

Industrial relations and social dialogue

Impact of national minimum wages on collective bargaining and wages for low-paid workers



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Glossary

This report analyses the relationships between various wage concepts in detail. Sometimes terms are used interchangeably, partly to provide variety for the reader. This glossary provides an overview of the terms used in this report and their definitions.

Term	Synonyms in this report	Definition/description
Actual wages	Actual pay, actual salary	The payment workers actually receive, which is likely higher than statutory or negotiated minimum wages. In other words, the salary obtained by each worker during a given period. In aggregate terms, it is the representative salary of a certain group of workers.
Collectively agreed (minimum) wages	Negotiated (minimum) wages, bargained (minimum) wages	Wages that are set in cross-sectoral, sectoral, occupational or company-level collective agreements. The term does not cover cross-sectoral nationwide agreements stipulating nationwide wage floors.
Crowding-out [of collective bargaining] versus loss of autonomy [of the social partners]	—	The difference between crowding-out and loss of autonomy is mostly related to the extent of displacement of collective bargaining. There is crowding-out when the social partners no longer negotiate. In the most extreme cases, they do not negotiate collective agreements, or they may not negotiate on certain issues, like wages. There is loss of autonomy when the statutory regulations reduce the space to negotiate, but without necessarily hindering negotiations.
Kaitz Index	—	The relationship between national minimum wages and actual wages. The latter can be expressed in average or median terms. The higher the Kaitz Index, the more ‘generous’ national minimum wages are compared with actual wages.
Minimum wages	—	Eurofound usually uses the term without further differentiation when reporting information from countries with and without national minimum wages (see, for example, Eurofound, 2024a). In this report, it was sought to limit the use of this term, unless the exact meaning was very clear in the specific context or the term could apply to both cases.
National minimum wage	Statutory or legal minimum wage (excluding national rates set by collective agreements)	A nationwide basic wage rate set as a wage floor, based on regulatory restrictions on the lowest rate employers can pay workers. It is regulated by formal laws, statutes or (in Belgium and Estonia) legal frameworks providing for collective bargaining on the cross-sectoral national minimum wage. All Member States except Austria, Denmark, Finland, Italy and Sweden have national minimum wages. As most national minimum wages in the EU are legal or statutory minimum wages, these terms are used as appropriate for each country. Notes: Deviations in terms of subminimum rates – for instance, by age – may exist. In this report, the full adult rates are the rates of interest.
Nominal [wages or any other wage concept]	[Wages or any other wage concept] in nominal terms	The value [of wages or any other wage concept] as stipulated or appearing in law, in collective agreements or on payslips.
Real [wages or any other wage concept]	[Wages or any other wage concept] in real terms	A recalculation of nominal [wages or any other wage concept] that takes into account the change in aggregate average prices over time (inflation). It is therefore a measure of how purchasing power [of wages] develops.
Spillover	—	This effect happens when an increase in national minimum wage pushes collectively agreed wages up for all workers along the wage scale.
Statutory minimum wage	Legal minimum wage, national minimum wage	The national minimum wage set by law or other statutory regulations.
Wage compression	—	This effect happens when an increase in national minimum wage pushes collectively agreed wages up but only for the lower-paid groups (ripple effect).
Wage inequality	—	A measure of the level of inequality among wage earners in a certain national wage distribution. In this report, it is measured by the Gini Index, the value of which ranges from 0 to 1, with a higher value meaning more inequality.

Executive summary

Introduction

There is ongoing debate on whether national minimum wages and collective wage bargaining strengthen or weaken each other. This research report provides empirical evidence on how changes to national minimum wages affect collectively agreed minimum wages and actual wages, and how they can affect collective bargaining in selected low-paid sectors. The report combines quantitative analysis (based on various databases) and qualitative analysis (based on 39 semi-structured interviews conducted with experts, policymakers and the social partners in six countries and two low-paid sectors).

Policy context

The EU Minimum Wage Directive, passed in October 2022, aims to ensure adequate statutory minimum wages, to promote collective wage bargaining and to enhance effective access of workers to minimum wage protection. The deadline for transposing the directive into national law elapsed in November 2024, but it has been influencing developments in national statutory minimum wage setting since its adoption. National statutory minimum wages have increased significantly in relation to actual wages over the past few years in many Member States. In addition, the benchmark for adequate bargaining coverage (80 %) has already shaped discussions on the reform of collective bargaining in some countries. These developments potentially have an impact on the interaction between national minimum wages and collectively agreed wages in various ways.

Key findings

Impact of changes to national minimum wages on collectively agreed wages

Econometric analyses estimating the impact of changes to national minimum wages on collective agreements and negotiated wages show the following.

- The cumulative variation in national minimum wages since the last collective agreement increases the probability of signing a new agreement, while cumulative inflation and the unemployment rate do not influence this probability. The time elapsed since the last agreement is also an important factor. The inclusion of the Kaitz Index (the ratio between the minimum wage and the average wage for each country and year) in this specification suggests that signing new agreements is less frequent in countries with a high national minimum wage compared with the average wage all else being equal.
 - The main determinant of the size of negotiated wage floor adjustments is the cumulative inflation rate since the last agreement. If inflation increases by 1 %, negotiated minimum wages increase by close to 0.7 % (that is, they have an elasticity of close to 0.7). The cumulative variation in national minimum wages in real terms also has a positive and significant effect on the size of negotiated wage floor adjustments, with an elasticity of 0.22. The unemployment rate has a significant but negative effect on the size of wage adjustments, providing clear evidence that negative cyclical conditions limit growth in bargained wages.
 - There is substantial heterogeneity in several dimensions: over the period considered, with stronger effects observed for 2020–2022; between low-paid sectors; and among groups of countries distinguished by different models of interaction between national minimum wages and collective bargaining.
- The qualitative analysis provides in-depth insights from interviews on how national minimum wages interact with collective agreements in six countries (France, Germany, Portugal, Romania, Slovenia and Spain) and within two low-paid sectors (the manufacture of food and beverages sector and the residential and social care sector). The analysis highlights the following.
- The social partners' perceptions of the role of the national minimum wage varies across countries, sectors and subsectors. High inflation and labour shortages have made employers and trade unions in the residential and social care sector more favourable towards it. In the manufacture of food and beverages sector, the national minimum wage has been perceived as 'a lesser evil' needed to help maintain purchasing power in the context of inflation.
 - The national minimum wage is having a limited impact on collective bargaining processes. There is some evidence of reduced room for manoeuvre in terms of negotiating pay and working conditions but no strong evidence of a crowding-out effect in collective bargaining, despite concerns expressed by the social partners in some countries. There is no significant impact on the duration or renewal of collective agreements in the countries and sectors analysed.

