

Employment and labour markets

Low-paid jobs: Employment trends and impact of minimum wage policies



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Executive summary

Introduction

This report examines trends in employment in low-paid jobs and whether minimum wage policies influenced the employment structures of the EU Member States between 2001 and 2024. While most existing research focuses on the local effects of minimum wage increases on employment levels, this report adopts a broader perspective, analysing how such policies may influence the distribution of employment across sectors and occupations. The basic unit of observation used in the analysis is the job (defined as a combination of occupation and sector), allowing the whole employment structure to be captured.

Policy context

Minimum wage policy has gained prominence across Europe, particularly since the mid-2010s. Following a period of wage moderation after the 2008 global financial crisis, many Member States implemented substantial increases in minimum wages. At EU level, this shift culminated in the adoption of the Minimum Wage Directive in 2022; the directive provides a framework for setting adequate wage floors and wider collective bargaining coverage.

At the same time, labour markets have undergone significant structural changes driven by a series of factors, including technological progress, globalisation, demographic shifts and institutional reforms. Empirical evidence suggests that the combined effects of these forces have led to a general upgrading of jobs in many Member States, alongside more limited episodes of polarisation in specific periods and Member States.

Minimum wage policies operate within this broader context and may interact with these structural drivers, potentially influencing not only wage levels but also the composition of employment through several channels, such as encouraging the reallocation of labour towards more productive firms and sectors and strengthening incentives for firms to invest in innovation and skills.

Key findings

- Low-paid jobs in Europe are heavily concentrated in a limited number of sectors and occupations. Among sectors, low-paid jobs are most prevalent in services, particularly accommodation and food services, administrative and support services, wholesale and retail trade, and human health and social work. Within these sectors, low-paid jobs are especially common in low-skilled occupations, such as cleaners and helpers, labourers, personal service workers, food preparation assistants and sales workers.
- Eight of the largest low-paid jobs (in terms of total employment) were selected for this study as representative of the low-paid segment of the labour market: retail sales workers, health and social care workers, hospitality personal service workers, manufacturing labourers, business services cleaners, retail labourers, personal service workers, and hospitality food preparation assistants. On average across Member States, between 2011 and 2024, these eight jobs grew in absolute terms (by 11.6 % in employment and 7.6 % in hours worked), but their shares of total employment and hours worked declined (– 2.5 % and – 5.2 %, respectively), indicating slower growth than better-paid jobs generally.
- Trends diverge markedly across jobs. The numbers of retail sales workers and manufacturing labourers declined in most Member States and periods, while for other jobs, particularly health and social care workers and hospitality food preparation assistants, numbers expanded. The overall decline in employment shares during 2011–2024 was largely driven by a reduction in the employment of retail sales workers, which was steady and broad-based over time, and in the employment of hospitality personal service workers, which was a more abrupt decline linked to structural changes related to the COVID-19 pandemic.
- Looking at the whole employment structure, the overall pattern between 2001 and 2024 points to employment upgrading, with strong growth in high-paid jobs. The largest losses were in middle-paid jobs rather than low-paid jobs, indicating a hollowing out of middle-paid jobs (denoting polarisation) alongside upgrading.

- Changes in the employment structure vary widely among Member States and over time, despite widespread rapid increases in minimum wages, indicating that the latter are only one of several drivers. In particular, employment in low-paid jobs appears to be closely linked to economic cycles, with sharp contractions occurring during the Great Recession (2008–2010) and in the aftermath of the COVID-19 pandemic, while high-paid jobs are generally more resilient.
- An econometric analysis provides some evidence of an upgrading of the employment structure, associated with increases in national minimum wages. A 1 % yearly increase in the real minimum wage level is associated with a reduction of around 0.1 % in the employment share of the bottom job–wage quintile (the lowest-paid jobs, which account for 20% of employment) and an increase of about 0.06 % in the employment share of the jobs in the top quintile (the highest-paid jobs, which account for 20% of employment).
- While wage inequality and the incidence of low-paid work declined overall across the EU over the period, the analysis does not identify a systematic link with minimum wage developments. However, minimum wage increases are associated with a reduction in wage inequality at the lower end of the wage distribution.
- Low-paid jobs are particularly vulnerable to economic shocks, and the structural changes triggered by the COVID-19 pandemic contributed to lasting reductions in the employment shares of some low-paid jobs. Minimum wage policies should therefore be complemented by broader countercyclical measures to sustain employment and income during downturns, and by structural policies that support transitions out of declining low-paid jobs during phases of structural change.
- Minimum wage policy does not operate in a vacuum: its employment effects are mediated by the broader economic and structural context, including the macroeconomic cycle, sociodemographic trends, exposure to trade and technological change, labour market institutions, sectoral composition and the scope for productivity gains. Policy design should therefore calibrate both the level and the pace of increases to the underlying sectoral and labour market conditions, using indicators that capture the exposure to minimum wage changes across occupations, sectors, regions and other relevant dimensions.
- Minimum wages are an effective instrument for compressing the lower tail of the wage distribution, while their effects on broader inequality measures are weaker and more country-specific. Expectations of what minimum wage policy can deliver should be calibrated accordingly, and complementary instruments – such as taxation, transfers and collective bargaining – remain essential for addressing wider distributional objectives.
- Complementary policies could help firms and workers adjust to higher wage floors. Productivity-enhancing investments in skills, technology and work organisation can help firms absorb higher wage floors without reducing employment, while active labour market policies can support workers in transitioning out of declining low-paid jobs into higher-paid occupations.

Policy pointers

- The concentration of low-paid jobs in a limited set of sectors and occupations highlights the potential of targeted policy interventions in these areas, which can reach a large share of the low-paid workforce.
- Evaluation of minimum wage policies should go beyond aggregate employment effects and consider changes in employment composition, including shifts across wage segments, sectors, occupations and contract types, in addition to impacts on headcount employment and hours worked.

Introduction

In recent years, minimum wage policy has received growing attention across Europe. National minimum wage levels evolved relatively slowly during the early 2000s, often lagging behind average wage growth ⁽¹⁾. The turning point came in the mid-2010s, as the euro area debt crisis eased and fiscal consolidation pressures diminished, allowing for policy priorities to shift towards wage adequacy and social inclusion.

In the following years, several EU Member States implemented substantial increases in their national minimum wages. For example, Spain raised its minimum wage by 22.3 % in 2019, while in October 2022 Germany introduced a significant increase of 22.2 % compared with January of the same year, partly in response to rising living costs following Russia's invasion of Ukraine. These adjustments were often accompanied by institutional reforms aimed at ensuring the adequacy and regular review of minimum wages, including the creation of independent minimum wage commissions in Germany and Ireland.

At the European level, these national developments have been accompanied by a broader policy debate on fair compensation for workers, culminating in October 2022 with the adoption of the EU directive on adequate minimum wages (from now on referred to as the Minimum Wage Directive), which, among other principles, requires Member States to use indicative reference values, such as national median or average wages, to guide their assessment of the adequacy of minimum wage levels ⁽²⁾.

Eurofound has played an active role in monitoring and analysing minimum wage policies in the EU-27, including researching non-compliance with national minimum wages (Eurofound, 2023c) and the relationship between national minima and collectively agreed wages (Eurofound, 2025a). In addition, Eurofound has tracked changes in the employment structure through the European Jobs Monitor ⁽³⁾. In this context, the employment structure refers to the way employment is distributed across different segments of the labour market, for example by wage level, skill requirements, occupation and sector. Within the European Jobs Monitor framework, employment is

analysed at a detailed level, where a job is defined as a specific occupation within a specific sector, such as sales assistants in the wholesale and retail trade or cleaners and helpers in accommodation and food services. Changes in the composition of employment are then assessed by grouping these jobs by key dimensions, such as wage level or required skill level, and examining how their distribution evolves over time. This approach enables assessment of where employment is growing, whether in better-paid and higher-skilled jobs or lower-paid and lower-skilled ones.

Two main patterns have emerged from this strand of research. On the one hand, there is evidence of a general upgrading of jobs in many Member States, meaning a shift towards high-skilled and high-paid jobs (Eurofound, 2015, 2025b). For example, this has been the case in Ireland, Luxembourg, Poland and Sweden. At the same time, for some Member States and periods there is evidence of polarisation, where labour markets grow at the top and bottom of the job distribution but shrink in the middle (Eurofound, 2015, 2025b). Such a pattern is observed, for example, in Belgium and the Netherlands, but, in each case, employment growth has been greater in the top rather than the bottom job-wage quintile. The coexistence of these two phenomena – upgrading and polarisation – indicates that changes in employment structures across Member States are more similar at the top than at the bottom of the job-wage distribution.

This report brings together these two strands of Eurofound's work, combining a description of employment trends within the employment structure (but with a special focus on jobs and wages at the lower tail of the job-wage distribution) with insights on the impact of minimum wage developments on low-paid jobs and on changes in the employment structure between 2001 and 2024. Therefore, this report makes two main research contributions: one, it provides a detailed picture of the employment evolution of selected low-paid jobs across Member States; and, two, it provides an empirical analysis of the impact of minimum wages on employment structures, using the job as the unit of analysis, which has few precedents in the literature.

⁽¹⁾ This report uses the term national minimum wages, rather than statutory minimum wages, to refer to those cases where a single wage floor exists across the whole country (apart from whatever subminima may exist). National is preferred to statutory, since there are two Member States (Belgium and Estonia) where the government does not set the legal minimum by law, since this is decided via bipartite negotiations at the peak level between the social partners.

⁽²⁾ Directive (EU) 2022/2041 of the European Parliament and of the Council of 19 October 2022 on adequate minimum wages in the European Union (OJ L 275, 25.10.2022, p. 33, ELI: <http://data.europa.eu/eli/dir/2022/2041/oj>).

⁽³⁾ <https://www.eurofound.europa.eu/en/surveys-and-data/european-jobs-monitor>.

Previous research on the impact of minimum wage policies has primarily concentrated on local effects, typically assessing whether a specific minimum wage hike in a given year had negative consequences for overall employment levels or for particular groups, such as young or low-skilled workers. However, these analyses tend to focus narrowly on the labour market outcomes of directly affected workers without considering broader structural and long-term effects, such as the change in the distribution of employment across sectors and occupations. This report aims to fill this gap by shifting the focus from local employment effects to the influence of minimum wage policies on the overall structure of employment, meaning the distribution of employment across occupations and sectors, with a special focus on those in the lower segment of the wage distribution.

One of the key hypotheses examined is whether minimum wage policies might have played a role in counteracting the polarising effects of globalisation, technological change and other structural forces, by acting as a potential lever for job upgrading. Specifically, the idea is that, by raising the cost of low-skilled labour, minimum wages may have prompted employment shifts towards more capital-intensive or higher-productivity jobs. These questions were investigated in a previous Eurofound study (Eurofound, 2014a), which found no compelling evidence that minimum wages played a decisive role. However, it is important to note that the time frame analysed (1995–2007) coincided with a period of modest minimum wage increases. In contrast, the present report covers a longer period, from 2001 to 2024, which encompasses the phase of large increases that started in the mid-2010s.

For reasons of data availability, the primary focus of this report is the Member States that had a national minimum wage in place during 2001–2024. Over this period, Austria, Denmark, Finland, Italy and Sweden had no national minimum wage at any point, while other Member States introduced one, namely Croatia in 2008, Germany in 2015 and Cyprus in 2023. Member States without a national minimum wage, either because they have never introduced one or did not have one during part of the period considered, are included in the analysis whenever the focus is describing the change in low-paid jobs. Once the focus moves to empirically assessing the link between minimum wages and changes in the employment structure, these Member States are not always included in the analysis due to data limitations.

The report is structured as follows.

Chapter 1 sets the context of the analysis. Specifically, it describes the main employment structure dynamics observed in Europe in the last two decades, such as polarisation and upgrading, together with a review of the main factors that might have driven them, including trade integration, technology, demographic changes and variations in the institutional setting. It then reviews how minimum wage policies have evolved across Member States and discusses the empirical literature and theoretical channels through which minimum wages can affect the composition of employment.

Chapter 2 describes the most common low-paid jobs in Europe and examines how their employment levels and working hours have varied between Member States and over time.

Chapters 3 and 4 adopt a more analytical approach, involving the use of regression analysis, to address some of the report's main research questions.

Chapter 3 targets two core issues: first, the effect of national minimum wages on employment in low-paid jobs; and, second, their effect on the employment structure across the wage distribution, analysed by job–wage quintiles. Both dimensions are considered because, although the primary focus is on low-paid jobs, it is necessary to test the hypothesis that, by raising the cost of lower-skilled labour, increases in the minimum wage may encourage a reallocation from lower- to higher-paying jobs.

Chapter 4 addresses the question of whether national minimum wages affected (1) wage inequality, measured by the Gini index and wage ratios; and (2) the share of low-paid workers, measured as the share of workers earning below two-thirds of the national median wage. These metrics provide an assessment of the quality of employment in a labour market that is complementary to that provided by the jobs approach adopted in Chapter 3.

Chapter 5 presents the conclusions of the report, including policy pointers.

1 Setting the context

This chapter comprises a literature review that sets the context for the rest of the report. It first reviews the main developments in employment structures across Member States over the past two decades, that is, the documented patterns of upgrading and polarisation, and the structural forces most commonly invoked to explain them, including technological change, globalisation, demographic shifts and institutional reforms. It then turns to minimum wage policy, tracing how minimum wage-setting has evolved in Member States over the same period. The final section reviews the empirical literature on the effects of minimum wages on employment structures and, in doing so, outlines the main theoretical channels through which minimum wages can influence the composition of employment, from direct effects on the cost of low-skilled labour to indirect channels operating through productivity, capital intensity and the reallocation of workers across firms and sectors.

Developments in employment structures in the last two decades

Rapid technological progress, widespread globalisation, changes in demography and labour market institutions, and climate change have significantly transformed labour markets across Europe. These major global trends have reshaped the way businesses operate, influenced income and employment distribution and altered the very nature of work. This has created new challenges for workers, particularly those at the lower end of the wage distribution.

To examine how these broad transformations manifest themselves within labour markets, the literature typically analyses changes in the distribution of jobs, which are defined either as occupations or as occupation–sector cells. What emerged from these studies is that, as a result of these major global trends, the employment structures of advanced economies have undergone profound transformations, marked by a decline in industrial jobs and a rise in service sector employment. These shifts have been accompanied by two distinct changes in the composition of the labour force. The first, often described as upgrading of the employment structure, is characterised by a steady increase in demand for high-paid, high-skilled jobs alongside a decline in low-paid jobs, resulting in a more qualified workforce overall (Eurofound, 2015, 2025b). The second pattern, known as polarisation of the employment structure, shows simultaneous growth in both high- and low-paid jobs, with a decline in middle-wage jobs (Eurofound, 2015). This hollowing

out of the labour market is frequently associated with routine-biased technological change and rising global competition (Autor et al., 2003, 2006).

From a global perspective, the analysis by Torrejón Pérez et al. (2025) reveals that upgrading has been the most prevalent pattern of structural change in the early 21st century. In recent decades, the majority of European countries as well as other countries such as Argentina, Brazil, Canada, Chile, India, Mexico and Russia have experienced various forms of upgrading, including shifts towards high-paid jobs or increases in middle-income jobs. While some instances of job polarisation do appear, they tend to be limited to the period following the global financial crisis in 2008 or to specific isolated time frames. Only in a few cases (most notably in France, South Korea and the United States) does polarisation emerge as a consistent long-term trend.

Across Europe, developments in employment structures over the past decade have been shaped by a mix of economic cycles and country-specific factors, but a general pattern of job upgrading has prevailed, particularly during times of economic expansion (Pérez et al., 2023). Employment gains have tended to be concentrated in better-paid jobs, especially in both the private and public service sectors. Although periods of crisis, such as the global financial crisis and, more recently, the COVID-19 pandemic, brought about some disruptions, their long-term impact on structural employment trends has been uneven. For instance, during the financial crisis, job losses were concentrated in the middle of the wage distribution, particularly in the construction and manufacturing sectors, which traditionally have higher male employment. In contrast, public service employment remained relatively resilient and continued to grow, supporting overall job upgrading. More recently, the COVID-19 crisis reinforced this trend, with losses in lower-paid, in-person service roles and gains in better-paid digital and professional occupations.

A more detailed analysis of occupational and sectoral changes in the 2023 European Jobs Monitor report provides further evidence of this upgrading dynamic (Eurofound, 2024b). Between 2011 and 2022, employment in the EU-27 increased by over 13 million workers, with more than 9 million of these additional workers concentrated in the top job–wage quintile, pointing to broad-based upgrading in most Member States, with exceptions such as Bulgaria and Italy. Notably, women’s employment grew faster than men’s, especially in mid- and high-paying roles. The service sector has been the primary engine of employment

growth, though manufacturing has also contributed, particularly through high-paying occupations like engineering and business-related professions. Furthermore, while the overall trend has favoured standard forms of employment, non-standard work, such as part-time and temporary jobs, has also become more prevalent, even in better-paid positions. Indeed, around one-third of new top-quintile jobs over the past decade have been non-standard.

Analyses of job polarisation often focus on changes in employment shares across the job–wage distribution, though technically this captures wage polarisation rather than job polarisation. While this approach provides useful insights, it offers only a partial view. To fully grasp the nature of structural changes in the labour market, it is essential to go beyond employment growth by wage category and consider additional dimensions. This means examining not only how many jobs are being created but also what types of jobs they are. Aspects such as job quality, contractual arrangements and required skill levels are critical for understanding the real impact of occupational change on workers' lives. The literature has highlighted significant variations across several of these dimensions.

- Decline in middle-skilled jobs.** Between the 1990s and the mid-2020s, the share of middle-skilled occupations fell considerably across Member States and member countries of the Organisation for Economic Co-operation and Development (OECD) (Eurofound, 2025b; Green, 2019). Middle-skilled jobs broadly correspond to clerical roles, craft occupations, and plant and machine operators and assemblers (International Standard Classification of Occupations 2008 (ISCO-08) groups 4, 7 and 8), including positions such as truck drivers, machine operators, cashiers and secretaries. Over the same period, employment growth was modest in low-skilled jobs (ISCO-08 groups 5 and 9), driven by increased employment of workers in sales and services, while the share of employment in elementary occupations remained roughly constant. By contrast, sustained growth was registered in high-skilled jobs, namely managers, professionals, and technicians and associate professionals (ISCO-08 groups 1, 2 and 3). In the EU, this expansion has been driven in particular by professional occupations (e.g. engineering professionals and business and administration professionals); their employment share doubled from 11 % to 22 % between 1995 and 2023 in the 12 Member States with available data (Austria, Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain) and grew at an average annual rate of around 3 % in the EU-27 between 2011 and 2025 (Eurofound, 2025b). Overall, the employment shift in terms of skill requirements combines

elements of both upgrading and polarisation. The substantial decline in middle-skilled jobs and strong growth in high-skilled jobs point to clear upgrading, while the simultaneous, though more modest, increase in low-skilled employment reflects a degree of polarisation.

Contrary to expectation, this shift has not led to a proportional decline in middle-income households (Salvatori et al., 2019). Instead, income distribution has been reshaped. Many middle-income households now rely on high-skilled occupations, while traditional middle-skilled jobs are increasingly associated with lower-income outcomes. For example, Vaughan-Whitehead et al. (2016) argue that, in some European countries, this is the case for teachers, doctors and public administration employees. This indicates a shift in the link between job skill level and income status. High- and middle-skilled jobs no longer guarantee the level of economic security they once did, indicating greater instability in the demographic that traditionally held these types of job.

- Upgrading of non-pecuniary job quality.** Measuring non-pecuniary job quality requires monitoring aspects such as intrinsic job quality, employment quality, workplace risks, and working time and work–life balance. When jobs are classified based on these non-pecuniary characteristics, the evidence suggests employment structures have been upgrading rather than polarising since 1995 in nearly all Member States (Eurofound, 2013). This contrasts with wage-based rankings, where polarisation has been observed in specific periods for some Member States, most notably around the 2008 financial crisis. The difference reflects the fact that many of the jobs that disappeared from the middle of the wage distribution, particularly male-dominated roles in manufacturing and construction, rank relatively low in terms of non-pecuniary job quality. Thus, while these jobs occupied a middle position in the wage distribution, they were closer to the lower end when assessed against broader measures of job quality, making structural change appear more clearly as upgrading from this perspective.
- Dualisation of the labour market.** Another important change in the structure of employment has been described as 'dualisation', highlighting the growing divide between 'insiders' and 'outsiders'. According to Rueda (2005), outsiders include not only the unemployed but also workers in more precarious forms of employment, such as those with part-time or temporary contracts, both voluntary and involuntary, who face limited access to social protection and career advancement. In contrast, insiders benefit from stable, well-protected positions (Connolly et al., 2010; Nicolaisen et al.,

2019; O'Reilly, 2002). A rapid increase in part-time employment, particularly in the lowest-paid segments of the labour market, has been recorded across the whole EU. Part-time job growth has been most pronounced in the lowest job–wage quintile, with the most significant increases seen in social work and building services and in roles such as retail sales workers, cleaners and helpers (Eurofound, 2015). However, part-time employment has also grown across higher job–wage quintiles, indicating a broader trend towards the normalisation of part-time work. This shift is evident also in professions traditionally associated with higher pay and qualifications, such as teaching and health professionals, suggesting that part-time arrangements are becoming increasingly common across the entire job spectrum. In principle, an increase in part-time work is not necessarily negative, as it might reflect workers' preference for more flexible work arrangements. However, in this same time frame a significant increase in involuntary part-time work is also observed. A peculiar characteristic of dualisation is that it tends to have a significant impact on already marginalised segments of the labour force, such as women, younger workers and non-native workers (Nicolaisen et al., 2019).

Main factors driving change

The changes observed in Europe's employment distribution over recent decades are unlikely to be the result of a single cause. Rather, they arguably reflect the combined effect of multiple factors, whose relative importance can vary significantly across Member States and time. Among the key drivers commonly identified in the literature are technological change, globalisation, demographic shifts and institutional settings (including minimum wage policies). The following section explores how each of these might have contributed to shaping labour market dynamics across Europe.

- Technological change.** Technological innovation is widely regarded as one of the key drivers of labour market transformation, reshaping how tasks are performed and redistributing them across different skill groups. This is largely due to the skill-biased nature of recent waves of technological change, meaning that their effects vary depending on workers' skill levels. According to Acemoglu et al. (2011), technology alters the set of tasks performed by different groups: high-skilled workers often benefit, as their roles tend to complement new technologies; low-skilled workers may retain positions involving non-automatable tasks, especially in non-offshorable services; and medium-skilled workers, particularly those in routine-based occupations, are most vulnerable to displacement.

As a result, automation has been closely linked to the decline of routine middle-income jobs, especially in sectors such as manufacturing. For this reason, this wave of automation is often referred to as routine-biased technological change (RBTC). This dynamic has contributed to job polarisation, particularly in the United States, with employment growth concentrated at the high and low ends of the wage distribution (Acemoglu et al., 2020). However, the relationship between technology and employment is not uniform across contexts. For example, Fernández-Macías et al. (2016) find that the link between routine task intensity and employment change is inconsistent across European countries, possibly due to differences in national labour market institutions and structures.

The most recent advances in AI and digital technologies have shown the potential to automate even non-routine tasks, such as writing, coding or certain forms of complex analysis, expanding the reach of automation beyond what was previously assumed. Importantly, the displacement effects of AI are particularly associated with entry-level positions, as AI tools can perform the types of tasks that characterise many junior roles (e.g. reviewing documents, desk research, data cleaning, etc.). This has potentially pressing policy implications, as it may reduce the stepping-stone function that low-paid entry-level jobs have traditionally served in helping workers build experience and progress to high-paid jobs. Nevertheless, these developments are still in their early stages, and the bulk of the analysis in this study captures earlier waves of technological change, which primarily affected routine middle-skilled jobs.

- Globalisation.** Globalisation, particularly through trade integration with emerging economies, has significantly reshaped labour markets in advanced countries by shifting demand across skill levels and job types. For example, evidence from Denmark shows how import competition has driven some degree of polarisation through job-to-job transitions: high-skilled workers move into better-paid jobs, while middle-skilled workers are pushed into lower-wage jobs (Keller et al., 2016). There are at least two channels through which trade competition can affect workers' earnings. The first operates through wage suppression: competition from lower-wage countries puts downward pressure on pay within the same occupation. The second operates through reallocation: when tasks are offshored entirely, displaced workers are forced to move into different occupations or sectors, often at lower pay, particularly where their skills do not easily transfer to available local jobs. This is the channel investigated by Keller et al. (2016).

Unlike technological change, globalised trade exposes domestic workers to direct international competition, regardless of the degree to which routine tasks comprise their occupation. Offshoring is a key mechanism in this process, as only offshorable tasks can be relocated to lower-wage countries.

- **Demographic changes.** Demographic change operates across several dimensions, most notably age, gender, citizenship and education. Population ageing in advanced economies has led to policy efforts aimed at extending working lives, while also increasing demand for healthcare and social services. This has contributed to occupational upgrading in the health sector, particularly in roles linked to elderly care and medical support (Eurofound, 2014a).

Rising female labour force participation, especially among high-skilled women, has reshaped household structures and labour supply. While this shift has supported employment growth in higher-paying, often state-funded, sectors such as health, education and public administration (Eurofound et al., 2021), it has also generated increased demand for household substitution services, including childcare, care for elderly people, domestic help and food services, such as restaurants. These roles tend to cluster at the lower end of the job–wage distribution, potentially reinforcing job polarisation. Moreover, despite notable progress, women remain disproportionately represented in low-paid jobs (Eurofound et al., 2021).

Education remains one of the strongest predictors of wage outcomes. However, despite widespread educational upgrading across Europe, the returns of higher education have diminished, especially for women, meaning that educational attainment alone no longer guarantees access to high-quality employment (Mariscal-de-Gante et al., 2023).

- **Institutional settings.** Institutional factors play a crucial role in shaping employment structures, as different labour market regimes directly affect employment distribution and mediate the impact of other drivers. For example, labour market regimes characterised by more robust employment protection legislation, comprehensive active labour market policies and higher levels of trade union involvement tend to be associated with less pronounced wage polarisation (Eurofound, 2015, 2017).

- **The adequacy of minimum income benefits** (the social safety net) can shape individuals' labour market participation decisions by affecting their 'outside options', that is, the income and support available to them when they are not in employment, and therefore the financial gains associated with taking up work (Immervoll, 2010; OECD, 2024). More generous minimum income schemes provide a floor to household income, which may reduce the need to accept very low-paid or precarious jobs and thereby limit employment growth at the bottom of the wage distribution. At the same time, they may create labour supply disincentives and make transitions into employment more difficult, particularly for low-skilled workers.
- **Employment protection legislation** influences hiring and dismissal decisions by altering the costs associated with dismissals and contract adjustments. Stricter employment protection legislation may reduce job turnover and contribute to greater employment stability but can also affect firms' incentives to create new positions. In some contexts, differences in protection across contract types may encourage the use of more flexible forms of employment, such as temporary or part-time work, contributing to the destandardisation of the employment relationship and shaping the distribution of jobs across wage segments (Boeri, 2011).
- **Trade union density** and collective bargaining are closely related, though the relationship between them varies among countries, depending on their specific wage-setting framework (OECD, 2025). Higher collective bargaining coverage is typically associated with more compressed wage structures, as collective bargaining tends to raise wages at the lower end while moderating wage dispersion (OECD, 2019). This can reduce wage inequality and shape the distribution of employment across wage segments.
- **Minimum wage policies** have the potential to influence not only wage levels but also the composition of employment through several channels, such as encouraging the reallocation of labour towards more productive firms and sectors and strengthening incentives for firms to invest in innovation and skills. Since these policies are key to this report, they are discussed separately in the following two sections.

Review of minimum wage policies

In the early 2000s, national minimum wages were already established in most Member States, but their levels evolved slowly and often lagged behind average wage growth. Governments viewed moderate increases as tools for preserving competitiveness and employment, especially in low-productivity sectors. In central and eastern European countries that joined the EU in the mid-2000s, minimum wages were low in absolute terms, often below 40 % of the median wage, and upratings were irregular (Eurofound, 2014b; Vaughan-Whitehead, 2010). In contrast, several western and southern European countries (e.g. Belgium, France, Greece, Ireland, Luxembourg, the Netherlands, Portugal and Spain) maintained more stable national minimum wage systems, frequently with automatic indexation mechanisms linking adjustments to inflation or average wages (Eurofound, 2024a).

Despite these institutional differences, developments in minimum wage levels across the EU were shaped by common macroeconomic conditions and policy orientations. In the aftermath of the 2008 global financial crisis, the EU institutions encouraged wage moderation through the European Semester process, which was introduced in 2011. As a result, minimum wage growth remained modest: in some cases, nominal rates were frozen or, as in Greece in 2012, even reduced under adjustment programmes (Eurofound, 2014b).

The turning point came in the mid-2010s, when attitudes changed visibly as the euro area debt crisis eased and fiscal consolidation pressures diminished. Economic recovery, rising employment and tightening labour markets shifted policy concerns from competitiveness towards wage adequacy and social inclusion. EU institutions began to re-emphasise upward wage convergence and in-work poverty reduction, supported by the European Parliament and the social partners (CESifo, 2015; Cova, 2022; Karakas, 2015). At the same time, debates around the social dimension of the EU and the European Pillar of Social Rights (2017) helped reframe minimum wage policies as tools to promote fair pay and living standards rather than as potential employment risks (European Commission: Directorate-General for Employment, Social Affairs and Inclusion, 2023; Schulten et al., 2021).

From 2015 onwards, a number of Member States initiated sizeable increases in national minima, often supported by new institutional frameworks, such as the German national minimum wage introduced in 2015, and established independent minimum wage commissions, for example in Germany and Ireland. In Germany, the reform followed a decade of debate over the expansion of the low-wage sector that followed the Hartz labour market reforms. The introduction was

expected to reduce reliance on in-work income supplements and improve living standards for low-wage earners, while maintaining employment stability (CESifo, 2015; Dütsch et al., 2025; Schulten et al., 2019). Cyprus formally launched a social dialogue process on introducing a national minimum wage in 2018. Following delays caused by the COVID-19 pandemic, high unemployment in 2021 and prolonged negotiations over the scheme's design, a final decision was reached in August 2022, with the measure entering into force on 1 January 2023 (Eurofound, 2023a). In Spain, the 2019 minimum wage hike raised the national floor by 22 %, directly affecting about 7 % of dependent employees (Eurofound, 2023a; Hijzen et al., 2023; OECD, 2023).

Rapid increases in nominal minimum wages in several central and eastern European countries, often well above those in western and southern Member States, further contributed to the broader trend of sustained growth and improving wage adequacy across the EU in the following years (Eurofound, 2023b; European Commission: Directorate-General for Employment, Social Affairs and Inclusion, 2023; OECD, 2023; Schulten et al., 2020). Overall, the ratio of minimum to average wages (known as the Kaitz index) has hence increased steadily across most national systems, reflecting a gradual improvement in the adequacy of minimum wages across the EU (Eurofound, 2024a, 2025a).

The COVID-19 pandemic and Russia's war of aggression on Ukraine, with the subsequent cost-of-living crisis (2021–2023), accelerated this trend (Countouris et al., 2020). Governments framed minimum wage hikes as instruments to protect purchasing power and reduce in-work poverty rather than as threats to employment (ILO, 2024). Germany, Portugal, Spain, the Baltic states, and several central and eastern European countries implemented double-digit nominal increases.

This new policy consensus that substantial minimum wage increases can coexist with high employment was reinforced at the EU level through the Minimum Wage Directive, adopted in 2022. The directive does not impose uniform rates but obliges Member States to use indicative reference values to guide their assessment of the adequacy of their statutory minimum wages. Member States are free to choose the reference values they wish to use, but the directive mentions as examples of reference values commonly used internationally 60 % of the gross median wage and 50 % of the gross average wage. In addition, the directive requires Member States where the collective bargaining coverage rate is below a threshold of 80 % to establish an action plan with concrete measures to gradually increase their coverage rate (Cova, 2022; Natili et al., 2024; Schulten et al., 2021). Importantly, the directive also lists labour productivity developments among the factors Member States should consider when assessing the adequacy of statutory minimum wages, reflecting

the view that sustainable wage floors should remain broadly aligned with the productive capacity of the economy.

At the same time, five Member States – Austria, Denmark, Finland, Italy and Sweden – continued to rely exclusively on collective bargaining to set wage floors, achieving high coverage rates (mostly above 80 %) through collective agreements without national minimum wages (Janssen et al., 2023, 2024; Schulten et al., 2019; see also Box 1 for a discussion on collectively agreed minimum wages). Especially in the Nordic countries, this model reflects long-standing traditions of social-partner autonomy and coordinated wage formation, where both unions and employer organisations oppose statutory intervention to preserve collective bargaining as the central mechanism of wage setting (Bhuller et al., 2022; Uusitalo et al., 2025).

However, such systems depend on well-established union and employer organisation structures, making them vulnerable to declining member participation and labour market fragmentation (Eurofound, 2024a; ILO, 2016; Schulten et al., 2019). Furthermore, the effectiveness of negotiated wage floors depends on not only union coverage but also compliance and enforcement. Evidence suggests that non-compliance can be substantial in some contexts. For example, in Italy, a significant share of workers are paid below the contractual minimum, particularly women and temporary workers, those in the south of the country and workers in small firms. Estimates indicate that around 10 % of workers earn wages roughly 20 % below the agreed minimum levels, limiting the extent to which collectively agreed wage floors translate into actual earnings gains for the most vulnerable groups (Garnero, 2018). As a result, even relatively high negotiated wage floors may have a more limited impact on reducing wage inequality than expected.

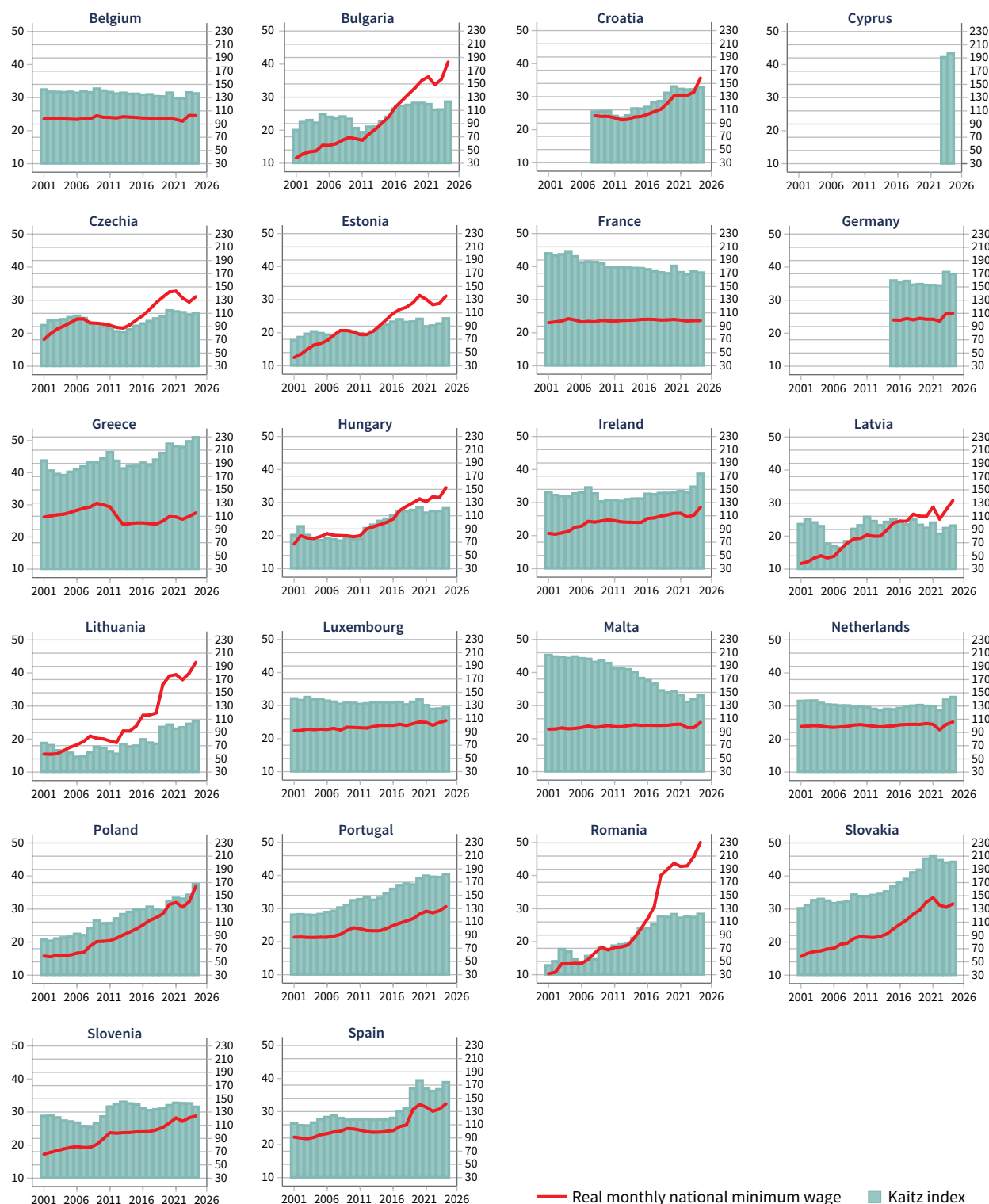
More broadly, collective bargaining also plays an important role in countries with national minimum wages. In these settings, minimum wages typically act as a wage floor, while collective agreements continue to shape wage structures above that level, influencing the overall distribution of earnings and working conditions.

Figure 1 shows the evolution of real monthly national minimum wages (i.e. wages adjusted for inflation, as opposed to nominal wages, which refer to the amounts expressed in current prices) and the relative Kaitz index, which is defined as the ratio between the national minimum wage and the average wage in the country, between 2001 and 2024. Across the 22 Member States, patterns of real minimum wage growth vary considerably. Several, such as Belgium, France, Luxembourg and the Netherlands, exhibit relatively low growth throughout the period, suggesting that minimum wages were generally adjusted in line with inflation, but real increases were limited.

In contrast, many eastern European Member States, including Bulgaria, Czechia, Estonia, Latvia, Lithuania, Poland, Romania and Slovakia, recorded very high growth rates. These Member States started with relatively low minimum wage levels (reflected in the low initial Kaitz index values but have caught up significantly. For many Member States, real minimum wages fell during periods of high inflation, notably around 2022, before rebounding sharply as many governments increased the minima to help support workers during the crisis.

Several developments stand out. Greece sharply reduced its national minimum wage in 2012, cutting it by 22.0 % in nominal terms as part of fiscal consolidation measures during the public debt crisis. By contrast, Slovenia implemented a substantial increase in 2010 (22.9 % in nominal terms), aimed at reducing poverty and establishing a living wage at the bottom of the wage distribution (Stoviček, 2013). In 2019, Spain raised the minimum wage by 22.3 % in nominal terms in an effort to counterbalance the loss of purchasing power among the lowest-paid employees as a consequence of the economic crisis (Eurofound, 2019). Germany introduced a significant increase in October 2022 (22.2 % in nominal terms), as part of measures to offset the sharp rise in living costs following the energy crisis triggered by Russia's invasion of Ukraine (Müller, 2023).

Figure 1: Real monthly national minimum wage (right axis, indexed values) and Kaitz index (left axis, %), 22 Member States, 2001–2024



Notes: The right y-axes show changes in real monthly national minimum wages (2015 = 100), while the left y-axes show the Kaitz index. Monthly minimum wages are drawn from Eurostat's `earn_minw_cur` dataset, which records national minimum wages in January and July of each year. The figures shown represent the average of these two values. The Kaitz index represents the national minimum wage as a percentage of the average full-time-equivalent wage per employee (i.e. the ratio between the two multiplied by 100).

Source: Authors' calculations based on Eurostat and OECD data.

Box 1: Collectively agreed minimum wages

Not all Member States had a national minimum wage in place for the whole period analysed (2001–2024). Specifically:

- Austria, Denmark, Finland, Italy and Sweden have no national minimum wage;
- Croatia introduced a national minimum wage in 2008;
- Germany introduced a national minimum wage in 2015;
- Cyprus introduced a national minimum wage in 2023.

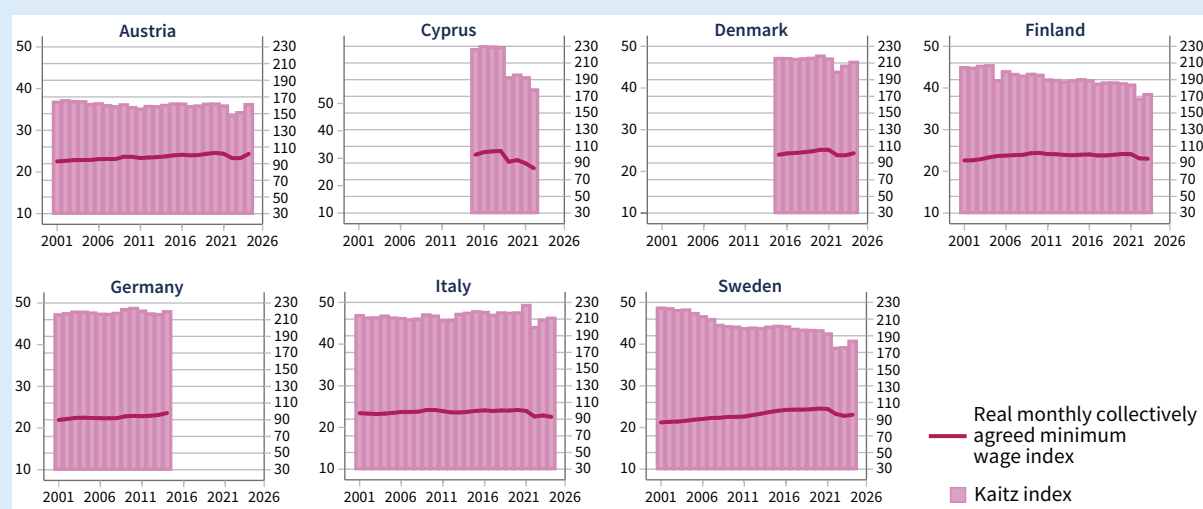
For these countries, collectively agreed minimum wages were analysed for the period that a national minimum wage was not established.

Data on collectively agreed minimum wages were drawn from two sources. For Austria, Finland, Germany, Italy and Sweden, the analysis used index series produced by national statistical offices, which are available from the early 2000s (see Table A3 in Annex 1). Although methodological differences between national statistical offices are likely, these indices provided a reasonable proxy for capturing the broad evolution of collectively agreed minimum wages over time.

For Croatia, Cyprus and Denmark, these indicators are not available. Therefore, an indicator for Cyprus and Denmark was built using Eurofound's database on collectively agreed minimum wages⁽⁴⁾, which enabled the production of indicators for 2015–2024. As the first year covered by the database is 2015, it was not possible to construct an index of collectively agreed minimum wages for Croatia, which had already introduced a national minimum wage in 2008, so it was excluded from the analysis. More information on the data and methodology used to build indicators on collectively agreed wages can be found in Annex 1.

Figure 2 shows the changes in collectively agreed minimum wages in the seven Member States for the years they had no national minimum wage and for which data are available. Overall, these wage floors tend to be set at higher Kaitz index levels than the average national minimum wages shown in Figure 1. Moreover, as they result from collective bargaining, their evolution is more gradual, with changes reflecting longer-term trends rather than large discrete shifts.

Figure 2: Real monthly collectively agreed minimum wage (right axis, indexed values) and Kaitz index (left axis, %), seven Member States, 2001–2024



Notes: The right y-axes show changes in real monthly collectively agreed minimum wages (2015 = 100), while the left y-axes show the Kaitz index. Annex 1 describes the data sources and methodology used to build the monthly index of collectively agreed wages. The Kaitz index represents the real monthly index of collectively agreed wages as a percentage of the real average full-time-equivalent wage per employee (i.e. the ratio between the two multiplied by 100).

Source: Authors' calculations based on data from Eurofound, national statistical offices, the OECD and Eurostat.

⁽⁴⁾ <https://www.eurofound.europa.eu/en/surveys-and-data/data-catalogue/database-collective-agreements-low-paid-workers-data-file>.

Effects of minimum wages on employment structures: theory and evidence

According to economic theory, raising the minimum wage can influence the employment distribution through several channels.

- Shifting employment towards more productive sectors and occupations.** By raising the cost of low-skilled labour, minimum wages may prompt employment shifts towards more capital-intensive or higher-productivity sectors and occupations.
- Improving allocational efficiency.** Minimum wages can encourage a reallocation of labour from smaller, lower-paying and less productive firms to larger or more productive establishments. This structural adjustment may raise overall efficiency and contribute to upgrading in the labour market.
- Incentivising innovation.** A higher wage floor can act as a catalyst for technological progress. When low-cost labour becomes more expensive, firms are incentivised to adopt labour-saving technologies and invest in innovation to maintain competitiveness. Historically, differences in wage levels have been linked to divergent paths of technological development; for example, the capital-intensive US manufacturing system evolved in response to relatively higher wages than the United Kingdom (Acemoglu, 2002). Today, similar dynamics may push firms to modernise operations, boosting productivity and long-term job quality.
- Incentivising investment in skills and capital.** As labour costs rise, employers may be more incentivised to improve worker productivity through training, upskilling and better job design, as well as through capital deepening. Evidence suggests that minimum wage increases can, in some cases, lead to higher investment in human capital, although the magnitude of these effects varies across contexts (Doucouliagos et al., 2025).

However, for these positive outcomes to materialise, several important conditions must be met. The overall effect of higher minimum wages is shaped by various aspects, such as the extent to which increased labour costs are passed on in price increases, the degree of international competition and export dependence of each sector, the availability of technological alternatives, product demand elasticities and the broader impact of increased disposable income among minimum wage earners. Notably, firms in sectors exposed to international competition face tighter constraints in passing on higher labour costs through price increases, since they compete with producers not subject to the same wage floors, making employment effects potentially larger than in non-tradable sectors.

A particularly important channel is **productivity**. Whether higher minimum wages translate into employment losses depends in part on the scope for productivity gains within firms and sectors. In sectors where productivity growth is structurally more limited, such as accommodation and food services or personal care, firms may struggle to absorb higher labour costs through efficiency gains alone, resulting in possible reductions in employment or hours worked. In other sectors, however, minimum wage increases can themselves act as a catalyst for productivity improvements, for example through investments in technology, retraining or work reorganisation, and may even support employment growth.

Literature review

This section reviews the empirical literature on the effects of minimum wages on the employment structure. Since there is a scarcity of studies examining these effects directly by using jobs as the unit of analysis (the combination of sector and occupation), the review draws on related strands of the literature that analyse impacts on job quality, productivity and firm dynamics, and on the role of mediating factors, such as trade exposure, technological change and market structure. These dimensions help explain why different sectors and occupations may be affected unevenly by minimum wage increases and, therefore, how employment structures may evolve over time. The review first considers the evidence on heterogeneous effects across different groups of workers and jobs, including variation by wage level and type of contract. It then turns to studies examining how these effects are shaped by broader economic forces, in particular exposure to international trade and technological change and differences in market structure.

Effects by worker and job characteristics

Wage levels

Starting with effects along the wage distribution, short-run analyses of policy changes show that job losses among workers earning below the wage floor are offset by job gains right above it, leaving low-wage employment roughly stable (Cengiz et al., 2019; Eurofound, 2025a; Gopalan et al., 2021; Pérez, 2020). While Caliendo et al. (2019) document modest negative employment effects for Germany in the short- and long-run, Dustmann et al. (2021) find no significant employment effects. Evidence from Spain similarly shows no or only minor effects after the 2019 minimum wage increase. The few studies examining longer-term effects suggest that, rather than minimum wage increases resulting in sustained employment losses, medium- to long-run adjustments occur through changes in job composition, working hours and workforce structure, including a concentration of hours among experienced workers and a reallocation of

employment from smaller, less productive firms to larger, more efficient establishments, which is consistent with an upgrading effect of minimum wages (Bossler et al., 2024; Clemens et al., 2021; Dustmann et al., 2021; Haelbig et al., 2023; Horton, 2017; Jardim et al., 2022).

Evidence from Germany and the United States confirms that wage spillovers to high-paid workers can occur (Bossler et al., 2024; Forsythe, 2023; Gandhi et al., 2025), though negative effects may arise under cost pressures (Gregory et al., 2022). Furthermore, a higher wage floor may encourage low-productivity workers to upskill or prompt employers to provide training (Cahuc et al., 1996). Maarek and Moiteaux (2018) argue that the relatively weaker employment growth in low-paid jobs in Member States than in the United States, which results in a less evident polarisation pattern, may reflect labour market rigidities and protections, most notably minimum wage policies.

