IFS

Institute for Fiscal Studies

Country Studies: Inequalities in Europe and North America

A parallel study to the IFS Deaton Review

Egbert Jongen
Jim Been
Koen Caminada
Heike Vethaak

Inequality in the Netherlands: 1973-2022

anr agence nationale de la recherche
SSHRC CRSH Social Sciences and Humanities Research Council Conseil de recherches en sciences humaines
NSF
ACADEMY OF FINLAND
UK Research and Innovation
Nuffield Foundation
CPP ESRC CENTRE FOR THE MICROECONOMIC ANALYSIS OF PUBLIC POLICY
Bundesministerium für Bildung und Forschung

Inequality in the Netherlands: 1973–2022

Egbert Jongen, Jim Been, Koen Caminada and Heike Vethaak

Contents

1. Executive summary

Education, employment, hours and earnings

The Netherlands witnessed a strong rise in the education level of women, their employment rate and their average earnings level, and a substantial drop in earnings inequality among working women. One of the key developments in the Netherlands over the past decades has been the steep increase in the employment rate of women, from 20% in the early 1970s to more than 80% in 2022 (women 25–60 years of age). Indeed, whereas many women left the labour market around childbearing age in the 1970s, this drop has largely disappeared in recent years. There was also an increase in hours worked per week by working women, but this increase was rather modest, from 26 hours per week in 1990 to 30 hours per week in 2022. The past decades have also witnessed a strong increase in the average level of education of women. Related to the increase in education and hours worked, the median level of earnings of women has almost doubled since the late 1970s. Furthermore, inequality in earnings among working women has come down substantially.

The story is quite different for men, though there was some rise in their education level as well, their employment rate declined somewhat, the real earnings of working men hardly increased and earnings inequality among working men increased. Furthermore, compared to women, changes for men have been more modest over the past five decades. The average education level of men has increased. However, employment rates have come down somewhat for men 25–60 years of age (mostly for men 25–44 years of age, while increasing for men 45–75 years of age). Hours worked per week by working men have been stable (at least since 1990). A striking finding is that median earnings of men have hardly increased (+4%) since the late 1970s. Furthermore, earnings inequality among working men has increased. Of note is also the rise in (solo) self-employment among men, a trend that is largely absent for women.

Women have closed the gap when it comes to education, closed most of the gap in the employment rate, but still work substantially fewer hours than men on average and also earn substantially less than men. Considering the joint distribution of both men and women, we find an increase in the level of education and the employment rate, where women have more than closed the gap in the average level of education with men and narrowed the gap in the employment rate to under 10 percentage points in 2022. However, sizeable gaps between men and women remain in hours worked per week: 30 hours per week for women compared to 38 hours per week for men in 2022, and in earnings, €28,797 per year for women compared to €44,636 per year for men in 2022 (in 2019 prices). Overall earnings inequality considering both men and women has only increased slightly since the late 1970s, but this is the net result of larger opposing changes for men and women and an increasing share of working women with relatively low and dispersed earnings.

Labour market institutions

After an initial decline, the share of workers close to the minimum wage has been increasing since the mid-2000s, union membership has declined, but coverage of collective labour agreements remains high. The relevance of the minimum wage declined in the 1980s, as minimum wages were 'frozen'. However, since the mid-2000s, the share of workers earning up to 120% of the minimum wage has increased. The share of employees who are members of a union dropped from 38% in 1970 to 17% in 2019, but the share of employees covered by a collective labour agreement has remained stable at around 80%. Hence, unions still play an important part in wage determination in the Netherlands. The share of gross social insurance benefits has increased for the bottom quartile of the disposable income distribution, but declined for the other quartiles, following the increase in enrolment in various types of social insurance during the 1980s. Direct taxes have declined as a share of gross income over time. Disposable income as a share of gross income has been trending upward, indicating that effective average

tax rates have declined, though the rise is less pronounced once we consider disposable income as a share of employer cost.

Household composition and incomes

The share of men and women who are single has risen; for women we see an increase for all levels of education, while for men we see it mostly among the lower educated. Moving from individuals to households, the share of individuals living in a couple is declining and the share of singles with and without dependent children is increasing. The increase in singles with children is concentrated among lower- and intermediate-educated women (most children of separated parents live with the mother), whereas for higher-educated women we mostly see an increase in singles without children. The increase in singles without children is particularly strong for lower-educated men, whereas there is almost no increase for higher-educated men. Indeed, the share of men who have a partner has declined most for men with relatively low earnings, whereas the decline in the share of women who have a partner is more evenly spread across the earnings distribution of women. We also find that the increase in the share of men who have a working partner is lower for men with relatively low earnings than for men with relatively high earnings, whereas for women the decline in the share of women who have a working partner is more evenly spread across the earnings distribution of women and also more modest.

Within couples, we have seen the emergence of assortative matching in the Netherlands. Around 1980 there was almost no relation between the average earnings of men and women in (opposite-sex) couples. In 2019 we see that men with relatively low earnings are more likely to be in a couple with a woman with relatively low earnings, and men with relatively high earnings are more likely to be in a couple with a woman with relatively high earnings.

Median gross and disposable household income have been growing over time, mostly due to the higher employment rate and earnings of women. Median gross household earnings have been increasing more or less steadily over time (with a temporary dip after the Great Recession), which is mostly due to the higher employment rate and earnings level of women. Median disposable household income across all households has also been increasing more or less steadily (with a temporary dip in the early 1980s during the economic recession). However, the median disposable household income of households without a working adult has hardly increased in real terms since the late 1970s.

There has been some increase in inequality in real equivalised disposable income across households and the top income shares, and a strong rise in relative poverty. Overall household income inequality as measured by the Gini coefficient has increased somewhat since the late 1970s. The rise in female participation has been across the board, but bigger in percentages at the lower end. While there has been an increase in assortative matching in couples, wages of women at the lower end of the wage distribution grew faster than the average. The income share of the top 1% has increased, though remains low by international standards. At the lower end of the income distribution, we see a strong rise in the share of individuals who live in relative poverty, which is related to the rising share of singles and lone parents.

Another important dimension of inequality is the difference between migrants and natives. This issue is becoming increasingly relevant for the Dutch society, as the share of migrants in the population is steadily increasing. The increase in the share of immigrants has been more pronounced at the lower end of the income distribution, which has contributed to the increase in inequality at the bottom of the income distribution. There is a persistent gap in relative poverty between immigrants and natives. The lower disposable income of immigrants than of natives is partly driven by their lower education level, which feeds into lower employment rates and lower earnings.

The COVID-19 crisis was a mere blip in terms of labour market outcomes and incomes compared to long-run trends. Indeed, there was only a minor drop in employment at the start of the COVID-19 crisis in 2020, but the economy, labour market outcomes and incomes quickly recovered.

2. Institutional background

In this section we briefly summarise the key institutional features of the social insurance system and the tax and transfer system in the Netherlands.

Social insurance

Unemployment insurance benefits are available to former employees who were working at least 26 weeks in the 36 weeks prior to unemployment. The gross replacement rate is 75% of the previous wage (up to a maximum) for the first 2 months, and then drops to 70% of the previous wage, which is the level up to the maximum benefit duration of 2 years. Benefits are financed via an employer premium that depends on the wage. Over the past decades there has been a shortening of the maximum benefit duration. Before 2016 the maximum benefit duration was 3 years and 2 months, and before 2006 the maximum benefit duration was 5 years.

Social assistance (welfare) benefits are available for unemployed individuals who do not (or no longer) qualify for unemployment insurance but pass a means test (insufficient partner income and/or wealth). The level of the social assistance is tied to the minimum wage. Couples on social assistance benefits receive 100% of the minimum wage, while singles on social assistance benefits receive 70% of the minimum wage.

Disability insurance benefits provide income support to individuals who are unable to work due to health reasons. The gross replacement rate is 75% of the previous wage for individuals who are fully and permanently disabled, and lower for other disabled individuals. Benefits are financed via an employer premium that depends on the wage. Before entering disability insurance, workers with health issues can be on sick leave for a maximum of 2 years. The last major reform of the disability insurance scheme was in 2006. For a detailed account of changes in disability insurance in the Netherlands see Koning and Lindeboom (2015).

Health insurance in the Netherlands is not tied to employment. Individuals are free to choose their private health insurer, and receive a universal basic in-kind health insurance package which they can top up by paying additional premiums, for example, for physiotherapy and dental costs. Health insurance, including dental costs, is free for children up to 18 years of age. Health insurance is financed out of an annual fee for individuals that they pay to their private insurer, an employers' premium which depends on gross wages, and general taxation.

Changes in (early) retirement benefits are also relevant for the analysis below, even though the focus is on the 25–60 age group. Retirement benefits consist of pay-as-you-go state pension benefits, pension occupational benefits and (also tax-favoured) private retirement savings benefits. State benefits depend on the years of residence in the Netherlands (2% per year living in the Netherlands, up to a maximum of 100% of the state pension) and occupational benefits depend on previous earnings and are financed out employee and employer premiums that depend on the wage. The median net replacement rate of pension benefits (including private tax-favoured pension savings) is 82%, but there is a lot of heterogeneity over individuals and households (Knoef et al., 2017). The age at which individuals qualify for the state pension benefits was 65 until 2012, after which it started increasing gradually, so that in 2023 the statutory retirement age is 66 years and 10 months. Individuals can retire earlier, using their occupational pensions with an actuarial fair deduction and/or private (retirement) savings. Early retirement benefits used to be much more generous in the period before 2006, which stimulated earlier cohorts to retire earlier, even in their late 50s. For an analysis of the labour market effects of reforms in (early) retirement benefits see Rabaté et al. (2023).

Tax and transfer system

Income tax is levied on individual income. In 2023 there are two tax brackets, with statutory rates of 36.93% up to €73.032 and 49.5% on income above that level. The number of income tax brackets has declined over the past decades, as have the top income tax rate and statutory tax rates (Caminada et al., 2021). Meanwhile, indirect taxes, such as value-added tax and excise duties, have increased.

There are a number of non-refundable tax credits that reduce personal income tax (De Boer and Jongen, 2020). There is a general tax credit that is phased out beyond a certain income level. There is an earned income tax credit that has a steep phase-in and phase-out range. There is also a specific earned income tax credit for lone parents and secondary earners with children up to 12 years of age. These latter two tax credits have increased substantially over the past two decades.

Next to tax credits, the Netherlands has various income-dependent benefits that depend on household income. This includes a child benefit for households with dependent children, a housing benefit for renters and a benefit to cover health insurance costs. These benefits are targeted at lower incomes, and are phased out beyond a certain income level. Working lone parents and dual-earner couples with children in formal child care also qualify for an income-dependent child subsidy per hour of child care, which declines with household income beyond a certain income level.

COVID-19 policy response

During the COVID-19 pandemic, the Netherlands relied heavily on a short-time work scheme, allowed firms to defer their tax payments, provided subsidies for the costs of fixed capital and provided income support for the self-employed. For an overview of the most important policy responses and the labour market developments during 2020 and 2021 see Jongen et al. (2021).

3. Notes on measurement and definitions

In this section we briefly outline the main datasets, definitions and splits into groups used in the analysis.

Datasets and time periods

- The data on education, employment, hours worked, contract type and household type are taken (mostly – exceptions are indicated in the notes to the figures) from the Dutch Labour Force Survey (Enquete Beroepsbevolking, EBB) and its predecessor, the Dutch Labour Force Count (Arbeidskrachtentelling, AKT). Data from the EBB (approximately 164,000 individuals in households) are available annually for the period 1987–2022, with (larger) breaks in the years 2003 and 2013. Data from the AKT are available biannually for the period 1973–1985. These datasets are accessible via remote access at Statistics Netherlands.

- The data on incomes are taken (mostly – exceptions are indicated in the notes to the figures) from the integral administrative personal and household income files (Inpatab and Inhatab, respectively) and the administrative Income Panel (Inkomenspanelonderzoek, IPO). The integral files include all Dutch citizens and are available annually for the period 2011–21. The IPO (approximately 90,000 individuals in households) is available for the years 1977, 1981, 1985 and 1987–2014, with a (larger) break in the year 2000 (for which, however, we observe both the incomes according to the old and the new sample definition). Statistics Netherlands and Leiden University have recently made the IPO (as) consistent (as possible) with the integral files for the period 1977–2014 (Caminada et al., 2021). These datasets are also accessible via remote access at Statistics Netherlands.

Unit of analysis and sample

- The sample in the main text consists of individuals 25–60 years of age, unless indicated otherwise. For figures on wages and earnings, the sample is further restricted to individuals (or households where applicable) with strictly positive wages or earnings, respectively. 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.

- We exclude observations with negative values for disposable household income from the graphs with disposable household income.

- We use the sampling weights for the EBB (and the AKT) and the IPO to arrive at nationally representative averages.

Definitions:

- **Employment rate**: the fraction of the population that is employed according to the self-reported employment status in the EBB.

- **Earnings**: gross annual real individual earnings (including self-employment income).

    - If a worker has multiple jobs, earnings from all jobs are summed together.

- Earnings include employee contributions and taxes but typically do not include employer contributions and taxes (in particular, employer pension contributions). Some figures explicitly compare trends in gross earnings with and without employer contributions and taxes.

- Data on annual wages, earnings and income are all administrative data, collected by the Tax Office and the Social Security Agency, available via remote access at Statistics Netherlands. Consistent series on hourly wages are only available for a short period and not included in the analysis.

- Income in kind (e.g., benefits of vehicles, computers and mobile phones purchased by the business that are also for personal use) are not included in the earnings concept used in the analysis.

- Nominal earnings are converted into real terms in calendar year 2019, using the Consumer Price Index (CPI) from Statistics Netherlands.

- **Hours of work**: usual/ typical paid hours worked per week, including overtime. We calculate hours worked for employees only (excluding the self-employed).

- **Wages**: individual real annual gross earnings. We calculate earnings for employees only. We convert nominal earnings into real terms in calendar year 2019, using the CPI of Statistics Netherlands.

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

  - The main measure of household income used in this report is income before housing costs have been deducted, and after direct taxes and premiums have been deducted from and transfers have been added to household income.

  - Income includes: earnings from employment, profit or loss from self-employment, social insurance benefits, social assistance, pension benefits (state, occupational and private pensions) and income from wealth.

  - Income is net of: income taxes, social insurance premiums, healthcare premiums and contributions to occupational and private pensions schemes.

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

  - We convert nominal incomes into real terms in calendar year 2019, using the CPI of Statistics Netherlands.

Splits:

- **Sex**: female, male.

- **Education**: the education variables are split into the following three groups based on the International Standard Classification of Education (ISCED): ISCED 0–2, ISCED 3–5 and ISCED 6–8.

- **Household type**: Single without dependent children; single with dependent children; couples without dependent children; couples with dependent children; adult child; other. A dependent child is a child aged 0–17.

4. Education, employment, hours and earnings

4.1 Trends in employment

Over the past decades, the Netherlands has seen a steep rise in the employment rate of prime working age women (aged 25–60). Their employment rate started at just 20% in the early 1970s and then rose steadily to over 80% in 2022 (Figure 1). This increase reflects changes in preferences for work (Statistics Netherlands and Social Cultural Office, 2020), the increased level of education (Euwals et al., 2011; CPB, 2018) and the increased availability of affordable child care and reductions in participation tax rates for secondary earners (Bosch and van der Klaauw, 2012; Bettendorf et al., 2015). Indeed, Figure 2 shows that the participation rate of women of childbearing age has increased the most. Since the turn of the century, the participation rate of women aged 61–74 has also increased, in part because early retirement and alternative pathways to retirement have become financially less attractive, and the upward shift of the statutory retirement age (Euwals et al., 2010; Lindeboom and Montizaan, 2020; Rabaté et al. 2023). After an initial decline in the participation rate of young women (aged 16–24) until the mid-1980s, due to increased participation in education and the rise in unemployment in response to the recession in the 1980s (Figure 7), their participation rate increased until the beginning of the 2000s, but this increase has slowed down since then.

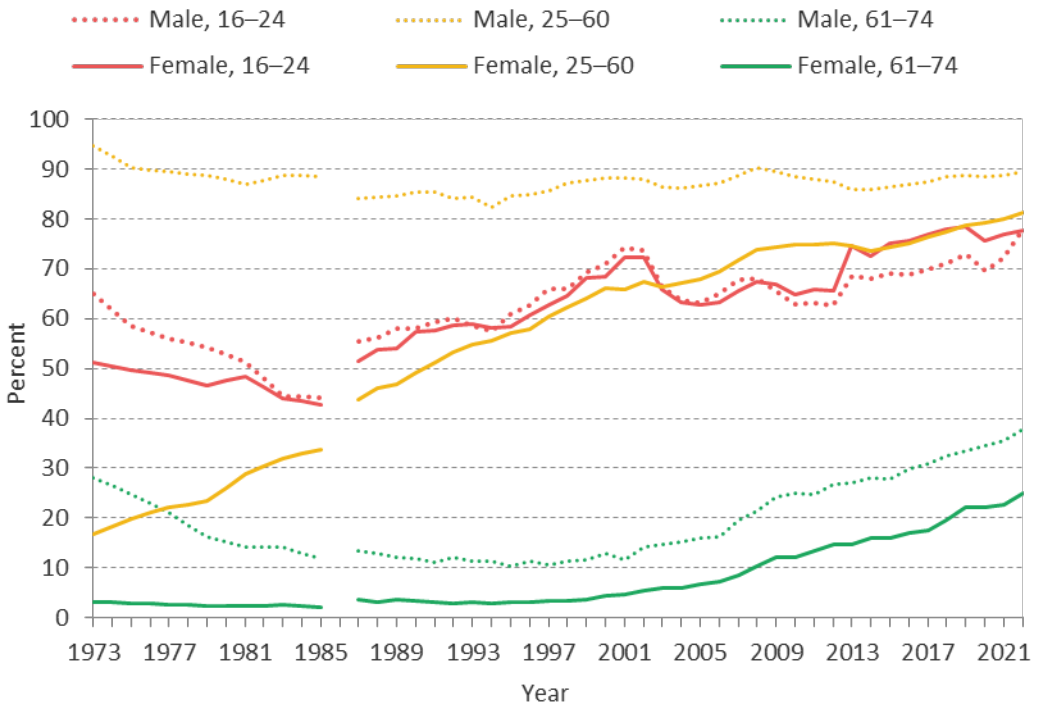
The employment rate of prime working-age men has declined somewhat since the early 1970s. The employment rate of prime working-age men declined between the early 1970s and the mid-1990s, but has increased since then (Figure 1). This partly reflects the initial rise in the use of social insurance and early retirement and the subsequent decline in the use of these schemes, as it became harder and financially less attractive to enter these schemes (Rabaté et al., 2023). The drop in the employment rate of men seems to be concentrated among men 25–44 years of age (Figure 2; for an exploration of potential mechanisms, see CPB, 2021). After a steep drop in the employment rate of men aged 61–74 in the 1970s and 1980s, as many older workers were sent into early retirement and disability insurance, their employment rate increased again in recent decades, as early retirement became less generous, the statutory retirement age was increased, the eligibility criteria for disability insurance became tighter and the maximum duration of unemployment insurance benefits was cut substantially (Rabaté et al., 2023). For young men and women (aged 16–24) we find a similar pattern, with a somewhat steeper decline in the 1970s to the mid-1980s, but with a recovery up to around 2000, and a more or less flat profile after that.

