax due when real property is transferred, and inheritance tax. All state taxes combined make up less than 4% of total tax revenue. Municipalities are in charge of the property tax and local business taxes. The local business tax constitutes an important source of revenues for the municipalities, and the concentration of business activity in certain regions therefore creates large and persistent differences in the municipalities' fiscal capacity and the infrastructure which can be provided locally.

Looking at the tax and transfer system as a whole, its main redistributive effects are due to transfers targeted at low-income households and the provision of public services, while the tax system itself is only mildly progressive as VAT and social security contributions counteract the progressiveness of the income tax.

Response to the COVID pandemic

As in many other countries, the German economy has been deeply affected by the COVID pandemic. In the first quarter of 2020, output fell by 2.2% compared with the previous quarter, marking the sharpest decline since the financial and economic crisis of 2009. In the second quarter, economic output fell by a further 9.7%, which was the sharpest decline since the introduction of quarterly calculations in 1970. Overall, GDP in Germany in 2020 fell by 5.0% year-on-year, and government budgets ended 2020 with a deficit of around 5% of GDP (Statistisches Bundesamt (Destatis), 2024b).

The main tool to capture the impact of COVID on the labour market has been a massive use of short-term work. Short-term work had been a popular measure also in prior economic crises, but the numbers of workers in short-term work during 2020 and 2021 were the highest ever recorded. In May 2020, companies had already registered short-time work for more than 10 million people (Bundesagentur für Arbeit, 2024c). Consequently, Germany experienced only a very moderate increase in unemployment during the pandemic. The existing regulations for accessing short-term work were made more lenient, and this facilitated access was extended until June 2023. While regularly employed workers were thus mainly shielded from substantial income losses, the marginally employed and self-employed were hit most by the pandemic.

Furthermore, many companies suffered severely in the crisis. Particularly hit were the sectors directly affected by lockdowns such as tourism and hospitality, transport, culture, and retail. However, sectors relying over-proportionally on exports, such as the automobile industry, also suffered considerable during the crisis. In response, in March 2020 the German government implemented a rescue package for small and medium-sized firms worth €750 billion. This has helped to stabilise the number of business insolvencies during and after the COVID crisis. To stabilise consumption and the macroeconomy, the German government further set up a €130 billion COVID stimulus package consisting of 57 measures. The most prominent was a temporary reduction in the VAT rate from 19% to 16%.

3. Notes on measurement and definitions

Time periods

- The analysis in this study is mostly based on the Socio-Economic Panel (SOEP), which started conducting household surveys in 1984. Hence, the analysis for Germany begins in 1984, although most income-related questions refer to the year prior to the interview, which makes 1983 the starting point for the analysis.

- This report is based on the latest version (v38.1) of the SOEP, which covers the survey year 2021 and allows the analysis of most income-related data for 2020 (Socio-Economic Panel, 2023). However, difficulties in data collection due to pandemic-related contact restrictions in Germany led to a significant drop in numbers of observations in the SOEP in 2020/2021 (see also chapter 9. Data appendix). In addition, analyses suggest that the standard questions in the SOEP on working hours and gross earnings do not adequately capture the extent and effects of short-time work in Germany in terms of working hours, earnings and related variables (see the following variable definitions). Consequently, the results of this wave are subject to greater uncertainty.

- Due to the reunification of Germany in October 1990 we have chosen to break the data at 1983, 1990/1991, 2007 and 2019. East German individuals are included in the SOEP from 1991 onwards.

Unit of analysis and sample

- The sample analysed consists of individuals aged between 25 and 60 inclusive, except where otherwise indicated. For figures on wages and earnings, the sample is further restricted to individuals (or households where applicable) with strictly positive wages or earnings. There are no further restrictions for the household income figures.

- Individuals are the unit of analysis throughout. For example, when analysing equivalised household income, each individual is allocated their respective equivalised household income, so that the specific household income is counted as many times as there are individuals aged 25–60 in the household.

- In the chart on the Gini coefficient of net household income where we winsorise (Figure 42), we allocate all observations above the 99th percentile the amount equal to the 99th percentile. Household disposable income does not contain negative values.

- Moreover, in the figure on the Gini coefficient of gross hourly wages among employees (Figure 11), we exclude the bottom and top 1% of the gender-specific distribution from the analysis.

- Otherwise, distributions are not trimmed.

- In the whole analysis the cross-sectional sampling weights at the individual level provided by the SOEP are used.

Definitions

- **Employment rate**: the fraction of the population that is employed. Individuals are considered employed if they have positive earnings (either from labour income or from self-employment) and worked at least 52 hours per year.

- **Earnings**: gross annual real individual earnings (including self-employed), among those who are employed and have strictly positive real earnings.

    - Earnings include wages and salary from all employment, including primary and secondary jobs, and self-employment, training, plus income from bonuses, overtime, and profit-sharing. Specifically, labour earnings are the sum of income from primary and secondary jobs, self-employment, 13th and 14th month pay, Christmas bonus pay, holiday bonus pay, miscellaneous bonus pay, and profit-sharing income. Since 1991 indemnity payments, since 1996 military service payments and since 2006 commuting expenses or travel grants are also considered. If an employee has multiple jobs, earnings from all jobs are summed together (Grabka, 2022, p. 50).

    - Most figures include employee taxes but *not* employer taxes, pension contributions or other contributions (e.g. health insurance). Some figures explicitly compare trends in gross earnings with and without employer taxes.

    - Employer costs are taken to consist of the social security contributions that are paid by the employer. In Germany, social security contributions are levied on gross earnings and paid approximately half by the employer and half by the employee. (This split is just the *de jure* payment and might not coincide with the economic incidence.) Social security consists of contributions to health insurance, long-term care insurance, unemployment insurance and the public pension system. Social security contributions are in general around 40% of the gross wage up to a certain threshold. Approximately half of this is paid by the employer. There are some exemptions from social insurance: First, there is the concept of marginal employment ('mini-jobs'; in 2023 with a threshold of €520 per month, previously €450 per month) where the employee does not pay social security contributions. However, the employer still has costs in the form of contributions and fees to the social security scheme. Second, there is a phase-in zone after this threshold. Third, the social security contributions are capped at gross wages of around €60,000 per year.

    - Social security contributions are calculated for the SOEP dataset at the individual level using the ifo microsimulation model for all years 1983–2020. For details, see Blömer and Peichl (2020).

    - In Germany, data on earnings are obtained as follows:

        - Information on individual wages or salaries of employees as well as income from self-employment is obtained by calculating the product of the number of months income was received in the previous year and the average amount per month.

        - Income in kind (e.g., vehicles, computers and mobile phones purchased by the business that are also for personal use) is not captured in the survey. These benefits are likely to be more important for the self-employed than for employees. Therefore, earnings measures are likely to underestimate the true monetary and other benefits of self-employment. However, it is very difficult to quantify this.

    - The information provided by the individuals surveyed on gross monthly salaries is subject to greater uncertainty for employees on short-time work since the outbreak of the COVID pandemic. A special analysis of the SOEP for the years 2020 and 2021 suggests that some employees on short-time work stated their gross earnings including the short-time work allowance in the survey, so that the state transfer is included in the information on gross earnings (Schröder, et al., 2023). This would explain why the decline in gross earnings for employees on short-time work is comparatively low compared to the reported reduction in working hours. As a result, gross earnings in the data year 2020 are likely to be overestimated and only partially reflect the extensive use of short-time work in Germany.

- Nominal earnings are converted into real terms based on calendar year 2020, using the CPI from 1991 and the price index for living expenses of all private households for the former federal territory of western Germany for the previous years provided by the federal statistical office (Statistisches Bundesamt (Destatis), 2024a).

- **Hours of work**: actual hours worked per week, including overtime, among those who are employed. Hours are strictly positive.

  - Hours of work are constructed by adding together the annual hours of full-time, part-time (including marginal employed), vocational training and short-time work. To obtain weekly hours of work, annual measures are divided by the number of weeks in a year. No correction for vacations or sickness has been made. Excludes self-employed workers.

  - For the question on hours worked, respondents were asked to indicate the average number of hours worked including overtime. This wording is intended to ensure that the respondents' answers are smoothed out by temporary outliers. This applies to temporary reductions in hours worked e.g. due to holidays, vacation or illness, as well as for temporary peaks, e.g. due to staff shortages or the scheduling of major projects in the companies. However, with regard to actual hours worked, it must be assumed that short-time workers might not have taken into account the temporary reduction in their working hours due to short-time work when reporting their average working time.[2] As a result, the number of hours worked in 2020 is likely to be overestimated and only partially reflects the extensive use of short-time work in Germany.

- **Wages**: individual real gross hourly wages (annual gross employee earnings divided by annual hours worked as defined above). Excludes self-employed workers.

  - We convert nominal wages into real terms based on calendar year 2020, using the CPI (not adjusted for mortgage interest) from 1991 and the price index for living expenses of all private households for the former federal territory of western Germany for the previous years provided by the federal statistical office (Statistisches Bundesamt (Destatis), 2024a).

  - Due to the uncertainties regarding the data on gross earnings and hours worked in connection with short-time work during the 2020 pandemic year, the results for hourly wages are also subject to greater uncertainty.

- **Disposable household income (household equivalised income after deducting taxes and adding benefits and tax credits**)

  - Disposable household income is the sum of total family income from gross labour earnings, asset flows, private retirement income, private transfers, public transfers, and social security pensions minus total family taxes and social security contributions. Labour earnings include wages and salary from all employment, including training, self-employment income, bonuses, overtime, and profit-sharing. Asset flows include income from interest, dividends and rent. Private transfers include payments from individuals outside the household, including alimony and child support payments. Public transfers include housing allowances, child benefits, subsistence assistance, special circumstances benefits, government student assistance, maternity benefits, unemployment benefits, unemployment assistance, and unemployment subsistence allowance. Social security pensions include payments from old age, disability and widowhood pension schemes. Income is net of income tax payment and

[2] Schröder et al. (2023) analyse the development of actual working hours of short-time workers during the COVID pandemic in the SOEP. They conclude that the reduction in actual working hours in 2020 for the sample of short-time workers is relatively small compared to the decrease in working hours that they find in a retrospective analysis of special questions on short-time work. In a special question in 2021, respondents were asked how many hours their working week was reduced on average while they were on short-time work.

payroll taxes such as health, unemployment, retirement insurance and nursing home insurance taxes (Grabka, 2022, p. 42).

- Incomes are equivalised using the modified OECD equivalence scale, normalised to a single individual.

Splits

- **Sex**: female, male

- **Education**: For the German case the education variables are split into the following three groups based on the International Standard Classification of Education: ISCED 0–2, ISCED 3–5 and ISCED 6–8. Since the ISCED 2011 classification is only available from 2010 onwards, we use ISCED 1997 information for the period from 1984 to 2009.

- **Household type**: Single without dependent children; single with dependent children; couples without dependent children; couples with dependent children; adult child; other. Parents of adult children are included in the 'other' category. A dependent child is a child aged 0–15 or 16–19 and in full-time education, living with parents.

- **Immigration**: Persons are classified as immigrants if they individually have a direct migration background (i.e., if they were not born in Germany). The country of origin of immigrants corresponds to the respective country of birth.

Other clarifications

- **Growth incidence curves**: These give the growth of each percentile of the distribution, where the percentile *p* is the level of a given variable such that *p*% of the population have lower values of that variable than that level. They do not give, for example, the mean growth within each percentile.

4. Individual employment and earnings

This section looks at trends in individual employment and earnings. With respect to earnings, we first look separately at hourly wages and hours worked, before analysing them together using a set of charts on earnings inequality.

4.1 Trends in employment

Figure 1 shows that since 1983, Germany has seen a steady and sustained rise in the employment rate for prime working-age women (aged 25–60), increasing the employment in this age group from little more than 50% in the early 1980s to more than 80% before the beginning of the COVID pandemic. By 2019, the gender employment gap had narrowed from almost 40 to around 7 percentage points. For prime working-age men, the employment rate has been very stable at around 90% throughout the whole period up to the outbreak of the COVID pandemic.

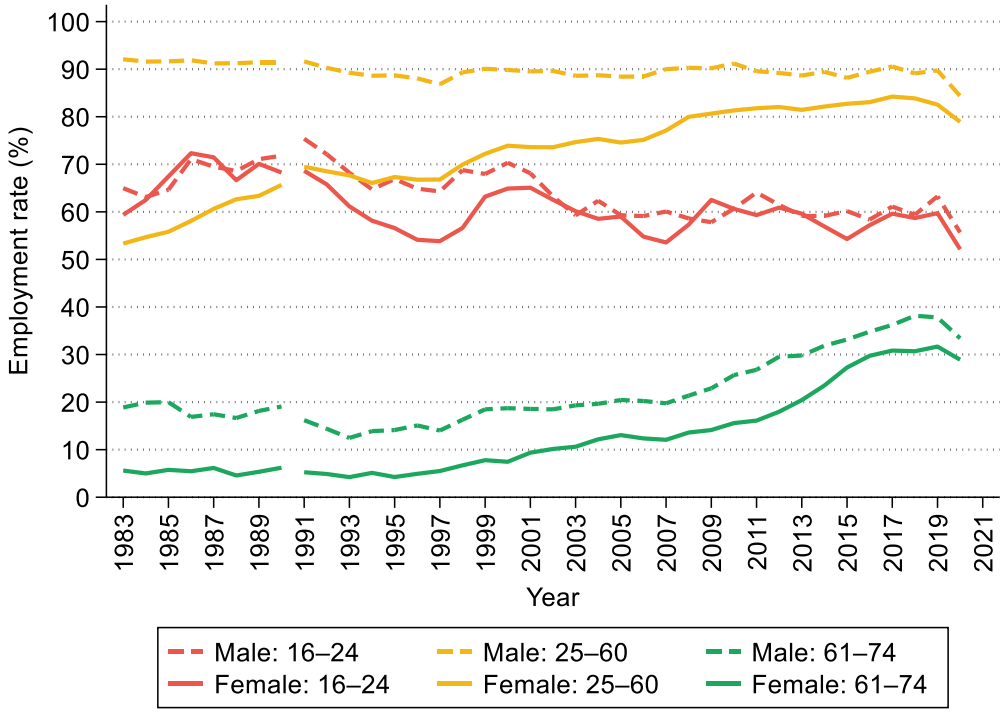
Likewise, employment rates among the young have remained quite stable, albeit at lower levels. Remarkably, there was no level difference in male and female employment rates even in the 1980s. This suggests that the remaining 7 percentage point employment gender gap among prime working-age women may decline further as well as soon as the younger cohorts have fully entered working age.

Among older men and women (aged 61–74), there has been fast growth in employment in the last two decades. This development reflects gradual increases to the retirement age, as well as enhanced possibilities and incentives for part-time employment during pension age.[3]

Figure 2 repeats this evidence in a graphical representation adjusted to the life cycle. For men below age 60, employment rates in 2019 were fairly similar to 1983. Increases in employment are visible only for older men close to retirement. In contrast, employment rates for women rose steadily. As a general pattern, these employment gains over the years have tended to increase in age. Among others, this reflects the fact that mothers in Germany who are leaving the labour market entirely after the birth of their first child have become less common in Germany. Instead, recently, more women have been returning to their jobs after some time.

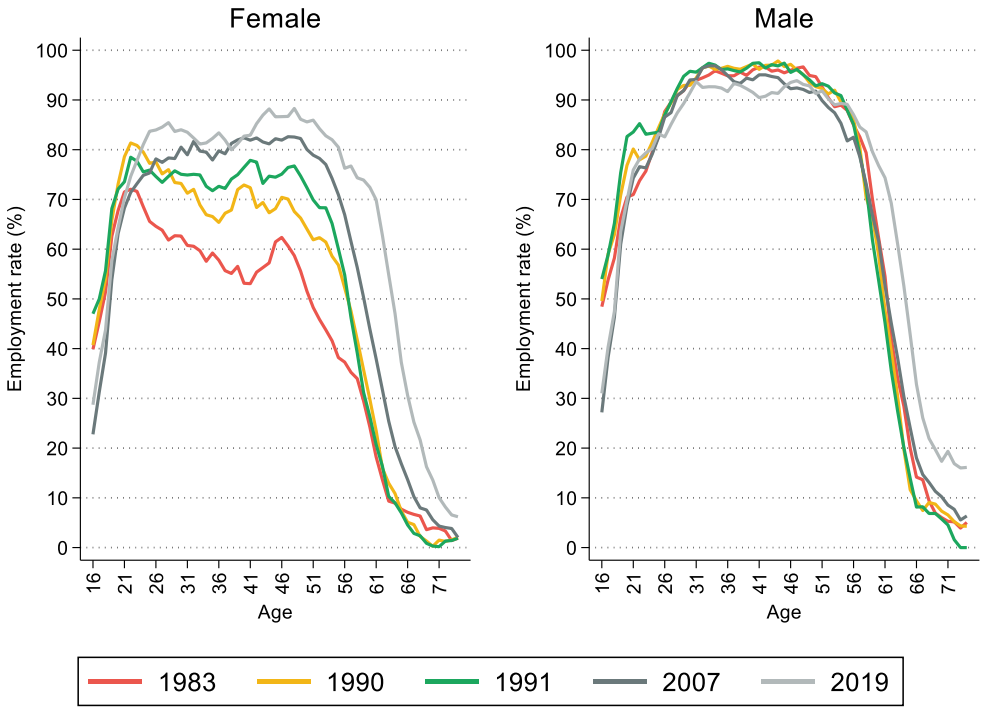
[3] In 2014, a reform to simplify employment relationships beyond the statutory retirement age has been implemented. With the introduction of the Flexirentengesetz 2016/2017, there were also adjustments to the additional earnings rule and increased pension supplements for employment beyond the statutory retirement age.

Figure 1. Employment rates by age and sex, over time



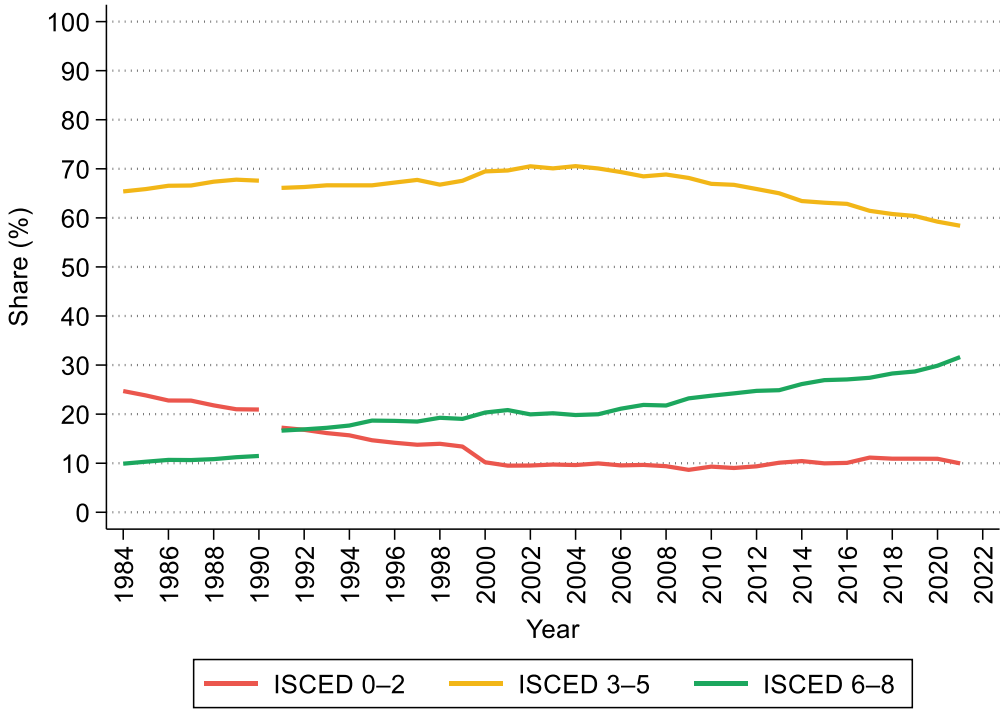
Note: Sample is individuals aged 16–74. Until 1990: West Germany only.

Figure 2. Employment rates over life cycle by sex, selected years



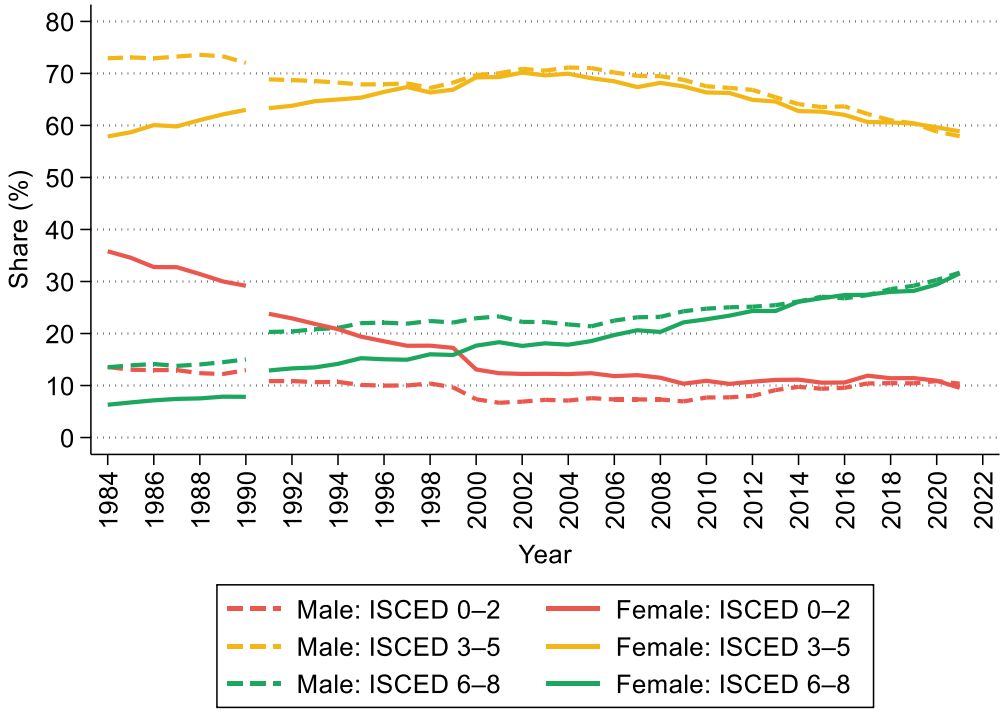
Note: Sample is individuals aged 16–74. Employment rates have been smoothed by calculating 5-year averages across age of individuals. Until 1990: West Germany only.

Figure 3. Educational attainment over time



Note: Sample is individuals aged 25–60 who have completed full-time education. Until 1990: West Germany only.

Figure 4. Educational attainment by sex, over time



Note: Sample is individuals aged 25–60 who have completed full-time education. Until 1990: West Germany only.