Employment contracts

The impact of minimum wage policies also differs across types of employment arrangement. In the context of the introduction of a German national minimum wage in 2015, Bossler et al. (2024), Caliendo et al. (2019) and the German Mindestlohnkommission (2023) all find consistent evidence that *Minijobber* were more negatively affected than full- or part-time employees⁽⁵⁾. These marginal jobs, mostly concentrated in low-wage segments, saw reductions in both employment and hours, suggesting a substitution away from marginal employment towards more stable forms of work. Further analyses confirm this substitution pattern, showing that minimum wages reduced the prevalence of marginal employment in the short-to-medium run, while supporting a shift towards regular jobs (Bachmann et al., 2017; Bachmann et al., 2022; Garloff, 2017). Currently emerging alternative forms of employment, such as gig work and spot labour markets (i.e. labour markets where workers and employers engage in short-term, task-based exchanges rather than ongoing employment relationships), appear to be particularly vulnerable. Kanayama et al. (2025) examine the impact of minimum wages on high-frequency online labour markets – a type of spot labour market characterised by frequent digital matching of workers to short-term tasks – and report negative employment effects in low-wage categories, specifically in temporary or freelance positions, underlining the vulnerabilities and sensitivity of non-standard work arrangements to rising wage floors.

Self-employment dynamics

Minimum wage policies can also influence self-employment dynamics, though the effects vary according to the context and type of self-employment. Evidence from Germany and the United States points to a modest substitution into solo self-employment or employment outside of the legal minimum wage coverage (e.g. platform work) when minimum wages rise. In German industries, sectoral minimum wage introductions between 1992 and 2010 increased the share of solo self-employed workers by up to 8.5 percentage points, reflecting a shift of higher-skilled dependent workers into independent activity as firms adjusted to lower demand for wage labour (Ganserer et al., 2022). Similarly, in the United States, higher minimum wages during the 2000s slightly reduced traditional self-employment, but in the 2010s, when digital platforms expanded, they encouraged growth in non-employer establishments in transportation and delivery services, suggesting that workers moved into gig-style self-employment not covered by minimum wages rather than exiting the labour force (Glasner, 2023). By contrast, short-term evidence from South Korea indicates that higher minimum wages raise exit rates among self-employed individuals with employees, as rising labour costs make small business operations less viable, though solo self-employed workers remain largely unaffected (Ahn, 2024).

Mediating effect of exposure to trade and technological change

Short- to medium-run analyses using administrative or payroll data find that employment reductions are concentrated in tradable and labour-intensive sectors, while non-tradable sectors tend to adjust through hiring composition or productivity rather than net job losses (Cengiz et al., 2019; Gopalan et al., 2021; Gorjón et al., 2024; Redmond et al., 2024). Empirical evidence from the United States on state-level minimum wage increases indicates that the overall number of low-wage positions remains largely unchanged over the five years following the increase, although employment declines are observed in tradable sectors (Cengiz et al., 2019). Analogously, Gopalan et al. (2021) report short-term reductions in low-wage workers, driven by lower hiring rather than lay-offs, with tradable industries experiencing employment losses while non-tradable firms substitute younger, low-skilled workers with more productive employees, producing wage spillovers without significant disemployment effects. Similar asymmetries are observed in Ireland, where labour-intensive low-margin sectors are more sensitive to wage increases (Redmond et al., 2024). Medium-run evidence

⁽⁵⁾ A *Minijob* is a German form of marginal employment subject to specific earnings limits and social security rules. Unlike regular part-time employment, which is defined by reduced working hours relative to full-time work, a *Minijob* is defined primarily by its low earnings threshold and specific social insurance treatment.

from Croatia further confirms this pattern, showing that tradable low-wage sectors are more affected than non-tradable sectors, as their limited ability to pass on higher labour costs under international competition constrains adjustment margins (Nestić et al., 2018). Dustmann et al. (2021) find that Germany's minimum-wage-induced employment moves towards larger, more productive and better-paying firms, especially in non-tradable sectors and low-wage occupations.

Analysing county-level data from 1992 to 2012 from the US agricultural sector, Kandilov et al. (2020) find that higher minimum wages reduce seasonal but not year-round employment, with total labour costs unchanged, indicating adjustment via capital investment and consolidation, a shift towards mechanisation and larger-scale operations. Furthermore, Lordan et al. (2018) show that higher minimum wages reduce employment in automatable occupations, especially in manufacturing and among older, female and black low-skilled workers, accelerating technological substitution of routine tasks and shifting employment to higher-skilled or non-routine jobs.

Mediating effect of market structure

Evidence from Germany and the United States indicates that minimum wage increases in monopsonistic labour markets are less likely to reduce employment and may even raise it, as firms initially pay below marginal productivity and can absorb higher wages (Azar et al., 2024; Popp, 2021) ⁽⁶⁾. Short-term evidence from Germany shows that monopsonistic competition differs across low-wage sectors, with retail, hospitality and agriculture exhibiting clear monopsony features, implying that a uniform wage floor can produce heterogeneous employment effects (Bachmann and Frings, 2017). Similarly, greater employment reductions have been documented in the accommodation and food service sector in Ireland (Redmond et al., 2024), in sectors with less industry concentration in Lithuania (Garcia-Louzao et al., 2023) and within the broader service sector in Spain (Gorjón et al., 2024).

⁽⁶⁾ A monopsonistic labour market is one in which employers have sufficient market power to influence wages because workers face limited alternative employment opportunities. This can arise, for example, in regions where only one or a few firms dominate local hiring.

2 Employment trends in low-paid jobs

This chapter addresses the report's first research question: how has employment in low-paid jobs in the EU evolved over the last two decades? While Eurofound's European Jobs Monitor has long tracked structural change in EU labour markets by aggregating jobs into job-wage quintiles, this chapter contributes by focusing on a fixed set of eight representative low-paid jobs that consistently account for the bulk of employment in low-paid jobs in the EU and following them across Member States and time. Trends are examined in terms of headcount and hours worked and in terms of levels and shares of total employment to capture different margins of adjustment. This finer level of disaggregation reveals patterns that the job-wage quintile-based view masks, in particular the very different trajectories of jobs that sit close to each other on the job-wage distribution.

The analysis is then extended to the rest of the job-wage distribution, in order to assess the changes in jobs in the bottom quintile, as well as in the rest of the job-wage quintiles, so the whole employment structure is covered, and patterns of upgrading or polarisation can be captured. The chapter also examines the broader macroeconomic, structural and demographic factors that potentially drive these dynamics. This examination serves a dual purpose: it provides a descriptive understanding of what shapes employment in low-paid jobs at the country-year level, and it informs the empirical strategy of Chapter 3, where the role of minimum wages is isolated from the broader set of drivers identified here.

Job groupings used in this report

In this report, a 'job' is defined as the combination of a particular sector (one-digit NACE (the general industrial classification of economic activities in the EU)) and occupation (two-digit ISCO). Three key groupings of jobs are used, each providing a different point of view.

1. **Job-wage quintiles.** Jobs are divided into five groups based on their level of pay. To do this, jobs are ranked in each country and year according to their average wage. The jobs are then split into five equal quintiles (each representing around 20 % of total employment) in each country for each year. The distribution of employment and hours worked across these five job-wage quintiles is called the employment structure in this report, and this grouping is used in Chapters 2 and 3. (For readability, the job-wage quintiles are sometimes referred to simply as quintiles.)

2. **Top 12 low-paid jobs** (country-specific). Within the bottom job-wage quintile (i.e. the lowest-paid jobs), as defined in the first step, the 12 largest jobs (in terms of total employment) within each Member State are identified. These 12 country-specific jobs are used as a sample of the most representative low-paid jobs in each Member State. Since this cluster provides an adjusted representation of the most relevant low-paid jobs in each Member State, it is used only in Chapter 3, where the impact of national minimum wages on the employment structure is explored. As detailed in Annex 2, the top 12 jobs in each Member State exhibit a fair amount of stability internationally and temporally, but there are certain jobs that appear only in selected Member States.
3. **Eight representative low-paid jobs** (the same across all Member States). These are 8 jobs selected for being particularly representative of low-paid jobs across the EU-27, in that they fall into the top 12 for the EU as a whole and as many individual Member States as possible. Because these eight jobs offer a sample of the most representative low-paid jobs in the EU, forming a fixed set of low-paid jobs that is consistent over time and across countries, this cluster is used in Chapter 2, to provide a comparative picture of employment trends in low-paid jobs across Member States. More details on the jobs approach, as well as the selection of the representative low-paid jobs, can be found in Box 2.

The choice of three groupings allows the report to ask different questions at the right level of granularity: how the employment structure as a whole has evolved (job-wage quintiles), how minimum wage policy interacts with country-specific low-paid jobs (top 12 jobs) and how a fixed set of jobs has fared comparably in different Member States (8 representative jobs). The fact that the same eight jobs appear among the largest low-paid jobs in most Member States, with rankings broadly stable between 2011 and 2024, is itself a meaningful finding: it indicates that the low-paid segment of the EU labour market has a recognisable and durable structure, anchored in a limited number of service sector occupations. See Box 2 for a list of the eight jobs selected and a description of the methodology used for their selection.

Box 2: Methodological note on the jobs approach and the selection of the eight representative low-paid jobs

In line with the European Jobs Monitor, the analysis adopts a jobs-based approach to examine structural shifts in employment across Member States. A 'job' is defined as the intersection of occupation and sector, using the two-digit level of ISCO and the one-digit level of NACE. This combination results in nearly 1 000 distinct jobs, although there are large differences in the size of jobs in terms of their employment shares.

Jobs are ranked within each Member State (and year) as well as for the EU as a whole according to their mean hourly wage and are then grouped into five job-wage quintiles, each representing 20 % of total employment in the initial period. For each Member State, the 12 jobs with the largest employment shares among those assigned to the lowest-paying quintile are identified. The same approach is applied to the EU as a whole by pooling employment across Member States and using population-weighted average wage ranks. Wage information is primarily drawn from the Structure of Earnings Survey (SES), while employment levels are based on data from the European Union Labour Force Survey (EU-LFS). (Table A1 in Annex 1 provides information on all data sources.)

The choice of time periods to analyse is dictated by two changes in the occupational and sectoral classifications used in the EU-LFS, namely the transition from NACE Rev. 1.1 to NACE Rev. 2 in 2008 and from ISCO-88 to ISCO-08 in 2011. These classification changes result in substantial breaks in the employment series, requiring the analysis to be conducted over three distinct subperiods: 2001–2007, 2008–2010 and 2011–2024. The final subperiod is further disaggregated into 2011–2019 and 2019–2024 to have a clearer picture of the different trends observed in the 2010s compared with the early 2020s and to account for the COVID-19 pandemic.

Table 1 shows the Member State count (i.e. the number of Member States in which the job appears among the 12 largest jobs in the bottom quintile), together with the EU rank in terms of size (i.e. the share of employment).

Table 1: Change in the ranking of the largest low-paid jobs between 2011 and 2024

Job	Job label	Member State count		EU rank	
		2011	2024	2011	2024
I-51	Hospitality personal service workers	22	20	3	3
N-91	Business services cleaners	20	23	4	4
S-51	Personal service workers	18	17	9	11
I-94	Hospitality food preparation assistants	16	19	13	8
G-52	Retail sales workers	15	13	1	1
A-92	Agricultural labourers	14	12	12	12
A-61	Skilled agricultural workers	14	10	14	16
P-91	Educational institution cleaners	14	12	15	17
Q-53	Health and social care workers	13	14	2	2
C-93	Manufacturing labourers	13	13	5	5
Q-91	Health sector cleaners	13	13	7	10
G-93	Retail labourers	13	16	8	6
N-54	Private security workers	13	13	10	13
F-93	Construction labourers	10	9	11	14
P-53	Education care workers	10	15	18	15
T-91	Domestic cleaners	9	6	6	9
I-91	Hospitality cleaners	7	8	19	19
I-52	Hospitality sales workers	7	7	22	7
P-51	Education personal service workers	7	5	24	22
H-44	Transport clerical workers	7	3		
O-96	Public sector elementary workers	5	2	25	29
C-75	Manufacturing craft workers	4	5		
F-71	Construction trades workers	4	3		

Notes: The two Member State count columns show the number of Member States in which the job is in the national top 12 of the largest low-paid jobs in the bottom quintile in 2011 and 2024. Note that the maximum can be only 26 and not 27, as Malta is excluded from the analysis because it reports the occupation only at the ISCO one-digit levels in the EU-LFS. The two EU rank columns record the rank of jobs in terms of size when all EU employment is pooled, in 2011 and 2024, respectively. The eight jobs selected as representative low-paid jobs are highlighted in orange text.

Source: Authors' calculations based on EU-LFS and SES data.

Given the changes in the sector and occupation classifications, it is not possible to track all jobs consistently from 2001 to 2024. The table, therefore, compares job rankings in 2011 and 2024. Jobs are denoted by their sector code (first letter) and occupation code (two digits).

While rankings remain broadly stable over time, some changes reflecting shifts in the employment distribution are evident. In particular, employment has declined in jobs such as S-51 personal service workers, P-91 educational institution cleaners and T-91 domestic cleaners but increased in, for instance, G-93 retail labourers and P-53 education care workers.

Of the largest low-paid jobs, the 8 jobs highlighted in orange text were chosen because they both have a high EU rank and appear in the top 12 of the largest low-paid jobs (in the bottom quintile) of most Member States while also retaining good sectoral and occupational coverage. Due to the changes in the sector and occupation classifications, three of the selected representative low-paid jobs (i.e. G-52 retail sales workers, N-91 business services cleaners and I-94 hospitality food preparation assistants) cannot be consistently mapped to earlier categories. The 2011 revision of ISCO is more problematic than the 2008 NACE change, and the largest discontinuities are therefore expected to occur between 2010 and 2011. Hence, these three jobs are analysed only from 2011 onwards. Additional information on the selected jobs can be found in Annex 2.

Overview of eight representative low-paid jobs

The largest low-paid jobs in Europe are heavily concentrated in a limited number of sectors and occupations (see Table 1 in Box 2). In terms of sectors, low-paid jobs are most prevalent in services, particularly accommodation and food services; administrative and support services; wholesale and retail trade; and human health and social work. Within these sectors, low wages are especially common in low-skilled occupations, such as cleaners and helpers, labourers, personal service workers, food preparation assistants, and sales workers. The concentration of low-paid jobs in a limited set of sectors and occupations has a clear policy implication: targeted interventions in these areas can reach a large share of the low-paid workforce at relatively low administrative cost. For example, sector-specific minimum wage floors or extensions of collective agreements in retail or hospitality can directly affect a large number of low-wage workers, while training and upskilling programmes for care workers or cleaners can support wage progression within occupations where low pay is widespread. Similarly, measures aimed at improving job quality in social care or regulating subcontracting practices in cleaning and support services can have broad effects.

Several factors help explain the persistence of low wages in these jobs. From the occupational perspective, these roles typically require low levels of formal skills, which reduces workers' bargaining power and facilitates substitution. Many of these occupations – including cleaning, care and personal services – are labour-intensive, difficult to automate and must be performed locally. Unlike in manufacturing jobs, these characteristics have shielded employment from automation and offshoring (Mandelman et al., 2022), but they have also meant that cost adjustment occurs primarily through wages and working conditions.

Productivity considerations also play a role. Many of these service jobs generate relatively low added value per worker and offer limited scope for productivity increases, constraining firms' ability to raise wages, particularly in competitive markets (Thompson, 2021). Employment in these occupations is often characterised by non-standard arrangements, such as part-time, temporary, seasonal or informal work, which further weakens wage-setting mechanisms. Low levels of unionisation and limited collective bargaining coverage, common across these occupations, reinforce these dynamics (Westhoff, 2022).

Sector-specific factors contribute as well. In accommodation and food services, low wages reflect high labour turnover, limited productivity growth and strong price competition. In retail, wages are constrained by thin margins and a large supply of workers with general skills. In care, cleaning and personal services, wages remain low despite the social value of the work, reflecting historical undervaluation, weak collective bargaining coverage in some countries and a high concentration of female workers (Devetter et al., 2020; Folbre et al., 2022).

Besides services, manufacturing and agriculture also deserve consideration. Manufacturing appears in the ranking mainly through C-93 manufacturing labourers. This partly reflects the timing of the data, which refer to 2011 and 2024, and the longer-term restructuring of European manufacturing. Much low-skilled manufacturing employment had already declined during the 1990s and 2000s due to globalisation, offshoring and technological change (Geishecker, 2006; Winkler, 2010). Furthermore, historically, wages in manufacturing were relatively higher than in many service sectors, in part because of stronger unionisation and more extensive collective bargaining (Kahn, 1998). Therefore, the remaining low-paid manufacturing jobs are concentrated among labourers.

In agriculture, low wages are reinforced by a combination of structural factors. Productivity growth is typically slow, given the labour-intensive and manual nature of much of the work, while agricultural products are exposed to substantial domestic and international price competition. Furthermore, many tasks performed by labourers are seasonal or temporary, often performed by migrant workers, limiting employers' incentive to raise wages (Bogoeski, 2022; Hedberg, 2021).

The eight representative jobs selected for this study can be broadly grouped into four categories.

Retail

- **G-52 retail sales workers.** Workers who help sell goods and services in shops, markets or customer contact centres, including cashiers, shop assistants and sales clerks. Typical tasks include greeting customers, arranging product displays, managing stock, processing payments, and sometimes supervising small teams or store sections.
- **G-93 retail labourers.** Workers performing simple manual tasks that support the handling and storage of goods in shops, supermarkets, warehouses and other retail settings. Typical tasks include loading and unloading products, moving and stacking items, replenishing shelves, packing and unpacking goods, and cleaning work areas.

Manufacturing

- **C-93 manufacturing labourers.** Labourers perform routine manual tasks in manufacturing to assist more skilled workers, such as machine operators and assemblers. Typical tasks include packing products by hand into boxes, bottles or other containers; labelling items; loading and unloading materials and finished goods; moving goods and equipment to work areas; cleaning machinery, tools and workspaces; and sorting products or components by hand.

Tourism and household substitution

- **I-51 hospitality personal service workers.** Workers in hotels, bars, restaurants and similar establishments who interact directly with customers, including waiters, bartenders, hotel reception staff and other front-of-house personnel. Their tasks typically involve serving food and drinks, assisting guests or customers, and handling basic customer transactions.
- **I-94 hospitality food preparation assistants.** Workers who support basic food and beverage preparation in hospitality establishments, including hotels, restaurants, fast-food outlets and ghost

kitchens. Typical tasks include preparing simple or pre-cooked foods, operating basic kitchen equipment, cleaning food preparation and service areas, and washing dishes.

Personal care and general services

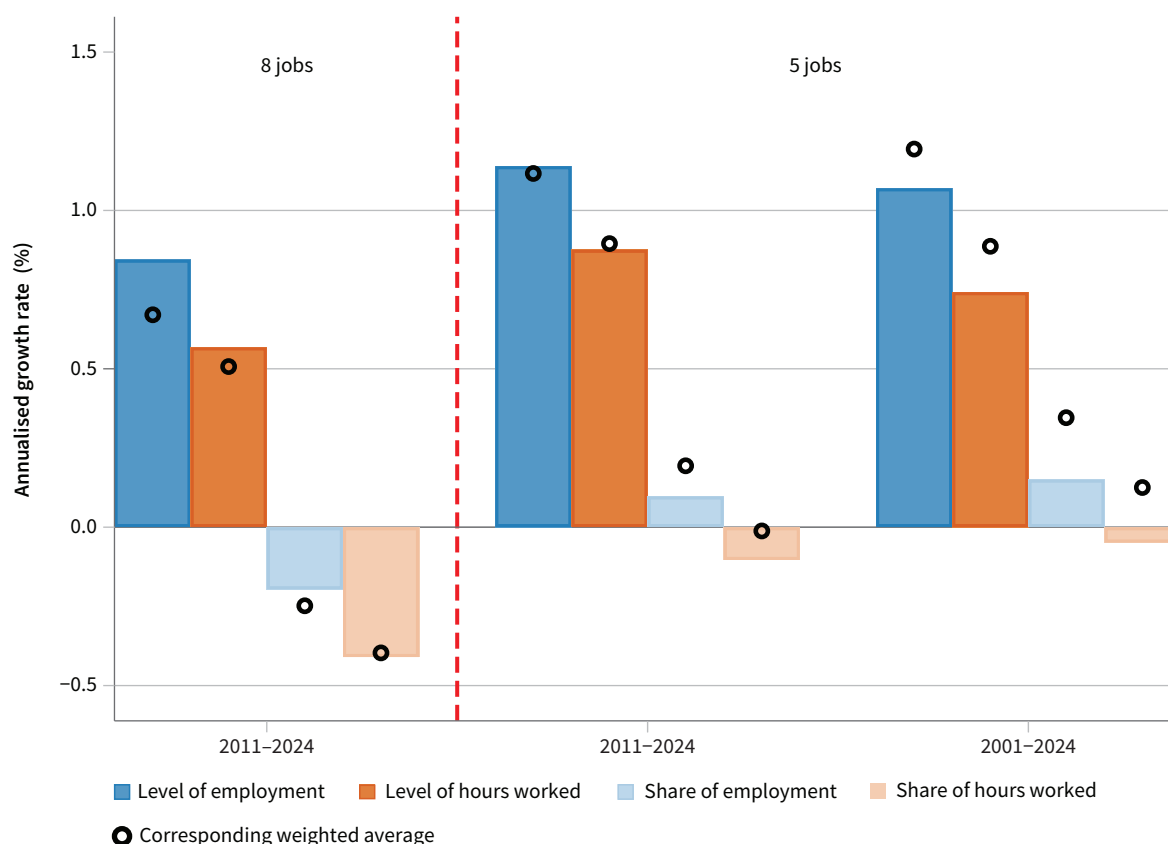
- **N-91 business services cleaners.** Cleaners and helpers who carry out routine cleaning and basic maintenance in offices, commercial buildings and other institutional settings. Note that this category includes both cleaners employed directly by organisations and those working for specialised cleaning companies providing outsourced services.
- **S-51 personal service workers.** These workers provide a wide range of customer-facing services that support daily life and personal well-being, such as laundry and dry cleaning; hairdressing; beauty treatments; fitness and physical wellness activities; and pet care services, such as boarding, grooming, sitting and training pets.
- **Q-53 health and social care workers.** Personal care workers provide day-to-day support to patients, children, or elderly, convalescent or disabled individuals, both in institutional settings (e.g. hospitals, care homes and schools) and in private homes. Tasks include helping children with meals and school activities; assisting residents with bathing, dressing and mobility; serving meals; taking basic health measurements (like temperature or blood pressure); supervising daily routines; and providing companionship. Note that this category does not include nurses or other regulated health professionals.

Evolution of the eight jobs

Figure 3 plots the average annualised growth rate across Member States for employment (blue bars) and hours worked (orange bars) in the eight representative low-paid jobs, both in terms of the absolute levels (dark shaded) and in terms of the share represented over the absolute level (light shaded). The data depicted by the bars refer to the average across Member States (or the unweighted EU average). The black circles represent the corresponding averages when more weight is given to Member States with a larger population, that is, data for the EU as a whole (or the weighted EU average) ⁽⁷⁾. The absolute values capture changes for the low-paid jobs regardless of what is going on in the rest of the economy. The shares, on the other hand, capture changes for the low-paid jobs only if these differ from the overall shifts in employment. As such, the shares capture change in the composition of employment.

⁽⁷⁾ The weighted EU average is produced by calculating an average of growth rates across Member States, but instead of an arithmetic average (as in the unweighted EU average), the growth rates of the different Member States are given different weights (depending on the weight represented by the employment in that Member State over the total employment in the EU). This weighted value does not replicate exactly the employment patterns for the EU aggregate (which would involve plotting employment across all Member States and then calculating growth rates over the period), but it is so close that it constitutes a good approximation.

Figure 3: Average annualised growth in employment and hours worked (level and share) in the representative low-paid jobs across EU Member States (%)



Notes: The bars represent the annualised growth rate of four variables (level of employment, share of employment, level of hours worked and share of hours worked) for the eight representative jobs for 2011–2024 and for the five jobs that can be followed over 2001–2024 (see Box 2 for an explanation of the two groups). As noted in Annex 1, Table A2, several country-years are excluded due to breaks in the EU-LFS data series. EU averages are computed as averages of country-level growth rates. Unweighted averages treat all Member States equally, while weighted averages account for differences in population size.
Source: Authors' calculations based on EU-LFS and SES data.

Developments in the eight jobs, 2011–2024

On average across the Member States, the eight representative low-paid jobs increased in absolute terms between 2011 and 2024, both in employment and hours worked. This corresponds to an annualised growth rate of 0.84 % in employment and 0.57 % in hours worked, amounting to increases of 11.6 % and 7.6 % over the period, respectively⁽⁸⁾. However, their shares of total employment and hours worked declined over the same years. On average, among Member States, employment shares decreased by 0.20 % per year, corresponding to a total reduction of 2.5 % in employment shares. The drop in the shares of hours worked is more consistent across Member States, amounting to a total of 5.2 % over 2011–2024. The trends are similar for the EU as a whole when weighting

the Member States by their population: the total reduction in employment shares amounts to 3.2 %, while shares of hours worked dropped by 5.0 %. This indicates that the pattern reflects a general trend across the Member States, rather than being driven by a small number of large economies.

The increase in levels is likely to reflect broader labour market developments, including overall employment growth, partly driven by rising female labour force participation, and the continued expansion of service sectors, where many of these low-paid jobs are concentrated. At the same time, the slower growth of hours relative to employment suggests a higher incidence of part-time work among the new positions created in these jobs.

⁽⁸⁾ Total growth over a period can be derived from annualised growth rates by compounding. Specifically, total growth is calculated as $(1 + g)^T - 1$, where g is the annualised growth rate and T is the number of years.

The decline in shares indicates that these representative low-paid jobs have grown more slowly than better-paying ones, pointing to a gradual shift in the employment structure away from low-paid jobs and towards high-paid or high-skilled roles (i.e. an upgrading pattern). This is consistent with evidence from the European Jobs Monitor, which shows that the greatest employment growth in 2011–2022 occurred in high-paid occupations, particularly among women (Eurofound, 2026).

Developments in five of the eight jobs, 2001–2024

As discussed in Box 2, five of the eight representative low-paid jobs can be tracked back to 2001. These five jobs are retail labourers, manufacturing labourers, hospitality personal service workers, personal service workers, and health and social care workers. To avoid introducing a large bias due to the change in classification in 2011 (see Annex 3; the break is evident in Figure A2 for shares and Figure A3 for levels), growth rates were computed over the full period 2001–2024 by combining the annualised growth observed in 2001–2010 and 2011–2024. However, while this approach mitigates the impact of the 2011 break, the results should nonetheless be interpreted with caution, as the correspondence between classifications before and after 2011 is not perfect. This means that the jobs before and after 2011 do not include exactly the same workers, and trends can therefore differ.

Beyond classification issues, the differences between the trends observed for the eight jobs (2011–2024) and for the five jobs (2001–2024) might be driven by at least two main factors. First, the time periods differ: the 2000s were generally characterised by employment growth in these jobs, so including these years moderates the overall decline in shares. Similarly, the impact of the COVID-19 shock is less pronounced when averaged over the longer period. Second, the three jobs observed only from 2011 onwards might have different patterns from the other five jobs. This is especially relevant for G-52 retail sales workers, which is particularly large, accounting for 40.4 % of the total employment share of the eight representative low-paid jobs in the EU in 2011 (see Figure A1 in Annex 2). As a result, developments in this job can, on their own, have a substantial influence on the overall trend for the whole group.

Against this background, focusing on the subset of five jobs over 2001–2024 suggests that their employment shares have remained broadly stable over time across Member States, with a weak increase in headcount employment share of 0.15 % annually (3.5 % over the period) and a weak decline in the share of total hours worked (– 1.1 % over the period). Comparing these results with those for the full set of eight jobs suggests that the more pronounced decline in shares observed

for the latter is driven mainly by the three jobs observed only from 2011 onwards, rather than by changes in the five jobs observed over 2001–2024. For the EU as a whole (weighted average), employment shares (in both headcount and hours worked) increased moderately between 2001 and 2024 in the five representative low-paid jobs.

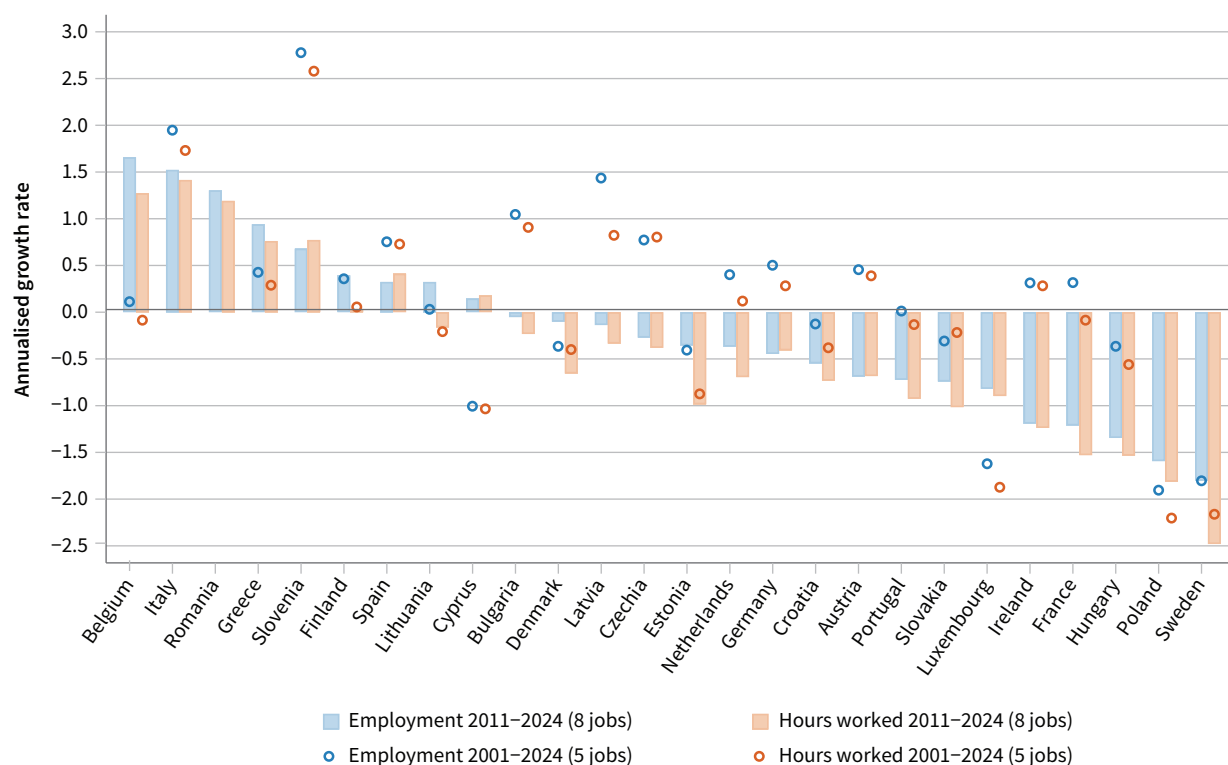
At the aggregate EU level, the changes in the shares of employment and hours worked are relatively small. However, this overall picture hides substantial differences between Member States, with some experiencing much larger shifts in the prevalence of the representative low-paid jobs.

Figure 4 shows that, consistent with a generalised upgrading pattern, between 2011 and 2024, the employment share of the eight jobs decreased in the majority of Member States, with the largest decreases observed in Sweden (– 1.8 % annually), Poland (– 1.6 %), Hungary (– 1.3 %), France (– 1.2 %) and Ireland (– 1.2 %). At the same time, a smaller group of Member States experienced increases in the share of employment in these jobs, most notably Belgium (1.7 % annually), Italy (1.5 %), Romania (1.3 %) and Greece (0.9 %). Figure A6 in Annex 3 shows the change in levels of employment and hours worked. The Member State ranking differs from that based on shares. For example, Ireland is among the Member States with the largest increases in employment levels in these jobs over the studied period. This reflects the fact that a decline in share does not require a fall in level; it is sufficient that employment in these jobs grows more slowly than in other occupations.

When focusing on the subset of five jobs over the longer 2001–2024 period, the ranking of Member States changes somewhat, although the two measures remain moderately correlated. Over this longer horizon, the largest declines in employment shares are observed in Poland (– 1.9 % annually), Sweden (– 1.8 %) and Luxembourg (– 1.6 %), while the strongest increases occurred in Slovenia (2.8 %), Italy (1.9 %) and Latvia (1.4 %). Nevertheless, while employment shares declined in around two-thirds of the Member States for the eight representative low-paid jobs between 2011 and 2024, employment shares in these five representative jobs increased in more than half of the Member States between 2001 and 2024.

As already suggested by Figure 3, these differences are largely driven by the distinct trajectories of the three jobs that are observed only from 2011 onwards. In Belgium, for instance, the increase over 2011–2024 is largely explained by sustained growth in N-91 business services cleaners in that period (see Annex 3, Figure A4 for shares and Figure A5 for levels). In some cases, however, both factors – the different time periods covered and the different set of jobs observed – play a role. In France and Ireland, for example, the more pronounced decline in 2011–2024 than in 2001–2024

Figure 4: Annualised growth in the shares of employment and hours worked of the representative low-paid jobs, Member States (%)



Notes: The bars represent annualised growth in the shares of employment and hours worked for the eight representative jobs between 2011 and 2024 (Member States are ranked from highest to lowest rate of change in employment), while the dots show annualised growth for the five jobs that can be followed over 2001–2024 (see Box 2 for an explanation of the two groups). As noted in Table A2 in Annex 1, several country-years are excluded due to breaks in the EU-LFS data series. Malta is excluded because it reports the occupation only at the ISCO one-digit level in the EU-LFS. In the case of Romania, the dots for 2001–2024 are omitted because changes in the occupational classification prevent consistent identification of the selected jobs over the full period.

Source: Authors' calculations based on EU-LFS and SES data.

reflects not only the downward trend in G-52 retail sales workers but also changes in Q-53 health and social care workers, which expanded in the 2000s but stagnated, and even slightly declined, after 2011 (see Figure A4 in Annex 3). In Slovenia, the large gap in growth rates is due not only to the downward trend in G-52 retail sales workers but also a shift in the trajectory of the job I-51 hospitality personal service workers, which was broadly stagnant in the early 2000s but declined sharply in the later period, partly as a result of disruptions related to COVID-19 (see Figure A4 in Annex 3).

Patterns by time period

To better understand how these changes unfolded over time, Figure 5 shows the growth rates of employment and hours worked in the representative low-paid jobs by Member State and period. This helps to clarify whether the changes were gradual or mainly concentrated around specific events, such as the 2008 global financial crisis or the COVID-19 pandemic. The figure also shows the EU averages of Member States (both weighted and unweighted). Growth rates are shown for employment and hours worked in the five representative low-paid jobs that can be followed from 2001, both in terms of the absolute levels (dark shaded) and in terms of the share represented over the absolute level (light shaded). The corresponding values for the full set of eight jobs (i.e. also including G-52 retail sales workers, N-91 business services cleaners and I-94 hospitality food preparation assistants) are shown by black crosses.

Figure 5: Annualised growth in employment and hours worked (level and share) in the representative low-paid jobs, EU and Member States, 2001–2024 (%)



Notes: The bars represent annualised percentage growth in the five jobs that can be followed throughout the period studied, while black crosses show the corresponding growth rates when all eight jobs are included for the final two periods only (see Box 2). Annualised growth rates are shown rather than total percentage change to account for the different lengths of the four periods and the different start and end years for some Member States. Malta is excluded because it reports the occupation only at the ISCO one-digit level in the EU-LFS. As noted in Annex 1, Table A2, the observation periods differ among the Member States due to breaks in the EU-LFS data series, as marked by the x-axes. *These bars should be interpreted with caution, as both countries experienced a break in the LFS during the period (in 2020 in Germany and in 2021 in France).

Source: Authors' calculations based on EU-LFS and SES data.

For **levels** of employment and total hours worked, the major pattern over the four time periods for the average across Member States (EU unweighted), and also in many individual Member States, is ‘up-down-up-down’, corresponding to the economic cycle of growth and disruption in these four periods. There are some Member States that did not see jobs destroyed in recessionary periods, such as Austria and Cyprus during the Great Recession and Finland, Slovenia and Spain during the COVID-19 pandemic (as illustrated in Figure A4 in Annex 3, the increase for Slovenia in the last period was due mostly to the large increase in the job C-93 manufacturing labourers), but the general pattern holds for most Member States. In the final period, the EU as a whole (EU weighted) shows virtually no change (unlike the decline observed in Member States on average). This reflects the fact that several of the largest Member States, such as France, Germany, Italy and Spain, had largely recovered from the COVID-19 shock by 2024 in terms of employment levels and, to a lesser extent, in terms of hours worked.

For **shares**, however, the pattern is more one of growth or stability in the first three periods, with significant declines limited to the more recent period, corresponding to the disruptions associated with the COVID-19 pandemic. On average across Member States (EU unweighted), the employment share of the five representative low-paid jobs increased only slightly in 2001–2007 and even more so in 2008–2010, while that of the eight representative low-paid jobs also remained almost constant in 2011–2019 before declining significantly between 2019 and 2024. The same general pattern in employment shares emerges for the EU as a whole (EU weighted).

Absolute values versus shares

While levels and shares tend to move together for the most part, there are exceptions. For one, absolute growth rates tend to be a little more pronounced than growth in shares, suggesting that growth or decline in low-paid jobs often correlates with what is going on in the economy overall. This pattern is especially prevalent during the 2008–2010 crisis for several Member States and, in fact, for the EU as a whole. The implication is that the drops seen in the low-paid jobs in absolute terms reflected what was going on in the economy more broadly, while the shares do not exhibit a decline. In the most recent period, however, corresponding to the COVID-19 recession, there were widespread decreases in the shares of low-paid jobs. For example, Cyprus, Greece, Ireland and Luxembourg all exhibit significant declines in employment shares in the latest period.

Decreases in shares, and not just absolute employment, point to this more recent recession having had significant structural or compositional impacts. In certain cases, such as for Cyprus, there is a large fall only in the share, with a much smaller decline in the levels of employment and hours worked in these low-paid jobs.

Employment versus hours worked

In most Member States and time periods, growth in total hours worked and employment tend to move closely in parallel⁽⁹⁾. This is unsurprising given that total hours worked represents the sum of all hours worked by all employees and, therefore, will naturally decrease or increase with the level of employment. In certain cases, however, the two measures move differently. For example, in some Member States (e.g. Ireland), hours worked fell more than employment during the Great Recession (2008–2010), suggesting that not only were some low-paid jobs cut but the jobs that were not cut had their hours reduced. This is a fairly typical employer response to an expected short-run lag in demand: it is cheaper to hold on to workers but to cut their hours because hiring again when demand picks up is a costly process. Indeed, on average across Member States (EU unweighted), which reflects the experiences of Member States more evenly, there is a slightly larger drop in hours worked than in employment during both the Great Recession and the COVID-19 period. In the EU as a whole (EU weighted), which is more influenced by larger Member States, the changes in levels appear more limited, particularly in the most recent period.

After outlining the key differences by outcomes, country and time period, the following picture emerges regarding growth in the representative low-paid jobs.

- While employment levels fell in both recession periods, the representative low-paid jobs quickly recovered after the Great Recession (2008–2010) and did not reflect a compositional shift in most Member States, whereas the decreases related to the COVID-19 pandemic (2019–2024) were more specific to the low-paid segment and more persistent, as reflected by the recent fall in employment shares.
- Member States differ, especially during recessionary periods. For example, some, such as Estonia, Latvia and Luxembourg, exhibited substantial declines in employment levels during the last period. Others, such as Belgium and Finland, showed growth.

⁽⁹⁾ Figures A2 and A3 in Annex 3 show the full time series of headcount employment and hours worked in levels and shares by Member State. Differences between the share of employment and the share of hours worked largely reflect varying levels of part-time work in low-paid jobs. This gap is especially noticeable in several Nordic and continental countries (e.g. Austria, Belgium, Denmark, Finland and Germany), while it is smaller in France, Italy, Slovenia and Spain.

These patterns carry two broader implications. The first concerns how downturns affect the low-paid segment. The divergence between levels and shares matters for how downturns are diagnosed: a recession that depresses both employment and the share of total employment, as in the COVID-19 episode, signals a structural reallocation away from low-paid work, while one that depresses levels alone, as in the Great Recession, is more consistent with a temporary contraction of demand. The persistence of the COVID-19 effect in several Member States suggests that structural changes in the more recent period, such as shifts in consumption patterns, technological progress and globalisation, altered the demand for certain types of low-paid jobs and limited the extent of the recovery. Moreover, the fact that some Member States experienced sharp declines while others saw growth over the same period further indicates that the response to a common shock is heavily mediated by country-specific institutional, sectoral and demographic factors, whose role is examined later in the chapter.

The second implication concerns measurement. The fact that hours worked adjust slightly more than headcount during downturns means that headcount-

based monitoring may understate the true extent of adjustment in low-paid jobs, which is an argument for tracking both metrics in policy assessments.

To better understand why the disruptions associated with the COVID-19 pandemic led to a larger compositional shift away from low-paid jobs and why responses differed across Member States, the next section examines whether specific jobs performed differently across periods. For this exercise, the Member States were grouped into six macro-regions, labelled as follows: Balkan, Baltic, Eastern, Nordic, Southern and Western-Central. Box 3 explains the categorisation of Member States according to these macro-regions.

Variation in trends across jobs and macro-regions

Figure 6 shows how the share of employment in each of the eight representative low-paid jobs has evolved in the EU (unweighted and weighted averages across Member States) and macro-regions. The analysis covers 2011–2024 for all eight jobs and extends back to 2001 for the five jobs for which additional data are available.

Figure 6: Average annualised growth in the employment share of the representative low-paid jobs, EU and macro-regions (%)



Notes: The y-axes show the average annualised percentage growth in employment shares across Member States within each macro-region for a given period. Jobs are sorted by employment size in 2011 (see Figure A1 in Annex 2). In some cases, the actual period used differs slightly due to breaks in the EU-LFS employment classifications (see Table A2 in Annex 1). Macro-region values are averages of country-level growth rates (not weighted by Member States' populations). EU values average the annualised growth rates across Member States. The unweighted EU average treats all Member States the same, while the weighted average gives more weight to Member States with larger populations.

Source: Authors' calculations based on EU-LFS data.

The first takeaway is that trends differ widely across jobs. Three of the jobs are characterised by a generalised declining trend.

- **G-52 retail sales workers** shows a broad decline across most macro-regions (but a slight decline in the Southern and Balkan macro-regions), with an average decrease of about 1.1 % per year for Member States (1.2 % for the EU as a whole), amounting to a total decline of 13.6 % (14.4 %) over 2011–2024. Given the size of this job (see Figure A1 in Annex 2), these declines have a significant impact on the overall trend for all jobs.
- **C-93 manufacturing labourers** also declined in most Member States, with the Baltic and Balkan groups the main exceptions. Across Member States, the average annual decrease was – 1.4 % (– 2.4 % for the EU as a whole), corresponding to a total decline of – 17.1 % (– 26.7 %) over 2011–2024. The decline was steeper in the early 2000s, in line with major waves of automation and offshoring in manufacturing. Over 2001–2024, this resulted in an average annual decrease of – 2.3 % (– 3.0 % population-weighted), corresponding to a total decline of – 41.2 % (– 49.9 %) over 2001–2024.
- **S-51 personal service workers** shows a general downward trend, especially in the early 2000s and in the Balkan group (the exceptions being the Nordic and Southern groups). On average across Member States, the yearly decrease was – 0.9 % (– 0.3 % population-weighted), corresponding to a total decline over 2011–2024 of – 11.5 % (– 3.4 %). The average yearly decline across Member States over 2001–2024 was – 1.6 % (– 1.0 % population-weighted), corresponding to a total decline of – 31.4 % (– 20.9 %).

A contrasting pattern is evident, however, in two jobs.

- **Q-53 health and social care workers** grew steadily in most areas, with an average annual increase across Member States of 1.7 % (2.0 % population-weighted), corresponding to a total increase of 24.4 % (29.6 %) over 2011–2024, and similar annual rates over 2001–2024, corresponding to a total increase of 48.7 % (54.9 %). The Nordic countries are an exception, mainly due to Sweden (see Figure A7 in Annex 3, which presents the annualised change in the employment shares of the eight representative low-paid jobs by Member State).
- **I-94 hospitality food preparation assistants** grew substantially across all macro-regions, especially in the Balkan and Baltic groups. On average across Member States, the increase was 4.0 % (2.3 % population-weighted), corresponding to a total increase of 66.1 % (34.6 %) over 2011–2024. However, this job represents a relatively small share of total employment in most Member States, so its growth does not offset the decline in larger jobs such as G-52 retail sales workers.

For the remaining three jobs, regional trends often move in opposite directions and partly cancel each other out, resulting in small increases at the EU level.

- **I-51 hospitality personal service workers** has grown since 2001 in Baltic, Nordic and Southern groups but declined after 2011 in Balkan and Eastern macro-regions. As a result, growth on average across Member States was close to zero between 2011 and 2024, at 0.1 % annually (0.3 % population-weighted), corresponding to a total increase of about 1.5 % (3.6 %). Over the longer period of 2001–2024, growth was higher, at 0.6 % (1.2 % population-weighted), corresponding to a total increase of about 15.9 % (31.1 %).
- **G-93 retail labourers** grew in the Balkan and Baltic macro-regions over the whole period, while the Nordic group saw a clear shift after 2011, largely driven by Sweden (see Figure A7 in Annex 3). At the EU level, this translated into modest growth: 0.4 % annually between 2011 and 2024 (0.6 % when population-weighted), corresponding to total increases of 5.1 % (8.6 %). Over 2001–2024, growth was stronger, at 1.0 % annually (0.6 % population-weighted), corresponding to total increases of 26.8 % (14.0 %).
- **N-91 business services cleaners** declined slightly in the Eastern and Southern groups but grew in the other macro-regions, especially the Balkan and Baltic groups. Overall, this led to an average increase across Member States of 1.0 % (0.4 % population-weighted), amounting to a total growth of 14.4 % (5.7 %) between 2011 and 2024.

Box 3: Categorisation of Member States into macro-regions

The macro-regions are defined on a geographical basis, grouping Member States that are broadly proximate and tend to share certain structural and economic characteristics (Figure 7). The macro-regions tend to differ somewhat in which of the representative jobs are the largest. For example, in the Southern group, the largest of the representative jobs is I-51 hospitality personal service workers, whereas in the Nordic group, it is Q-53 health and social care workers. The Member States have been assigned to the macro-regions as follows:

- Western–Central: Austria, Belgium, France, Germany, Ireland, Luxembourg, the Netherlands;
- Nordic: Denmark, Finland, Sweden;
- Southern: Cyprus, Greece, Italy, Malta, Portugal, Spain;
- Eastern: Czechia, Hungary, Poland, Slovakia;
- Baltic: Estonia, Latvia, Lithuania;
- Balkan: Bulgaria, Croatia, Romania, Slovenia.

Note that the classification is intended as an analytical convenience to summarise patterns across Member States and should not be taken to imply homogeneity within groups or sharp boundaries between them. Results at macro-region level are unweighted averages across the Member States in each macro-region. This is intentional: weighting by population would cause results to be dominated by the largest Member States, obscuring the detection of common trends across Member States within a macro-region.

Figure 7: Map of macro-regions



Source: Authors.

Figure 8 shows the changes in the employment shares of each of the representative low-paid jobs, broken down into four subperiods, at EU level (weighted and unweighted) and for the macro-regions. Figure A8 in Annex 3 presents the corresponding statistics for employment levels, showing similar patterns, while individual country-level plots are presented in Figure A4 (shares) and Figure A5 (levels).

EU averages. On average across Member States (EU unweighted), the modest growth in employment levels and shares in the first three periods appears to be mostly driven by jobs in services that are the least susceptible to technological replacement (principally, Q-53 health and social care workers and I-51 hospitality personal service workers but to some extent also G-93 retail labourers, I-94 hospitality food preparation assistants and N-91 business services cleaners). By contrast, C-93 manufacturing labourers and G-52 retail sales workers see relative declines, likely due to the increasing prevalence of manufacturing imports and the roll-out of automated checkouts, respectively.

Overall, the contrasting trends across the different low-paid jobs reflect the trends that are also responsible for the broader shifts in the employment structure characterised by polarisation and upgrading. As most of these low-paid jobs record increases rather than declines, the group as a whole shows modest growth over the first three periods. However, in the final period, an overall decline in employment shares is observed, largely driven by those jobs most affected by the pandemic. These are jobs that previously had robust growth, such as I-94 hospitality food preparation assistants (which recorded only modest growth in the final period, likely reflecting an incomplete rebound after the COVID-19 pandemic), I-51 hospitality personal service workers and N-91 business services cleaners, but there are also the jobs that continue their previous stagnating trend (i.e. G-52 retail sales workers and S-51 personal service workers). These five jobs were all

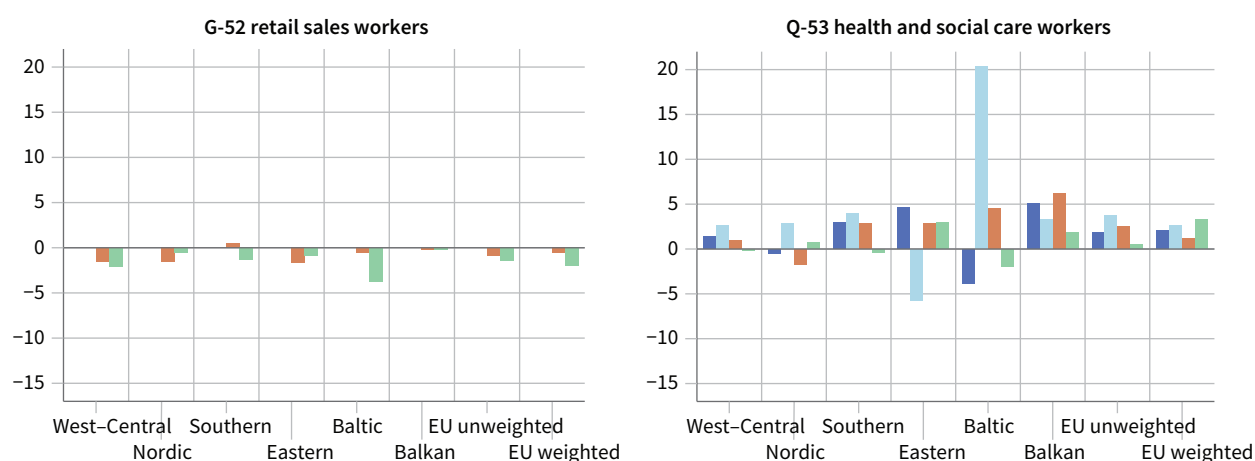
hit hard during the pandemic due to lockdowns that affected hospitality, retail and other customer-facing services and, in the case of office cleaners, the lack of demand due to the switch to working from home. Q-53 health and social care workers, on the other hand, seem to have been fairly pandemic-proof, likely owing to their crucial role during this time.