Education levels have increased, and women have more than closed the gap with men. From now on we focus on individuals aged 25–60. Since 1990, the share of people with lower education (ISCED 0–2; Figure 3) has declined and the share of those with higher education (ISCED 6–8) has increased, while the share with intermediate education (ISCED 3–5) has remained more or less stable. The increase in the share of higher-educated women has been particularly strong (Figure 4), and in 2022 slightly more women are higher educated than men (among the 25–60 age group).

Since 1990, there has been an increase in the employment rate of women for all levels of education, while the employment rate of men has hardly changed for all levels of education. Average employment rates have increased for all education levels (Figure 5). If we look by gender, we see that the employment rate increases for all levels of education for women, though rising somewhat more strongly for lower-educated women (Figure 6). The employment rate for men has been rather stable since 1990 for each level of education, though there has been some overall increase for men as the share of higher-educated men increases and higher-educated men have somewhat higher employment rates than lower-educated men.

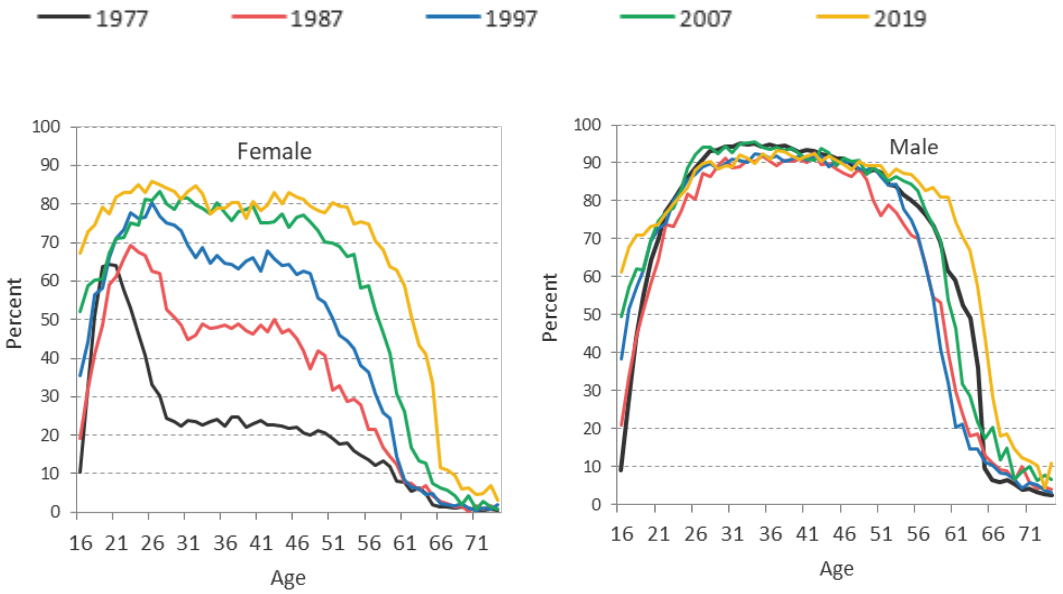
The impact of the COVID-19 crisis on employment rates was a mere blip when compared to long-run trends. There was only a small drop in employment in early 2020, mostly for lower educated (see Figure 5), but employment rates quickly recovered. For further analyses of this period see Jongen et al. (2021).

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



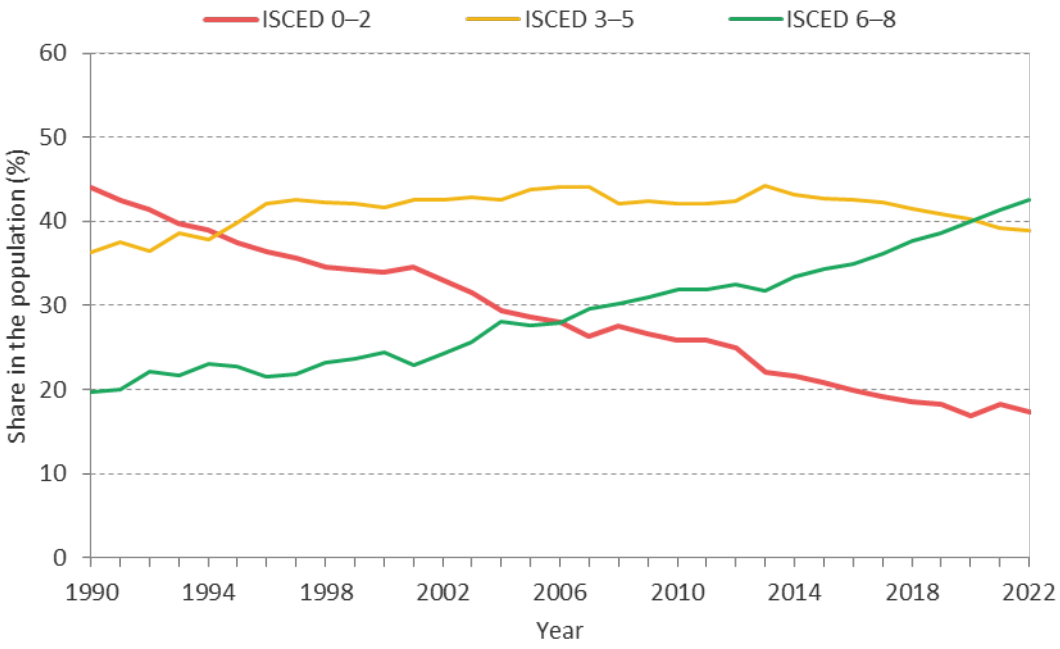
Notes: Own calculations using the EBB for 1987–2020 and the AKT for 1973–85 (even years are interpolated). Breaks in the series in 1986 (all groups) and 2013 (most notably for ages 16–24).

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



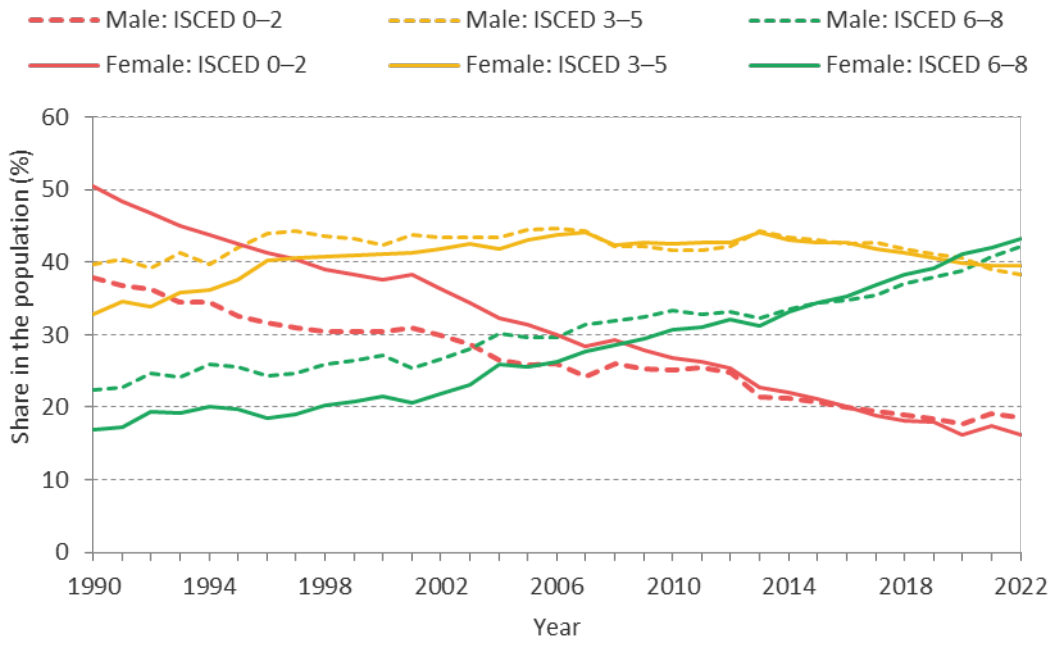
Notes: Own calculations using the EBB for 1987, 1997, 2007 and 2019, and the AKT for 1977. Breaks in 1986 (all groups) and 2013 (most notably for ages 16–24).

Figure 3. Educational attainment over time



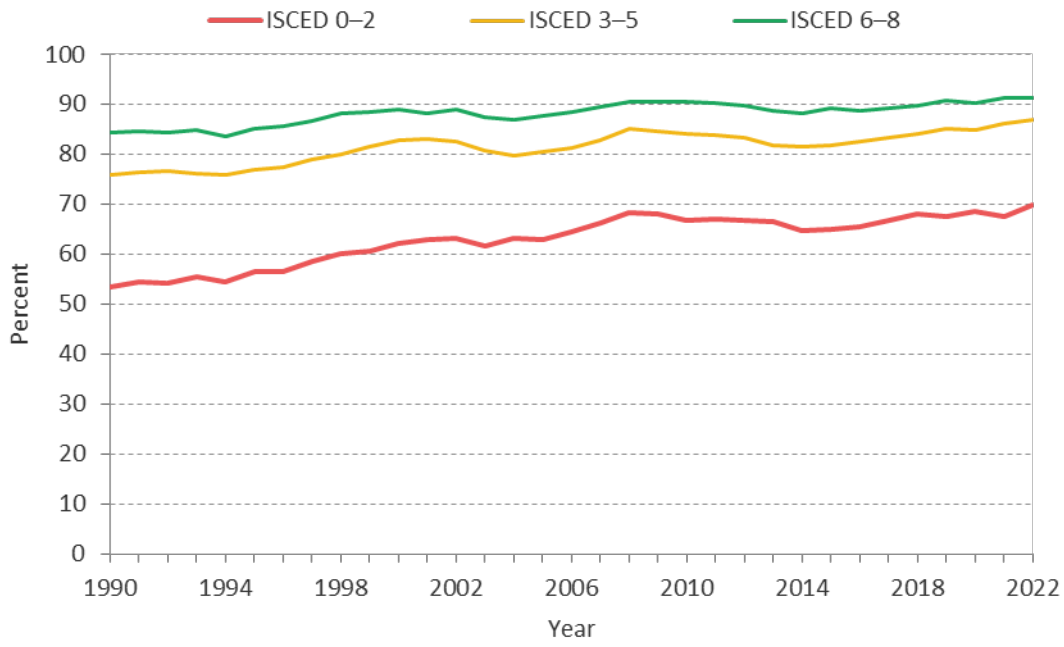
Notes: Own calculations using the EBB. Sample is individuals aged 25–60.

Figure 4. Educational attainment by sex, over time



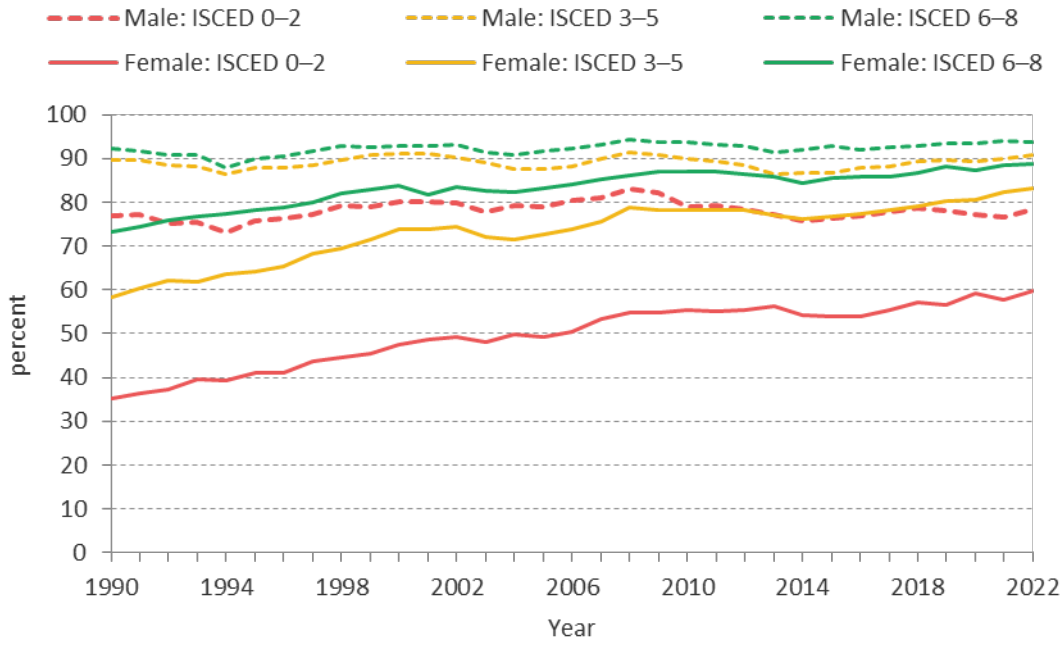
Notes: Own calculations using the EBB. Sample is individuals aged 25–60.

Figure 5. Employment rates by education, over time



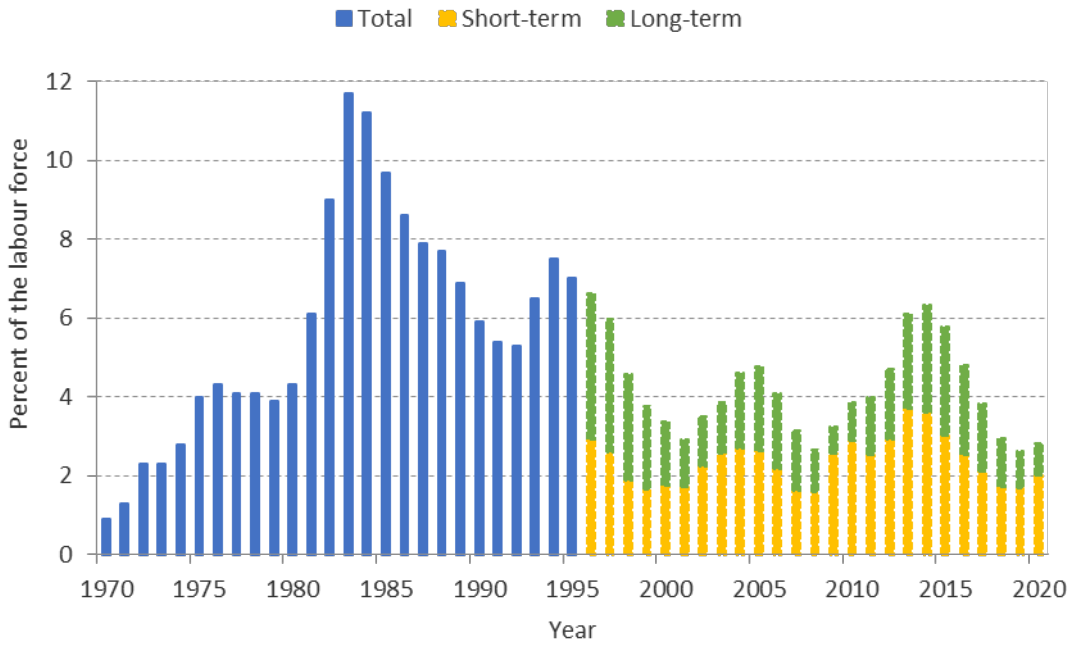
Notes: Own calculations using the EBB. Sample is individuals aged 25–60. Breaks in the series in 2013.

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



Notes: Own calculations using the EBB. Sample is individuals aged 25–60. Breaks in the series in 2013.

Figure 7. Unemployment rate by duration of unemployment, over time

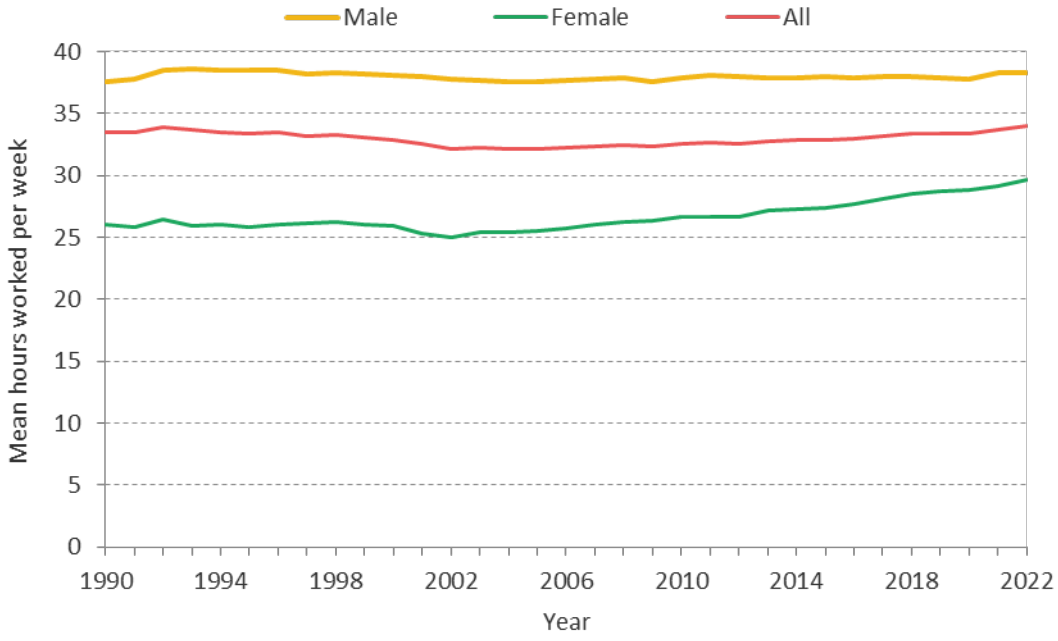


Notes: Authors' calculations using Statline of Statistics Netherlands. Sample is individuals aged 25–60. Unemployment rate is calculated as the unemployed fraction of the labour force aged 25–60, split into short-term (less than 12 months) and long-term (12 months or longer) unemployment. Break in the share of short- and long-term unemployed in 2011.