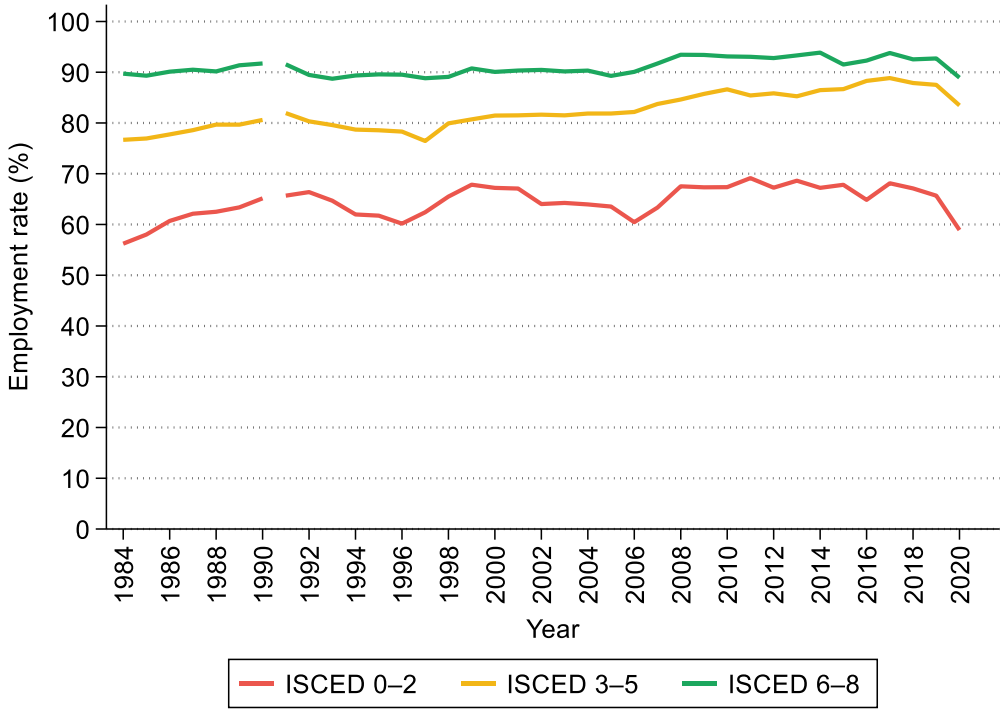
We now focus on individuals of prime working age (25–60). Since the 1970s, there has been a significant expansion of education and educational attainment in Germany, partially pre-dating our observation window. Under the umbrella of the so-called '*Bildungsexpansion*, policymakers in Germany triggered a series of reforms aimed at the expansion of higher education. This resulted in an increased school leaving age (which differs by federal state in Germany), more places in upper secondary education and an expansion of the university system, which saw the foundation of many new universities in the 1970s. Consequently, in the overall population, educational attainments in higher education have increased significantly. As shown in Figure 3, the share of people having a degree within the categories ISCED 6–8 tripled from nearly 10% to around 32% in 2021. Analogously, the number with little or no education has declined strongly over the same period and stood at only 10% in 2021.

While these trends have been similar for both men and women (Figure 4), the drop in the share of people in the lowest education categories (ISCED 0–2) is mainly driven by females, where the numbers decrease from more than one-third of the population in 1983 to under 10% in 2021.

Figure 5 shows that the general upward trend in employment has differed little by educational background. Although employment has risen somewhat faster for those with low-level or no qualifications, the difference in employment levels by educational attainment still persists: while in 2019 93% of high skilled individuals in Germany were employed, only 65% of those with low-level or no qualifications (ISCED 0–2) participate in the labour market.

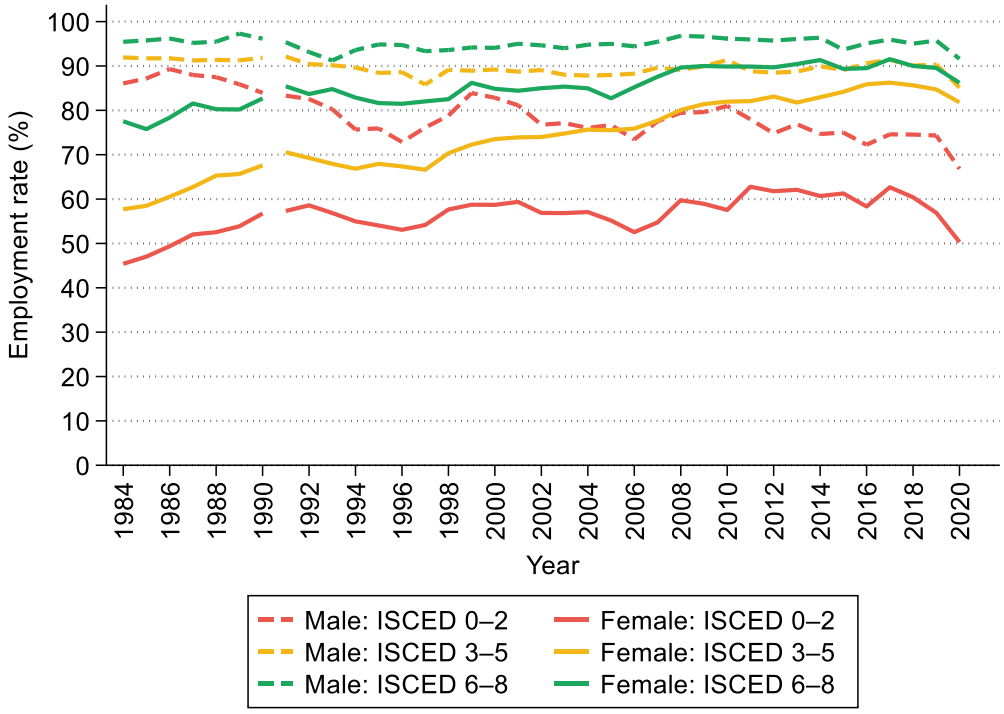
As seen in Figure 6**,** the general upward trend in employment is mainly driven by higher employment rates among women with middle (ISCED 3–5) or high (ISCED 6–8) levels of educational attainment.

Figure 5. Employment rates by education, over time



Note: Sample is individuals aged 25–60 who have completed full-time education. Until 1990: West Germany only.

Figure 6. Employment rates by sex and education, over time



Note: Sample is individuals aged 25–60 who have completed full-time education. Until 1990: West Germany only.

We know look at the unemployment rate (Figure 7). Overall, the unemployment rate of the reunited Germany is significantly higher than in the years before (where only West Germany is shown). After reunification, many people of the East German labour force initially lost their jobs in the previously state-regulated economy of the German Democratic Republic due to the shutdown of less productive East German establishments. However, most of these individuals found new work in the following years, so that unemployment rates started to decline again.

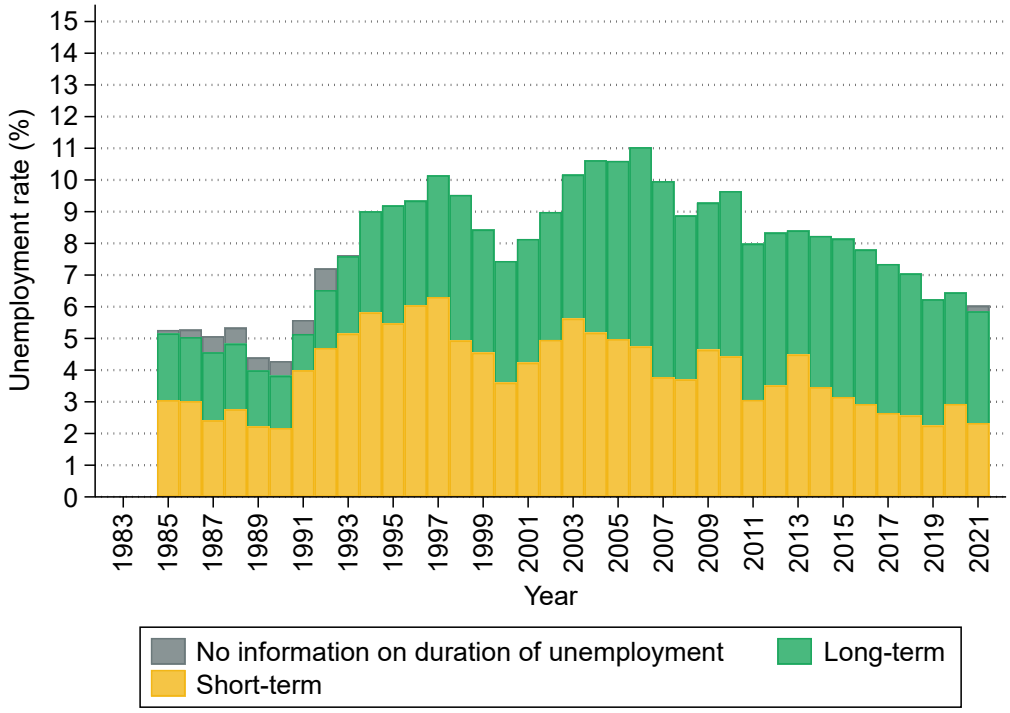
However, unemployment rates increased again after 2000 and started to decline only after the implementation of the Hartz reforms in the labour market. The share of short-term unemployed workers has decreased steadily since and stands at approximately 2%, whereas the number of long-term unemployed has been declining only slowly. Compared with the official statistics of the German Federal Employment Agency on long-term unemployment, it must be pointed out that the number of long-term unemployed seems to be overestimated in the SOEP data. However, the decline in unemployment in the figures of the Federal Employment Agency is also largely due to lower short-term unemployment.

As of today, for individuals with basic qualifications and the willingness to work the German economy is close to full employment. Due to demographic changes, which increasingly affect the German economy, this situation will likely persist for many years, as most companies struggle to fill vacancies, especially in low-paid occupations. However, Germany is failing to reduce the substantial stock of long-term unemployed. These are individuals lacking even basic qualifications (and thus will not be hired on the primary labour market), or individuals who could work but voluntarily refrain from doing so. In this context there is a constant discussion in German academia and politics about the level of unemployment benefits as well as the transfer withdrawal scheme. The unemployment benefit II system as well as housing benefits and the additional child benefit is characterised by a strong transfer withdrawal rate once people start working, resulting in very low net hourly wages for an additional hour of work for meaningful number of hours. Effective marginal tax rates can be close to 100%, resulting in very low net hourly wage increases for some individuals especially in the lower wage sector. The issue of high phase-out rates in Germany is well known and has long been criticised by economists (see, for example, Blömer, Fuest and Peichl, 2019; Walwei et al., 2019; or Bruckmeier, Mühlhan and Wiemers, 2018). However, none of the past governments has implemented a substantial reform of the transfer system.

With regard to the COVID pandemic, a sharp decline in employment was prevented by the massive use and expansion of short-time working regulations. In April and May 2020, more than 5 million short-time workers were registered with the Federal Employment Agency, and numbers continued to be at historically high levels for the following months (Bundesagentur für Arbeit, 2024c). In consequence, unemployment increased only little during the pandemic, as most employees were effectively shielded from job losses. According to official statistics, the unemployment rate rose from 5.0 to 5.9 percent from 2019 to 2020 (Bundesagentur für Arbeit, 2024a) and the number of people in employment fell by merely 0.8% in 2020 (Statistisches Bundesamt (Destatis), 2024b). However, the impact on the labour market has been very heterogeneous across different social groups. The number of self-employed people and the number of people in marginal employment were significantly more affected in 2020 than employees subject to social security contributions. The number of people in marginal employment (e.g. low-income earners such as mini-jobbers) fell by more than 7% compared to the previous year (Bundesagentur für Arbeit, 2024b).

The results from the SOEP also show an increase in the unemployment rate for 2020. The decline in employment appears to be somewhat more pronounced in the SOEP than in the overall aggregates of the national accounts, but also shows clear differences between different age and education groups. The decline in employment is much more pronounced for the younger age cohorts (16-24-year-olds) and for individuals with a lower level of education (ISCED 0-2).

Figure 7. Unemployment rate by duration of unemployment over time



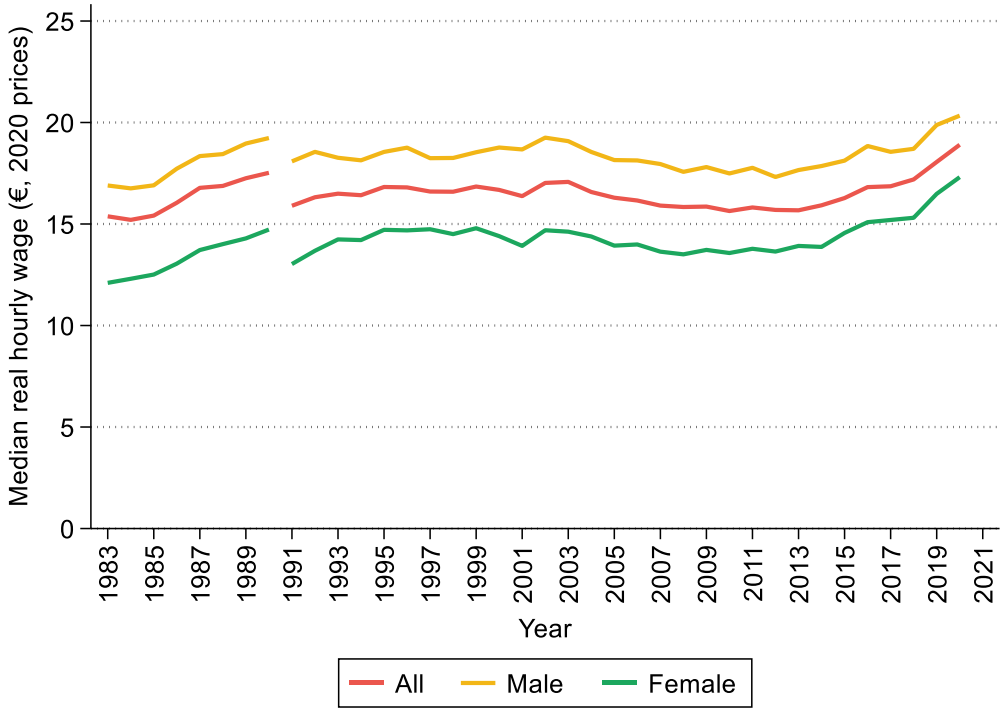
Note: Sample is individuals aged 25–60. Unemployment rate is split between short-term (less than 1 year) and long-term (1 year or more) duration of unemployment. An unemployed person is defined as someone who is registered as a jobseeker at the Federal Employment Agency. Until 1990: West Germany only. In 1991 East German individuals were not asked about the length of unemployment.

4.2 Trends in hourly wages (employees only)

Real median hourly wages grew little between 1983 and 2019. Until 1990 there was a steady increase in real wages at the median (West Germany only). With the structural break in 1990, reflecting the sample of reunified Germany, from 1991 on, median wages did not increase for a long time. Real median hourly wages actually fell below the 1991 level between 2008 and 2013. Growth in median wages was limited to the last few years before the COVID pandemic. Over the period from 1991 (after reunification) to 2019 (before the outbreak of the COVID pandemic), real hourly median wages increased by about 14%. Notably, we also do not see an impact of the Great Recession of 2008–09 on median hourly wages. Figure 8 and Figure 9 show that these trends have been similar for males and females, and across education groups. What stands out in Figure 9 is that median wages for high-qualified males are substantially higher than in all other parts of the labour force. This pattern has not changed in recent decades, although the gender gap in median hourly wage has narrowed slightly in recent decades. Moreover, the analysis shows that growth in median wages was especially low or even negative for low-skilled individuals, while hourly wages for women with tertiary education rose markedly in more recent years.

With respect to the COVID pandemic, this analysis shows a substantial increase in real median hourly wages for both men and women for the year 2020.[4] Possible explanations for the rise in median hourly wages in 2020 could include both the continued strong increases in collectively agreed wages in 2020, as well as a composition effect caused by the disproportionately sharp decline in marginally employed workers in the lower tail of the wage distribution. However, the results for hourly wages are also subject to greater uncertainty due to the insecurities regarding the data on gross income and hours worked in connection with short-time work during the 2020 pandemic year (see chapter 3. Notes on measurement and definitions).

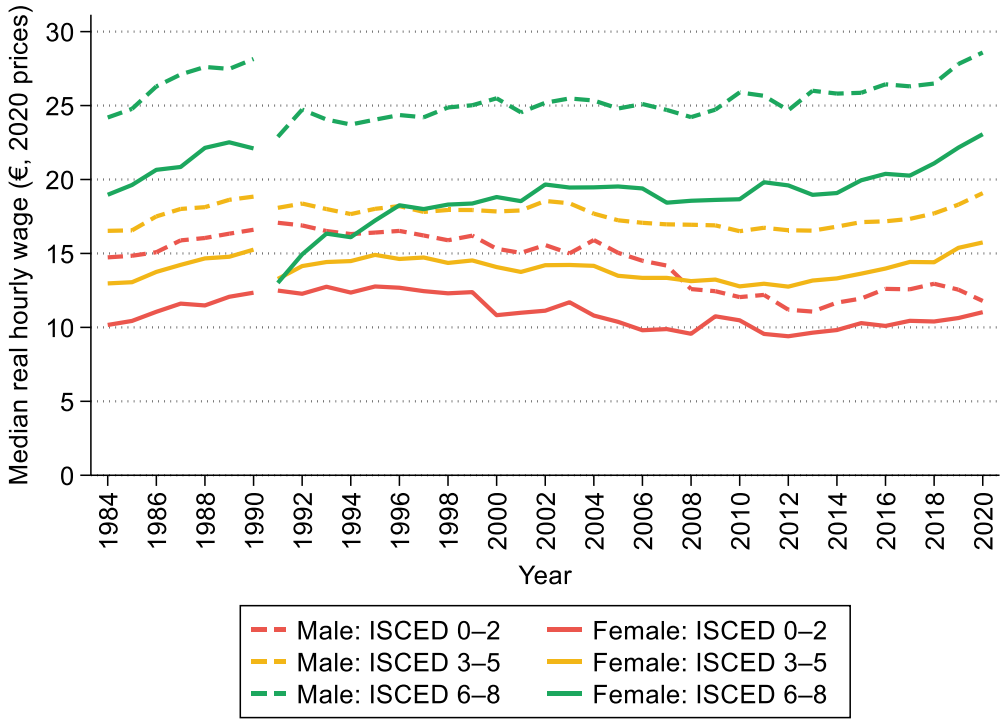
Figure 8. Median real hourly wage among employees, overall and by sex, over time



Note: Sample is employees aged 25–60. The sample does not include individuals with earnings from self-employment. Individuals with both earnings from employment and self-employment are also excluded from the analysis, leaving only employees' hourly wages. Wages are in 2020 prices. Until 1990: West Germany only.

[4] An analysis of monthly income data for dependent employees in their main job based on the SOEP by Grabka (2024) also shows a strong increase in real median hourly wages for the pandemic years 2020 and 2021.

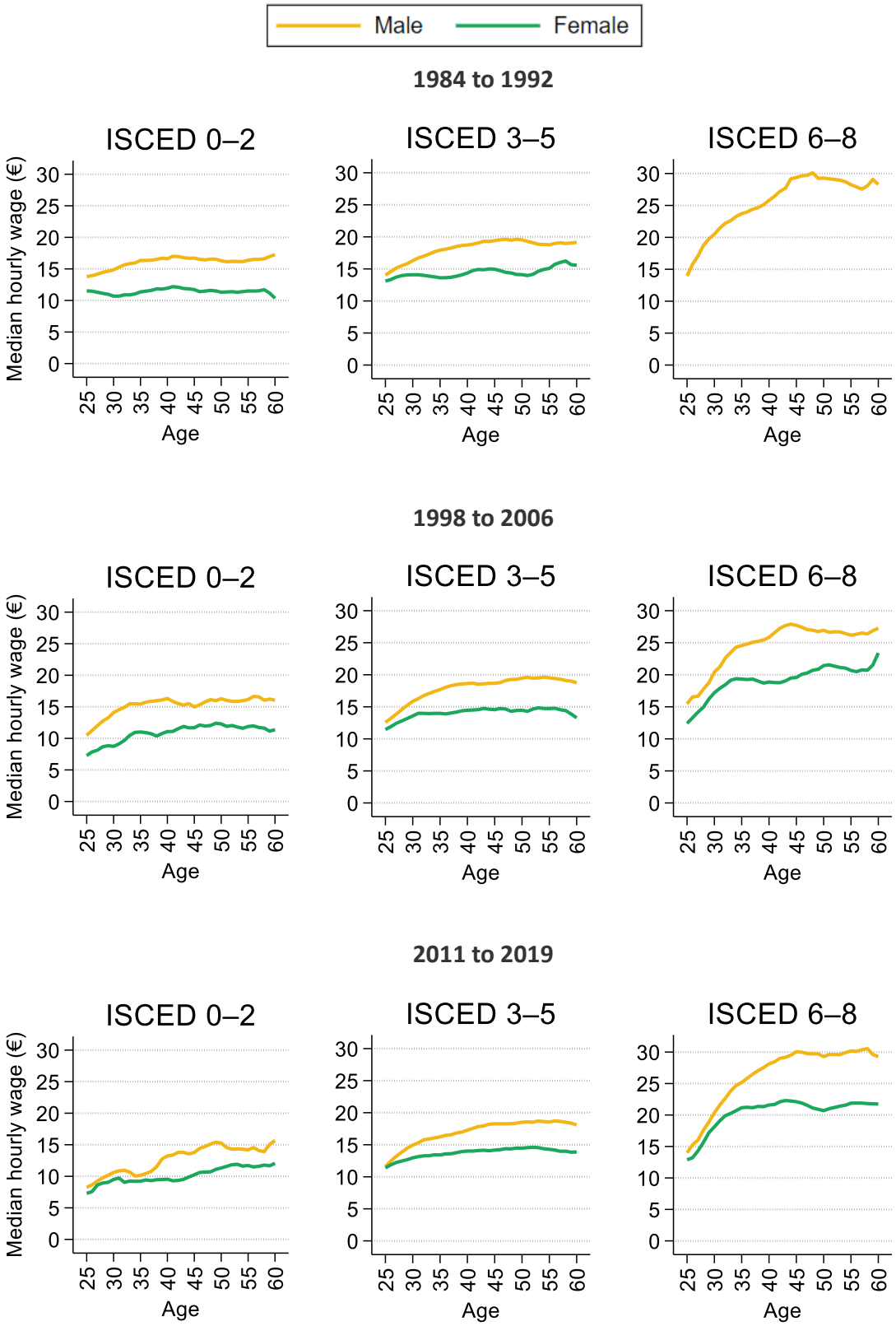
Figure 9. Median real hourly wage among employees, by sex and education, over time



Note: Sample is employees aged 25–60 who have completed full-time education. The sample does not include individuals with earnings from self-employment. Individuals with both earnings from employment and self-employment are also excluded from the analysis, leaving only employees' hourly wages. Until 1990: West Germany only. Wages are in 2020 prices.

Figure 10 shows median wages over the life cycle by sex and education, for different time periods. Individuals with lower levels of education see a flatter wage profile over the life cycle, with men with little or no education (ISCED 0–2) and women with low to middle levels of education (ISCED 0–2 and 3–5) seeing little wage growth over their working lives. For individuals with degrees (ISCED 6–8), men and women have the same median wage at age 25 in more recent years, but the gender wage gap gradually opens between the ages of 25 and 35 and persists until retirement age.

Figure 10. Median real hourly wage among employees over life cycle, by sex and education

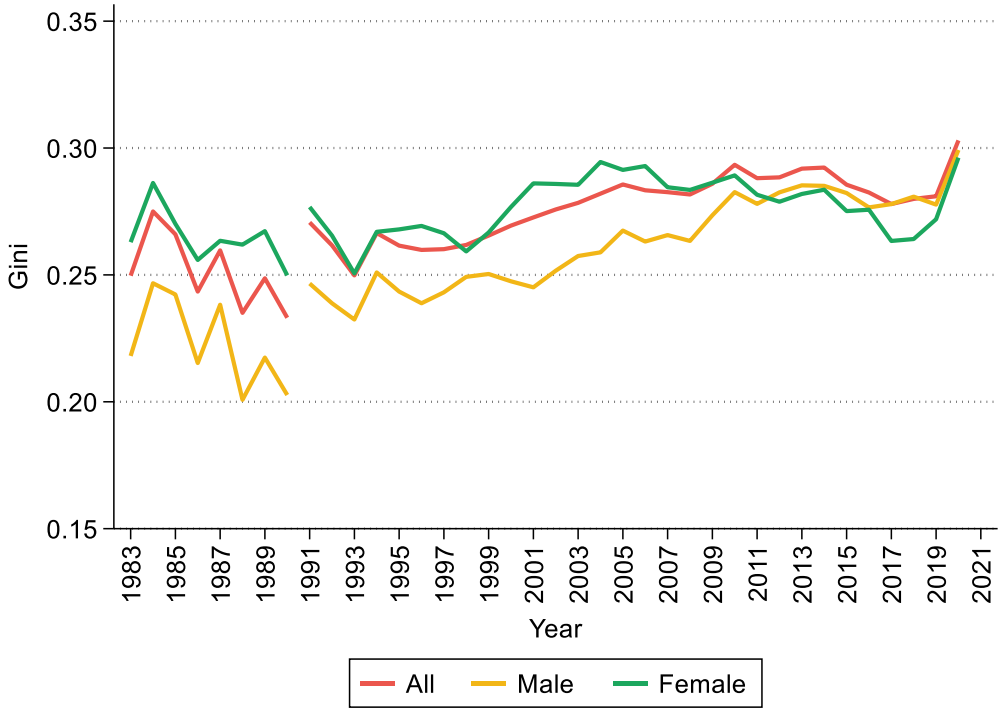


Note: Sample is employees aged 16-60. The sample does not include individuals with earnings from self-employment. Individuals with both earnings from employment and self-employment are also excluded from the analysis, leaving only employees' hourly wages. Wages are shown in 2020 constant-wage terms. Five-year smoothing across ages has been applied. Due to small sample size,

hourly wages for individuals aged over 60 are excluded. For the same reason hourly wages for the period 1984–92 for high-skilled female individuals are not shown. Until 1990: West Germany only.