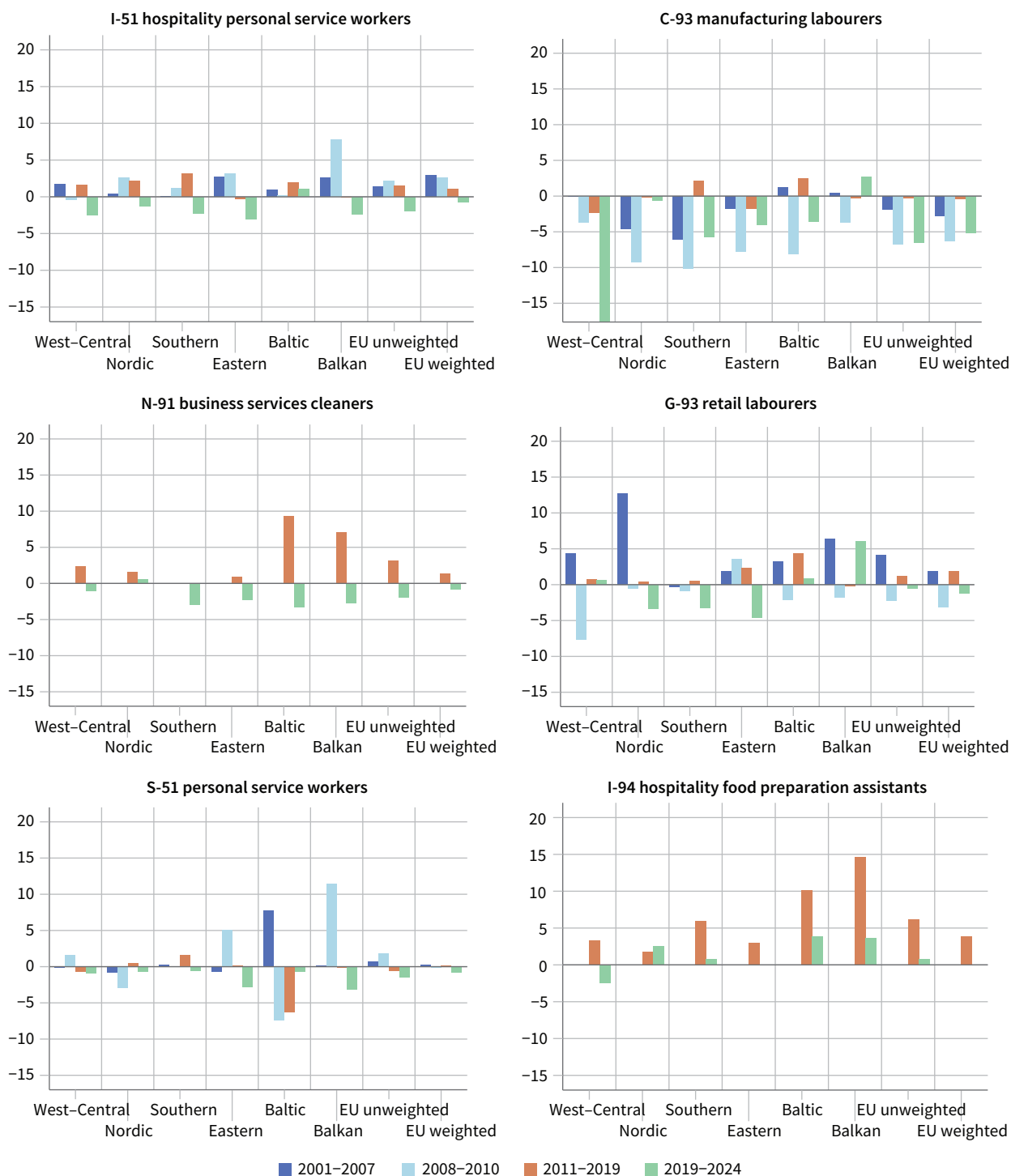
Macro-regions. Focusing on the individual macro-regions, it is possible to identify which drive the overall patterns observed at the EU level. In terms of the growth in the first three periods, the macro-regions appear to move together for the most part, with one or two macro-regions leading the growth. For example, the positive growth rates in the first three periods in the key jobs of Q-53 health and social care workers, I-94 hospitality food preparation assistants, and N-91 business services cleaners appear generally stronger in the Balkan and Baltic macro-regions, whereas the Nordic and Southern regions see the biggest declines in C-93 manufacturing labourers.

There are a few instances of an individual Member State bucking the EU trend for a certain job. These cases usually occur in isolated single periods with context-dependent explanations. For example, the Nordic macro-region shows a decrease in Q-53 health and social care workers in the third period that is likely to be due to reforms to care work in Sweden (see Figure A4 in Annex 3) that worsened job satisfaction, resulting in a rise in the rate of workers quitting, as described by Trydegård (2012) and Strandell (2020). Such outliers do not tend to persist across multiple periods and, therefore, do not obscure the overall trends.

In terms of declines during the pandemic, these are observably less pronounced in the macro-regions that were not as hard hit by the COVID-19 pandemic, such as the Nordic macro-region. In sharp contrast to the rest of Europe, the Nordic macro-region saw a slight increase in the share of employment among N-91 business services cleaners.

Figure 8: Average annualised growth in the employment share of the representative low-paid jobs by subperiod, EU and macro-regions (%)





Notes: The y-axes show the average annualised percentage growth in employment shares across Member States within each macro-region for a given period. In some cases, the actual period used differs slightly due to breaks in the EU-LFS employment classifications (see Table A2 in Annex 1). Macro-region values are averages of country-level growth rates (not weighted by Member States' populations). EU values average the annualised growth rates across all Member States. The unweighted EU average treats all Member States the same, while the weighted average gives more weight to Member States with larger populations.

Source: Authors' calculations based on EU-LFS data.

The disaggregation by job and macro-region clarifies that the modest aggregate decline in employment shares of the representative low-paid jobs over 2011–2024 is not a uniform downward trend but the net result of opposing forces. Along the job dimension, the decline is largely driven by G-52 retail sales workers,

which shows a broad downward trend throughout the period, and I-51 hospitality personal service workers, which was significantly affected by structural changes following the COVID-19 pandemic. This decline was mitigated, but not offset, by the upward trend in Q-53 health and social care workers (see also Figure A8).

The implication for policy is that changes in the overall incidence of low-paid work increasingly reflect shifts in the sectoral and occupational composition of employment, pointing to the need for differentiated policy responses that address declining low-paid segments (e.g. retail and manufacturing), while improving job quality and wage progression in expanding ones, notably in health and social care.

Along the macro-regional dimension, trajectories diverge in patterns that map onto underlying structural differences. For example, the Balkan and Baltic regions are the main exception to the EU-wide decline in C-93 manufacturing labourers and show the strongest expansion of I-94 hospitality food preparation assistants, G-93 retail labourers and N-91 business services cleaners, suggesting broad-based growth in low-paid service jobs from a relatively low base, while the Nordic group stands out as an exception to the general expansion of health and social care workers.

Taken together, the job and regional patterns underline the structural diversity of the low-paid segment across the EU. This diversity matters because minimum wage policies do not operate in a vacuum: their employment effects are mediated by the structural composition of each country's labour force, which determines whether firms can absorb higher wage floors through productivity gains and reallocation rather than adjustments on the employment margin alone.

Before turning to the drivers of employment changes in low-paid jobs, Box 4 places the analysis of the eight representative low-paid jobs in the broader context of the whole employment structure, showing how employment shares have evolved across the five job-wage quintiles in Member States. The next section examines whether the differences among Member States and periods documented so far can be traced to macroeconomic, demographic and structural drivers, such as labour market policies.

Box 4: Changes in employment shares across the whole employment structure

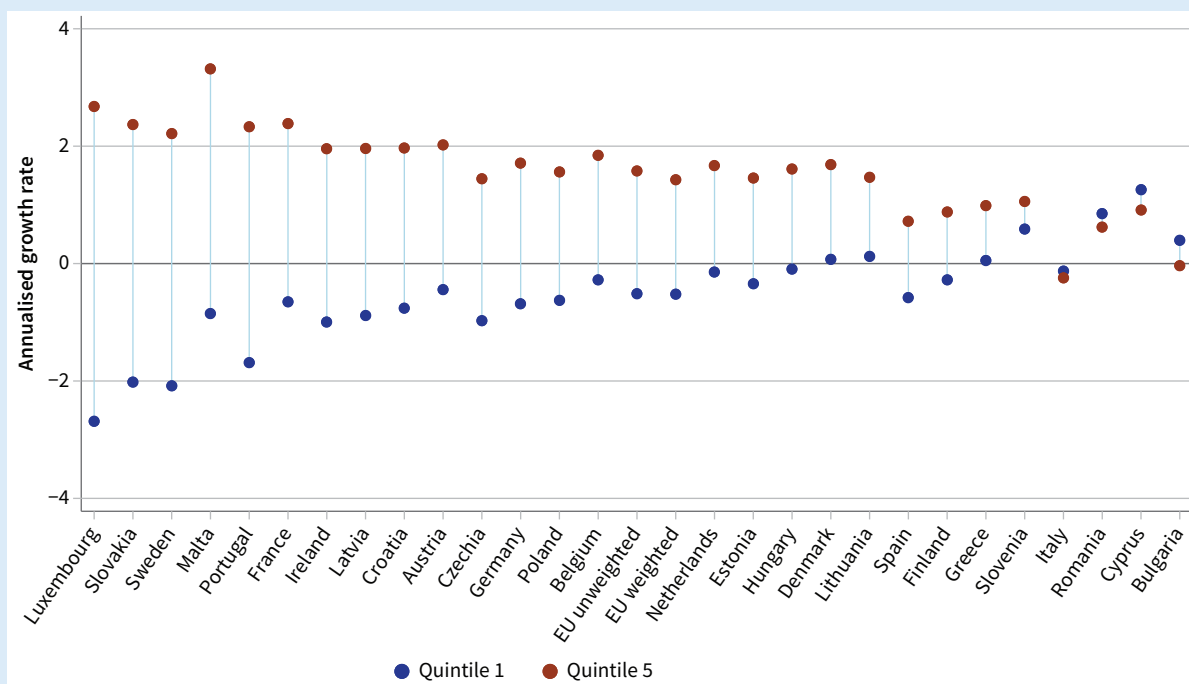
This chapter mainly focuses on the eight representative low-paid jobs, but a key outcome variable in Chapter 3 is changes in employment shares in each of the five job-wage quintiles. To provide a background for this analysis and descriptive insights into trends across the wage structure, the changes in employment shares by job-wage quintile are examined here. This allows an assessment of whether employment growth has been concentrated at the bottom, middle or top of the job-wage distribution.

Figure 9 shows the annualised change in employment shares for the lowest-paid (bottom) job-wage quintile (Quintile 1) and highest-paid (top) job-wage quintile (Quintile 5) over 2001–2024. It should be noted that, unlike the representative low-paid jobs analysis, where the same jobs are tracked throughout the period, the set of jobs within each quintile may shift slightly across subperiods, as the job-wage quintiles had to be recalculated to account for changes in the sectoral and occupational classifications. In practice, however, these changes are not substantial. Looking at the unweighted average across Member States, the overall pattern points to employment upgrading. The share of the lowest-paid jobs has slightly declined (– 0.5 % annually, – 11.2 % overall), while the share of the highest-paid jobs has increased (1.6 % annually, 43.3 % overall). The larger increase in the top quintile suggests that these gains are not driven only by declines in the bottom quintile but also reflect shifts away from middle-paid jobs (in Quintiles 2, 3 and 4). The pattern is the same when looking at the EU as a whole (the weighted average), suggesting that the pattern is generalised rather than being driven by a few particularly large Member States ⁽¹⁰⁾.

This EU-wide pattern masks substantial differences between Member States. The upgrading trend is particularly pronounced in Member States such as Ireland, Luxembourg, Portugal, Slovakia and Sweden. A smaller group of Member States displays a pattern closer to mild polarisation, with increases in both the bottom and top quintiles, as seen in Cyprus, Romania and Slovenia. Cyprus and Romania, together with Bulgaria, also stand out for having slightly stronger growth in the bottom quintile than in the top quintile. Italy is the only Member State in which the employment structure remained almost completely unchanged.

⁽¹⁰⁾ The weighted average changes for 2001–2024 are – 11.3 % for Quintile 1 and + 38.6 % for Quintile 5.

Figure 9: Annualised growth in the employment share of the bottom and top job-wage quintiles, EU and Member States, 2001–2024 (%)



Notes: The y-axis shows the annualised percentage growth in employment shares for the bottom and top quintiles over 2001–2024. This is calculated as a weighted average of the annualised growth rates in each subperiod (2001–2007, 2008–2010, 2011–2019 and 2019–2024), with weights based on the number of years. The trend refers to 2011–2024 for Malta. In some cases, the actual period used differs slightly due to breaks in the EU-LFS employment classifications (see Table A2 in Annex 1). EU values average the annualised growth rates across all Member States. The unweighted EU average treats all Member States the same, while the weighted average gives more weight to Member States with larger populations. Member States are sorted based on the difference between the growth rate for Quintile 1 and that for Quintile 5.

Source: Authors' calculations based on EU-LFS and SES data.

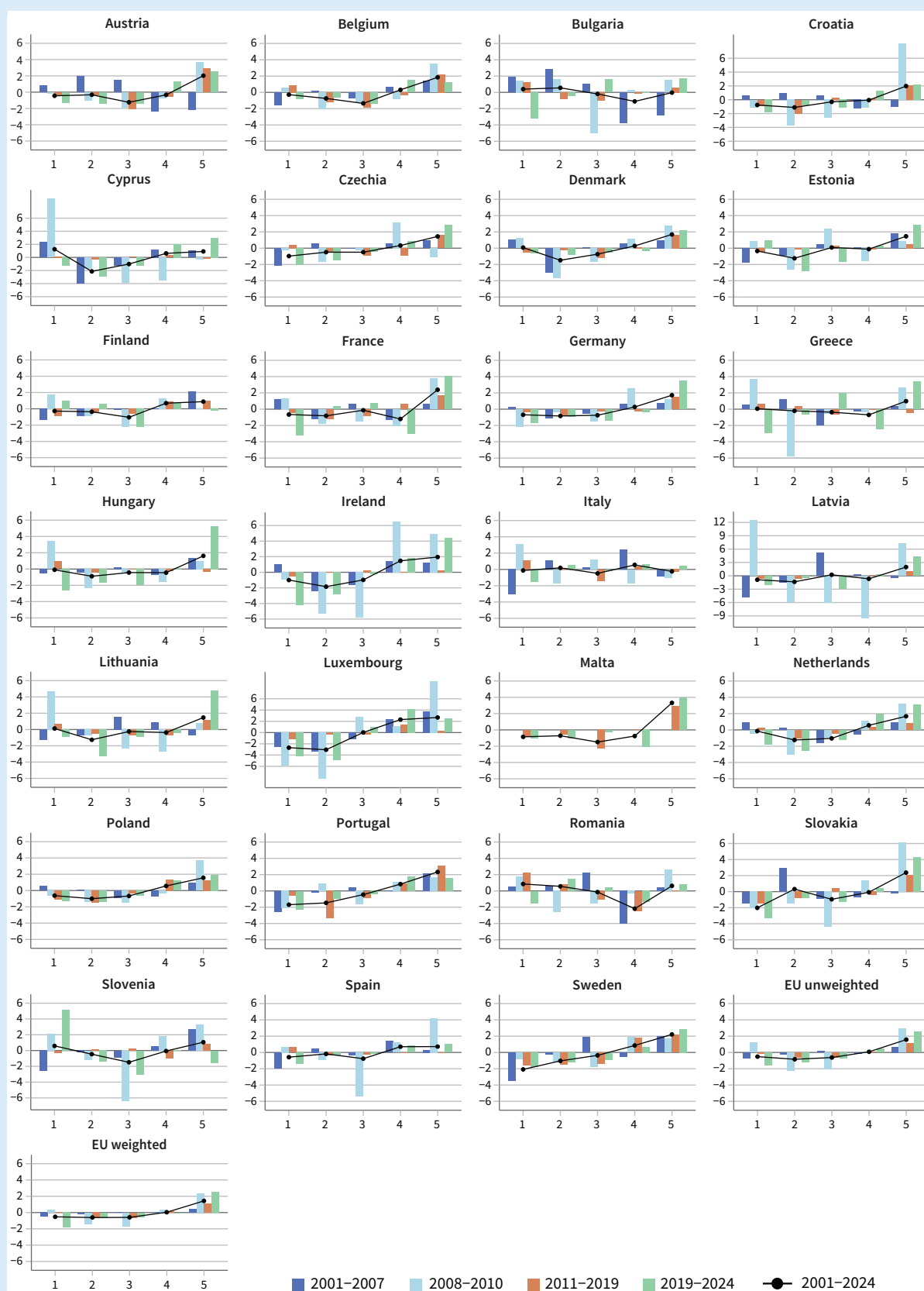
Figure 10 goes into more detail, showing the change in the share of employment of each of the five job-wage quintiles and showing the breakdown across subperiods. On average across Member States, there seems to be an upgrading pattern but with a small degree of polarisation. Rather than an increase in employment at the bottom of the distribution, as in a typical polarisation pattern, the lowest-paid quintile shows a more moderate decline than the middle quintiles. Over 2001–2024, the annualised change was –0.5 % in Quintile 1 (–11.2 % overall), compared with –0.8 % in Quintile 2 (–17.6 %) and –0.6 % in Quintile 3 (–13.4 %). By contrast, Quintile 4 remained broadly stable at 0.1 % (2.0 %), while Quintile 5 grew strongly at 1.6 % (43.3 %) ⁽¹¹⁾. For 2011–2024, during which period jobs can be consistently assigned to the same quintiles, the pattern is similar: employment shares fell by –0.7 % annually (–8.2 % in total) in Quintile 1, –0.9 % (–10.8 %) in Quintile 2 and –0.7 % (–8.7 %) in Quintile 3, while increasing slightly in Quintile 4 by 0.1 % (1.8 %) and significantly in the top quintile, Quintile 5, by 1.7 % (23.9 %).

However, there is some heterogeneity across Member States and time periods. The most common pattern observed is one of upgrading, with employment shares decreasing in the lower quintiles and increasing in the upper ones. This is the case for Ireland, Luxembourg, Malta, Poland and Sweden in most time periods.

In fewer cases, an employment polarisation pattern is observed, characterised by a hollowing out of jobs in the middle of the wage distribution and increases in employment in the bottom (lowest wages) and top quintiles (highest wages). Such a pattern is observed, for example, in Belgium, Lithuania and the Netherlands for 2011–2019, but for no Member State is this pattern persistent throughout the entire studied period.

⁽¹¹⁾ The overall percentage changes between 2001 and 2024 are similar when weighting Member States by population: –11.3% in Quintile 1, –13.1% in Quintile 2, –12.7% in Quintile 3, +0.9% in Quintile 4 and +38.6% in Quintile 5.

Figure 10: Annualised growth in the employment share of the five job-wage quintiles by subperiod, EU and Member States (%)



Notes: The y-axes show the annualised percentage growth in employment share for each quintile in each of the four periods. The x-axes show the quintiles (1 = lowest to 5 = highest). The long-term trend 2001-2024 is the simple average of the annualised growth rate in each period, weighted by the number of years. The trend refers to 2011-2024 for Malta. In some cases, the actual period used differs slightly due to breaks in the EU-LFS employment classifications (see Table A2 in Annex 1). EU values average the annualised growth rates across all Member States. The unweighted EU average treats all Member States the same, while the weighted average gives more weight to Member States with larger populations.

Source: Authors' calculations based on EU-LFS and SES data.

The corresponding figures for other outcomes can be found in Annex 3, specifically the annualised change in the share of hours worked (Figures A9 and A10); the annualised change in employment levels (Figures A11 and A12); and the annualised change in hours worked (Figures A13 and A14). These other outcomes are broadly consistent with the patterns of change in the share of employment.

These trends across the employment structure are in line with those seen in previous Eurofound reports and studies and by other researchers; unlike in the United States, the polarisation in European countries is generally asymmetrical, with a definite skew towards high-paid and high-skilled jobs (Eurofound, 2014a). Furthermore, polarisation has been observed in specific countries in specific periods rather than as a prevalent form of structural change occurring uniformly across time and across most Member States (Eurofound, 2014a). In this regard, trends across the wage structure are similar to trends for the eight representative jobs, which were also very heterogeneous across Member States and time.

Factors driving growth in the eight jobs

As discussed in Chapter 1, employment trends in the representative low-paid jobs are shaped by a combination of factors. These include institutional characteristics, such as minimum wage policies, whose specific impacts are analysed in detail in Chapter 3 due to their key importance to this report. Other factors include global megatrends (e.g. technological change and globalisation), demographic changes and the general business cycle. This section provides a high-level assessment of the non-minimum-wage factors that are most associated with changes in low-paid jobs. Beyond being of interest in their own right, the results also inform the empirical strategy in Chapter 3, which examines the effect of minimum wages while controlling for the broader drivers identified here.

In general, gross domestic product (GDP) growth stands out as by far the strongest single correlate of employment growth in the representative low-paid jobs, in both levels and shares. Figure 11 illustrates this relationship, plotting employment growth in low-paid jobs against contemporaneous and lagged GDP growth at the country-year level. Both levels and shares display a clear positive association, with the association being greater for employment levels than for employment shares. This is intuitive: GDP growth raises labour demand across the economy, which translates fairly directly into more low-paid jobs, whereas its effect on the share of low-paid jobs depends on whether these jobs expand faster than jobs higher up in the job-wage distribution, a margin in which the business cycle plays a smaller and more ambiguous role. Lagged GDP growth is included alongside the contemporaneous measure because employment adjustments might respond to changes in macroeconomic conditions with a delay. For example, firms might absorb short-run fluctuations through hours, overtime or temporary contracts before

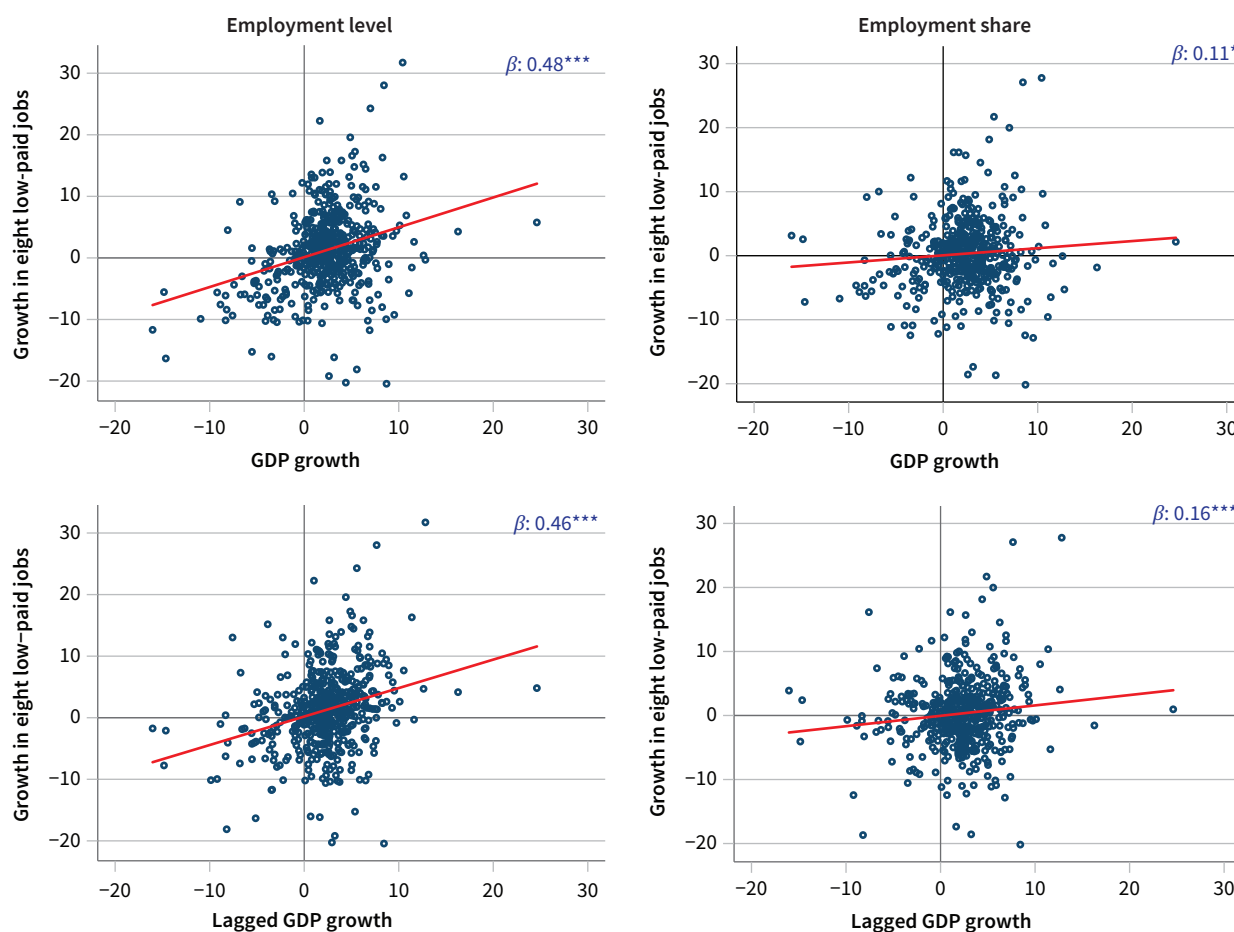
adjusting headcount, so the full employment response to a change in GDP could be spread over more than one year.

Figure A15 in Annex 3 explores a wider set of factors, illustrating the change in employment levels and shares for the eight representative low-paid jobs in total and for each of the five job-wage quintiles, next to changes in selected potential determinants capturing different aspects, such as the economy, demographics, vulnerability to trade or technological change, and institutional factors. The growth patterns for the representative low-paid jobs and employment in the lower job quintiles appear to be tightly linked with GDP growth but less obviously related to the other factors. Both GDP and low-paid employment levels (in the eight representative low-paid jobs and lower quintiles) exhibit a cyclical nature, with sharp contractions during the Great Recession and COVID-19 pandemic. This pattern holds somewhat for employment shares, especially for the later period, but less so for the Great Recession. Employment in higher quintile jobs follows a different pattern from that of low-paid employment, with generally higher growth in levels and shares (especially for the top quintile). Employment in high-paid jobs was much less affected by the COVID-19 recession than low-paid employment.

Figure A16 in Annex 3 formalises this comparison by reporting the coefficients from a multivariate regression of growth in employment in the eight representative low-paid jobs on all determinants simultaneously, controlling for country and year fixed effects.

The results confirm the dominance of GDP: a 1 percentage point increase in lagged GDP growth is associated with roughly a 0.32 percentage point increase in the employment level in the eight representative low-paid jobs ($p < 0.01$) and a 0.18 percentage point increase in the relative employment share ($p = 0.11$, marginally insignificant), while contemporaneous GDP growth is not significant

Figure 11: Relationship between employment growth (level and share) in the eight representative low-paid jobs and GDP growth



Notes: The dots represent country-year observations of the percentage employment change in the representative low-paid jobs, either in level (left) or share (right), and GDP percentage growth (top) or lagged GDP percentage growth (bottom), using 527 country-year observations (for 2002–2024). β denotes the coefficient of the simple linear relationship (significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$). Data from 2008 and 2011 are excluded from the employment variable, as growth rates cannot be computed due to changes in the ISCO and NACE classifications (see Box 2). Malta is excluded due to data reliability issues. Additional country-year observations are excluded from the employment outcomes due to discontinuities in the EU-LFS data series, as summarised in Annex 1, Table A2.

Source: Authors' calculations based on EU-LFS (employment) and Eurostat (GDP) data.

once the lag is included. Few of the remaining variables have a statistically significant relationship in these regressions, which is partly expected in a joint model, given that several are likely correlated with GDP growth, and their independent contribution becomes harder to identify once GDP is already controlled for⁽¹²⁾. The temporary employment share is the only factor that is significant in both the levels and shares regressions, and the female employment rate has a large and significant coefficient in the levels regression. It seems likely, however, that these variables are related to employment growth simply by their connection to GDP growth or by the fact that women and temporary

workers are more likely to be in those low-paid jobs (i.e. reverse causality).

The result that GDP growth dominates the variation across Member States and over different periods in employment in low-paid jobs has implications both for the analysis that follows and for policy. Analytically, it justifies the choice in Chapter 3 to control for the business cycle when estimating minimum wage effects: any analysis that does not do so risks confounding wage policy with cyclical co-movement. At the same time, it is important to remark that the absence of a clear relationship between the other factors (trade, technology, demographics and institutions) and

⁽¹²⁾ Note that, while some variables are correlated with each other (e.g. unemployment and GDP), variance inflation factors for the multivariate ordinary least squares regression are all below 4 (averaging 2.3), well within the conventional thresholds of 5 (moderate concern) and 10 (severe multicollinearity).

employment growth in low-paid jobs in these aggregated country-year regressions does not mean that they are irrelevant. Their effects may be obscured by their correlation with GDP, may operate through channels that the country-year aggregation does not capture or may matter for specific jobs or country groups rather than on average. For this reason, the econometric analysis in Chapter 3 retains these variables as controls, in order to account for residual sources of variation that could otherwise bias the estimated effects of minimum wages.

For policy, the dominance of the business cycle has clear implications. Employment in low-paid jobs is markedly more cyclical than employment in high-paid jobs. This asymmetry means that downturns disproportionately affect workers at the lower end of the job-wage distribution, strengthening the case for countercyclical policy instruments specifically targeted at low-paid segments during recessions, such as short-time work schemes, in-work benefits and sectoral support measures.

3 Effect of minimum wages on low-paid jobs and the employment structure

This chapter addresses the central research question of the report: do minimum wage policies influence the structure of employment across the EU, and, in particular, do they contribute to a shift from employment in lower-paid to higher-paid jobs? The question has been examined before in Eurofound research (Eurofound, 2014a), which found no compelling evidence of such an effect during 1995–2007.

The contribution of this chapter is threefold. First, it revisits the question over a longer and more policy-relevant time frame (2001–2024) that includes the substantial minimum wage increases observed since the mid-2010s. Second, it broadens the scope of analysis compared with most of the existing literature: while previous studies have typically assessed the local employment effects of specific minimum wage reforms in individual countries and focused on the most exposed workers (e.g. low-wage, female, young or migrant workers), this chapter examines the relationship across all Member States that have had a national minimum wage for more than two decades and uses the job (occupation by sector) as the unit of analysis, which allows compositional effects across the whole employment structure to be captured. Third, it uses an econometric approach that accounts for the main drivers of employment identified in Chapter 2, with the goal of providing the most reliable estimate possible of the role played by minimum wages, given the data at hand ⁽¹³⁾.

While a first attempt was made in the previous chapter to identify some factors that may drive employment trends in low-paid jobs, this chapter provides a detailed analysis of the specific impact of minimum wages, which is the main variable of interest in this report. For this reason, instead of focusing on the eight representative low-paid jobs (as in Chapter 2), the empirical analysis uses the top 12 country-specific low-paid jobs, which provides a better representation of the low-paid job segment in each Member State and the impact of minimum wages on employment

patterns. As explained at the beginning of Chapter 2, these 12 low-paid jobs were selected as they are consistently among the largest jobs (in terms of total employment) within the bottom job–wage quintile in each Member State.

The chapter proceeds in three steps. It first examines the changes in employment and hours worked in these top 12 low-paid jobs and across the job–wage structure, following individual cases of large changes in the minimum wage in specific Member States, before moving on to plotting the more general relationship between growth in the national minimum wage and growth in low-paid jobs and over the whole employment structure, across all Member States and years. It then examines the share of workers in low-paid jobs earning the minimum wage in each period and geographical area, to provide an indication of the extent to which minimum wage changes might affect those labour markets. Finally, the chapter presents the results of an econometric analysis of the impacts of minimum wage growth on employment growth in the top 12 low-paid jobs and across the whole job–wage structure.

Note that, unlike Chapter 2, the focus here is on the effects of minimum wages; therefore, Member States without a national minimum wage in any year of the period studied are excluded from the analysis due to data limitations. Nevertheless, while setting of higher wage floors may be done in different ways (e.g. by the social partners via collective bargaining or by governments via statutory regulations), the implications of the analysis of the impact of higher national minimum wages on employment structures may be considered applicable generally. The exclusion of Member States without national minimum wages leads to some changes in the composition of the macro-regions established in Chapter 2, including the exclusion of the Nordic region. The data and indicators used to measure variations in national minimum wages are described in Box 5.

⁽¹³⁾ This report does not directly analyse the relationship between minimum wages and informal employment. If, in countries or sectors with higher rates of informal work, minimum wage increases would push some employment into informality rather than reducing it outright, then the standard employment statistics might undercount the true extent of the adjustment. The extent to which this possibility is relevant is likely to vary considerably across Member States, being more pertinent in Member States with weaker enforcement capacity and higher baseline informality rates.

Box 5: Indicators of change in national minimum wages

Data on monthly national minimum wages were taken from Eurostat's dataset `earn_mw_cur`, which records the value of national minimum wages as of January and July of each year. Using data for January alone would ignore minimum wage changes occurring in the second half of the year, while using those for July alone would attribute mid-year changes to the entire year, including the first half, when they were not yet in place. Therefore, in this report the annual value is defined as the average of the January and July observations. A possible drawback of this averaging approach is that it can spread the effect of any one minimum wage increase across two years; however, the main results are robust to the use of either the January or the July measures instead. Member States without a national minimum wage were omitted from the descriptive analysis and regressions because they have missing values for the national minimum wage in all years in the Eurostat data.

To measure minimum wage growth, three indicators were used: growth in the national minimum wage, the Delta index and lagged growth in the Kaitz index.

The baseline specification relies on the percentage change in the real national minimum wage (*NMW* in the equations), which, for each country *c* and year *t*, is defined as follows:

$$\text{Growth in NMW} = 100 \times \frac{NMW_t - NMW_{t-1}}{NMW_{t-1}}$$

The two alternative indicators, the Delta index and the growth rate of the Kaitz index with a lagged denominator, capture how the minimum wage moves relative to average wages. The Delta index takes the change in the minimum wage from one year to the next and rescales it by average wages. The Kaitz index compares the level of the minimum wage to the average wage in a given country and year, so that its growth tells us whether the minimum wage is catching up with, keeping pace with or falling behind average wages over time. Both indicators use past values of average wages in the denominator to avoid including wage changes that may result from the minimum wage itself. The indicators are defined as follows:

$$\text{Delta index} = 100 \times \frac{NMW_{c,t} - NMW_{c,t-1}}{\text{Average wage}_{c,t-1}}$$

$$\text{Growth in Kaitz index (lagged)} = 100 \times \frac{\frac{NMW_{c,t}}{\text{Average wage}_{c,t-1}} - \frac{NMW_{c,t-1}}{\text{Average wage}_{c,t-2}}}{\frac{NMW_{c,t-1}}{\text{Average wage}_{c,t-2}}}$$

The Delta and lagged Kaitz indices use average wage data from the OECD, which reports average annual wages per full-time-equivalent dependent employee. For Cyprus, Malta and Slovakia, where OECD data are not available, average wages were drawn from Eurostat's dataset of full-time-equivalent compensation per employee (national accounts, `nama_10_fte`). Both data sources record annual wages, which were converted into monthly values by dividing by 12. More details on the data sources can be found in Annex 1.

Both national minimum wages and average wages were deflated using Eurostat's harmonised index of consumer prices (HICP) and expressed in the national currencies of Member States that had not adopted the euro by 2024. For Member States that adopted the euro between 2002 and 2024, wages were kept in the pre-euro currency and converted at the fixed exchange rate for the years following adoption.

From a conceptual perspective, the Delta index closely captures changes in the minimum wage relative to the wage distribution, while the percentage growth of the national minimum wage provides a clear and easily interpretable alternative. By contrast, the growth rate of the Kaitz index is noisier, as it reflects not only changes in the minimum wage but also movements in average wages, making interpretation less straightforward. Data limitations also play a role. As shown in Figures A17 and A18 in Annex 3, median wage data from the EU Statistics on Income and Living Conditions (EU-SILC) survey are subject to breaks and limited time coverage, while average wage data from the OECD and national accounts are not available for all Member States and years and offer limited control over the sample. Therefore, the percentage growth in the national minimum wage was chosen as the preferred indicator, while the other two indicators were used for robustness checks.

Table A4 in Annex 3 shows the distribution of the three indicators, while Table A5 shows how they correlate with each other. In general, the three measures are relatively highly correlated, with values above 0.9 for the percentage growth in the national minimum wage and the Delta index. As expected, the correlation is lower for the growth in the lagged Kaitz index, especially for the Balkan and Baltic macro-regions, as that indicator also captures developments in average wages.

Evolution of low-paid jobs in relation to minimum wages

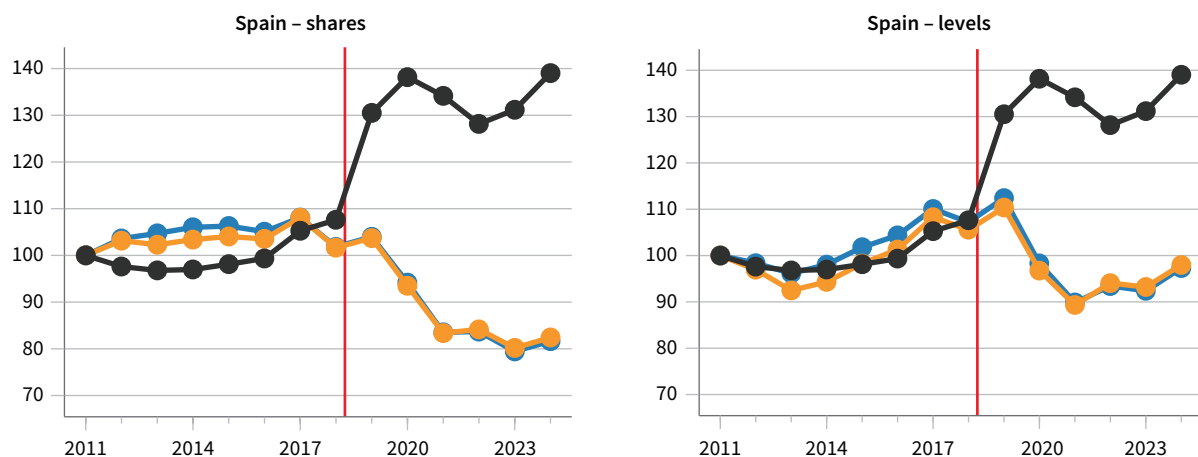
This section links changes in minimum wages with employment changes in low-paid jobs descriptively, to explore whether an association between the two emerges. To get a first impression, Figure 12 focuses on four major national minimum wage changes in selected Member States and illustrates the subsequent evolution of real minimum wages alongside employment and hours worked in the top 12 low-paid jobs.

The first event is the large increase in Spain in January 2019, when the national minimum wage rose by 22.3 % in nominal terms. The second is the introduction of the minimum wage in Germany in 2015. The third is a substantial increase in the German minimum wage in October 2022, amounting to 14.8 % relative to July and 22.2 % relative to January of the same year. The fourth is the 22 % cut in the national minimum wage in Greece in March 2012 following the public debt crisis⁽¹⁴⁾.

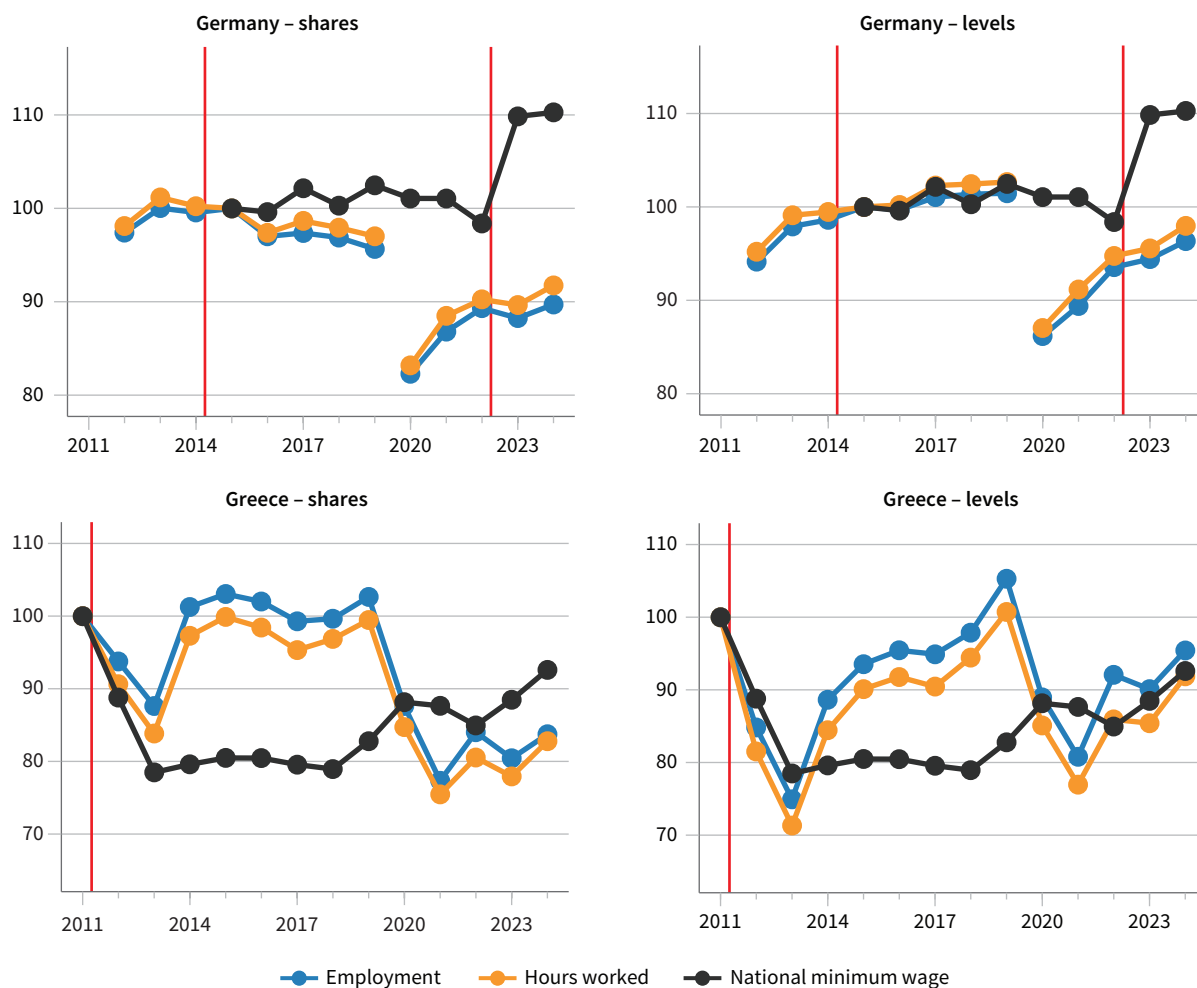
In the case of Spain in 2019, there was a small increase in employment and hours worked in the top 12 low-paid jobs, in both levels and shares, following the rise in the minimum wage. However, for none of the outcomes does this small increase appear to be a dramatic change from the pre-existing trend. This increase was then followed by significant drops in employment and hours worked in 2020 and 2021, which, even by the last data point of 2024, have still not fully recovered. The significant drops occur one year after the minimum wage change and are, therefore, likely to be related to the pandemic recession.

The introduction of a minimum wage in Germany in 2015 does not appear to coincide with any significant change in employment or hours worked that year. In 2016, there was a dip in employment and hours worked, but it is not clear that this was an impact of the minimum wage introduction, given the pre-existing downward trend. After the large minimum wage increase in the latter half of 2022, however, there

Figure 12: Change in employment and hours worked (share and level) in the top 12 low-paid jobs compared with change in the national minimum wage – selected Member States with large variation in the national minimum wage, 2011–2024 (indexed values)



⁽¹⁴⁾ Two other potentially interesting cases are the large increase in Slovenia in 2010 (22.7%) and the introduction of the minimum wage in Croatia in 2008. However, both of these events coincide with breaks in the employment data series, making it impossible to separate actual changes in employment in response to the policy from artificial variations caused by changes in classification.



Notes: The y-axes show the variation in each of the three series (2011 = 100). The vertical red line in each graph marks the last data point before the minimum wage policy change. For Germany, values are indexed to 2015 rather than 2011, as the minimum wage was introduced in 2015. Moreover, for Germany the series start in 2012 and are interrupted in 2020 due to a discontinuity in the EU-LFS data (see Table A2 in Annex 1).

Source: Authors' calculations based on data from Eurostat (national minimum wage) and the EU-LFS (employment and hours).

appears to have been a slight dampening of growth in both outcomes compared with the trend in the previous few years. However, this slowing coincided with a general convergence to pre-pandemic levels of economic activity as well as the cost-of-living crisis, which themselves may have been contributing factors. Note that, as explained in Box 5, the late-2022 change shows up in the 2023 minimum wage value, since it averages January and July. In addition, in Germany's case, the data series is interrupted in 2020 due to a discontinuity in the EU-LFS data (see Table A2 in Annex 1).

In Greece, the large decrease in the minimum wage in March 2012, which shows up partly in the 2012 value and fully by 2013, coincided with large decreases in both employment levels and shares in the top 12 low-paid jobs, before they started to increase significantly from 2013. These employment changes are likely related to the economic situation in Greece at that time. Given the

extent of the economic upheaval, it is difficult to determine if there was any impact of the minimum wage decrease.

Some general observations apply to all four cases examined. First, comparing employment and employment shares allows changes in the overall level of low-paid work to be distinguished from changes in its size relative to the entire labour force. In the plots shown in Figure 12, employment levels tend to adjust more strongly than employment shares, suggesting that many of the observed changes are in line with the general direction of the economy such that changes to the overall distribution of workers are less pronounced. Second, in these plots, hours tend to move more than employment, in line with the fact that adjustments in the number of hours worked are subject to less friction due to the quasi-fixed cost associated with hiring and firing employees. Finally, the trends observed for the top 12 low-paid jobs are broadly mirrored in the bottom quintile, as discussed in Box 6.