4.2 Trends in hours worked per week

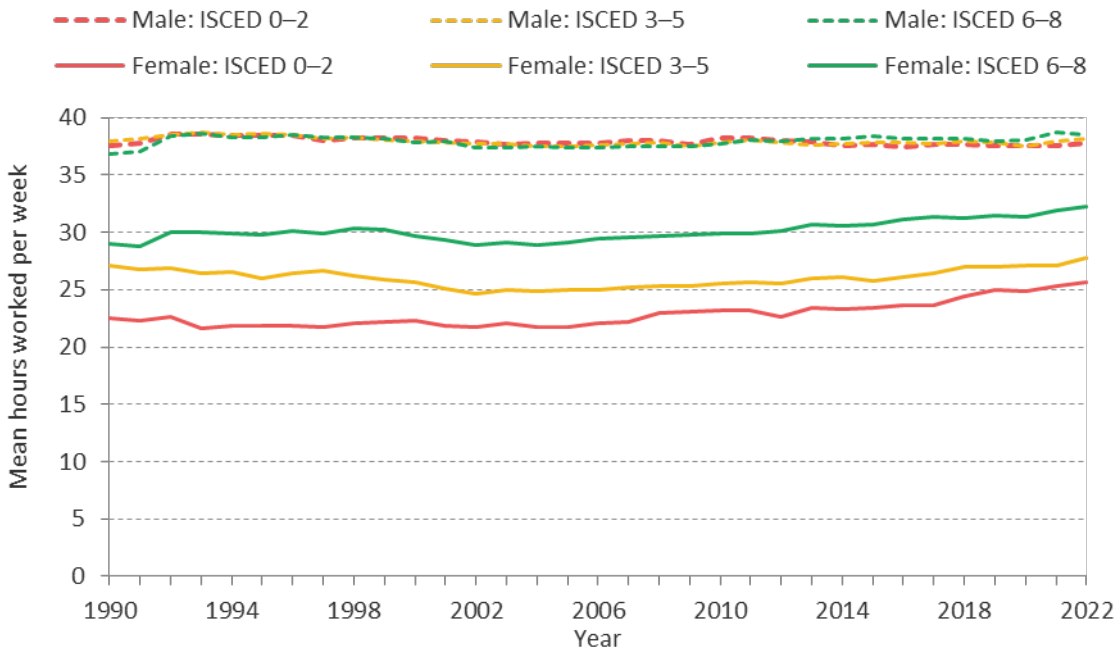
Since 1990, hours worked per week of employees have remained rather stable for men, but since 2005 have increased somewhat for women. Hours worked for men (employees) have hovered around 38 hours per week over the past three decades (Figure 8). Hours worked for women remained fixed at around 25 hours per week over the period 1990–2004, but have increased somewhat since then to 30 hours per week in 2022. The increase in child care subsidies and tax credits for secondary earners from 2005 onwards may have played a role in that (Bettendorf et al., 2015), together with the strong increase in the share of higher-educated women who work on average more hours per week than lower- and intermediate-educated women (Figure 9). Note that hours worked per week are very similar across education levels for men, whereas (working) higher-educated women work more hours per week than lower-educated women. Also note that these hours worked per week are relatively low by international standards. Indeed, the Netherlands is still by far number 1 in the world when it comes to part-time work (35% of all employed worked part-time in 2022, compared to 16% on average for the OECD; see OECD, 2023).

Figure 8. Mean hours worked among employees, overall and by sex, over time



Notes: Own calculations using the EBB. Sample is employees aged 25–60.

Figure 9. Mean hours worked among employees, by sex and education, over time



Notes: Own calculations using the EBB. Sample is employees aged 25–60.

4.3 Trends in annual wages

The gender gap in median wages has been decreasing. In Figure 10 we show the level of median real annual wages for employees (including their profit income, but excluding individuals whose primary income comes from self-employment) over the period 1977–2021, for all employees and for employees by sex. Median real wages over the joint distribution of men and women have been rather stable over the past 40 years, despite the increase in the education level. For men, median real wages have only increased by about 4%, to around €44,000 in 2021 (at 2019 prices). For women, median real wages have almost doubled (+88%) to around €28,000 in 2021 (at 2019 prices). The level of female median wages was 35% of male median wages in 1977. This increased to 64% in 2021, hence the gender gap in wages has decreased substantially, but still remains sizeable.

Wage profiles over the life cycle are much steeper for men than for women, in particular for the higher educated. In Figure 11 we see that the development in median real wages over the life cycle (note that these are cross-sectional data) differs quite a lot between men and women, and also by level of education. For men, real wages increase for all educational levels but most substantially among higher-educated men. For higher-educated women, we find the most substantial increases prior to the age of 30. Lower-educated and intermediate-educated women show almost no growth beyond the age of 30. Indeed, the gender gap in wages opens up mostly after the age of 30, when children arrive.

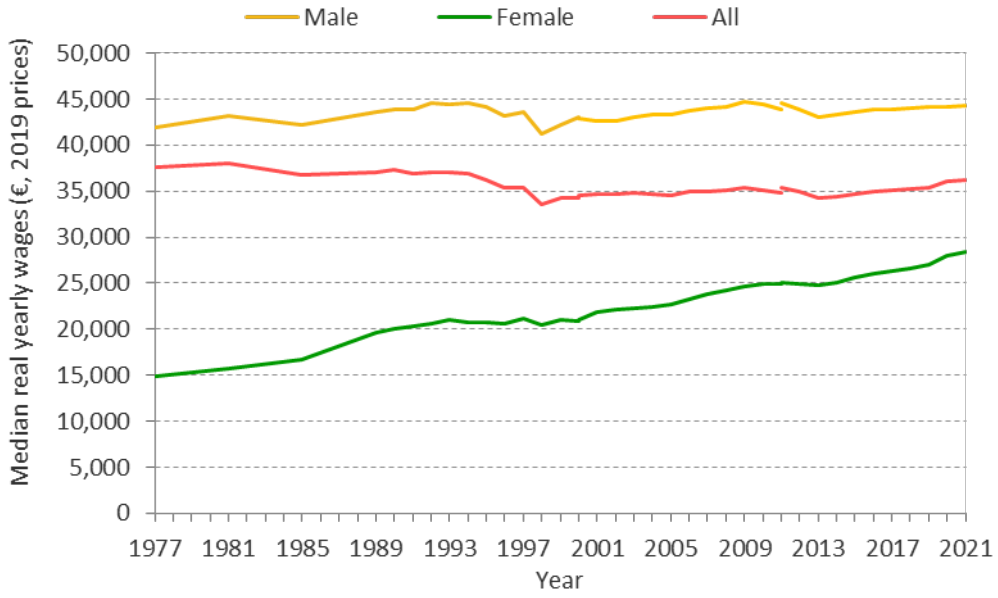
The Gini coefficient of overall median wages has been increasing somewhat over time. Figure 12 shows long-term trends in wage inequality as measured by the Gini coefficient. Overall, wage inequality has increased somewhat, with most of the increase happening before 2000. However, when we decompose this by gender, we observe two opposing trends. For men, we find substantially lower inequality than for women, but their Gini coefficient has been increasing quite a bit. For women, inequality was much higher, but their Gini coefficient has decreased substantially over time.

Wage inequality has decreased across the earnings distribution for women. Figure 13 analyses wage inequality using 90:10 and 50:10 ratios, revealing more about the lower and upper tails of the wage distribution. Overall, both the 90:10 and 50:10 ratios of earnings have decreased to a similar extent, which means that earnings inequality has decreased across the whole wage distribution. This trend is primarily driven by the large decrease in wage inequality among women. For men, we find that both the 90:10 and 50:10 ratios have increased over time.

Wage growth has been higher among women in the lower wage percentiles. In Figure 14 we show the average annual real wage growth for three consecutive periods of (about) 13 years: 1981–94, 1994–2007 and 2007–19. For men, real wages have only grown (somewhat) among the higher wage percentiles. At the bottom of the wage distribution, real wages have decreased. Women's real wage growth shows a different pattern. Growth was positive in all three periods for the whole wage distribution of women. Furthermore, women at the lower end of the wage distribution show higher growth rates than women further up the wage distribution.

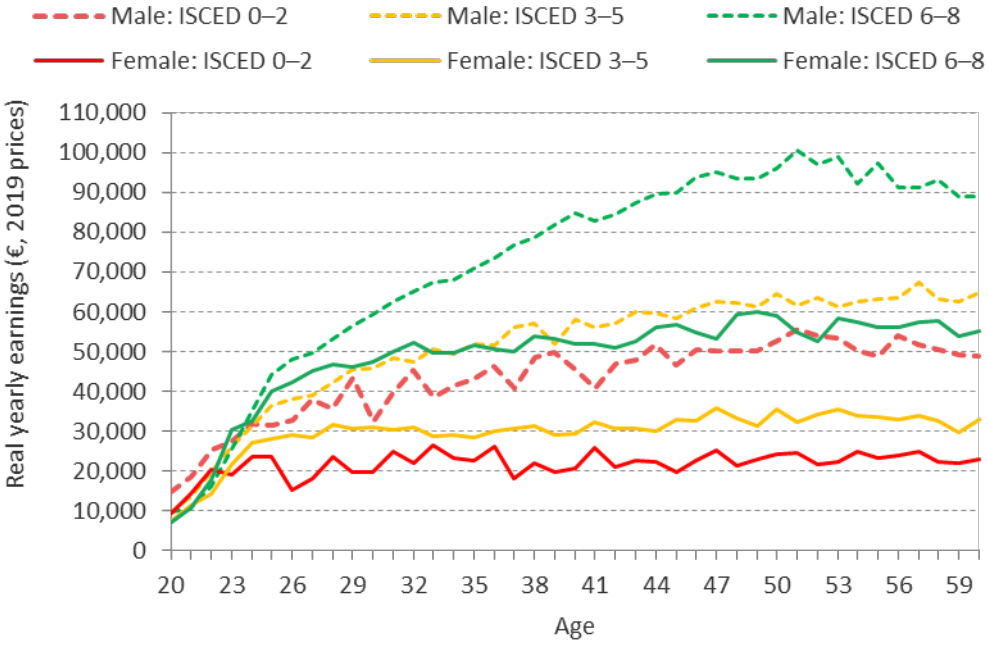
The COVID-19 crisis has hardly affected wage growth. Indeed, in part due to the short-time work schemes, wages continued to grow on an annual basis during 2020 and 2021.

Figure 10. Median real annual wages, overall and by sex, over time



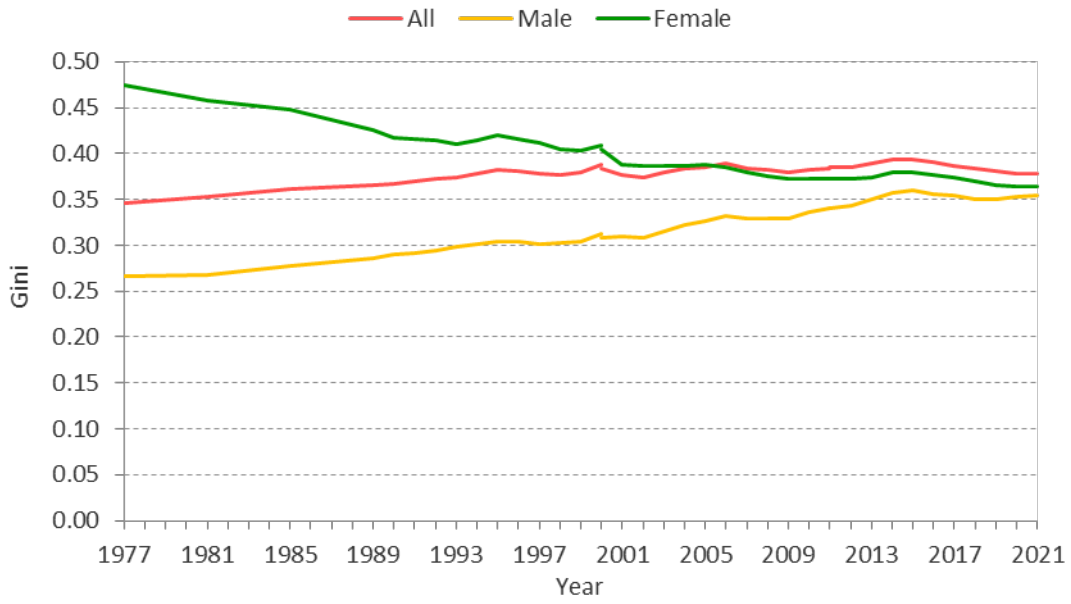
Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). Sample is employees aged 25–60. Wages are in 2019 prices. Note that these are wages, not hourly wages. Breaks in the series in 2000 and 2011.

Figure 11. Median real annual wages by age, sex and education in 2019



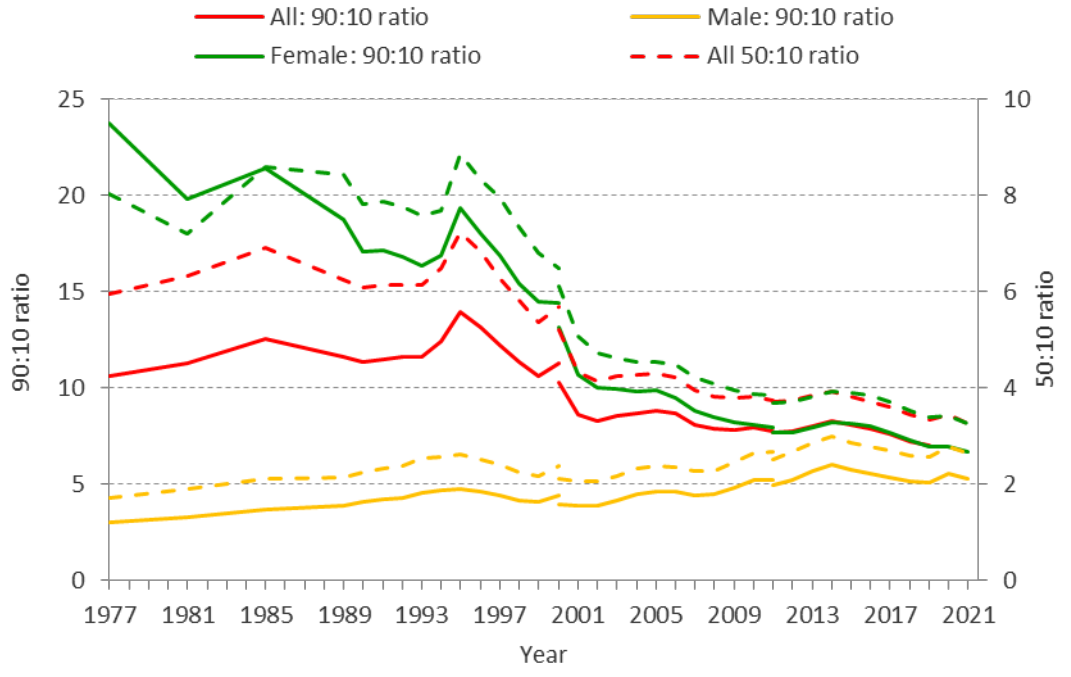
Notes: Own calculations using the EBB of 2019. These are cross-sectional earnings (wages plus potential profits or losses) for employees only. Differences are due to differences in hours and differences in earnings per hour.

Figure 12. Gini coefficient of real annual wages, overall and by sex, over time



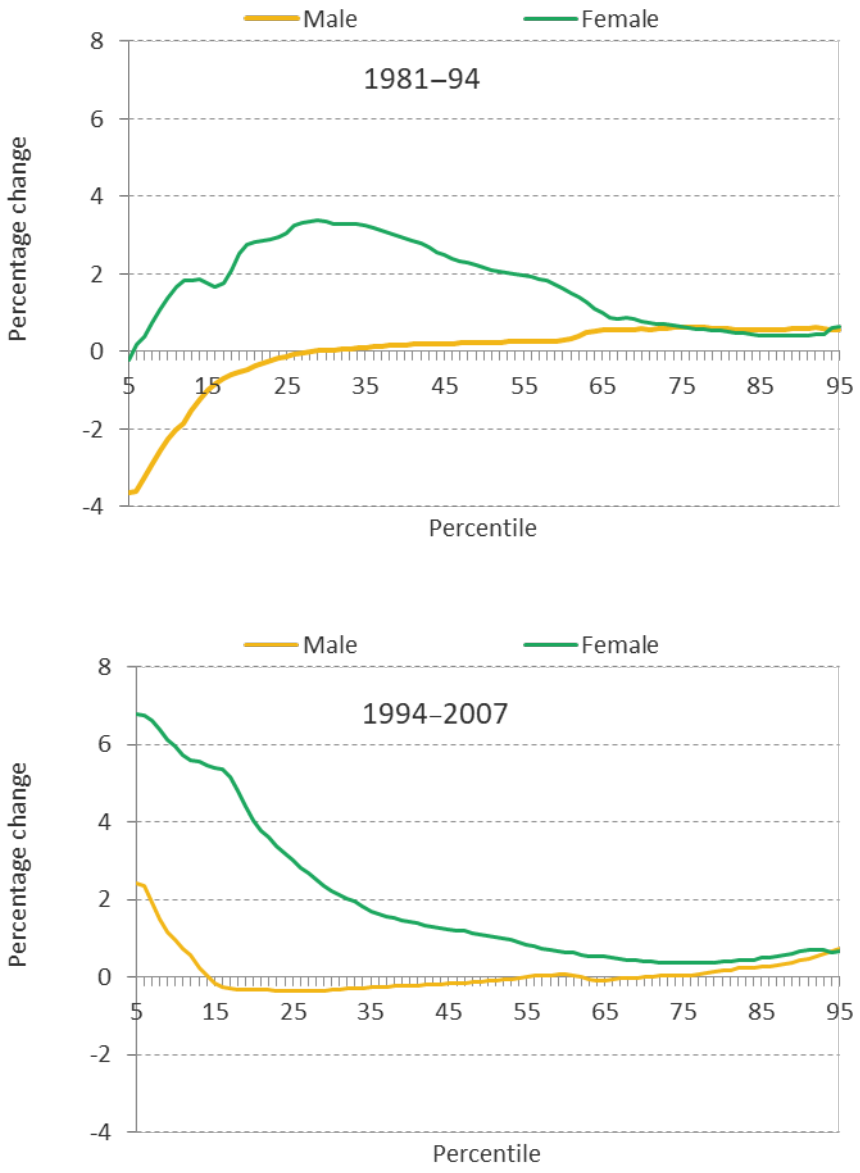
Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). Sample is employees aged 25–60. Breaks in the series in 2000 and 2011.

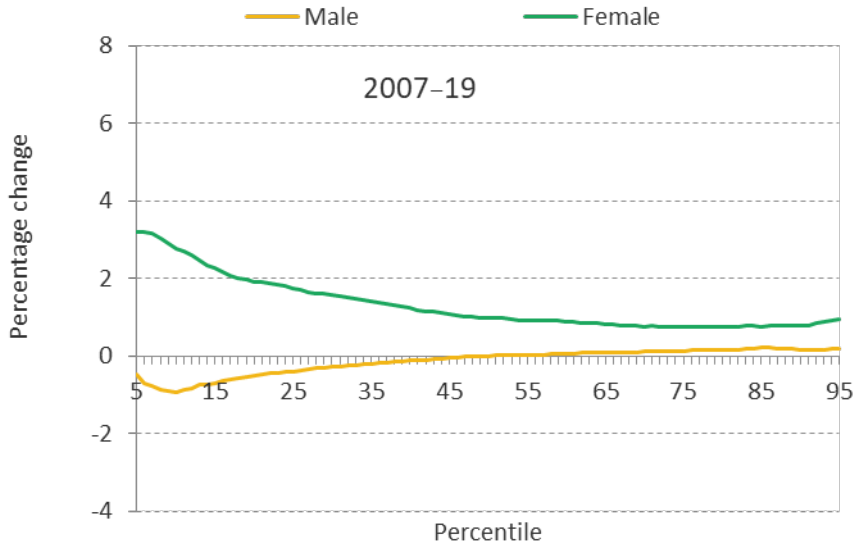
Figure 13. 90:10 and 50:10 ratios of real wages, overall and by sex, over time



Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). Sample is employees aged 25–60. Breaks in the series in 2000 and 2011.

