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Inequality Trends in the Context of Changes in Labor Market Outcomes, Composition and Redistribution in Germany*

With ongoing demographic and economic changes, documenting the distribution of economic resources within a society is a recurring task for applied economic research that can never be considered complete. In Germany, several studies have investigated trends in earnings and income inequality in the past few years (e.g., Drechsel-Grau et al. 2022; Fuchs-Schündeln et al. 2010; Card et al. 2013). However, a recent and comprehensive account of inequality in Germany that also considers dimensions other than earnings and income inequality is currently not available.

Our research project in the context of the Deaton Review documents the development of inequalities in Germany over the years from 1983 to 2020.¹ This period spans the last few years before reunification for West Germany and the thirty years thereafter for both West and East Germany. We then compare our findings to analogous statistics from Europe's and North America's major economies that have been obtained within a coherent framework.

DATA AND FINDINGS

Our analysis is based on the German Socio-Economic Panel (SOEP),² a nationally representative household survey of the German population established in 1984 (for details, see Goebel et al. 2019). Compared to other available statistics in Germany, such as administrative tax or labor market data, the SOEP has the advantage of being a multipurpose survey, covering

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¹ The Deaton Review Country Studies initiative is a collaborative effort involving 17 countries from Europe and North America aiming to harmonize data and measurement methods to gain a comprehensive understanding of the drivers of economic inequalities across high-income nations.

² For this publication, the SOEP-Core v38.1 was used; see doi:10.5684/soep.core.v38.1.eu.

KEY MESSAGES

- We examine how inequality evolved in Germany during the 1983-2020 period
- Labor market participation of women increased significantly, while average weekly working hours of women changed little
- Gender differences in earnings are still pervasive and more pronounced for individuals with children
- Inequality in earnings and disposable household income increased from the 1990s until 2005
- Since then, inequality in earnings has decreased, despite labor force compositional changes, such as high rates of net migration, that tend to push up inequality

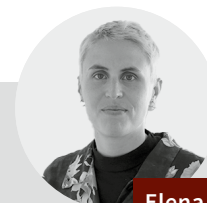
not only income and employment but also education, household composition, and parental background. We can, therefore, examine very different kinds of inequalities in the same data set and obtain a consistent set of results.

We restrict our sample to all individuals aged between 25 and 60 for all the available survey years from 1984 to 2021, unless otherwise noted. We rely mainly on previous-year information relative to the time of the interview. Therefore, our analysis spans the period from 1983 to 2020. Nominal earnings and income variables are converted into real terms based on cal-



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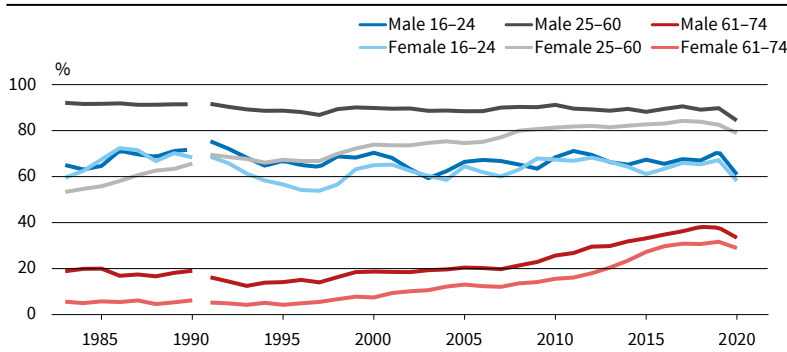
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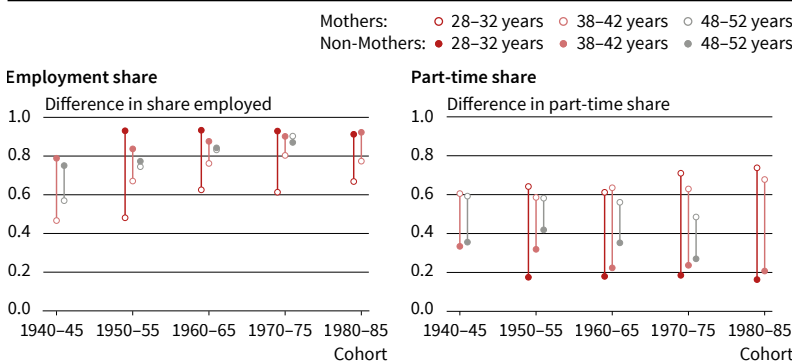
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Figure 1
Employment Rates by Age and Sex



Note: This figure shows employment rates by age and sex in a sample of all individuals aged 16-74. Until 1990: West Germany only.
Source: Authors' calculations using data from SOEP v38.1. © ifo Institute