Box 6: Employment by job-wage quintile in relation to the national minimum wage

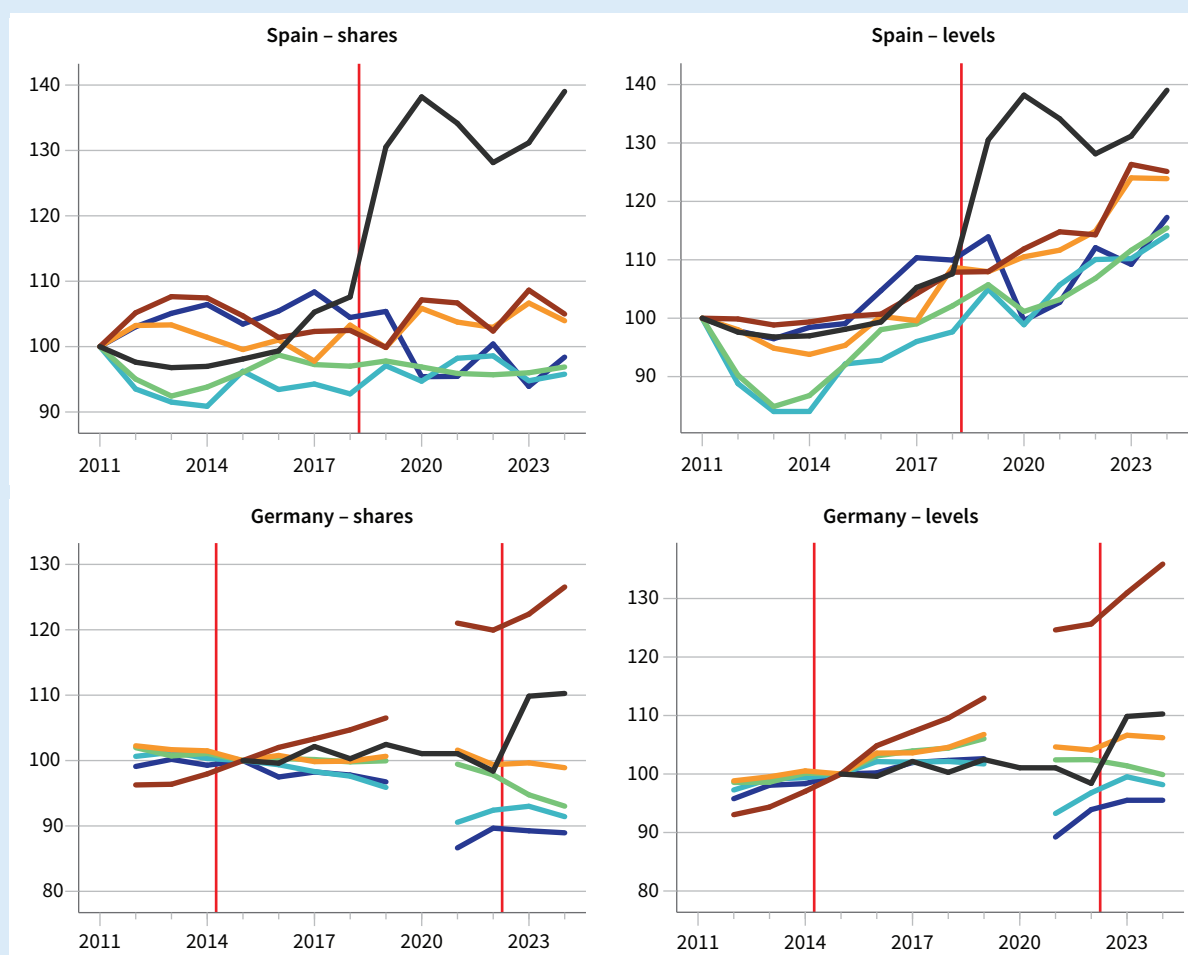
Figure 13 depicts the employment change by job-wage quintile before and after the same four selected cases of large changes in national minimum wages. In the case of Spain, the bottom quintile (Quintile 1) closely follows the pattern observed for the top 12 low-paid jobs in Figure 12: there was no immediate response to the minimum wage increase but a clear drop around the COVID-19 period. While employment at the bottom picked up again in absolute terms, its share did not return to pre-pandemic levels, as employment growth shifted towards the top quintiles. The second and third quintiles show a similar but more moderate pattern, as after the drop due to the pandemic they grew in absolute terms, thereby keeping their employment shares roughly constant. By contrast, the fourth and fifth quintiles grew more steadily throughout the whole period, actually increasing their employment shares at the expense of the bottom quintile.

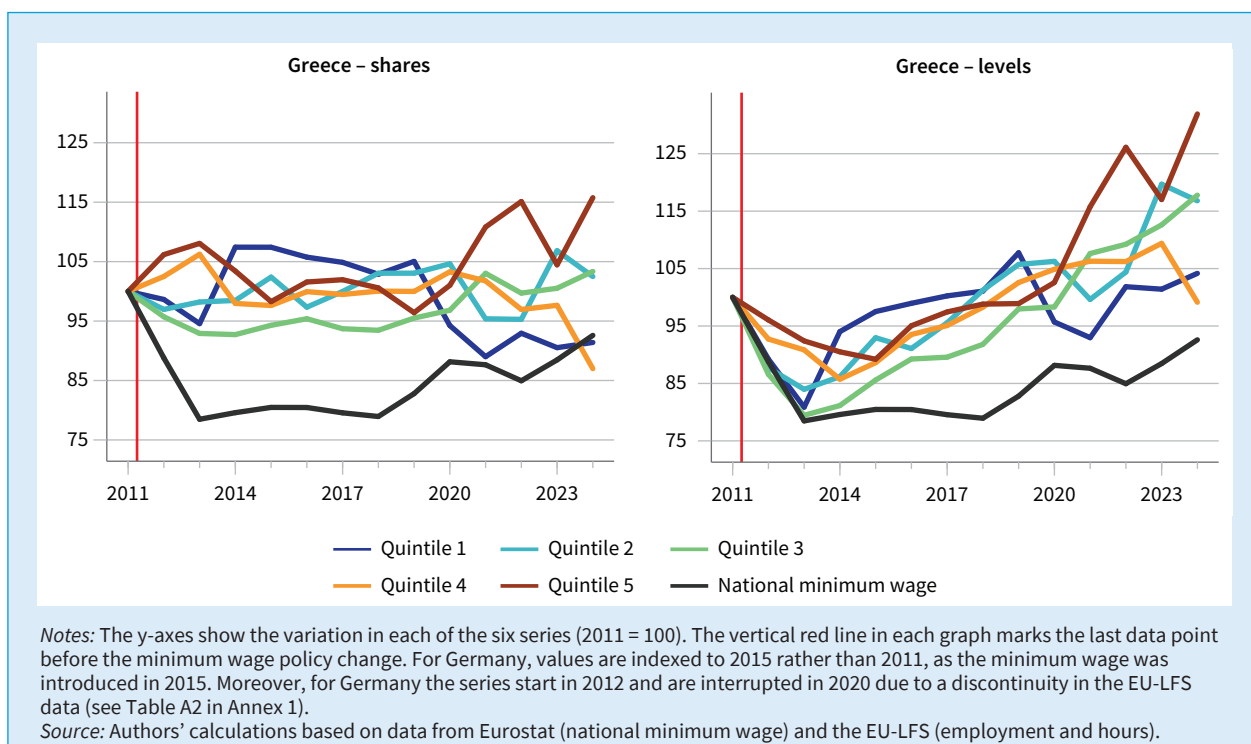
Germany's bottom quintile also shows a similar pattern to the top 12 low-paid jobs, with no clear response to the introduction of the minimum wage in 2015, but a noticeable weakening of the otherwise upward trend in the bottom and second quintiles around 2022. As in Spain, the top quintiles exhibit sustained growth throughout the period, although this was much more pronounced in the fifth quintile than the fourth.

In Greece, all quintiles experienced a drop around 2012–2013, reflecting the country's difficult macroeconomic situation at the time. The drop was much more pronounced in the bottom three quintiles, resulting in a decline in their employment shares compared with the fourth and fifth quintile. Interestingly, the bottom quintile bounced back faster than the second and third quintiles and even outpaced the top two quintiles. Apart from minimum wage changes, this might have been related to an increase in tourism (see Figure A19 in Annex 3).

Figure A20 in Annex 3 shows the corresponding results for hours worked, indicating similar patterns to those observed for employment.

Figure 13: Change in employment (share and level) compared with change in the national minimum wage, by job-wage quintile – selected Member States with large variations in the national minimum wage, 2011–2024 (indexed values)





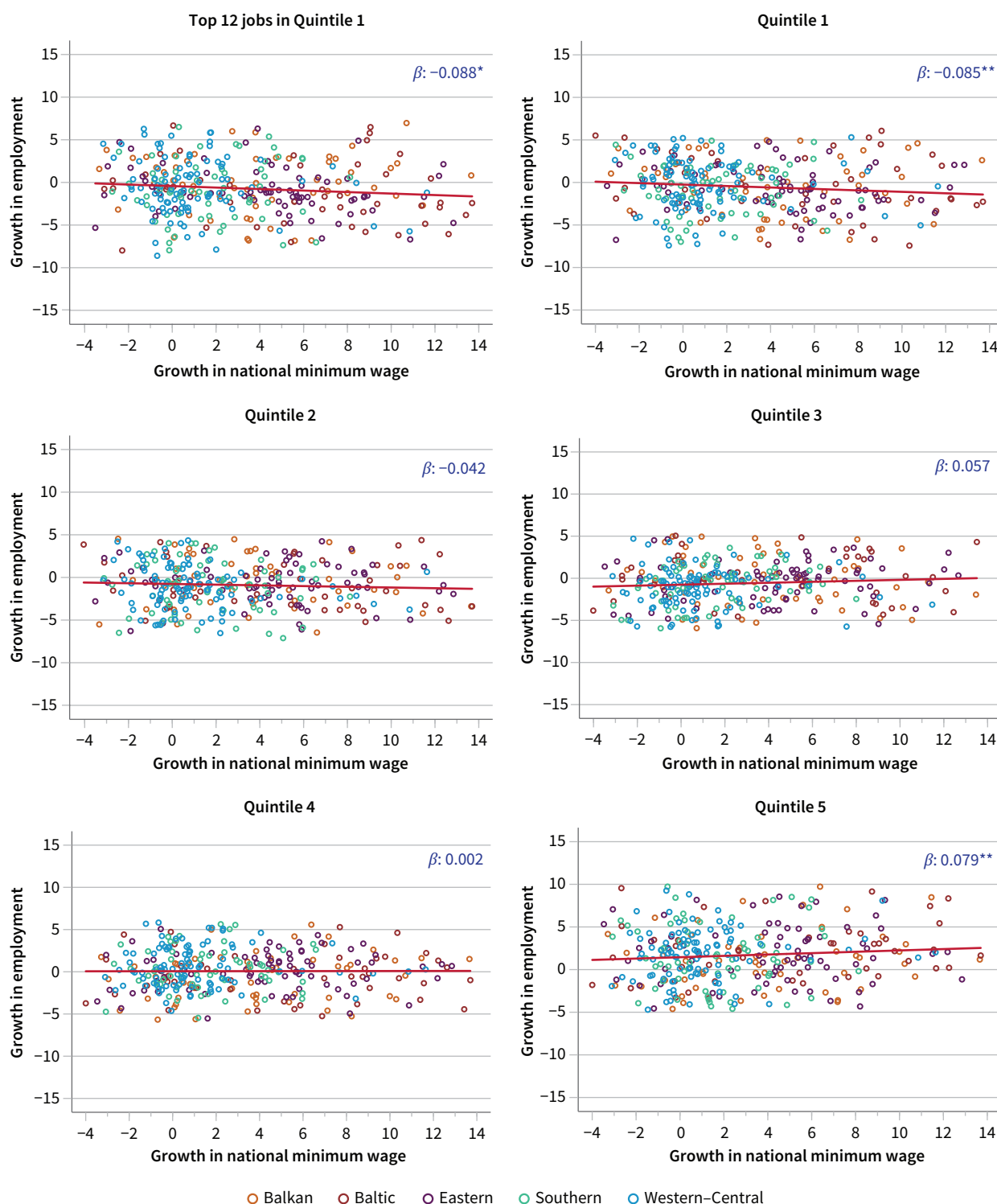
The case studies illustrated by Figures 12 and 13 offer an initial visual indication of how employment responds to large minimum wage changes. The case studies highlight that even very large minimum wage changes are difficult to read in isolation, as each event coincides with other macroeconomic shocks, such as the COVID-19 recession, the cost-of-living crisis and the Greek debt crisis. Therefore, Figure 14 shows the results of a more systematic approach, which examines the relationship between changes in employment shares and minimum wage growth across all Member States and years, with each point representing a country-year observation. The colour of the dots represents different macro-regions (defined in Box 3), and the minimum wage indicator used (the percentage growth in the national minimum wage) is described in Box 5. The figure includes six panels, one for the top 12 low-paid jobs and one for each job-wage quintile, and includes linear trend lines, along with the corresponding coefficients from simple regressions without additional control variables⁽¹⁵⁾.

Overall, there is some indication of an upgrading effect on the employment structure associated with minimum wage increases, as the estimates are negative for the changes in the employment shares of the top 12 low-paid jobs and the bottom quintile but positive for the higher quintiles. However, these patterns should be interpreted as broad associations rather than causal effects. First, only the results for the top 12 low-paid jobs, the bottom quintile and the top quintile are statistically significant, and only at the 90 % or 95 % level. Second, the estimated effects are relatively small in magnitude. For example, a 1 % increase in the real minimum wage is associated with an almost 0.09 % decrease in the employment share of the top 12 low-paid jobs and the employment share of the bottom job quintile (and with a 0.08 % increase in the employment share of the top job quintile).

⁽¹⁵⁾ For country c and year t , the relationship of interest β is estimated as:

$\% \text{ change employment share}_{c,t} = \alpha + \beta \times \% \text{ change NMW}_{c,t} + \epsilon_{c,t}$, where α is a constant term and $\epsilon_{c,t}$ is an error term.

Figure 14: Growth in the employment share of the top 12 low-paid jobs and each of the five job-wage quintiles compared with growth in the national minimum wage, at the country-year level, 2002–2024 (%)



Notes: Each dot represents a specific country-year, with the colour indicating the corresponding macro-region (see Box 3). The y-axes show the percentage change in employment share, while the x-axes represent the percentage growth in the minimum wage from one year to the previous year. The linear fit is unweighted and is intended only to illustrate the overall trend (β significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$). Data from 2008 and 2011 are excluded, as growth rates cannot be computed due to changes in classifications (see Box 2). Additional country-year observations are excluded from the employment outcomes due to discontinuities in the EU-LFS data series, as summarised in Table A2 in Annex 1. Outliers in the top and bottom 5 % of both the x- and y-axes have been removed.

Source: Authors' calculations based on data from Eurostat (national minimum wage) and the EU-LFS (employment outcomes).

Generally, employment growth rates vary widely across Member States and over time, suggesting that changes in the distribution of employment are driven not only by minimum wage policies but also by broader factors, such as macroeconomic conditions, sectoral shocks, shifts in labour demand and other institutional settings. For instance, many of the observations with large minimum wage increases are concentrated in Eastern, Balkan and Baltic macro-regions, which may also have experienced distinct macroeconomic developments compared with Member States in other regions. These factors can only be accounted for in a regression framework, such as the one presented in the final section of the chapter.

Figure A21 in Annex 3 shows the same estimates as in Figure 14 but using the two alternative indicators of national minimum wage change, namely the Delta index and the growth in the lagged Kaitz indicator, both described in Box 5. The results based on the Delta index are broadly comparable to those obtained using the percentage growth in real minimum wages, showing that the result is not driven by how the minimum wage changes are measured. By contrast, as expected, the estimates based on the lagged Kaitz index appear to be noisier.

Box 7 looks at the changes in collectively agreed wage floors and employment shares across the job–wage distribution for Member States without a national minimum wage during the study period.

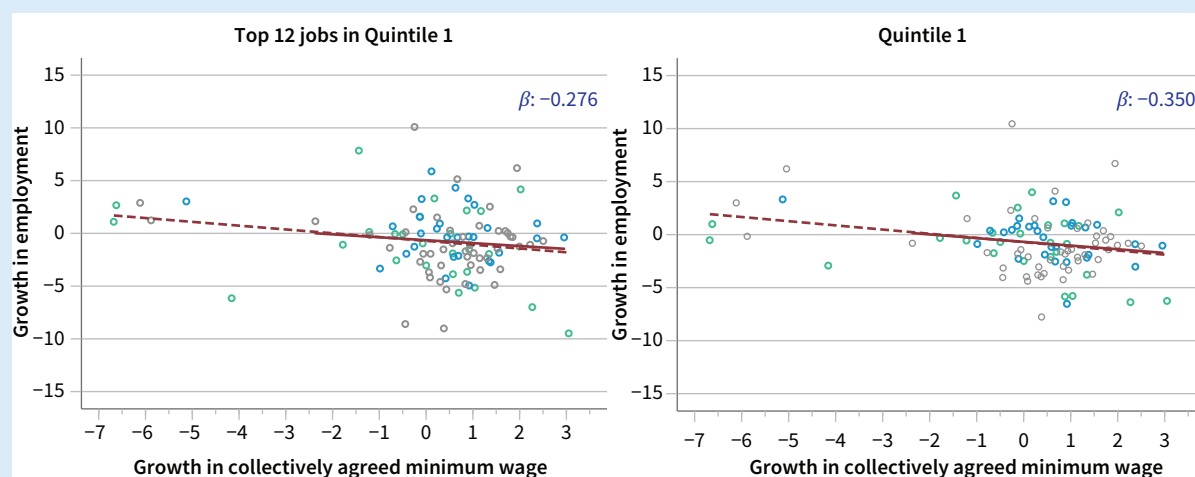
Box 7: Change in the employment structure in country–year pairs for Member States without a national minimum wage

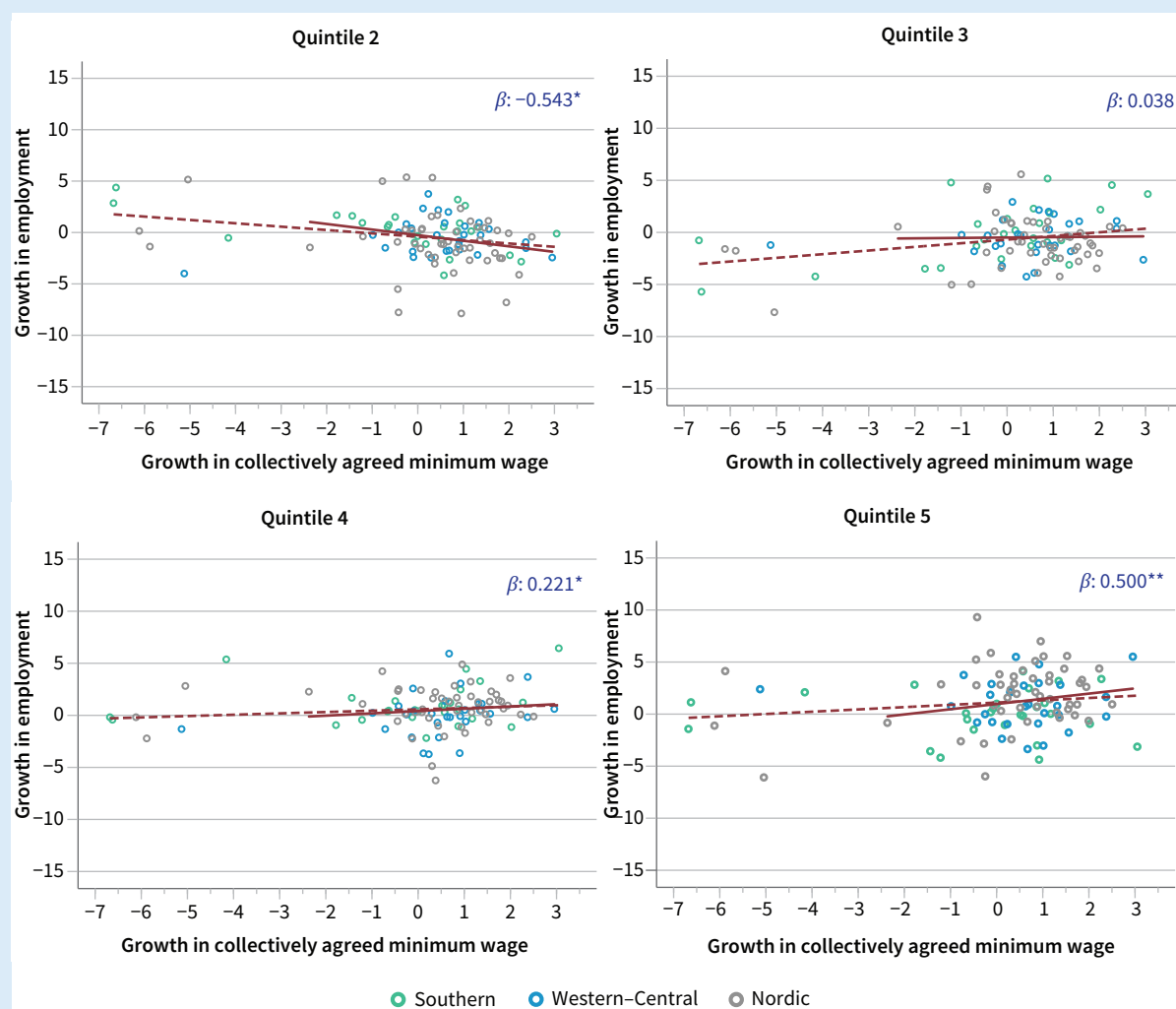
Figure 15 presents the results of a country–year analysis of Member States that did not have a national minimum wage for either the entirety of or part of the period from 2001 to 2024. Each dot represents a specific country–year observation, with the colour indicating the macro-region to which the country belongs. The sample includes Austria, Finland, Italy and Sweden for 2002–2024 and Germany prior to the introduction of its minimum wage in 2015. For Cyprus and Denmark, the observation period starts in 2016. Annex 1 includes more details on how the index of collectively agreed wages was constructed for each Member State.

As in Figure 14, the plots show a simple linear relationship between changes in employment shares and annual changes in collectively agreed wages (in real terms). The main estimates (indicated by the solid line) are based on observations where wage changes are between -3% and $+3\%$, excluding more extreme cases. The dashed line shows that the overall pattern remains similar when these more extreme observations are included.

Overall, there is some evidence of a pattern consistent with upgrading of the employment structure, with mild negative effects at the lower end of the distribution and more positive ones in the higher quintiles. As in the case of Figure 14, these patterns should be interpreted as broad associations rather than causal effects. First, only the estimates for the second, fourth and fifth quintiles are statistically significant, and only at the 90 % or 95 % level. Second, these relationships do not account for other relevant factors, such as macroeconomic conditions, sectoral shocks, shifts in labour demand and other institutional settings. Finally, the results are based on a smaller group of Member States than those in Figure 14, so they should be interpreted with additional caution.

Figure 15: Growth in the employment share of the top 12 low-paid jobs and each of the five job–wage quintiles compared with growth in collectively agreed minimum wages, at the country–year level, 2002–2024 (%)





Notes: Each dot represents a specific country-year, with the colour indicating the corresponding macro-region (see Box 3). The y-axes show the percentage change in employment share, while the x-axes represent the percentage growth in the index of collectively agreed wages from one year to the previous year. The linear fit is unweighted and the reported coefficients β are from the regressions restricted to the collectively agreed minimum wage growth range -3 % to +3 % (solid line). Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Outliers in the top and bottom 1 % of both the x- and y-axes have been removed. Restricted to country-years of Member States without a national minimum wage and available data on collectively agreed minimum wages.

Source: Authors' calculations based on data from the EU-LFS, national statistical offices and Eurofound.

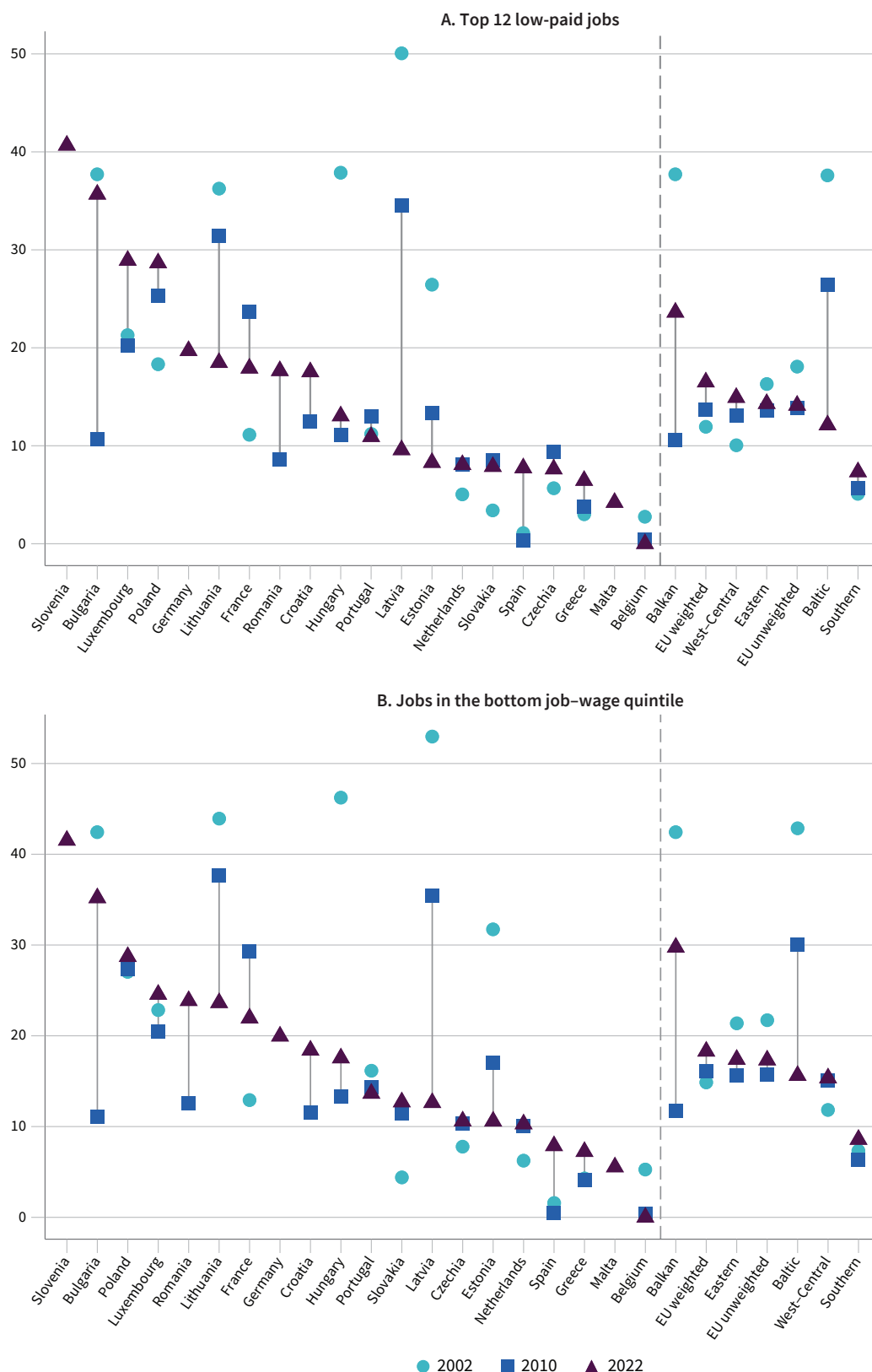
Exposure of low-paid jobs to minimum wage increases

One way to understand the relationships, or lack thereof, revealed by the case studies (Figures 12 and 13) and the scatter plots (Figure 14) above is to investigate the extent to which the top 12 low-paid jobs and the jobs in the bottom job-wage quintile were actually directly affected by the minimum wage. To this effect, Figure 16 shows the average share of workers in the top 12 low-paid jobs and bottom-quintile jobs in each

Member State, macro-region and the EU as a whole who earn the minimum wage. The shares in 2002, 2010 and 2022 are calculated using data from the SES, with minimum wage earners defined as workers with a gross hourly wage between 90 % and 110 % of the national minimum wage. This relatively wide band accounts for potential non-compliance with minimum wage regulations, which may result in observed wages below the national floor. It also includes workers earning slightly above the minimum, who are likely to be affected by increases in the minimum wage⁽¹⁶⁾.

⁽¹⁶⁾ The SES is the main data source for studying wage distributions across Member States, as it is the only EU-wide survey with a sample size large enough to produce reliable estimates at a detailed level, such as the NACE-ISCO cells used in this study. A limitation of the SES, however, is its time frequency, as it is available only every four years between 2002 and 2022.

Figure 16: Share of minimum wage earners in the top 12 low-paid jobs (panel A) and in bottom job-wage quintile jobs (panel B) by year, EU, Member States and macro-regions (%)



Notes: The y-axes show the percentage of minimum wage earners, based on SES data from 2002, 2010 and 2022. Minimum wage earners are defined as those earning a gross hourly wage that is 90–110 % of the national minimum wage. Averages by macro-region are unweighted. The Member States belonging to each macro-region are specified in Box 3. The figure includes only Member States with a national minimum wage that are included in the scientific use files of the SES. EU values are averages of the shares across Member States. The unweighted EU average treats all Member States the same, while the weighted average gives more weight to Member States with larger populations. Missing data points indicate that the survey was not conducted in that Member State in a given year or that the Member State did not have a national minimum wage at that time.

Source: Authors' calculations based on SES data.

On average across Member States (EU unweighted), there were slightly higher shares in 2002 than in 2010, with a small increase from 2010 to 2022, which reflects the increase in minimum wage levels over the period (see Chapter 1). The top 12 low-paid jobs have slightly lower shares (around 14 % in 2022) than bottom-quintile jobs (around 17 % in 2022). Looking at the macro-regions, the results reveal large differences between them. The Balkan and Baltic areas had very high minimum wage shares in these jobs in 2002 but fell more in line with the rest of the EU in later periods, especially the Baltic macro-region. The Eastern macro-region was remarkably similar to the EU average. The Western–Central macro-region had slightly lower shares but with more of an upward trend. The Southern macro-region had much lower shares and little movement.

Focusing in on individual Member States may help to explain some of the previous case study results. Notably, Greece and Spain both had very low shares of the top 12 low-paid and bottom-quintile workers actually earning the minimum wage (significantly less than 10 % in each case in 2022). This fact could help explain why there appears to be little reaction to some quite large changes in the minimum wage in percentage terms in those Member States. Even though the minimum wage change was substantial, if fairly few workers were affected, then a large employment impact would not be expected. In contrast, in Germany, the share was much higher, at around 20 % in 2022, which is in line with the apparently negative reaction in employment to the large minimum wage increase that year.

It can be seen that significant differences also exist within the macro-regions, particularly when the bottom quintile is examined. Within the Eastern macro-region, Poland had a much higher share (and steeper upward trend) than Czechia, Hungary and Slovakia when 2022 is taken as a reference year. In the Balkan macro-region, Bulgaria, Romania and Slovenia had higher shares in 2022 than Croatia. Among Member States in the Western–Central macro-region, France, Germany and Luxembourg had relatively high shares of minimum wage earners, while the Netherlands was at the lower end, and Belgium had the lowest share of all. Among Member States in the Southern macro-region, Malta, Greece and Spain had low shares, while Portugal had somewhat higher shares but was still below the average of the Western–Central macro-region.

Over 2010–2022, the share of minimum wage earners generally increased. However, not all Member States followed the same general trajectory. Some, such as Bulgaria and Romania, experienced substantial increases in the share of minimum wage earners. In contrast, a few saw a decline, most notably Latvia and Lithuania, where the share of minimum wage earners fell between 2010 and 2022. However, it appears that

this might be due to a cyclical pattern in these Member States: the national minimum wage initially caught up with average wages, increasing coverage, but later lagged behind, reducing its ‘bite’ and leaving fewer workers affected. Finally, several Member States showed little overall change, including Belgium, Czechia, the Netherlands and Portugal. Portugal provides an interesting example: although the Kaitz index increased consistently, the overall share of minimum wage earners remained largely unchanged.

This analysis of the exposure of jobs to minimum wage increases (as measured by the share of employees earning close to minimum wage levels) adds an important layer of nuance to the descriptive evidence in the previous section. The fact that the share of workers in the top 12 low-paid jobs earning at or near the minimum wage varies substantially across Member States implies that the direct mechanical impact of any given minimum wage increase will be highly country-specific: the same percentage increase in the national minimum wage can affect very different shares of the workforce in different Member States, depending on how many workers are actually paid at or near the wage floor. This exposure also varies considerably within Member States, with minimum wage earners often concentrated in specific occupations, sectors and regions, which means that the effects of increasing a national wage floor are unevenly distributed across the domestic labour market. The size of a minimum wage increase is therefore only part of the story, and its reach across the workforce depends just as much on how many workers it directly affects and where they are employed. This in turn suggests that policy decisions on the level and pace of minimum wage increases should be informed by more disaggregated indicators of exposure, rather than by national averages, which can mask very different distributional implications.

Minimum wages and low-paid jobs: an econometric analysis

While the descriptive evidence in the previous sections (see Figure 14 above) identified a slight negative relationship between changes in minimum wage policy and changes in the employment structure, this did not measure a causal effect between them. A key issue is that there may be further factors that are associated with both increases in the minimum wage and growth in the employment share of low-paid jobs (and change in other parts of the job–wage distribution), such as GDP and other factors explored at the end of Chapter 2.

To illustrate this point, consider, for example, the factor of general economic growth. Member States that experience above-average economic growth may see both above-average growth in the employment share of low-paid jobs and above-average growth in real minimum wages over that period. In such a case,

a positive relationship between real minimum wage increases and growth in the employment share of low-paid jobs would appear, driven by each being related to a third factor, economic growth, rather than there being a positive causal impact of real minimum wages on employment share growth. Other examples could just as well result in a negative bias. For example, a slowing of real minimum wage growth might correlate with changes in other areas of labour market policy, such as a cut in unemployment benefits. If benefit cuts were successful in increasing the employment share of low-paid jobs, this might give rise to the appearance of a negative relationship between real minimum wage growth and employment share growth that in fact would have arisen from the liberalisation programme and not necessarily the minimum wage policy changes.

Therefore, this section presents a multivariate analysis conducted to estimate the impact of minimum wages on employment shares over the whole employment structure, while controlling for other factors. For this analysis, the growth in employment shares was regressed on the growth in minimum wages at job–country–year level, as well individual year, country and job effects and a series of important control variables relating to GDP, education, demography and economic structure. The exact econometric specifications are outlined in Box 8, which also discusses the analysis’s limitations. The main specifications estimate impacts on growth in employment shares for jobs across all job–wage quintiles, so that the analysis observes the impact of minimum wages not only on low-paid jobs but also on the whole employment structure.

Box 8: Econometric specification of the regression analysis

There exist many potential covariates with real minimum wage growth and growth in employment shares at the country–year level (e.g. globalisation, technological change, broader policy shifts, trends in skills and education, changes in the structure of the economy, changing demographics, etc.). As such, the causal impact of real minimum wage growth on growth in the employment share of low-paid jobs could be higher or lower than the slight negative relationship identified in the scatter plots presented earlier in this chapter.

To obtain an estimate closer to the causal relationship between minimum wage increases and changes in employment shares over the job distribution, this section adopts a multivariate regression approach that attempts to control for confounding factors as effectively as possible. For this analysis, the outcome variable is the growth in the share of employment in a particular job as a proportion of total employment in a particular Member State and year. Employment shares are the preferred measure in the analysis because this measure permits the impact of minimum wages in particular jobs (e.g. the bottom job–wage quintile or the top 12 low-paid jobs) to be taken into account, while considering and relating them to developments in the whole employment structure.

The baseline econometric approach is:

$$\begin{aligned} \text{Growth employment share}_{ct,j} \\ = \alpha + \beta_k \times (\text{growth SMW}_{ct} \times q_{k,j}) + \delta(X_{ct} \times q_{k,j}) + (\mu_c \times q_{k,j}) \\ + (\lambda_t \times q_{k,j}) + \tau_j + \varepsilon_{ct,j} \end{aligned}$$

Growth employment share_{ct,j} is the growth in the employment share of job *j* in country *c* and year *t*, *growth SMW_{ct}* is the growth in the real monthly national minimum wage (no job variation), *q_{k,j}* is a set of five dummy variables, indicating the job–wage quintile *k* that job *j* belongs to, *X_{ct} × q_{k,j}* is a vector of control variables at the country–year level interacted with the job–wage quintiles, and *μ_c × q_{k,j}*, *λ_t × q_{k,j}* and *τ_j* are country–quintile (that is, country by job–wage quintile), year–quintile and individual job fixed effects, respectively. The coefficients *β_k* give the impact of minimum wages on employment shares in each quintile. Note that, in this specification, the minimum wage treatment varies only at the country–year level, making it equivalent to a regression with data aggregated to that level (see Table A6 in Annex 4 for comparison).

Regressions are estimated using weighted least squares, where the weights variable is the employment share in the base period (*t* – 1) and standard errors are clustered at country level. The use of weights is particularly important when using data disaggregated to the job level to avoid overemphasising the importance of some very small and therefore potentially badly measured job cells. The base year (*t* – 1) is the more intuitive choice of weighting period compared, for example, with *t*, because the growth rates are most sensitive to small values in the base period.

The growth in minimum wages is based on the Eurostat dataset `earn_mw_cur`, which records the value of monthly national minimum wages as of January and July of each year. In the baseline specification, annual growth is therefore computed using an annual value defined as the average of the January and July observations. Using data for January alone would ignore minimum wage changes occurring in the second half of the year, while using data for July alone would attribute mid-year changes to the entire year, including the first half, when they were not yet in place. A possible drawback of this averaging approach is that it can spread the effect of any one minimum wage increase across two years; however, the main results are robust to using either the January or the July measures instead. Wages are deflated using the HICP and, for Member States that had not adopted the euro by 2002, they are expressed in the national currency. Further details are provided in Box 5.

The control variables included account for changes in the macroeconomic setting (GDP, lagged GDP and unemployment share); sociodemographic changes (the share of the population with tertiary education, the share of the population aged 65 years and over, net migration and the share of women in employment); the effect of trade⁽¹⁷⁾; technological change (imports from China and an indicator of employment in jobs exposed to RBTC); and large changes in labour market institutions (proxied by the share of temporary workers). All the control variables are expressed in growth rates, except net migration, which is expressed as net inflow per 1 000 inhabitants. Table A1 in Annex 1 details the data sources for all these variables.

The inclusion of control variables ensures that like is compared with like. By simultaneously estimating the relationship between each control variable and employment growth, the multivariate regression removes the influence of that factor. This technique ensures that the relationship ultimately estimated is based on comparing employment growth between observations with different levels of minimum wages while effectively holding other factors, such as GDP growth, constant. Crucial controls are the country fixed effects. These capture the typical level of employment growth specific to each Member State. By absorbing the general employment growth, they account for all factors that may bias the result, even those for which no data are available (e.g. labour market liberalisation), as long as they remain constant within a Member State over time.

All the control variables, as well as the country and year fixed effects, are additionally interacted with the job–wage quintile indicators to allow their relationships with employment share growth to vary by job–wage quintile. As illustrated at the end of Chapter 2, the control variables exhibit different relationships with employment at different points along the job–wage distribution. For example, GDP appears to be more strongly related to employment growth in the lower quintiles than to employment growth in the upper quintiles. Fully interacting in this way allows the regression to capture such varying relationships by job–wage quintile and makes the specification equivalent to a wage quintile subsample regression.

It is important to remark that all control variables enter the regression at the country–year level, with job-level variation introduced only through their interaction with the job–wage quintile indicators. This choice is due to the limited availability of data at the job level. Although Chapter 2 showed that several of these variables have limited explanatory power in aggregate country–year regressions, this does not imply they are necessarily irrelevant in the context of a job-level estimation: the same country–year variation may have differential effects across job–wage quintiles that are not visible in aggregate regressions, and it is precisely this differential variation that the quintile interactions are designed to capture. As discussed below, the coefficients are quite stable across models with and without controls. Coefficient stability when including controls is usually interpreted as reassuring regarding the model specification (Oster, 2019). This means that the basic specification without controls already addresses a lot of potential sources of bias by estimating the relationship using growth rates rather than levels, as well as additionally including country fixed effects. That said, coefficient stability is not a conclusive indication of a lack of bias, especially as reverse causality may still be present.

The analysis covers 2002–2024 and is restricted to country–year observations of Member States with a national minimum wage. Data from 2008 and 2011 are excluded, as growth rates cannot be computed due to changes in the ISCO and NACE classifications (see Box 2). Additional country–year observations are excluded due to discontinuities in the EU-LFS, as summarised in Table A2 in Annex 1.

Different specifications use alternative outcome variables, alternative treatment variables and/or different modelling assumptions to show the results' robustness (see Annex 4).

⁽¹⁷⁾ Firms in tradable sectors have less scope to absorb higher labour costs through price increases than those operating in sheltered local services markets and are, therefore, more likely to adjust by reducing employment.

Limitations of the analysis

While the approach takes several steps to mitigate, as much as is possible, potential sources of bias to the estimates, the results are nevertheless subject to a number of limitations that should be kept in mind when interpreting the results. A key issue is that, while the dataset is at the job level, the growth in real minimum wages varies only at the aggregated country level. The concern here is that Member States are heterogeneous, with a whole range of differences between them (e.g. in terms of economic circumstances or policy environment) that may not have been perfectly controlled for with the control variables. If these factors vary over time within Member States, they could bias the estimates, as they will not be absorbed by the country fixed effects.

A further issue is that of possible reverse causality. It may be that employment share changes across the wage structure lead to changes in the minimum wage, as Member States that are doing better economically (and upgrading their employment structure) may be better placed to improve their national minimum wage levels. Also, if there is job upgrading, then workers left at the bottom of the distribution may call for larger minimum wage increases to maintain relative earnings. If such reverse causality exists and is not captured by controls, such as GDP, estimates could be biased.

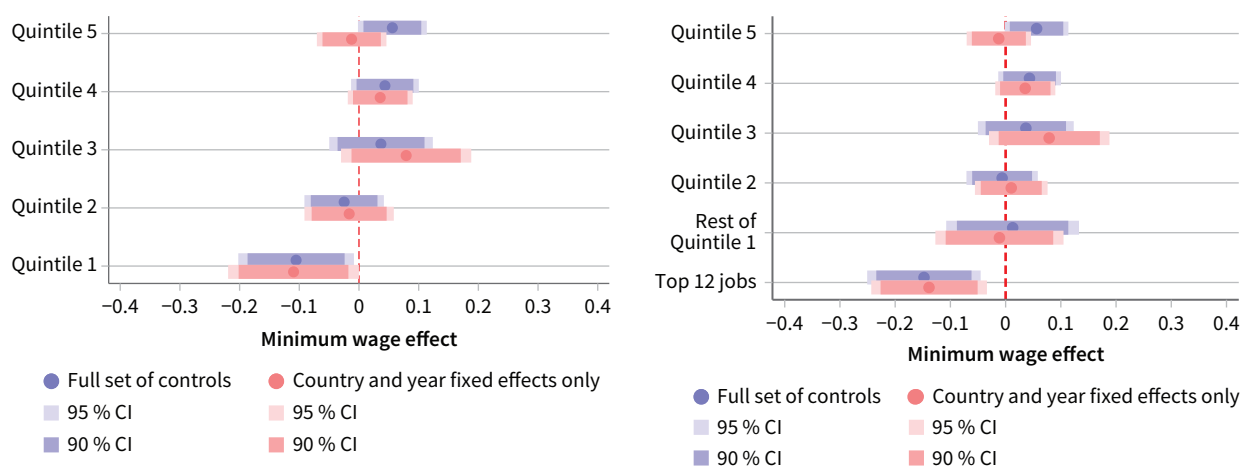
In addition, there are the various data problems that have been discussed already in the report, such as jumps in the EU-LFS in certain Member States, changes in job classifications, measurement issues in the minimum wage variable and the lack of important control variables at the job level. While efforts have been made to address these data issues as well as possible, there remains a possibility of bias in the estimates arising from measurement issues.

Figure 17 illustrates the estimated relationships between minimum wage growth and employment share growth in each job–wage quintile according to the results of the multivariate regression model. The ranges show the 90 % and 95 % confidence intervals, which give an indication of the statistical margin of error. To interpret the magnitude of the coefficients in the results, consider that an estimate of -0.1 implies that a 1 % increase in the real minimum wage is associated with a 0.1 % decrease in the employment share.

Relevant findings emerge from the analysis. There is a negative and statistically significant relationship

between minimum wage growth and the growth in the employment share of jobs in the bottom quintile (Quintile 1 in the left panel). When the bottom quintile is split (right panel), it appears that the relationship is driven primarily by the top 12 low-paid jobs in each Member State. The relationships for higher job–wage quintiles become progressively less negative and then positive for the highest job–wage quintiles. While the estimated relationships in the second to fourth quintiles are statistically insignificant (since the 90 % confidence interval intersects with the dashed zero line), the fifth quintile estimate is significant at the 10 % level.

Figure 17: Effect of minimum wage growth on employment share growth across the job–wage structure



Notes: CI, confidence interval. The figure shows the yearly effect over the period 2002–2024. The dependent variable is the percentage growth in the employment share of each job. The figure shows only the coefficients on the minimum wage variable, based on the baseline specification outlined in Box 8. The plot on the right further splits the bottom quintile into jobs that are included among the top 12 low-paid jobs in each Member State (as defined in Chapter 2) and the remaining jobs in the bottom quintile. Coefficient estimates are shown as circular markers, with lines indicating the 90 % and 95 % confidence intervals. Estimates in blue include the full set of controls listed in Box 8 and job effects, while estimates in red include the country and year fixed effects but no additional controls. The corresponding regression tables are reported in Table A7 (left panel) and Table A8 (right panel) in Annex 4.

Source: Authors' calculations based on EU-LFS data and other sources (see Table A1 in Annex 1 for details).

Looking at the coefficients' sizes in the strongest model with job fixed effects (left panel), the bottom quintile estimate is -0.105 , implying that the employment share decreases approximately 0.1 % for each percentage increase in the real minimum wage, and the top quintile estimate is 0.057 , implying that employment share increases by around 0.06 % for each 1 % increase in the real minimum wage. To put these estimated relationships into perspective, there is a minimum wage increase of around 3.4 % per year for the average job (weighted average across Member States), which cumulatively over a 20-year period would correspond to about a 10 % decrease in the employment share of jobs in the bottom quintile and a 6 % increase in the employment share of jobs in the top quintile. The average job has an employment share of around 0.20 %, so this would be expected to decrease to around 0.18 % if in the bottom quintile or increase to around 0.21 % if in the top quintile. For the top 12 low-paid jobs, the estimate is larger still, at around -0.148 , meaning a 1 % increase in the real minimum wage is associated with a 0.15 % decline in the employment share of the top 12 low-paid jobs.

Altogether, the negative relationship with employment share growth at the bottom of the wage distribution combined with the positive estimate at the top of the wage distribution is consistent with the association between minimum wage increases and a pattern of job upgrading in the employment structure. As discussed in the last section of Chapter 1, economic theory suggests that minimum wage increases can reduce employment at the bottom of the wage distribution, while also contributing to increases in employment further up. This might occur through several channels. First, by raising the cost of low-paid labour, minimum wages can encourage a shift towards more productive sectors and occupations and a reallocation of employment from less productive firms to more efficient ones. Second, minimum wages may also strengthen the incentive for firms to adopt labour-saving technologies and invest in innovation, supporting productivity and increasing job quality over time. Finally, higher labour costs can encourage greater investment in skills, training and job design, contributing to a gradual upgrading of the employment structure.

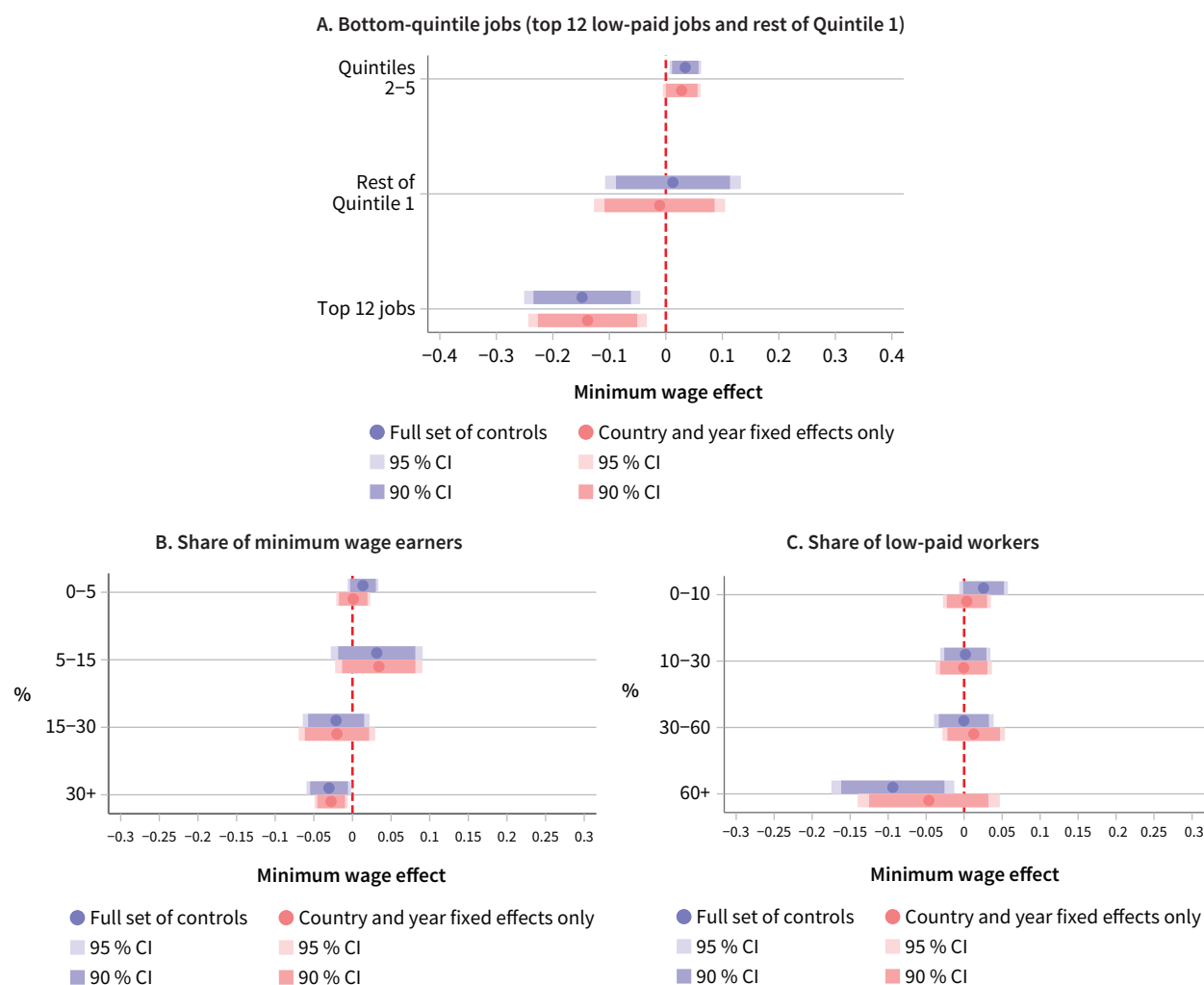
That said, while the results presented here are consistent with the job upgrading mechanism, they should be interpreted with a degree of caution given the limitations of the analysis as laid out in Box 8.