Figure 14. Annualised growth in real wages by wages percentile, by sex, selected periods





Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). Sample is employees aged 25–60. Breaks in the series in 2000 and 2011.

4.4 Trends in annual earnings

The trends in median real earnings (wages and profit income) are very similar to the trends in median real wages, increasing strongly for women but hardly increasing for men. In the following graphs we now include the self-employed in the sample and analyse the earnings of wage earners and self-employed combined. Similar to Figure 10, median real (gross) earnings of individuals have been relatively stable over time, except for a slight decrease during the 1990s (Figure 15). However, there are substantial differences by gender, both in the levels and the growth rate. Among men, median real earnings show a slight increase over time of about 4%, up to about €45,000 in 2021 (at 2019 prices). Among women, median real earnings show a substantial increase over time of about 91% since 1977, reaching about €29,000 in 2021 (at 2019 prices).

The Gini coefficient of earnings for both men and women has increased slightly over time, the net effect of a strong decline for women and a rise for men. Figure 16 shows long-term trends in gross individual earnings inequality as measured by the Gini coefficient. Overall, earnings inequality has been trending up slightly, though it has been quite stable since the mid-1990s. However, decomposed by gender, we observe two opposing trends, similar to the trends in wages. For men, who show substantially lower inequality than women, the Gini has increased over time. For women, the Gini coefficient of individual earnings has decreased substantially.

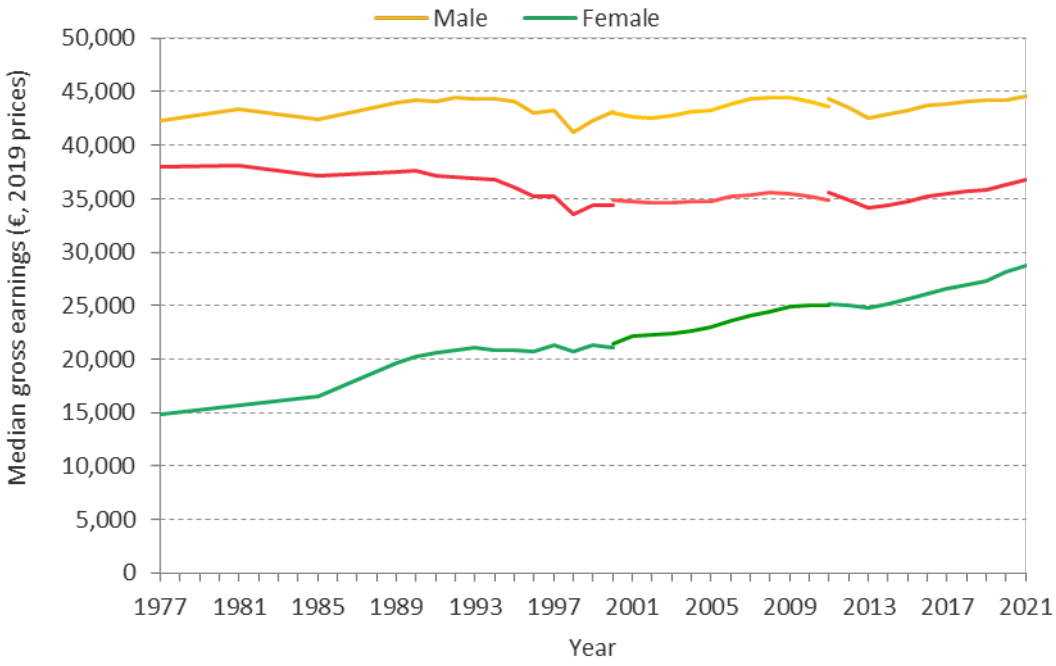
The Gini coefficient of employer costs follows a pattern quite similar to earnings. Similar to the Gini coefficients of gross individual earnings and real wages, we find that the inequality in employer costs has also increased slightly (Figure 17).

Earnings inequality has decreased for women across the earnings distribution, and increased for men. Figure 18 analyses gross individual earnings inequality by 90:10 and 50:10 ratios which, in contrast to the Gini in Figure 16 and 17, put more emphasis on the lower and upper tails of the earnings distribution. Overall, both 90:10 and 50:10 ratios of earnings have decreased similarly over time, meaning that earnings inequality has decreased at both the lower and higher ends of the earnings distributions. This trend is primarily driven by the large decreases in inequality among women. For men, we find that both 90:10 and 50:10 ratios have slightly increased over time. These trends are largely similar to the trends in wages observed in Figure 13.

Earnings growth has been higher among women at the lower earnings percentiles. In Figure 19, we show the average annual earnings growth for three consecutive periods. The patterns and percentages are very similar to wages in Figure 14.

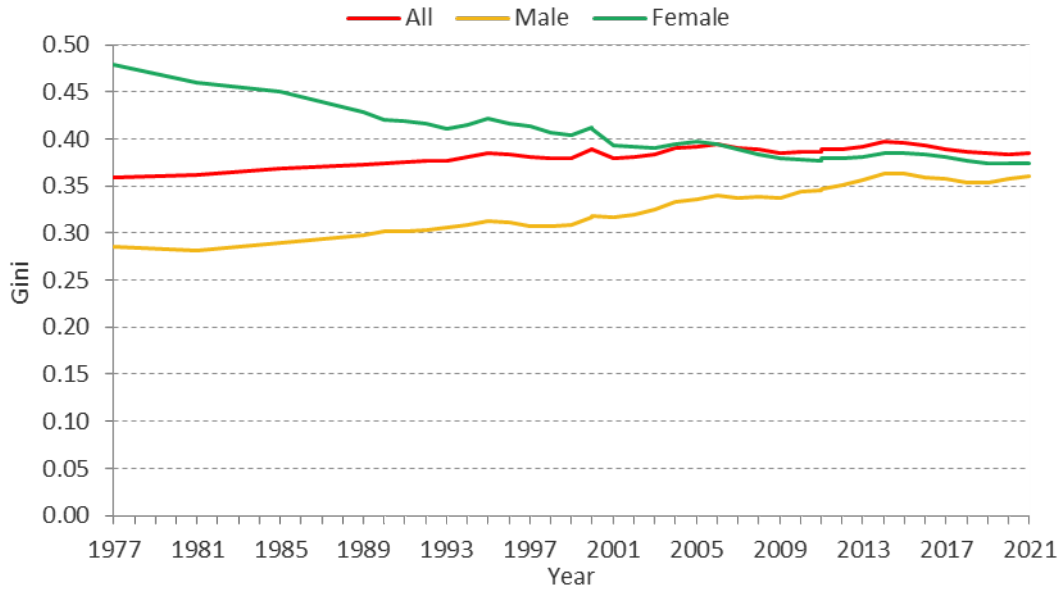
Growth in gross earnings and employer costs has been concentrated at the lower end of the earnings distribution. Figure 20 shows the growth in gross earnings and employer costs by earnings percentile for the periods 1981–94, 1994–2007 and 2007–19. Both earnings definitions show very similar patterns in growth over the three periods, though since 1994 employer costs have tended to grow more strongly than gross earnings. Both earnings definitions also have tended to grow more strongly at the lower end of the earnings distributions. This is consistent with the stronger growth we observe among women as can be seen in Figure 19.

Figure 15. Median real gross individual earnings, overall and by sex, over time



Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). Sample is individuals in work aged 25–60. Gross earnings are in 2019 prices. Breaks in the series in 2000 and 2011.

Figure 16. Gini coefficient of gross individual earnings, overall and by sex, over time

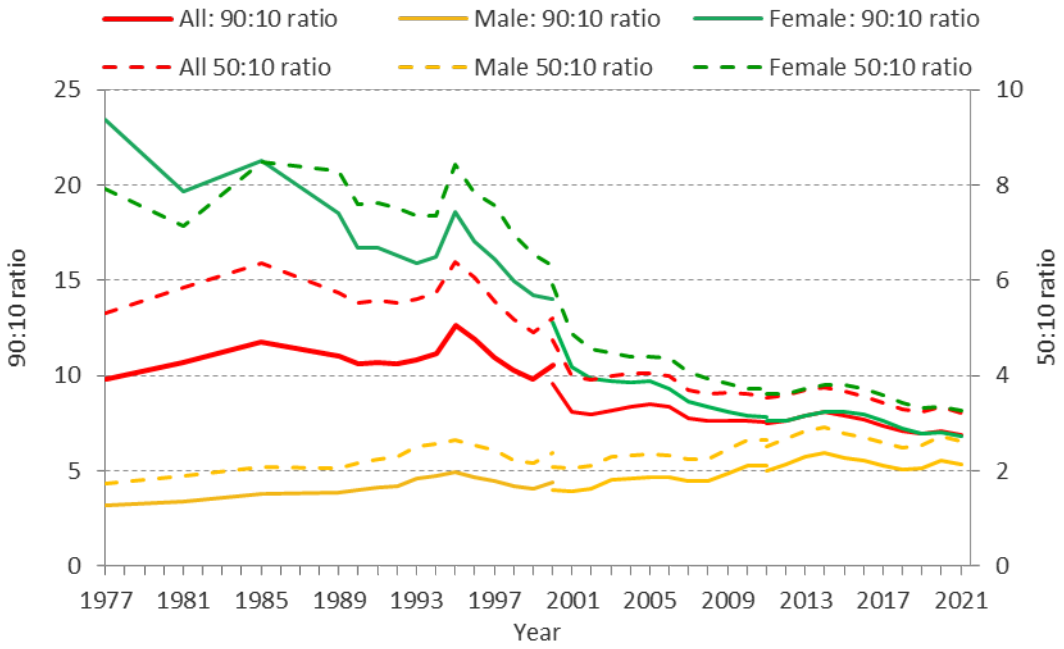


Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). Sample is individuals in work aged 25–60.

Figure 17. Gini coefficient of gross individual earnings and total employer cost, over time

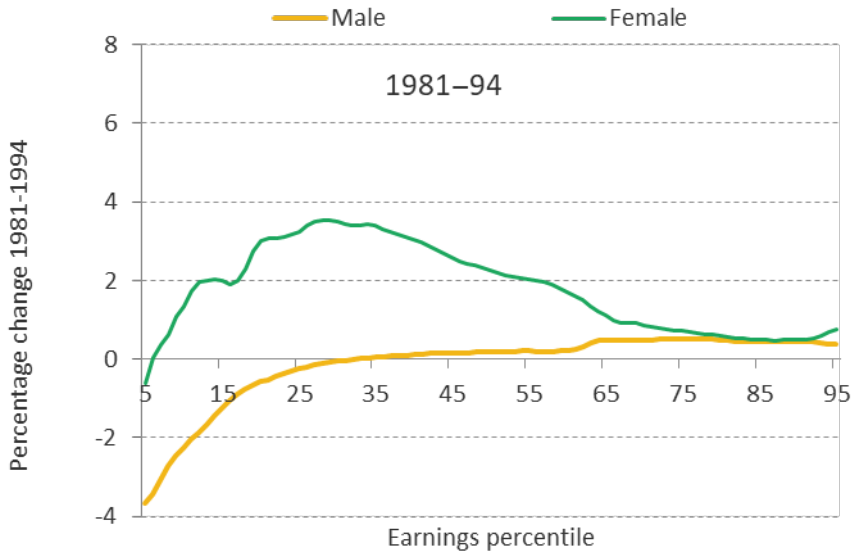
Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). Sample is individuals in work aged 25–60.

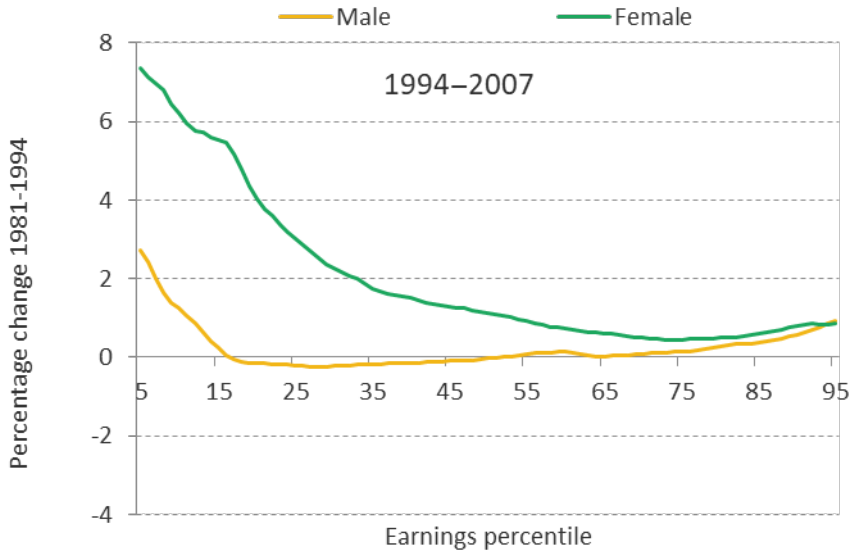
Figure 18. 90:10 and 50:10 ratios of gross individual earnings, overall and by sex, over time

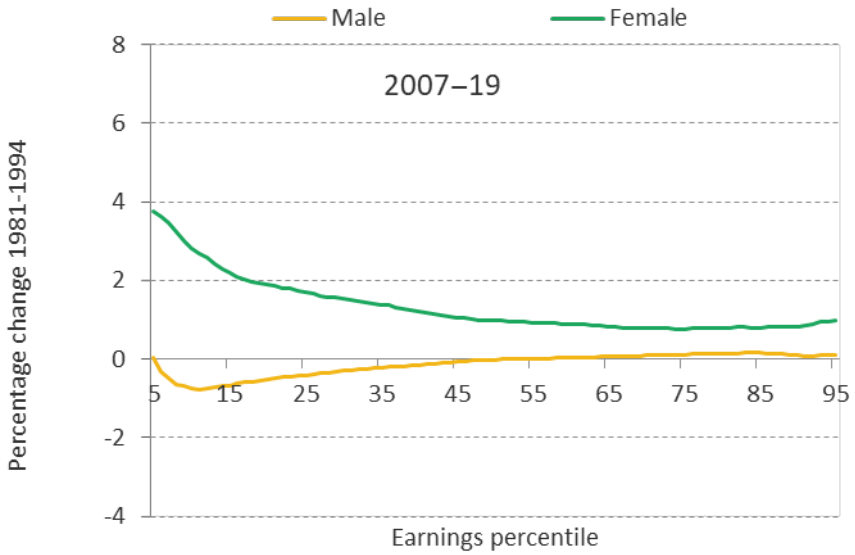


Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). Sample is individuals in work aged 25–60.

Figure 19. Growth in gross earnings by earnings percentile, overall and sex, selected periods







Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). Sample is individuals in work aged 25–60. Breaks in the data in 2000 and 2011.

Figure 20. Growth in gross earnings and employer costs by earnings percentile, selected periods

Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). Sample is individuals in work aged 25–60.

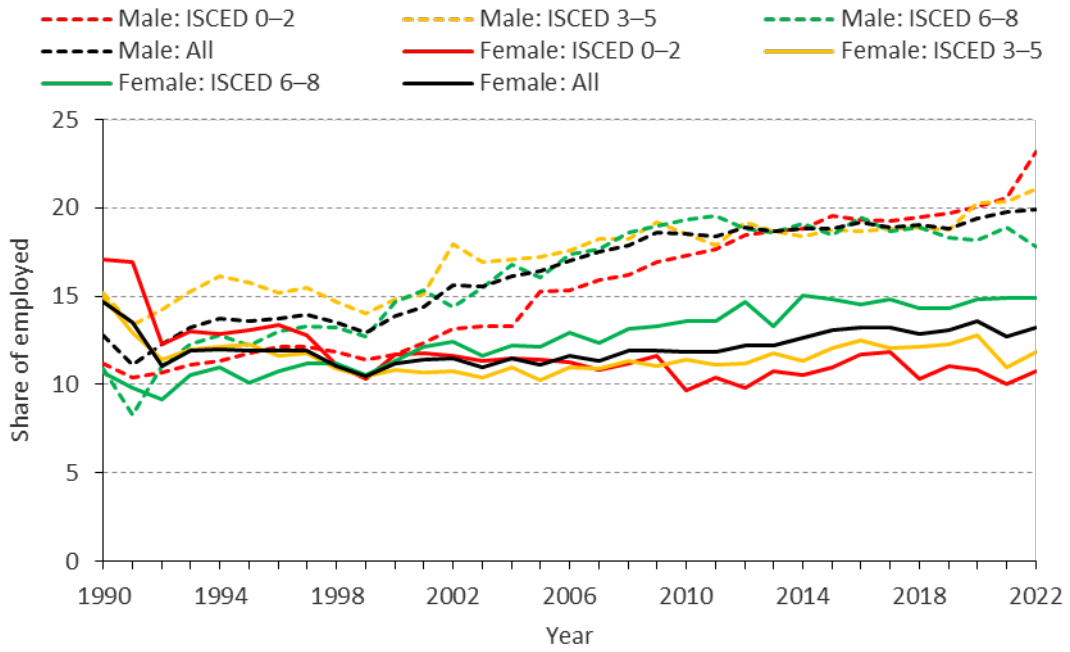
4.5 Self-employment

The share of (solo) self-employed has risen since the mid-1990s, in particular for men. An increasing share of workers are self-employed (Figure 21), with the increase due to the increase in so-called solo self-employed (self-employed without employees or a working family member). The rise in self-employment is stronger for men than for women (Figure 22). The rise is particularly strong for low-educated men. For women there is some rise in self-employment for higher-educated women. When we look at the share of self-employed across the earnings distribution, we see that the rise in the share of self-employed has been much stronger between 2007 and 2019 than between 1981 and 2007 (Figure 23). Although we see an increase in self-employment across the board, the increase seems slightly stronger at the lower end of the earnings distribution.