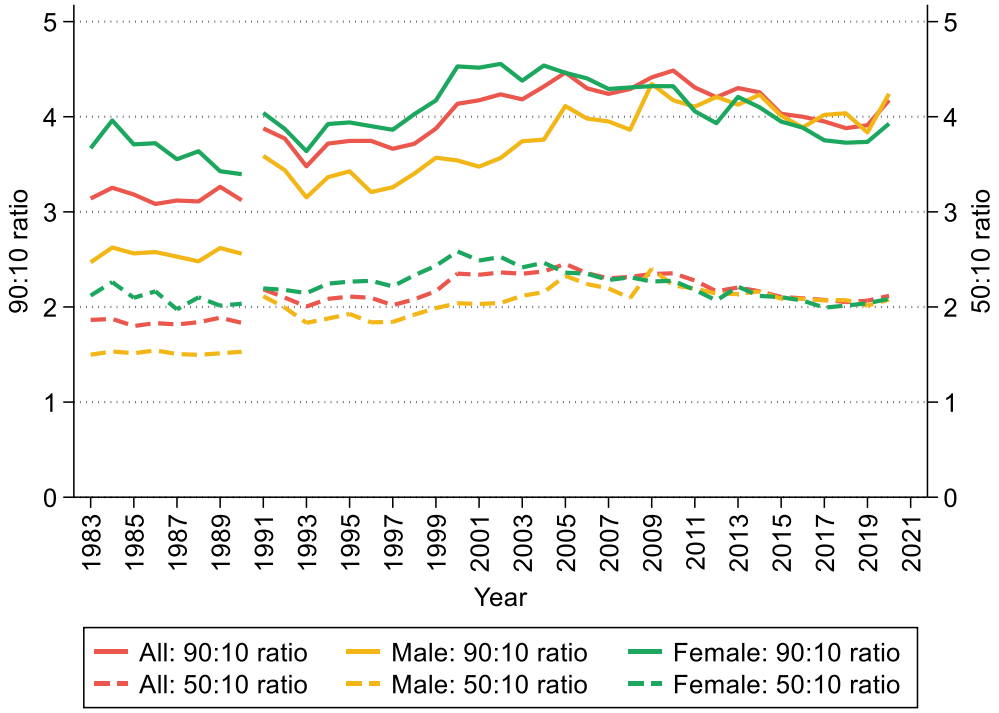
Figure 11 and Figure 12 plot trends in wage inequality using the Gini coefficient, the 90:10 ratio and the 50:10 ratio. Wage inequality as measured by the Gini grew from 1991 to 2009 and has been very stable ever since around a value of 0.28. Looking separately at the 90:10 ratio and the lower half of the distribution (as captured by the 50:10 ratio), we see that inequality in some of these statistics even fell in the years preceding the outbreak of the COVID pandemic. This development was mainly driven by real wage growth at the bottom of the income distribution, as captured in Figure 13. For the first year of the pandemic, 2020, the results show a sharp increase in the Gini coefficient for hourly wages. Figure 12 shows that this is accompanied by an increase in the 90:10 percentile ratio in 2020, while the 50:10 ratios tend to stagnate.

Figure 11. Gini coefficient of hourly wages among employees, overall and by sex, over time, excluding top and bottom 1% of gender specific wage distributions



Note: Sample is employees aged 25–60. The sample does not include individuals with earnings from self-employment. Individuals with both earnings from employment and self-employment are also excluded from the analysis, leaving only employees' hourly wages. We exclude the bottom and top 1% of the gender-specific distribution of hourly wages from the analysis. Until 1990: West Germany only.

Figure 12. 90:10 and 50:10 ratios of hourly wages among employees, overall and by sex, over time

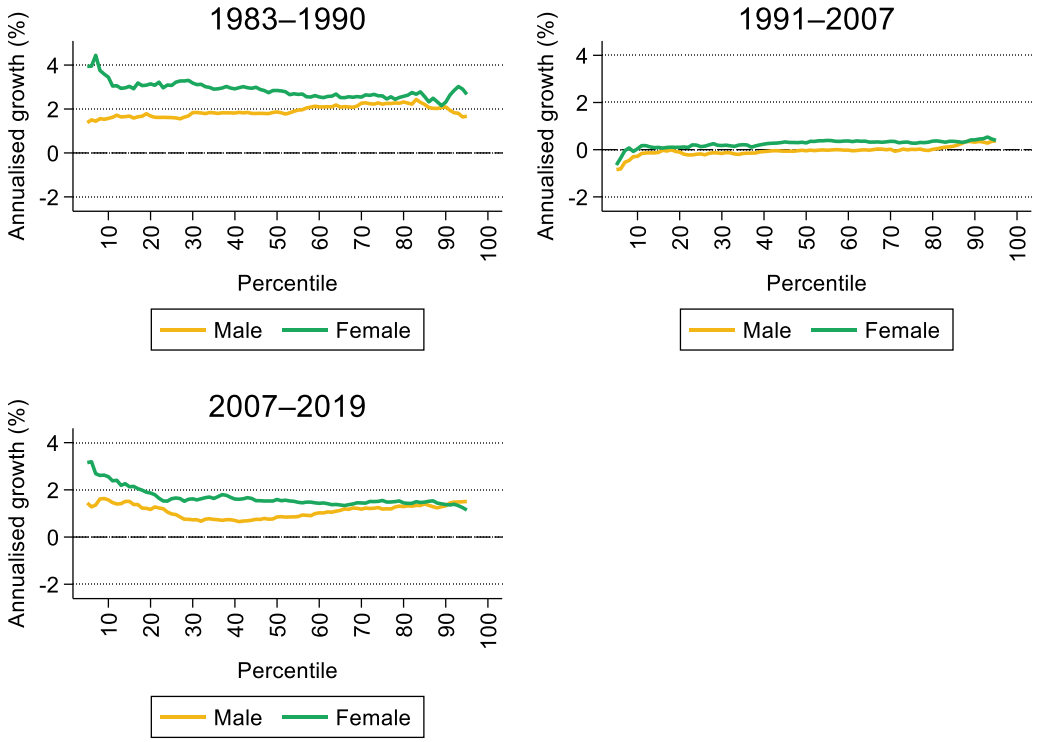


Note: Sample is employees aged 25–60. The sample does not include individuals with earnings from self-employment. Individuals with both earnings from employment and self-employment are also excluded from the analysis, leaving only employees' hourly wages. Until 1990: West Germany only.

Figure 13 shows in more detail the changes in hourly wages across the wage distribution. The annualised growth in real hourly wages by wage percentile is shown. Positive values for a given percentile denote an increase in wages measured at that percentile. The period between 1983 and 1990 in West Germany was one of high and relatively inclusive wage growth, with wages growing by nearly 2% a year for men and 3% for women across most of the distribution.

In contrast, wage inequality increased moderately between 1991 and 2007. While real wages remained constant in the middle range of the wage distribution, individuals in the bottom part of the distribution experienced small real wage losses. Only top wage earners were able to achieve small wage gains in real terms. Overall, growth rates for the entire income distribution were significantly lower during this period. Between 2007 and 2019, the pattern changed again to mostly inclusive growth, with real wage growth of 1% for men and 2% for women each year, and on average higher growth rates at the bottom of the distribution.

Figure 13. Annualised growth in hourly wages among employees by wage percentile, overall and by sex, selected periods



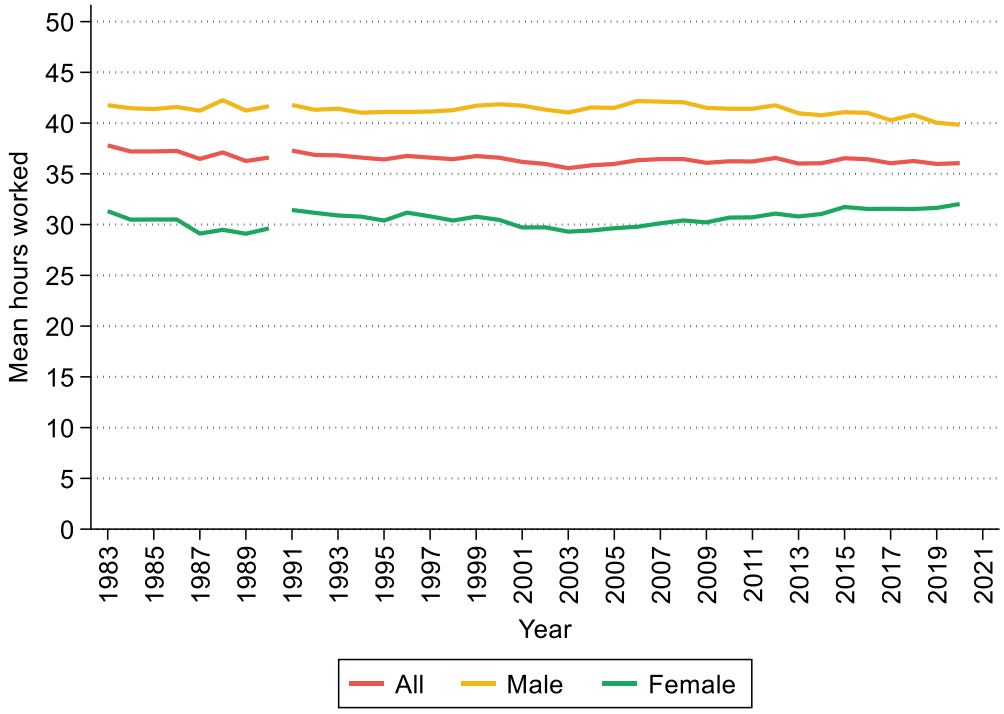
Note: Sample is employees aged 25–60. The sample does not include individuals with earnings from self-employment. Individuals with both earnings from employment and self-employment are also excluded from the analysis, leaving only employees' hourly wages. Until 1990: West Germany only.

4.3 Trends in hours worked (employees only)

Figure 14 shows that average hours worked among employees have remained very stable, with a small difference between men (working slightly fewer hours) and women (working slightly more hours). Consequently, the gender gap in working hours is closing very slowly. This implies that the increased participation of women in the labour market happened predominantly at the extensive and not at the intensive margin. The trends also look similar when working hours are plotted separately by education (Figure 15). However, the overall increase in working hours for women is mainly driven by medium- or higher-skilled individuals. The average number of working hours per week for lower-skilled individuals declined substantially over the period from 1983 to 2019.

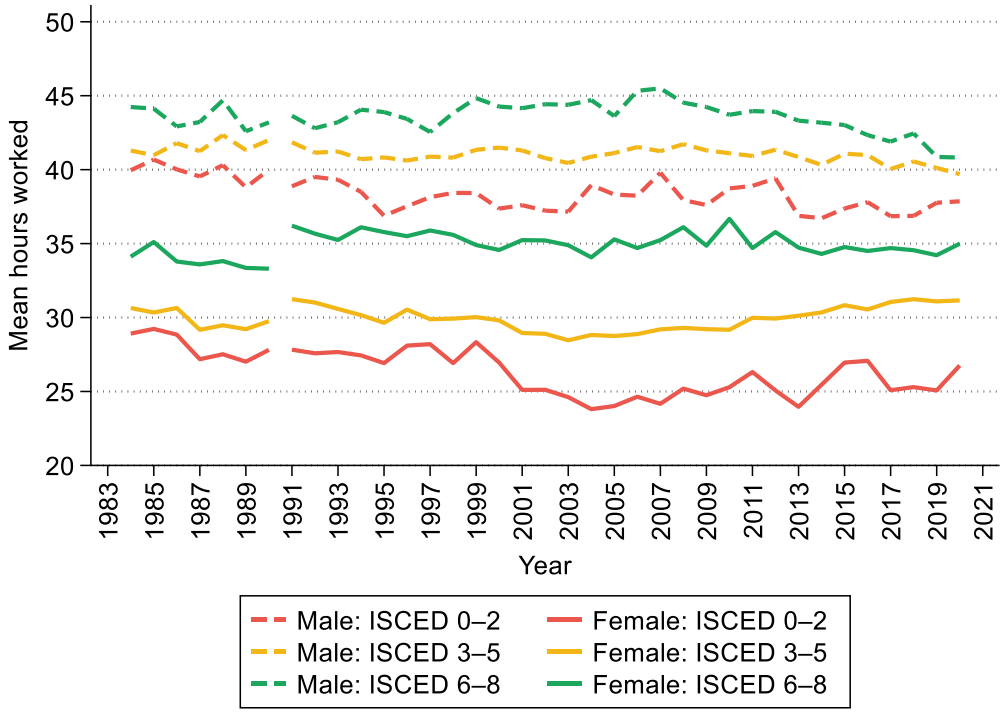
As already noted in Chapter 3. Notes on measurement and definitions it must be assumed that the extensive use of short-time work during the COVID pandemic and the corresponding reduction in working hours is not adequately reflected in the variable on working hours in the SOEP. The Federal Statistical Office shows a decline in the aggregate number of hours worked by employees of over 4% in 2020 (Statistisches Bundesamt (Destatis), 2024b). There is no corresponding decline in average working hours in the SOEP data, as short-time workers presumably did not indicate the temporary reduction in working hours due to short-time work when stating their average working hours. The SOEP results on working hours reflect rather a continuation of the long-term trend, with slightly increasing (decreasing) average working hours for women (men).

Figure 14. Mean hours worked among employees, overall and by sex, over time



Note: Sample is employees aged 25–60. The sample does not include individuals with earnings from self-employment. Individuals with both earnings from employment and self-employment are also excluded from the analysis, leaving only hours worked by employees. Hours include paid (but not unpaid) overtime. Until 1990: West Germany only.

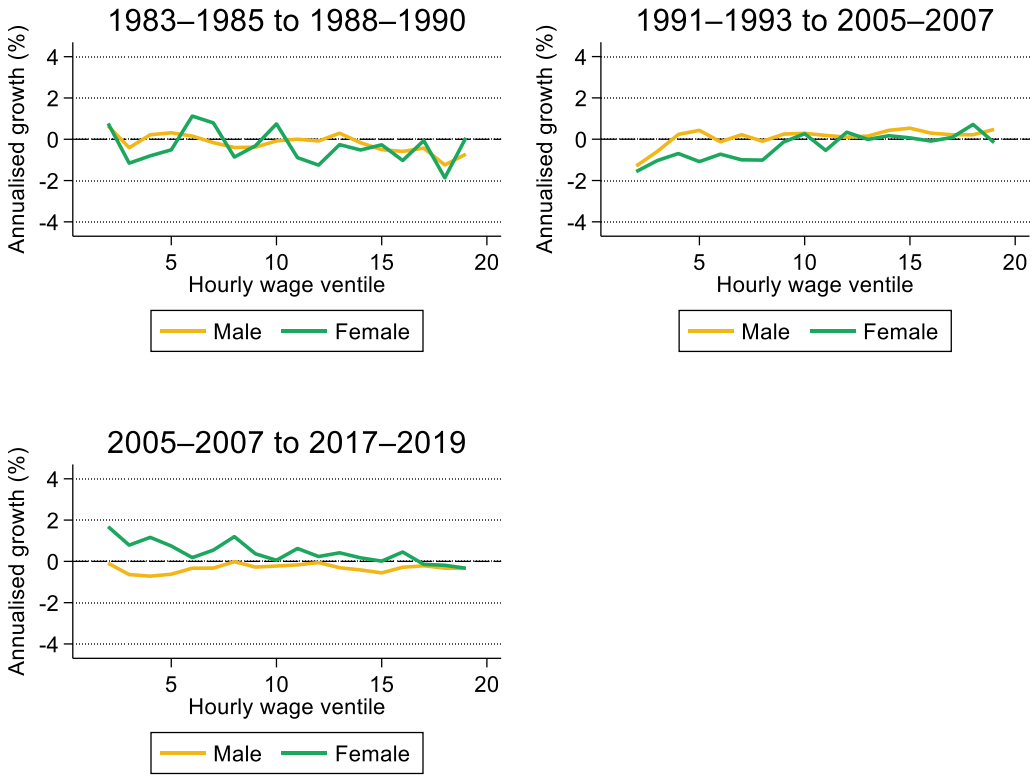
Figure 15. Mean hours worked among employees, by sex and education, over time



Note: Sample is employees aged 25–60 who have completed full-time education. The sample does not include individuals with earnings from self-employment. Individuals with both earnings from employment and self-employment are also excluded from the analysis, leaving only hours worked by employees. Hours include paid (but not unpaid) overtime. Until 1990: West Germany only.

Figure 16 shows the growth in average hours worked along the hourly wage distribution for different time periods. The development of working hours along the income distribution was shaped in earlier years by declining numbers of working hours for female individuals in the bottom as well as in the upper part of the distribution. The period from 1991–93 to 2005–07 was characterised by a stagnation or only small increases in working hours along the hourly wage distribution, with a decline in hours worked by (female) individuals situated in the lower part of the wage distribution. In more recent years, this pattern reversed and women in the lower half of the income distribution experienced more substantial growth in working hours than their male counterparts. Part of this change results potentially from the Hartz reforms, which transformed the German unemployment insurance system in 2004 and reduced the incentives for non-working partners to stay at home. Another potential channel is the strong growth in childcare supply during this period.

Figure 16. Annualised growth in mean hours worked among employees by hourly wage ventile, overall and by sex, selected years



Note: Sample is employees aged 25–60. The sample does not include individuals with earnings from self-employment. Individuals with both earnings from employment and self-employment are also excluded from the analysis, leaving only hours worked by employees. Hours include paid (but not unpaid) overtime. Until 1990: West Germany only.

4.4 Inequality in individual earnings among those in work (employees and self-employed)

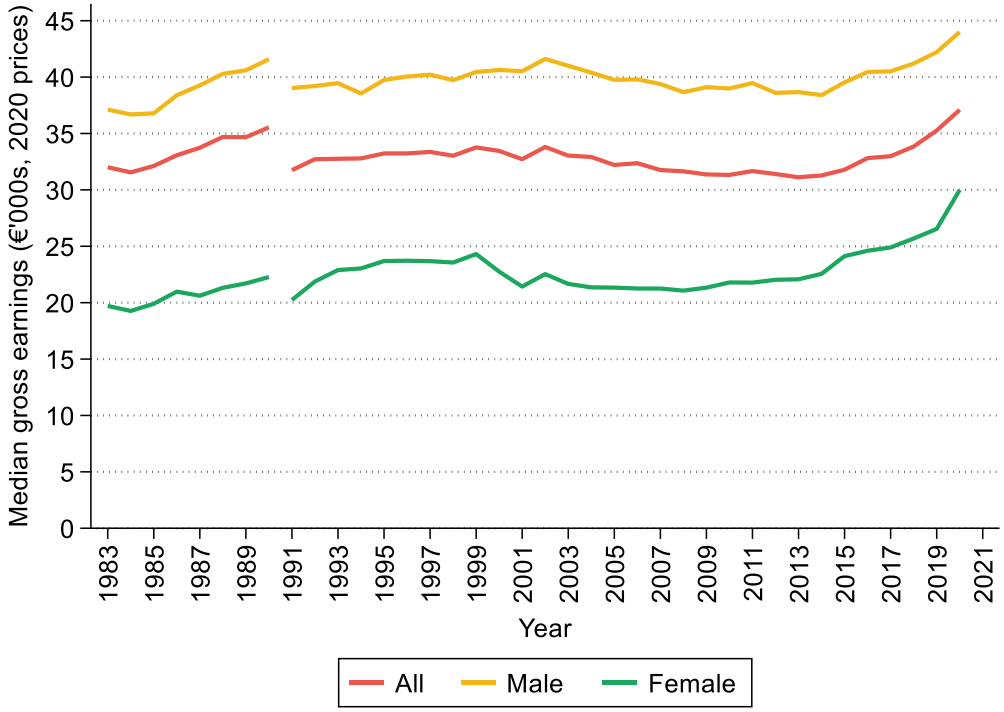
We now turn to trends in individual earnings, which reflect the combination of trends in hours worked and hourly wages. Before we go on to examine distributional measures,

Figure 17 shows trends in median earnings, which are mainly driven by median wage changes – median hours have been comparatively stable over time. The figure shows again that after the reunification, Germany saw a stagnation or even reduction in real median earnings. Only in the years immediately before the COVID pandemic did real median earnings start to grow again. In real terms median gross individual earnings in Germany as a whole, including the eastern German states, were roughly on a par in 2019 with what was achieved in the western German states in 1990.

Figure 18 shows that the absence of growth in individual earnings mainly stems from those with low-level qualifications (ISCED 0–2), though trends by education could be affected by selection (given the increase in educational attainment over this period). In particular, the median wages of men with low levels of qualifications were still lower in 2019 than in 1983. Increases in median gross individual earnings can be observed mainly for the group of individuals with tertiary education; this is true especially for high-skilled women who experienced growth in individual earnings in the aftermath of the Great Recession.

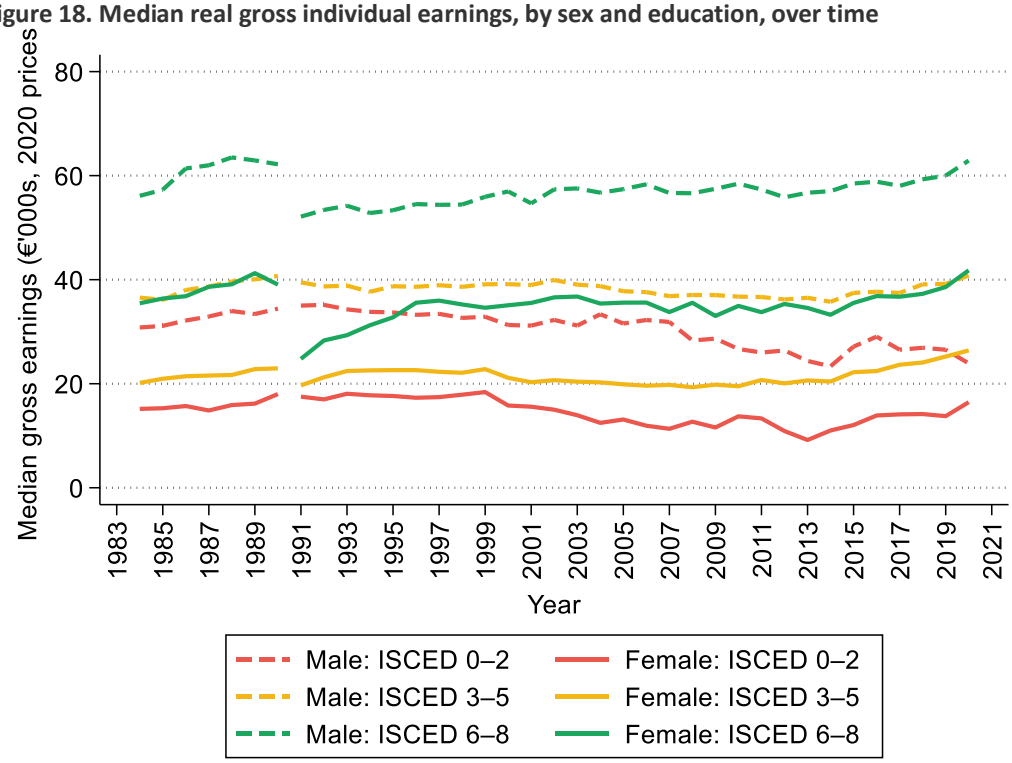
In the first year of the COVID pandemic, median real gross earnings continue to rise markedly in parallel with median hourly wages. Again, this might be due to considerable increases in collectively agreed wages in 2020 or a composition effect caused by the disproportionately sharp decline in marginally employed workers in the lower tail of the income distribution. However, the results for gross individual earnings are also subject to greater uncertainty and gross earnings in the data year 2020 are likely to be overestimated for short-time workers (see chapter 3. Notes on measurement and definitions).