Annex 4 includes full regression tables, alternative versions of these plots using different indicators of minimum wage increases, an examination of the differences in characteristics between the top 12 low-paid jobs and the rest of the bottom quintile, and alternative definitions of weights⁽¹⁸⁾. The Delta index and lagged Kaitz index show similar patterns (Figure A22 and Table A9 in Annex 4), although the scale is different due to the different units, as does using the minimum wage growth rates based on the measurement from the first half of the year (January) or the second half (July) (Figure A23 and Table A10). Figure A24 shows that fixed weights deliver similar results but with larger confidence intervals, which might be expected given that they likely overemphasise the importance of some small cells with noisy values. This demonstrates that the results are not driven by the choice of indicator of minimum wage change or how the job observations are weighted. Annex 4 also provides an examination of the differences between the top 12 low-paid jobs and other jobs in the bottom quintile in terms of the proportion of workers earning around the minimum wage and below two-thirds of the median wage (Table A11). The top 12 low-paid jobs have somewhat smaller shares of workers earning around the minimum wage and below two-thirds of the median. This shows that the larger estimation relationship is not simply to do with minimum wage exposure but may instead be related to other job differences, such as substitutability.

Figure 18 shows results using alternative job groupings instead of job-wage quintiles. In panel A, the only change from the main specification presented above is to pool Quintiles 2 to 5 to form a single group. Pooling the upper quintiles increases the precision of the coefficient, resulting in a statistically significant positive estimate. The estimates for the top 12 low-paid jobs and the rest of Quintile 1 are unaffected by pooling the other quintiles, estimates being negative and statistically significant for the employment share of the top 12 low-paid jobs.

The implication here is that, while there may be a negative relationship between minimum wage growth and employment share growth at the bottom of the distribution (the top 12 low-paid jobs), this appears to be counterbalanced by a positive relationship with employment share growth higher up the employment structure, pointing again to an upgrading pattern. Given that the outcome variable is share in total employment, the negative relationship with the top 12

⁽¹⁸⁾ The regression tables show that, in the specification with controls and job fixed effects, the models shown in Figure 17 have an R^2 of 0.004 (see Tables A7 and A8 in Annex 4). The R^2 measures the share of the variation in the dependent variable explained by the model. The relatively low values observed here reflect the fact that all variables are expressed in growth rates relative to the previous year, which tend to be more volatile. When the same models are estimated with the variables expressed in levels, the R^2 increases to around 0.8. Moreover, even in the specification in growth rates, when aggregating the job-level data at the same level of the national minimum wage variation (i.e. country-year), the R^2 grows from approximately 0.01 (specification with controls but without job fixed effects) to about 0.3–0.4 (see Table A6 in Annex 4).

Figure 18: Effect of minimum wage growth on employment share growth by job grouping

Notes: CI, confidence interval. The figure shows the yearly effect over the period 2002–2024. In contrast with Figure 17, in Figure 18, alternative job groupings are used instead of job–wage quintiles. The dependent variable is the percentage growth in the employment share of each job. The figure shows only the coefficients on the minimum wage variable, based on the baseline specification outlined in Box 8. Coefficient estimates are shown as circular markers, with lines indicating the 90 % and 95 % confidence intervals. Estimates in blue include the full set of controls listed in Box 8, while estimates in red include only country and year fixed effects.

Source: Authors' calculations based on EU-LFS and SES data.

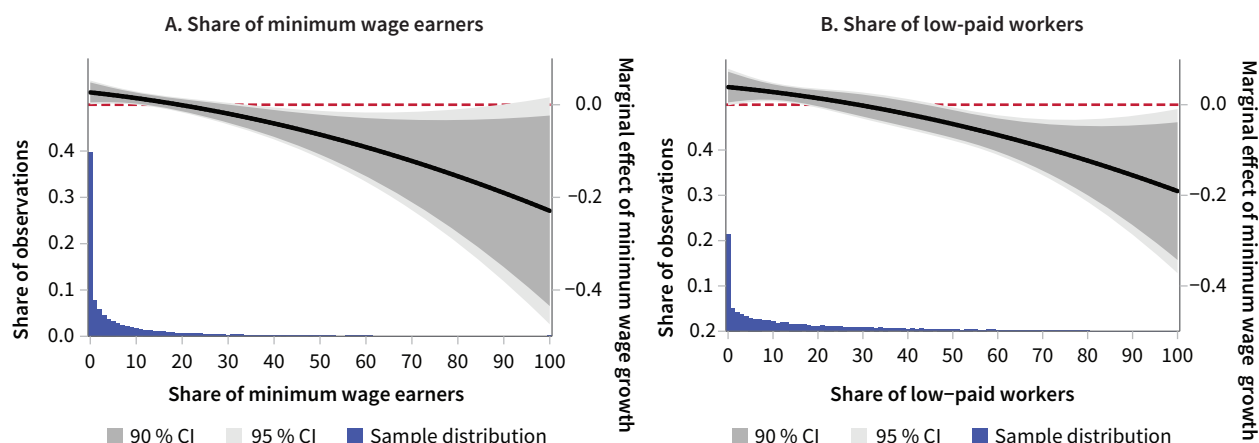
low-paid jobs in Quintile 1 must be balanced by a positive relationship with jobs in the remainder of the wage distribution (Quintiles 2 to 5) such that the net change in shares is zero. Indeed, the Quintile 2–5 estimate of 0.028 is 4.9 times smaller than the negative top 12 jobs estimate of -0.138 , which is consistent with equal and opposite changes in their shares, because the total employment share of Quintile 2–5 jobs is approximately 4.9 times larger than the total employment share of the top 12 low-paid jobs within the bottom quintile.

Panel B uses the share of workers earning around the minimum wage, grouping jobs into those with 0–5 %, 5–15 %, 15–30 % and more than 30 % minimum wage earners. Panel C uses the share of workers on low pay (defined as less than two-thirds of the median), grouping jobs into those with 0–10 %, 10–30 %, 30–60 % and more than 60 % low-paid workers. Here, the results

point to an insignificant relationship between minimum wage growth and employment share growth in all the groups of jobs characterised by a lower incidence of minimum wage earners and low-paid work.

Nevertheless, a significant negative relationship emerges between minimum wage increases and growth in the employment shares of those jobs characterised by a high incidence of minimum wage earners (above 30 %) and low-paid workers (above 60 %), although the results are sensitive to the particular model specification. In the specification with job fixed effects (blue), the coefficients are statistically significant and equal to -0.030 for jobs with 30 % or higher minimum wage earners and -0.094 for jobs with 60 % or higher low-paid workers. In each case, a 1 % increase in the real minimum wage corresponds to a 0.030 % and a 0.094 % decrease in the employment share, respectively.

Figure 19: Effect of minimum wage growth on employment share growth – marginal effects by share of minimum wage earners and share of low-paid workers



Notes: CI, confidence interval. The figure shows the yearly effect over the period 2002–2024. The dependent variable is the percentage growth in the employment share of each job. Instead of interacting minimum wage growth with job-wage quintile indicators, the specification interacts minimum wage growth with a continuous measure of job exposure to changes in national minimum wages. In panel A, this is the share of workers earning 90–110 % of the minimum wage in each job and country-year; in panel B, it is the share of workers earning below two-thirds of the median wage. Both are computed based on SES data, as described in Annex 1. The sample distribution gives the share of observations (job-years) that fall between each integer value for the shares of minimum wage earners and low-paid workers. Source: Authors' calculations based on EU-LFS and SES data.

Altogether, these results imply that the negative relationship is confined to a select group of jobs with the highest concentrations of low-paid workers.

Figure 19 illustrates the results of interacting growth in the minimum wage and growth in employment shares by using a continuous measure of (1) the share of minimum wage earners and (2) the share of low-paid workers within jobs. Here, minimum wage growth is interacted with the share and the squared share to deliver marginal effects in a quadratic form. In contrast to the results of the categorical interaction in the previous figure, here the positive estimates at small shares are statistically significant, at the 10 % level for minimum wage earner shares below about 12 % and at the 5 % level for low-paid workers shares below about 17 %. The difference in significance here is likely due to the fact that the continuous interaction makes use of more observations than categories for estimates at any one point.

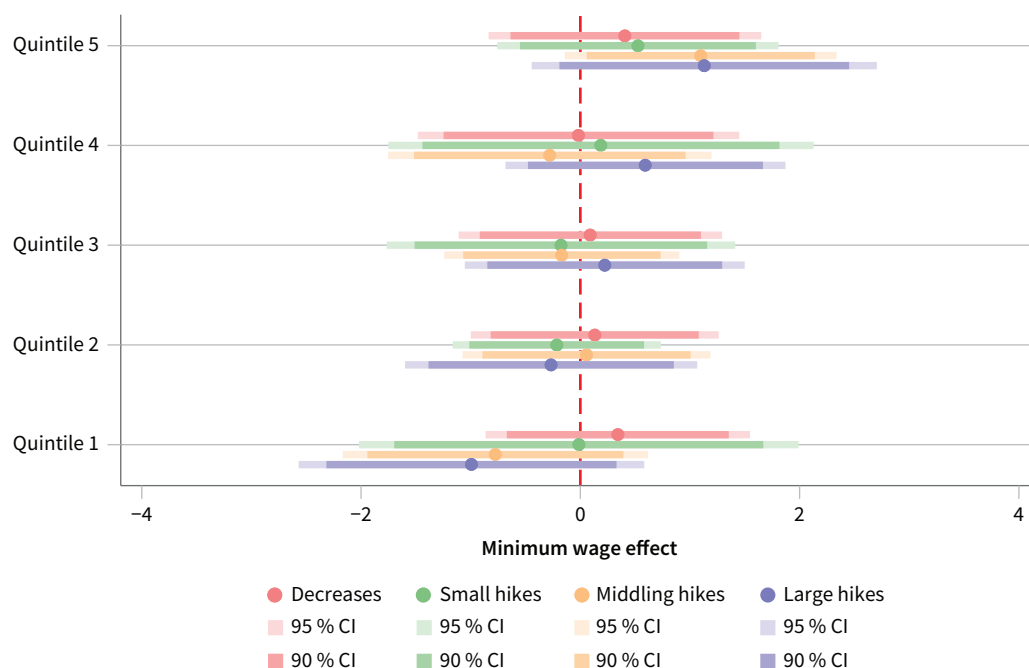
Consistent with the previous figures, the negative relationship between minimum wage and employment share growth becomes statistically significant at a share of around 30 % minimum wage earners and a share of

around 50 % low-paid workers within jobs. While the negative effect strengthens as the incidence of minimum wage earners and low-paid workers increases further within jobs, the sample distribution shows that, even among low-paying jobs, shares of minimum wage earners above 50 % are rare.

Figure 20 shows the results of an investigation of whether growth in the employment share of each job-wage quintile is related to the particular size of the minimum wage increase. Increases are categorised into five groups by splitting the growth rates observed over country-year observations: decreases, no hike, small hikes, middling hikes and large hikes⁽¹⁹⁾. The growth in employment share by job-wage quintile is compared in each of the increase or decrease categories with the growth in the no hike category, conditional on the control variables and fixed effects from the previous specifications. The plot shows that large and middling hikes tend to be associated with the largest decreases in the employment share of the bottom quintile and the largest increases in that of the top quintile, whereas small hikes and decreases exhibit much smaller differences from the no hike baseline. Nevertheless, none of the coefficients are statistically significant.

⁽¹⁹⁾ The five groups are based on splitting hikes according to the quintiles. Specifically, decreases range from – 14.7 % to – 0.57 % (mean – 2.87 %); no hike ranges from – 0.57 % to 0.83 % (mean 0.13 %); small hikes range from 0.83 % to 3.52 % (mean 2.02 %); middling hikes range from 3.52 % to 6.88 % (mean 5.01 %); and large hikes range from 6.88 % to 37.71 % (mean 12.04 %).

Figure 20: Effect of minimum wage growth on employment share growth by job–wage quintile and category of minimum wage increase



Notes: CI, confidence interval. The figure shows the yearly effect over the period 2002–2024. The dependent variable is the percentage growth in the employment share of each job. Rather than using the continuous variable for national minimum wage growth, hikes are categorised into five groups by splitting the growth rates observed over country–year observations into quintiles, with the base category being – 0.57 % to 0.83 %. The figure shows only the coefficients on the minimum wage variable, based on the baseline specification outlined in Box 8, with the full set of controls and job fixed effects.

Source: Authors' calculations based on EU-LFS data and other sources (see Table A1 in Annex 1 for details).

In summary, the econometric analysis presented in this section identifies a negative and statistically significant relationship between real minimum wage growth and the employment share of bottom-quintile jobs, together with a positive and significant relationship for top-quintile jobs. The negative effect at the bottom is driven primarily by the top 12 largest low-paid jobs in each Member State and, within these, by the subset of jobs with the highest concentration of minimum wage earners and low-paid workers. Taken together, these patterns are consistent with an association between minimum wage increases and job upgrading in the EU employment structure over the past two decades, a finding that updates the no-effect result of earlier Eurofound research (Eurofound, 2014a), plausibly reflecting the substantial minimum wage growth observed over the more recent period. As emphasised throughout this chapter, these estimates should be interpreted as broad associations conditional on a large set of controls, not as causal effects. Influences from country-specific developments that the model does not control for, possible reverse causality between economic conditions and minimum wage decisions, and measurement issues in employment data and minimum wage indicators mean that the estimates reported above are subject to substantial uncertainty.

Nevertheless, the associations that emerge from the econometric analysis carry important policy implications. First, the standard policy question of whether minimum wages reduce employment for a certain group is too narrow, since significant adjustments may take place across the whole employment structure, with employment shifting from lower- to higher-paid jobs. Evaluation frameworks should therefore track not only headcount but also the composition of employment across wage segments, sectors, occupations and contract types.

Second, the effects of minimum wage increases on the employment structure are unlikely to materialise automatically or uniformly. The effects of minimum wage increases are interlinked with the structural composition of each country's labour force, the concentration of minimum wage earners across jobs and sectors, and the broader institutional and economic context in which the minimum wage is set – all of which mean that the same minimum wage increase will have different effects in different Member States.

Third, complementary policies should help firms and workers adjust to higher wage floors. Where firms can raise productivity sufficiently to absorb higher minimum wages, the relevant support could consist of investment

in skills, technology and organisational practices that enable within-firm productivity gains. Where productivity cannot be raised substantially, in particular in structurally low-productivity jobs, adjustment will instead involve a contraction of employment in those

jobs and a reallocation of workers towards other activities. In this case, the relevant support could consist of active labour market policies, reskilling programmes and transition support that help displaced workers move into higher-paying expanding jobs.

4 Effect of minimum wages on low-paid work and wage inequality

This chapter examines the relationship between minimum wages and two additional dimensions of labour market outcomes captured at country level: the incidence of low-paid work and wage inequality. The incidence of low-paid work is measured by the share of workers with an hourly wage less than two-thirds of the national median, and wage inequality is measured using both the p50/p10 wage ratio and the Gini index. Further details on these indicators and their construction can be found in Box 9. The share of low-paid workers captures how common it is to earn relatively low pay in a given Member State. By contrast, the p50/p10 ratio and the Gini index capture how large wage differences are, focusing, respectively, on gaps at the lower end and across the wage distribution as a whole. Together, these metrics provide complementary perspectives on the wage distribution and the overall quality of employment in a Member State, enriching the picture provided by the jobs-based indicators analysed in Chapters 2 and 3.

Some amount of low-paid work, as well as a degree of wage dispersion, is to be expected in market economies and is not necessarily problematic, reflecting differences in skills, experience and job characteristics. Low-paid jobs may also act as stepping stones to better-paid jobs by improving workers' employment-related skills (Schnabel, 2021). However, an issue arises when the prevalence of low-paid work and inequality is both high

and persistent. This is particularly the case when low-paid jobs trap overqualified workers in roles below their skill level, limiting productivity and wage progression, or when structurally important occupations, including those requiring significant skills and responsibilities, such as social care work, remain persistently low-paid. In such cases, low pay is more likely to reflect weak bargaining power or the undervaluation of certain types of work, rather than differences in human capital. A high incidence may also signal limited opportunities for skill acquisition in employment, weak wage progression, or structural features of the labour market that concentrate employment in lower-paid occupations or sectors. In this sense, higher values of low-paid work, the p50/p10 ratio and the Gini index may indicate that gains in the labour market are not evenly shared across workers. Monitoring the prevalence of low-paid work is therefore important for assessing both the inclusiveness of labour markets and the effectiveness of policies aimed at improving earnings at the bottom of the wage distribution.

Importantly, while the earlier analysis focused on characteristics of jobs and used jobs as the unit of observation in the regression analysis, the indicators considered in this chapter focus directly on individual workers and their earnings and provide results mainly at country level.

Box 9: Distributional indicators used in the analysis

The share of low-paid workers is an important dimension of the labour market because it reflects the extent to which employment provides adequate earnings. In this report, low-paid workers are defined as those whose hourly wage is below two-thirds of the national median wage, following a typical definition in the literature (Salverda et al., 2009).

Wage inequality is captured using two indicators: the p50/p10 ratio and the Gini index. The p50/p10 ratio compares the wage of a typical worker (the median) with that of workers at the lower end of the distribution (the bottom decile) and, therefore, focuses on inequality among lower-paid workers. A higher value indicates a larger gap between those at the bottom and in the middle of the wage scale.

The Gini index is widely used in policy analysis and international comparisons of inequality because it summarises the entire wage distribution in a single measure. The index ranges from 0 to 100, where 0 indicates perfect equality, meaning that all individuals earn the same wage, and 100 indicates perfect inequality, where one individual receives all income while everyone else receives none. Using the Gini index makes it possible to capture changes in inequality that occur across the whole wage distribution, including those that may arise from broader adjustments in workforce composition.

The metrics are computed using data from EU-SILC. EU-SILC is the only survey that enables the computation of wage distribution statistics for all Member States on a yearly basis. By contrast, the most commonly used dataset for wage statistics, the SES, is conducted only every four years. Moreover, EU-SILC is better suited to capturing

workers at the lower end of the wage distribution. At the same time, it should be noted that EU-SILC may be subject to year-to-year fluctuations, which can sometimes be sizeable, especially for smaller Member States with more limited sample sizes. For this reason, the analysis in this chapter focuses primarily on broad trends.

All indicators are calculated for each Member State and year using gross full-time-equivalent monthly wages. This measure converts annual earnings into a monthly wage and adjusts them to a full-time basis, accounting for differences in working time, including part-time work and multiple job holding. This ensures that wage differences reflect pay levels rather than differences in hours worked, making comparisons across workers, Member States and time more meaningful.

Wages are expressed in national currencies. For Member States that adopted the euro during 2004–2024, values are kept in their original currencies using the same fixed conversion rate for all years after adoption. To ensure comparability, extremely low values are excluded based on country-specific thresholds linked to national or collectively agreed minimum wages.

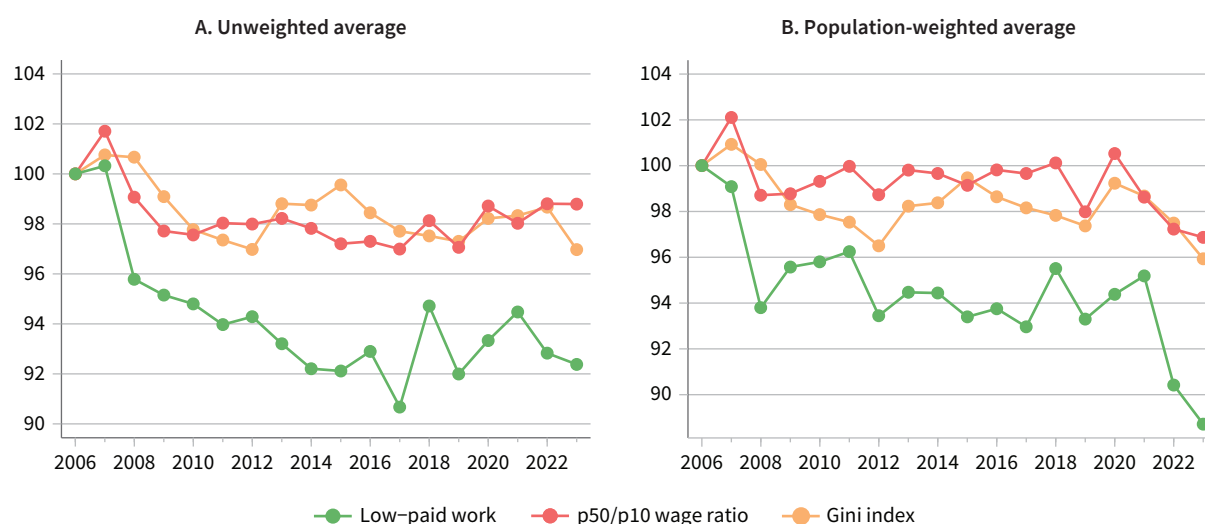
The 2004–2024 waves of EU-SILC are used, providing wage information for 2003–2023. As many Member States are not represented in the initial waves, all statistics reported in this chapter start from the 2007 wave (referring to 2006 wages). More details on wage data processing can be found in Annex 1.

Broad trends in wage distribution over 2006–2023

Overall, distributional outcomes in the EU-27 improved between 2006 and 2023, as all three distributional indicators declined (Figure 21). This pattern holds regardless of whether weighted or unweighted averages are used, suggesting that it reflects a common trend

among Member States rather than being driven by developments in larger economies. The largest reduction is observed in the share of low-paid workers, indicating that low pay has become less widespread. Most of this decline occurred in the earlier years of the period (roughly 2006–2015), after which the trend levels off, with some short-term fluctuations. The p50/p10 ratio and the Gini index also declined, although more moderately and by a similar magnitude.

Figure 21: Change in low-paid work and wage inequality indicators, using unweighted and weighted averages, EU, 2006–2023 (indexed values)



Notes: The y-axes show the evolution of the three series (2006 = 100). The three distributional indicators, defined in Box 9, were first calculated independently at country level and then averaged (either raw mean or populated-weighted) to EU level, before being indexed to 100 in 2006. *Source:* Authors' calculations based on the 2007–2024 EU-SILC waves (income reference years 2006–2023).

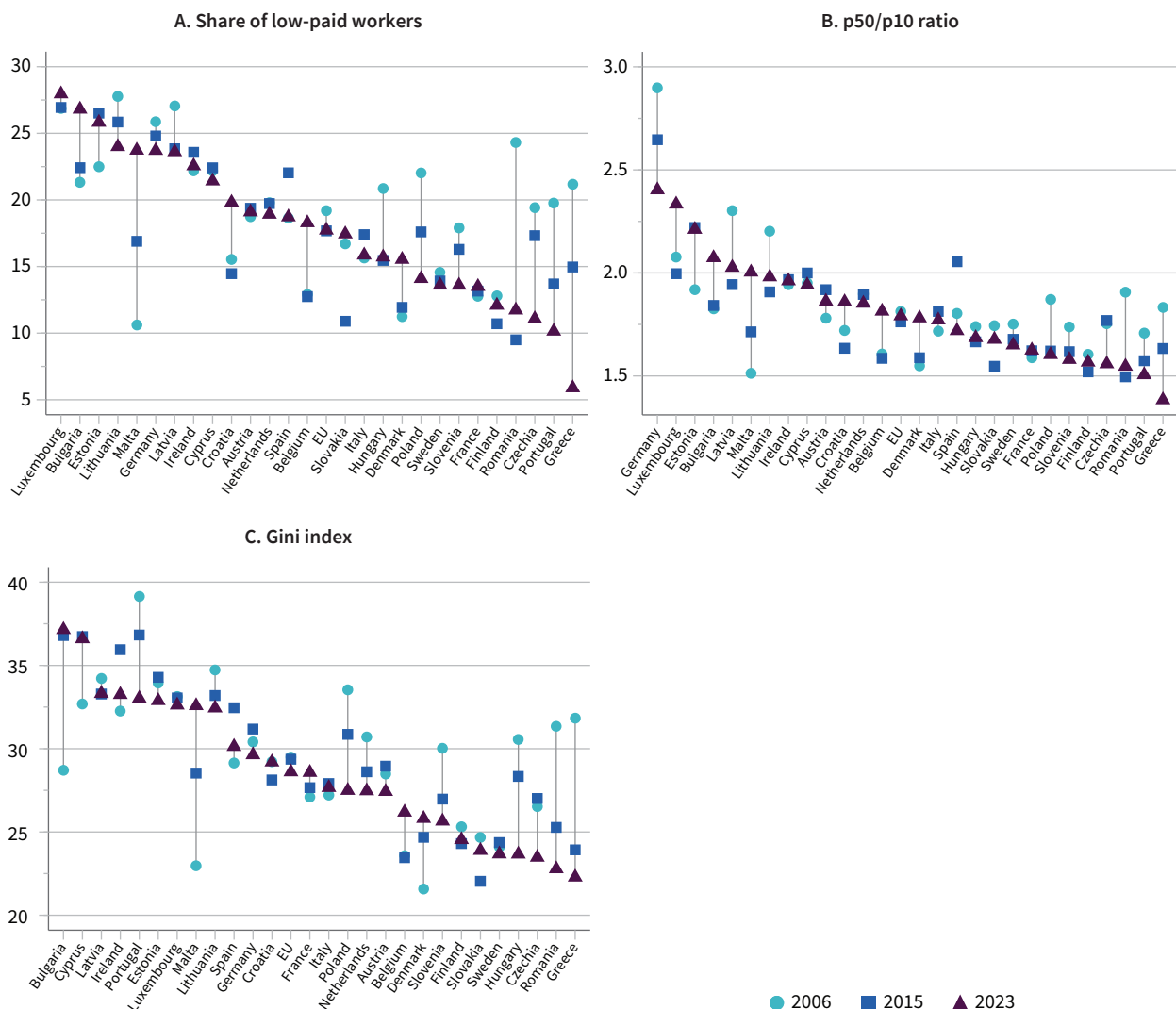
The EU-wide trends mask considerable heterogeneity in the evolution of the distributional indicators across the Member States. Figure 22 compares Member States' positions in terms of low-paid work and wage inequality in 2006, 2015 and 2023. Across all three indicators, the overall ranking of Member States remains relatively stable, with Member States that start with higher or lower levels generally maintaining their relative position, excluding some notable exceptions, such as Greece, Portugal and Romania.

The share of low-paid workers (panel A) has remained constant or decreased in the large majority of Member States, with particularly strong reductions in Member States that started well above the EU average, such as Czechia, Greece, Hungary, Poland, Portugal and Romania. Only a small number of Member States record increases over the period, including Belgium, Bulgaria

and Malta. Despite these widespread improvements, differences among Member States remained sizeable in 2023, with shares ranging from 5.9 % in Greece to 28 % in Luxembourg. In fact, differences among Member States have widened. This is reflected in the increase in the ratio of the highest to the lowest value from 2.6 in 2006 to 4.7 in 2023.

Panels B and C show a broadly similar direction of change, with most Member States recording declines or stability in both the p50/p10 ratio and the Gini index, although again with some exceptions. Compared with panel A, differences among Member States are more limited to begin with and change only slightly over time. The ratio between the highest and lowest country values declines from around 1.9 to 1.7 for the p50/p10 ratio and from 1.8 to 1.7 for the Gini index, pointing to only a modest narrowing of already relatively small gaps.

Figure 22: Change in the share of workers in low-paid work and in wage inequality, EU and Member States, 2006, 2015 and 2023



Notes: The three distributional indicators are defined in Box 9. Series are based on the 2007–2024 EU-SILC waves (income reference years 2006–2023). 'EU' refers to the unweighted average across Member States.

Source: Authors' calculations based on EU-SILC data.

Table 2 links developments across the three distributional indicators, helping to highlight some common patterns. One group of Member States, largely in eastern Europe, and also including Greece and Portugal, experienced substantial reductions in the share of low-paid workers. These Member States also tended to record substantial declines in the p50/p10 ratio and, in most cases, the Gini index. This points to clear improvements at the lower end of the wage distribution, accompanied by some broader compression in wage differences.

Table 2: Percentage change in the distributional indicators between 2006 and 2023, EU and Member States (%)

Member State	Low-paid workers	p50/p10 ratio	Gini index
Greece	- 72.2	- 24.5	- 30.0
Romania	- 51.8	- 18.9	- 27.3
Portugal	- 48.7	- 11.9	- 15.6
Czechia	- 43.0	- 11.1	- 11.5
Poland	- 36.0	- 14.3	- 18.0
Hungary	- 24.7	- 3.1	- 22.6
Slovenia	- 24.1	- 9.1	- 14.6
Lithuania	- 13.6	- 10.1	- 6.6
Latvia	- 12.7	- 11.9	- 2.6
Germany	- 8.4	- 17.1	- 2.5
EU	- 7.6	- 1.2	- 3.0
Sweden	- 6.6	- 5.8	- 1.7
Finland	- 5.5	- 2.4	- 3.1
Netherlands	- 4.4	- 2.4	- 10.6
Cyprus	- 3.4	- 0.5	11.9
Spain	0.5	- 4.6	3.4
Italy	1.3	3.1	1.6
Ireland	1.7	0.9	3.1
Austria	1.9	4.6	- 3.7
Luxembourg	4.0	12.4	- 1.6
Slovakia	4.4	- 3.8	- 3.2
France	5.7	2.3	5.4
Estonia	14.8	15.2	- 3.1
Bulgaria	25.7	13.5	29.4
Croatia	27.6	8.1	- 0.1
Denmark	38.1	15.0	19.6
Belgium	41.7	12.9	11.1
Malta	123.4	32.4	41.8

Notes: The three distributional indicators are defined in Box 9. The series are based on the 2007 and 2024 EU-SILC waves (income reference years 2006 and 2023). 'EU' refers to the unweighted average across Member States.

Source: Authors' calculations based on EU-SILC data.

By contrast, in most western and northern European countries, changes were more limited across all three indicators. In some Member States, such as Finland, the Netherlands and Sweden, the share of low-paid workers declined only slightly, alongside small reductions in inequality measures. In others, including France and Ireland, the share of low-paid workers increased modestly, with mixed developments in the p50/p10 ratio and the Gini index, suggesting little overall change in the distribution of wages. Germany represents a somewhat special case, with a clear improvement in the p50/p10 wage ratio associated with more modest improvements in the other two indicators.

Another group of Member States experienced larger increases in the incidence of low-paid work. This pattern is most pronounced in Malta⁽²⁰⁾ but is also observed in Belgium, Bulgaria, Croatia, Denmark and Estonia. In these cases, increases in low-paid work were generally accompanied by rises in the p50/p10 ratio, pointing to widening gaps at the lower end of the wage distribution. Changes in the Gini index are more heterogeneous, but in several of these Member States, such as Bulgaria, Denmark and Malta, overall wage inequality also increased.

Potential role of minimum wages

These developments raise the question of whether minimum wage policies may have influenced the changes in low-paid work and wage inequality in Member States.

Minimum wages have the potential to affect distributional metrics through several channels. First, they have a direct effect on the lower end of the wage distribution by raising the earnings of workers whose wages had previously been below or close to the minimum wage. This tends to compress the lower tail of the wage distribution and reduce gaps between the lowest-paid workers and those earning slightly more. Second, minimum wage increases may generate spillover effects for workers earning just above the new wage floor, as employers may adjust these wages to maintain pay structures within firms. These ripple effects can further reduce wage dispersion among low- and lower-middle-income workers. Finally, as discussed in Chapter 3, minimum wages can lead to changes in employment or workforce composition, for example if firms adjust hiring or occupational structures in response to higher labour costs. Such adjustments may influence observed wage inequality in more complex ways.

⁽²⁰⁾ The estimates for Malta should always be considered with caution due to the relatively small sample size.

The relationship between minimum wages and the share of low-paid workers is not straightforward. While minimum wages directly affect the lower end of the wage distribution, their direct effects will push workers over the low-pay threshold only if the minimum wage itself moves from below to above two-thirds of the median wage. This is equivalent to having a Kaitz index of 66.7 % or above, which is quite rare (see Figure 1). That said, indirect wage effects of minimum wage changes (i.e. where wages above the minimum often rise as well due to spillover effects) may be more likely to push workers over the low-pay threshold since these do not require the Kaitz index to be quite so high. Indirect effects even higher up the wage distribution, however, might push up the wage of the median worker, which would then move the threshold upwards, actually reducing the number of workers that fall below it.

More generally, changes in the share of low-paid workers and in wage inequality reflect a range of factors beyond minimum wage policies. Changes in labour market conditions; shifts in the sectoral composition of employment; the power and coverage of labour unions; and other policy measures such as tax reforms, social contributions or collective bargaining agreements can all affect the distribution of wages (Clark et al., 2013; Gautié et al., 2010; Mussida et al., 2026; Vandekerckhove et al., 2018). As a result, movements in the share of low-paid workers do not necessarily reflect the effects of minimum wage policies alone.

Figure 23 compares the changes in the three distributional indicators with developments in minimum wages from 2006 to 2023. Member States without a national minimum wage are shown instead in Figure 24. To facilitate comparison, all series are expressed as indices with 2006 set equal to 100. Most Member States see significant movements in their national minimum wage at some point over the period (with a few exceptions, such as Belgium, France, Malta and the Netherlands). By comparison, the collectively agreed minimum wages tend to be more stable.

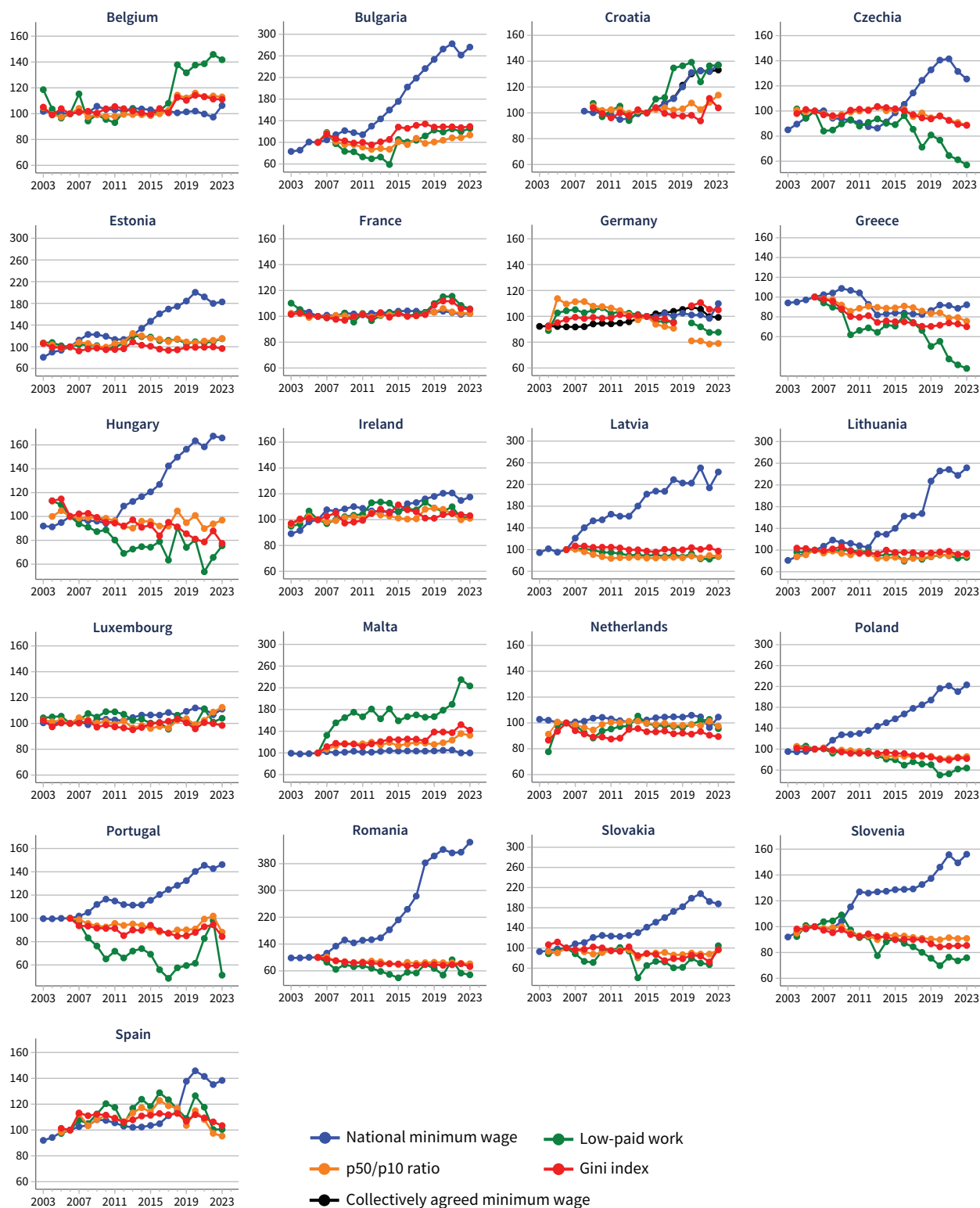
Looking across Member States, there is no single clear relationship between minimum wages and the distributional indicators. In a number of Member States, sizeable increases in minimum wages were not accompanied by clear improvements in distributional indicators. This is observed in the Baltic states (Estonia, Latvia and Lithuania) and Bulgaria and Croatia, where low-paid work and inequality measures remained

broadly unchanged or increased despite rising minimum wages. One reason why this might be is that in the Balkan states and eastern Europe, national minimum wages started from a very low base. As a result, very few workers actually earned the minimum wage, so, even after substantial increases, most workers were completely unaffected. Studies looking at Bulgaria and Croatia (Blažević, 2013; Manolova et al., 2017; Mrnjavac et al., 2014) found that these national minimum wage increases did little to increase actual wages or reduce poverty.

In another group of Member States, minimum wages remained broadly stable, but the distributional indicators, particularly the share of low-paid workers, increased. This is the case in Belgium and Malta, pointing to the importance of factors beyond minimum wage policy. In Greece, the 2012–2013 debt crisis led to sharp minimum wage cuts. Surprisingly, these did not trigger major changes in the share of low-paid workers, which experienced a large drop around the 2008 global financial crisis, nor in the inequality indicators.

Finally, in several Member States, increases in minimum wages coincided with improvements in distributional indicators. This pattern is visible in Czechia, Hungary, Poland, Portugal, Slovakia and Slovenia, and – to some extent – Romania. It is particularly evident in Slovenia, where the sharp increase in the minimum wage in 2011 coincided with a subsequent decline in the distributional indicators, especially the share of low-paid workers. However, such patterns are not universal. In Spain, the large increase in the minimum wage in 2019 was accompanied by a sustained decline in the Gini index and the p50/p10 ratio. While the COVID-19 pandemic temporarily interrupted this trend in 2020, the downward pattern in inequality indicators resumed thereafter. Germany represents a somewhat distinct case. Following the introduction of the minimum wage in 2015, there is an apparent reduction in wage inequality indicators, especially the p50/p10 as observed in Table 2. These dynamics are also confirmed by Bossler et al. (2023), who apply a difference-in-difference approach to administrative data. By contrast, the large increase in 2022 did not coincide with a clear improvement. However, this may reflect the broader economic context, as high inflation and rising energy prices, caused by Russia's war of aggression against Ukraine, likely offset some of the potential effects of the minimum wage increase.

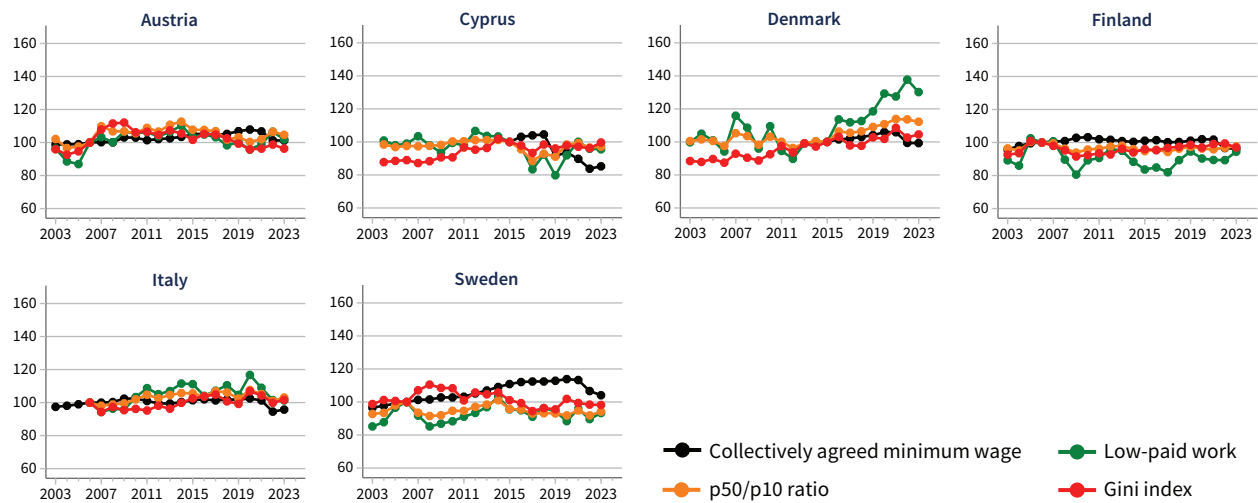
Figure 23: Change in distributional indicators and national minimum wage, 21 Member States, 2003–2023 (indexed values)



Notes: The distributional indicators were computed on the 2004–2024 EU-SILC waves (income reference years 2003–2023; see Annex 1 for further details). The y-axes show the changes in the four series (2006 = 100).

Source: Authors' calculations based on data from EU-SILC (distributional indicators), Eurofound and national statistical offices (collectively agreed minimum wages) and Eurostat (national minimum wages).

Figure 24: Change in distributional indicators and collectively agreed minimum wages, six Member States, 2003–2023 (indexed values)



Notes: The distributional indicators were computed on the 2004–2024 EU-SILC waves (income reference years 2003–2023; see Annex 1 for further details). The y-axes show the change in the four series (2006 = 100).

Source: Authors' calculations based on data from EU-SILC (distributional indicators) and Eurofound and national statistical offices (collectively agreed minimum wages).

One of the reasons it is difficult to identify a clear relationship between minimum wages and the distributional indicators from a simple comparison of long-term trends is that these indicators are shaped by many other factors that differ among Member States and over time. These include persistent country-specific characteristics, for example the strong minimum wage growth observed in many eastern European Member States; common shocks affecting all countries in a given period, such as the 2008 global financial crisis; and other policies or structural changes that influence wage outcomes.

To explore this relationship more systematically, Figure 25 shows how changes in national minimum wages are associated with changes in the distributional indicators after accounting for these other factors. In practice, this means that the analysis removed the influence of country-specific factors that are fixed over time; time-specific factors that affect all countries; and a range of factors that vary over time for each country related to economic conditions, demographics and labour market structures. The resulting correlations, therefore, reflect the association between minimum wages and the distributional indicators, holding these other influences constant. The full set of control variables corresponds to those used in the regression analysis described in Box 8.

The conditional correlations shown in Figure 25 suggest that the relationship between minimum wages and the distributional indicators remains generally weak, even

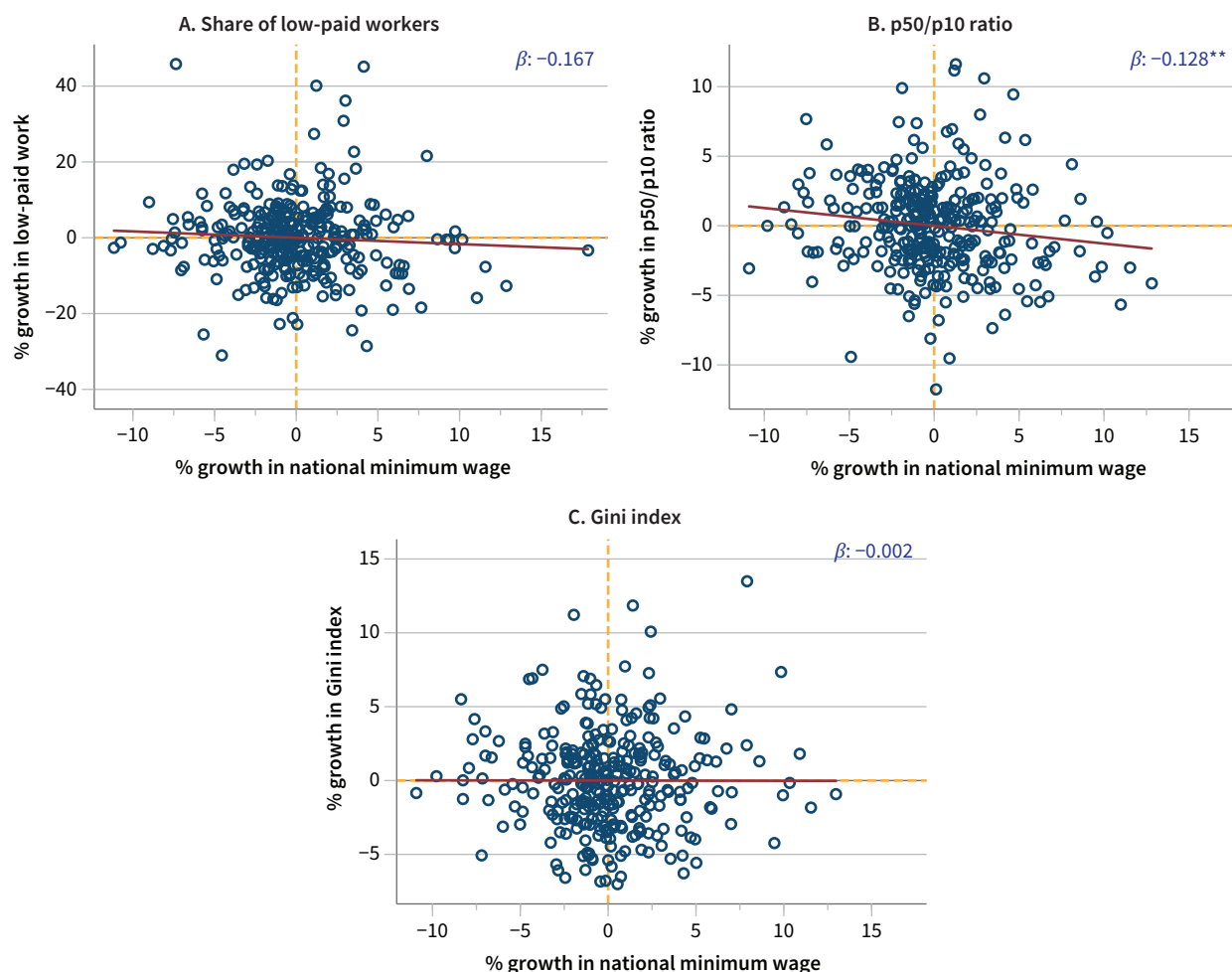
after accounting for other factors. For both the share of low-paid workers (panel A) and the Gini index (panel C), the estimated relationships (-0.167 and -0.002) are not statistically significant, pointing to no clear association with minimum wage changes⁽²¹⁾. In the case of low-paid work, this is consistent with the fact that the measure is defined relative to the median and may not move in line with changes at the bottom of the distribution.

A somewhat clearer pattern emerges for the p50/p10 ratio (panel B), where the estimated relationship is -0.128 and is statistically significant. The coefficient estimate suggests that a 1 % increase in the minimum wage is associated with a 0.128 % reduction in the p50/p10 measure of wage inequality.

These results should be interpreted with caution. They reflect conditional correlations rather than causal relationships and may still be influenced by unobserved factors or measurement limitations. As such, they provide an indication of broad patterns rather than definitive evidence on the impact of minimum wages. Nevertheless, the patterns observed are broadly consistent with the findings of other empirical studies. Evidence from country-specific studies generally points to limited effects of minimum wages on the prevalence of low-paid work and on overall wage inequality, alongside more consistent, though still modest, reductions in wage gaps at the lower end of the distribution. At the same time, these effects vary considerably between Member States and depend on the broader economic and institutional context.

⁽²¹⁾ Note that a comparison of the size of the coefficient between indicators with different standard deviations is not informative. The share of low-paid workers coefficient of -0.167 is the highest of the three partly because that variable simply has a greater range of values (see the scale of the y-axis).

Figure 25: Conditional relationship between annual growth in national minimum wages and annual growth in distributional indicators



Notes: β denotes the coefficient from a simple linear regression of the residuals of the y-axis variable on the residuals of the x-axis variable (significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$). Residuals are obtained after regressing both variables on country and year fixed effects, as well as the set of control variables described in Box 8. Each dot represents a country-year observation. The three distributional indicators are defined in Box 9 and are computed on the 2007–2024 EU-SILC waves (income reference years 2006–2023; see Annex 1 for further details). The top and bottom 1 % of observations, ranked by the change in the national minimum wage, are excluded.

Source: Authors' calculations based on data from EU-SILC (distributional indicators) and Eurostat (national minimum wage).