Figure 21. Share of employees and self-employed workers, over time

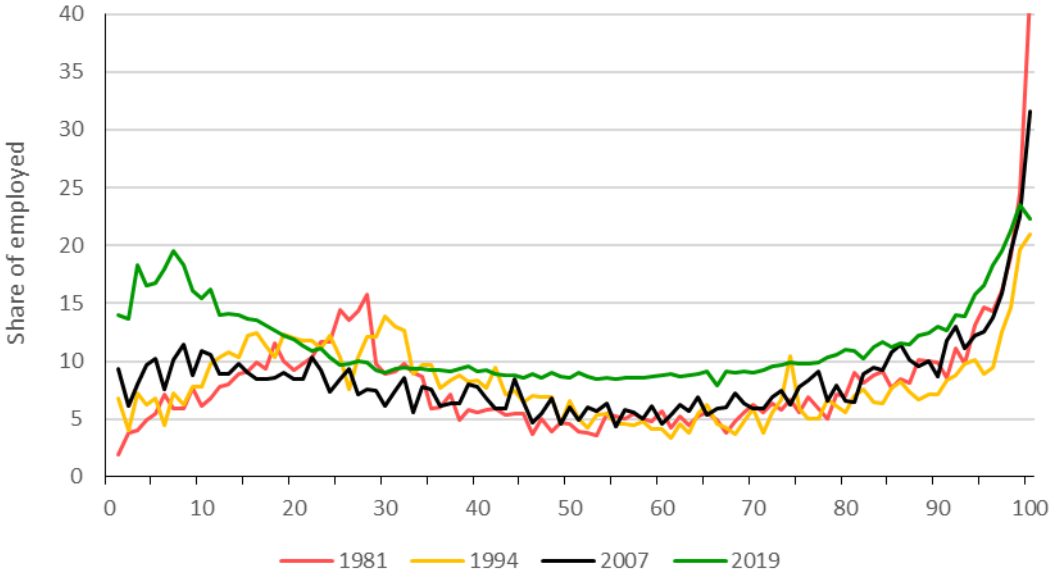
Notes: Own calculations using the EBB. Individuals age 25–60 years of age. 'Solo self-employed' are self-employed without employees, 'Other self-employed' includes self-employed with employees and family workers.

Figure 22. Share self-employed by sex and education, over time



Notes: Own calculations using the EBB. Individuals age 25–60 years of age.

Figure 23. Share self-employed by percentile of individual earnings, selected years



Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). Individuals 25–60 years of age.

5. Labour market institutions

The relevance of the minimum wage declined in the 1980s, as minimum wages were 'frozen', but since the mid-2000s the share of workers with a wage up to 120% of the minimum wage has been increasing. During the 1970s, the minimum wage increased at a faster pace than the average wage in collective labour agreements (Figure 24, left-hand panel). However, during the 1980s the minimum wage was 'frozen', whereas the average wage in collective labour agreements continued to increase. Since the 1980s, minimum wages have grown at a similar pace to the average wage in collective labour agreements (until recently, on 1 January 2023, minimum wages were increased by 10%). As a result of the minimum wage freeze, the number of employees with earnings at the minimum wage level declined during the 1980s (Figure 24, right-hand panel). During the early 1990s this share rebounded somewhat, but has been more or less stable since the mid-1990s. However, the share of workers with a wage up to and including 120% of the minimum wage has been increasing since the mid-2000s.

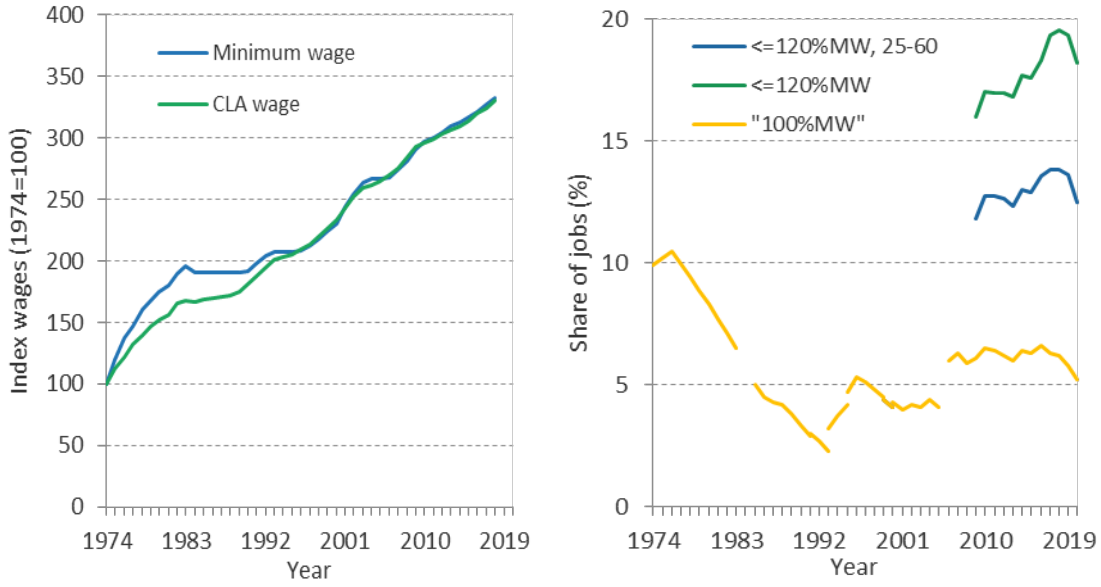
Union membership among employees has been cut in half since the late 1970s, but the share of employees covered by a collective labour agreement is still close to 80%. The share of employees who are members of a union has declined from close to 40% in 1970 to below 20% in 2019 (Figure 25). The decline was particularly strong in the 1980s. However, the share of employees covered by a collective labour agreement was 80% in 1970, and was still close to 80% in 2019. This is the result of extending the collective labour agreement to all employees in the same firm or sector.

The share of gross social insurance benefits has increased for the bottom quartile of the disposable income distribution, but declined for the other quartiles. As enrolment in various types of social insurance increased during the 1980s, gross social insurance benefits as a proportion of overall gross income increased, in particular for the bottom income quartile (Figure 26). Since then, benefits have largely followed the business cycle for the bottom income quartile. This relation with the business cycle is much weaker for the other income quartiles, where the share of benefits in gross income has been declining since the 1980s.

Direct taxes have declined as a share of gross income over time. The share of direct taxes in gross income has declined since 1977 (Figure 27).

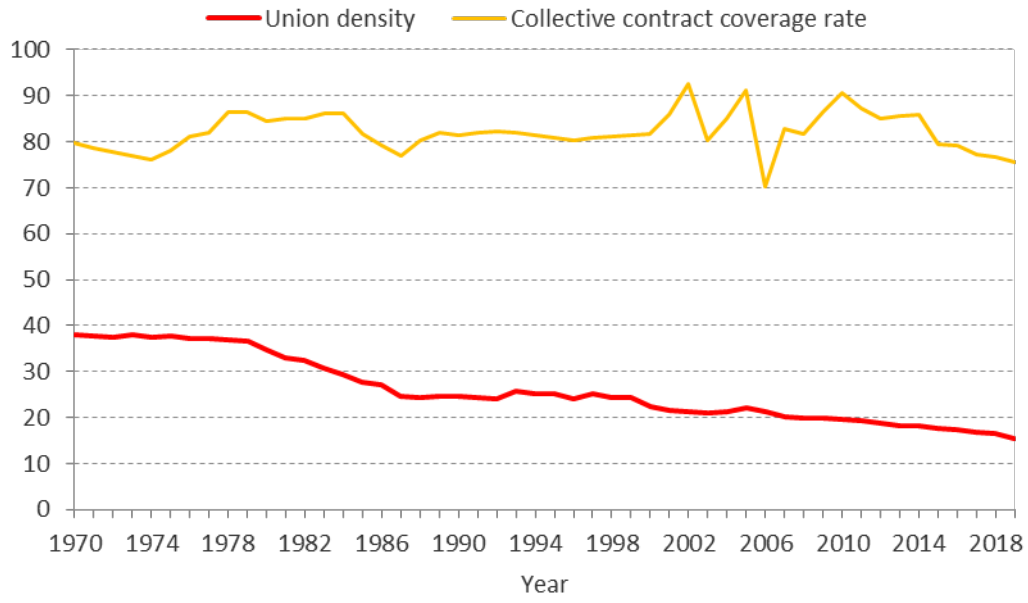
Disposable income as a share of gross income has been trending upward, indicating that effective average tax rates have declined, though the rise is less pronounced once we consider disposable income as a share of employer cost. Disposable income as a share of gross income has been increasing the most for the bottom income quartile (Figure 28). The increase is more moderate for the other income quartiles, in particular when we consider disposable income as a share of employer cost (Figure 29).

Figure 24. Bite of the minimum wage, over time: (left) minimum wages and collective wages (1974=100); (right) share of jobs just above the minimum wage



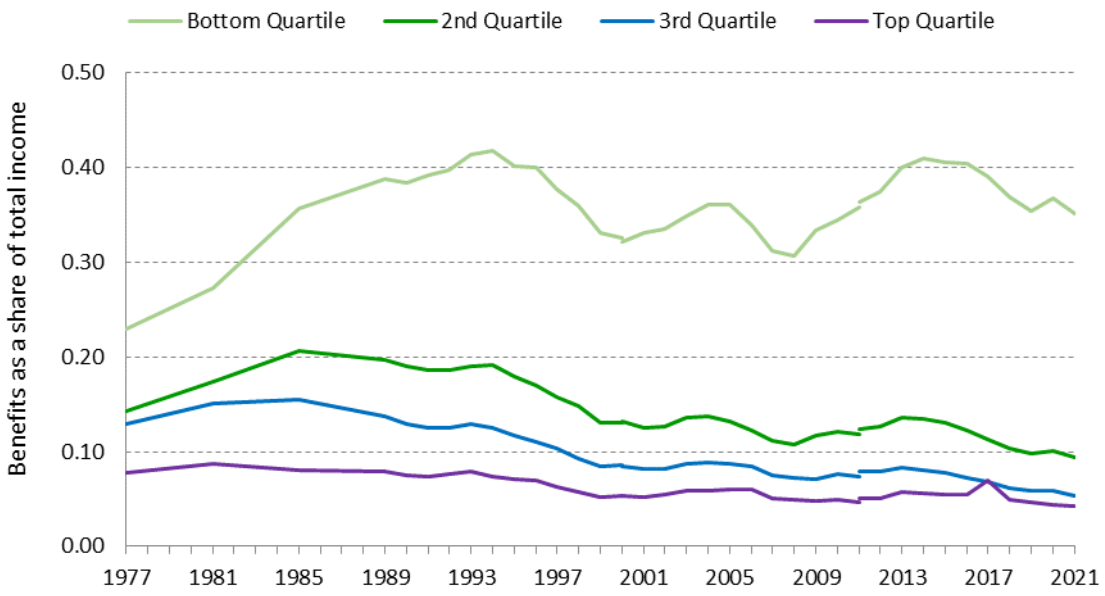
Notes: Data are taken from a special issue of Statistics Netherlands on the minimum wage (https://www.cbs.nl/nl-nl/nieuws/2019/08/vijftig-jaar-minimumloon) and Statline for recent data on the share of employees at or below 120% of the minimum wage. The left-hand panel shows an index of the (nominal) minimum wage and the average collectively agreed wage over time. CLA = collective labour agreement. The right-hand panel shows the share of jobs of employees of all ages at the minimum wage ('100%MW', with breaks in 1983, 1991, 1995, 1999, 2000 and 2006), the share of jobs of employees of all ages at or below 120% of the minimum wage ('<=120%MW') and the share of jobs of employees 25–60 years of age at or below 120% of the minimum wage ('<=120%MW, 25–60).

Figure 25. Union density and fraction of workers covered by collective bargaining agreements, over time



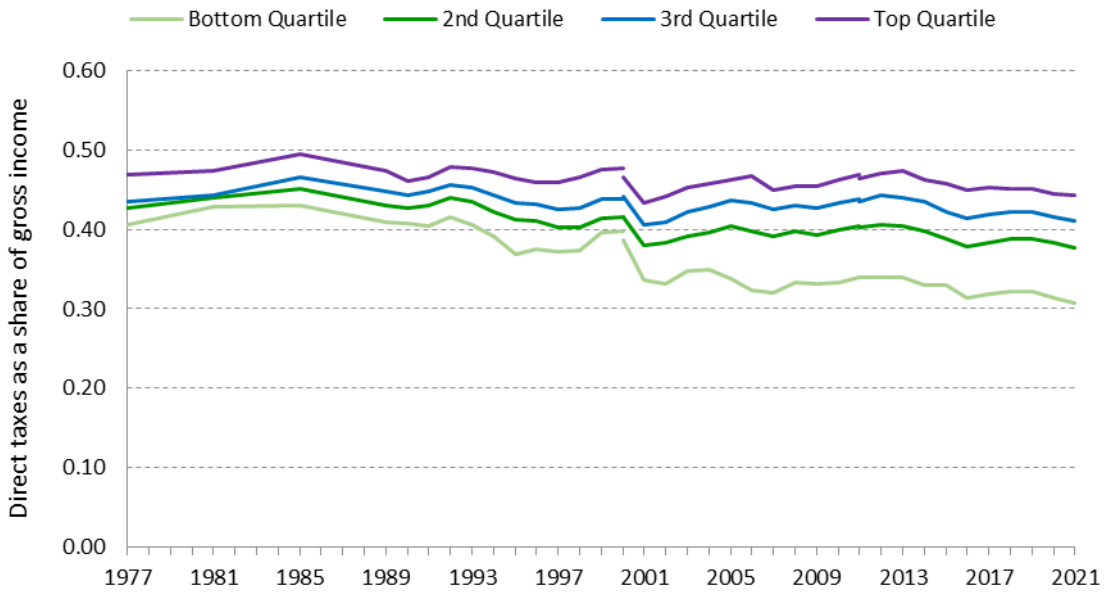
Notes: Data taken from the OECD. Union density is the share of employees who are members of a union. The collective contract coverage rate is the share of employees covered by a collective labour agreement (CLA), due to the extension of CLAs to the whole firm or sector.

Figure 26. Benefits as a proportion of overall income, by net household income quartile



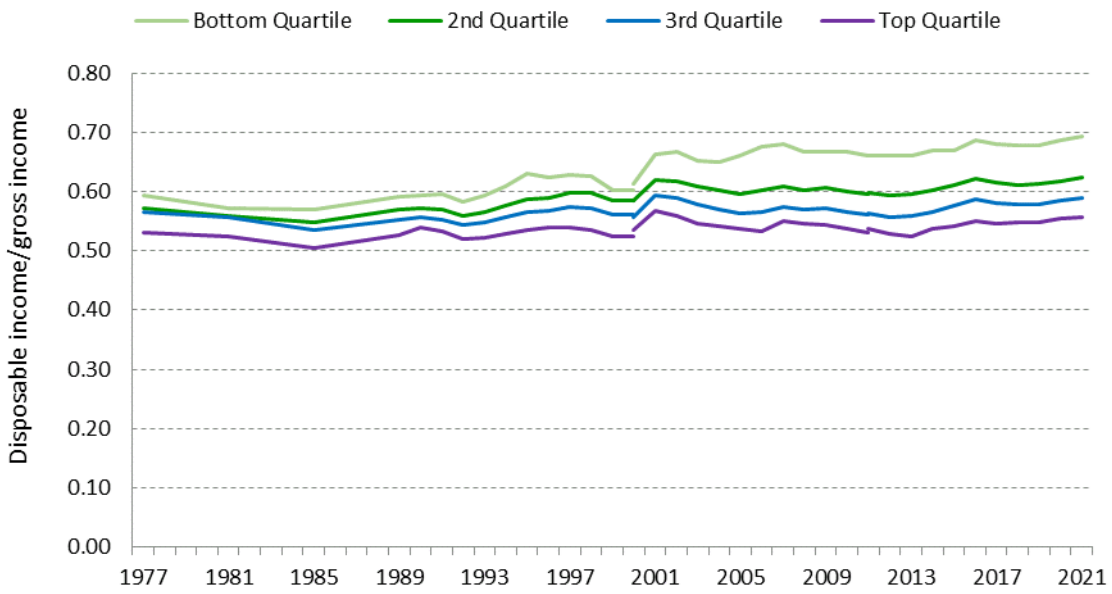
Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). Individuals 25–60 years of age.

Figure 27. Direct taxes as a proportion of gross income, by net household income quartile



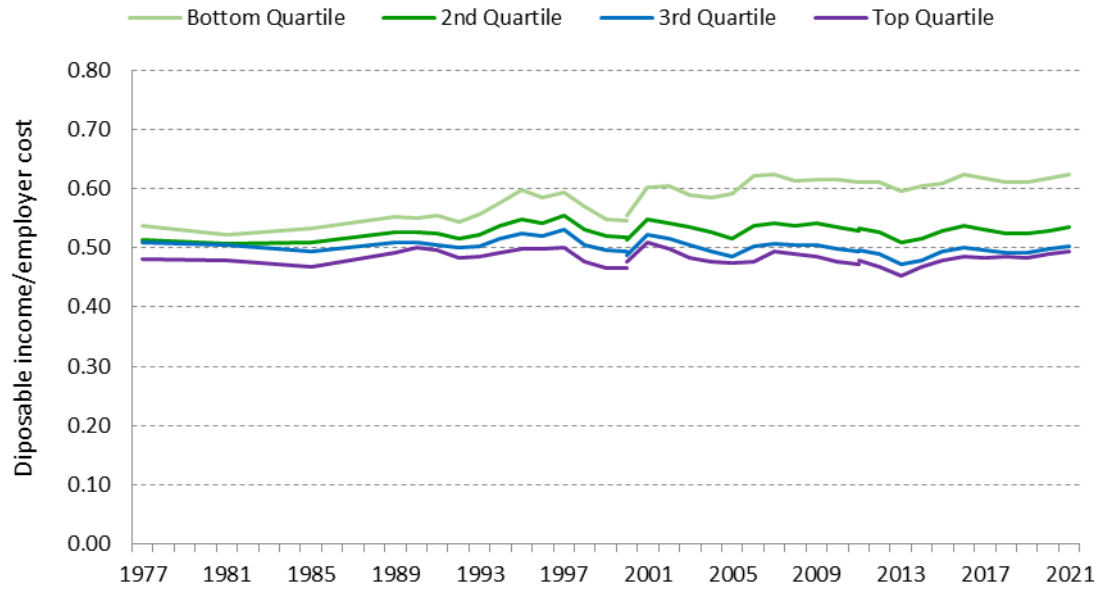
Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). Individuals 25–60 years of age. Direct taxes are defined here as the difference between gross income and disposable income.

Figure 28. Disposable income as a proportion of gross income, by net household income quartile



Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). Individuals 25–60 years of age.

Figure 29. Disposable income as a proportion of gross income and employer social security contributions, by net household income quartile



Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). Individuals 25–60 years of age.

6. Household composition and incomes

6.1 Trends in household composition

The share of individuals who are married/cohabiting has been decreasing for lower- and intermediate-educated individuals, but has remained rather stable for higher-educated individuals. Overall, the share of individuals who are married or cohabiting (with or without children) has decreased from 80% in 1990 to close to 70% in 2020 (Figure 30). There is an important break in the EBB regarding position in the household, so we do not report outcomes for 2021 and 2022. The decrease in couples was the most pronounced for low-educated individuals; the share of singles among this group has almost doubled between 1990 and 2020. There is also some decrease in the share of couples for intermediate-educated individuals, but for high-educated individuals there is almost no decrease.