Figure 2
Differences in Employment and Part-Time Share across Mothers and Non-mothers, Different Cohorts



Note: This figure shows the differences in the employment and part-time rates of mothers and non-mothers of different ages over different cohorts. The sample contains women aged 28-32, 38-42, or 48-52 of the cohorts 1940-45, 1950-55, 1960-65, 1970-75, and 1980-85, their employment status and parenthood status. Employment is defined as working at least an average of one hour per week over the last year.
Source: Authors' calculations using data from SOEP v38.1. © ifo Institute

endar year 2019 using the Consumer Price Index of Germany. Furthermore, to account for household size, disposable household income is adjusted according to the modified OECD equivalence scale. For further details on definitions and income concepts used, see Blömer et al. (2023).

INCREASED LABOR FORCE PARTICIPATION AMONG WOMEN AND THE ELDERLY

Labor force participation among older workers increased significantly in the past decade (Figure 1).

Among older men and women (age group 61-74), the employment rate rose from about 10 percent in 2010 to about 35 percent in 2019. This development reflects gradual increases in the retirement age, as well as enhanced possibilities and incentives for part-time employment during retirement.

The most significant trends in the German labor market in the past decades relate to the increasing labor market participation of women. Since 1983, Germany has seen a steady and sustained rise in the employment rate for prime-working-aged women (aged 25 to 60), increasing the employment in this age group from little more than 50 percent in the early 1980s to more than 80 percent today (Figure 1). For prime-working-aged men, the employment rate has been very stable at around 90 percent throughout the period, so that the gender employment gap has narrowed from almost 40 to around 7 percentage points.

An analysis of the employment rates over the life cycle also shows that labor force participation of women has increased significantly in recent decades overall, but especially for women after the age of 25. The dip in employment rates around the age of 30 shrinks significantly and later on this leads into even larger employment gains for women past the child-bearing age. Among other things, this indicates that the phenomenon of mothers dropping entirely out of the labor market after their first child has become less common in Germany.

GENDER GAP CLOSSES SLOWLY – STRONG IMPACT OF CHILDBIRTH REMAINS

Nevertheless, after starting a family, it is still women who are more likely to work fewer hours (in part-time jobs or marginal employment) or to no longer work at all. This becomes apparent in the differences in employment rates between mothers and non-mothers (Figure 2) or between mothers and fathers. Younger mothers around the age of 30, even of the youngest cohorts, are more than 20 percentage points less likely to be employed and are four times more likely to work part-time than women without children. It is not until the age of 50 that the gap in the employment rate between mothers and non-mothers closes.

But mothers around the age of 50 are still more likely to work part-time than non-mothers. Fathers in the labor market are not negatively impacted by parenthood. Instead, they are slightly more likely to be employed and earn slightly more than non-fathers.

The decrease in labor supply from mothers is associated with sharply increasing differences between men and women in earnings over the working life, even among younger cohorts (Oberfichtner 2022). We find that mothers' labor earnings around the age of 30 are, on average, 70 percent to 80 percent lower than fathers' in the same



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age group. For childless individuals, the gender earnings gap is less pronounced and has decreased over the past decades. In particular, for childless women around the age of 30, it has decreased to less than 5 percent for the most recent cohort (1980s). An analysis of hourly wages for different time periods also shows that the wage differential between men and women at age 25 declined substantially and is almost non-existent in more recent years. However, while the employment rates of women with and without children converge again around the age of 50, the labor earnings of mothers remain lower than those of non-mothers. In addition, significant gender gaps in earnings at older ages remain, regardless of parenthood.

Compared to other European countries, the employment rate of women of working age in Germany is relatively high and, at 80 percent, well above the EU average (Eurostat 2023).