Figure 17. Median real gross individual earnings, overall and by sex, over time



Note: Sample is individuals in work aged 25–60. Individuals are considered in work if they worked at least 52 hours in the year preceding the survey and received earnings either from labour income or from self-employment. Hence, both employees and self-employed workers are represented. Gross earnings are in 2020 prices. Until 1990: West Germany only.

Figure 18. Median real gross individual earnings, by sex and education, over time



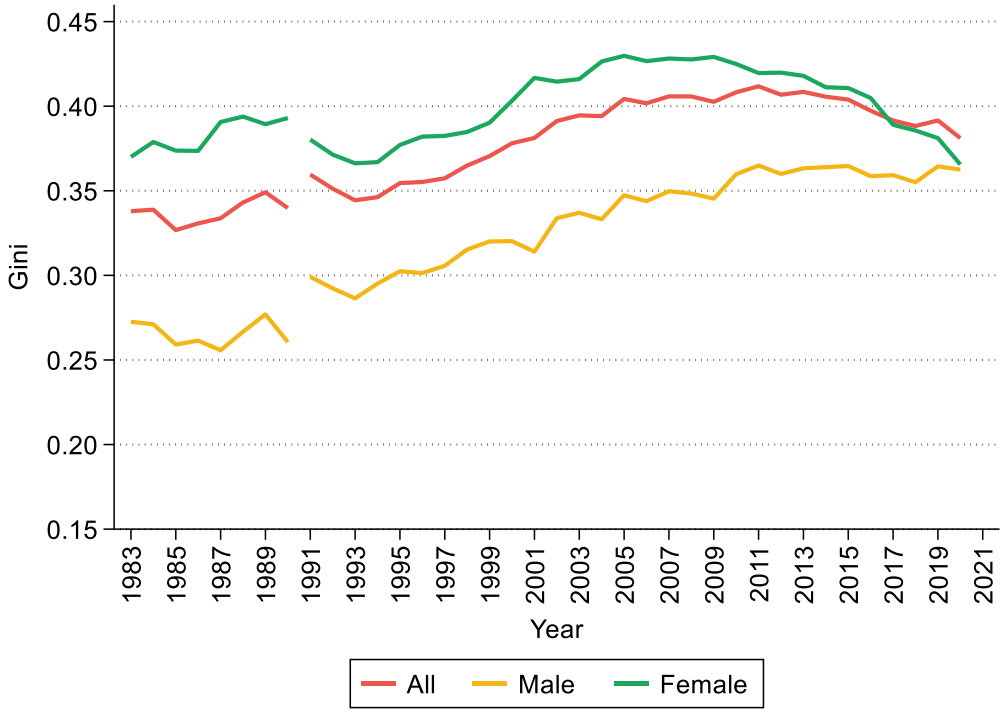
Note: Sample is individuals in work aged 25–60 who have completed full-time education. Individuals are considered in work if they worked at least 52 hours in the year preceding the survey and received earnings either from labour income or from self-employment. Hence, both employees and self-employed workers are represented. Gross earnings are in 2020 prices. Until 1990: West Germany only.

Figure 19 shows that overall earnings inequality as measured by the Gini coefficient has recently declined, after a long period of growing inequality, especially during the period 1995–2005. The reasons why the Gini coefficient has not increased further after 2005 are diverse (Biewen, Ungerer and Löffler, 2019). The recent decline in the Gini can be partially attributed to a reduction in female earnings inequality. This decrease arises partially due to an increase in hours worked among women who previously worked less than full-time. In addition, the introduction of the minimum wage and increases in the mini-job threshold are both measures that have predominantly affected women and that have also contributed to a decrease in inequality (compare also Figure 11). Hence, the decline in female earnings inequality happened mostly in the bottom half of the earnings distribution.

Inequality in men's earnings has stabilised at a level of 0.36 – up from 0.26 in the 1980s. As shown above, this rise in male earnings inequality has been driven by rising wage inequality rather than rising hours inequality. Overall, earnings inequality has become more severe in Germany following the reunification.

The results indicate that the Gini coefficient decreases from 2019 to 2020. This contrasts with the rising Gini coefficient for hourly wages (see Figure 11). This is partly due to the fact, that hourly wages in the upper part of the income distribution have risen sharply, while the highest growth rates for earnings are to be found in the lower and middle parts of the distribution. This could be related to the fact that income losses of short-time workers are not fully but partially reflected in earnings. In addition, Figure 19 is based on the sample of employees and the self-employed, while the analysis of hourly wages only includes employees. Overall, however, the results should be interpreted with caution due to the difficulties mentioned above.

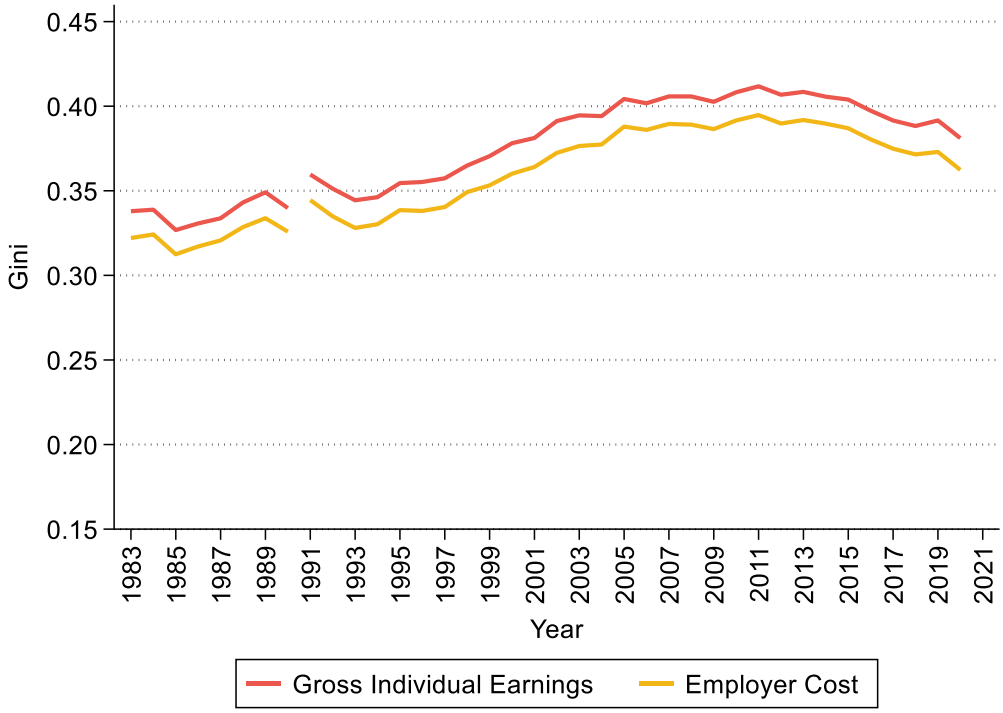
Figure 19. Gini coefficient of gross individual earnings, overall and by sex, over time



Note: Sample is individuals in work aged 25–60. Individuals are considered in work if they worked at least 52 hours in the year preceding the survey and received earnings either from labour income or from self-employment. Hence, both employees and self-employed workers are represented. Until 1990: West Germany only. Until 1990: West Germany only.

Figure 20 shows how the Gini coefficient for earnings differs in levels when they are considered on an 'employer cost' basis, including employer social security contributions to better reflect the direct labour cost of employers of employing an individual. Trends have been very similar over time. The curves for the Gini coefficient based on gross individual earnings and employer costs move almost in parallel over time. However, the curve for the Gini coefficient of gross earnings lies above the labour cost series in all years. One of the reasons for this is that no further social security contributions are payable by employers for earnings above a certain income threshold and social security contributions do not continue to increase proportionally with gross earnings above the assessment ceiling, while gross wages up to the income threshold are increased by employers' social security contributions in the employer cost calculation.

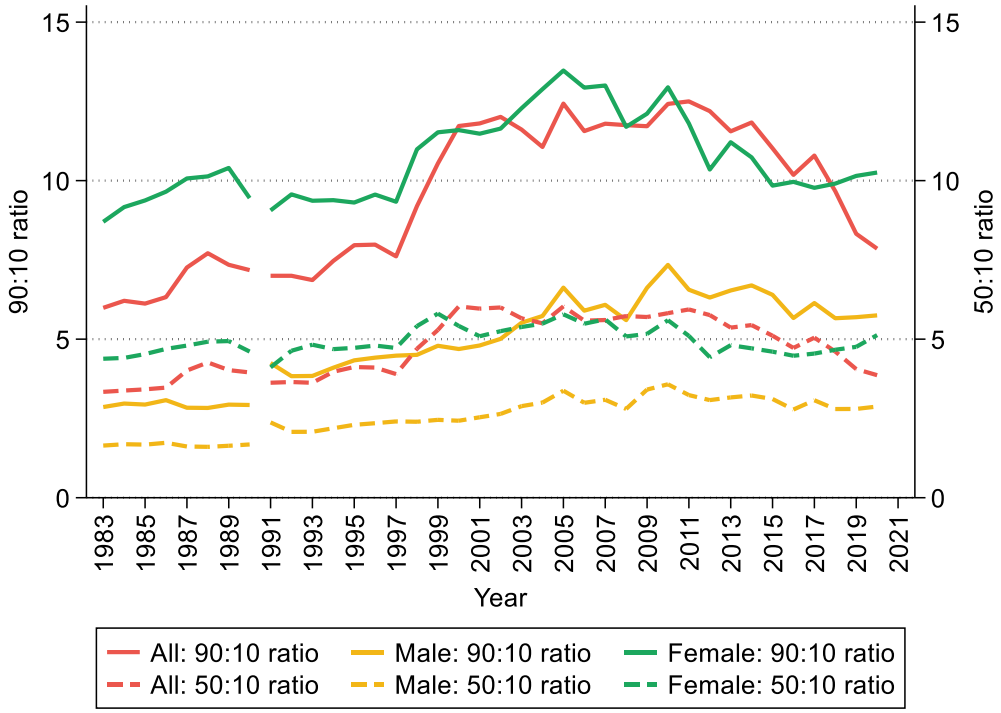
Figure 20. Gini coefficient of gross individual earnings and total employer cost, over time



Note: Sample is individuals in work aged 25–60. Individuals are considered in work if they worked at least 52 hours in the year preceding the survey and received earnings either from labour income or from self-employment. Hence, both employees and self-employed workers are represented. The 'employer cost' series includes employer social security contributions. Until 1990: West Germany only.

Figure 21 shows earnings inequality as captured by both the 90:10 and 50:10 percentile ratios. Inequality has fallen across most of the distribution in the last decade after substantial increases in earnings dispersion in the period from 1993 to 2011. Over the whole period, there has been only a small rise in inequality due to shifts in the lower half of the income distribution (captured by the 50:10 ratio) but moderate increases in the 90:10 ratio, with gross individual earnings at the 90th percentile being more than eight times higher than income at the 10th percentile in 2019 (compared to a ratio of roughly 6 in 1983). This means that over the last thirty years, earnings at the ends of the income distribution have grown stronger than earnings in the middle. Therefore, Figure 22 shows that income polarisation – much discussed in the US and Europe – is taking place in Germany as well.

Figure 21. 90:10 and 50:10 ratios of gross individual earnings, overall and by sex, over time

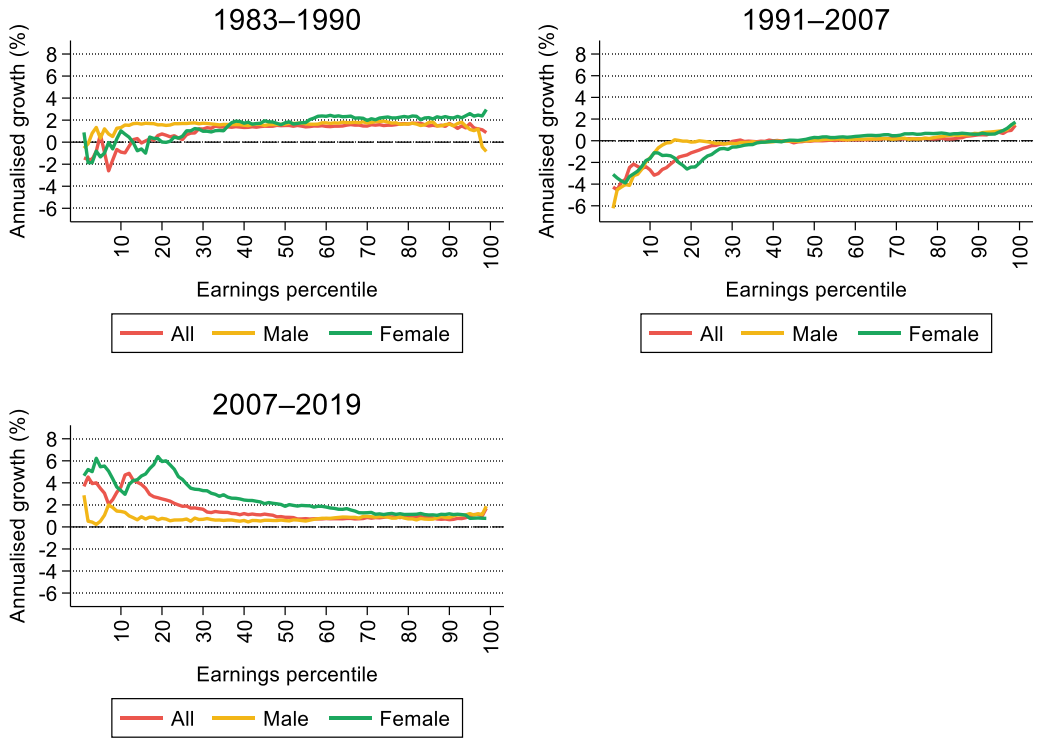


Note: Sample is individuals in work aged 25–60. Individuals are considered in work if they worked at least 52 hours in the year preceding the survey and received earnings either from labour income or from self-employment. Hence, both employees and self-employed workers are represented. Until 1990: West Germany only.

Figure 22 shows growth in gross individual earnings across the distribution. It shows similar trends to Figure 13, which plots the change in hourly wages over the same periods. The period from 1983 to 1990 was characterised by inclusive growth in individual earnings along the income distribution. However, for women at the bottom of the earnings distribution, we do not observe earnings growth, reflecting the decline in hours worked by female employees (Figure 16). In the period from 1991 to 2007 especially male (but also female) individuals at the bottom of the distribution experienced losses in their incomes in real terms. Only individuals in the top 10 percentiles were able to realise small gains in earnings. In recent years, individuals in Germany have again been able to achieve larger increases in individual earnings. For women, earnings at the bottom of the distribution rose even more strongly than hourly wages between 2007 and 2019.

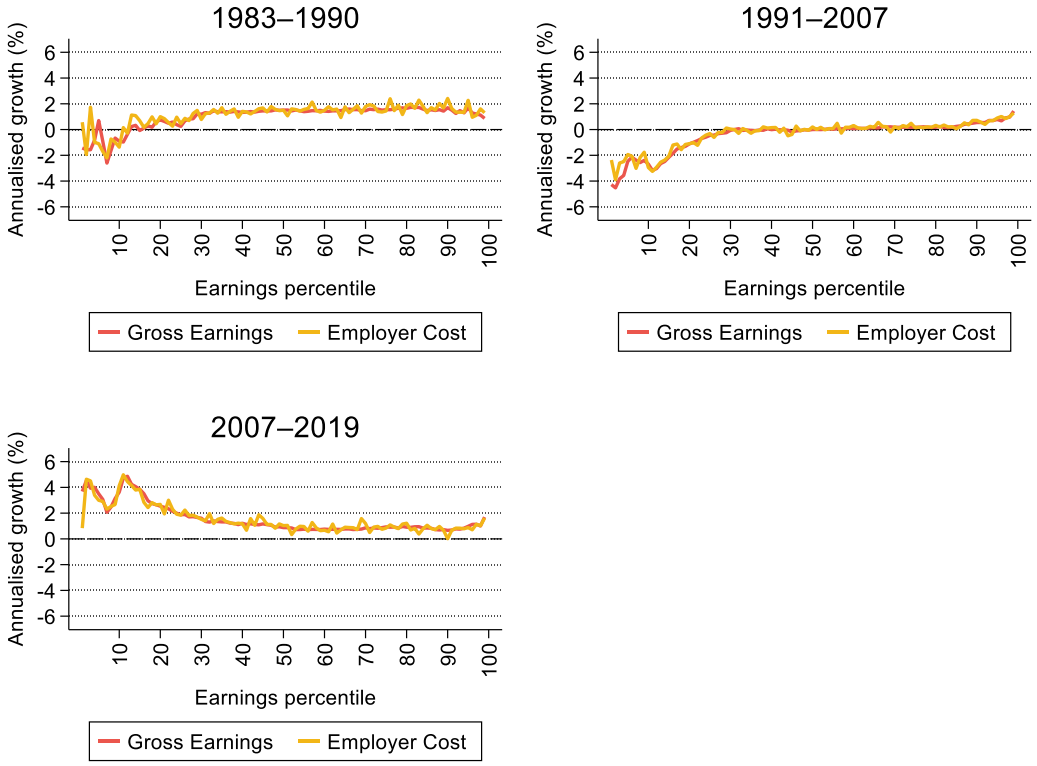
Figure 23 shows that including employer social security contributions makes little difference compared to gross individual earnings, when calculating growth incidence curves for different time periods.

Figure 22. Annualised growth in gross earnings by earnings percentile, overall and sex, selected periods



Note: Sample is individuals in work aged 25–60. Individuals are considered in work if they worked at least 52 hours in the year preceding the survey and received earnings either from labour income or from self-employment. Hence, both employees and self-employed workers are represented. 1983 to 1990: West Germany only.

Figure 23. Annualised growth in gross earnings and employer cost by earnings percentile, selected periods



Note: Sample is individuals in work aged 25–60. Individuals are considered in work if they worked at least 52 hours in the year preceding the survey and received earnings either from labour income or from self-employment. Hence, both employees and self-employed workers are represented. To obtain the employer cost series, a moving average of employers' social security contributions was calculated over several observations in order to reduce fluctuations in the series due to observations with zero social security contributions. 1983 to 1990: West Germany only.

4.5 Self-employment

Figure 24 shows that the share of employees has been steadily increasing from 67% in 1984 to 80% in 2019 (left-hand axis). The share of self-employed is low in Germany and fluctuated around 7% during this period (right-hand axis). Solo self-employment as well as the overall share of self-employed workers have fallen in more recent years and the COVID pandemic has further accelerated this trend. This picture is also evident in the official statistics. At 2.5%, the number of self-employed persons declined more substantially than the number of employees in 2020 (Statistisches Bundesamt, 2024b).

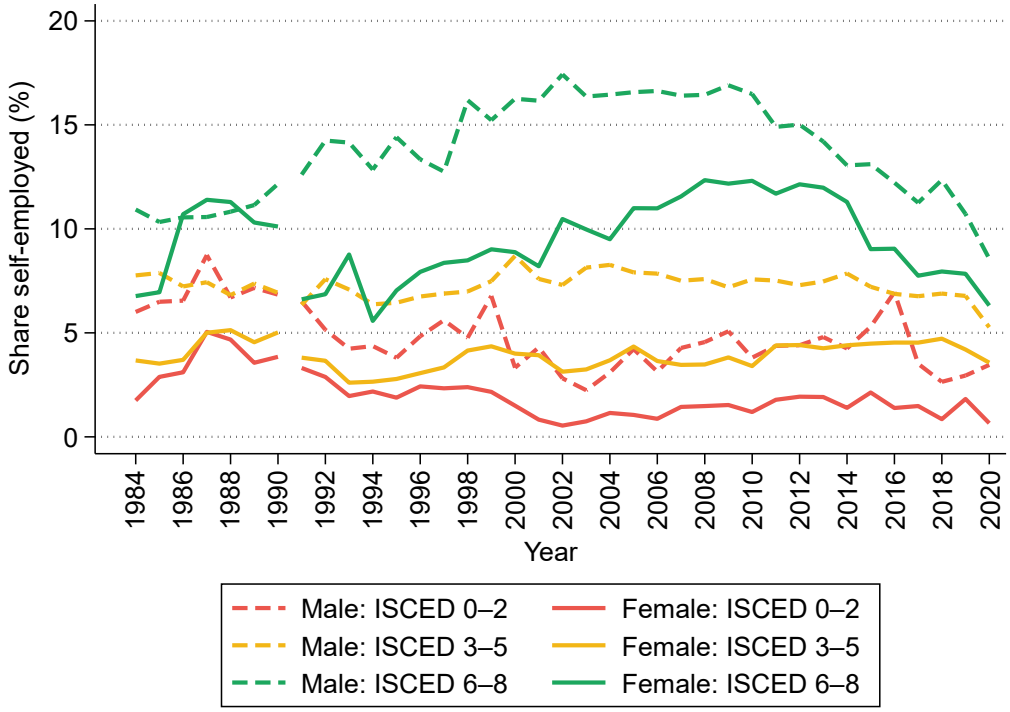
Comparing the share of self-employed workers across sex and educational attainment, as shown in Figure 25, one can see that self-employment is more common among men and highly educated individuals. Across the income distribution we find the highest share of self-employed workers among top earners (Figure 26). However, the bottom part of the distribution also contains more self-employed workers than the middle layers. Figure 26 also yields insights with respect to the development of self-employment over time along the income distribution: the share of self-employed workers in the bottom distribution declined slightly from 1985 to 2017.