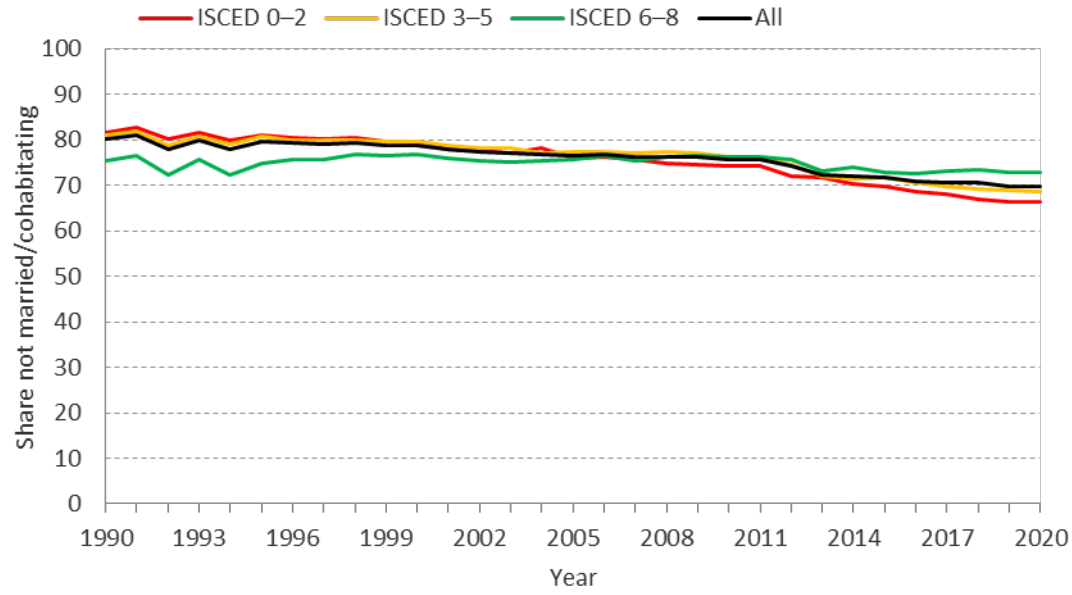
For lower- and intermediate-educated women we see an increasing share of singles without children and lone parents; for lower- and intermediate educated men the increase is mostly in singles without children. An increasing share of individuals are either single without children or a lone parent (Figure 31). When we look by gender and education group (Figure 32), we see that for women the share of singles without children rises for all education levels, though less so for intermediate-educated women. For low- and intermediate-educated women we also see an increasing share of lone parents. We see a particularly strong increase in singles without children among low-educated men, and also some increase in this share for intermediate-educated men. This also reflects that children of divorced parents are more likely to be registered and live with the mother than the father (more than 80% of lone parents are women). For high-educated men there is hardly an increase in the share who are single, as opposed to high-educated women, where this share is increasing.

Among men with relatively low earnings, the share who are in a couple has declined, and the share who have a working partner has increased less than among men with relatively high earnings. The share of men with relatively low earnings who are married or cohabiting has declined substantially (Figure 33). Also, among men with relatively low earnings, the share who have a working partner did not change much between 1981 and 2019, the net result of the general increase in female participation but a decrease in the share of low-earning men who have a female partner. For high-earning men, the share who are married/cohabiting has hardly changed, consistent with the results by level of education, while the share of high-earning men who have a working partner has increased quite a lot.

Both low- and high-earning women are less likely to be in a couple, and also less likely to have a working partner. For women, changes are less earnings-specific (Figure 33). Low-earning women are less likely to be married/cohabiting, but the same is true for high-earning women, with a drop in the share who are married/cohabiting in the order of 5–10 percentage points. Also when we look at the share who have a working partner, we see an across-the-board drop in this share, up to 10 percentage points.

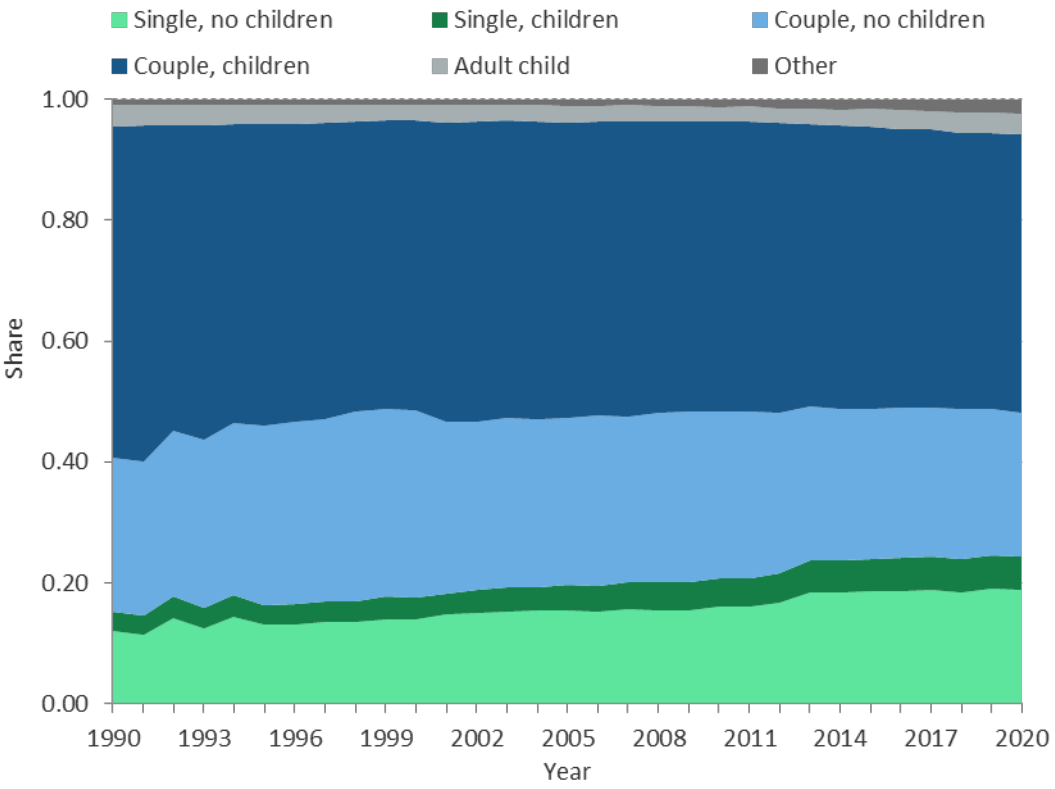
Within couples there is an increase in assortative matching in terms of earnings. Within the group of male–female couples, there was hardly any assortative matching by earnings level between men and women in 1981 (Figure 34). This picture had changed considerably by 2019, when we observe a clear pattern of assortative matching on earnings for men and women. Women (men) with relatively low (high) earnings are in couples with men (women) who have on average relatively low (high) earnings.

Figure 30. Share of individuals married/cohabiting, overall and by education, over time



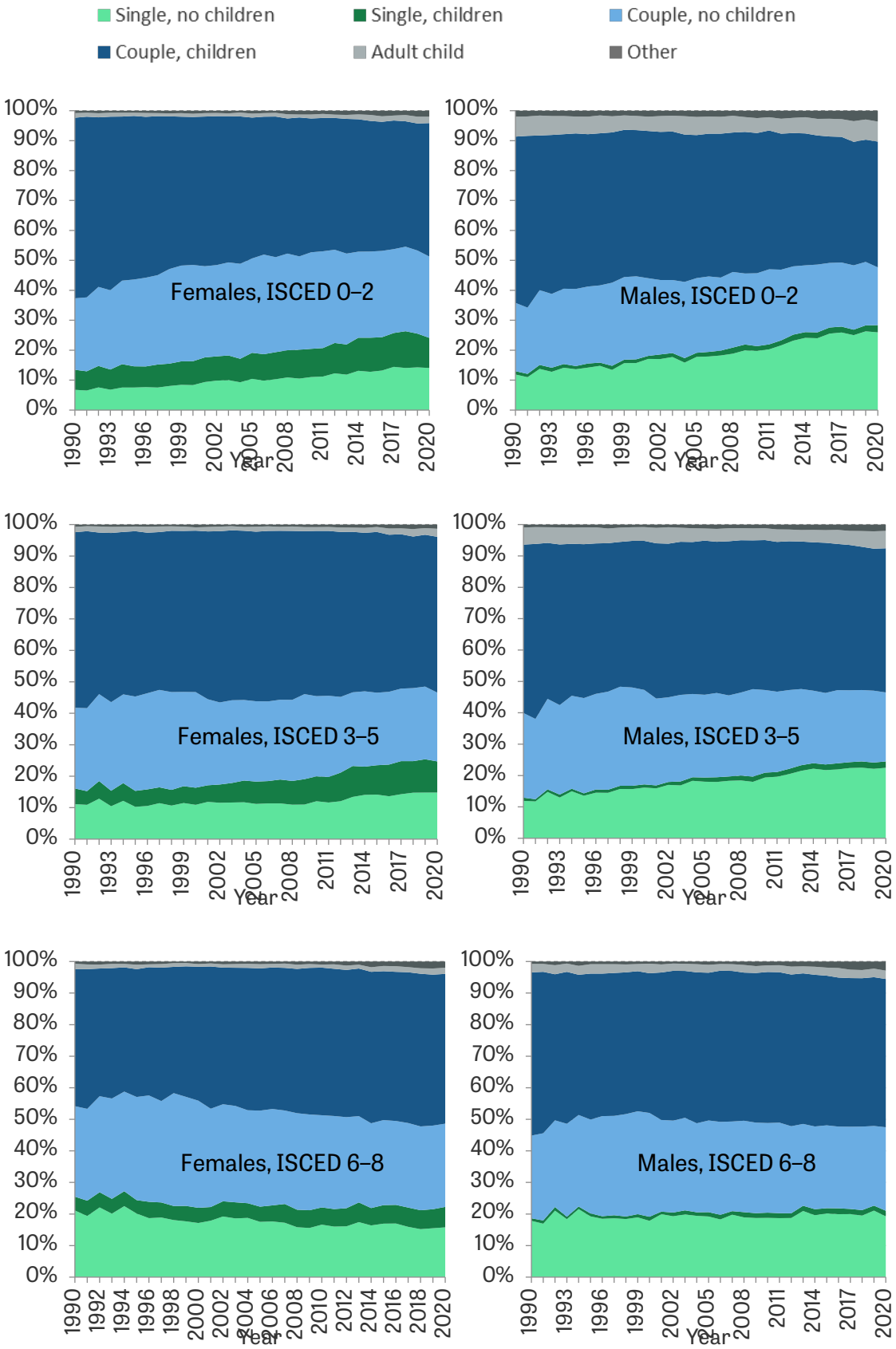
Notes: Own calculations using the EBB. Sample is individuals aged 25–60.

Figure 31. Share of individuals by position in the household, over time



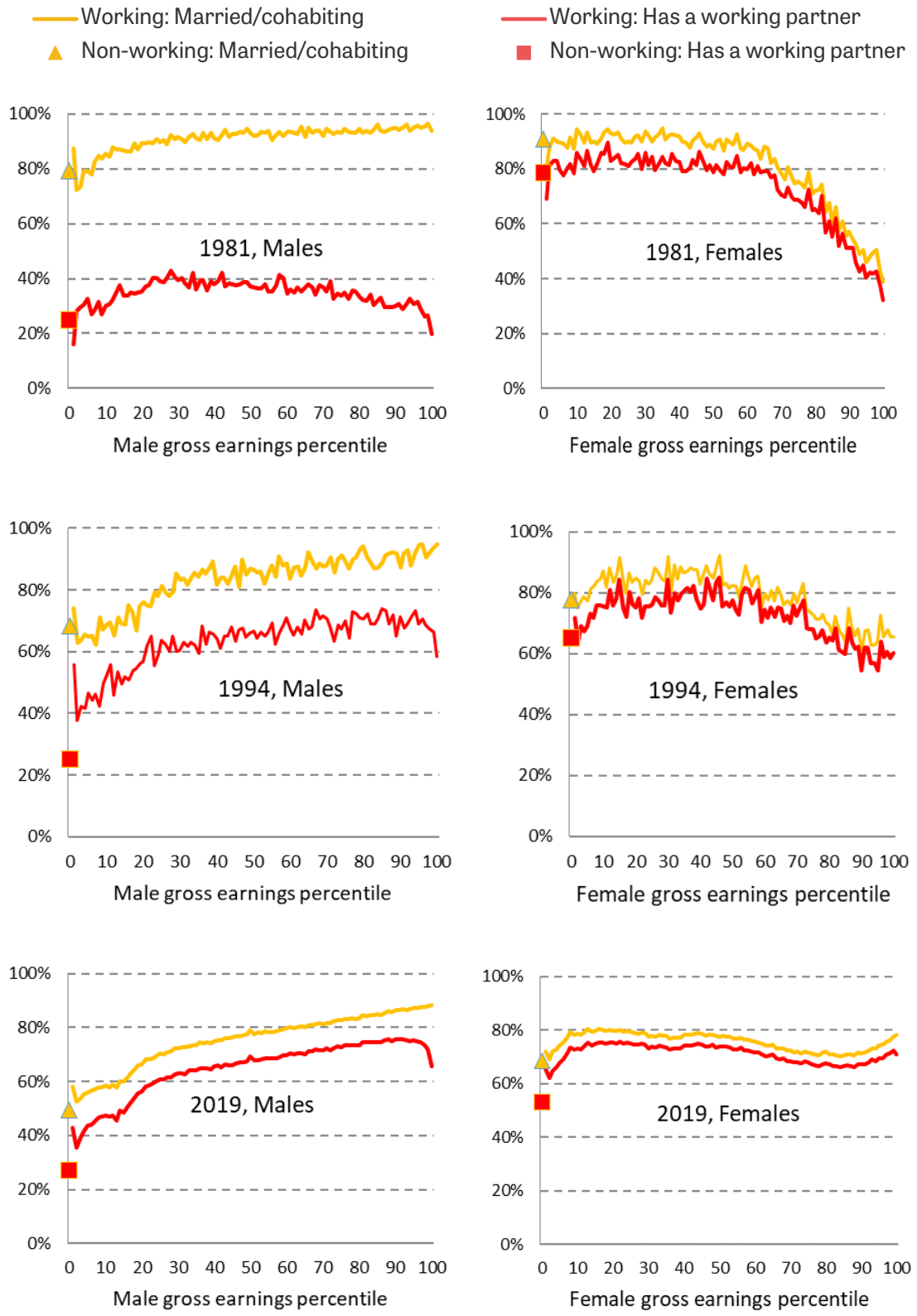
Notes: Own calculations using the EBB. Sample is individuals aged 25–60. 'Single, children' and 'couple, children' refer to dependent children only. Parents of adult children are categorised as 'other'. Before 1994 'adult child' refers only to adults living in a household whose head is their parent due to data limitations.

Figure 32. Share of individuals by position in the household, by sex and education, over time



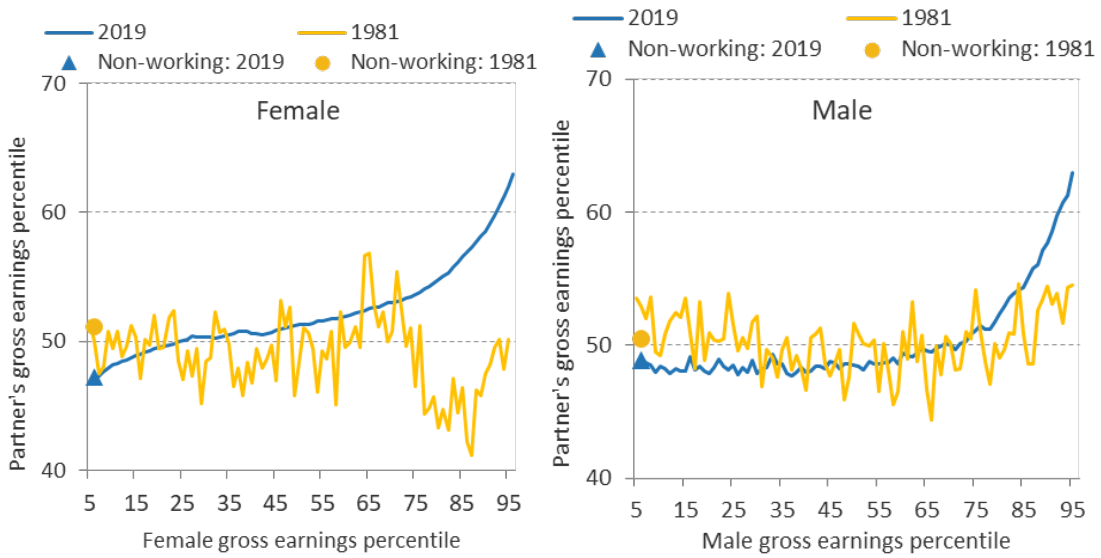
Notes: Own calculations using the EBB.

Figure 33. Share married/cohabiting and share with working partner, by sex and individual gross earnings percentile, selected years



Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). Sample is individuals aged 25–60. Married/cohabitating also includes civil partnerships. The proportion with a working partner is conditional on being married/cohabiting.

Figure 34. Mean gross earnings percentile of partner/spouse by individual's gross earnings percentile, selected years



Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). Sample is individuals aged 25–60. Married/cohabitating also includes civil partnerships.

6.2 Household earnings and disposable incomes among working households

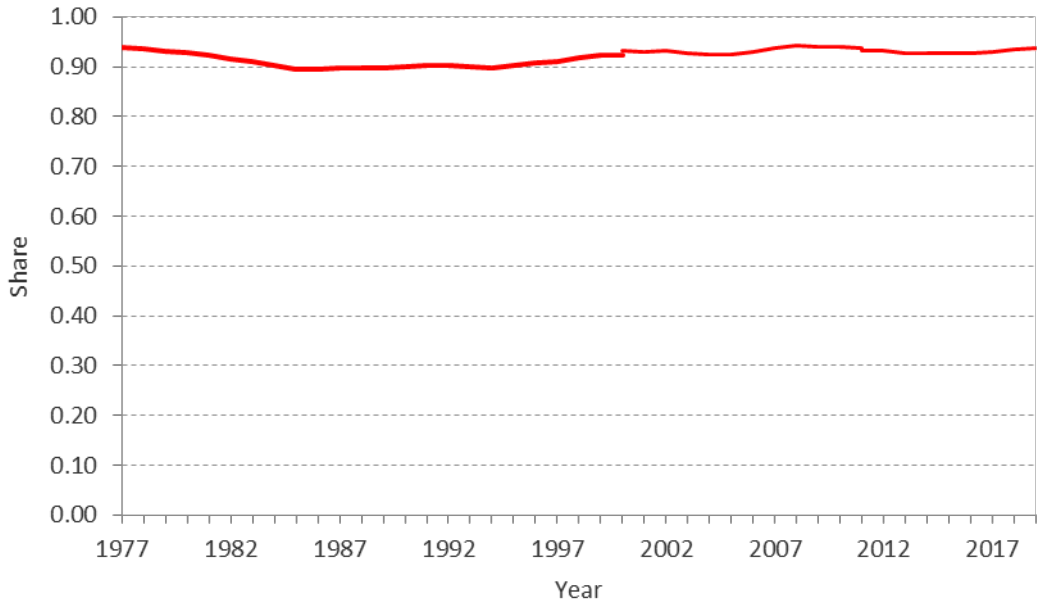
After an initial decline in the 1980s, the share of households with at least one working adult has been slightly increasing. From the end of the 1970s to the early 1980s, the share of households with at least one working adult declined, in part related to the recession of the early 1980s (Figure 35). But since the early 1990s, the share of households with at least one working adult has increased somewhat, related to the increasing share of women that work.