- National minimum wage increases are having some impact on collectively agreed wages and their structure.
 - A common trend observed in the two sectors and most of the countries analysed is the increasing relevance of pay bonuses and supplements addressed in collective bargaining, very often negotiated at company level, because of the increases in national minimum wages. This is because basic pay rates tend to increase at a slower pace than national minimum wages, and companies resort to these bonuses to guarantee that actual wages remain above the legal rates.
 - In the residential and social care sector in Germany and Spain, after increases in the national minimum wages, employers are no longer willing to improve other working conditions, which were used to compensate for low wages in the past. A similar pattern was observed in the food and beverages industry in Portugal.
- There appears to be a compression effect in the negotiated wage distribution because of the increases in national minimum wages. The intensity of this effect varies across countries and sectors; based on the qualitative analysis of collective agreements in the two low-paid sectors selected, this effect seems to be more intense in the manufacture of food and beverages. This compression effect can be interpreted as a short-term adaptation of collective bargaining to the new minimum wage, while in the medium term spillover effects may become more important as collective agreements translate national minimum wage increases to the whole wage distribution. However, the extent to which compression persists is shaped by the characteristics of the sector. Moreover, spillover effects are more likely to be observed in those sectors or countries experiencing more intense labour shortages, like the residential and social care sector.
- The impact of changes in national minimum wages in 2015–2021 was somewhat larger than that in 2006–2014. In fact, the effect on the actual wages of low-paid workers since 2015 may have been more intense than the effect on the wages collectively negotiated for workers in low-wage sectors.
- Only large nominal increases in national minimum wages produce substantial increases in the wages of low-paid employees. Uprates of at least 15 %, in nominal terms, are the only ones with a measurable and statistically significant impact.
- National minimum wage uprates in the Member States that joined the EU in 2004 or afterwards had a greater impact on changes in the wages of low-paid workers than uprates in the pre-2004 Member States until 2015. However, the size of the effects have converged between the groups in more recent years.
- Increases in national minimum wages during the study period not only translated into wage improvements for low-paid employees but also benefited workers with higher wage levels.
- Looking at the trajectories of individual workers, the analysis finds significant increases in wages for the lowest deciles of the wage distribution, particularly when national minimum wage increases are higher.
- A causal econometric analysis was conducted to measure changes in national minimum wages and to estimate what happened to the salaries of workers who were earning below the new rate before the changes, compared with the effect on the salaries of low-wage workers who were earning slightly above the rate. The results indicate a significant and positive effect of substantial minimum wage increases of between 10 % and 15 %.

Impact of national minimum wages on actual wages and the wage distribution

The econometric analysis of the impact of national minimum wages on actual wages, based on European Union Statistics on Income and Living Conditions for 2006–2021, found the following.

- National minimum wage developments have a significant impact on the actual wages of low-paid workers, regardless of their sector, occupation, gender and age: a 1 % increase in the national minimum wage resulted in a 0.31 % increase in the wages of low-paid employees over 2006–2021.
- Changes in national minimum wages have a more important role in pushing for a new wage agreement being signed than changes in macroeconomic factors, such as inflation and unemployment. However, the magnitude of the increase in negotiated wages is mainly explained by inflation, followed by uprates in national minimum wages and then unemployment rate decreases.
- Considering the likely impacts on negotiated wages when setting national minimum wages can provide useful insights for policymakers on the potential (indirect) impacts of national minimum wage uprates and hence improve the entire process of setting national minimum wages.

Policy pointers

- Increases in the national minimum wage do not seem to have a strong detrimental effect on the autonomy of the social partners to negotiate collective agreements, although a reduced margin to negotiate around some issues is reported. Crowding-out effects do not seem to be significant but, as expected, are stronger in countries with weak collective bargaining institutions and coverage. These countries require greater efforts to support the social partners and collective bargaining so that adequate minimum wages are compatible with well-functioning collective bargaining. Efforts could include guaranteeing an adequate legal framework for collective bargaining and enhancing the social partners' capacities.
- Despite some evidence of wage compression in collectively agreed wages, there is an overall absence of wage compression. This is due to national minimum wage hikes resulting in wage growth not only among lower-paid employees, but also higher-paid ones. This may limit the effectiveness of minimum wage uprates as an instrument to reduce wage inequality over time. The impact of minimum wages on the compression of negotiated wages does, however, vary across sectors, being influenced by other variables, like labour shortages and minimum wage levels.
- Increases in national minimum wages led to similar improvements in the actual wages of low-paid workers regardless of their characteristics. However, some groups, such as female workers, still benefit more from such hikes, because they are relatively more represented among minimum wage earners.
- In countries with low collective bargaining coverage, the most important factor influencing wage increases for low-paid workers is national minimum wages. In these countries, negotiated wages have a positive, albeit limited (not statistically significant), impact on the wages earned by low-paid workers. In contrast, both negotiated wages and national minimum wages substantially affect the wages of low-paid workers in countries with high collective bargaining coverage.

Introduction

Policy context

Improving the situations of low-paid employees has been a focus of the EU policy agenda for a long time. This objective gained renewed support with the introduction of the directive on adequate minimum wages (Directive (EU) 2022/2041). The Minimum Wage Directive, as it is known, which passed in October 2022, has two key goals. First, by establishing a framework for setting adequate statutory minimum wages and ensuring workers' access to minimum wage protection, the directive aims to reinforce the statutory minimum-wage-setting process and ensure the levels set are adequate. Second, the directive aims to expand the coverage of workers by collective bargaining and to strengthen the role of the social partners in wage setting through collective bargaining. The intention is to prevent the unintended effect of reducing the role of the social partners if national statutory minimum wages 'crowd out', or make unnecessary, collective wage bargaining.

Aims and methods

This report provides empirical evidence on the interaction of the two goals established in the Minimum Wage Directive. With this evidence, it aims to provide an understanding of and learning on how changes to national minimum wages ⁽¹⁾ influence:

- collectively agreed (or 'negotiated' or 'bargained') wages and actual wages;
- the collective bargaining landscape for selected low-paid jobs and sectors.

The main research questions to be addressed are as follows.

1. How do changes to national minimum wages affect collectively agreed pay and collective bargaining coverage, particularly in low-paid segments of the labour market and in low-paid sectors?
 - What happens to collective bargaining in low-paid sectors when national minimum wages are increased?
 - Are all agreements renegotiated? Do they all continue to exist? Are new agreements made?
 - Do collectively agreed pay rates change and, if so, to what extent?

- How do the actors involved in bargaining react?
 - Does the bargaining landscape change? Do new actors come into the picture, or do those involved in bargaining retreat?
 - Is there evidence that collective bargaining is crowded out in low-paid sectors when national minimum wages increase substantially or start to play a dominant role?
2. How do changes to national minimum wages affect actual wages?
 - What is the impact of national minimum wages on the actual wages of low-paid workers?
 - Do the actual wages of low-paid workers react only when national minimum wages increase substantially?
 - Does the impact of national minimum wages on the actual wages of low-paid workers vary across sectors and Member States and based on gender and age?
 - What is the effect of national minimum wage developments specific to employees in different sectors and occupations, of different genders and ages, and in different groups of countries?
 - Is there evidence of a spillover effect, leading to increases in the wages of workers earning above the minimum wage?
 - What is the effect of national minimum wage developments on actual wages when looking at the individual trajectories of workers?
 - What was the impact of minimum wage hikes on the wage distribution in some specific episodes among selected Member States?

The methodology combines quantitative (econometric) and qualitative analyses. First, the quantitative analysis uses the Eurofound database on the lowest rates in collective agreements for workers in low-paid sectors to analyse the impact of national minimum wages on collectively agreed minimum wages. Second, it uses European Union Statistics on Income and Living Conditions (EU-SILC) samples to analyse the impact of national minimum wages on actual wages.