Figure 24. Share of employees and self-employed workers, over time

Note: Individuals 25–60 years of age. Workers are defined as self-employed if they receive more income from self-employment than they do from employment. Employees are individuals in the specified age range who worked at least 52 hours in the year preceding the survey and receiving labour earnings. The share of employees and self-employed is calculated as a fraction of individuals with information on the employment status. The time series for 'solo self-employed' and 'other self-employed' are not based on income information, in contrast to the overall self-employment calculation. Instead, additional information on occupational position in the survey year is used, where respondents could indicate self-employment and were asked about the number of employees. The

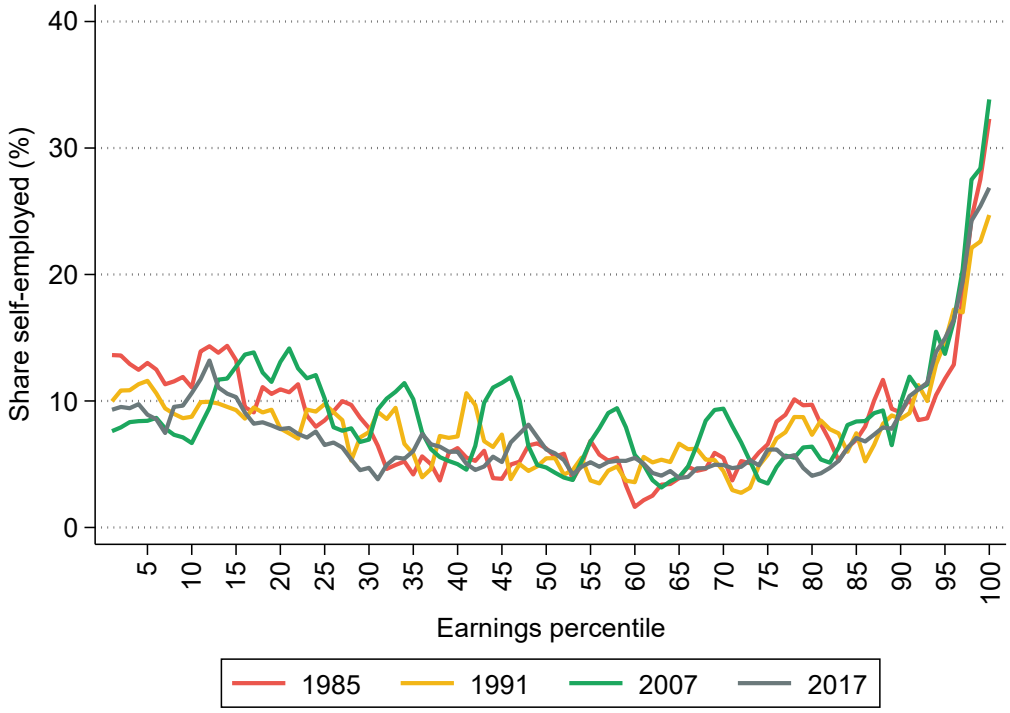
division into ‘solo self-employed’ and ‘other self-employed’ is made on these grounds. This is the reason for the different time periods covered. Because of this the shares might not add up to the total number of self-employed people. The ‘solo self-employed’ relate to self-employed workers without employees. ‘Other self-employed’ include self-employed with employees and family workers. Until 1990: West Germany only.

Figure 25. Share self-employed by sex and education, over time



Note: Individuals 25–60 years of age. Workers are defined as self-employed if they receive more income from self-employment than they do from employment. The share of self-employed is calculated as a fraction of individuals. Until 1990: West Germany only.

Figure 26. Share self-employed by percentile of individual earnings, selected years



Note: Individuals 25–60 years of age with positive earnings. Workers are defined as self-employed if they receive more income from self-employment than they do from employment. The share of self-employed is calculated as a fraction of individuals. Five-year averages have been calculated and smoothing across five percentile points has been applied. Until 1990: West Germany only.

5. Institutions

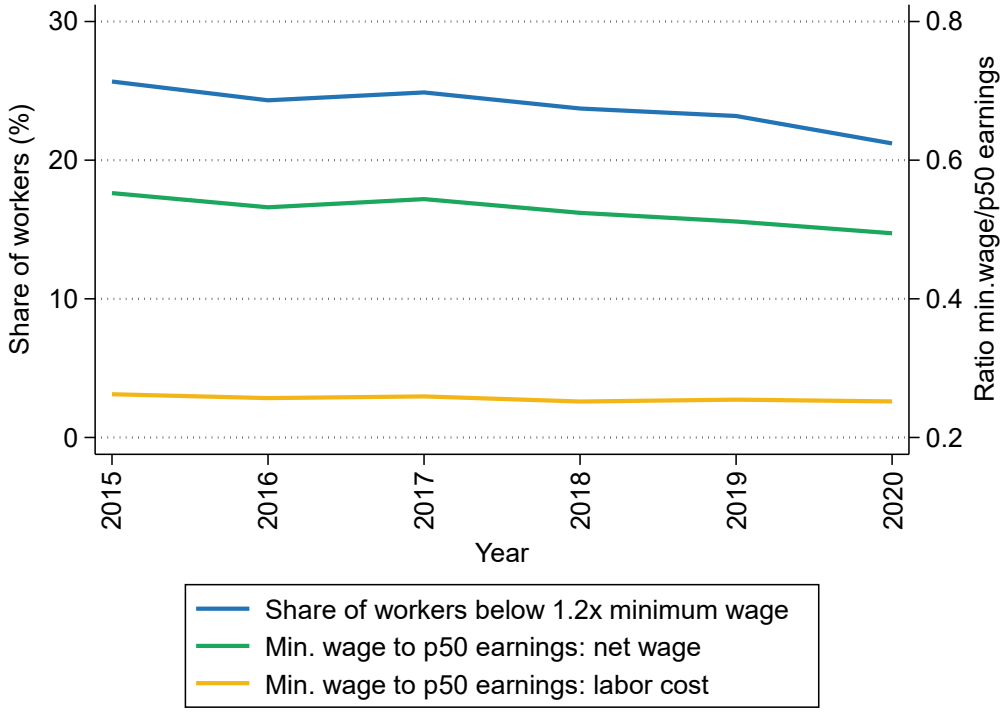
This section looks at labour market institutions that affect earnings and incomes: the tax- and transfer system, minimum wages and collective bargaining, and social insurance. As in most of the report, the analysis is restricted to workers, employees or individuals aged 25–60.

5.1 Minimum wage and unions

In Germany, a mandatory minimum wage was only introduced in 2015, bringing in an hourly rate of at least €8.50.[5] Since then, the bite of the minimum wage and the share of workers earning below 120% of the minimum wage has fallen slightly, as shown in Figure 27. The level, as a share of median net wages, is rather high at more than 50%, but decreased slightly over the period 2015–2020. Until 2021, minimum wage increases were determined by a joint commission of union and employer representatives and economists. In 2022, the government deviated from this policy and decided to unilaterally increase the minimum wage from €10.45 to €12.00 per hour, which so far constitutes the highest increase of 14.8%. Therefore, the bite of the minimum wage is expected to increase substantially in the coming years.

[5] However, for a transitional period until the end of 2017, industry minimum wages were still allowed to be lower than the general minimum wage.

Figure 27. Bite of the minimum wage, over time

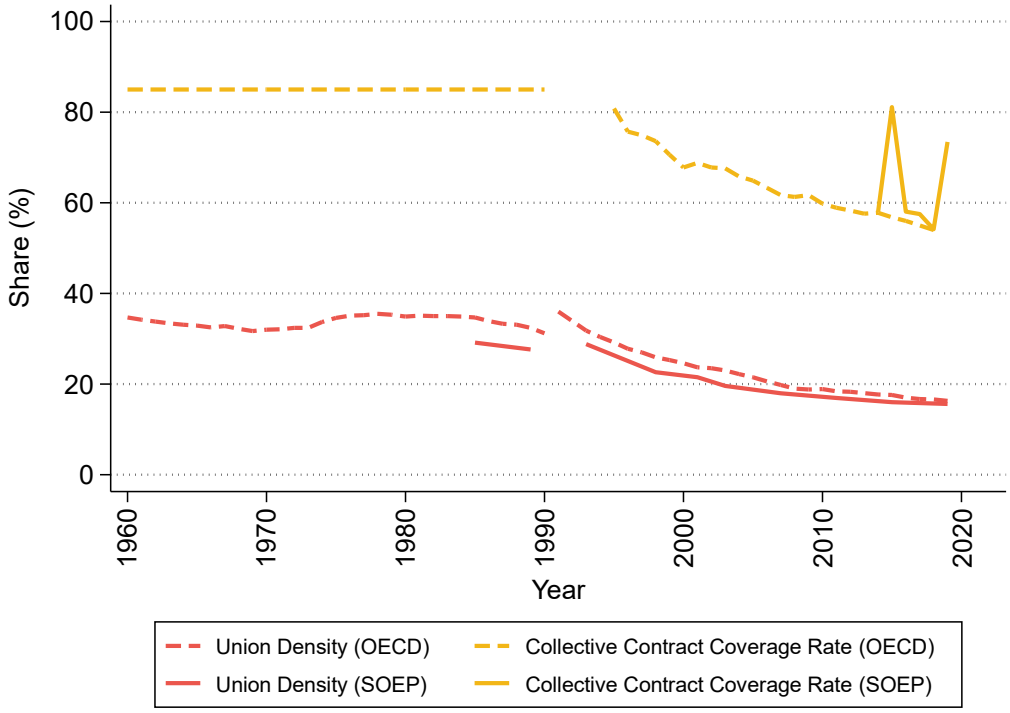


Note: Labour costs taken from the German Federal Statistics Agency. Labour costs include compensation of employees with gross earnings in the form of cash and non-cash benefits and employers' social security contributions, the cost of vocational training and continuing education, other training, other expenses and taxes on the total payroll or number of employees. Individuals aged 25–60. The minimum wage used is the minimum wage for over-25s. The figure presents the share of workers with a wage below 1.2 times the minimum wage (left-hand axis) as well as the ratio of the minimum wage to the median wage for the net wage and the average labour cost (right-hand axis). Periods in which the minimum wage was at a given value do not exactly correspond to financial years, so in this figure '1999' on the horizontal axis corresponds to '1 January 1999', and each datapoint is plotted at the midpoint of the period to which it corresponds.

Source: Statistisches Bundesamt (Destatis) 2023; authors' calculations using data from the SOEP.

Figure 28 shows union density for all employees in Germany. OECD numbers are available from 1960 onwards, whereas for more recent years we also observe (self-reported) union density in the SOEP household survey. Collective bargaining is still the norm in many sectors of the Germany economy, with the majority of workers covered by collective bargaining agreements. However, this share has been steadily declining from 85% in the 1980s to roughly 55% in the years before the COVID pandemic.

Figure 28. Union density and fraction of workers covered by collective bargaining agreements, over time



Note: The sample for the OECD series is all employees, and the sample for the SOEP series is individuals aged 25–64. The sample for collective contract coverage is individuals aged 25–60. Until 1990: West Germany only. In both cases the denominator is the number of employees.

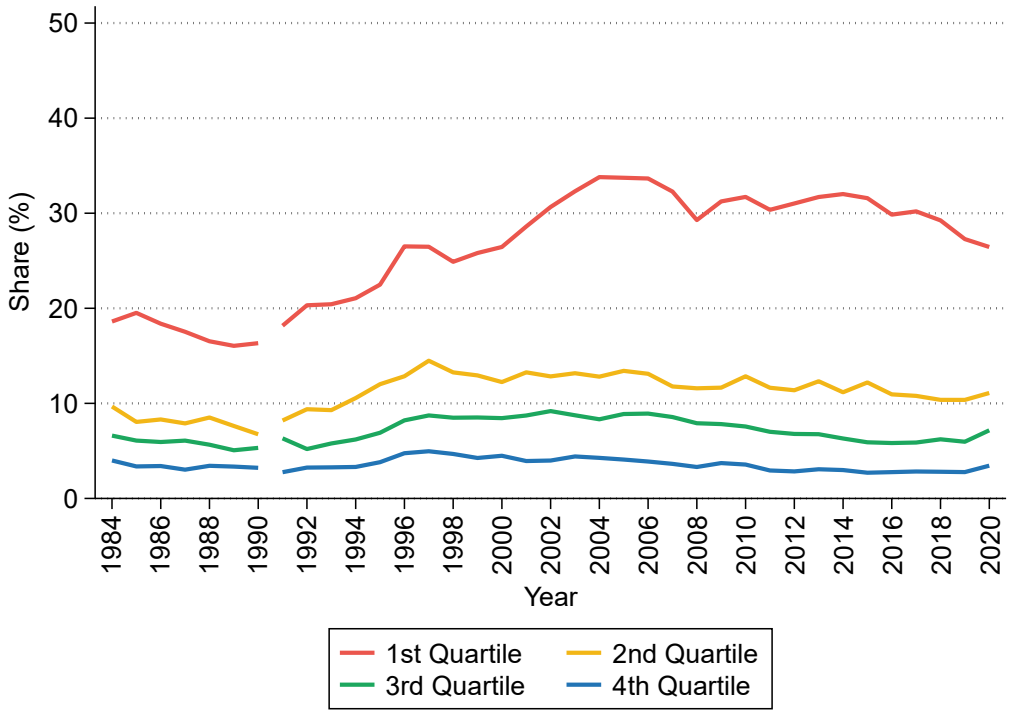
Source: OECD 2023; authors' calculations using data from the SOEP.

5.2 Tax and benefits (financial transfers from the state)

Figure 29 shows public (financial) transfers received as a share of total (gross) income from 1984 to 2020 across quartiles of the net income distribution. The transfers comprise unemployment benefits, short-time work allowance[6], social assistance and citizen's benefit (unemployment benefits II for the period considered), child benefits, parental benefits, educational benefits as well as pension income from the statutory pension insurance system. As expected, the largest benefit income ratio is found for the first quartile for all years. This quartile should comprise most of the (long-term) unemployed who receive unemployment benefits, citizen's benefits or social assistance, while receiving little or no labour earnings. While the benefit income ratio decreased slightly for all quartiles and differences between the quartiles were rather stable in the second half of the 1980s, German reunification seems to have been a turning point. In 1991 the ratios in the first and second quartiles jump up by about four percentage points, which can mainly be attributed to the population increase due to the reunification. In the following years, the German economy struggled with high unemployment rates, which is probably the main reason for the increasing benefit income ratio in the first quartile up to 2005, where it culminates at 33,8%. After the last Hartz reforms in 2005 the ratios decreased nearly constantly until recent years, interrupted only by the Global Financial Crisis in 2009 and the period of high immigration around 2015. In 2020, it is notable that the share of benefits increased for all quartiles except for the first quartile. This is a particular finding since the literature shows a cushioning or even positive effect of discretionary policy measures on disposable income for the bottom of the income distribution during the pandemic in Germany (e.g., Clark et al. 2021; Christl et al. 2023). It should be noted at this point that the surveys in 2020/21 are likely driven by special Covid effects. On the one hand, this includes genuine effects such as higher transfer payments; on the other hand, special effects may occur in the sample selection or due to a different survey date. We suspect a relevant change in the composition of the quartiles behind the deviating effects in quartile 1 and the other quartiles. The significance of the development at the current margin (2020) should therefore be treated with caution.

[6] In as far as survey respondents did not miss-characterise it as part of their labour earnings.

Figure 29. Benefits as a proportion of overall income, across quartiles of the equivalised disposable income distribution

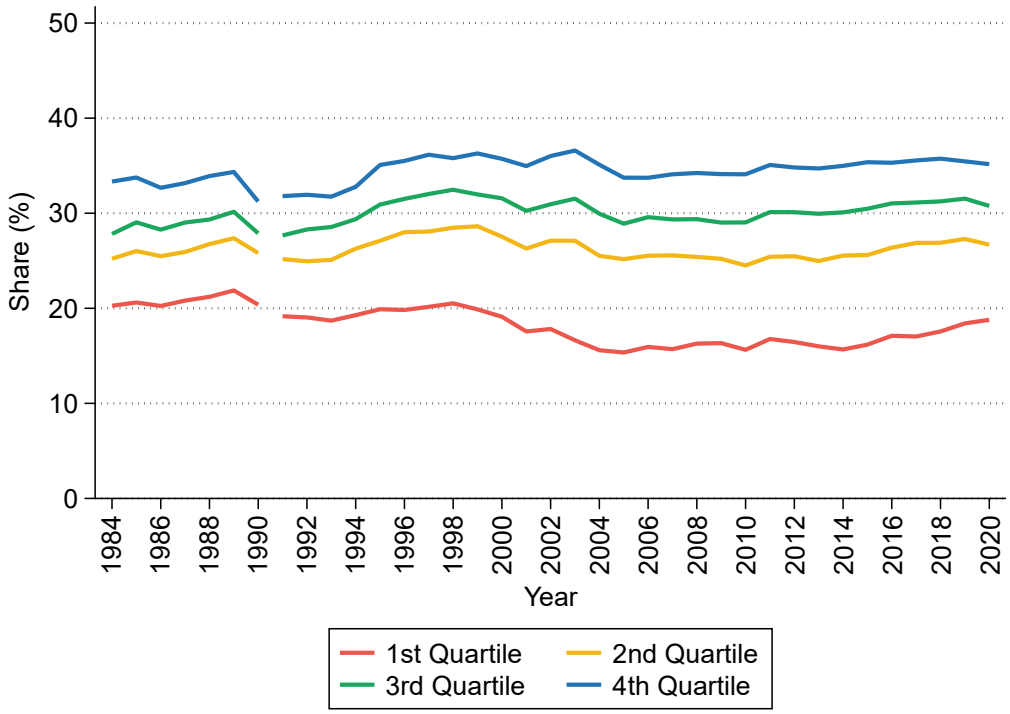


Note: The sample includes individuals aged 25–60. Income and benefits are aggregated at the household level. Overall income includes gross labour earnings, asset income, income from private transfers, private retirement income and public benefits. Public benefits include all public transfers as well as income from social security pensions. Disposable income is overall income net of direct taxes and employee social security contributions and is equivalised according to the modified OECD equivalence scale. Benefits and income amounts are calculated as the mean in the respective quartile of the equivalised disposable income distribution. Until 1990: West Germany only.

Source: Authors' calculations using data from SOEP.

Due to the progressive income tax scheme in Germany, households at the upper end of the income distribution face higher tax burdens, as can be seen in Figure 30. In 2019, the burden of direct taxes, mainly income taxes on labour and capital income, plus social security contributions, was equal to 35.5% for the fourth, 31.5% for the third, 27.3% for the second and 18.5% for the first quartile. From 1984 to 2019 the tax burden increased the most in absolute terms for the third quartile, by about 4 percentage points. In more recent years, the tax burden on the first quartile has been growing faster than for the other quartiles. Social security contributions do not contribute to the progressive nature of the tax burden as payments increase linearly with income up to the contribution assessment ceiling.

Figure 30. Direct taxes and employee social security contributions as a proportion of overall income, across quartiles of the equivalised disposable income distribution



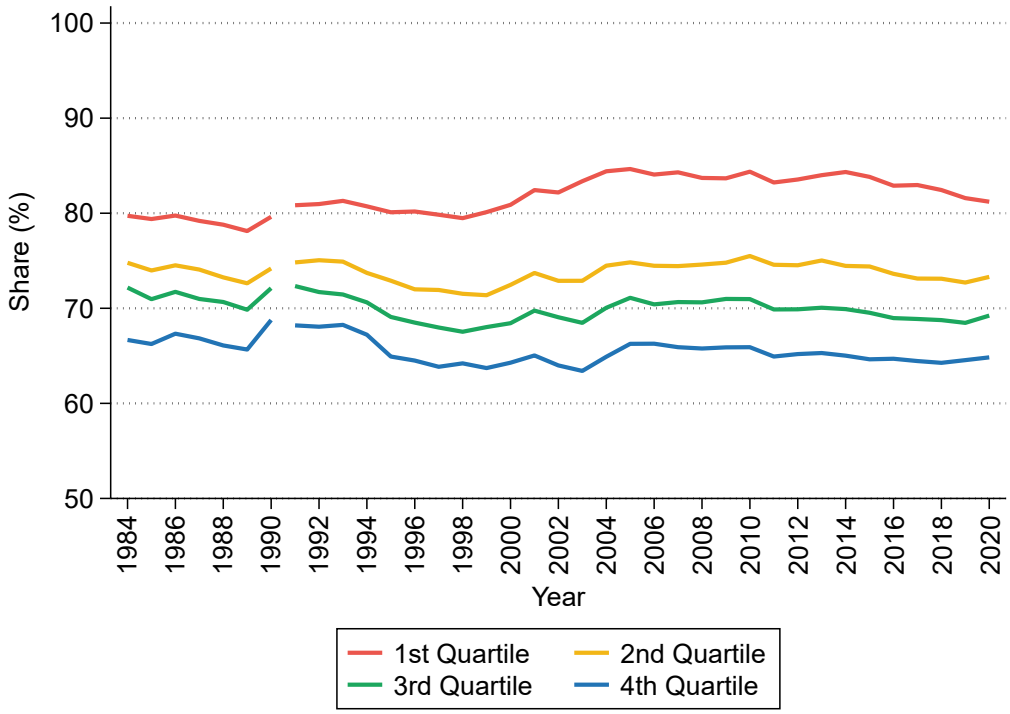
Note: The sample includes individuals aged 25–60. Income and benefits are aggregated at the household level. Overall income includes gross labour earnings, asset income, income from private transfers, private retirement income and public benefits. Public benefits include all public transfers as well as income from social security pensions. Disposable income is overall income net of direct taxes and employee social security contributions and is equivalised according to the modified OECD equivalence scale. Benefits and income amounts are calculated as the mean in the respective quartile of the equivalised disposable income distribution. Until 1990: West Germany only.

Source: Authors' calculations using data from SOEP.

Bringing the tax elements and benefit elements together, Figure 31 shows the total disposable household income, including benefits and net of taxes and social security contributions, as a share of total gross income along the income distribution. On average, the households in the first quartile of the income distribution receive the highest net gross income share. As seen in the previous two charts, households in the first quartile have a high benefit–income ratio and pay a lower share of their gross income as taxes and social security contributions than other quartiles, which eventually translates into a higher net gross income ratio. From 1984 to 2019, the ratio decreased slightly for the upper three quartiles and increased for the first quartile.

By adding the employers' social security contributions to overall income, the proportion of disposable to gross income becomes lower for all quartiles, as Figure 32 shows. For the lower three quartiles, the net-gross share is around 10% lower compared to the ratio without employers' social security contributions. The difference in the net-gross shares is slightly lower for the upper quartile at approx. 6%, as no social security contributions are due for income above the income threshold and the upper quartile contains a disproportionately high number of self-employed persons who do not pay employer social security contributions.

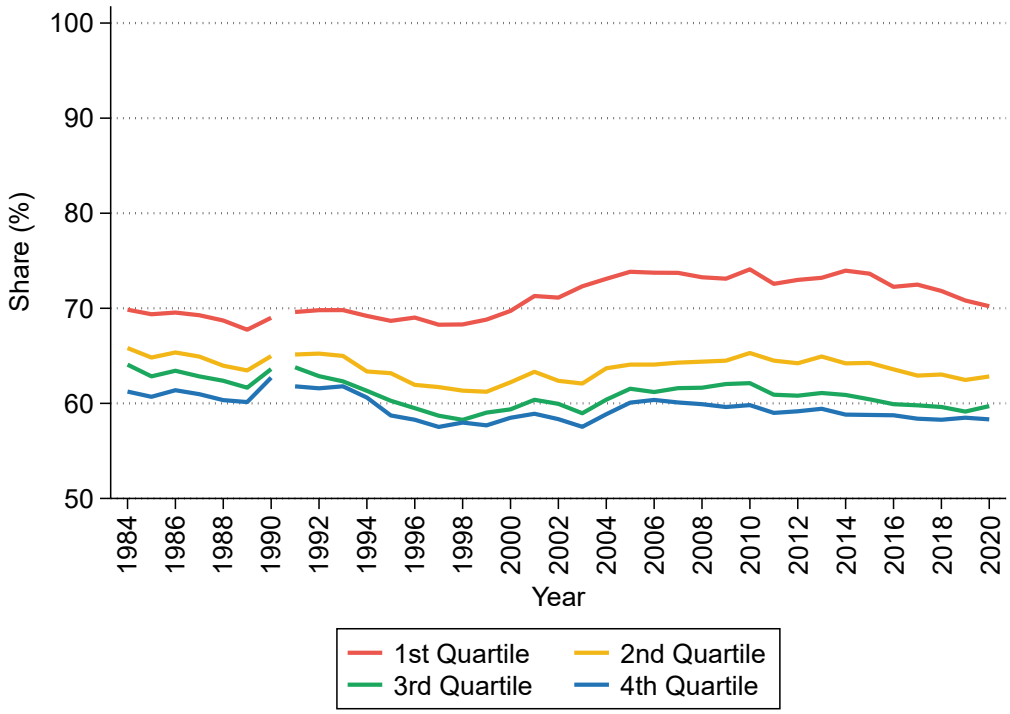
Figure 31. Disposable income as a proportion to overall income, across quartiles of the equivalised disposable income distribution



Note: The sample includes individuals aged 25–60. Income and benefits are aggregated at the household level. Overall income includes gross labour earnings, asset income, income from private transfers, private retirement income and public benefits. Public benefits include all public transfers as well as income from social security pensions. Disposable income is overall income net of direct taxes and employee social security contributions and is equivalised according to the modified OECD equivalence scale. Benefits and income amounts are calculated as the mean in the respective quartile of the equivalised disposable income distribution. Until 1990: West Germany only.