Household earnings and disposable household income have steadily increased over the last 40 years, though not for households without an adult in work. Figure 36 shows that both gross household earnings and disposable household income have increased over time for working households. For non-working households, which have substantially lower disposable income than working households, disposable income has hardly changed over time. Working households dominate the observed trend for disposable income of all households.

Growth in real gross household earnings and growth in household disposable income have followed very similar patterns. Both the annualised growth in real gross household earnings and that in household disposable income for working households by percentile are shown in Figure 37. Patterns and levels of growth in gross household earnings and disposable income are quite similar to each other in the periods 1981–94 and 1994–2007. In 2007–19, growth in disposable income was somewhat higher than household earnings growth. Since 1994–2007, growth in both income definitions is quite stable over the income distribution, unlike the individual earnings growth (in particular, of women) shown in Figure 19.

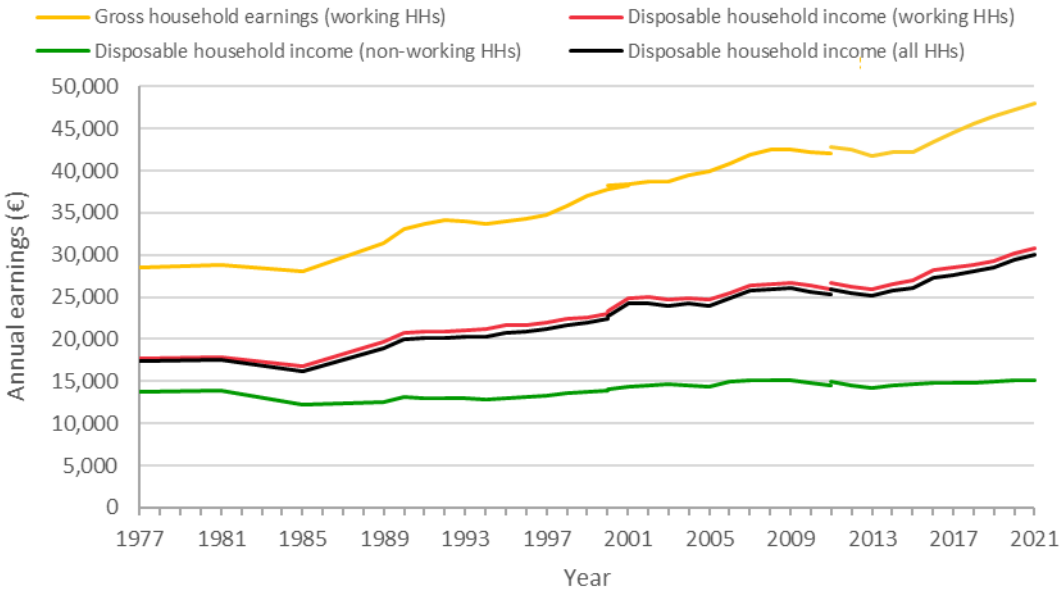
The COVID-19 crisis has hardly affected the growth in household incomes. Indeed, since the impact on employment rates was minor and relatively short-lived, and earnings per worker were hardly affected, the COVID-19 crisis hardly impacted household incomes.

Figure 35. Share of individuals in a working household, over time



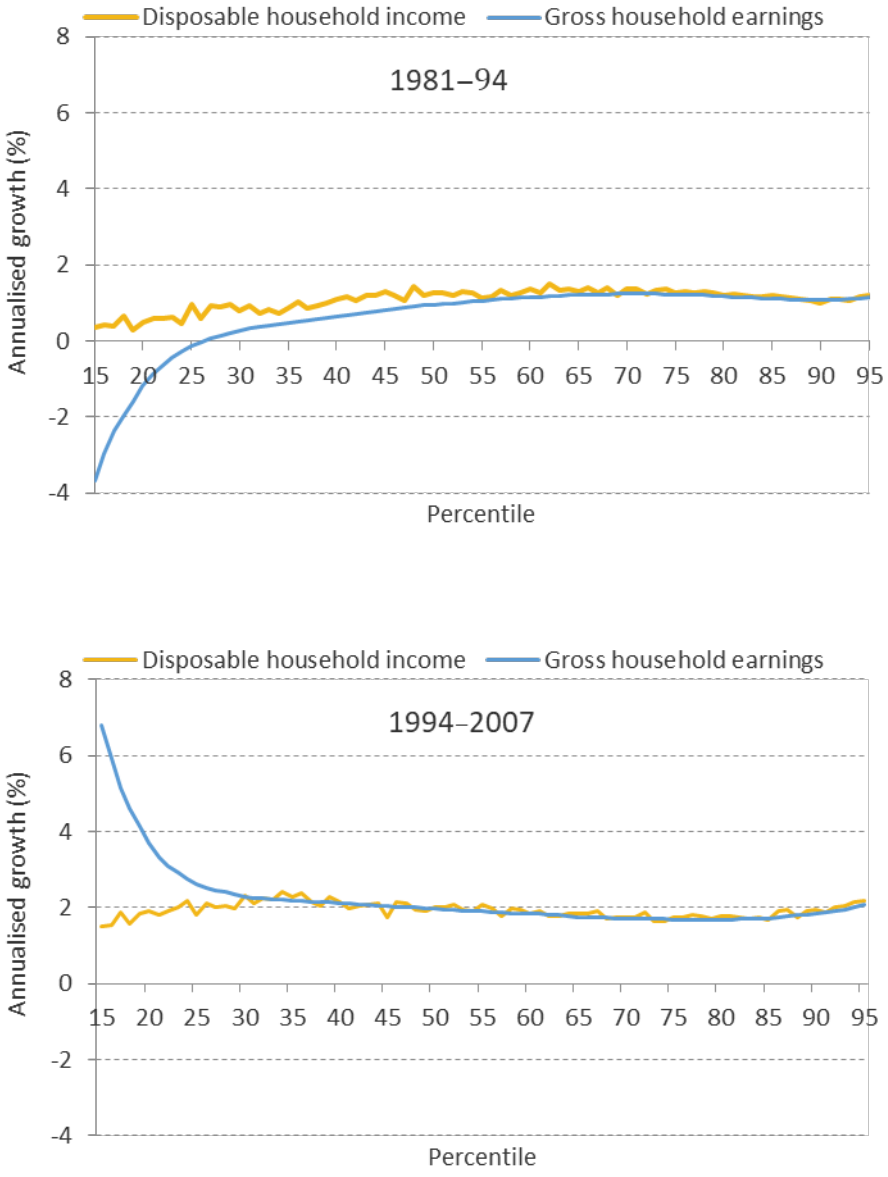
Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). Sample is individuals aged 25–60. A working household is defined as a household in which at least one adult is in work.

Figure 36. Median real gross household earnings and disposable household income among working households, over time



Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). 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.

Figure 37. Annualised growth in real gross household earnings and household disposable income for working households, by percentile, selected years



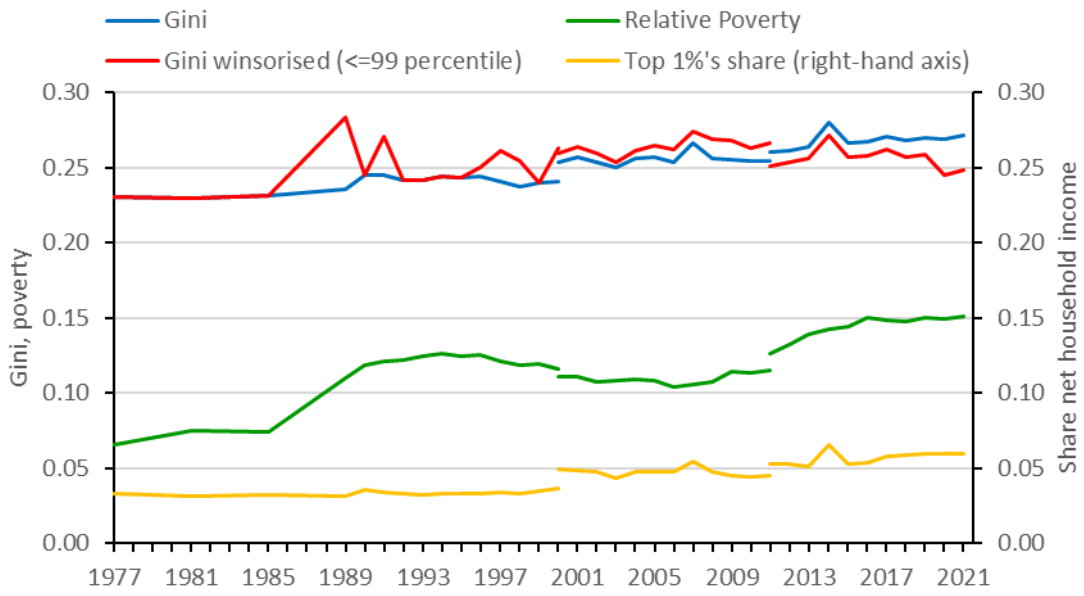
Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). Sample is individuals in working households. A working household is defined as a household in which at least one adult is in work. All incomes have been equivalised using the modified OECD equivalence scale.

6.3 Inequality in incomes among all households

There has been some increase in inequality in real equivalised disposable income across households and the top income shares, and a strong rise in relative poverty. In Figure 38, we show the long-term trends in inequality in (standardised) disposable household income, the top 1% income share and the share of individuals who live in relative poverty. The Gini coefficient has increased by 9% (accounting for the breaks in the series in 2000 and 2011). At the lower end, we observe a substantial increase in relative poverty from 7% to 15% (+122%). The top 1% income share has increased by 12%. The peaks in this top income share in 2007 and 2014 are due to temporary cuts in the tax on dividends, which gave, for example, the high-earning self-employed an incentive to pay out dividends in those years.

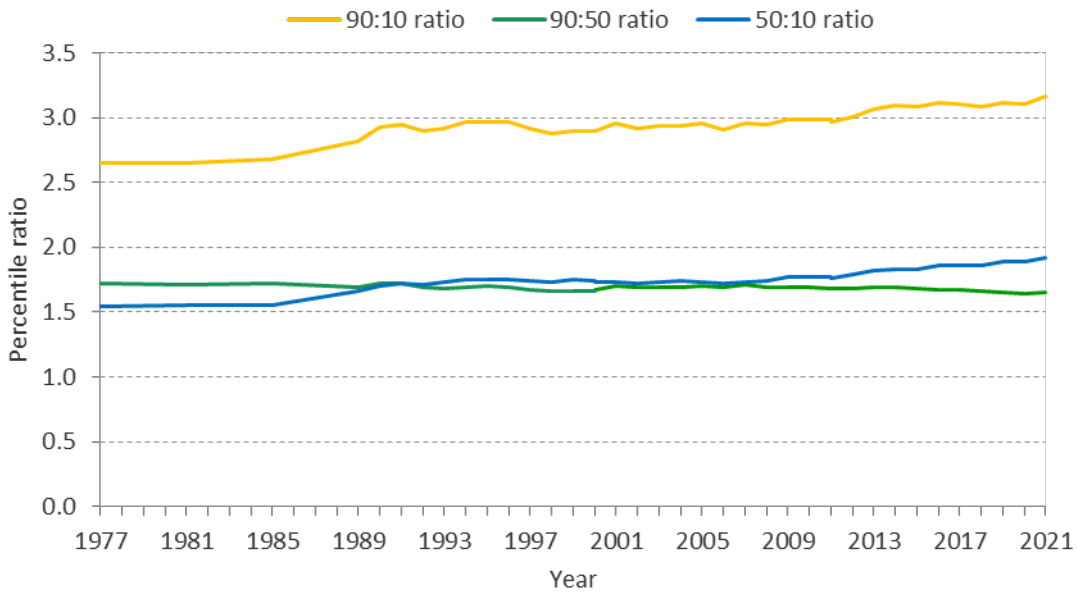
Inequality in disposable household income has primarily increased at the lower end of the distribution. Building on the Gini coefficients shown in Figure 38, which suggest a slight increase in disposable household income inequality, we show the 90:10, 90:50 and 50:10 ratios in Figure 39. These measures show more clearly what has happened in the lower and upper parts of the distribution of disposable household income. We observe that the 90:10 and 50:10 ratios have increased somewhat over time. The 90:50 ratio is relatively stable over time. Taken together, this suggests that inequality has primarily increased at the lower end of the income distribution, which relates to the increasing poverty rates observed in Figure 38.

Figure 38. Gini, relative poverty and top 1% share of net household income for all households, over time



Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). The inequality measures are based on incomes measured net of taxes and benefits but before housing costs have been deducted. The relative poverty rate is defined as the proportion of people living in households with less than 60% of contemporaneous median income before the deduction of housing costs. All incomes have been equivalised using the modified OECD equivalence scale. Breaks in the series in 2000 and 2011.

Figure 39. Percentile ratios of disposable household incomes for all households, over time



Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). The inequality measures are based on incomes measured net of taxes and benefits but before housing costs have been deducted. All incomes have been equivalised using the modified OECD equivalence scale. Breaks in the series in 2000 and 2011.

7. Immigrants and natives

Inequality by migration background is an important topic in the Netherlands. Although the Netherlands is often considered to be a country where inequality is relatively low, there are substantial differences when it comes to gender (see the previous sections) and migration background (Jongen et al., 2019, 2020; Dagevos et al., 2020).

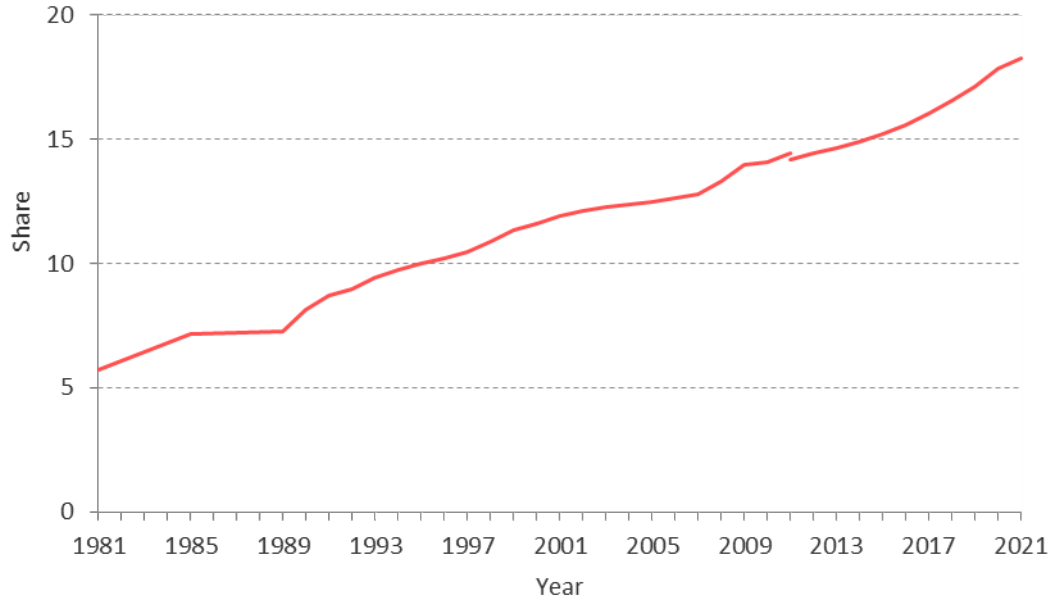
The issue is becoming increasingly relevant for Dutch society, as the share of migrants in the population is steadily increasing. Figure 40 gives the share of immigrants in the population aged 25–60. We see a steady increase in the share of immigrants in the population. Most of this growth has been in so-called non-Western immigrants (broadly speaking, immigrants from Africa, Latin America and Asia), see Dagevos et al. (2020). The main countries of origin for non-Western immigrants are from Türkiye, Morocco, Surinam and the Antilles and Aruba.

The increase in the share of immigrants was more pronounced at the lower end of the income distribution, which has contributed to the increase in inequality at the bottom of the income distribution. Figure 41 shows the share of immigrants by disposable income percentile in 1994, 2007 and 2019. Although the share of immigrants has increased in all parts of the income distribution, the rise was the most pronounced at the bottom of the income distribution. This has contributed to the (moderate) increase in income inequality.

There is a persistent gap in relative poverty between immigrants and natives. Figure 42 shows that immigrants are about three times as likely to live in relative poverty as natives, and this factor has remained pretty constant over time.

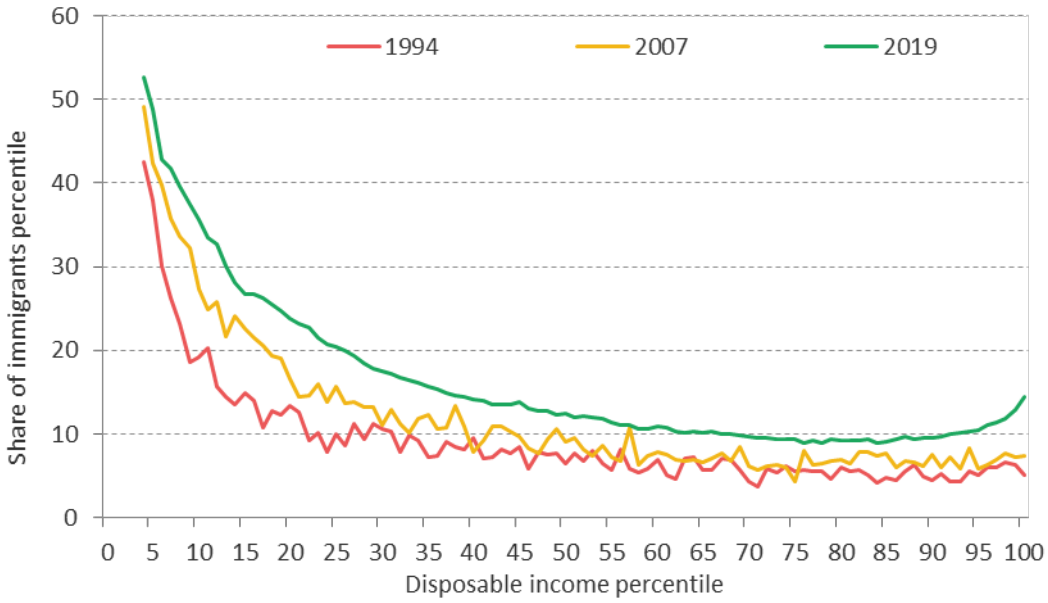
The lower disposable income of immigrants relative to natives is driven by their lower education level, lower employment rate and lower earnings. Although the gap to natives in terms of education is smaller for women than for men, the gap in employment rates is bigger for women (Figure 43). Differences in hours per week are modest, and working immigrant women actually work more hours per week than native women. Overall, the gap to natives in earnings is smaller for women than for men.