The qualitative analysis is based on six national case studies covering France, Germany, Portugal, Romania, Slovenia and Spain. These countries differ in terms of industrial relations institutions (Eurofound, 2023a) and

⁽¹⁾ A national minimum wage is a regulatory restriction on the lowest rate employers can pay workers. This is regulated by formal laws, statutes or (in Belgium and Estonia) legal frameworks providing for collective bargaining on the cross-sectoral national minimum wage. All Member States except Austria, Denmark, Finland, Italy and Sweden have national minimum wages. As most national minimum wages in the EU are legal or statutory minimum wages, these terms are used as appropriate for each country.

mechanisms for minimum wage setting and the approaches to it (Eurofound, 2024a). In addition, when the types of interaction between national minimum wages and collectively agreed wages are categorised, these countries fall into different groups (Bosch and Weinkopf, 2013; Dingeldey et al., 2021). The case studies were conducted to provide an in-depth analysis of the interaction between national minimum wages and collective agreements in two low-paid sectors: the manufacture of food and beverages (NACE ⁽²⁾ codes C10 and C11) and residential and social care (NACE codes Q87 and Q88).

Literature review

This section presents a brief literature review of the main topics researched in this project. It looks at low pay and discusses the main causes behind it. The review then addresses the role played by minimum wages in reducing low pay.

Low pay

Approaching the analysis of low-paid jobs as a labour market phenomenon presents several challenges from the theoretical or analytical and methodological points of view. Addressing these challenges helps to better frame the analysis of the interaction between national minimum wages and the negotiated wages of low-paid workers.

In general, ‘low pay’ or ‘a low wage’ means a level of compensation that is insufficient to meet basic needs and maintain a decent standard of living. It represents a disparity between the wages earned by individuals and the costs associated with necessities such as food, housing, healthcare, education and transportation. There are three main definitions used in research to measure low pay (Grimshaw, 2011). It can be defined:

- in absolute terms, based on an estimate of what a household is required to earn to remain above the income poverty threshold;
- as a fixed proportion of the earnings distribution (for example, the bottom 20 % of employees);
- as a wage relative to the median or average pay in a particular national economy (Grimshaw, 2011).

The last approach is frequently used by organisations such as Eurostat and the Organisation for Economic Co-operation and Development (OECD) and raises the questions of how to set the relative limit, determine the base amount (median or average wage) and select the sample of the working population (all employees, full-time employees and so on) (Fialová, 2024).

For instance, Eurostat defines low-wage earners as those employees earning two thirds or less of the national median gross hourly earnings.

At the theoretical or analytical level, a variety of terms are used to refer to low wages or low pay. Although these terms are very often used interchangeably, some of them connote slightly different theoretical perspectives and describe different realities. On the one hand, there are terms like ‘working poor’ and ‘in-work poverty’ that include a reference to poverty as a consequence of the level of earnings (measured at household level). On the other hand, the terms ‘low pay’ and ‘low wage’ refer more generally to the position of workers in the wage distribution without necessarily meaning that those workers are in situations of poverty or material deprivation.

Causes of low pay

As reflected in Table 1, the share of low-wage earners, defined as the proportion of wage earners whose earnings per hour are less than two thirds of the median earnings per hour, remained very stable at the EU level from 2006 to 2018 at around 15 %. This general trend, however, masks persistent cross-country variations in the EU in terms of the prevalence of low-wage earners as a proportion of all employees. In the Nordic countries, the share of low-wage earners has been comparatively low over the period considered. In contrast, most eastern European countries and several southern and central-western European countries record shares higher than the EU average.

Several factors have contributed to the increasing number of low-paid jobs since the late 1970s. Changes in labour market regulations have interacted with other developments to produce an environment that favours the creation of this type of job.

Segmented labour markets, characterised by temporary or part-time work, often offer lower wages due to reduced job security and benefits. Moreover, labour market deregulation and weakened labour protections have contributed to low pay by reducing workers’ bargaining power, enabling employers to put additional downward pressure on wages (Esping-Andersen and Regini, 2000).

The segmented character of the labour market, with marked differences in working conditions across groups of workers, has important distributional implications (Eurofound, 2019). First, it is a significant source of social inequalities due to the perpetuation of low pay, and it gives rise to pressures on the state to mitigate the negative effects that accompany these inequalities.

⁽²⁾ The general industrial classification of economic activities within the European Union.

Table 1: Low-wage earners as a proportion of all employees (excluding apprentices), by Member State, 2006–2018 (%)

Member State	2006	2010	2014	2018
Austria	14.19	15.02	14.76	14.75
Belgium	6.82	6.37	3.79	13.68
Bulgaria	18.90	22.01	18.19	21.41
Croatia	n/a	21.35	23.11	18.42
Cyprus	22.65	22.62	19.33	18.73
Czechia	17.05	18.19	18.69	15.09
Denmark	8.31	8.17	8.61	8.69
Estonia	23.19	23.76	22.76	21.95
Finland	4.75	5.85	5.28	5.03
France	7.13	6.08	8.81	8.61
Germany	20.30	22.24	22.48	20.68
Greece	15.73	12.82	21.72	19.65
Hungary	21.87	19.51	17.75	11.61
Ireland	21.41	20.66	21.56	19.78
Italy	10.27	12.36	9.44	8.46
Latvia	30.90	27.81	25.46	23.49
Lithuania	29.12	27.24	23.96	22.33
Luxembourg	13.18	13.06	11.94	11.38
Malta	14.43	17.61	15.08	15.51
Netherlands	17.74	17.46	17.98	18.24
Poland	24.72	24.16	23.56	21.87
Portugal	20.72	16.08	12.03	3.95
Romania	26.85	25.82	24.40	20.01
Slovakia	18.30	19.03	19.21	16.01
Slovenia	19.24	17.14	18.47	16.52
Spain	13.37	14.66	14.59	14.33
Sweden	1.77	2.51	2.64	3.61
EU-27 (as of 2020)	15.73	15.80	16.36	15.22

Note: n/a, not available.

Source: Structure of Earnings Survey

Studies have shown that structural factors can be as important as, or even more important than, personal attributes in determining whether an individual will be at risk of poverty (Tomlinson and Walker, 2012). Second, labour market segmentation has the even more important longitudinal effect of low upward mobility of those workers in the lower segments of the labour market (Eurofound, 2019). Theories of segmentation take account of other variables that indicate the existence of social, class, ethnic, racial and gender stratification and inequality. Segmentation is linked to the stratification of labour markets, which is associated with wage inequalities, in addition to

differences between professional categories, more or less stable types of employment contracts and the employment of immigrants in certain job niches with little probability of upward labour mobility. These characteristics of ‘bad jobs’ define the secondary and peripheral segment of the labour market (Piore, 1979).

Technological advancements and changing job requirements have also contributed to wage polarisation, with high-skilled workers experiencing wage growth, while the wages of low-skilled workers are stagnant or declining (Autor, 2014). The rise of the platform economy, fuelled by the use of technology and algorithmic management, has given birth to gig work and on-demand labour. While these platforms provide flexible employment opportunities, they often come with lower pay and reduced benefits. Gig workers, such as those providing ride-hailing or food delivery services, face an uncertain income, a lack of labour protection and limited bargaining power. Technological platforms have facilitated the fragmentation of work, making it challenging for low-paid workers to secure stable and well-paying jobs.