Source: Authors' calculations using data from SOEP.

Figure 32. Disposable income as a proportion to overall income including employer social security contributions, across quartiles of the disposable income distribution



Note: The sample includes individuals aged 25–60. Income and benefits are aggregated at the household level. Overall income includes gross labour earnings, asset income, income from private transfers, private retirement income and public benefits. Public benefits include all public transfers as well as income from social security pensions. Disposable income is overall income net of direct taxes and employee social security contributions and is equivalised according to the modified OECD equivalence scale. Employer social security contributions are simulated with the ifo microsimulation model (Blömer & Peichl, 2020). Benefits and income amounts are calculated as the mean in the respective quartile of the equivalised disposable income distribution. Until 1990: West Germany only.

Source: Authors' calculations using data from SOEP, simulations from ifo microsimulation model.

6. Household incomes

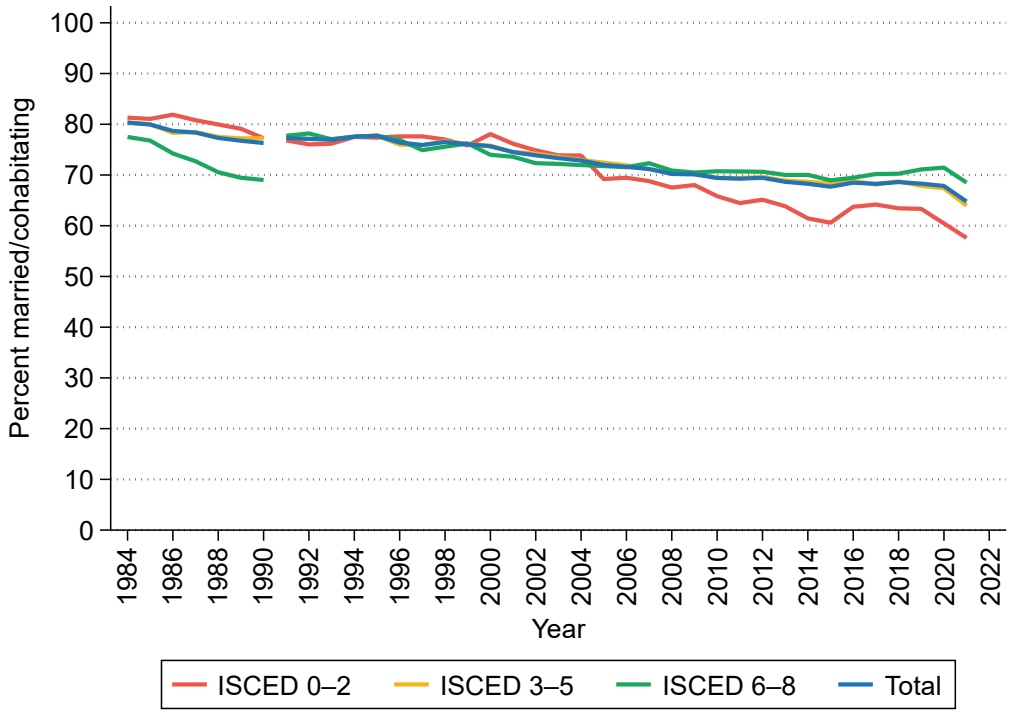
This section looks at trends in household incomes. We start by looking at trends in household composition and the degree of assortative matching, which partly determine household earnings. We then compare trends in household earnings and household disposable income for working households, drawing out the role of the tax and transfer system over time. Finally, we show a set of charts on trends in household income inequality across all households (including those where no one is in work).

6.1 Trends in household composition

As in most industrialised economies, rates of marriage and cohabitation in Germany have fallen in recent decades. This decline has been strongest among individuals with low levels of formal schooling, whereas marriage and cohabitation rates among graduates (ISCED 6–8) have decreased less. In consequence, Figure 33 provides evidence for increased assortative matching, meaning that graduates are increasingly likely to marry other graduates.

The COVID pandemic appears to have further exacerbated the negative trend in marriage and cohabitation rates. The proportion in 2020 is roughly 3 percentage points below the 2019 figure, regardless of the education level. Statistics from the Federal Statistical Office (2022) show that the number of marriages in Germany also fell sharply by over 10.3% and 4.2% in 2020 and 2021 respectively.

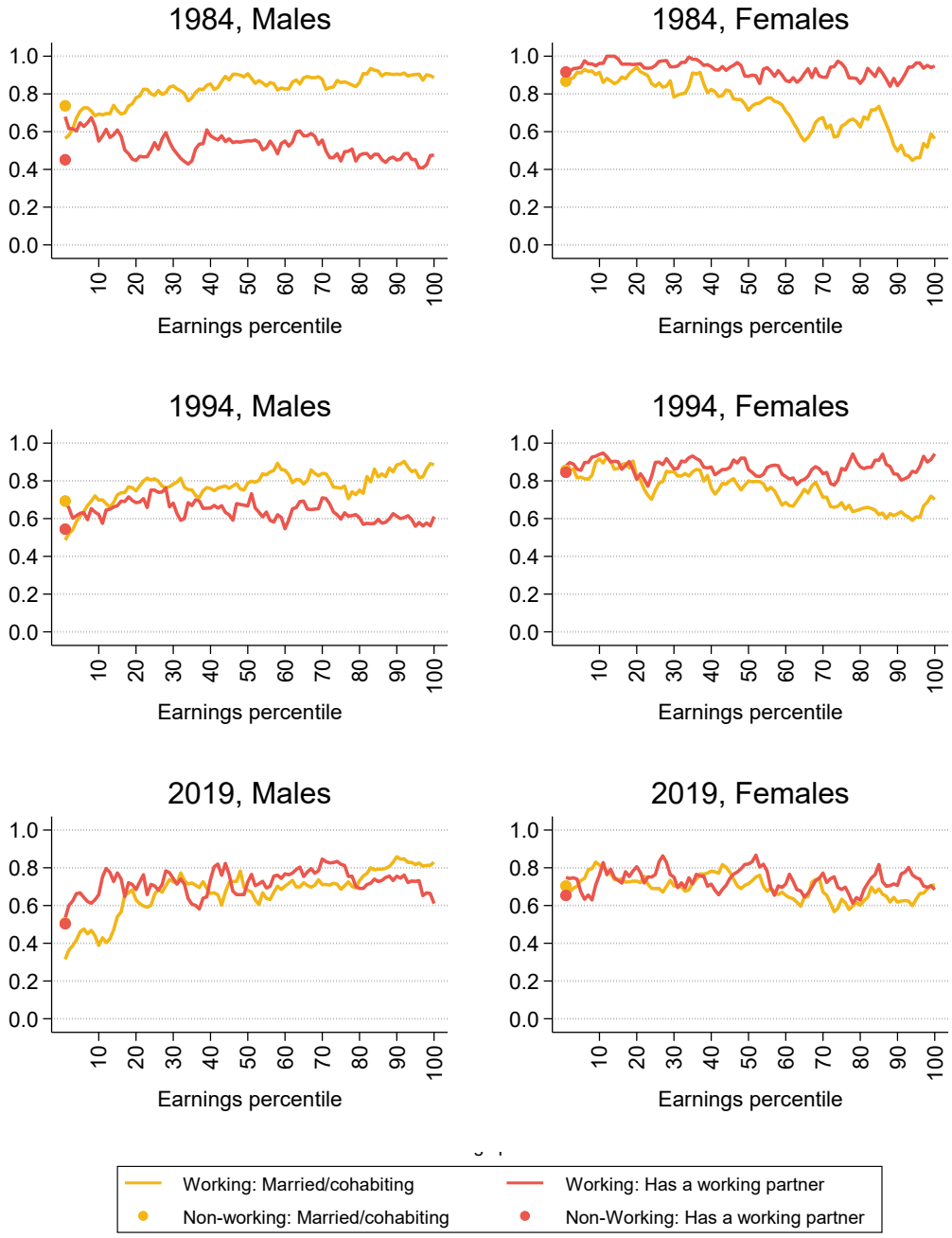
Figure 33. Share married/cohabiting, overall and by education, over time



Note: Sample is individuals aged 25–60 who have completed full-time education. Until 1990: West Germany only.

Figure 34 shows a similar pattern when looking at individual earnings, rather than education. For men, the positive correlation between individual earnings and the probability of being in a couple has become stronger over time. For women, this relationship was negative in 1984 (high-earning women were less likely to be a couple), whereas in 2019 the correlation was essentially zero. In particular, high-earning individuals are now more likely than before to have a partner who works.

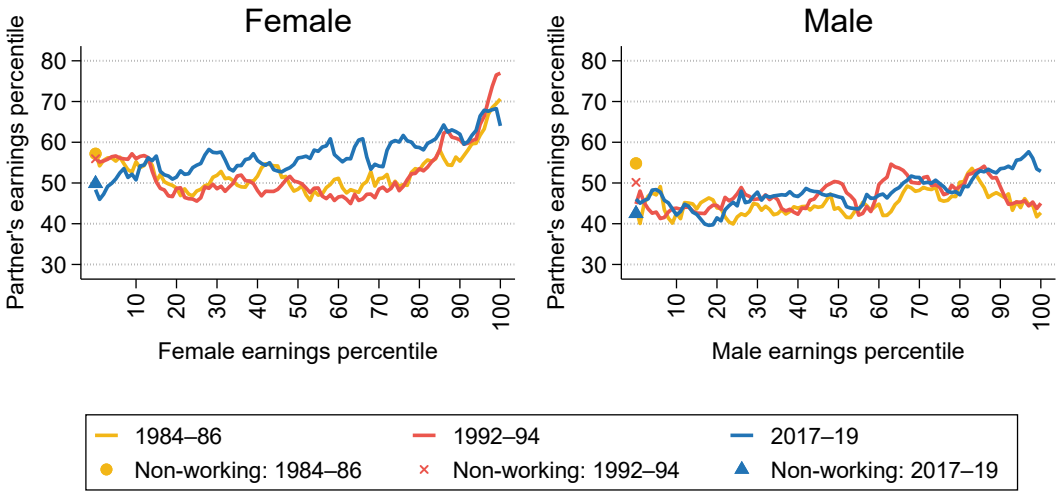
Figure 34. Share married/cohabiting and share with working partner, by sex and individual gross earnings percentile, selected years



Note: Sample is individuals aged 25–60. Married/cohabitating also includes civil partnerships. The proportion with a working partner is conditional on being married/cohabiting. Smoothing across five percentile points has been applied. 1984: West Germany only.

Finally, for couples in which both partners work, the correlation between the gross earnings percentile of an individual and the partner's position in the gross earnings distribution has changed markedly over the years, as shown in Figure 35. For women, the U-shaped pattern of the 1980s and 1990s has changed into a more linear relationship. For men, the correlation has grown stronger, pushing up inequality in household earnings.

Figure 35. Mean gross earnings percentile of partner/spouse by individual's gross earnings percentile, selected years

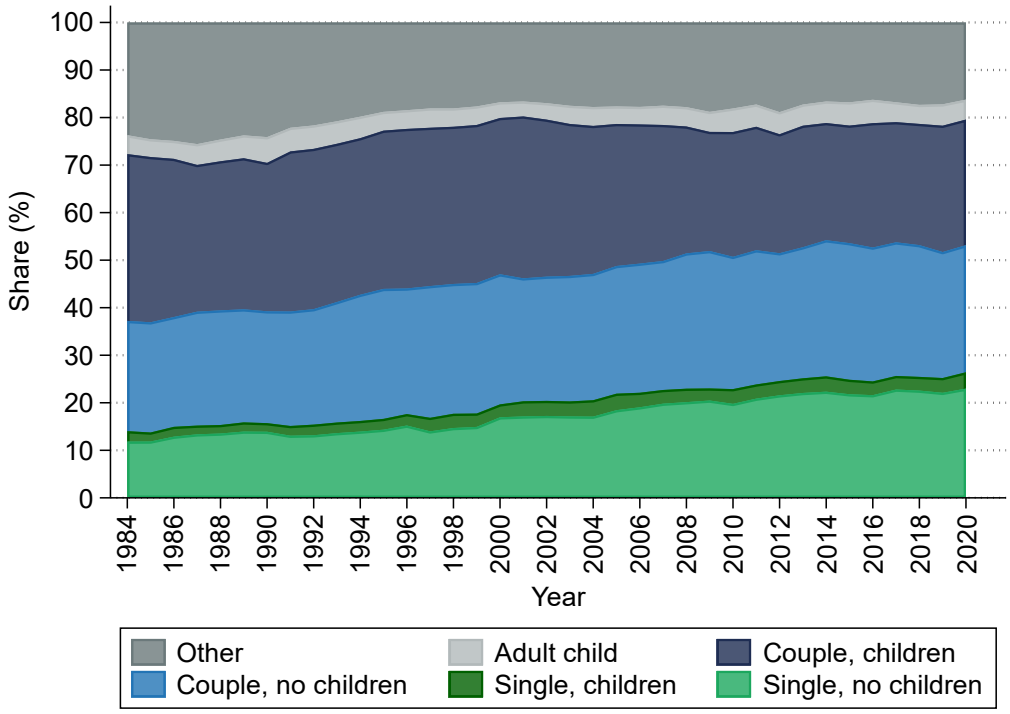


Note: Sample is individuals aged 25–60. Married/cohabitating also includes civil partnerships. Mean earnings of partners are plotted as five-point moving averages across the earnings distribution. Smoothing across five percentile points has been applied. 1984–86: West Germany only.

Looking at family structure more broadly (Figure 36), the share of prime working-age adults who are single increased from 14% in 1983 to 25% in 2019. There are both more single parents and more singles without children in 2019 than in 1983. Moreover, there has been a shift away from children within the group of coupled households. The share of couples with children decreased from 35% in 1983 to 27% in 2019 while the share of couples without children increased from 23% to 27%.

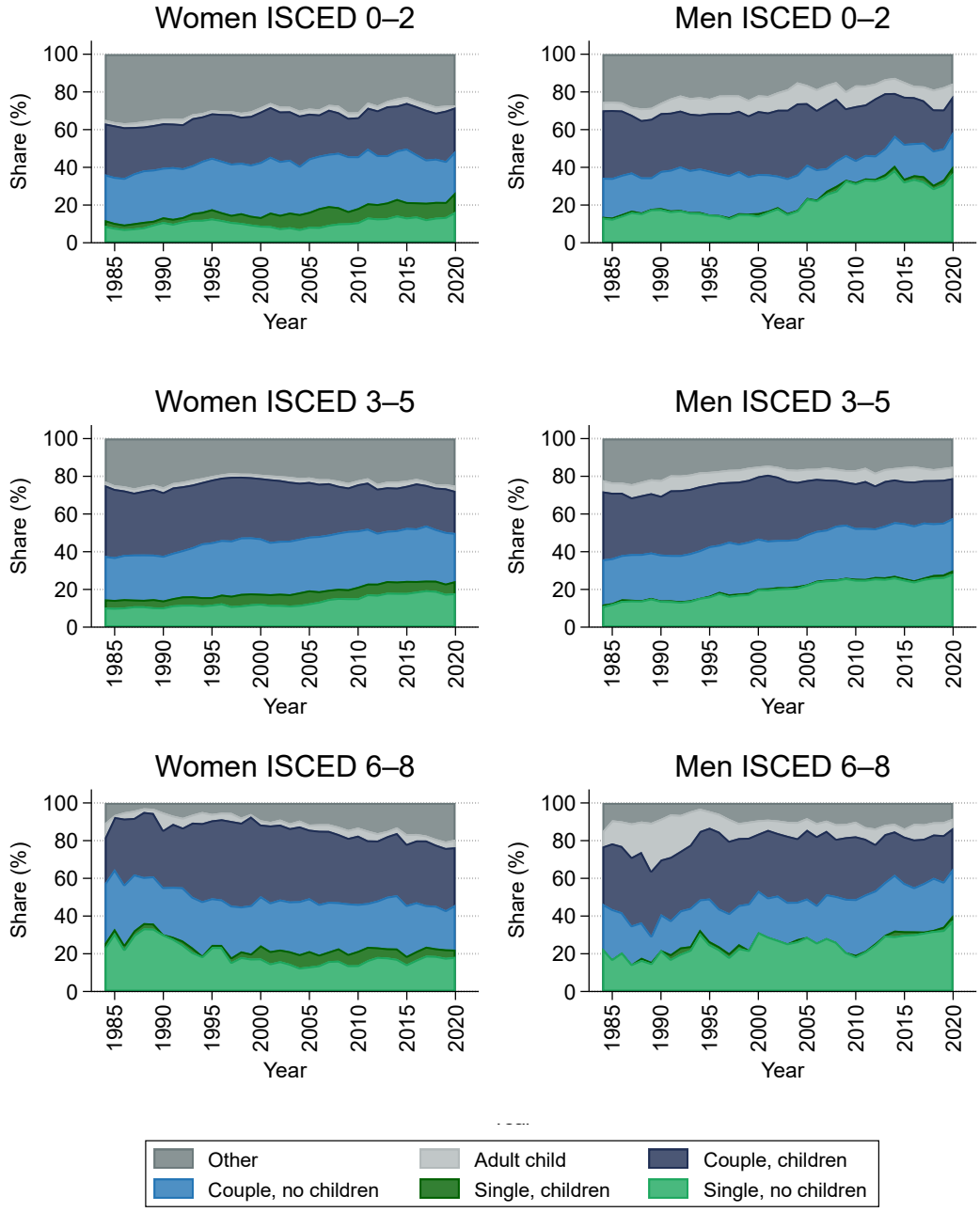
Figure 37 again shows the rise in the share of single households over time, separately for male and female individuals. For women, the increase in the share of single mothers with lower levels of formal education after the turn of the millennium is substantial. For men with similar education levels the share of childless singles increased most markedly over the same period. The only group that does not exhibit an increase in singlehood are highly educated women. Especially with the inclusion of the East German sample and in the first half of the 1990s, the share of singles decreases in this group. In line with the further decline in marriage and cohabitation rates during the pandemic (see Figure 33), the proportion of people in single households also continues to rise in 2020, particularly among individuals with a low level of education (ISCED 0–2) as well as for men with high education levels (ISCED 6–8). Finally, men of all education levels are more likely to still be living with their parents while of prime working age.

Figure 36. Share of individuals by position in the household, over time



Note: Sample is individuals aged 25–60. Missing values have been excluded as they lead to inconsistencies in 1991, the year of German reunification. 'Single, children' and 'couple, children' refer to dependent children only. Parents of adult children are categorised as 'other'. Until 1990: West Germany only.

Figure 37. Share of individuals by position in the household, by sex and education, over time



Note: Sample is individuals aged 25–60. Missing values have been excluded as they lead to inconsistencies in 1991, the year of German reunification. 'Single, children' and 'couple, children' refer to dependent children only. Parents of adult children are categorised as 'other'. Until 1990: West Germany only.

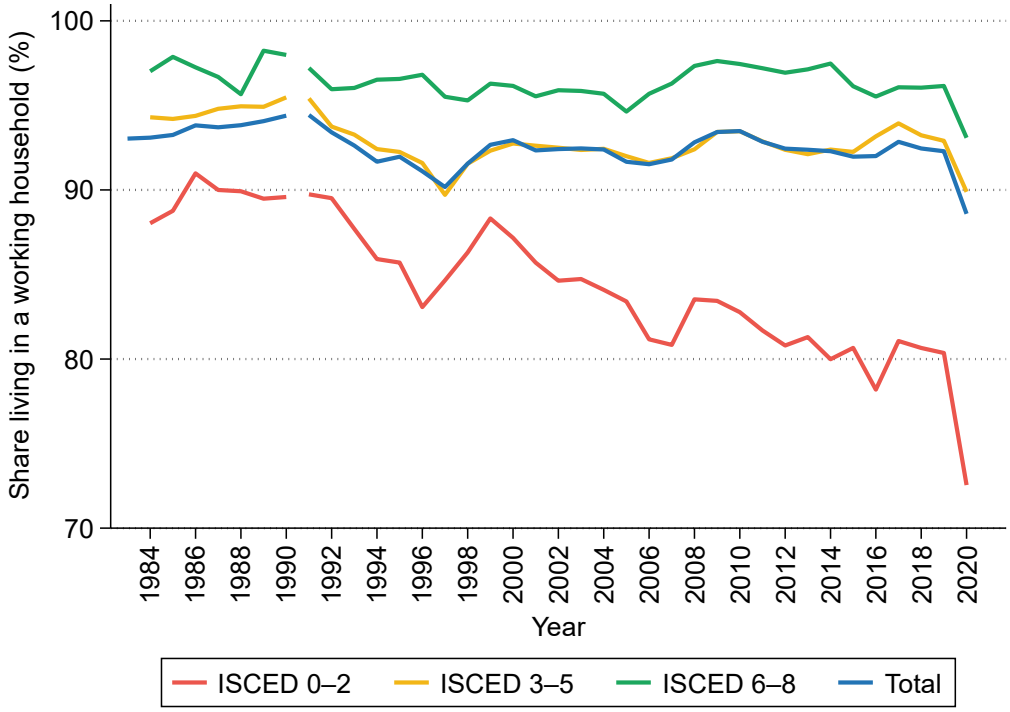
6.2 Earnings and incomes among working households

As illustrated by

Figure 38, the share of individuals in working households has been relatively stable over time among graduates and medium-skilled workers, despite rising levels of employment since the mid-1990s. However, the increasing labour force participation of women has been accompanied by a structural shift from the traditional single-earner household to multi-earner households. Thus, the increase in women's labour force participation has not led to an increase in working households to the same extent. In addition, the share of single-income households has increased significantly since the mid-1990s, while the prevalence of single-income couples has continued to decline. Comparing 2019 to 1993, there has been a decline in the share of those with no or low-level qualifications living in a working household (from 88% to 80%), though part of this is likely to reflect the fact that this group is increasingly negatively selected.

The sharp decline in 2020, particularly among individuals with a low level of education, is likely to somewhat exaggerate the actual developments, as the decline in employment in the SOEP data in 2020 is also somewhat sharper than in the official data from the Federal Statistical Office. However, according to the Federal Employment Agency (Bundesagentur für Arbeit, 2024b), the number of people in marginal employment (e.g. low-income earners such as mini-jobbers) also fell by more than 7% year-on-year in 2020.