5 Conclusions

This report brings together two key strands of Eurofound's research, combining insights on minimum wage developments with an analysis of changes in employment structures. By adopting a jobs-based approach, where a job is defined as a specific occupation within a specific sector, the analysis examines how employment in low-paid jobs has evolved across the EU over the past two decades and whether minimum wage policies have played a role in shaping these developments across the employment structure. In doing so, the report makes two main contributions: a detailed analysis of trends in selected low-paid jobs across Member States and new empirical evidence on the relationship between minimum wages and the employment structure, using the job as the unit of analysis; this approach remains relatively rare in the literature. In contrast to most existing research, which focuses on the local effects of minimum wage increases on employment levels or specific groups, this report takes a broader perspective by examining how minimum wages relate to the overall distribution of employment across sectors and occupations, giving particular attention to the lower end of the job–wage distribution.

Research findings

The descriptive evidence presented in Chapter 2 shows that, on average across the Member States, employment in eight representative low-paid jobs identified in the research grew in absolute terms between 2011 and 2024 (by 11.6 % in headcount employment and 7.6 % in hours worked). However, their shares of total employment and hours worked declined (– 2.5 % and – 5.2 %, respectively), indicating slower growth than better-paid jobs, which is consistent with an upgrading pattern in the employment structure. A slightly different picture emerges when focusing on a subset of five representative low-paid jobs that can be consistently tracked back to 2001, whose shares remained broadly stable over time, with a small increase in employment share (3.5 %) and a slight decline in share of hours worked (– 1.1 %) during 2001–2024.

These aggregate patterns mask substantial heterogeneity across jobs. In particular, sustained declines occurred for retail sales workers and manufacturing labourers (and personal service workers to a lesser extent), while health and social care workers and hospitality food preparation assistants expanded. For the remaining jobs, regional trends often moved in opposite directions and partly offset each other.

Overall, the decline observed over 2011–2024 for the full set of representative low-paid jobs was driven mainly by reductions in the employment of retail sales workers, which was a gradual decline over the whole period, and, to a lesser extent, of hospitality personal service workers, a job that was strongly affected by structural changes following the COVID-19 pandemic. This decline was partly offset by the upward trend in health and social care workers.

Differences among Member States are also pronounced. Consistent with a generalised upgrading pattern (i.e. a shift towards higher-skilled and higher-paid jobs), between 2011 and 2024 the employment share of the eight representative low-paid jobs decreased in the majority of Member States, with the largest decreases observed in France, Hungary, Ireland, Poland and Sweden. At the same time, a smaller group of Member States experienced increases in the share of employment in these jobs, most notably Belgium, Greece, Italy and Romania. When focusing on the subset of five jobs over the longer 2001–2024 period, the ranking of Member States changed somewhat, although the two measures remained moderately correlated.

The descriptive evidence from Chapter 2 also suggests that employment in low-paid jobs is influenced by a combination of cyclical and structural factors. Low-paid jobs tended to be more sensitive to economic downturns, with sharp contractions during the Great Recession and the COVID-19 pandemic, while high-paid jobs were generally more resilient. The pandemic, in particular, appears to have had more persistent structural effects, contributing to lasting changes in the composition of employment and largely explaining the decline in the employment shares of the representative low-paid jobs between 2011 and 2024.

Extending the focus to the whole employment structure, an upgrading pattern but with a small degree of polarisation (where employment grows at the top and bottom of the wage distribution but contracts in the middle) emerges on average across Member States. Specifically, when jobs are sorted into five quintiles based on wage (with the lowest paid in the first job–wage quintile and highest paid in the fifth), employment is shown to have declined in the bottom three job–wage quintiles, consistent with upgrading. However, the decline was greater for the middle quintiles than the bottom one, resulting in a degree of hollowing out, which resembles the typical polarisation pattern. In particular, during 2001–2024, the annualised change in the first (or bottom) quintile was – 0.5 % (– 11.2 % over the whole period), compared with – 0.8 % in the second

quintile (– 17.6 %) and – 0.6 % in the third quintile (– 13.4 %). By contrast, the fourth quintile increased only slightly at 0.1 % (2.0 %), while the fifth (or top) quintile grew strongly at 1.6 % (43.3 %). This EU-wide pattern masks substantial differences among Member States. The upgrading trend was particularly strong in Ireland, Luxembourg, Portugal, Slovakia and Sweden. A smaller group of Member States, namely Cyprus, Romania and Slovenia, displayed a pattern closer to mild polarisation, with similar increases in both the bottom and top quintiles.

A central question is whether minimum wage policies have contributed to counteracting the polarising effects of technological change, globalisation and other structural forces by supporting job upgrading. While earlier research covering periods of limited minimum wage growth found no strong evidence of such effects, the longer time frame analysed here (2001–2024), which captures the substantial increases in minimum wages observed since the mid-2010s, provides a more comprehensive basis for assessing these relationships. The results of the econometric analysis in Chapter 3 show that increases in real minimum wage levels are associated with declines in the employment share of jobs in the bottom quintile and that this negative relationship is statistically significant. The estimates of this regression analysis become progressively less negative and turn positive for higher job–wage quintiles and positive and statistically significant for the top job–wage quintile. In terms of magnitude, a 1 % increase in the real minimum wage is associated with a reduction of around 0.1 % in the employment share of bottom-quintile jobs and an increase of about 0.06 % in top-quintile jobs. Given average increases of around 3.4 % per year, these effects cumulated in a decline of about 10 % in the share of the lowest-paid jobs and an increase of around 6 % in the highest-paid ones over 2001–2024. Taken together, and with the caveats indicated, these results are consistent with an association between minimum wage increases and job upgrading in the employment structure.

The report also examined hours worked alongside employment headcount in low-paid jobs. The two measures move closely in parallel in most Member States and periods. However, hours worked tend to decline slightly more than employment during downturns, suggesting that employers adjust along the intensive margin – in other words, reducing hours per worker – before cutting headcount. Beyond the cyclical context, hours worked are also a relevant margin of adjustment in response to minimum wage increases, as employers may reduce hours rather than employment in response to higher wage floors. Aggregate employment figures alone may therefore understate the full adjustment in labour input, reinforcing the case for monitoring frameworks that

track both employment and hours worked when assessing the effects of minimum wages and economic shocks on low-paid workers.

Complementing the employment analysis, the report also investigated the relationship between minimum wage developments and wage inequality. Chapter 4 found no strong or systematic link between minimum wage developments and the observed declines in wage inequality and low-paid work across the EU. Nevertheless, increases in minimum wages are associated with a reduction in wage inequality at the lower end of the wage distribution.

Policy pointers

The results of this report have several implications for policymakers.

First, the data show that the most representative low-paid jobs are concentrated in a limited number of sectors and occupations. This underlines the potential of targeted policy interventions to reach a large share of the low-paid workforce.

Second, the question of whether minimum wages reduce employment for certain groups is too narrow, as significant adjustments may take place within the whole employment structure. Monitoring frameworks should therefore look beyond aggregate employment figures and track distributional changes across wage segments, sectors, occupations and contract types.

Third, the employment effects of minimum wage increases depend heavily on context. On the macroeconomic side, the analysis confirms that employment in low-paid jobs is closely linked to the business cycle and tends to be more vulnerable to downturns than employment in high-paid jobs. This underscores the importance of the macroeconomic context. During downturns, minimum wage policy should be complemented by broader countercyclical measures, such as short-time work schemes and targeted income support, to sustain employment in vulnerable job categories. Separately, phases of structural change can contribute to lasting reductions in some low-paid job categories, as the pandemic illustrated, through shifts in consumption patterns, accelerated digitalisation and changes in work organisation. In such contexts, structural policies that support transitions out of declining jobs may be important.

Fourth, minimum wage policy does not operate in a vacuum: its employment effects are mediated by a broader set of economic and structural factors, including the macroeconomic cycle, sociodemographic trends, exposure to trade and technological change, labour market institutions, and sectoral composition.

A particularly relevant dimension is the degree of exposure to international competition: firms in tradable sectors face tighter constraints in passing higher labour costs on through price increases than those operating in sheltered local services markets, making the employment effects of minimum wage increases potentially larger where export dependence or import competition is high. Similarly, the scope for absorbing higher wage floors without employment losses is greater in sectors where firms can adjust through productivity improvements, for instance through investment in equipment, training or process innovation, than in sectors where such margins are narrower, such as accommodation and food services or personal care. This implies the importance of calibrating both the level and the pace of minimum wage increases to underlying sectoral and labour market conditions. In practice, this calibration should be supported by indicators that capture the share of workers earning at or near the minimum wage across occupations, sectors, regions and other relevant dimensions (e.g. gender), since national averages can mask very different distributional implications across Member States.

Fifth, upgrading the employment structure in the context of minimum wage increases requires complementary policies. Productivity-enhancing investments in skills, technology and work organisation can help firms absorb higher wage floors without reducing employment, while active labour market policies can support workers in transitioning out of declining low-paid jobs into better-paid ones.

Sixth, minimum wages are an effective instrument for compressing the lower tail of the wage distribution. However, their effects on broader inequality measures, such as the Gini index, and on the overall share of low-paid workers are weaker and more country-specific, partly because in some Member States the minimum wage covers relatively few workers. Expectations of what minimum wage policy can deliver in terms of overall wage inequality should be calibrated accordingly, and complementary instruments such as taxation, transfers and collective bargaining remain essential for addressing wider distributional objectives.

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Annexes

Annex 1: Information on data and sources

This annex provides additional information on all the data used in the report. Table A1 summarises the data sources, while the sections that follow provide more information on the processing of EU-LFS, SES and EU-SILC data, and data on collective agreements.

Table A1: Summary of data sources used for the report

Type of information	Source
Employment outcomes (employment levels, employment shares, hours worked levels, hours worked shares)	2001–2024 EU-LFS (see section below for more information)
Average hourly wages of each job (used for dividing jobs into quintiles)	2002–2022 SES (see section below for more information)
Inequality measures (Gini index, p50/p10 ratio) and share of low-paid workers	2004–2024 EU-SILC (see section below for more information)
Nominal minimum wage	Eurostat: earn_mw_cur
Deflator	Eurostat: prc_hicp_aind
Exchange rates	Eurostat: ert_h_eur and ert_bil_eur
Average annual wages	OECD: ‘Average annual wages’ Eurostat: nama_10_fte Both provide average annual wages per employee in full-time equivalents
Collectively agreed minimum wages	Eurostat and national statistical offices (see section below for more information)
GDP	Eurostat: nama_10_gdp
Share of women in employment	Computed based on the EU-LFS
Share of the population aged > 65 years	Ardeco: SPPAN
Share of the population aged 15–64 years with tertiary education	Ardeco: RPD TN
Unemployment (among those aged 15–74 years)	Ardeco: RPUCNP
Net migration per 1 000 persons	Ardeco: SNPTD Integrated with Eurostat’s migr_netmigr for missing values
Share of workers in temporary employment	Calculated based on the EU-LFS
Share of employment in occupations exposed to RBTC	Routine task intensity index values by occupation were retrieved from Mihaylov et al. (2019) for ISCO-08 and Owen et al. (2017) for ISCO-88 Employment shares in occupations with high routine task intensity were computed based on the EU-LFS
Imports from China	Comtrade (imports from China and Hong Kong)
Social net	OECD: ‘Adequacy of minimum income benefits’
Employment protection legislation	OECD: ‘Strictness of employment protection’
Labour union density	OECD / Amsterdam Institute for Advanced Labour Studies Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts database
Share of workers earning minimum wage and share of low-paid workers by job	These measures are based on SES data from 2002–2022, which is the only source allowing the calculation of the share of workers earning 90–110 % of the minimum wage and the share of workers earning below two-thirds of the median wage at the job level. For jobs, sectors or country–years not covered in the SES, values were imputed using ISCO one-digit estimates from EU-SILC, EU averages or country–year quintile averages, depending on the case.

Source: Authors.

EU Labour Force Survey data

EU-LFS data for 2001–2024 are used for all Member States. The focus is on the following variables:

- **ISCO and NACE classifications** for 2001–2024, using the ISCO-88 classification up to 2010 and the NACE Rev. 1.1 classification up to 2007;
- **wage decile** (*incdecil*) to complement wage information from the SES;
- **outcome variables**, that is, employment count, hours worked and type of contract (e.g. temporary);
- **weight** (*coeffy*).

The outcome variables of interest, such as employment shares and hours worked, are estimated using the entire population of employed individuals aged 15–64. In general, all observations are retained so that the data remain as close as possible to official statistics. The only observations excluded are those missing both ISCO and NACE codes. For some outcome variables, missing values arise when the variable itself is not reported. In addition, overseas territories are excluded for France, as they were only incorporated in the survey from 2014 onwards.

There are cases of significant breaks in the EU-LFS employment series that do not reflect real changes in employment distributions but rather result from Member State-specific adjustments or ‘swaps’ in occupational codes.

Unfortunately, these cases cannot be identified from Eurostat’s documentation on comparability over time ⁽²²⁾. However, the largest breaks can be detected by examining total employment by Member State and ISCO classification year by year, looking for (1) extreme changes in a single year and (2) extreme changes that occur in one year and then stabilise at the higher or lower level.

Table A2 summarises how these breaks are addressed in this report. Most potential breaks are disregarded, particularly where no clear pattern is evident, and only those associated with identifiable reclassifications are explicitly considered. In some cases, the decision to account for a break depends on whether it is flagged in Eurostat’s documentation.

Table A2: Adjustments to the EU-LFS time series

Member State	Issue	Solution
Austria	2004: significant reclassification	Start first period in 2004
Belgium	2002: potential inconsistencies in the assignment of workers between ISCO groups 82 and 93	Recode 82 as 93 for all periods
	2021: break in clerical employment	Aggregate ISCO two-digit occupations within group 40 to ISCO one-digit groups
Croatia	Data only available for 2002 onwards, as state was not previously included in the EU-LFS	Start first period in 2002
Finland	2002: reclassification of health sector in 2002	Start first period in 2002
France	2003: large change for ISCO groups 23, 33, 73 and 91	Start first period in 2003
	2013: large changes for many occupations (ISCO groups 21, 24, 26 and 31)	Start third period in 2013
	2021: large changes for many occupations (ISCO one-digit groups 1, 7 and 9)	Exclude 2021 from regressions (In descriptive statistics, start fourth period in 2019 anyway to capture changes related to the COVID-19 pandemic)
Germany	2012: large changes for many occupations (ISCO groups 12–14, 35, 74 and 82)	Start third period in 2012
	2020: teaching professionals (group 23) swap with legal, social, cultural and related associate professionals (group 34)	Exclude 2020 from regressions (In descriptive statistics, start fourth period in 2019 anyway to capture changes related to the COVID-19 pandemic)
	2020: break in clerical employment	
	2020: Large increases for some occupations (groups 12–14, 35, 54, 71, 74, 83 and 93)	

⁽²²⁾ https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_labour_force_survey_%E2%80%93_data_and_publication#Comparability_over_time_and_across_countries.

Member State	Issue	Solution
Greece	2021: reclassification of health associate professionals (group 32) as health professionals (group 22)	Recode 32 as 22 for all periods (employment is highest in group 22)
Italy	2004: new classification not comparable to previous	Start first period in 2004
Netherlands	2013: break in several occupations	Start third period in 2013
Poland	2005: reclassification of health associate professionals (group 32) as health professionals (group 22)	Recode 32 as 22 for all periods (employment is highest in group 22)
Romania	2001–2004: only one-digit ISCO reported 2006: large changes in many occupations	Stop first period in 2004
	2014: downward revision of employment estimates due to revision of population estimates in census	Ignored
	2021: loss of farmers (no swapping)	Ignored
Slovakia	2013: break in several occupations	Start third period in 2013
Spain	2021: swapping of group 51 with group 52	Exclude group 51 from descriptive statistics and from regressions including jobs from ISCO group 5 in 2021

Note: First period is 2001–2007, second period is 2008–2010, third period is 2011–2019 and fourth period is 2019–2024.

Source: Authors.

Structure of Earnings Survey data

SES data are the main source of information for calculating the average hourly wages of each job, which are used to compute job–wage quintiles.

Wage variable. The main variable of interest is B43 (average gross hourly earnings in the reference month (to two decimal places)), which includes overtime and shift payments but excludes bonuses. In two cases, however, B42 (gross earnings in reference month) and B32 (number of hours paid during the reference month) are used: for Italy in 2010 (where data for B43 are unavailable) and for Greece in 2014–2018 (where data for B43 are reported without decimals, making the calculation of the quintiles more problematic). Wages of Member States with currencies other than the euro were converted into euro using the Eurostat dataset `ert_bil_eur_a__custom_17883787` ⁽²³⁾.

Weight variable. The variable of interest is B52 (grossing-up factor for employees (to two decimal places)).

All observations are retained except those for apprentices.

EU Statistics on Income and Living Conditions

Weight variable. PB040 (personal cross-sectional weight).

NACE. One-digit groups are used, although data are sometimes more aggregated. Rev. 1 was used until 2007 and Rev. 2 from 2008 onwards.

ISCO. In general, two-digit groups are available, although only one-digit groups are available for Malta and for some years for Germany and Slovenia. ISCO-88 was used until 2010 and ISCO-08 from 2011 onwards.

Staggered start. All Member States' time series start in 2004 except:

- Cyprus, Czechia, Germany, Hungary, Latvia, Lithuania, the Netherlands, Poland, Slovakia and Slovenia, which start in 2005;
- Bulgaria, Malta and Romania, which start in 2007;
- Croatia, which starts in 2010.

Wage information. Data include gross employee cash or near-cash income (PY010G), which 'refers to the monetary component of the compensation of employees in cash payable by an employer to an employee. It includes the value of any social contributions and income taxes payable by an employee or by the employer on behalf of the employee to social insurance schemes or tax authorities' (Eurostat, 2024). Note that the wage information refers to the previous year.

⁽²³⁾ https://ec.europa.eu/eurostat/databrowser/product/page/ert_bil_eur_a__custom_17883787.

Following Brandolini et al. (2011), full-time-equivalent monthly earnings were calculated by dividing the annual value (PY010G) by the number of months worked in full-time jobs (PL070) plus the number of months worked in part-time jobs (PL071), scaled down by a Member State- and sex-specific factor equal to the ratio of median hours of work in part-time jobs to median hours of work in full-time jobs.

In line with the approach adopted in previous Eurofound studies, the income variable was then scaled down by the ratio of hours worked in the main job to total hours worked whenever respondents held more than one job. Abnormally low values were excluded. This applies to those earning less than half of the national minimum wage or collectively agreed wage (for Austria, Finland, Italy and Sweden). The limit is replaced by 20 % of the median for Cyprus, Denmark and Malta.

Discontinuity in sample size. The sample size varies greatly over the years. The most evident discontinuities are observed around 2020. For example, the sample in Germany increased from around 9,400 in 2019 to around 17,300 in 2020 and about 23,500 in 2021. Large variations are also evident for other Member States, for example Italy (in 2020) and Spain (in 2020 and 2021). These large changes could result in fluctuations in the measures of inequality analysed in Chapter 4.

In Chapter 4, for Germany, 2018 data are used in place of 2023 values. For Croatia, 2008 data are used in place of 2006 values.

Data on collectively agreed minimum wages

Data on collectively agreed minimum wages are drawn from two sources. The primary source is Eurofound's established database on collectively agreed minimum wages ⁽²⁴⁾, which reports agreed monthly wages in euro, adjusted for the number of monthly payments. The analysis relies on the variable 'rate applicable', which accounts for implicit references to national minimum wages, incorporates rates specified in related texts and imputes the national minimum wage when the collectively agreed rate falls below it. For each Member State and month, and for each of the 12 sectors covered, multiple collective agreements may be observed, each reporting a minimum and a maximum value. The minimum value is retained and averaged first across agreements for the same sector and month, and subsequently across months within the same year. This procedure yields an average monthly wage by Member State, year and sector. EU-LFS data are then used to estimate the employment share of each sector in a given year, and sectoral wages are aggregated using employment weights to obtain a national-level measure.

Using this approach, estimates of collectively agreed minimum wages are available for all Member States for 2015–2024. However, the analysis extends back to the early 2000s, making it necessary to lengthen the time series, particularly for the eight states without a national minimum wage throughout the period. For five of these states (Austria, Finland, Germany, Italy and Sweden), index series produced by national statistical offices are available (see Table A3). Although methodological differences among national statistical offices are likely, these indices provide a reasonable proxy for capturing the broad evolution of minimum wages over time. Annual growth rates are derived from the indices and applied to the 2015 level obtained from the Eurofound-based series in order to reconstruct historical values. Comparable indices could not be identified for Croatia, Cyprus or Denmark.

Table A3: Indices of collectively agreed wages computed by the national statistical offices

Member State	Source
Austria	Statistics Austria (Tariflohnindex)
Finland	Statistics Finland (index of wage and salary earnings, requested by email)
Germany	Destatis (Indizes der Tarifverdienste)
Italy	Italian National Institute of Statistics (Retribuzioni contrattuali)
Sweden	National Mediation Office (actual and negotiated wages by sector per year)

Source: Authors.

⁽²⁴⁾ <https://www.eurofound.europa.eu/en/surveys-and-data/data-catalogue/database-collective-agreements-low-paid-workers-data-file>.

Annex 2: Representative low-paid jobs

In line with the European Jobs Monitor, the analysis adopts a jobs-based approach to examining structural shifts in employment across Member States. A job is defined as the intersection of occupation and sector, using the two-digit level of ISCO classification and the one-digit level of NACE classification. This combination results in nearly 1 000 distinct jobs, although there are large differences in the sizes of jobs in terms of their employment shares.

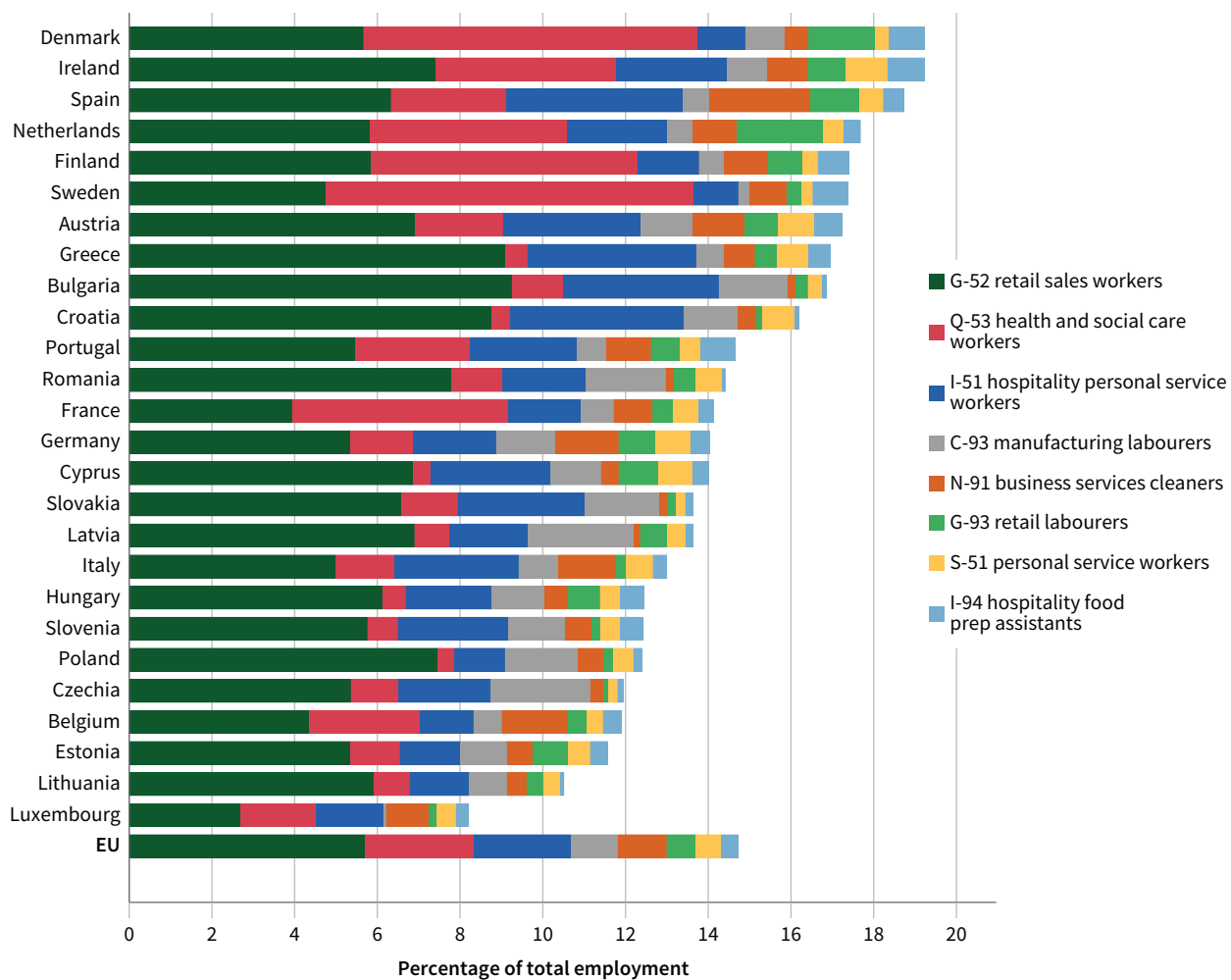
To identify a set of representative low-paid jobs in Europe, jobs are ranked within each Member State and year according to their mean hourly wage and grouped into five job-wage quintiles, each representing 20 % of total employment in the initial period. For each Member State, the 12 jobs with the largest employment shares among those assigned to the lowest-paying quintile are identified. The same approach is applied to the EU as a whole by pooling employment across Member States and using population-weighted average wage ranks. Wage information is primarily drawn from the SES, while employment levels are based on data from the EU-LFS.

The choice of periods to analyse is dictated by two changes in the occupational and sectoral classifications used in the EU-LFS, namely the transition from NACE Rev. 1.1 to NACE Rev. 2 in 2008 and from ISCO-88 to ISCO-08 in 2011. These classification changes result in substantial breaks in the employment series, requiring the analysis to be conducted over three distinct subperiods: 2001–2007, 2008–2010 and 2011–2024. The final subperiod is further disaggregated into 2011–2019 and 2019–2024, to provide a clearer picture of the different trends observed in the 2010s and in the early 2020s.

The ranking of jobs according to their mean hourly wage is remarkably stable across time within each Member State and between Member States in the same year. For example, cleaning jobs across several sectors tend to be at the bottom of the wage distribution in all Member States and years. While the relative location along the distribution tends to be fairly stable across years and Member States, there are significant differences in the sizes of jobs in terms of employment.

Figure A1 highlights significant differences in the shares of total employment for the representative low-paid jobs across Member States, ranging from 8.2 % in Luxembourg to 19.2 % in Denmark. Among the categories included, G-52 retail sales workers is the largest on average at 5.7 %, followed by Q-53 health and social care workers and I-51 hospitality personal service workers, though their importance varies by Member State. In a few cases, such as Bulgaria and Latvia, C-93 manufacturing labourers also plays a significant role, while the remaining jobs typically account for less than 1 % of employment on average.

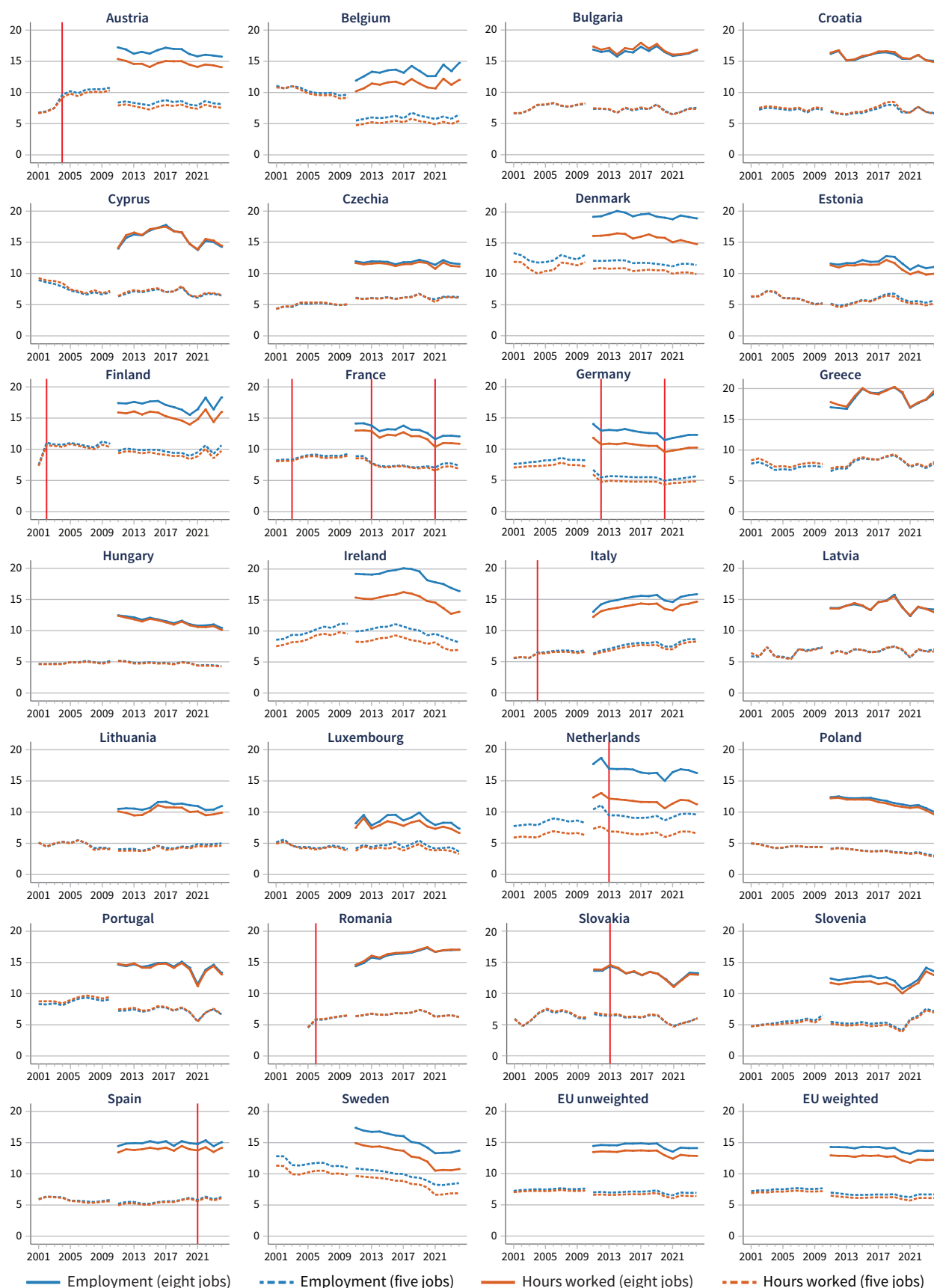
Figure A1: Share of employment in the eight representative low-paid jobs, EU and Member States, 2011 (%)



Notes: Malta is excluded as it reports the occupation only at the ISCO one-digit level in the EU-LFS. The EU average is unweighted.
Source: Authors' calculations based on EU-LFS and SES data.

Annex 3: Additional descriptive statistics

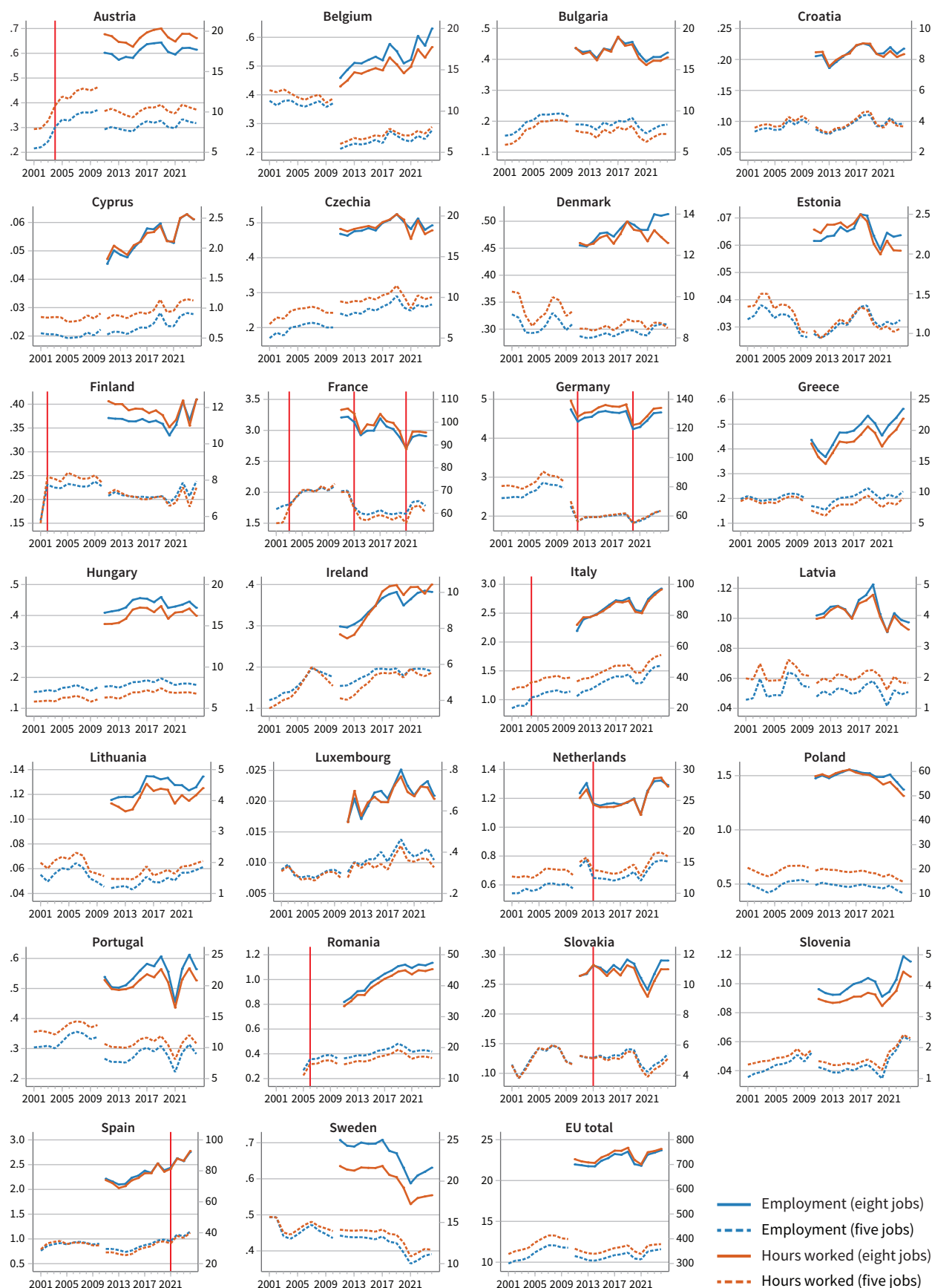
Figure A2: Growth in the shares of employment (left axis) and hours worked (right axis) of the representative low-paid jobs, EU and Member States (%)



Notes: Malta is excluded as it reports the occupation only at the ISCO one-digit level in the EU-LFS. The y-axes report annual percentage growth in shares of employment and hours worked. As noted in Table A2, the results for some Member States are affected by breaks in the EU-LFS data; these are indicated in the figure by red lines. The unweighted EU average treats all Member States the same, while the weighted average gives more weight to Member States with larger populations.

Source: Authors' calculations based on EU-LFS and SES data.

Figure A3: Growth in the level of employment (left axis) and hours worked (right axis) in the representative low-paid jobs, EU and Member States



Notes: Malta is excluded as it reports the occupation only at the ISCO one-digit level in the EU-LFS. As noted in Table A2, some Member States are affected by breaks in the EU-LFS data; these are indicated in the figure by red lines. The EU total sums the number of workers and hours worked across all Member States. Both employment and hours worked have been divided by 1 000.

Source: Authors' calculations based on EU-LFS and SES data.

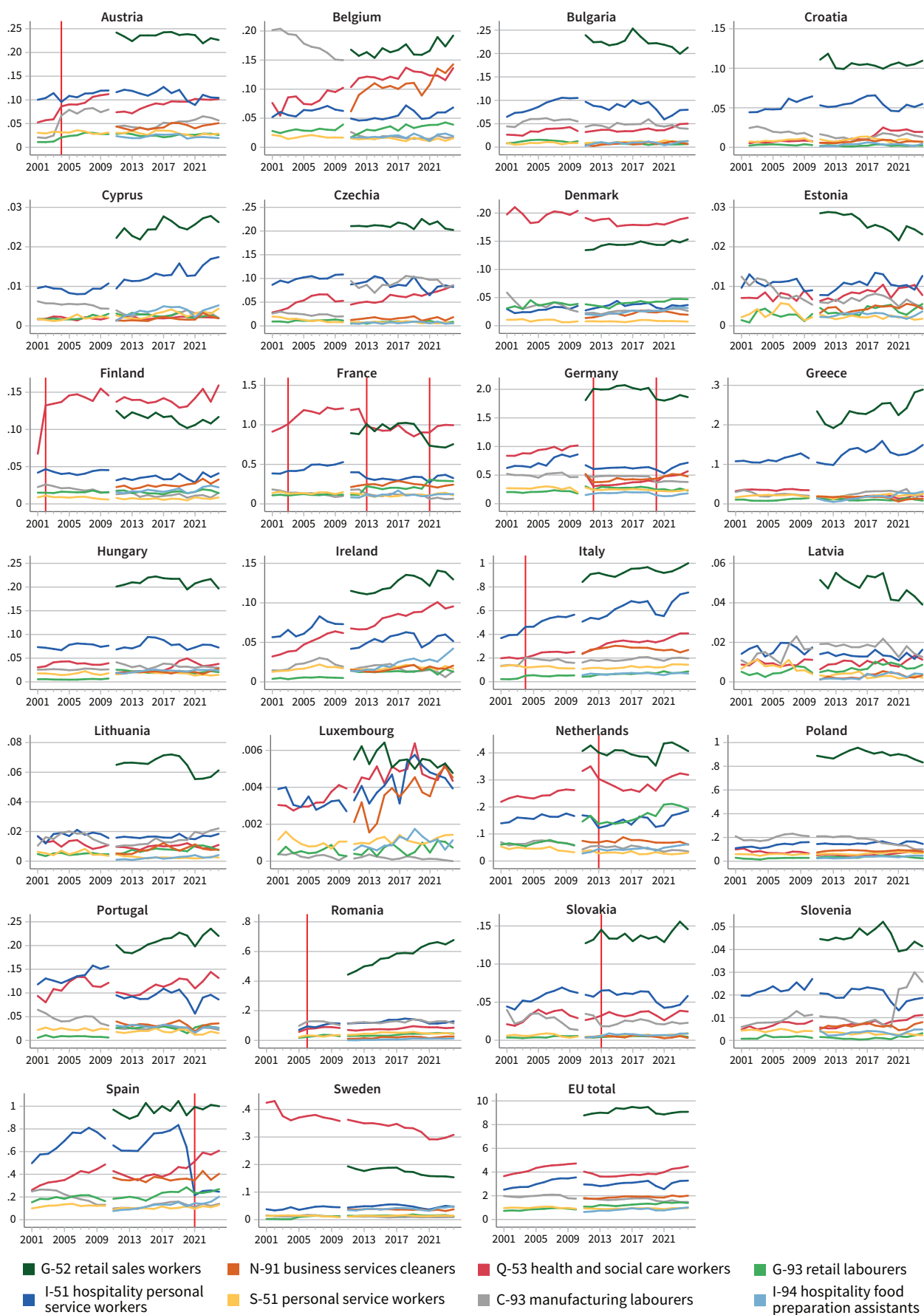
Figure A4: Growth in the share of employment of each of the representative low-paid jobs, by occupation, EU and Member States (%)



Notes: Malta is excluded as it reports the occupation only at the ISCO one-digit level in the EU-LFS. As noted in Table A2, some Member States are affected by breaks in the EU-LFS data; these are indicated in the figure by red lines. The unweighted EU average treats all Member States the same, while the weighted average gives more weight to Member States with larger populations.

Source: Authors' calculations based on EU-LFS and SES data

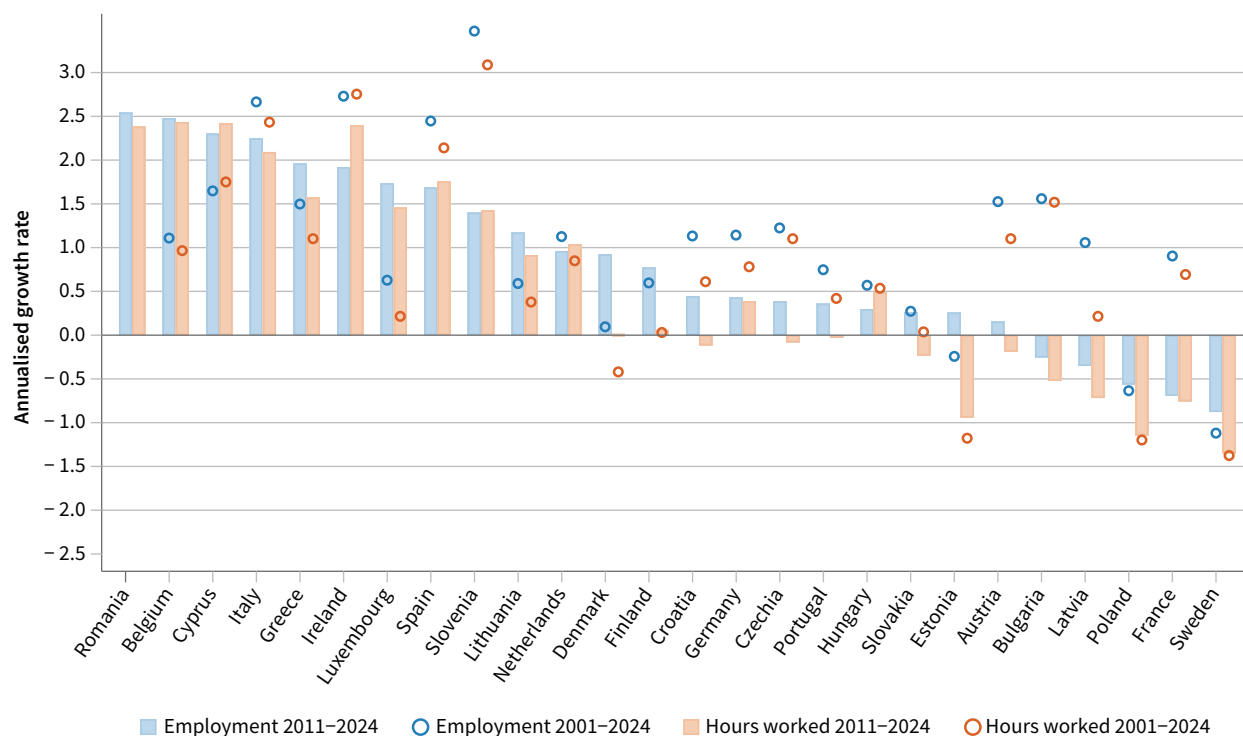
Figure A5: Growth in the level of employment in each of the representative low-paid jobs, EU and Member States



Notes: Malta is excluded as it reports the occupation only at the ISCO one-digit level in the EU-LFS. Employment has been divided by 1 000. As noted in Table A2, some Member States are affected by breaks in the EU-LFS data; these are indicated in the figure by red lines. The unweighted EU average treats all Member States the same, while the weighted average gives more weight to Member States with larger populations.

Source: Authors' calculations based on EU-LFS and SES data.

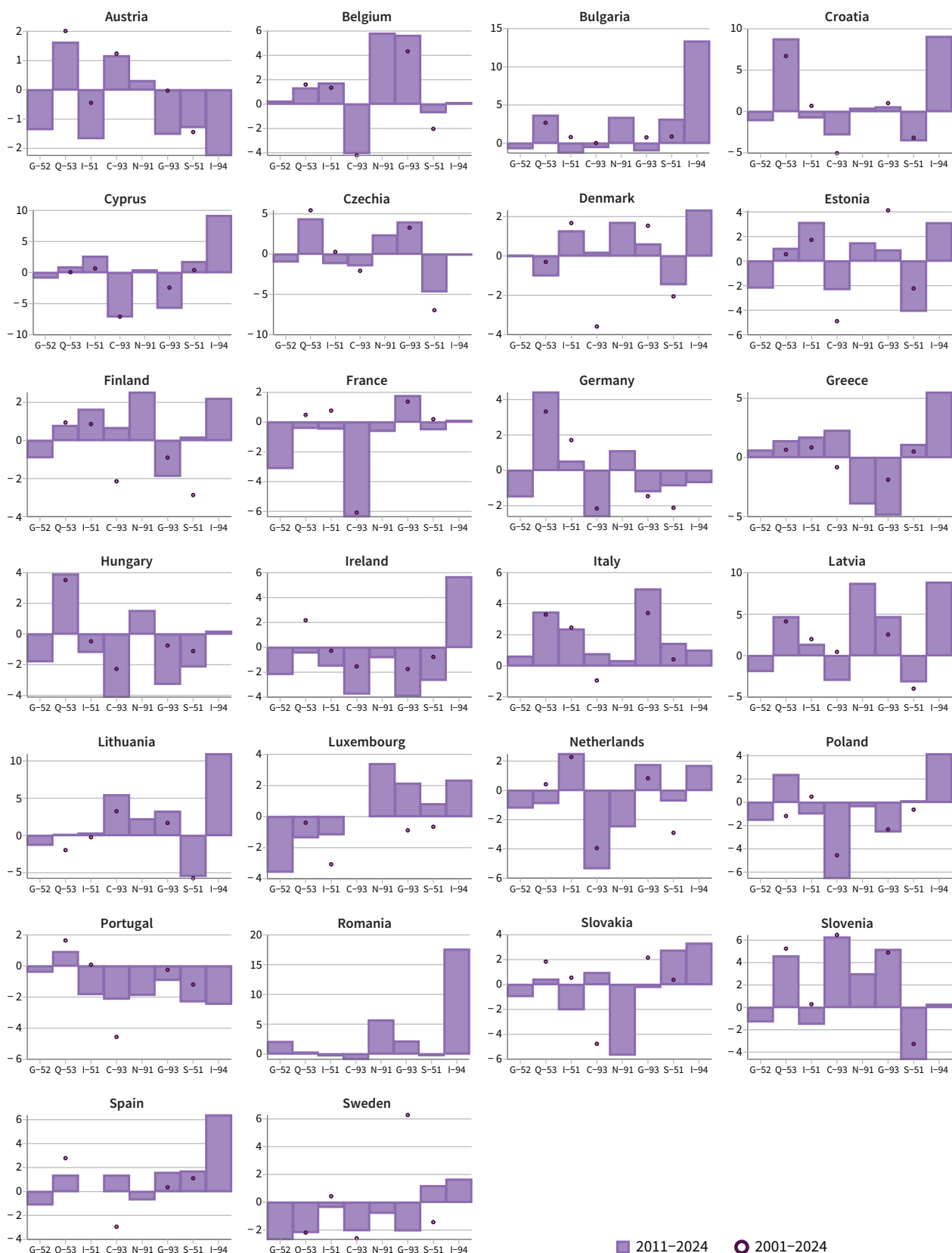
Figure A6: Annualised growth in levels of employment and hours worked in the representative low-paid jobs, Member States, 2011–2024 (eight jobs) and 2001–2024 (five jobs) (%)



Notes: Malta is excluded as it reports the occupation only at the ISCO one-digit level in the EU-LFS. The bars represent annualised growth in employment and hours worked for the eight representative jobs between 2011 and 2024, while the dots show annualised growth for the five jobs that can be followed over 2001–2024 (see Box 2). As noted in Table A2, the results for several Member States are adjusted to account for breaks in the EU-LFS data.

Source: Authors' calculations based on EU-LFS and SES data.