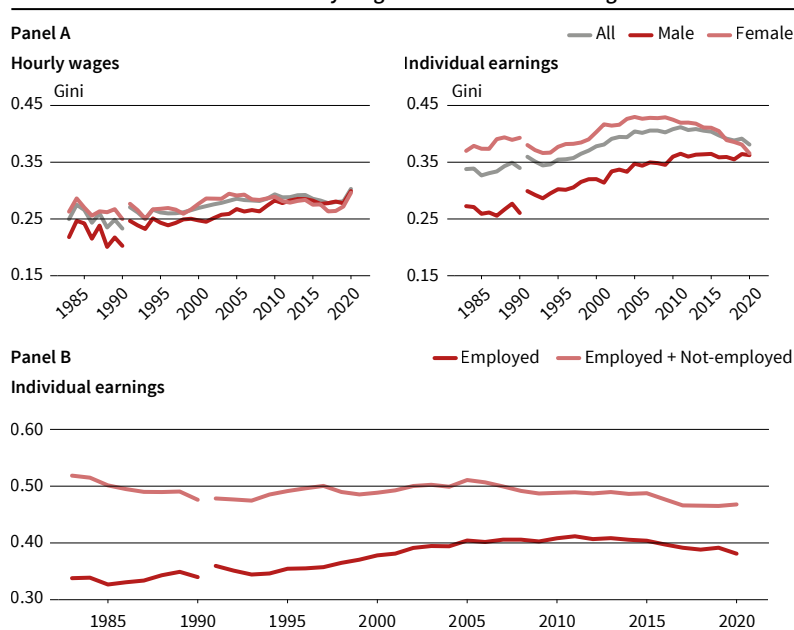
The gender employment gap is also less pronounced in Germany than in many other European countries. However, due to the high share of part-time working mothers, the earnings gap between fathers and mothers has been relatively large in Germany despite the low employment gap when compared to other developed countries (Kleven et al. 2019).

SIMILAR EVOLUTION OF INEQUALITY IN HOURLY WAGES AND EARNINGS

Average hours worked among employees have remained very stable over the past decades. Employed men work almost always full-time. The actual average number of hours worked among male employees decreased only slightly from 1983 to 2019, from about 42 to 40 hours per week. In comparison, the average working time for women in 2019 is around 31 hours per week, which increased only marginally in the past two decades. In line with the results presented above, which showed that the increase in labor supply of women happened predominantly at the extensive and not at the intensive margin, the gender gap in working hours is closing very slowly.

Compared to other countries studied in the Deaton Review (IFS 2023), the difference in average

Figure 3
Gini Coefficient of Real Gross Hourly Wages and Individual Earnings



Note: Panel (A) shows the Gini coefficient (overall and by sex) of real gross hourly wages in a sample of employees aged 25–60 and for individual earnings in a sample of individuals in work aged 25–60. The sample of employees does not include individuals with earnings from self-employment. We exclude the bottom and top 1% of the gender-specific distribution of hourly wages from the analysis. Individuals are considered in work if they worked at least 52 hours in the year preceding the survey and received earnings either from labor-income or self-employment. Panel (B) shows the Gini coefficient of gross individual earnings in a sample of individuals aged 25–60, once only including employed persons (as above) and once also including the not employed, for which the hourly wage is set to zero. Wages are in 2019–20 prices. Until 1990: West Germany only. Source: Authors' calculations using data from SOEP v38.1. © ifo Institute

weekly working hours between male and female employees in Germany was still relatively high: over eight hours in 2019. Large gender differences in working hours can also be found in the Netherlands and the UK. However, in many other countries, including the US, Canada, France, and Spain, the gap in working hours is only around four hours per week. In Finland, the difference was barely two hours per week on average in 2019.

Overall, real median hourly wages grew little between 1983 and 2019. In 1990, a long period of growth in median wages came to an end with German reunification, since the lower level of hourly wages in East Germany led to a drop in overall median hourly wages when the East German states were integrated into the sample in 1991. Since then, wage growth in median wages has been limited to the last few years before



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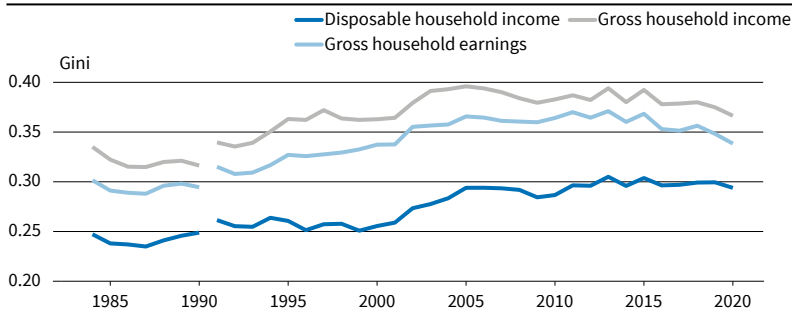


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Figure 4

Gini Coefficient of Disposable Household Income and Gross Household Earnings/Income