Figure 38. Share of individuals in a working household, overall and by education, over time



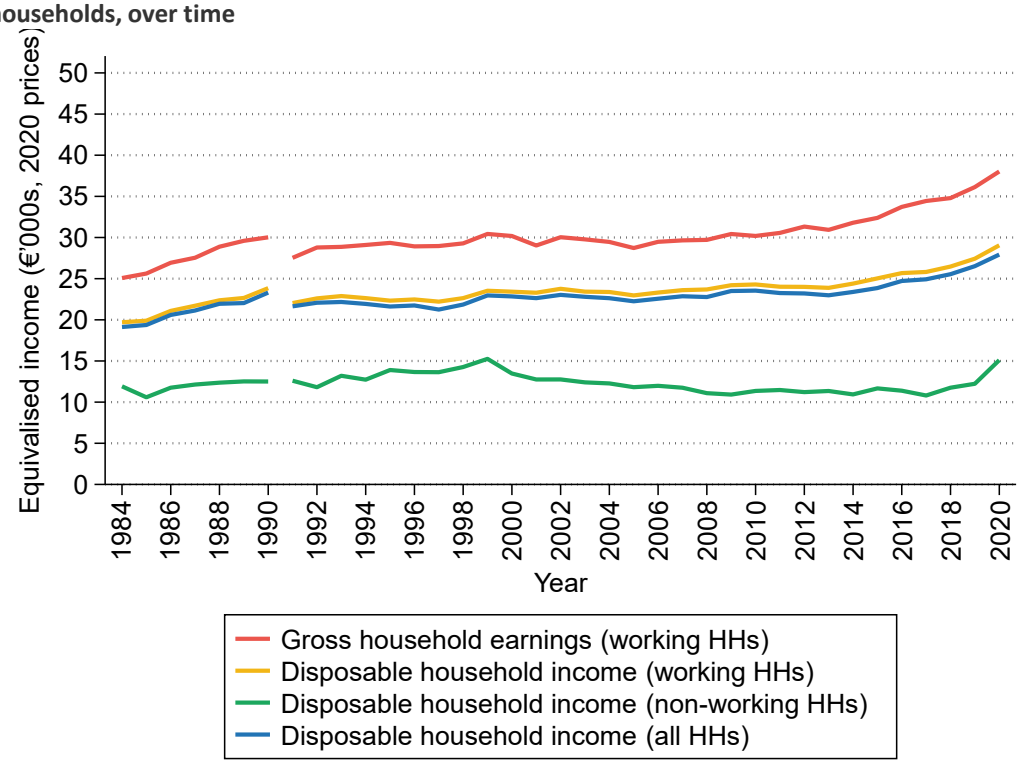
Note: Sample is individuals aged 25–60. Missing values have been excluded. A working household is defined as a household in which at least one adult is in work. Until 1990: West Germany only.

We now consider how all the trends above combined explain trends in household earnings, and how interactions with the tax and benefit system generate trends in disposable household income. Figure 39 shows gross household earnings and disposable household income in real terms over time. In contrast to real median wages, equivalised median gross household income increased substantially from €25,000 in 1983 to €36,000 in 2019 for working households. This difference arises due to changes in household

composition (affecting the equivalisation weights) and due to the steady increase in employment among women. Disposable household income for working households increased over time, too. However, the increase in disposable income was more moderate as changes in the tax and benefit system and bracket creep have increasingly raised tax duties over time.

Non-working households saw a moderate increase in disposable household income up to 1999, and a slow decline afterwards. This decline in real income was partially driven by bracket creep, as nominal transfer payments remained constant in many years despite inflation. Furthermore, the trend reflects a compositional shift towards a higher share of long-term rather than short-term unemployed (compare Figure 7). Because the long-term unemployed receive lower transfer payments especially since the Hartz reforms, a higher share of long-term unemployed decreases average disposable household incomes in the group of non-working households.

Figure 39. Median real gross household earnings and disposable household income among working households, over time



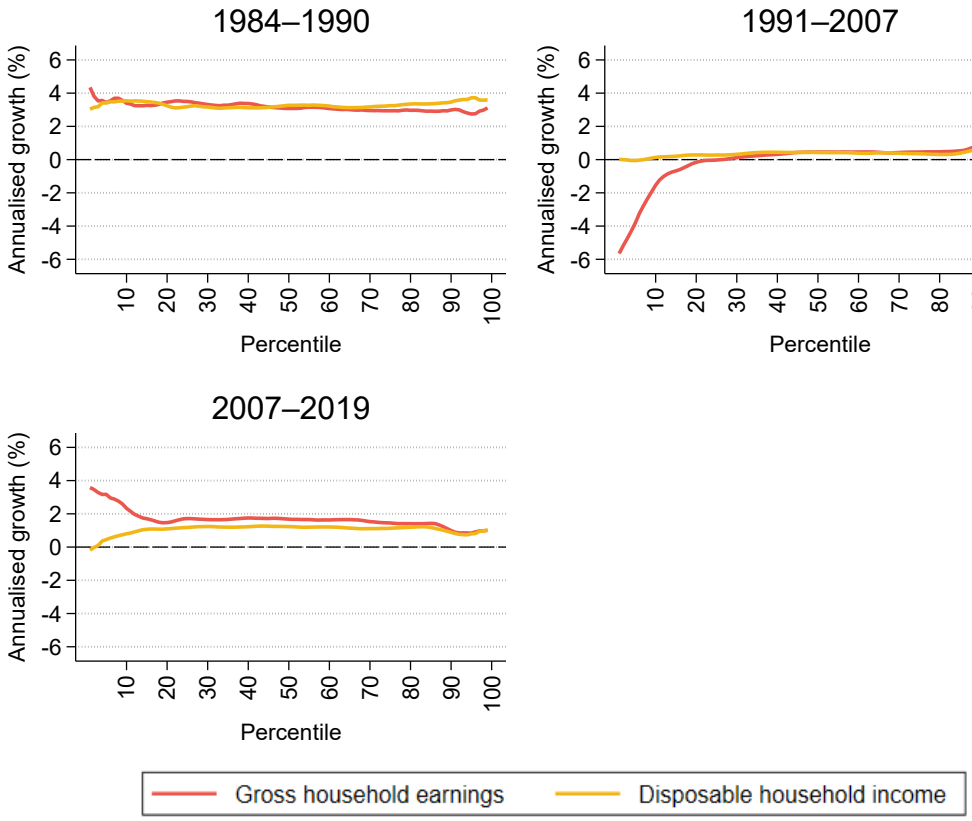
Note: Sample is individuals aged 25–60 in working and non-working households. A working household is defined as a household in which at least one adult is in work. All incomes have been equivalised using the modified OECD equivalence scale. Households with missing equivalised gross household earnings or disposable household incomes have been dropped. Until 1990: West Germany only.

Figure 40 shows that the tax and benefits system in Germany dampened the impact of rising earnings inequality on disposable income inequality among working households in the period between 1991 and 2007, where gross household income fell substantially at the bottom of the distribution. The profile for disposable household incomes was relatively flat and the decline in disposable income at the bottom of the distribution was much smaller.

The period from 1984 to 1990 was characterised by inclusive growth both for gross household earnings and disposable household earnings. Between 2007 and 2019 gross household earnings and disposable household earnings grew at about the same rate across the distribution, except for the bottom of the distribution, where disposable household earnings showed lower growth rates. At these income percentiles, a high share of income originates from transfers, largely decoupling the gross and disposable income distribution. Furthermore, the Hartz reforms have brought about redistributions from transfer recipients to working households by reducing transfers and increasing the incentives to work in the low-

wage sector. Thus, currently available evidence suggests that they have decreased earnings inequality (at least in the overall population) but increased inequality in disposable household income (Battisti, Felbermayr and Lehwald, 2016; Hartung, Jung and Kuhn, 2022; Immel, 2021).

Figure 40. Annualised growth in real gross household earnings and household disposable income for working households, by percentile, selected years



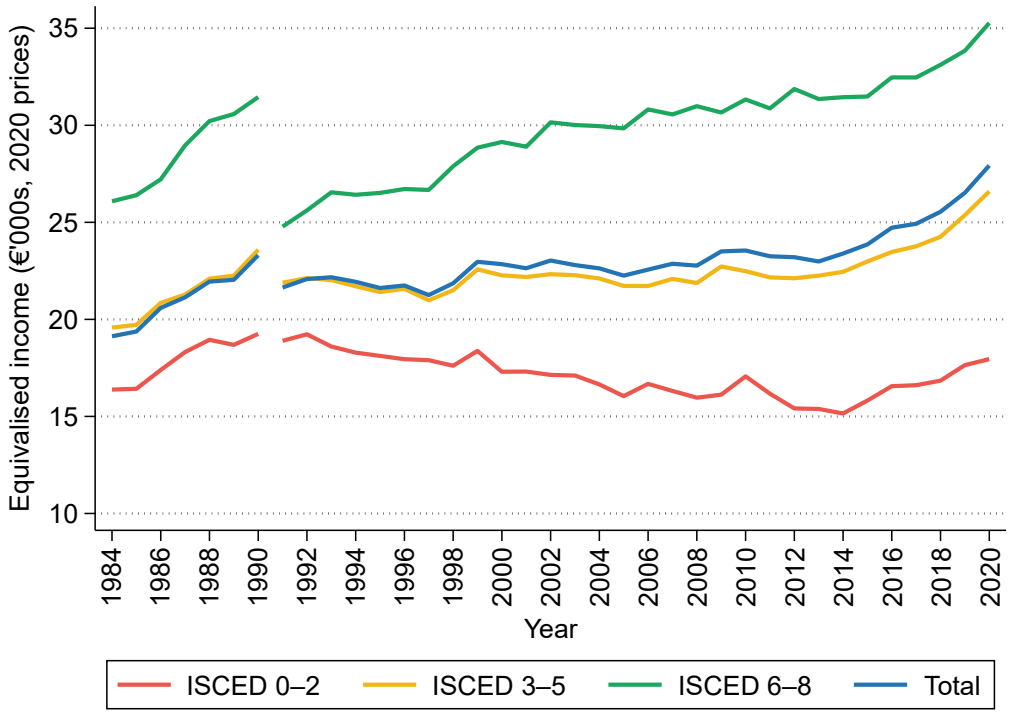
Note: Sample is individuals aged 25–60 in working households. A working household is defined as a household in which at least one adult is in work. All incomes have been equivalised using the modified OECD equivalence scale. Household disposable income and household gross earnings have been smoothed across five percentile points. Households with missing disposable household incomes or gross household earnings have been dropped due to inconsistencies in 1991, the year of German reunification. Until 1990: West Germany only.

6.3 Inequality in incomes among all households

This section brings together the trends shown above to look at inequality in disposable household incomes across all households.

Figure 41 shows growing dispersion in real median disposable household incomes. Whereas incomes grew for graduates (ISCED 6–8) and those with medium-level qualifications (ISCED 3–5), incomes stagnated for lower-educated groups (ISCED 0–2).

Figure 41. Median real disposable household income for all households, overall and by education, over time

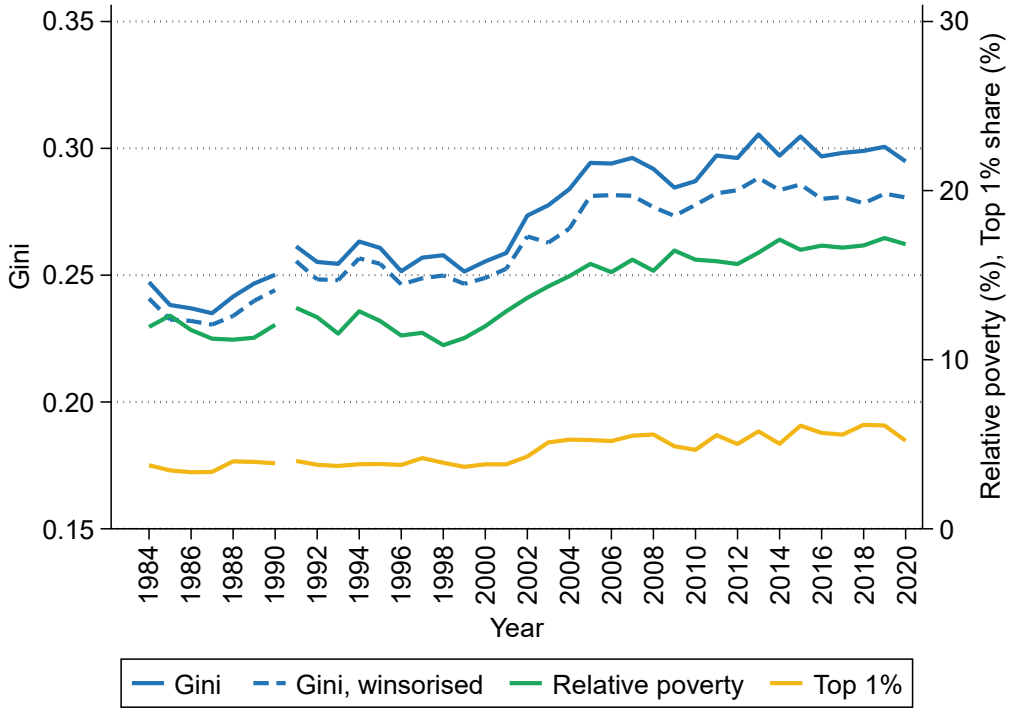


Note: Sample is individuals aged 25–60. Incomes are in 2020 prices. All incomes have been equivalised using the modified OECD equivalence scale. Until 1990: West Germany only.

Figures 42 and 43 show that measures of inequality in disposable household incomes were relatively stable in the 1980s, 1990s and after 2010, but grew markedly in the 2000s. Figure 42 documents that the Gini coefficient and the share of relative poverty (individuals with less than 60% of median income) increased especially between 1999 and 2005. In parallel, the income shares of the top 1% increased slowly but steadily throughout the observation period in our data. The SOEP household data are known to be not fully representative of the top of the income distribution, which means we are hesitant to draw strong conclusions from these statistics. Reassuringly, Bartels (2019) shows an increase of the top 1% income share from 1984 to 2014 also in the administrative tax data, complementing our findings in the SOEP. Furthermore, the Gini coefficient looks very similar when winsorising incomes at the 99th percentile. At the same time, the level of inequality as measured by the top 1% income share is of course higher in the tax data.

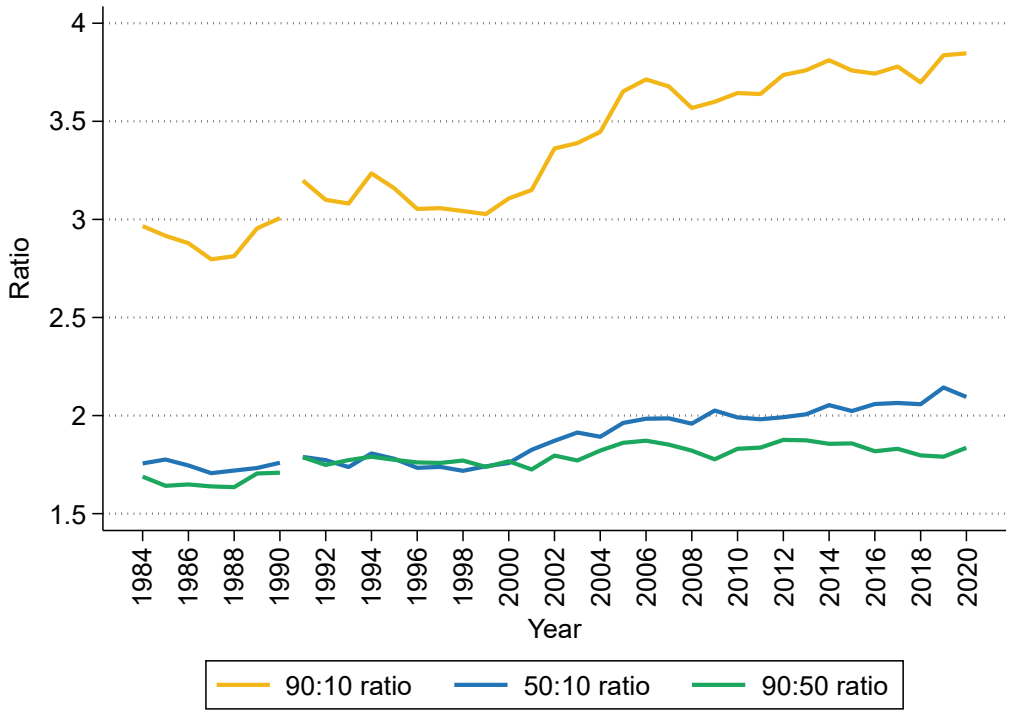
Figure 43 displays the 90:10, 50:10 and 90:50 ratios of disposable household incomes. Overall, the 90:10 and 50:10 ratios increased substantially whereas the 90:50 ratio did not change much. This provides clear evidence that the increase in inequality in disposable household incomes was mainly a result of low-income earners falling behind, whereas the income gap between top-income and middle-income earners remained rather stable.

Figure 42. Gini, relative poverty and top 1% share of net household income for all households, over time



Note: Sample is individuals aged 25–60. The inequality measures are based on incomes net of taxes and benefits. The relative poverty rate is defined as the proportion of people living in households with less than 60% of contemporaneous median income. All incomes have been equivalised using the modified OECD equivalence scale. For the winsorised Gini coefficient, we allocate all observations above the 99th percentile the amount equal to the 99th percentile. Disposable household income does not contain negative values. Until 1990: West Germany only.

Figure 43. Percentile ratios of disposable household incomes for all households, over time



Note: Sample is individuals aged 25–60. The inequality measures are based on incomes net of taxes and benefits. All incomes have been equivalised using the modified OECD equivalence scale. Until 1990: West Germany only.

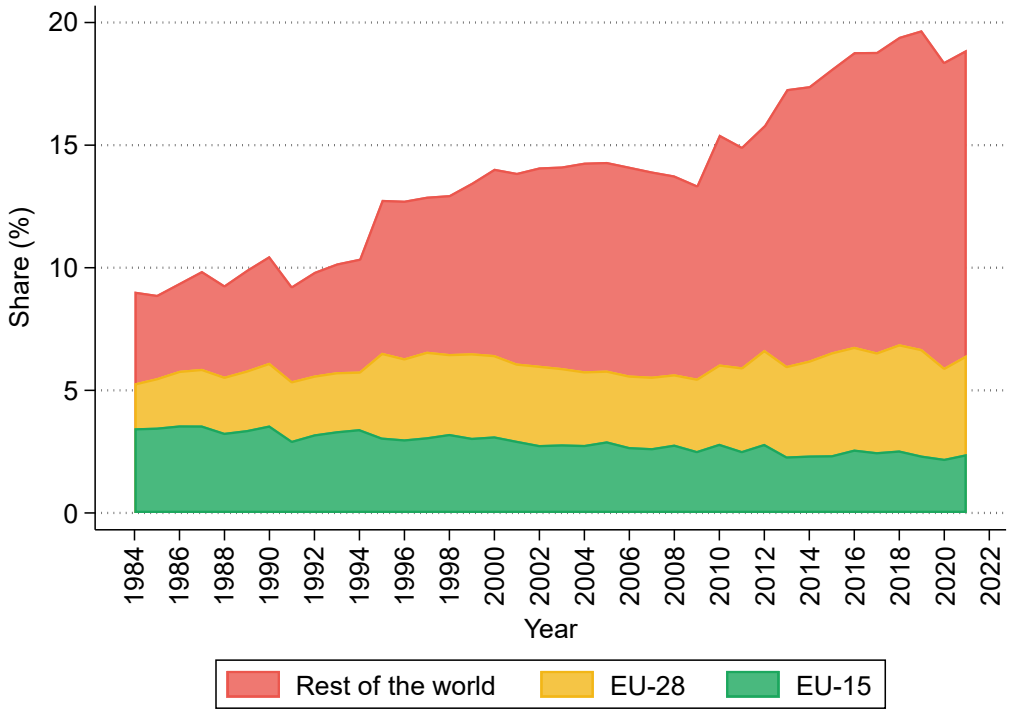
7. Inequality between migrants and natives

Finally, we consider migration patterns. Germany is mostly a country of immigration. From 1984 to 2019, the share of immigrants in the adult population increased substantially, as shown in Figure 44.[7] This increase was entirely driven by immigration from outside Europe. For example, a substantial part of the biggest increase around 2015 coincides to the war in Syria and the following migration movements.

Most of these immigrants are today at the bottom of the income distribution, as depicted in Figure 45. In 2017, the share of immigrants at the bottom of the income distribution was 30%, compared to 10% at the top. This gap, now 20 percentage points, was substantially smaller in the 1980s and 1990s. Via this channel, immigration has been (at least in the short term) a factor pushing towards higher earnings inequality in Germany.

Figure 46 displays further outcomes of immigrants relative to natives. The gaps in hours worked and employment are smaller than for earnings, but still visible. For example, immigrants worked 5-10% fewer hours in 2019 than natives, and female immigrants in particular were less likely to be employed. Furthermore, immigrants possess lower levels of formal education. This is especially true for men. Interestingly, the education gap was especially large in 1992 and has been shrinking since then. However, we are careful in interpreting these findings, as it is often not clear how to best translate educational qualifications of immigrants into the ISCED scale.

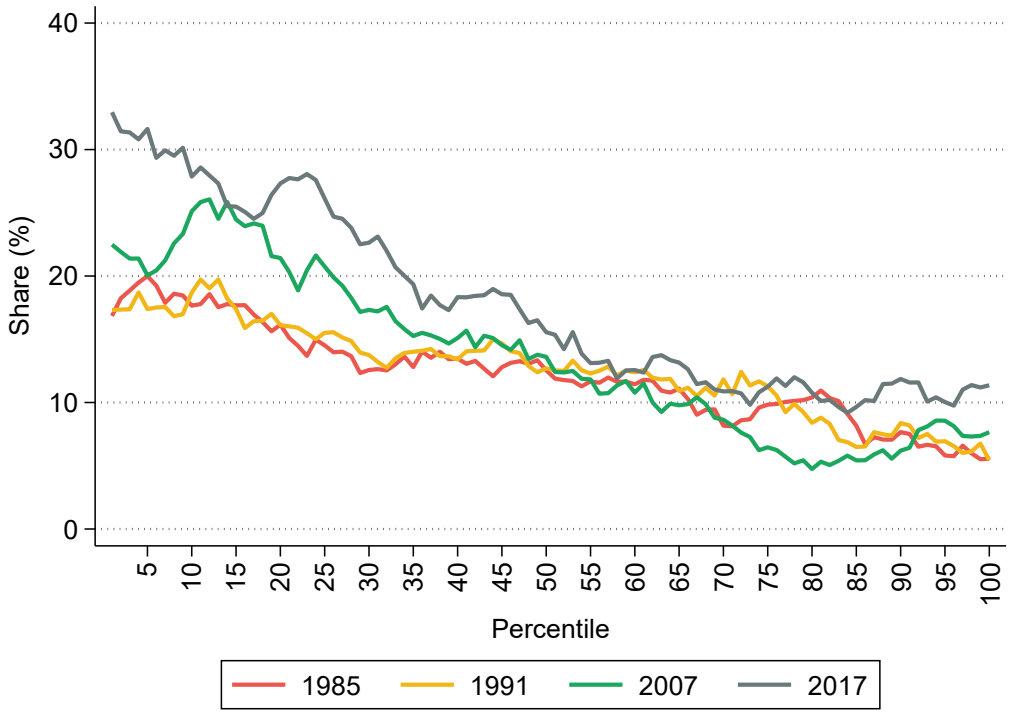
Figure 44. Share of immigrants in the population aged 25–60, 1983–2021



Note: Sample is individuals aged 25–60. Until 1990: West Germany only.