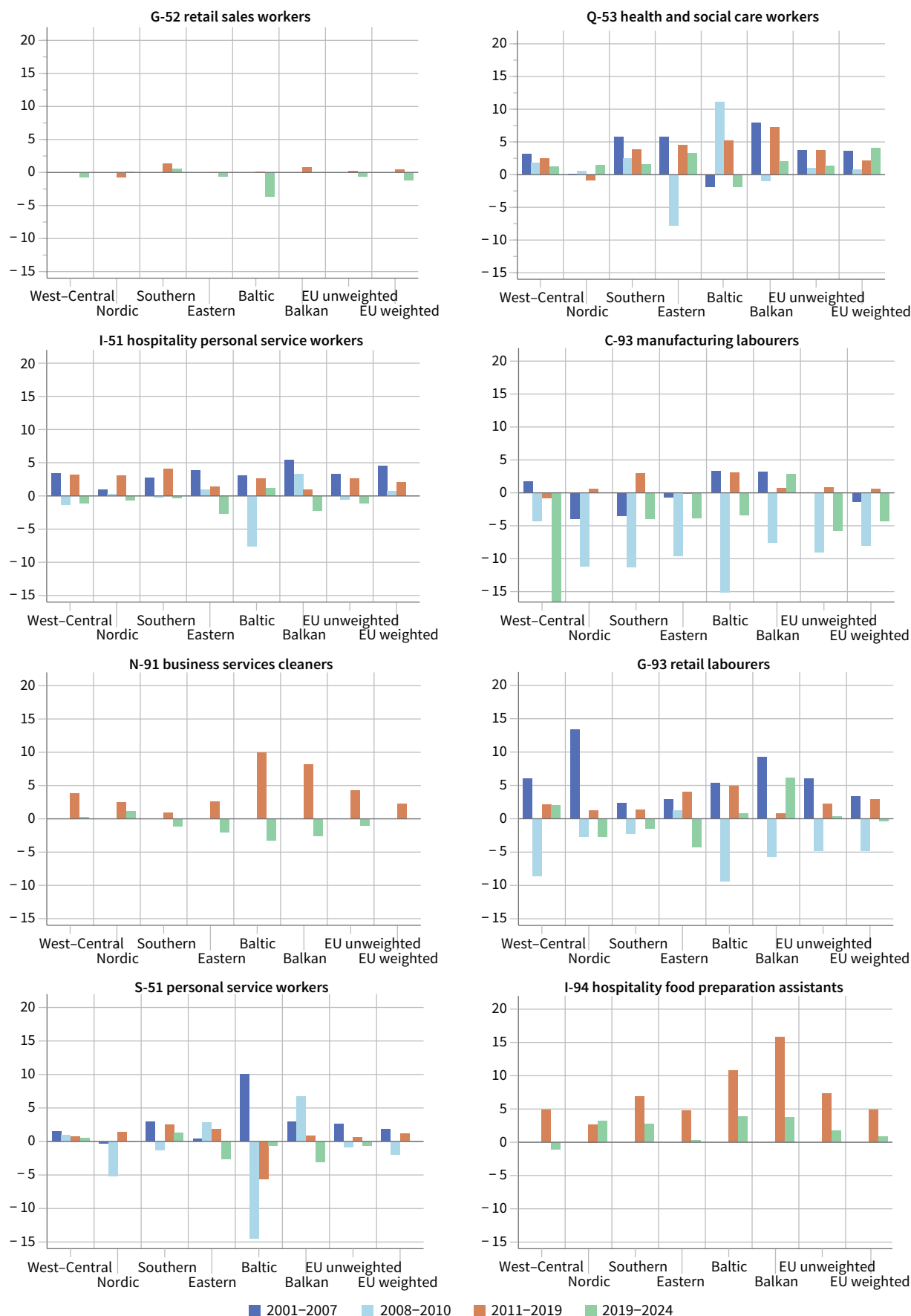
Figure A7: Annualised growth in the employment share of the representative low-paid jobs, Member States (%)



Notes: Malta is excluded as it reports the occupation only at the ISCO one-digit level in the EU-LFS. The y-axes show the annualised percentage growth in employment shares for a given period. In some cases, the actual period used differs slightly due to breaks in the EU-LFS employment classifications (see Table A2).

Source: Authors' calculations based on EU-LFS data.

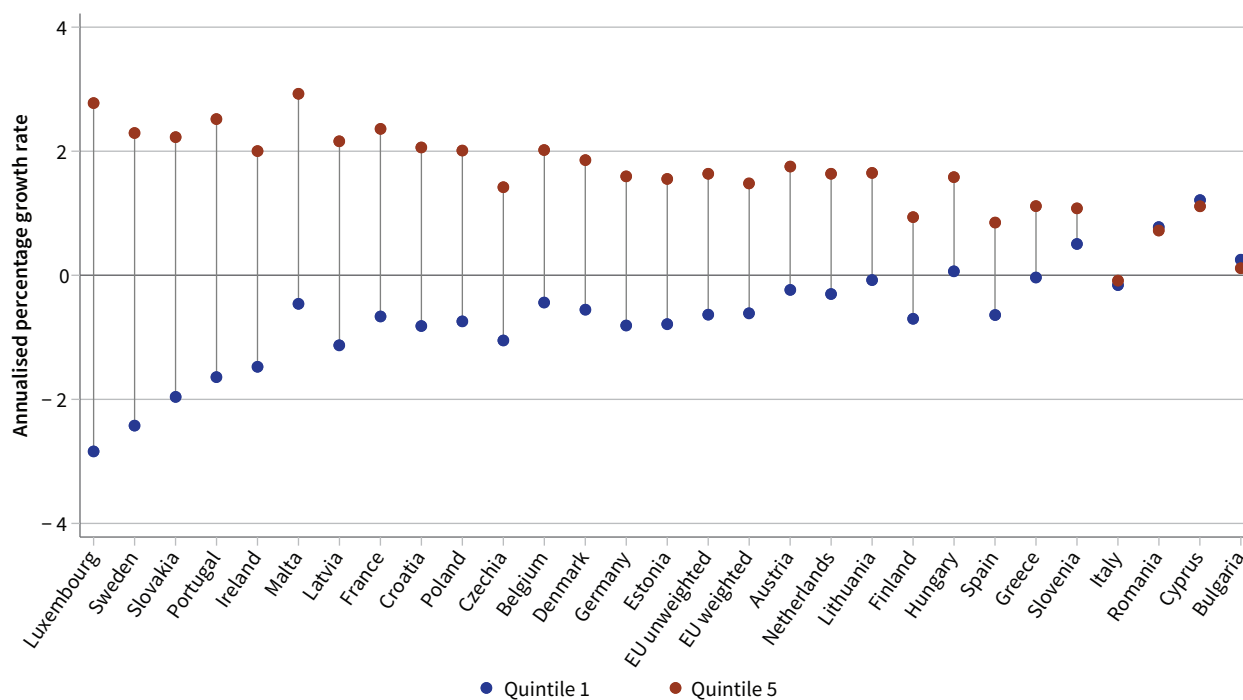
Figure A8: Average annualised growth in employment level in the representative low-paid jobs by subperiod, EU and macro-regions (%)



Notes: The y-axes show the average annualised percentage growth in employment levels across Member States within each macro-region for a given period. In some cases, the actual period used differs slightly due to breaks in the EU-LFS employment classifications (see Table A2). Macro-region values are averages of country-level growth rates (not weighted by Member States' populations). EU values average the annualised growth rates across Member States. The unweighted EU average treats all Member States the same, while the weighted average gives more weight to Member States with larger populations.

Source: Authors' calculations based on EU-LFS data.

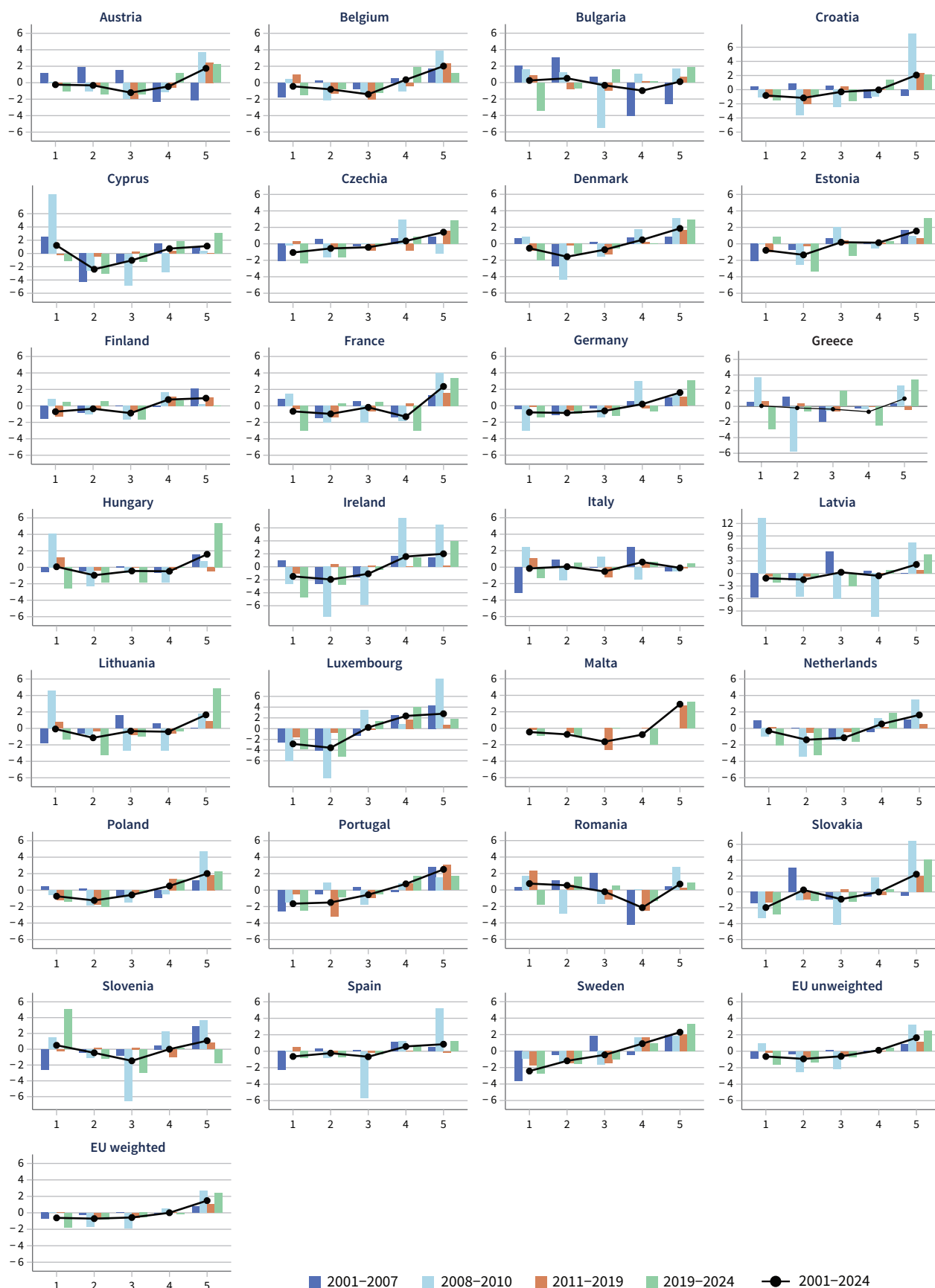
Figure A9: Annualised growth in the share of hours worked for the bottom and top job-wage quintiles, EU and Member States, 2001–2024 (%)



Notes: The y-axis shows the annualised percentage growth in the share of hours worked for the bottom and top quintiles over 2001–2024. This is calculated as a weighted average of the annualised growth rates in each subperiod, with weights based on the number of years. The trend over 2011–2024 is shown for Malta. In some cases, the actual period used differs slightly due to breaks in the EU-LFS employment classifications (see Table A2). EU values average the annualised growth rates across all Member States. The unweighted EU average treats all Member States the same, while the weighted average gives more weight to Member States with larger populations. Member States are sorted based on the difference between the growth rate for Quintile 1 and that for Quintile 5.

Source: Authors' calculations based on EU-LFS and SES data.

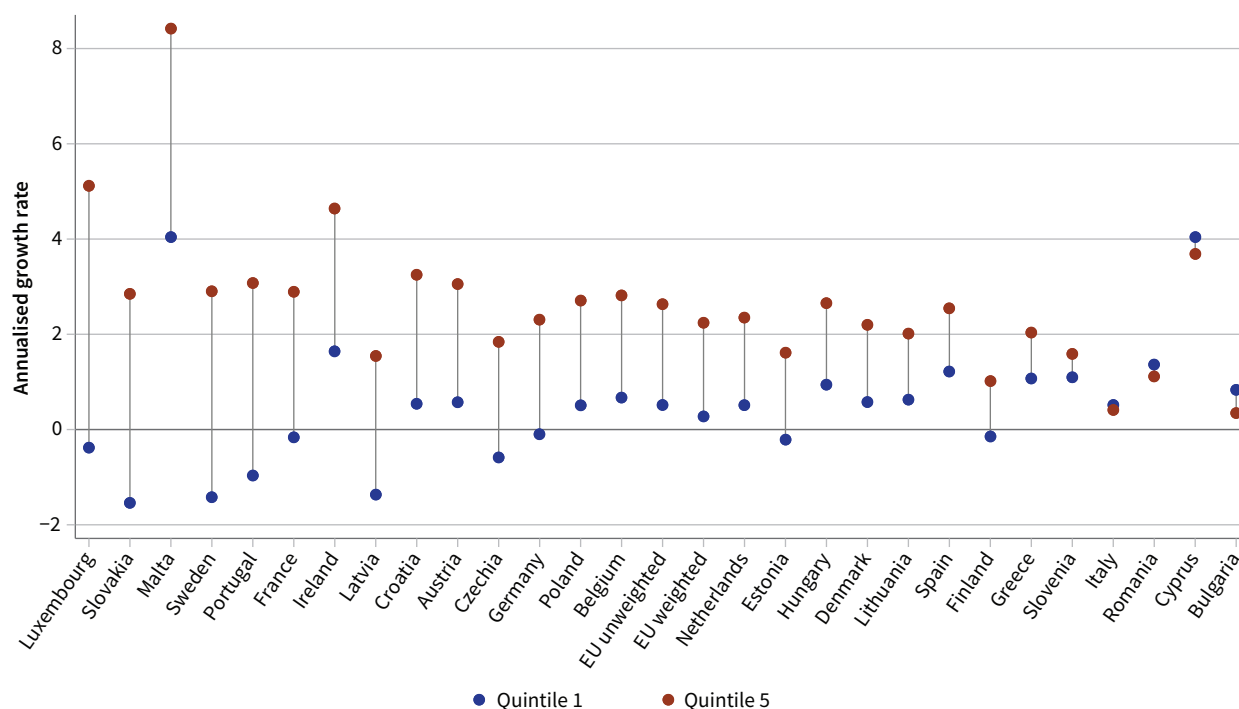
Figure A10: Annualised growth in the share of hours worked in the five job-wage quintiles by subperiod, EU and Member States (%)



Notes: The y-axes show the annualised percentage growth in hours worked for each quintile in each of the four periods. The x-axes show the quintiles (1 being the lowest and 5 being the highest). The long-term trend over 2001–2024 is the simple average of the annualised growth rate in each subperiod, weighted by the number of years. The trend over 2011–2024 is shown for Malta. In some cases, the actual period used differs slightly due to breaks in the EU-LFS employment classifications (see Table A2). EU values average the annualised growth rates across all Member States. The unweighted EU average treats all Member States the same, while the weighted average gives more weight to Member States with larger populations.

Source: Authors' calculations based on EU-LFS and SES data.

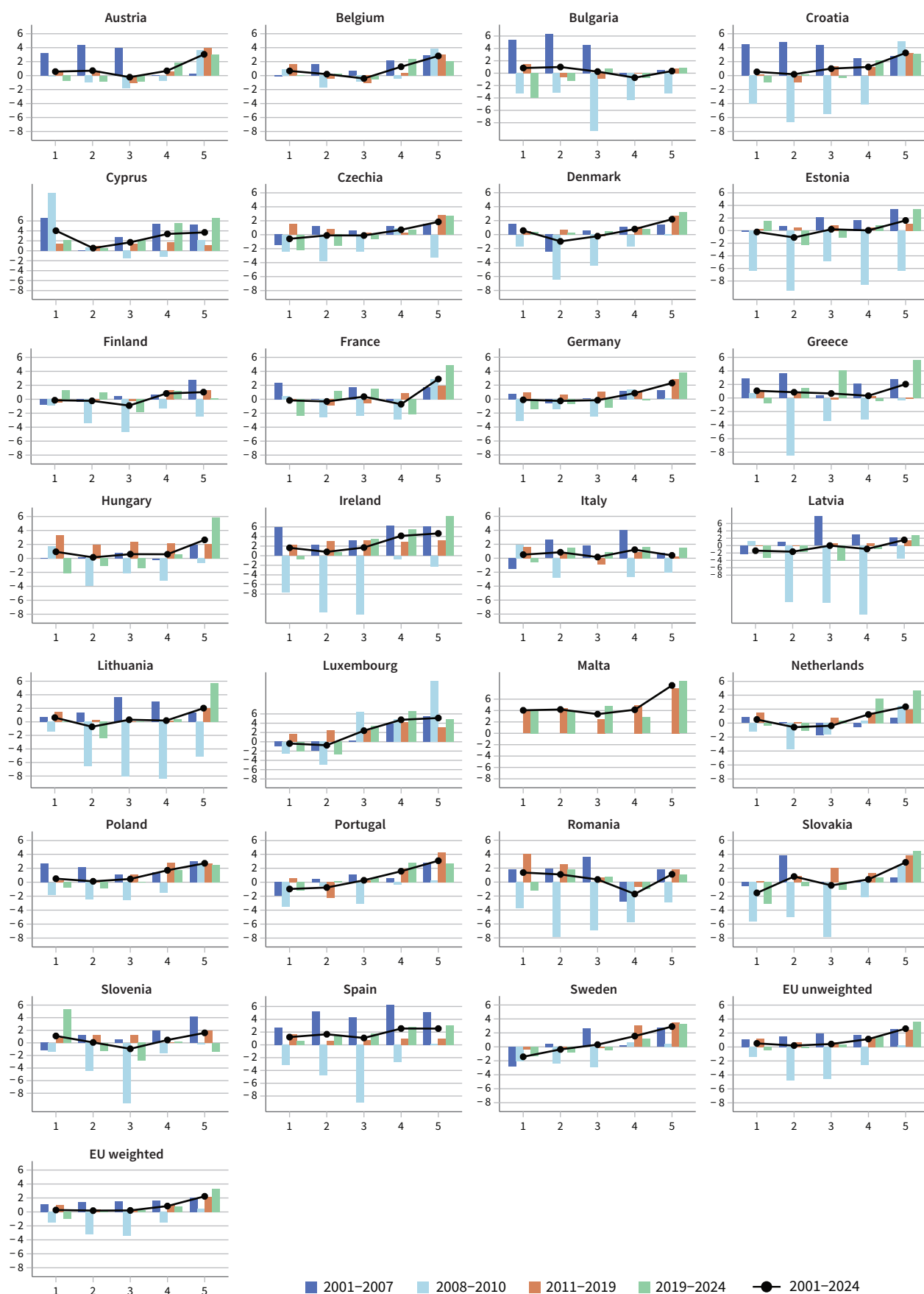
Figure A11: Annualised growth in employment level for the bottom and top job-wage quintiles, EU and Member States, 2001–2024 (%)



Notes: The y-axis shows the annualised percentage growth in employment (headcount) for the bottom and top quintiles over 2001–2024. This is calculated as a weighted average of the annualised growth rates in each subperiod, with weights based on the number of years. The trend over 2011–2024 is shown for Malta. In some cases, the actual period used differs slightly due to breaks in the EU-LFS employment classifications (see Table A2). EU values average the annualised growth rates across all Member States. The unweighted EU average treats all Member States the same, while the weighted average gives more weight to Member States with larger populations. Member States are sorted based on the difference between the growth rate for Quintile 1 and that for Quintile 5.

Source: Authors' calculations based on EU-LFS and SES data.

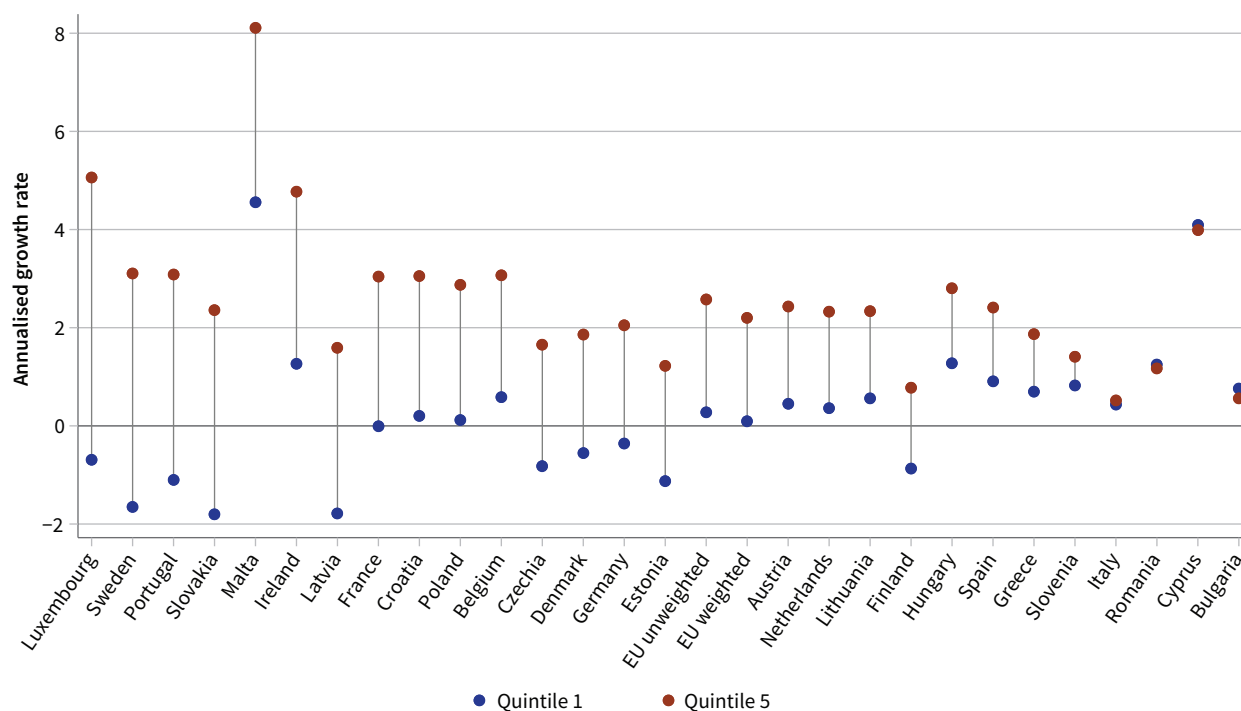
Figure A12: Annualised growth in employment level of the five job–wage quintiles by subperiod, EU and Member States (%)



Notes: The y-axes show the annualised percentage growth in employment levels for each quintile in each of the four periods. The x-axes show the quintiles (1 being the lowest and 5 being the highest). The long-term trend over 2001–2024 is the simple average of the annualised growth rate in each subperiod, weighted by the number of years. The trend over 2011–2024 is shown for Malta. In some cases, the actual period used differs slightly due to breaks in the EU-LFS employment classifications (see Table A2). EU values average the annualised growth rates across all Member States. The unweighted EU average treats all Member States the same, while the weighted average gives more weight to Member States with larger populations.

Source: Authors' calculations based on EU-LFS and SES data.

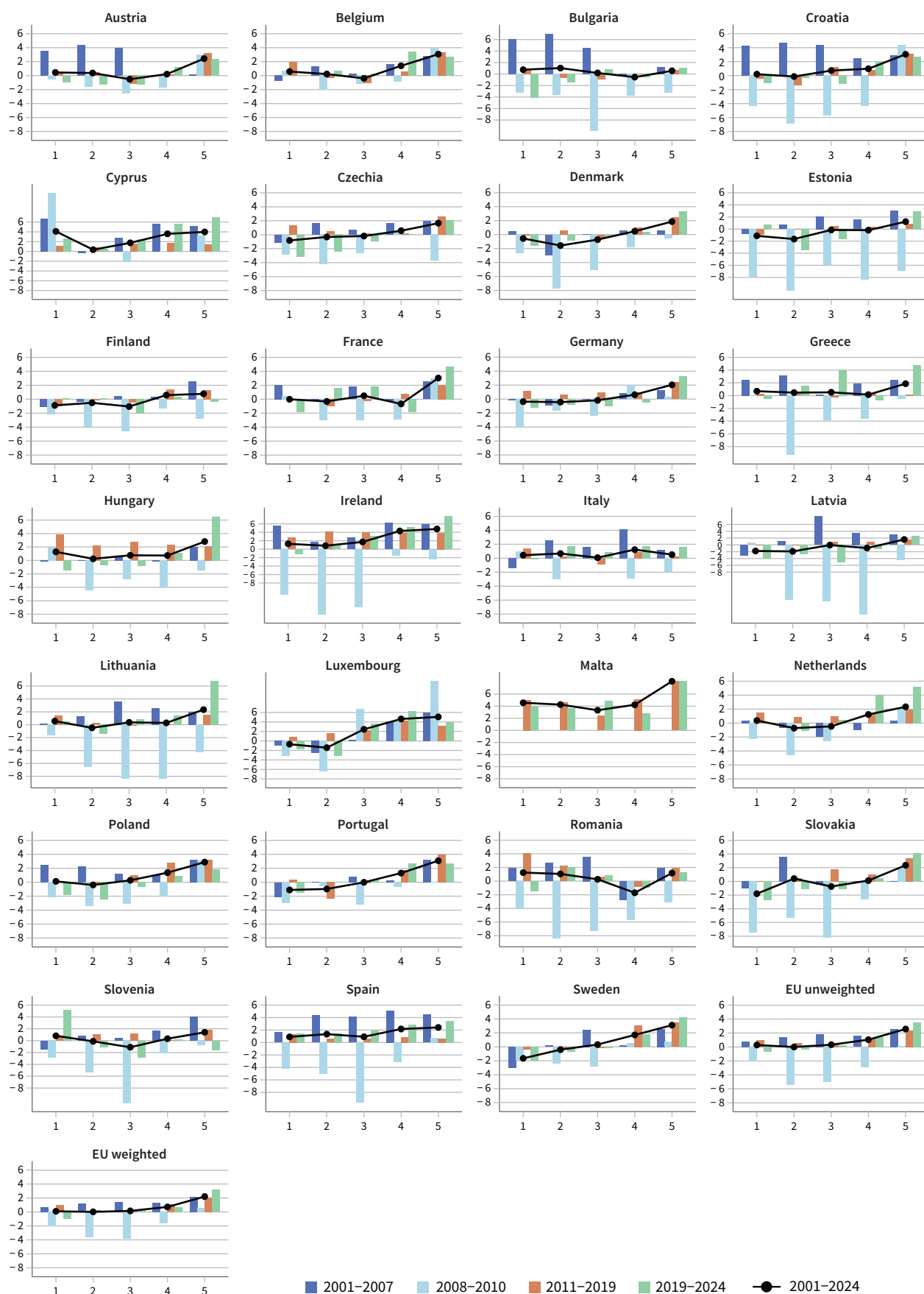
Figure A13: Annualised growth in hours worked for the bottom and top job-wage quintiles, EU and Member States, 2001–2024 (%)



Notes: The y-axis shows the annualised percentage growth in hours worked for the bottom and top quintiles over 2001–2024. This is calculated as a weighted average of the annualised growth rates in each subperiod, with weights based on the number of years. The trend over 2011–2024 is shown for Malta. In some cases, the actual period used differs slightly due to breaks in the EU-LFS employment classifications (see Table A2). EU values average the annualised growth rates across all Member States. The unweighted EU average treats all Member States the same, while the weighted average gives more weight to Member States with larger populations. Member States are sorted based on the difference between the growth rate for Quintile 1 and that for Quintile 5.

Source: Authors' calculations based on EU-LFS and SES data.

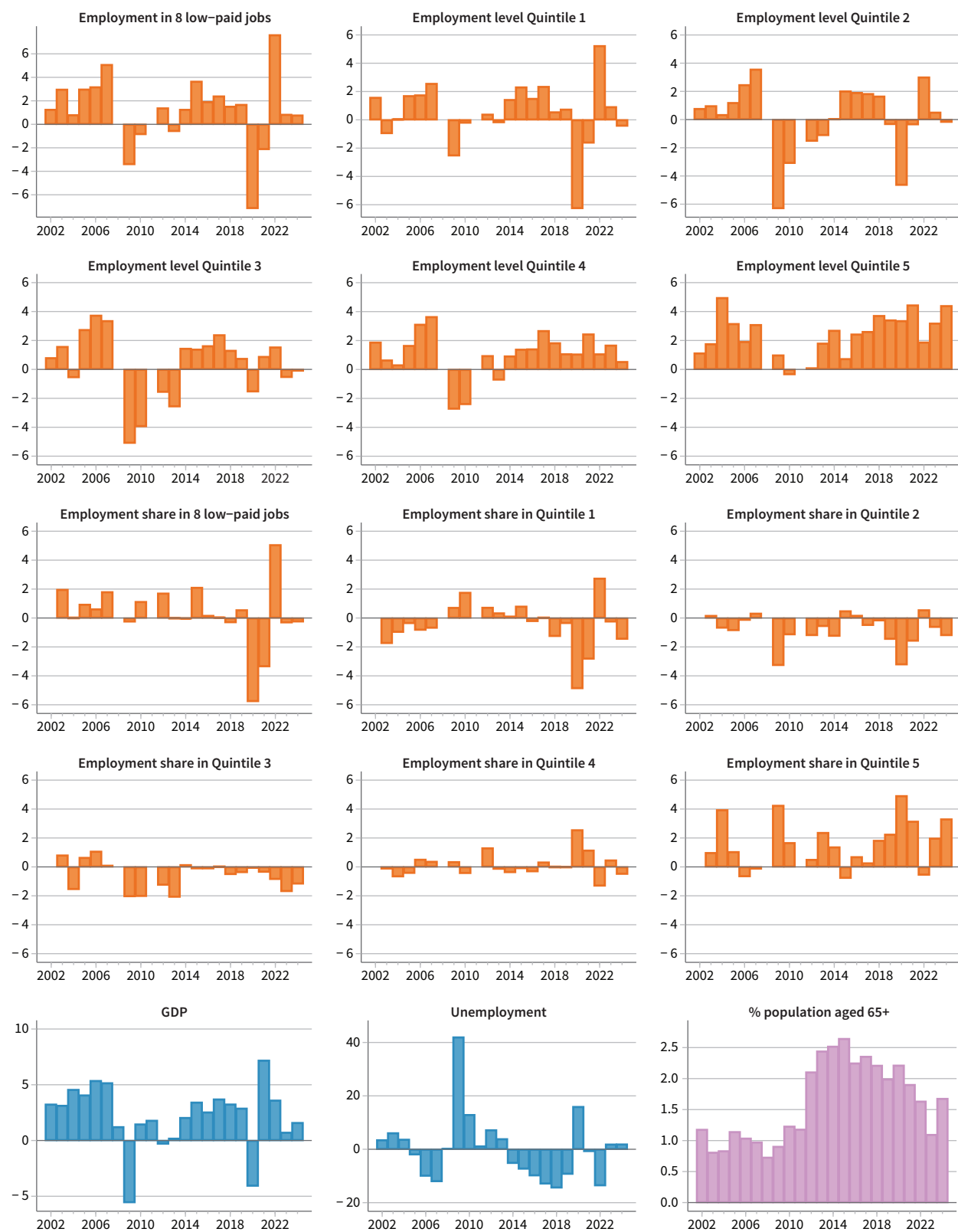
Figure A14: Annualised growth in hours worked in the five job–wage quintiles by subperiod, EU and Member States (%)

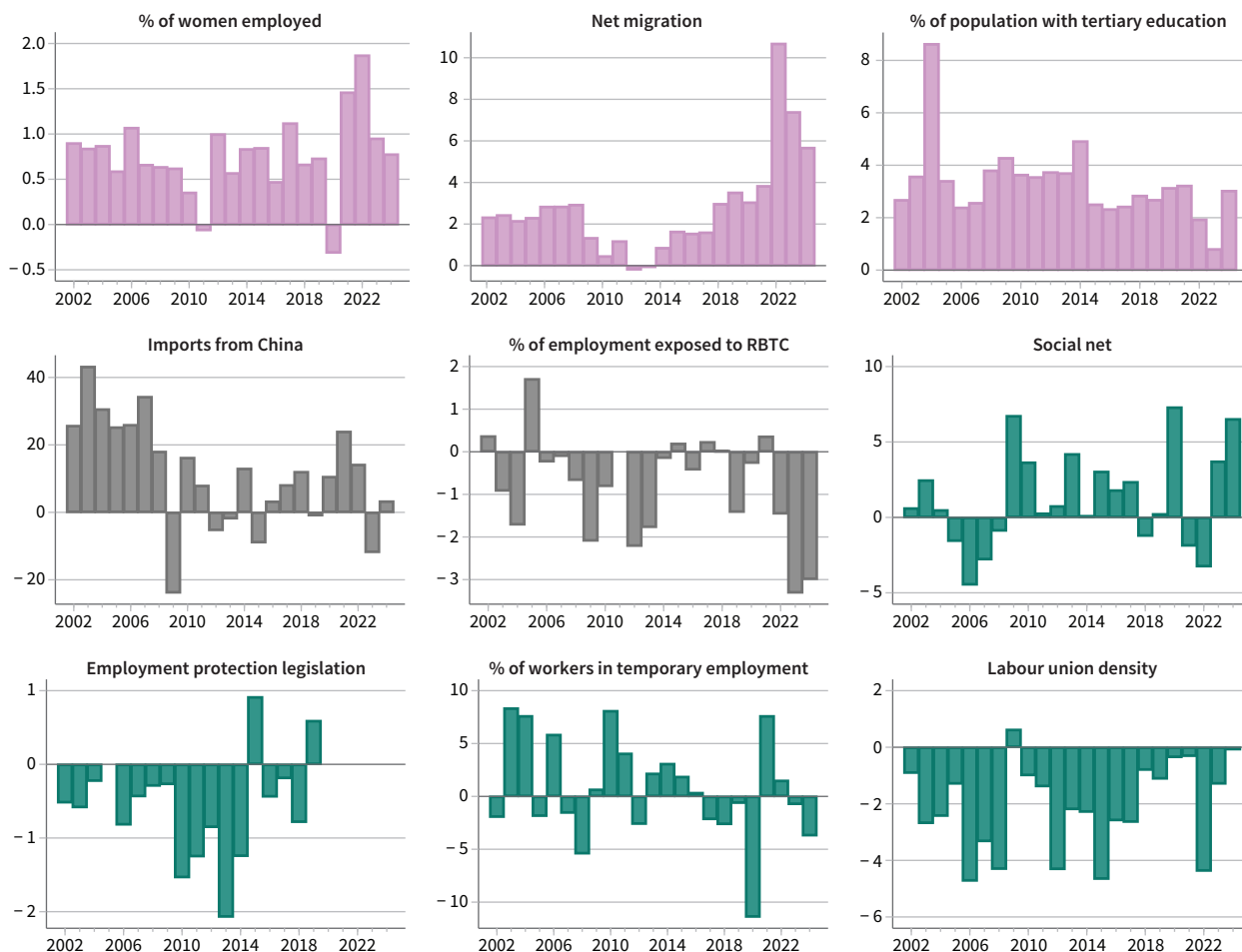


Notes: The y-axes show the annualised percentage growth in hours worked for each quintile in each of the four periods. The x-axes show the quintiles (1 being the lowest and 5 being the highest). The long-term trend over 2001–2024 is the simple average of the annualised growth rate in each subperiod, weighted by the number of years. The trend over 2011–2024 is shown for Malta. In some cases, the actual period used differs slightly due to breaks in the EU-LFS employment classifications (see Table A2). EU values average the annualised growth rates across all Member States. The unweighted EU average treats all Member States the same, while the weighted average gives more weight to Member States with larger populations.

Source: Authors' calculations based on EU-LFS and SES data.

Figure A15: Average change in employment, by wage segment and explanatory factor, EU, 2002–2024 (%)

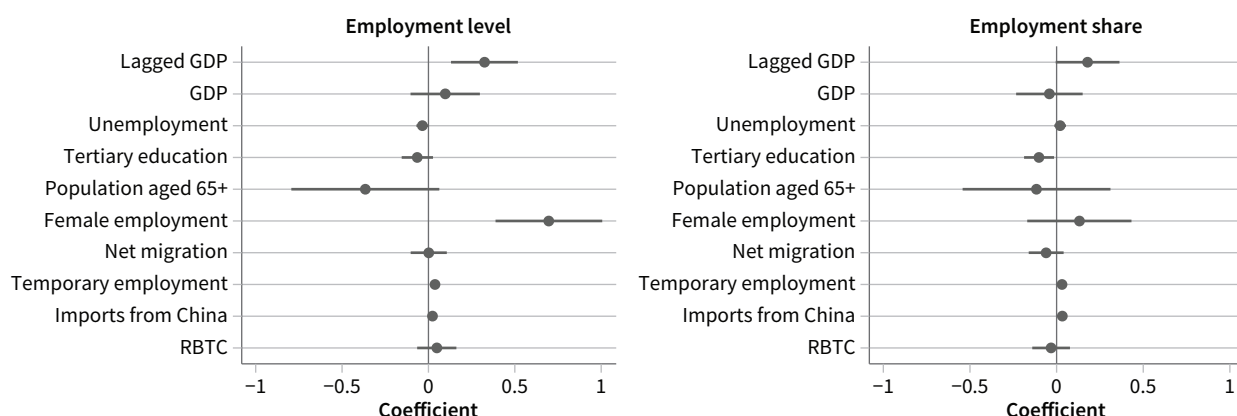




Notes: The y-axes show unweighted average percentage growth across all Member States in each year. Data for 2008 and 2011 are excluded from the employment variables, as percentage change cannot be computed due to changes in the ISCO and NACE classifications (see Box 2). The plot for the eight representative low-wage jobs reports the growth rates of the subset of five jobs until 2010. Malta is excluded due to data reliability issues. Additional country-year observations are excluded from the employment outcomes due to discontinuities in the EU-LFS data series, as summarised in Table A2.

Source: Authors' calculations based on data from multiple sources (see Table A1 for details).

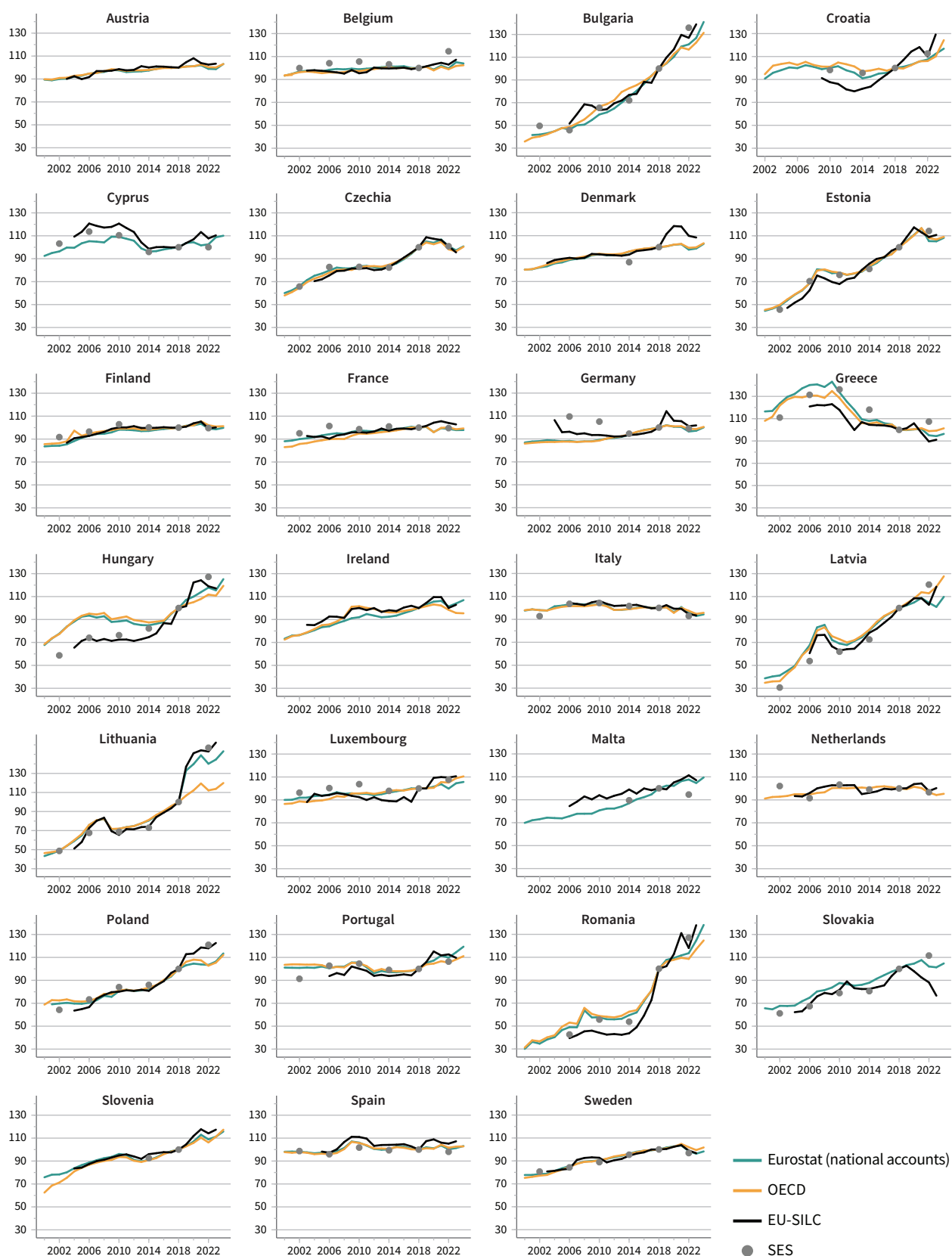
Figure A16: Relationship between change in employment in the representative low-paid jobs and change in selected explanatory factors, EU and Member States, 2002–2024



Notes: Based on regressions of the percentage change in the representative low-paid jobs, either in level (left) or share (right), on the percentage change in the variables shown plus country and year fixed effects, using 527 country-year observations (for 2002–2024). Data from 2008 and 2011 are excluded from the employment variables, as growth rates cannot be computed due to changes in the ISCO and NACE classifications (see Box 2). Malta is excluded due to data reliability issues. Additional country-year observations are excluded from the employment outcomes due to discontinuities in the EU-LFS data series, as summarised in Table A2. The R^2 is 0.32 for the left panel and 0.2 for the right. The dots are coefficient estimates, and the spikes indicate 90% confidence intervals. The regressions are not weighted by Member States' populations.

Source: Authors' calculations based on data from the EU-LFS (regarding employment) and other sources (see Table A1 for details).

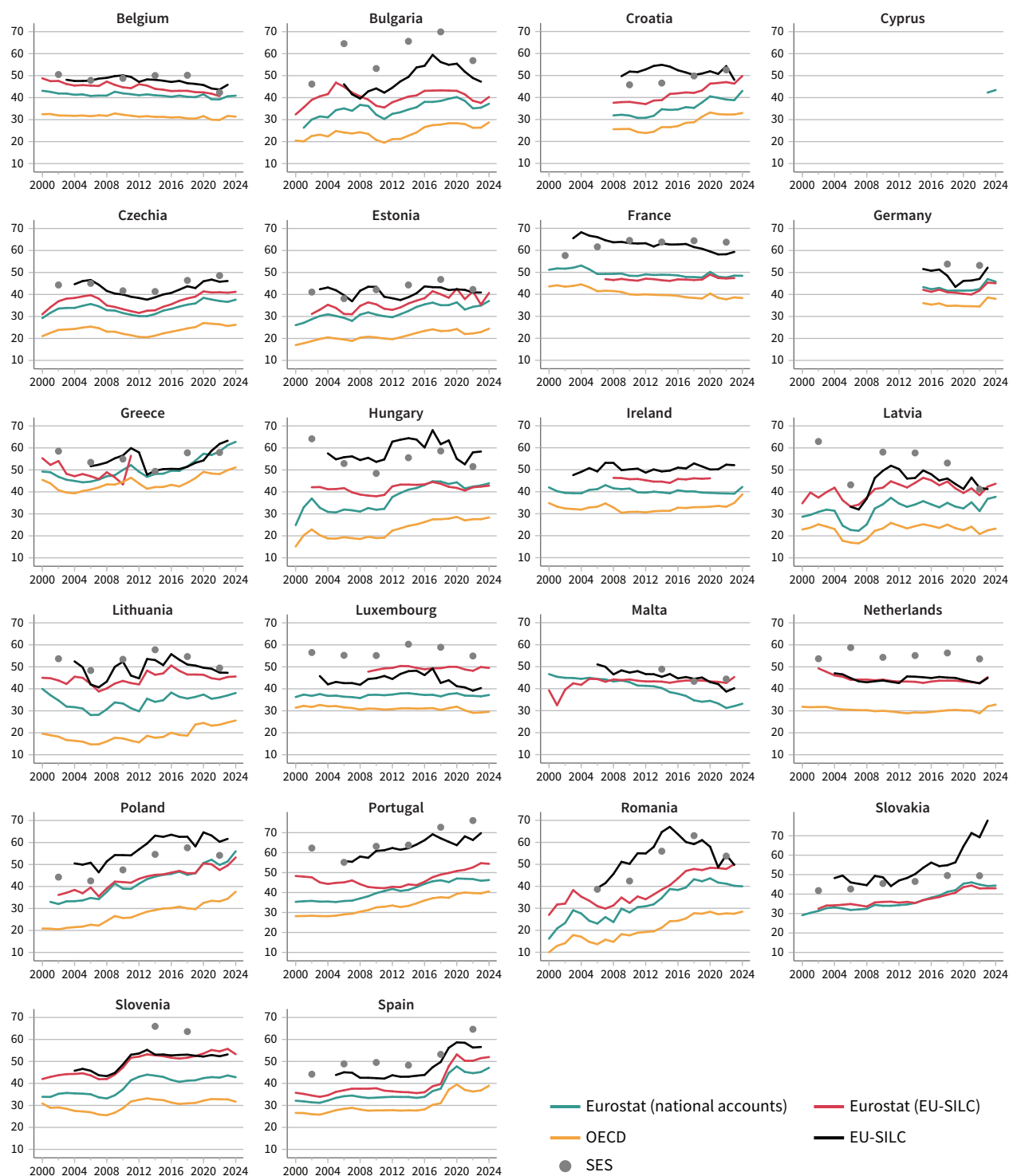
Figure A17: Average and median wages from different data sources, Member States (indexed values)



Note: EU-SILC data (monthly gross full-time-equivalent wages) and SES data (gross hourly wages) are medians, while the OECD data and Eurostat data (national accounts) give average yearly full-time-equivalent wages (2018 = 100).

Source: Authors' calculations based on EU-SILC, SES, Eurostat and OECD data.

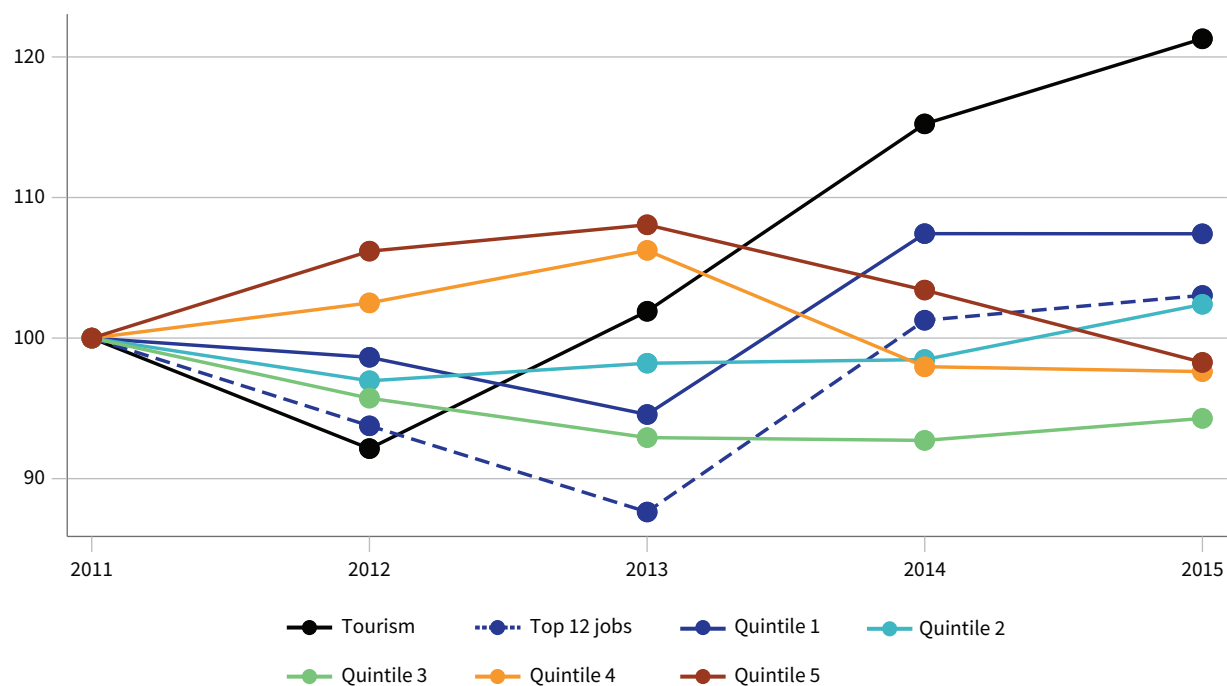
Figure A18: Kaitz index computed with average and median wages from various data sources, Member States, 2000–2024



Notes: The Kaitz index shows the national minimum wage as a percentage of the average full-time-equivalent wage per employee (i.e. the ratio between the two multiplied by 100). Minimum wages are drawn from Eurostat's `earn_minw_cur` dataset, while the full-time-equivalent wage per employee is computed from different sources: EU-SILC data (monthly gross full-time-equivalent wages) and SES data (gross hourly wages). The OECD and Eurostat (national accounts) are average yearly full-time-equivalent wages.

Source: Authors' calculations based on EU-SILC, SES, Eurostat and OECD data.

Figure A19: Employment shares in relation to tourist activity in Greece, by job–wage quintile (indexed values)



Notes: The y-axis shows the variation in each of the seven series (2011 = 100). Tourist activity is measured as the total number of nights spent at tourist accommodation establishments (Eurostat, tour_occ_ninat).