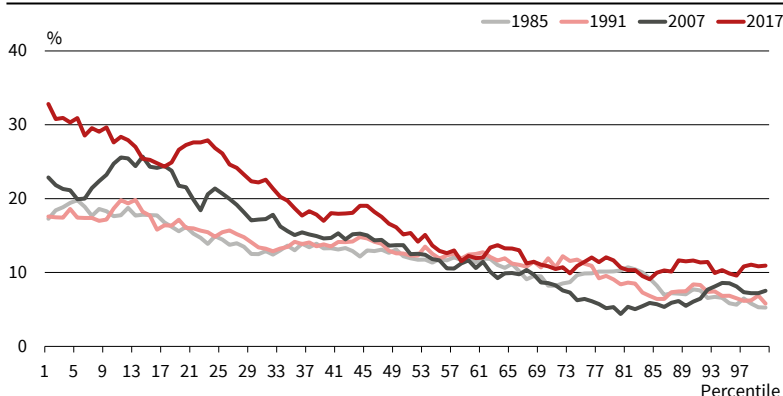
Note: This figure shows the Gini coefficient of disposable household income, gross household earnings and gross household income in a sample of individuals aged 25–60. Gini in gross household labor earnings is calculated for households in which at least one household member is in work. Individuals are considered in work if they worked at least 52 hours in the year preceding the survey and received earnings either from labor-income or from self-employment. Gini in household disposable income and household gross income for all households. Until 1990: West Germany only.

Source: Authors' calculations using data from SOEP v38.1.

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Figure 5

Share of Immigrants in the Population, across the Disposable Income Distribution



Note: This figure shows the share of immigrants in the population across the disposable income distribution. Sample is individuals aged 25–60. Incomes are in 2019–20 prices. Disposable household incomes have been equivalized 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.

Source: Authors' calculations using data from SOEP v38.1.

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the Covid-19 pandemic. The decade-long stagnation of median real hourly wages is observed for both men and women and in all education groups.

Taken together, inequality in hourly wages and individual earnings has developed very similarly in Germany for the past decades. After increases in wage and earnings dispersion from 1993 to 2010, the Gini coefficient for both hourly wages and individual earnings has fallen in the last decade, as shown in Figure 3.³ The recent decline in the Gini coefficient can be partially attributed to a reduction in inequality in female wages and working hours. Other studies confirm above-average growth rates in general at the lower end of the earnings distribution of employees in the past few years (Felbermayr et al. 2016), linked to the introduction of a nationwide EUR 8.50/hour minimum wage in 2015 (Bossler and Schank 2023; Peichl and

³ Other studies also find growing inequality measures in gross incomes among full-time employees (see Dustmann et al. 2009 and 2014; Card et al. 2013) and a reversal in more recent years (Möller 2016; Drechsel-Grau et al. 2022).

Popp 2022) and the positive wage agreements of trade unions in recent years (Felbermayr et al. 2016).

The Deaton Review Country Studies show that inequality in real gross hourly wages has increased in many countries in recent decades. Moreover, in an international comparison, the Gini coefficient of hourly wages in Germany was at a relatively high level in 2019, with only a few countries, such as the US or the UK, showing higher inequality values.

INCREASING LABOR FORCE PARTICIPATION AMONG LOW-INCOME EARNERS MASKS DECLINING INEQUALITY IN THE WORKING-AGE POPULATION

In the years around the turn of the millennium, Germany was often referred to as the “sick man of Europe” and unemployment was high, reaching almost 12 percent in 2005. This motivated the most important transformation of the German welfare state in the last decades, known as the Hartz reforms, which took place in the early 2000s. The aim of the Hartz reforms was to increase the efficiency and flexibility of the labor market, reduce unemployment, and make the welfare system more responsive to the needs of individuals. The core element, Hartz IV, which became the moniker for the new benefit, was a substantial reduction in long-term unemployment benefits, reducing the generosity of the transfer system. By causality or correlation, unemployment rates decreased substantially in the years following the reforms, down to 7.4 percent in 2008 and just 5.2 percent in 2019 (Bundesagentur für Arbeit 2023).⁴

The strong growth in employment since 2006 has played a major role in the dynamics of income inequality, as employment increased disproportionately in the lower half of the income distribution (Felbermayr et al. 2016). To shed light on this, we follow Felbermayr et al. (2016) and compute the Gini coefficient of real gross individual earnings by setting the income of individuals without labor income to zero. The result is depicted in Panel B of Figure 3. The Gini coefficient for the sample of employed people and individuals without employment decreased from 2005 to 2011. Due to the reduction in the unemployment rate, the share of individuals with zero income became smaller and earnings inequality in the working-age population decreased.

THE TAX AND TRANSFER SYSTEM HAS REDUCED INCOME INEQUALITY

Two important factors affect the way in which inequality in individual earnings translates into inequality in household incomes: patterns of assortative matching and the tax and benefit system. We first find that assortative matching has increased recently. For ex-

⁴ For an overview on the role of the Hartz reforms, see for example Dustmann et al. (2014) and Hochmuth et al. (2021).

ample, compared to 1984, the share of individuals not married or living with a partner is today systematically lower for individuals with low levels of formal education (ISCED 0-2) than among the rest of the population. Conditional on individual earnings, this tends to depress disposable household income in the group compared to individuals that have acquired more formal education.