Role of minimum wages in reducing low pay

Several policies can be implemented to reduce low pay, including changes to labour market regulations. However, minimum wages, in their various forms, have the most important role in addressing this problem. They work by establishing a wage floor and providing a necessary protection for low-paid workers. Minimum wages can affect low pay in two ways.

First, they can increase the earnings of low-wage workers. By setting a minimum wage floor, policymakers aim to ensure that workers receive a fair and decent income. Several studies have found that minimum wage increases lead to higher wages for low-wage workers (Cengiz et al., 2019). This increase in wages can improve the financial stability of workers and potentially reduce income inequality by compressing wage differentials. However, the ultimate impact of minimum wages in terms of reducing inequality is relative to the wage level. If starting from a low level, any increase in the national minimum wage will have a strong impact on poverty reduction. However, as the initial level increases, the impact on reducing poverty and inequality becomes smaller as the minimum wage increase drives up the whole wage structure.

The positive distributional effect of a higher minimum wage can be offset by a negative employment effect. Some argue that higher minimum wages lead to job losses, especially for low-skilled workers in low-wage occupations, as employers may find it difficult to absorb increased labour costs. However, the empirical evidence on employment effects is mixed (Cengiz et al., 2019; Neumark and Shirley, 2022). While some studies

suggest negative employment effects (Neumark and Wascher, 2008), others find limited or no significant impact (Card et al., 1994; Cengiz et al., 2019). The actual employment impact may vary depending on factors such as the magnitude of the minimum wage increase, local labour market conditions and the sectors affected.

Second, minimum wages can affect collective bargaining and collectively agreed wages. The spillover effects of an increase in the minimum wage on collectively agreed wages can take several forms. When the minimum wage is increased, it also raises the wage floor for low-wage workers. As a result, workers who were previously earning slightly above the new minimum wage may demand higher wages to maintain wage differentials. This can put additional pressure on trade unions and employers, including pressure to increase wages for higher-skilled workers as well. This spillover effect is enhanced by the impact of minimum wage increases on union bargaining power. When the national minimum wage rises, the gap between the wages negotiated by unions and the national minimum wage shrinks. Unions can use this as leverage in negotiations, arguing that their members' wages should reflect their higher skills and experience compared with minimum wage workers. A minimum wage rise can therefore lead to growing demands for wage increases, benefits and improved working conditions.

Conceptual framework

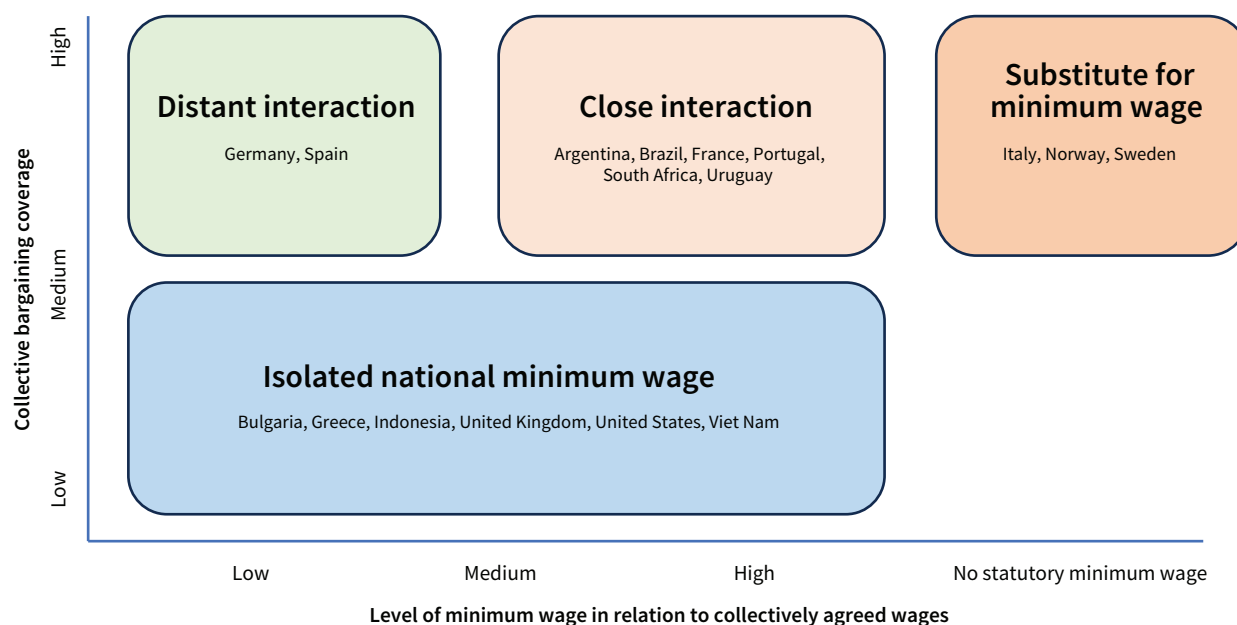
The diversity of collective bargaining institutions and minimum wage regimes opens the door to a large variation in how they interact and thus their impact on low-paid sectors and workers (Dingeldey et al., 2021).

Typology of interaction

The typology developed by Dingeldey et al. (2021), which adapts a typology previously created by Grimshaw and Bosch (2013), uses two criteria to map the forms and intensity of interaction: first, the level of the minimum wage in relation to collectively agreed wages and, second, the national institutional setting for collective bargaining, including extension mechanisms and the level of collective bargaining coverage (Figure 1). This framework considers how both criteria shape the strategies and options of the relevant actors, envisaging five types of interaction.

- Isolated national minimum wage** occurs when there is weak collective bargaining, often at company level and covering only a small number of companies and workers, while most workers are covered by just the national minimum wage. The interaction is limited to some sectors. In countries with this interaction type, national minimum wages are crucial in influencing wage developments for a large proportion of workers. This model is identified in many eastern European countries (for example, Bulgaria), but also in Greece (Molina, 2021) and the United Kingdom.

Figure 1: Typology of institutional interaction in minimum wage regimes



Source: Dingeldey et al. (2021)

- **Close interaction** between a high national minimum wage and collective bargaining is when the distance between a relatively high national minimum wage and the lowest wage brackets in most sectors is small and there is a tradition of state intervention. Under this interaction model, collectively agreed wages are strongly influenced by national minimum wage dynamics. France is the clearest example of this interaction type, as the national minimum wage is set at a relatively high level and often pushes up collectively agreed wages. This interaction also applies to some of the low-wage sectors in Germany, where negotiations forced collective agreements to include above-average wage increases after the introduction of the statutory minimum wage (Bosch et al., 2021).
- **Distant interaction** means that the national minimum wage is used as a point of reference to set sector-specific wage levels at a certain distance above it. In countries with this interaction type, the trade unions aim to keep a certain distance between the minimum wage and the lowest wages determined in collective agreements. This trade union strategy is identified in low-wage sectors in countries such as Belgium, Germany, the Netherlands and Spain. In their original typology, Grimshaw and Bosch (2013) used a slightly different category, named **distant coexistence**, meaning that collective agreements set wages well above the national minimum wage, and collectively agreed wages are not directly affected by national minimum wage dynamics. According to Dingeldey et al. (2021), examples of this practice are often found in almost all European countries, at least in some sectors. A prime nationwide example was Spain, until the large national minimum wage increase in 2019.
- **Autonomous wage setting or substitute for minimum wage** is when there is no national minimum wage, and sectoral collective agreements alone set negotiated minimums. This is the case in Austria, Denmark, Finland, Italy and Sweden.