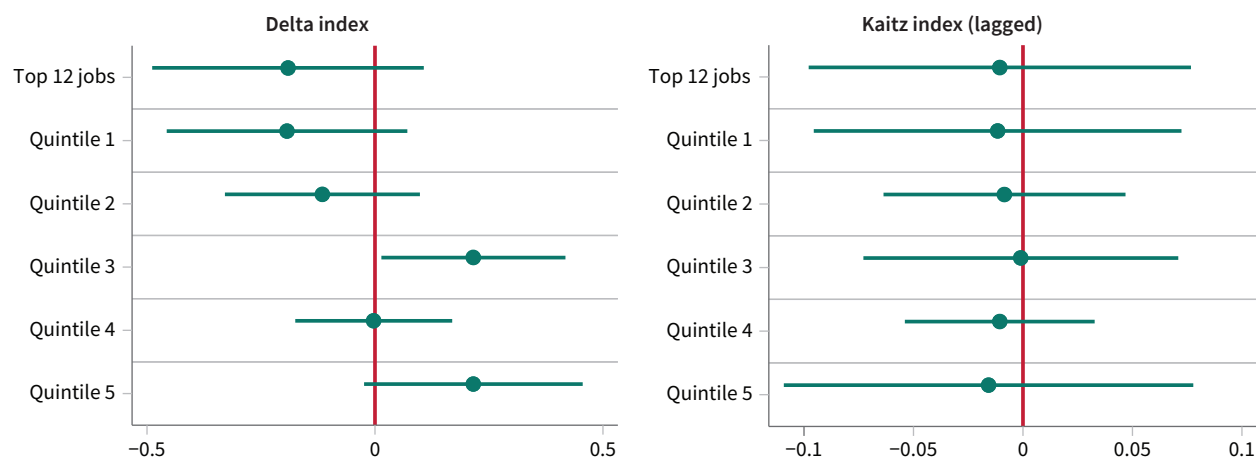
Source: Authors' calculations based on data from Eurostat (tourism) and the EU-LFS (employment shares).

Figure A20: Change in hours worked (share and level) compared with change in the national minimum wage, by job-wage quintile – selected Member States with large variation in the national minimum wage, 2011–2024 (indexed values)



Notes: The y-axes show the variation in each of the six series (2011 = 100). For Germany, values are indexed to 2015 rather than 2011, as the minimum wage was introduced in 2015. Moreover, for Germany the series start in 2012 and are interrupted in 2020 due to discontinuity in the EU-LFS data series (see Table A2).

Source: Authors' calculations based on data from Eurostat (national minimum wage) and the EU-LFS (employment and hours).

Figure A21: Growth in the employment share of the top 12 low-paid jobs and each of the five job-wage quintiles compared with growth in the national minimum wage (Delta index and lagged Kaitz index), 2002–2024

Notes: The figure reports coefficients estimated from simple, unweighted regressions of changes in employment share against the variation in the national minimum wage, measured with either the Delta index or the lagged Kaitz index (both defined in Box 5). Each dot corresponds to a separate regression estimated based on country-year observations for a given wage segment. For comparability with Figure 14, outliers in the top and bottom 5 % of both the dependent and independent variables have been removed. No additional controls are included. Spikes indicate 90 % confidence intervals.

Source: Authors' calculations based on data from Eurostat and the OECD (national minimum wage) and the EU-LFS (employment outcomes).

Table A4: Distribution of the national minimum wage indicators, 2002–2024

	Mean	Minimum	p5	p10	p25	p50	p75	p90	p95	Maximum	Count
Balkan											
Growth in NMW	5.9	-7.4	-3.3	-1.8	0.7	3.9	9.2	15.2	16.6	37.7	85
Delta index	1.4	-2.1	-0.7	-0.5	0.2	1.1	2.2	3.4	4.0	8.9	85
Kaitz index (lagged)	2.0	-15.3	-11.6	-8.0	-2.0	2.2	5.4	10.7	12.2	41.0	85
Baltic											
Growth in NMW	5.7	-14.7	-4.8	-4.0	-0.1	6.5	10.3	13.7	16.0	35.7	69
Delta index	1.1	-3.6	-1.0	-0.7	-0.0	1.3	2.1	2.9	3.4	6.7	69
Kaitz index (lagged)	1.3	-18.9	-11.2	8.9	-4.3	0.6	6.5	11.7	13.5	29.9	69
Eastern											
Growth in NMW	3.8	-7.5	-4.6	-2.4	-0.1	4.4	6.4	9.2	12.4	18.8	92
Delta index	1.1	-3.5	-1.2	-0.6	-0.0	1.2	1.9	3.0	3.4	5.6	92
Kaitz index (lagged)	1.8	-10.2	-8.1	-4.7	-1.4	2.5	4.6	7.6	11.2	13.4	92
Southern											
Growth in NMW	1.3	-11.6	-3.1	-2.2	-0.6	1.2	3.1	5.1	6.0	21.3	86
Delta index	0.4	-5.2	-1.5	-0.8	-0.2	0.4	1.2	2.0	2.2	6.6	86
Kaitz index (lagged)	0.9	-8.6	-6.4	-5.0	-1.6	0.5	3.2	6.1	6.9	21.6	86
Western-Central											
Growth in NMW	0.7	-7.9	-2.5	-1.7	-0.7	0.3	1.7	2.9	6.0	11.6	124
Delta index	0.2	-2.4	-0.8	-0.6	-0.2	0.1	0.6	0.9	1.9	4.0	124
Kaitz index (lagged)	0.0	-8.6	-5.1	-3.3	-1.5	-0.3	0.9	3.6	6.0	14.3	124
Total											
Growth in NMW	3.2	-14.7	-4.0	-2.2	-0.4	1.7	5.8	10.3	13.9	37.7	456
Delta index	0.8	-5.2	-1.0	-0.7	-0.1	0.6	1.5	2.6	3.1	8.9	456
Kaitz index (lagged)	1.1	-18.9	-8.0	-5.2	-2.0	0.6	3.8	8.3	11.2	41.0	456

Notes: NMW, national minimum wage. The national minimum wage indicators are defined in Box 5. Values are unweighted by Member States' populations.

Source: Authors' calculations based on data from Eurostat and the OECD.

Table A5: Correlation between the national minimum wage indicators, 2002–2024

	All	Balkan	Baltic	Eastern	Southern	Western–Central
Growth in NMW versus Delta index	0.95	0.95	0.98	0.96	0.98	1.00
Growth in NMW versus growth in Kaitz index (lagged)	0.76	0.78	0.73	0.82	0.81	0.86
Delta index versus growth in Kaitz index (lagged)	0.74	0.73	0.75	0.79	0.77	0.85

Notes: NMW, national minimum wage. The national minimum wage indicators are defined in Box 5. Values are unweighted by Member States' populations.

Source: Authors' calculations based on Eurostat and OECD data.

Annex 4: Regression tables and robustness checks

This annex presents a series of robustness checks and reports the regression tables underlying the regression analysis plots in Chapter 3.

Robustness checks

Aggregate jobs into quintiles. In the baseline specification, observations are at country–year–job level, although the main variable of interest, i.e. growth in the national minimum wage, is at the country–year level. Table A5 tests whether the results are sensitive to aggregating the observations back to the country–year level and regressing the variation in the share of employment by quintile, with separate regressions.

National minimum wage indicators. The baseline specification in Chapter 3 (Figure 12) uses the percentage growth in the real statutory minimum wage. Figure A22 tests the robustness of results to the use of two alternative indicators, namely the Delta index and the Kaitz index with a lagged denominator. These alternative indicators are described in Box 5.

National minimum wage reference month. The baseline specification in Chapter 3 (Figure 17) uses the growth in the real statutory minimum wage, where the annual value is calculated as the average of the values in January and July. Using data for January alone would ignore minimum wage changes occurring in the second half of the year, while using data for July alone would attribute changes occurring mid-year to the entire year, including the first half, when they were not yet in place. Figure A23 tests the robustness of results to the use of January or July as reference months.

Fixed weights. Figure A24 reports the estimates using either time-varying weights (our baseline) or fixed weights, fixed at the start year of each period. The weights variable is the employment share either in (a) the base year for the growth rate, i.e. $t-1$, or (b) the start year of the period, i.e. in 2001, 2008, 2011 or 2019, respectively. The fixed weights deliver similar results but with larger confidence intervals, which might be expected given that they likely overemphasise the importance of some small cells with noisy values.

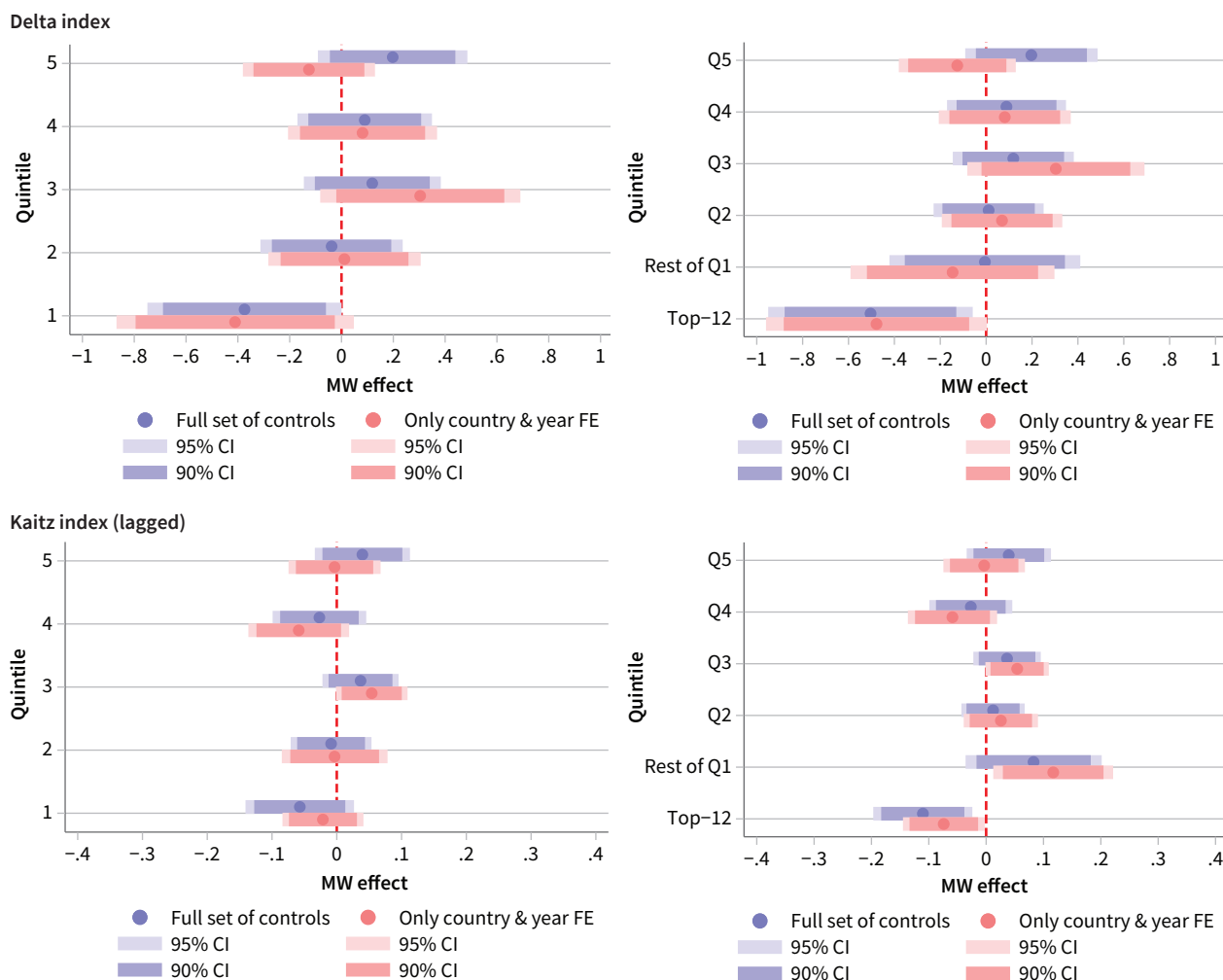
Additional controls. The baseline specification does not include controls for the social net, employment protection legislation or labour union density because these indicators are missing for a consistent share of country–years. Figure A25 shows that adding these controls does not affect the main estimates.

Other dependent variables. The baseline models use the growth in employment shares as a dependent variable. Figure A26 estimates the main model also for the change in employment levels, hours worked and share of hours worked. The patterns observed are comparable to the ones for employment shares.

Exclude the pandemic. Figure A27 estimates the main model excluding the years most affected by the COVID-19 pandemic, namely 2020–2022. The estimates are not statistically different from the ones of the full period.

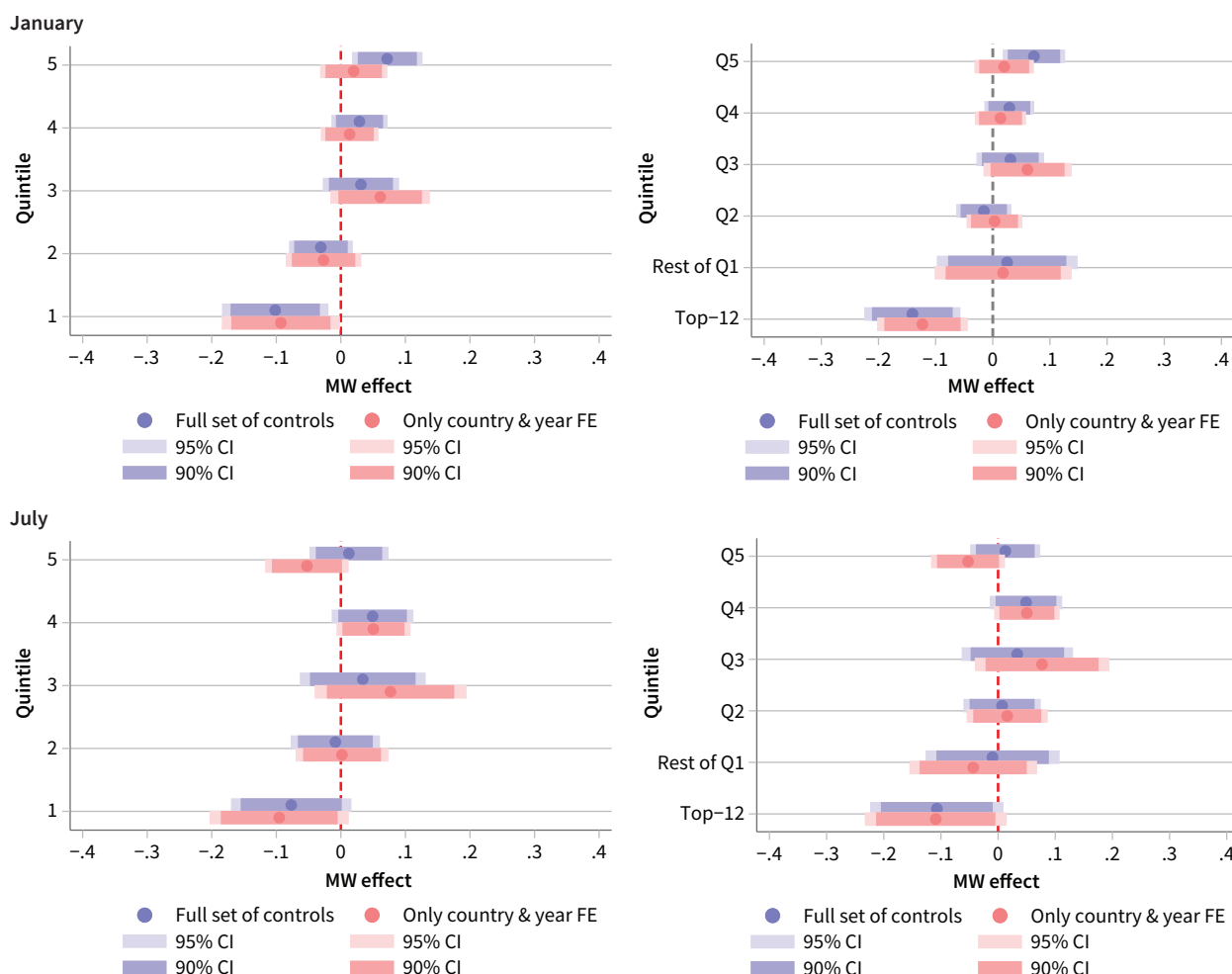
By period. Figure A28 reports the estimates of the regressions done separately by time period. The patterns observed are comparable across the time periods.

Figure A22: Effect of minimum wage growth on employment share growth across the wage structure – alternative minimum wage indicators: Delta index and lagged Kaitz index

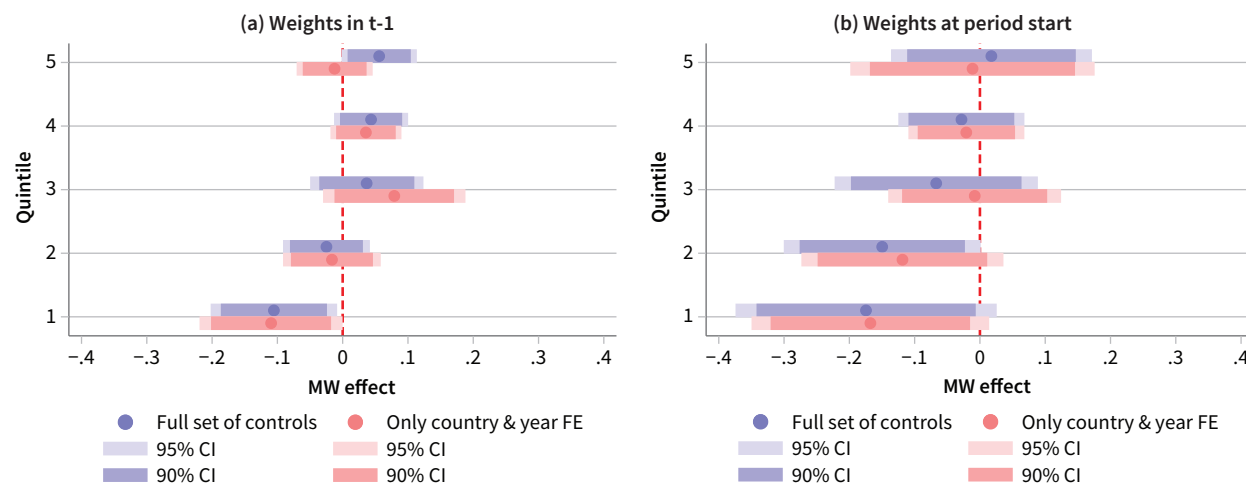


Notes: MW, minimum wage; CI, confidence interval; FE, fixed effects. The dependent variable is the percentage growth in the employment share of each job. MW denotes the percentage growth in the real monthly minimum wage, measured either with the Delta index or with the growth in the lagged Kaitz index as defined in Box 5. The figure reports only the coefficients on the minimum wage variable, based on the baseline specification outlined in Box 8. The plot on the right further splits the bottom quintile into jobs that are part of the top 12 low-paid jobs in each country (as defined in Chapter 2) and the remaining jobs in the bottom quintile. Coefficient estimates are shown as circular markers, with lines indicating the 90 % and 95 % confidence intervals. Estimates in blue include the full set of controls listed in Box 8, while estimates in red include only country and year fixed effects interacted with the quintiles. The corresponding regression tables for the right panels are reported in Table A8.

Source: Authors' calculations based on data from the EU-LFS and other sources (see Table A1 for details).

Figure A23: Effect of minimum wage growth on employment share growth across the wage structure – alternative national minimum wage reference months (January and July)

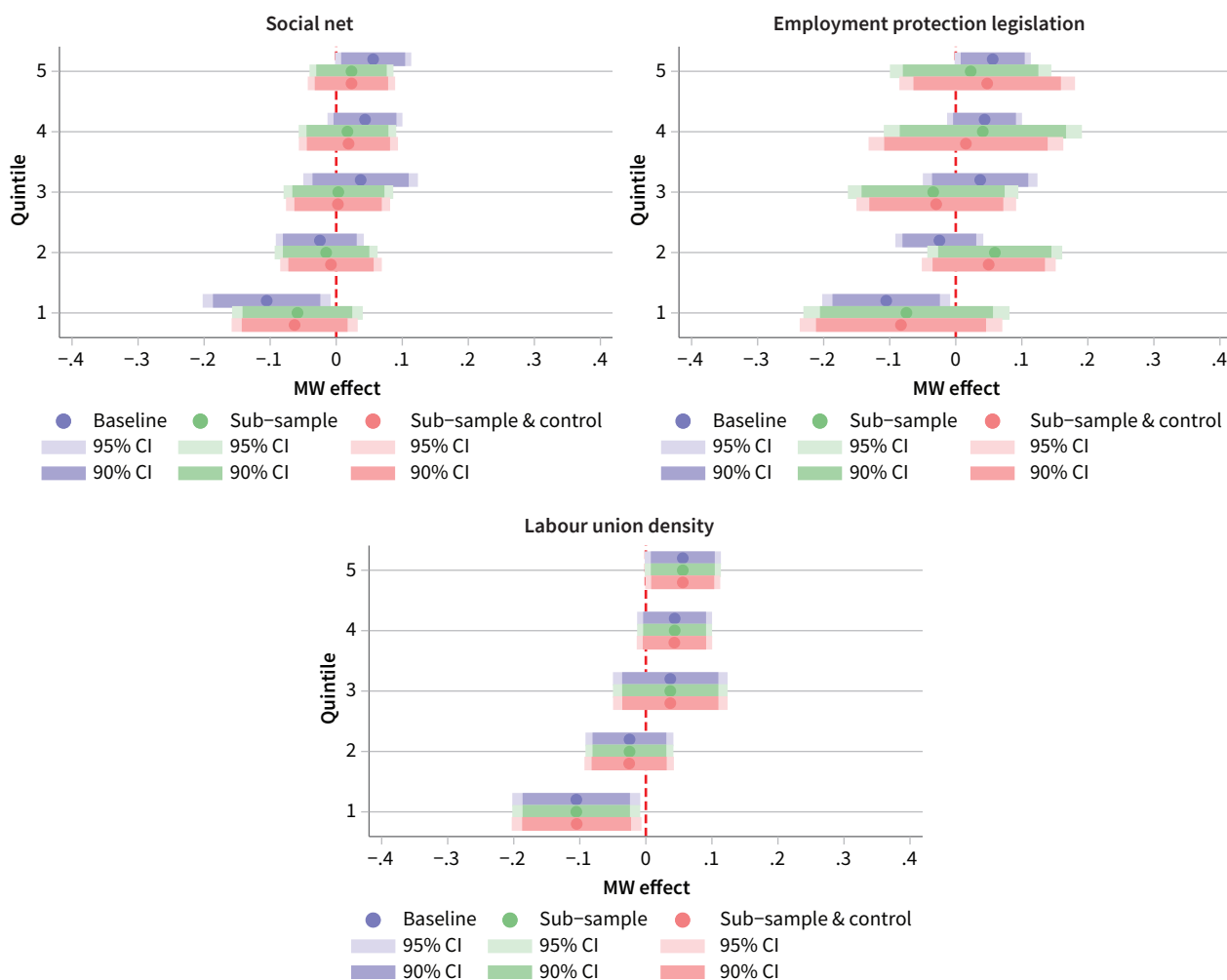
Notes: MW, minimum wage; CI, confidence interval; FE, fixed effects. The dependent variable is the percentage growth in the employment share of each job. MW denotes the percentage growth in the real monthly minimum wage, measured either with the Delta index or with the growth in the lagged Kaitz index as defined in Box 5. The figure reports only the coefficients on the minimum wage variable, based on the baseline specification outlined in Box 8. The plot on the right further splits the bottom quintile into jobs that are part of the top 12 low-paid jobs in each country (as defined in Chapter 2) and the remaining jobs in the bottom quintile. Coefficient estimates are shown as circular markers, with lines indicating the 90 % and 95 % confidence intervals. Estimates in blue include the full set of controls listed in Box 8, while estimates in red include only country and year fixed effects interacted with the quintiles. The corresponding regression tables for the right panels are reported in Table A8. Source: Authors' calculations based on data from the EU-LFS and other sources (see Table A1 for details).

Figure A24: Robustness to using fixed weights

Notes: MW, minimum wage; CI, confidence interval; FE, fixed effects. The dependent variable is the percentage growth in the employment share of each job. The figure reports only the coefficients on the minimum wage variable, based on the baseline specification outlined in Box 8. Coefficient estimates are shown as circular markers, with lines indicating the 90 % and 95 % confidence intervals. Estimates in blue include the full set of controls (listed in Box 8) and job fixed effects, while estimates in red include only country and year fixed effects interacted with the quintiles.

Source: Authors' calculations based on data from the EU-LFS and other sources (see Table A1 for details).

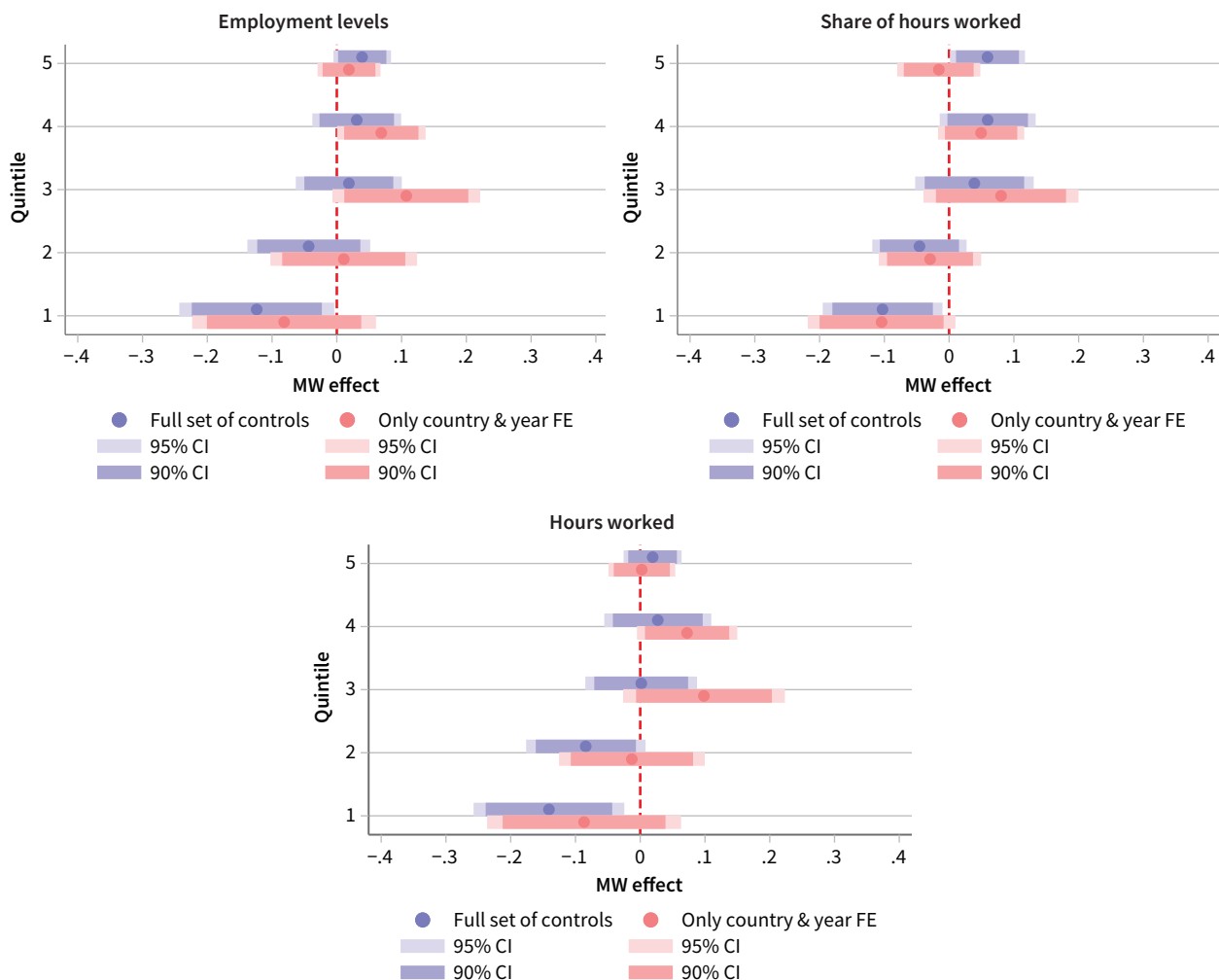
Figure A25: Effect of minimum wage growth on employment share growth across the wage structure – additional controls



Notes: MW, minimum wage; CI, confidence interval. The dependent variable is the percentage growth in the employment share of each job. The figure reports only the coefficients on the minimum wage variable, based on the baseline specification outlined in Box 8. Estimates in blue include the full set of controls listed in Box 8. Estimates in red extend this specification by adding the additional control variable, which is only available for a subset of country-year observations. Estimates in green use the same restricted sample as the red specification but exclude the additional control. This allows differences between the blue and red estimates to be interpreted more clearly, by distinguishing the effect of the additional control from changes driven by the reduced sample. Coefficient estimates are shown as circular markers, with lines indicating the 90 % and 95 % confidence intervals.

Source: Authors' calculations based on data from the EU-LFS and other sources (see Table A1 for details).

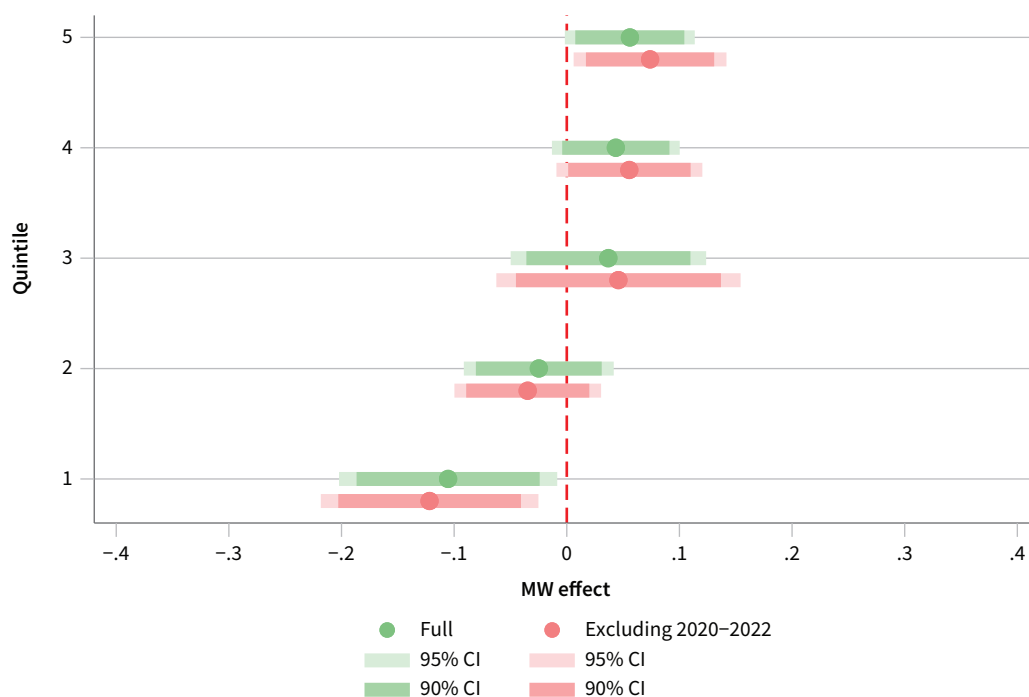
Figure A26: Effect of minimum wage growth on employment share growth across the wage structure – alternative dependent variables



Notes: MW, minimum wage; CI, confidence interval; FE, fixed effects. The dependent variable is the percentage growth in employment levels by jobs (top left panel), hours shares (top right panel) or hours levels (bottom left panel) of each job. The figure reports only the coefficients on the minimum wage variable, based on the baseline specification outlined in Box 8. Coefficient estimates are shown as circular markers, with lines indicating the 90 % and 95 % confidence intervals. Estimates in blue include the full set of controls listed in Box 8, while estimates in red include only country and year fixed effects interacted with the quintiles. The corresponding regression tables are reported in Table A11.

Source: Authors' calculations based on data from the EU-LFS and other sources (see Table A1 for details).

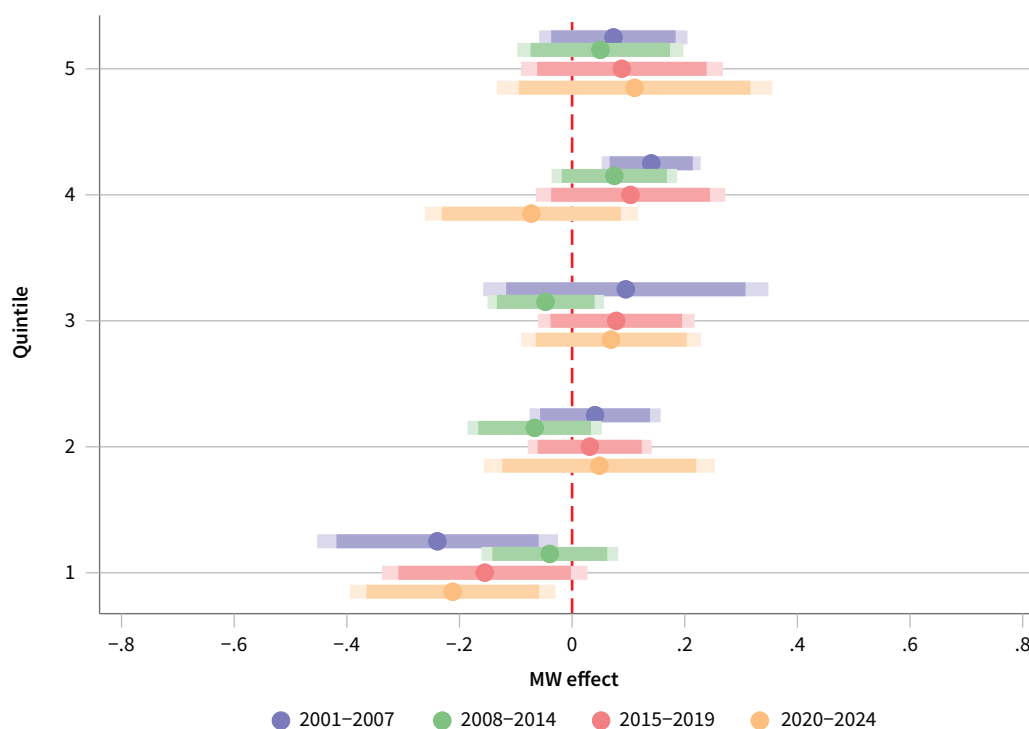
Figure A27: Effect of minimum wage growth on employment share growth across the wage structure, excluding pandemic years (2020–2022)



Notes: MW, minimum wage; CI, confidence interval. The dependent variable is the percentage growth in the employment share of each job. The figure reports only the coefficients on the minimum wage variable, based on the baseline specification outlined in Box 8. Coefficient estimates are shown as circular markers, with lines indicating the 90 % and 95 % confidence intervals. Estimates include the full set of controls (listed in Box 8) and job fixed effects.

Source: Authors' calculations based on data from the EU-LFS and other sources (see Table A1 for details).

Figure A28: Effect of minimum wage growth on employment share growth across the wage structure by time period



Notes: MW, minimum wage. The dependent variable is the percentage growth in the employment share of each job. The figure reports only the coefficients on the minimum wage variable, based on the baseline specification outlined in Box 8. Coefficient estimates are shown as circular markers, with lines indicating the 90 % and 95 % confidence intervals.

Source: Authors' calculations based on data from the EU-LFS and other sources (see Table A1 for details).

Table A6: Effect of minimum wage growth on employment share growth across the wage structure – comparing results of country–year–job and country–year specifications

	(1) Q1 Aggr.	(2) Q1 Disagg.	(3) Q2 Aggr.	(4) Q2 Disagg.	(5) Q3 Aggr.	(6) Q3 Disagg.	(7) Q4 Aggr.	(8) Q4 Disagg.	(9) Q5 Aggr.	(10) Q5 Disagg.
gr. NMW	-0.102* (0.053)		-0.031 (0.037)		0.032 (0.048)		0.044 (0.030)		0.053 (0.034)	
Q1 # gr. NMW		-0.102* (0.050)								
Q2 # gr. NMW				-0.031 (0.036)						
Q3 # gr. NMW						0.032 (0.046)				
Q4 # gr. NMW								0.043 (0.029)		
Q5 # gr. NMW										0.053 (0.033)
Observations	405	38049	405	28266	405	33224	405	34586	405	43760
Adjusted R ²	0.209	0.004	0.094	0.002	0.159	0.003	0.063	0.002	0.362	0.007
AIC	2209.0	373105.9	2148.7	271103.4	2139.9	322296.5	2217.5	335657.1	2213.9	437974.9
BIC	2253.0	373200.0	2192.7	271194.2	2183.9	322389.0	2261.6	335750.0	2258.0	438070.5

Notes: Specifications without job fixed effects but with the same battery of controls shown in Table A6. Standard errors in parentheses. Significance levels: * p < 0.1, ** p < 0.05, *** p < 0.01.

Source: Authors' calculations based on data from the EU-LFS (employment), Eurostat (national minimum wage) and other sources (see Table A1 for details).

Regression tables

Table A7: Effect of minimum wage growth on employment share growth across the wage structure

	(1) Country and year fixed effects only		(2) Full set of controls			(1) Country and year fixed effects only		(2) Full set of controls	
Q1 # gr. NMW	-0.110*	(0.056)	-0.105**	(0.049)		Tert. edu.#Q1		-0.242***	(0.083)
Q2 # gr. NMW	-0.016	(0.038)	-0.025	(0.035)		Tert. edu.#Q2		-0.101	(0.095)
Q3 # gr. NMW	0.079	(0.056)	0.035	(0.044)		Tert. edu.#Q3		-0.182***	(0.028)
Q4 # gr. NMW	0.036	(0.028)	0.044	(0.029)		Tert. edu.#Q4		0.066	(0.074)
Q5 # gr. NMW	-0.012	(0.030)	0.057*	(0.030)		Tert. edu.#Q5		0.478***	(0.035)
L.GDP#Q1			-0.035	(0.085)		Aged 65#Q1		0.014	(0.159)
L.GDP#Q2			-0.006	(0.105)		Aged 65#Q2		-0.040	(0.183)
L.GDP#Q3			0.137	(0.080)		Aged 65#Q3		-0.197	(0.119)
L.GDP#Q4			0.099	(0.122)		Aged 65#Q4		0.347	(0.205)
L.GDP#Q5			-0.143	(0.087)		Aged 65#Q5		0.296	(0.194)
GDP#Q1			-0.026	(0.118)		Fem. empl.#Q1		0.114	(0.157)
GDP#Q2			0.195***	(0.044)		Fem. empl.#Q2		-0.144	(0.106)
GDP#Q3			0.120	(0.085)		Fem. empl.#Q3		0.076	(0.118)
GDP#Q4			-0.050	(0.103)		Fem. empl.#Q4		0.018	(0.104)
GDP#Q5			-0.226**	(0.095)		Fem. empl.#Q5		-0.191	(0.149)
Unempl.#Q1			0.029**	(0.013)		Net migr.#Q1		-0.020	(0.044)
Unempl.#Q2			0.019	(0.017)		Net migr.#Q2		0.058	(0.037)
Unempl.#Q3			0.004	(0.016)		Net migr.#Q3		-0.041	(0.039)
Unempl.#Q4			0.013	(0.014)		Net migr.#Q4		0.004	(0.046)
Unempl.#Q5			-0.011	(0.021)		Net migr.#Q5		-0.023	(0.039)

	(1) Country and year fixed effects only	(2) Full set of controls		(1) Country and year fixed effects only	(2) Full set of controls
Temp. empl.#Q1		0.046*** (0.012)	RBTC#Q1		-0.023 (0.073)
Temp. empl.#Q2		0.013 (0.012)	RBTC#Q2		0.114** (0.049)
Temp. empl.#Q3		-0.003 (0.009)	RBTC#Q3		0.255*** (0.063)
Temp. empl.#Q4		-0.027*** (0.007)	RBTC#Q4		-0.100 (0.072)
Temp. empl.#Q5		-0.012 (0.009)	RBTC#Q5		-0.220** (0.084)
Imp. China#Q1		0.020 (0.018)	Constant	-0.090*** (0.016)	-0.262* (0.133)
Imp. China#Q2		0.002 (0.011)	Observations	178494	177862
Imp. China#Q3		0.012 (0.010)	Adjusted R ²	0.002	0.002
Imp. China#Q4		0.002 (0.012)	AIC	1745458.8	1737994.3
Imp. China#Q5		-0.038 (0.023)	BIC	1745509.3	1738206.1

Notes: All regressions include 'country#Quintile' and 'year#Quintile' fixed effects. The second model also includes job fixed effects. Standard errors in parentheses. * p. < 0.1, ** p. < 0.05, *** p. < 0.01. The table corresponds to the left panel of Figure 17.

Source: Authors' calculations based on data from the EU-LFS and other sources (see Table A1 for details).

Table A8: Effect of minimum wage growth on employment share growth across the wage structure

	(1) Country and year fixed effects only	(2) Full set of controls
Q1-Top12 # gr. NMW	-0.139** (0.053)	-0.148** (0.052)
Q1-rest # gr. NMW	-0.011 (0.059)	0.012 (0.061)
Q2 # gr. NMW	0.010 (0.034)	-0.006 (0.033)
Q3 # gr. NMW	0.079 (0.056)	0.035 (0.044)
Q4 # gr. NMW	0.036 (0.028)	0.044 (0.029)
Q5 # gr. NMW	-0.012 (0.030)	0.057* (0.030)
Observations	178494	177862
Adjusted R ²	0.002	0.004
AIC	1745402.4	1737922.4
BIC	1745463.0	1738134.2

Notes: Only the coefficients for the national minimum wage indicators are reported, although all regressions include the same set of controls as in Table A6. Standard errors in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01. Right panel of Figure 17.

Source: Authors' calculations based on data from the EU-LFS and other sources (see Table A1 for details).

Table A9: Effect of minimum wage growth on employment share growth across the wage structure – alternative national minimum wage indicators (Delta index and growth of Kaitz index)

Delta index	(1) Country and year fixed effects only	(2) Full set of controls	Gr. Kaitz index (lag)	(1) Country and year fixed effects only	(2) Full set of controls
Q1-Top12 # Delta index	-0.478* (0.246)	-0.503** (0.228)	Q1-Top12 # gr. lag Kaitz	-0.074* (0.036)	-0.110** (0.044)
Q1-rest # Delta index	-0.147 (0.227)	-0.008 (0.212)	Q1-rest # gr. lag Kaitz	0.117** (0.053)	0.083 (0.061)
Q2 # Delta index	0.069 (0.134)	0.011 (0.123)	Q2 # gr. lag Kaitz	0.026 (0.033)	0.012 (0.028)
Q3 # Delta index	0.304 (0.197)	0.110 (0.136)	Q3 # gr. lag Kaitz	0.054* (0.028)	0.036 (0.030)
Q4 # Delta index	0.081 (0.147)	0.089 (0.132)	Q4 # gr. lag Kaitz	-0.059 (0.040)	-0.027 (0.037)
Q5 # Delta index	-0.126 (0.130)	0.203 (0.148)	Q5 # gr. lag Kaitz	-0.003 (0.036)	0.040 (0.038)
Observations	178494	177862	Observations	178494	177862
Adjusted R ²	0.002	0.004	Adjusted R ²	0.002	0.004
AIC	1745406.8	1737929.0	AIC	1745407.5	1737927.1
BIC	1745467.4	1738140.9	BIC	1745468.1	1738138.9

Notes: Only the coefficients for the national minimum wage indicators are reported, although all regressions include the same set of controls as in Table A6. Standard errors in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01.

Source: Authors' calculations based on data from the EU-LFS and other sources (see Table A1 for details).

Table A10: Effect of minimum wage growth on employment share growth across the wage structure – alternative national minimum wage reference months (January and July)

NMW January	(1) Country and year fixed effects only	(2) Full set of controls	NMW July	(1) Country and year fixed effects only	(2) Full set of controls
Q1-Top12 # gr. NMW	-0.123*** (0.041)	-0.140*** (0.043)	Q1-Top12 # gr. NMW	-0.109 (0.063)	-0.107* (0.060)
Q1-rest # gr. NMW	0.018 (0.061)	0.025 (0.063)	Q1-rest # gr. NMW	-0.044 (0.057)	-0.010 (0.060)
Q2 # gr. NMW	0.003 (0.025)	-0.016 (0.025)	Q2 # gr. NMW	0.016 (0.036)	0.007 (0.034)
Q3 # gr. NMW	0.061 (0.039)	0.029 (0.030)	Q3 # gr. NMW	0.077 (0.060)	0.033 (0.050)
Q4 # gr. NMW	0.014 (0.023)	0.029 (0.022)	Q4 # gr. NMW	0.050* (0.029)	0.049 (0.032)
Q5 # gr. NMW	0.020 (0.027)	0.074** (0.028)	Q5 # gr. NMW	-0.053 (0.033)	0.013 (0.031)
Observations	178197	177565	Observations	178494	177862
Adjusted R ²	0.002	0.004	Adjusted R ²	0.002	0.004
AIC	1742534.9	1735069.0	AIC	1745403.9	1737931.0
BIC	1742595.5	1735280.8	BIC	1745464.5	1738142.8

Notes: Only the coefficients for “NMW growth” are reported, although all regressions include the same set of controls as in Table A6.

Standard errors in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01.

Source: Authors' calculations based on data from the EU-LFS and other sources (see Table A1 for details).

Table A11: Comparison of top 12 jobs and the rest of the jobs in Quintile 1 in terms of their potential exposure to changes in the national minimum wage

Variable	Rest of Quintile 1	Top 12 in Quintile 1	Difference
% minimum wage earners	21.61 [0.22]	19.65 [0.37]	-1.968*** [0.424]
N	28,589	4,698	33,287
% low-paid	42.49 [0.24]	41.01 [0.39]	-1.478*** [0.459]
N	28,626	4,739	33,365

Notes: Standard errors in parentheses. Significance levels: * p. < 10%, ** p. < 5%, *** p. < 1%.

Source: Authors' calculations based on data from the EU-LFS, SES and other sources (see Table A1 for details).

Table A12: Effect of minimum wage growth on growth in employment and hours worked across the wage structure – other dependent variables

Employment levels	(1) Country and year fixed effects only		(2) Full set of controls		Hours share	(1) Country and year fixed effects only		(2) Full set of controls	
Q1 # gr. NMW	-0.081	(0.072)	-0.124*	(0.061)	Q1 # gr. NMW	-0.104*	(0.058)	-0.102**	(0.047)
Q2 # gr. NMW	0.011	(0.058)	-0.044	(0.050)	Q2 # gr. NMW	-0.029	(0.040)	-0.046	(0.037)
Q3 # gr. NMW	0.107*	(0.058)	0.016	(0.042)	Q3 # gr. NMW	0.080	(0.061)	0.037	(0.047)
Q4 # gr. NMW	0.069*	(0.035)	0.031	(0.035)	Q4 # gr. NMW	0.049	(0.034)	0.060	(0.038)
Q5 # gr. NMW	0.019	(0.025)	0.040*	(0.023)	Q5 # gr. NMW	-0.016	(0.033)	0.061*	(0.030)
Observations	178494		177862		Observations	177183		176558	
Adjusted R ²	0.006		0.010		Adjusted R ²	0.001		0.002	
AIC	1750204.2		1742444.9		AIC	1811363.1		1803920.2	
BIC	1750254.7		1742656.7		BIC	1811413.5		1804131.9	

Hours	(1) Country and year fixed effects only		(2) Full set of controls	
Q1 # gr. NMW	-0.087	(0.076)	-0.141**	(0.059)
Q2 # gr. NMW	-0.013	(0.057)	-0.085*	(0.048)
Q3 # gr. NMW	0.098	(0.064)	-0.001	(0.045)
Q4 # gr. NMW	0.072*	(0.040)	0.027	(0.042)
Q5 # gr. NMW	0.002	(0.026)	0.020	(0.023)
Observations	177183		176558	
Adjusted R ²	0.004		0.006	
AIC	1817411.3		1809751.3	
BIC	1817461.7		1809963.0	

Notes: Only the coefficients for “NMW growth” are reported, although all regressions include the same set of controls as in Table D2. Standard errors in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01.

Source: Authors’ calculations based on data from the EU-LFS and other sources (see Table A1 for details).

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This report examines trends in employment in low-paid jobs and whether minimum wage policies influenced employment structures across the EU Member States between 2001 and 2024. Using a jobs-based framework and harmonised EU data, the analysis starts with a description of employment trends in selected low-paid jobs and in the whole employment structure, where patterns of upgrading and, to a lesser extent, polarisation emerge across Member States. The analysis then examines the effects of minimum wages on the distribution of employment across sectors and occupations and on the wage distribution. The results of an econometric analysis indicate that increases in real minimum wage levels may be linked to an upgrading of the employment structure. The analysis also finds that increasing the minimum wage reduces inequality at the lower end of the wage distribution, although no robust systematic relationship between minimum wages and wage inequality was identified.

The European Foundation for the Improvement of Living and Working Conditions (Eurofound) is a tripartite European Union Agency established in 1975. Its role is to provide knowledge in the area of social, employment and work-related policies according to Regulation (EU) 2019/127.