Assortative matching is evident, to varying degrees, in all countries studied in the Deaton Review. Similar to Germany, most countries see below-average marriage and cohabitation rates for low-educated groups. Additionally, in almost all countries, the earnings percentile of a partner increases in the earnings distribution of the spouse, although the gradient of the partner's earnings differs considerably between countries and is much higher for some countries, such as the US.

As a second factor, changes in the German tax and benefit system have altered the mapping between individual labor earnings and disposable household income. Until the Hartz reforms came into effect in 2005, the share of benefits in total gross household income had increased steadily, in particular in the bottom quarter of the income distribution. Since then, this trend has been broken, and the share of benefits in total income has been slowly but continuously declining. This development corresponds to the increase in the unemployment rate before and the decline after the Hartz reforms (Bundesagentur für Arbeit 2023), reflecting lower aggregate unemployment-related benefit payments.

However, unemployment and social assistance benefits constitute just one part of the tax and transfer system, which has changed along numerous dimensions in the past decades. To obtain a comprehensive picture of the role of taxes and transfers in reducing inequality, Figure 4 plots the Gini coefficient in gross and net household income. In line with the increase in earnings inequality, both have increased in the early 2000s. The Gini of net income was consistently lower in all years, documenting that the tax and transfer system has been progressive up to today, thus reducing inequality. Both elements of the welfare system, taxes and transfers, contribute to the overall redistributive character. Most social transfers are typically targeted to households in the lower bottom of the income distribution, leading to a high benefit/income ratio in these households. The transfer system is accompanied by the progressive income tax scheme, where households with high gross income pay higher marginal tax rates. Between 1984 and 2020, the difference between the Gini coefficient in gross household income and disposable household income has been relatively stable, between 0.08 and 0.12, despite larger reforms to the tax and transfer system like the Hartz reforms.

The Gini coefficient for real gross individual earnings in Germany is relatively high in an international

comparison with other advanced economies in Europe and Northern America. However, the Gini coefficient for real disposable household income in Germany is close to the international average. Surprisingly, following increases in recent decades, the Gini coefficient based on disposable household income in the Scandinavian countries is now at a similar level to that of many Western European countries.

IMMIGRATION HAS CHANGED THE INCOME DISTRIBUTION COMPOSITION

After the disruption caused by German reunification in 1990–1991, which increased the population in the Federal Republic of Germany by 16 million, immigration has considerably changed the composition of the German population. Most recently, Russia's invasion of Ukraine has triggered large migration movements to Germany. According to the latest projections, this trend will continue, with 2022 marking the highest net migration balance ever recorded. In total, the share of immigrants in Germany substantially rose from under 10 percent in the 1980s to nearly 20 percent most recently.

Also, before Russia's military aggression against Ukraine, a large share of migration towards Germany was from conflict regions, e.g., from Syria since 2015. It is perhaps not surprising therefore that immigrants are at least initially more likely to be located in the bottom half of the income distribution, as shown in Figure 5. In 2017, the share of immigrants at the bottom of the income distribution was 30 percent, compared to 10 percent at the top. This gap of now 20 percentage points was substantially smaller in the 1980s and 1990s. Via this mechanical channel, immigration has been – at least in the short term – a factor pushing towards greater earnings inequality in Germany, also compared to other countries. While immigration in the US and the Netherlands, for example, is also more concentrated in the lower half of the income distribution, the immigrant share along the income distribution has been quite stable over the past 20 years for those countries. In the UK, immigrants have spread evenly across the income distribution in recent years.

POLICY CONCLUSION

In this report, we document that inequality in earnings and disposable household income remained stable in recent years despite compositional changes in the labor force that tend to push up inequality. The most important development in the German labor market in the past decades was the increasing labor market participation of women. However, most of these employment gains took place in part-time positions, and conditional on working, female work hours changed little. Hence, gender differences in earnings are still pervasive.

Policy reforms that could tackle gender differences in earnings should target, for example, incentives to increase participation at the intensive margin, or reforming the joint taxation of married couples, a proposal that has been discussed thoroughly in the past and again more recently. This, in interaction with the marginal employment scheme, creates strong economic incentives for the second earner, in most cases women, to remain in part-time jobs. Blömer and Peichl (2023) discuss and simulate several reform proposals that could increase female labor market participation.

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