This classification provides a useful starting point for understanding the interaction between national minimum wages and collectively agreed wages. However, it provides limited insights on some important issues.

- It remains largely descriptive (what) and offers few analytical insights on why there are different types of interaction (why).
- Related to the previous point, although it adopts an actor-centred, institutionalist approach, the role of agency and power relations remains a secondary consideration.

- It considers sectoral differences to a limited extent and fails to provide a systematic account of which sectoral variables are most important.
- It addresses the impact of national minimum wages on negotiated wage levels but sheds little light on the broader distributional impact – that is, on the distribution of collectively agreed wages.

Sectoral logic is particularly important in the analysis of low pay and may produce a better understanding of differences within and across countries. The relationship between national minimums and collectively agreed wages can vary significantly across sectors. Even within low-paid sectors, collectively agreed wages may be significantly higher than national minimum wages due to factors such as labour shortages, high productivity or strong unions with substantial power resources. Where trade unions have limited bargaining power, collectively agreed minimum wages may be closer to national minimum wages (Keune and Pedaci, 2020).

More generally, the relationship between national minimum wages and sectoral collectively agreed wages can be influenced by a range of factors, including labour market conditions, economic factors, institutional arrangements and the specific dynamics of each negotiation process. Even sectors that are generally considered low paid due to the high prevalence of workers with low wages may have remarkable variance in relation to wage dynamics and outcomes. Including sector-related variables in the analysis of this interaction may provide insights on the mechanisms at work in translating higher minimum wages into collectively agreed wages. More specifically, it can aid the understanding of the roles of domestic institutional frameworks and strong sectoral logic in driving this impact (Bechter et al., 2012).

Some studies have already highlighted the existence of sectoral differences (Bosch et al., 2021; Dingeldey et al., 2021). However, there is limited evidence on how sectoral collective bargaining institutions may affect the interaction between national minimum wages and collectively agreed wages, and the key variables explaining the interaction where there is one.

To better understand the interaction between national minimum wages and negotiated wages and the interaction's impact on low pay, the approach can be enriched by including two additional dimensions in this typology:

- the role of agency and power relations,
- the analysis of pay structures and distributional impact.

Role of agency and power relations

The bargaining power of workers and employers in the negotiation process can influence the relationship between national minimum wages and collectively agreed wages. In situations where workers have a stronger bargaining position – for example, in times of labour shortages – they may be able to negotiate basic minimum wages well above national minimum wages. Conversely, in sectors or regions with weaker labour unions or low worker bargaining power – for example, when unemployment rates are high – collectively agreed wages may be more closely aligned with national minimum wages. The domestic institutional framework provides a common ground for workers and their representatives to negotiate wages with employer organisations in all sectors of the economy.

However, the size of the impacts of national minimum wages on collectively agreed wages, including the impact on wage compression and the spillover effect, may vary based on other variables, like the existence of bargaining actors on both sides of industry, the union density in the sector and the percentage of workplaces with worker representation structures. The analysis of the impact of these variables on collective bargaining processes requires opening the black box of sectoral collective bargaining in order to understand how and to what extent changes in national minimum wages translate into higher collectively agreed wages and for which categories of workers. More specifically, it requires looking at those aspects shaping power relations and imbalances and how these manifest during collective agreement negotiations. Table 2 lists variables that can be explored through quantitative and qualitative methodologies and enable an understanding of the role of power relations.

Distributional impact

There are three scenarios regarding the distributional impact of increases in national minimum wages on collectively agreed wages (see Table 3 and Figure 2).

- In the first scenario, there is no impact due to the low level of the national minimum wage compared with collectively agreed wages. This is usually the case when the national minimum wage is set at a low level and collectively agreed wages are isolated from it. In this scenario, the distribution of negotiated wages would not change substantially because of an increase in the national minimum wage.
- In the second scenario, the national minimum wage sets a benchmark for negotiated wage increases whereby collective agreements specify that wages must be set above the national minimum wage, ensuring that workers at the bottom of the wage scale receive wages that are higher than the legal requirement. In this scenario, the impact of the national minimum wage on collectively agreed wages usually leads to wage compression through the ripple effects of the minimum wage (Cengiz et al., 2019), since only those at the bottom or near to the minimum wage on the pay scale are upgraded.
- In the third scenario, the national minimum wage can have spillover or second-order effects (Grimshaw and Rubery, 2013) on collectively agreed wages, particularly in sectors and occupations with a high proportion of low-wage workers. If the minimum wage increases, employers in these sectors may feel pressure to increase collectively agreed wages for higher-skilled workers too to maintain wage differentials and ensure that wage structures remain intact.

The variables determining which effect predominates are multifarious and include not only the level of the national minimum wage but also other sector-related factors like the skills level of the workforce, market conditions (including labour market shortages) and productivity.

Table 2: Variables potentially affecting sectoral bargaining power asymmetries

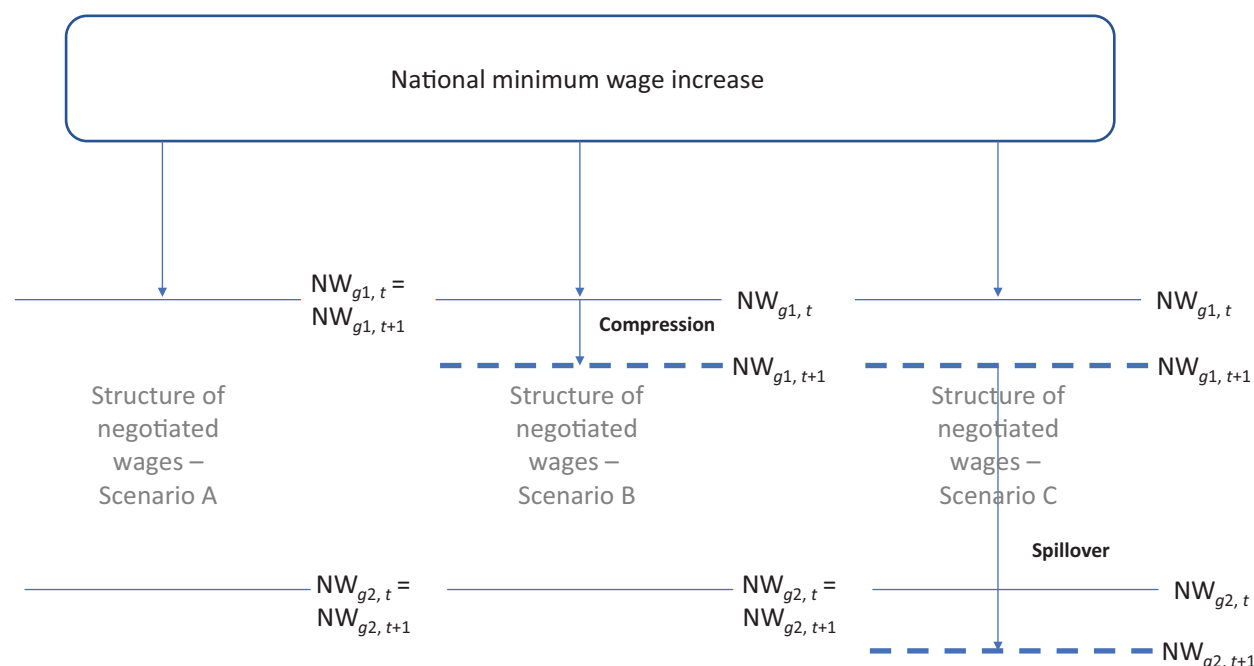
Organisational	Supply side	Demand side
Union density in the sector and organisational fragmentation	Labour shortages or unemployment	Average company size in the sector
Employer organisation density in the sector and organisational fragmentation	Skills level of the workforce	Productivity developments
Mobilisation capacity of trade unions		Exposure to international competition
Percentage of workplaces with union representation in the sector		