Figure 40. Share of immigrants in the population 25–60



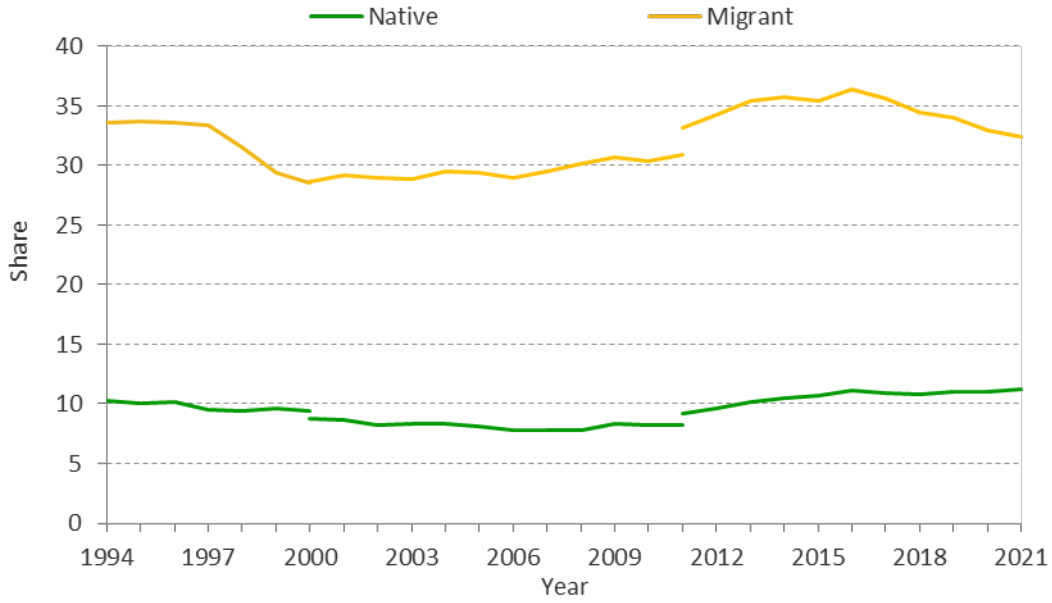
Notes: Own calculations using the EBB. Share of (first generation) immigrants in the population aged 25–60. Break in the series in 2011.

Figure 41. Share of immigrants in population, by disposable income distribution over time



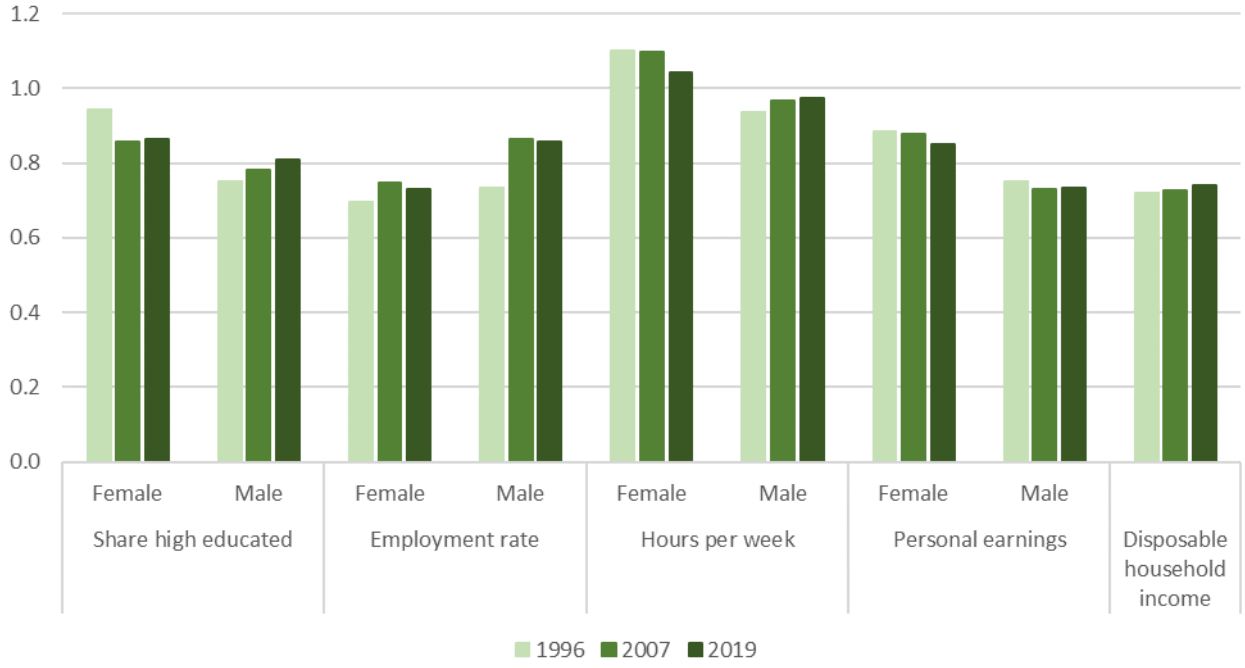
Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19).

Figure 42. Share in relative poverty, immigrants and natives, 26–50 years of age, 1994–2019



Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). Breaks in the series in 2000 and 2011.

Figure 43. Outcomes immigrants relative to natives, ages 25–60, 1996-2019



Notes: Own calculations using the EBB, the IPO (1996 and 2007) and the integral income files (2019). Individuals aged 25–60. Natives are normalised to 1. Earnings and incomes are ratios of medians. Earnings are only of those that work.

8. References

Bettendorf, L., Jongen, E. and Muller, P., 2015. Childcare subsidies and labour supply – Evidence from a large Dutch reform. *Labour Economics*, *36*, 112–23.

Bosch, N. and van der Klaauw, B., 2012. Analyzing female labor supply – Evidence from a Dutch tax reform. *Labour Economics*, *1*(3), 271–80.

Caminada, K., Jongen, E., Bos, W., van den Brakel, M. and Otten, F., 2021. *Inkomen Verdeeld: Trends 1977–2019* (in Dutch). Statistics Netherlands/Leiden University, Heerlen/Leiden. [link]

CPB, 2018. Arbeidsparticipatie, CPB Notitie. Centraal Planbureau (in Dutch). https://www.cpb.nl/sites/default/files/omnidownload/CPB-Notitie-20dec2018-Arbeidsparticipatie.pdf

CPB, 2021. Dalende arbeidsparticipatie van jonge mannen – een vooronderzoek, CPB Notitie, Centraal Planbureau (in Dutch). https://www.cpb.nl/sites/default/files/omnidownload/CPB-Notitie-Dalende-arbeidsparticipatie-van-jonge-mannen-een-vooronderzoek.pdf

Dagevos, J., Jongen, E. and Muns, S., 2020. Promising policies for integration on the labour market. Netherlands Bureau for Economic Policy Analysis and Netherlands Institute for Social Research.
https://www.cpb.nl/sites/default/files/omnidownload/English_Summary_Promising_policies_for_integration_on_the_labour_market.pdf

De Boer, H.-W. and Jongen, E., 2020. Analysing tax-benefit reforms in the Netherlands using structural models and natural experiments. IZA Discussion Paper 12892.
https://docs.iza.org/dp12892.pdf

Euwals, R., van Vuuren, D. and Wolthoff, R., 2010. Early retirement behaviour in the Netherlands: evidence from a policy reform. *De Economist*, *158*, 209–36.

Euwals, R., Knoef, M. and van Vuuren, D., 2011. The trend in female labour force participation: What can be expected for the future? *Empirical Economics*, *40*, 729–53.

Jongen, E., Bolhaar, J., Elk, R. van, Koot, P. and van Vuuren, D., 2019. Inkomensongelijkheid naar migratieachtergrond. CPB Policy Brief 2019/06 (in Dutch).
https://www.cpb.nl/sites/default/files/omnidownload/cpb-policy-brief-2019-06-inkomensongelijkheid-naar-migratieachtergrond_0.pdf

Jongen, E., Muns, S. , Thijs, C., de Boer, H.-W., Dagevos, J., Dillingh, R., Huijnk, W., Karpinska, K. Klaver, J., Schaper, J., de Wilde, T. and Zulkarnian, A., 2020. Kansrijk integratiebeleid op de arbeidsmarkt. Netherlands Bureau for Economic Policy Analysis and Netherlands Institute for Social Research.

https://www.cpb.nl/sites/default/files/omnidownload/Kansrijk_integratiebeleid_op_de_arbeidsmarkt2.pdf

Jongen, E., Ebregt, J. and Verstegen, L., 2021. IZA COVID-19 crisis response monitoring, Netherlands (December 2021). IZA. https://www.iza.org/wc/files/downloads/iza__crisismonitor_countryreport_nl_202112.pdf

Koning, P. and Lindeboom, M., 2015. The rise and fall of disability insurance enrollment in the Netherlands, *Journal of Economic Perspectives*, *29*(2), 151–72.

Knoef, M., Been, J., Caminada, K., Goudswaard, K. and Rhuggenaath, J., 2017. De toereikendheid van pensioenopbouw na de crisis en pensioenhervormingen, Netspar Design Paper 68. https://www.netspar.nl/assets/uploads/Netspar-Design-Paper-68-WEB.pdf

Lindeboom, M. and Montizaan, R., 2020. Pension reform: Disentangling retirement and savings responses, *Journal of Public Economics*, *192*(3), 104297.

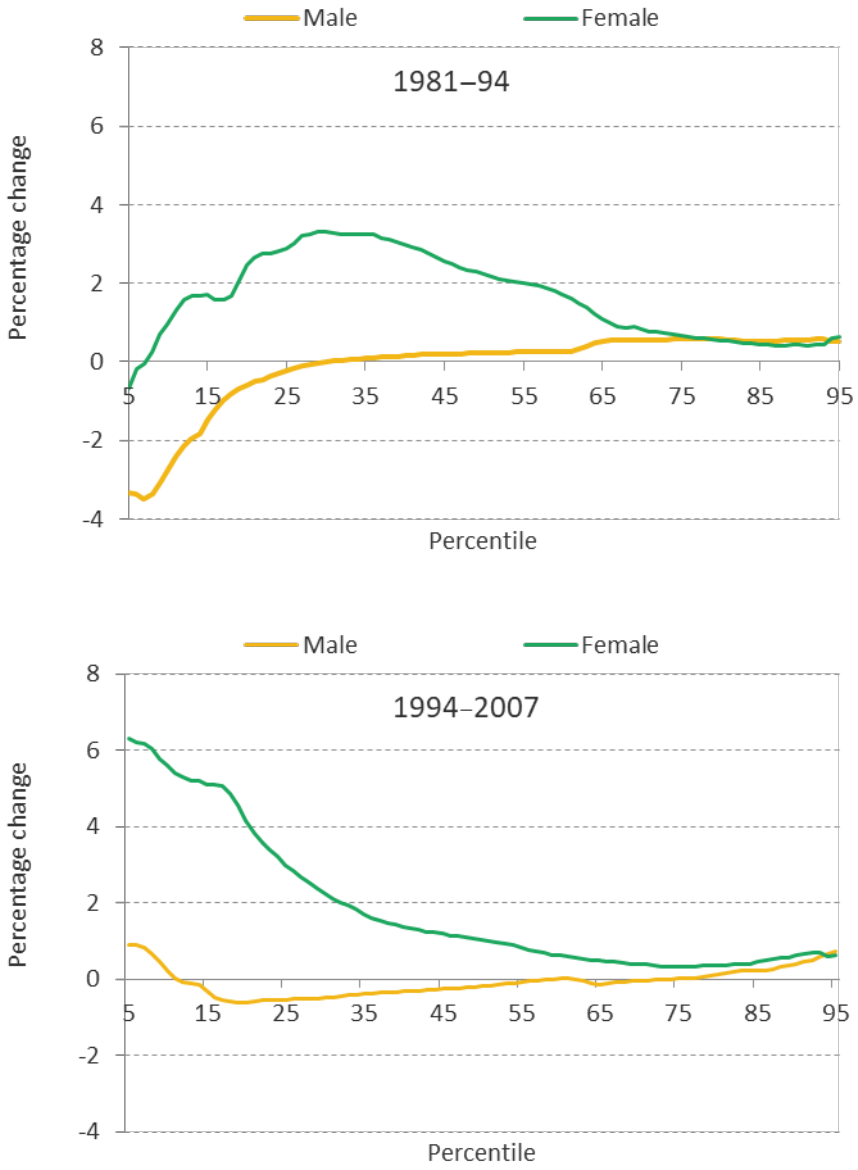
OECD, 2023. Labour Force Statistics. Paris: OECD. https://www.oecd.org/sdd/labour-stats

Rabaté, S., Jongen, E. and Atav, T., 2023. Increasing the retirement age: policy effects and underlying mechanisms, *American Economic Journal: Economic Policy*, forthcoming. https://www.aeaweb.org/articles?id=10.1257/pol.20210101

Statistics Netherlands and Social Cultural Office, 2020. *Emancipatiemonitor 2020*, Statistics Netherlands (in Dutch). https://www.cbs.nl/nl-nl/publicatie/2020/50/emancipatiemonitor-2020

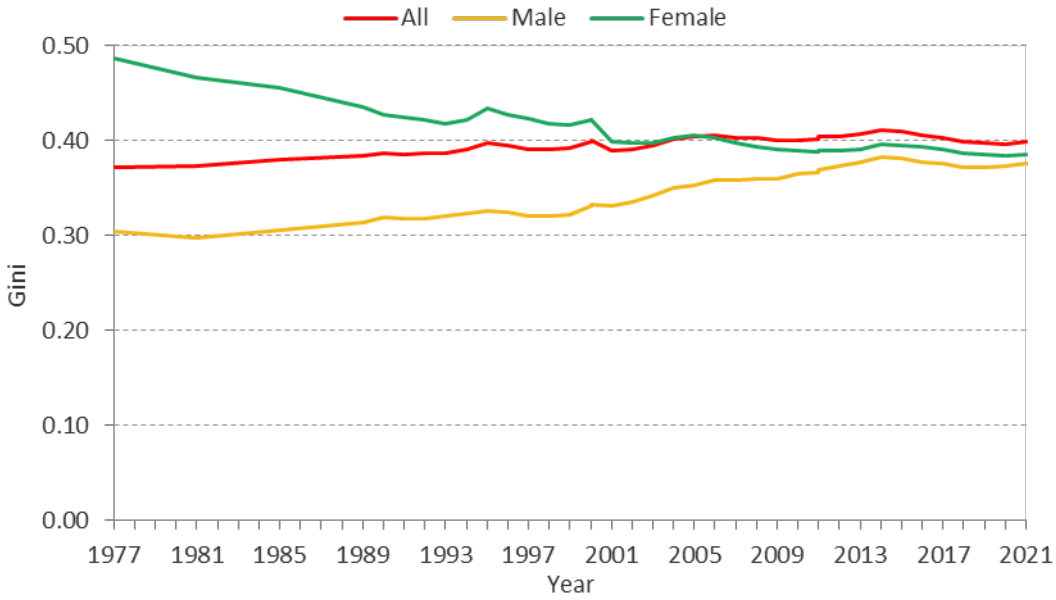
9. Appendix: additional charts

Figure 44. Annualised growth in real wages by wages percentile, overall and by sex, selected periods



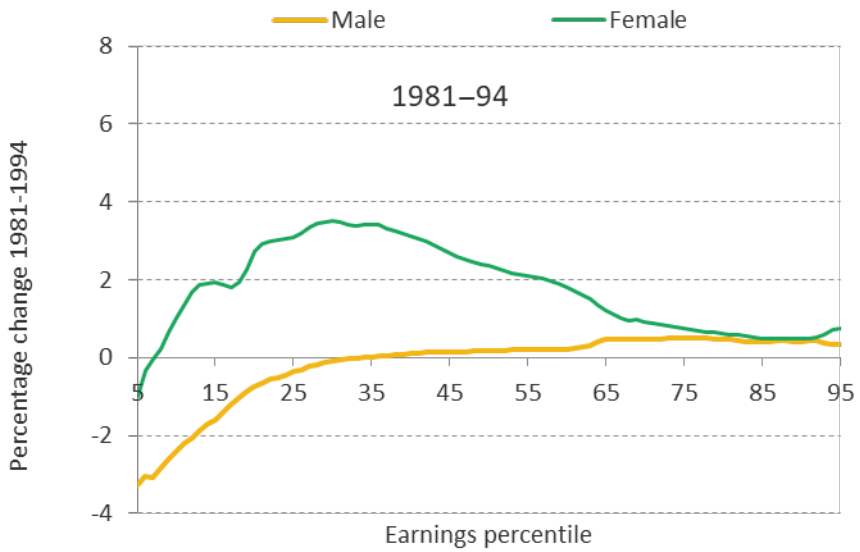
Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19).

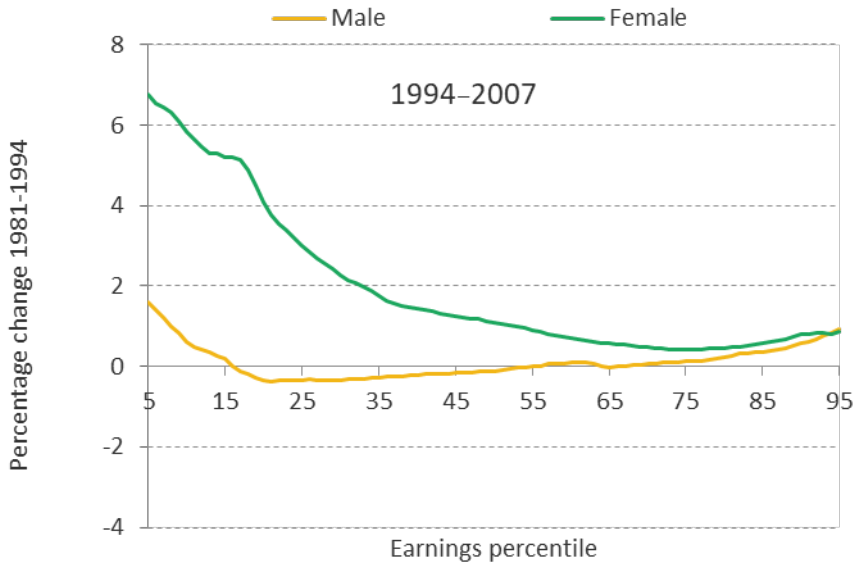
Figure 45. Gini coefficient of gross individual earnings, overall and by sex, over time



Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19). Breaks in the series in 2000 and 2011.

Figure 46. Annualised growth in gross earnings by earnings percentile, overall and sex, selected periods





Notes: Own calculations using the IPO (1977–2011) and the integral income files (2011–19).