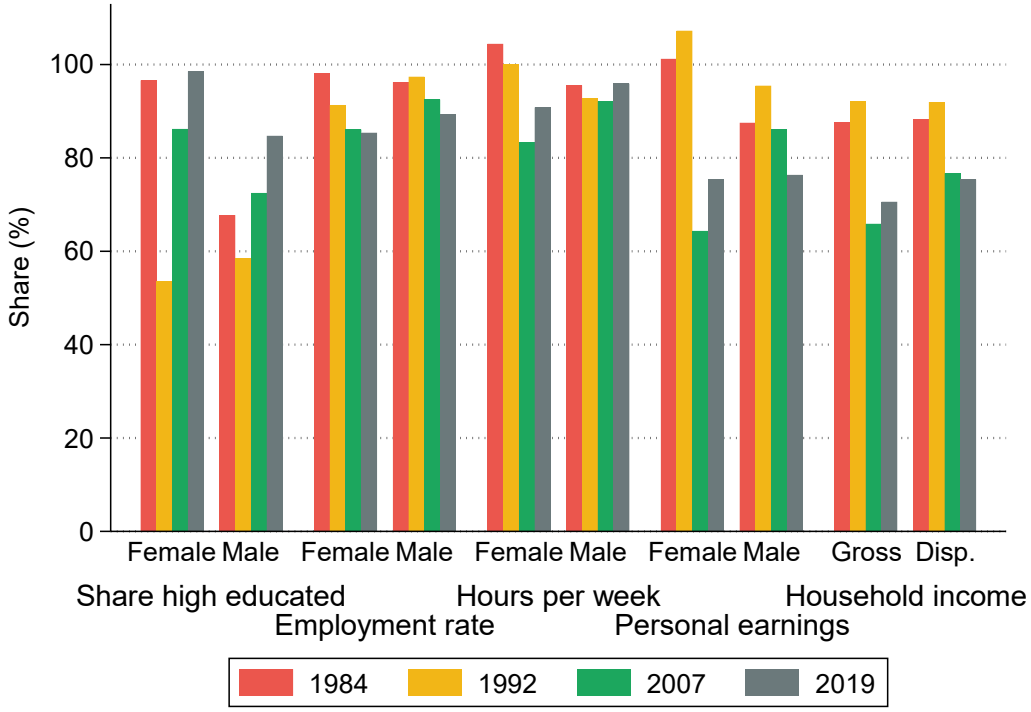
[7] The SOEP numbers will differ in some years from administrative sources due to the incorporation of new samples over time. Nevertheless, the broad trend of increasing non-European immigration as reflected here is also found in administrative data.

Figure 45. Share of immigrants in the population, across the disposable income distribution, 25–60 years of age, 1985, 1991, 2007 and 2017



Note: Sample is individuals aged 25–60. Incomes are in 2020 prices. Disposable household incomes have been equivalised using the modified OECD equivalence scale. Five-year averages have been calculated and smoothing across five percentile points has been applied. Until 1990: West Germany only.

Figure 46. Outcomes for migrants relative to natives, ages 25–60, 1984, 1992, 2007, 2019



Note: Sample is individuals aged 25–60. Incomes are in 2020 prices. Disposable household incomes have been equivalised using the modified OECD equivalence scale. Output of natives have been normalised to 1. Earnings (of those at work) and incomes are ratios of medians. 1984: West Germany only.

8. References

Bartels, C., 2019. Top Incomes in Germany, 1871–2014. *Journal of Economic History, 79*(3), 669–707.

Battisti, M., Felbermayr, G. and Lehwald, S., 2016. Inequality in Germany: Myths, facts, and policy implications. ifo Working Paper No. 217.

Biewen, M., Ungerer, M. and Löffler, M., 2019. Why did income inequality in Germany not increase further after 2005? *German Economic Review, 20*(4), 471–504.

Blömer, M. and Peichl, A., 2020. The ifo tax and transfer behavioral microsimulation model. ifo Working Paper No. 335.

Blömer, M., Fuest, C. and Peichl, A., 2019. Die Hartz-IV-Reformdebatte. *ifo Schnelldienst, 72*(6), 21–5.

Börschlein, E.-B., Bossler, M., Fitzenberger, B., & Popp, M., 2023. *Mit der Erhöhung auf 12 Euro liegt die Entwicklung des gesetzlichen Mindestlohns über der Tariflohn- und Preisentwicklung*. IAB-Forum: Das Magazin des Instituts für Arbeitsmarkt- und Berufsforschung: https://www.iab-forum.de/mit-der-erhoehung-auf-12-euro-liegt-die-entwicklung-des-gesetzlichen-mindestlohns-ueber-der-tariflohn-und-preisentwicklung/

Bundesagentur für Arbeit, 2024a. *Arbeitslosigkeit und Unterbeschäftigung*. https://statistik.arbeitsagentur.de/DE/Navigation/Statistiken/Fachstatistiken/Arbeitsuche-Arbeitslosigkeit-Unterbeschaeftigung/Aktuelle-Eckwerte-Nav.html

Bundesagentur für Arbeit, 2024b. *Eckwerte Arbeitsmarkt - Beschäftigung*. https://statistik.arbeitsagentur.de/DE/Navigation/Statistiken/Interaktive-Statistiken/Eckwerte-Arbeitsmarkt/Dashboard-Eckwerte-Arbeitsmarkt-Nav.html

Bundesagentur für Arbeit, 2024c. *Kurzarbeit*. https://statistik.arbeitsagentur.de/DE/Navigation/Statistiken/Interaktive-Statistiken/Kurzarbeitergeld/Kurzarbeitergeld-Nav.html

Bruckmeier, K., Mühlhan, J. and Wiemers, J., 2018. Erwerbstätige im unteren Einkommensbereich stärken: Ansätze zur Reform von Arbeitslosengeld II, Wohngeld und Kinderzuschlag. IAB-Forschungsbericht No. 9/2018.

Christl, M., De Poli, S., Hufkens, T., Peichl, A., & Ricci, M., 2023. The role of short-time work and discretionary policy measures in mitigating the effects of the COVID-19 crisis in Germany. *International Tax and Public Finance, 30*, 1107–36.

Clark, A. E., d'Ambrosio, C., & Lepinteur, A. (2021). The fall in income inequality during COVID-19 in four European countries. *The Journal of Economic Inequality*, *19*, 489-507.

Drechsel-Grau, M., Peichl, A., Schmid, K., Schmieder, J., Walz, H. and Wolter, S., 2022. Inequality and income dynamics in Germany. *Quantitative Economics, 13*(4), 1593–635.

Goebel, J., Grabka, M. M., Liebig, S., Kroh, M., Richter, D., Schröder, C. and Schupp, J., 2019. The German Socio-Economic Panel (SOEP). *Jahrbücher für Nationalökonomie und Statistik, 239*(2), 345–60.

Grabka, M. M., 2022. *SOEP-Core v37: Codebook for the $PEQUIV File 1984-2020: CNF Variables with Extended Income Information for the SOEP.* Berlin: DIW/SOEP.

Grabka, M. M., 2024. Niedriglohnsektor in Deutschland schrumpft seit 2017. *DIW Wochenbericht,* 2024(5). doi: https://doi.org/10.18723/diw_wb:2024-5-1

Hartung, B., Jung, P., & Kuhn, M., 2022. Unemployment insurance reforms and labour market dynamics. Mimeo. https://www.wiwi.uni-bonn.de/kuhn/paper/Unemployment_Insurance_and_Separation_Rates.pdf

Immel, L., 2021. The impact of labor market reforms on income inequality: Evidence from the German Hartz reforms. ifo Working Paper No. 347.

OECD, 2023. OECD/AIAS database. https://www.oecd.org/employment/ictwss-database.htm

Schmidt, T., Holtemöller, O., Kooths, S., Michelsen, C., & Wollmershäuser, T., 2021. *Pandemie verzögert Aufschwung - Demografie bremst Wachstum. Gemeinschaftsdiagnose Frühjahr 2021.* Essen: Projektgruppe Gemeinschaftsdiagnose.

Schröder, C., Grabka, M. M., Handrich, L., König, J., Morales, O., Priem, M., . . . Winkler, A., 2023. *Sonderauswertungen des Sozioökonomischen Panels (SOEP) 2020 und 2021 zu Löhnen und Arbeitszeiten in der Pandemie.* Berlin: Deutsches Institut für Wirtschaftsforschung Berlin e.V.

Socio-Economic Panel, 2023. SOEP-Core v38.1eu (Data 1984-2021, EU-Edition). doi:10.5684/soep.core.v38ir

Statistisches Bundesamt (Destatis), 2022. Tiefststand bei Eheschließungen und Hoch bei Geburten im Jahr 2021: Pressemitteilung Nr. 181 vom 28. April 2022. https://www.destatis.de/DE/Presse/Pressemitteilungen/2022/04/PD22_181_126.html

Statistisches Bundesamt (Destatis), 2023. Eine Arbeitsstunde kostete im Jahr 2022 im Schnitt 39,50 Euro: Pressemitteilung Nr. 164 vom 26. April 2023. https://www.destatis.de/DE/Presse/Pressemitteilungen/2023/04/PD23_164_624.html

Statistisches Bundesamt (Destatis), 2024a. Statistischer Bericht - Verbraucherpreisindex für Deutschland - Lange Reihen ab 1948. https://www.destatis.de/DE/Themen/Wirtschaft/Preise/Verbraucherpreisindex/

Statistisches Bundesamt (Destatis), 2024b. Volkswirtschaftliche Gesamtrechnungen - Fachserie 18 Reihe 1.2. https://www.destatis.de/DE/Themen/Wirtschaft/Volkswirtschaftliche-Gesamtrechnungen-Inlandsprodukt/inhalt.html

Walwei, U., Eichhorst, W., Rinne, U., Blömer, M., Fuest, C. and Peichl, A., 2019. Hartz IV - Reform einer umstrittenen politischen Maßnahme? *Wirtschaftsdienst, 99*(4), 235–55.

9. Data appendix

This Appendix describes in more detail the data sources underlying the figures in this report. While in some graphs aggregate data from the German statistical office or the OECD have been added, all microdata data used in this paper originate from the latest version (v38.1) of the German Socio-Economic Panel (Socio-Economic Panel, 2023).

Established in 1984, the SOEP is a nationally representative household panel survey of the German population. In the years before the outbreak of the COVID pandemic, it annually samples around 15,000 German households or 25,000 individuals each year (Goebel et al., 2019). The SOEP is a multidisciplinary survey as it provides a broad range of socioeconomic variables such as income, education, employment status and biographical characteristics as well as subjective measures such as life satisfaction or views on fairness.

The target population covered in the SOEP is defined as the population of private households residing within the current boundaries of the Federal Republic of Germany. Because of changes in these boundaries (in 1990) and changes in the population due to migration, various adaptations have been made to the initial sampling structure to maintain the representativity of the sample. The SOEP was expanded to the territory of the German Democratic Republic in June 1990, only six months after the fall of the Berlin Wall. However, we decided to include households from Eastern Germany only from 1991 onwards in our data, because due to the reunification there were some issues with income measurement in 1990. For this reason, several time series graphs, e.g., in median wages, display a discrete jump in 1991, representing the new sample composition due to the German reunification. In all figures, we use the cross-sectional sampling weights at the individual level to ensure that our statistics are representative of the entire German population.

To compute wage and income statistics, it would generally be possible to additionally rely on the German administrative tax return data or the social security data of the Institut für Arbeitsmarkt- und Berufsforschung (IAB) of the German labour agency. However, both data sets are not representative for the entire population. While the administrative IAB data are of very high quality and provide complete coverage of all jobs in Germany that are subject to social security contributions, the income variable is top-coded at the social security contribution limit. This means that there is no information on incomes for men above around the 90th percentile, and for women above the 96th percentile. The German tax data are based on individual and household tax returns and have no top-coding. However, the nature of tax returns in Germany is such that many low-income workers do not file a return and thus are not covered in the tax data. Drechsel-Grau et al. (2022) combine tax and social security to provide a comprehensive account of the recent evolution of the German income distribution. However, as these data lack important demographic characteristics that have been of interest in this report and are only available for the last two decades, we decided to base our entire analysis on the SOEP.

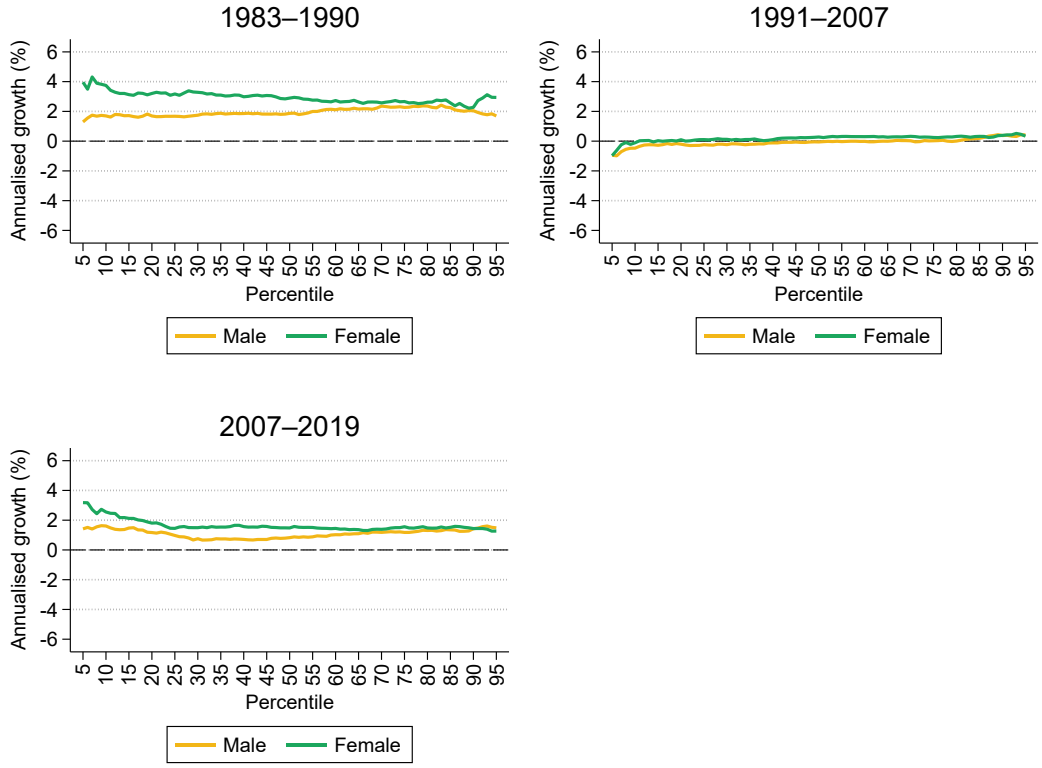
As with most survey data, the main limitation of the SOEP is imperfect coverage of the top of the income distribution. As this report provides few figures that are sensitive to inequality at the top (e.g., percentile ratios to measure inequality), this limitation is not very relevant in our context. While most information in the SOEP is provided for the current month or situation, income figures refer to the last year. This means that we observe income variables from 1983 to 2020, whereas most other statistics are available for the time period from 1984 until 2021.

However, the results for the 2021 survey wave and the corresponding 2020 income data are subject to greater uncertainty for a number of reasons. On the one hand, the number of observations in the SOEP declined significantly in its recent wave from around 16,000 individuals aged between 25 and 60 per wave to around 12,500 adult respondents. Due to the pandemic-related contact restrictions, the data collection could not be carried out as usual. In many cases, interviews had to be conducted via telephone instead of face-to-face interviews (Grabka M. M., 2024). In addition to the corona-related difficulties in data

collection, there was a change in the survey institute in 2021, which has been associated with the lower willingness of SOEP respondents to participate in the survey (Schröder, et al., 2023). On the other hand, analyses suggest that the standard questions in the SOEP do not adequately capture the extent and (distributional) effects of short-time work in Germany in terms of hours worked, earnings and related variables (Schröder, et al., 2023). In 2020, the SOEP was not yet able to collect any explicit information on the use of short-time work. A survey on the use of short-time work could only be carried out retrospectively with the survey in 2021. Chapter 3. Notes on measurement and definitions contains more detailed information on each variable.

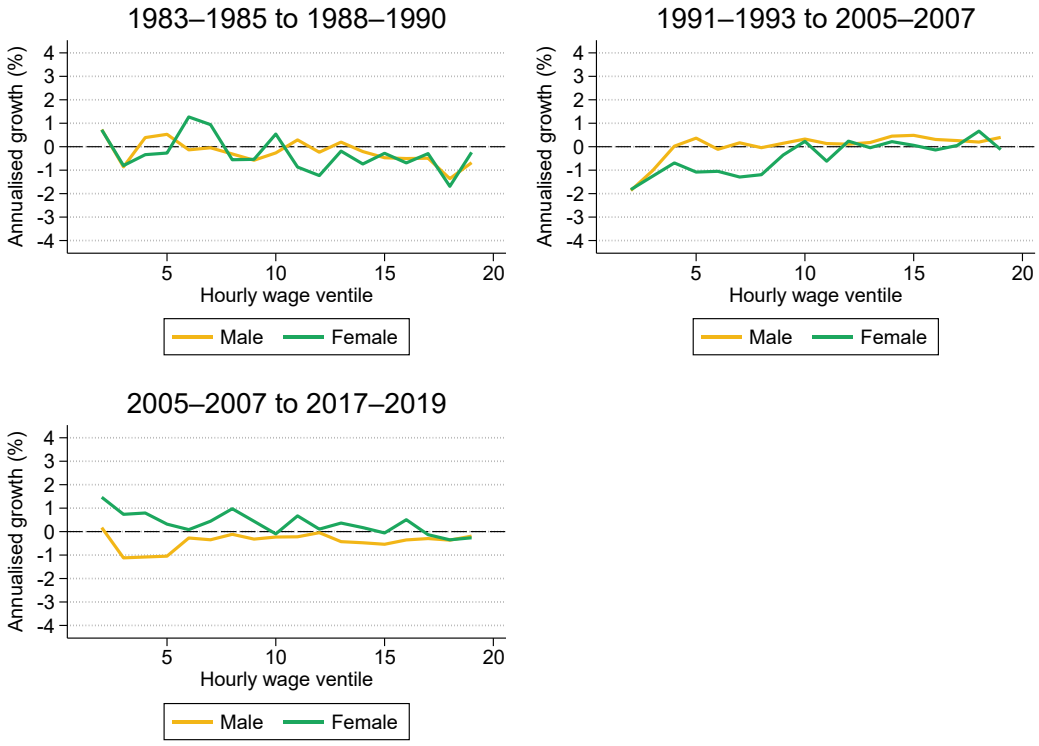
10. Appendix: additional charts

Figure 47. Annualised growth in hourly wages among employees by wage percentile, overall and by sex, selected periods



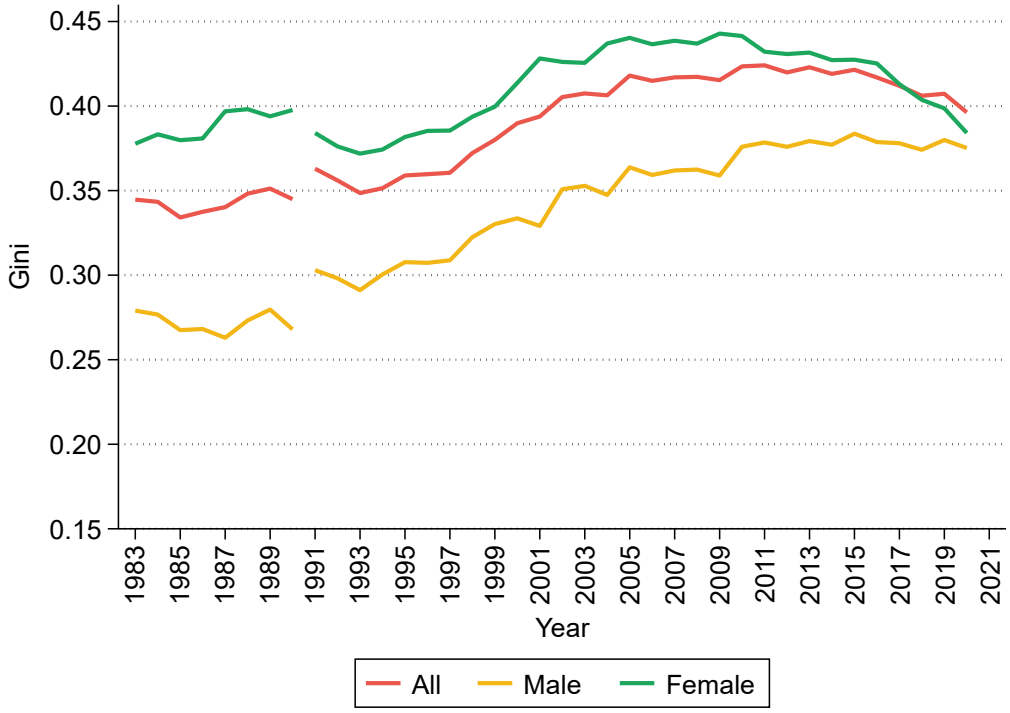
Note: Sample is employees aged 25–74. The sample does not include individuals with earnings from self-employment. Individuals with both earnings from employment and self-employment are also excluded from the analysis, leaving only employees' hourly wages. Until 1990: West Germany only.

Figure 48. Annualised growth in mean hours worked among employees by hourly wage ventile, overall and by sex, selected years



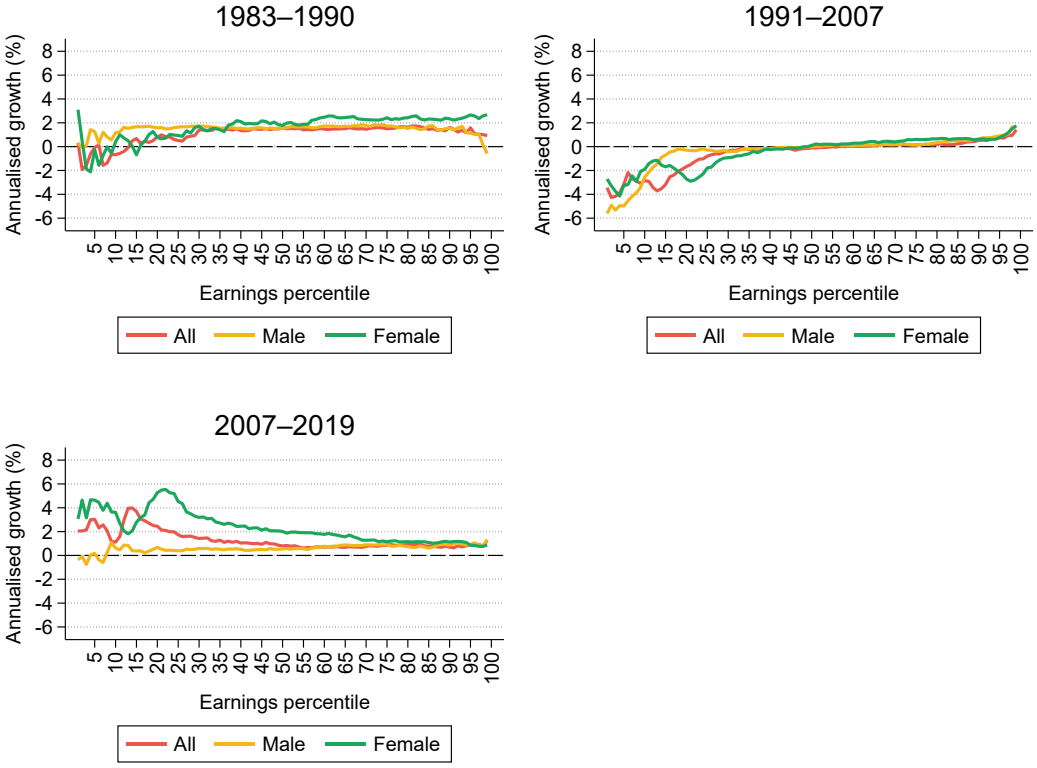
Note: Sample is employees aged 25–74. The sample does not include individuals with earnings from self-employment. Individuals with both earnings from employment and self-employment are also excluded from the analysis, leaving only hours worked by employees. Hours include paid (but not unpaid) overtime. Until 1990: West Germany only.

Figure 49. Gini coefficient of gross individual earnings, overall and by sex, over time



Note: Sample is individuals in work aged 25–74. Individuals are considered in work if they worked at least 52 hours in the year preceding the survey and received earnings either from labour income or from self-employment. Hence, both employees and self-employed workers are represented. Until 1990: West Germany only.

Figure 50. Annualised growth in gross earnings by earnings percentile, overall and sex, selected periods



Note: Sample is individuals in work aged 25–74. Individuals are considered in work if they worked at least 52 hours in the year preceding the survey and received earnings either from labour income or from self-employment. Hence, both employees and self-employed workers are represented. Until 1990: West Germany only.