Source: Authors

Table 3: Distributional scenarios of the interaction between national minimum wages and collectively agreed wages

Scenario A (no effect)	Scenario B (wage compression)	Scenario C (spillover effect)
Low national minimum wage has limited or no effect on collectively agreed wages	Increase in national minimum wage pushes collectively agreed wages up but only for the lower-paid groups (ripple effect)	Increase in national minimum wage pushes collectively agreed wages up for all workers (second-order effect)

Source: Authors

Figure 2: Wage compression and spillover effect on collectively agreed wages

Note: NW, negotiated wage.

Source: Dingeldey et al. (2021)

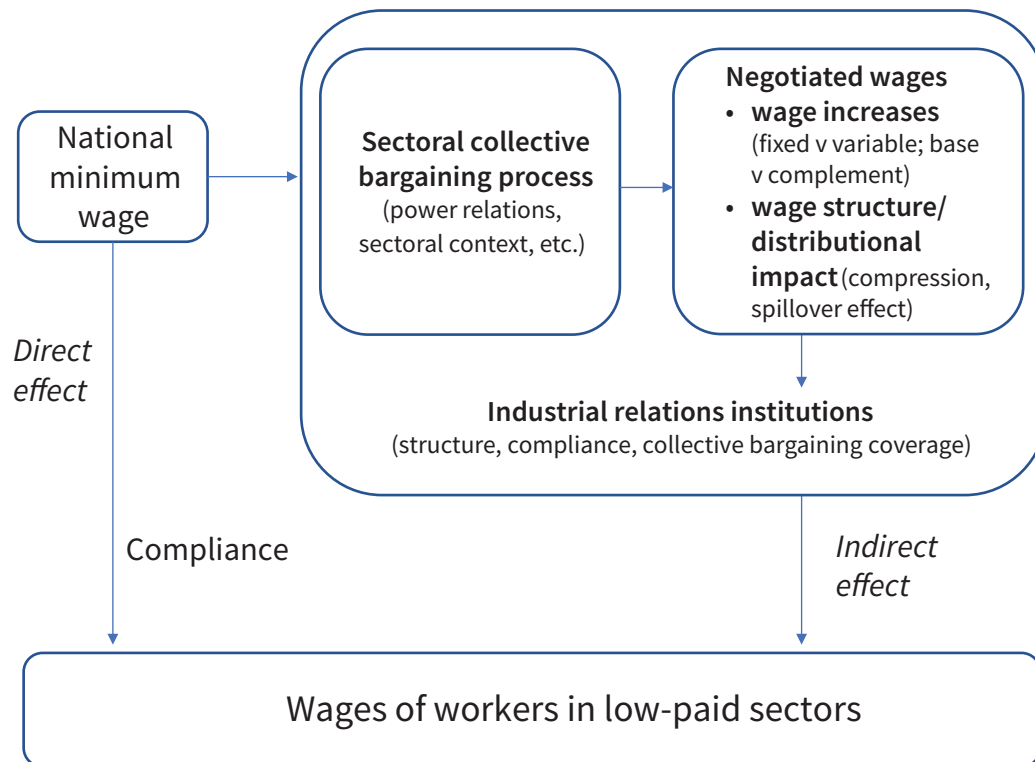
Pay structure

Another aspect often overlooked by analyses of the interaction between national minimum wages and collectively agreed wages is the structure of pay, meaning the various elements that form the overall payslip. Actual wages may combine several components, including variable and fixed parts. When wages are negotiated in collective agreements, not all components of wages increase to the same extent. In some cases, only base wages are affected by negotiated wage increases, leaving variable parts untouched or with lower increases. Moreover, in a few countries, sectoral collective agreements may include clauses

allowing company-level agreements to top up negotiated minimum wage increases with a company-specific bonus related to productivity, among other factors. Analysing the importance of fixed versus variable wage components, together with the capacity of the lower levels in collective bargaining to deviate from wages set at sectoral level, will help build a better understanding of the role of sectoral collectively agreed wages and their effect on low pay.

The distributional impact and pay structure affect the interaction between national minimum wages and collectively agreed wages in different forms and at different stages, as shown in Figure 3.

Figure 3: Interaction between national minimum wages and collectively agreed wages: dimensions of a conceptual framework



Source: Authors

Structure of the report

Following this introductory chapter, the findings of this report are presented in two parts.

- Part 1 presents the methodology and results of the quantitative and qualitative analyses exploring the impact of national minimum wages on collectively agreed minimum wages. The quantitative analysis (Chapter 1) draws on the Eurofound database on minimum wages for low-paid workers in collective agreements. The qualitative analysis (Chapter 2) is based on 39 semi-structured interviews conducted with experts, policymakers and social partners in six Member States (France, Germany, Portugal, Romania, Slovenia and Spain) and two low-paid sectors (residential and social care and manufacture of food and beverages).
- Part 2 summarises the results of analyses of the impact of national minimum wage increases on actual pay, obtained using three quantitative approaches based on EU-SILC data. Chapter 3 uses aggregate wage data, while Chapter 4 looks at the wages of individual workers and deploys a difference-in-differences approach. In Chapter 5, six quantitative case studies investigate the impact of minimum wage increases on the wage distribution, covering the same Member States analysed in Part 1 as part of the qualitative research.

The report concludes with a discussion of the key findings of the analysis.

Part 1:
**Impact of national minimum wages
on negotiated wages in the EU**

1 Impact of national minimum wages on negotiated wages: quantitative analysis

This chapter presents the methodology and results of the quantitative analysis of the effect of changes to national minimum wages on renegotiations of collective agreements and on the level of collectively agreed wages (research question 1). The analysis includes only Member States with national minimum wages and covers 2015–2022, unless otherwise noted. It is based on the Eurofound database on minimum wages for low-paid workers in collective agreements.

Methodology

For the analysis of the impact of the national minimum wage on collectively agreed wages, the report adopts the approach developed by Fougère et al. (2018) for France, adapting it to the specific needs of this analysis in terms of the institutional characteristics of the countries analysed and the information available. In brief, Fougère et al. (2018) suggest an empirical approach that considers a discretionary process of wage bargaining. As a collective agreement is not a continuous process but one updated at certain points in time, changes in collectively agreed wages should be evaluated based on the most recent date they were modified and any factors associated with this timing, such as inflation or changes in productivity. In this chapter, the report specifies and estimates an

econometric model that allows for the quantification of the effect of an increase in national minimum wages on collectively agreed wages, taking into account the role played by these additional factors. Box 1 summarises the main features of the methodology applied, while additional technical details are provided in Annex 1.

Direction of causality

There is an important assumption regarding the direction of causality between national minimum wages and collectively bargained wages under the econometric framework: that changes in bargained wages in the low-paid sectors included are not considered when setting the national minimum wage.

The assumption can be justified by the following arguments.

First, it can be assumed that wage rates in a specific collective agreement for low-wage sectors would have only a marginal contribution to the average of bargained wage rates in a specific economy. This minimal contribution could, perhaps, be considered when updating the national minimum wage.

Second, low-paid sectors tend to be covered less by collective bargaining agreements than other sectors, particularly in countries where collective bargaining coverage is already low.

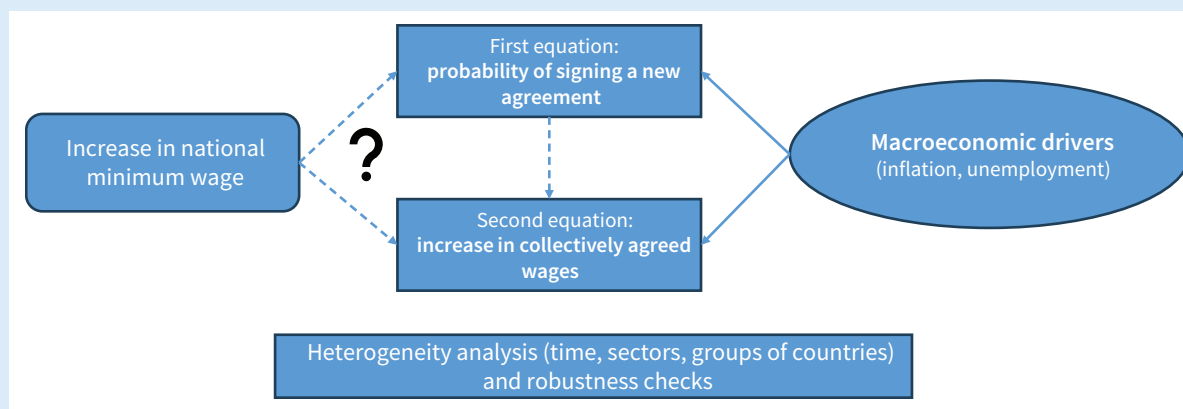
Box 1: Empirical strategy for calculating the effects of national minimum wages on collectively agreed wages

The analysis is implemented using two equations.

- The first equation focuses on the determinants of the probability of having a new agreement in each of the sectors and countries considered. The factors that affect this probability are cumulative inflation, the cumulative change in the national minimum wage in real terms, the length of time since the last signed agreement, the compliance (or non-compliance) of the negotiated basic wage floor in the agreement with the national minimum wage and other contextual factors, such as the unemployment rate.
- In the second equation, the nominal change in the collectively agreed lowest wages in the sectors and countries considered that has occurred since the last agreement is explained by inflation, the change in the national minimum wage in real terms and the unemployment rate. As the dependent variable is observed only when a new agreement is signed, it is important to correct for selection bias – that is, the non-random selection of the observations used in the second stage. For this reason, the second equation includes a measure of the likelihood that an agreement is signed, given certain characteristics, which is obtained in the first equation and known as the inverse of the Mills ratio.

The specification also includes various types of fixed effects (collective agreement, country and time) together with a time trend (Figure 4). See Annex 1 for more details.

Figure 4: Empirical strategy for calculating the effects of national minimum wages on collectively agreed wages



Source: Authors

Third, Eurofound's regular reporting on developments in national minimum wages (covering various years, but see Eurofound (2024a), in particular) shows that in most cases national wage-setters do not consider developments in negotiated wages in general or those in low-paid sectors in particular when setting the new rates. In a growing number of countries, however, wage-setters refer to actual average or median wages.

Germany and the Netherlands are the only Member States where past or projected developments in average collectively agreed wages are taken into account in making changes to the statutory minimum wage. Hence, as the assumption does not hold a priori for Germany and the Netherlands, robustness checks were carried out excluding these two countries from the analysis in order to test the validity of the results. As far as the proposed model controls for other observable and unobservable factors in the macroeconomic and labour market institutional context in each country, it also controls for the potential indirect link between bargained wages and national minimum wages. Moreover, controlling for the likelihood of signing an agreement in the second equation accounts for other potential factors that can lead to national minimum wage increases when bargained wages rise. Macroeconomic conditions may affect the probability of negotiating and eventually signing a new agreement, so controlling for this probability also mitigates the risk of simultaneity bias. As far as the study works with cumulated variations and

not levels, it can be expected that it also attenuates the potential problem of reverse causality.

Data sources and definitions of variables

The econometric analysis relies mainly on the information obtained from the Eurofound pilot project to develop an EU-wide database of minimum wage rates contained in collective agreements for low-paid workers (Eurofound, 2024b). The project gathered 692 series of collective agreement texts related to 24 low-paid sectors of interest and coded them to provide a time series of collectively agreed minimum rates from 2015 to 2022 in the Member States.

The analysis developed in this chapter focuses on those countries with national minimum wages during the period considered and for which the qualitative assessment of the representativeness of the sample of agreements in Eurofound's dataset was considered appropriate. The analysis includes the following set of countries ⁽³⁾: Belgium, Bulgaria, Croatia, Czechia, France, Germany, Greece, Hungary, Ireland, Luxembourg, the Netherlands, Portugal, Slovakia, Slovenia and Spain. After limiting the analysis to these countries, the dataset for the econometric analysis, before computing growth rates, included an unbalanced panel of 308 time series of the lowest pay rates contained in collective agreements and 25 042 valid monthly observations between January

⁽³⁾ Cyprus is not considered, as its statutory minimum wage was adopted in January 2023. Estonia, Poland and Romania are not included in the analysis, as data in the Eurofound database (2024b) are not considered representative of collective bargaining in the selected low-paid sectors in these countries. Malta is excluded because, in the absence of access to agreements, statutory occupational wage regulations rather than negotiated ones were included in the database.

2015 and December 2022 ⁽⁴⁾. The analysis focused on the lowest (full adult) basic pay rate found in each collective agreement.

All data are expressed in national currencies in order to avoid potential distortions due to exchange rate variations for those countries that are not members of the euro area. Rates for collective agreements in countries with more than 12 payments per year (Greece, Portugal, Slovenia and Spain) were converted by dividing the annual sum of the bargained wage floor by 12.

To compute the nominal change in the negotiated wage between two agreements, it is necessary to have precise information regarding the start and end dates of each agreement. It is then possible to build the operator $\Delta_{t-\tau_{ajc},t}$ which provides the difference in the variable of interest between the date of the last agreement, $t-\tau_{ajc}$ (where τ_{ajc} is the length of time since the last agreement a in industry j of country c) and date t . Furthermore, this information is necessary to construct some of the variables that affect the probability of a new agreement in the first equation ⁽⁵⁾. Specifically, the vector of dummy variables corresponds to the length of time

between two successive agreements. The start and end dates of each agreement are also available in the Eurofound database for all the countries analysed (2024a) ⁽⁶⁾.

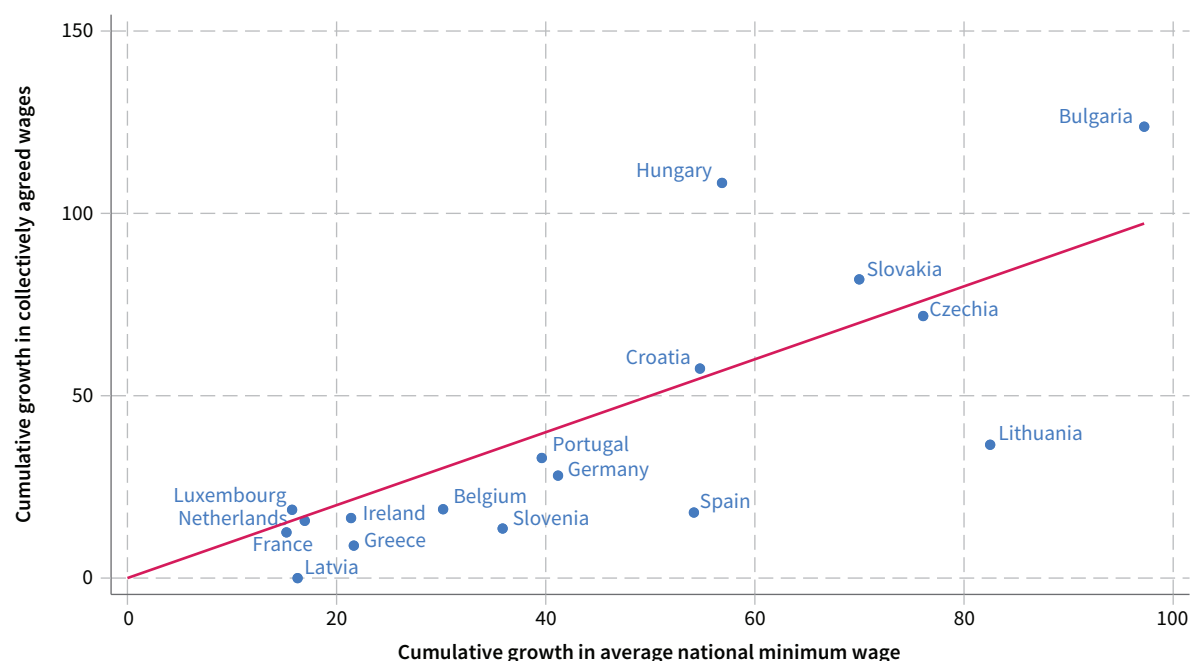
The calculation of the change in the national minimum wage (the treatment variable) was performed using data from the Eurofound data catalogue of monthly minimum wages for 2015–2022. Data from prior to 2015 were used when needed to calculate the potential change associated with that year.

Eurostat data on the monthly Harmonised Index of Consumer Prices and unemployment rates, both adjusted for seasonality, were used to construct the explanatory variables in the econometric models of cumulative inflation and unemployment rates ⁽⁷⁾.

Descriptive analysis

Before presenting and discussing the results of the econometric analysis, it is worth inspecting the developments in national minimum wages and bargained wages based on the dataset used in the analysis. Figure 5 shows the cumulative growth in

Figure 5: Association between cumulative growth in national minimum wages and collectively agreed wages, Member States, January 2015–December 2022 (% change)



Source: Authors, based on the Eurofound data catalogue of monthly minimum wages and the Eurofound database on minimum wages for low-paid workers in collective agreements

⁽⁴⁾ It is also worth noting that in Latvia and Lithuania there is only a single time series of collective agreements for each country with all the required information available. As all the specifications include collective agreement series fixed effects, the econometric results are based on information for only 15 countries and not 17. The same applies to a few series of collective agreements that were not revised during the period considered.

⁽⁵⁾ In addition, in the work of Fougère et al. (2018), the econometric estimates of the effect of a national variable, such as the statutory minimum wage in France, required some cross-section variation in such variables in order to provide panel estimates. Considering the individual growth period of the national minimum wage in every industry provided such variation. In the current study, the variation partly arises from national differences.

⁽⁶⁾ A detailed analysis of the duration of agreements in the sample was performed in order to check the consistency of the information. There is a high concentration of agreements around durations of 12, 24 and 36 months, which seems to confirm the qualitative information obtained from other data sources, such as the OECD and Amsterdam Institute for Advanced Labour Studies dataset on institutional characteristics of trade unions, wage setting, state intervention and social pacts (AIAS ICTWSS), at the national level. A specific comparison between this report's dataset and the one used by Fougère et al. (2018) for France was also performed, and the distribution of agreements according to their duration was very similar. To the best of our knowledge, there is no dataset that would enable the comparison to take into account the sectoral dimension.

⁽⁷⁾ This study uses monthly data. There is no dataset providing country- and sector-specific unemployment rates; for that reason, the analysis uses national rates.

national minimum wages compared with the cumulative growth in the lowest bargained wages in low-paid sectors between 2015 and 2022 in the countries considered.

As can be seen, there is a clear positive linear association (indicated by the red line) between cumulative growth in national minimum wages and bargained wages between 2015 and 2022. The coefficient of correlation is 0.80. There are, however, some exceptions, such as Lithuania and Spain, where cumulative growth in national minimum wages is substantially higher than cumulative growth in negotiated wages in low-paid sectors. Meanwhile, in Hungary and, to a lesser extent, Bulgaria cumulative growth in negotiated wages in low-paid sectors is substantially higher than cumulative growth in national

minimum wages. As a result, the dispersion of the points in relation to the regression line suggests that the intensity of the raw relationship between both wages is not very strong, as many other factors can moderate this association, like the inflation rate or the unemployment rate, as previously mentioned. The next section assesses the strength of the association when controlling for these other factors when estimating the coefficients of the empirical model outlined above.

Baseline results and robustness check

Table 4 shows the detailed results of estimating the first and second equations of the econometric model with all available information.

Table 4: Estimated impact of national minimum wages on collectively agreed minimum wages: baseline model, full sample, 2015–2022

	First equation (probability of a new collective agreement)	Second equation (cumulative variation in negotiated wages)
Cumulative inflation growth	0.00343 (0.00924)	0.703*** (0.0415)
Cumulative variation in national minimum wages	0.0123** (0.00494)	0.224*** (0.0184)
Unemployment rate	– 0.0156 (0.0202)	– 0.196*** (0.0516)
Duration of between 12 and 24 months	1.140*** (0.0645)	
Duration of more than 24 months	1.940*** (0.103)	
Non-compliance with national minimum wages	– 1.241*** (0.0966)	
Inverse of the Mills ratio		0*** (0)
Sector/country collective agreement fixed effect	Yes	Yes
Country fixed effect	Yes	Yes
Month fixed effect	Yes	No
Time trend	Yes	No
Time fixed effect	No	Yes
Observations	18 490	18 490
R ²		0.471

Notes: The table covers all countries with a national minimum wage considered. The second column shows the estimated coefficients (and the robust standard errors in parentheses) of a probit model corresponding to the agreement equation with the probability of signing a new agreement as the dependent variable. The third column shows the estimated coefficients (and the robust standard errors in parentheses) of the wage floor equation with negotiated wages as the dependent variable. *** p < 0.01, ** p < 0.05, * p < 0.1.

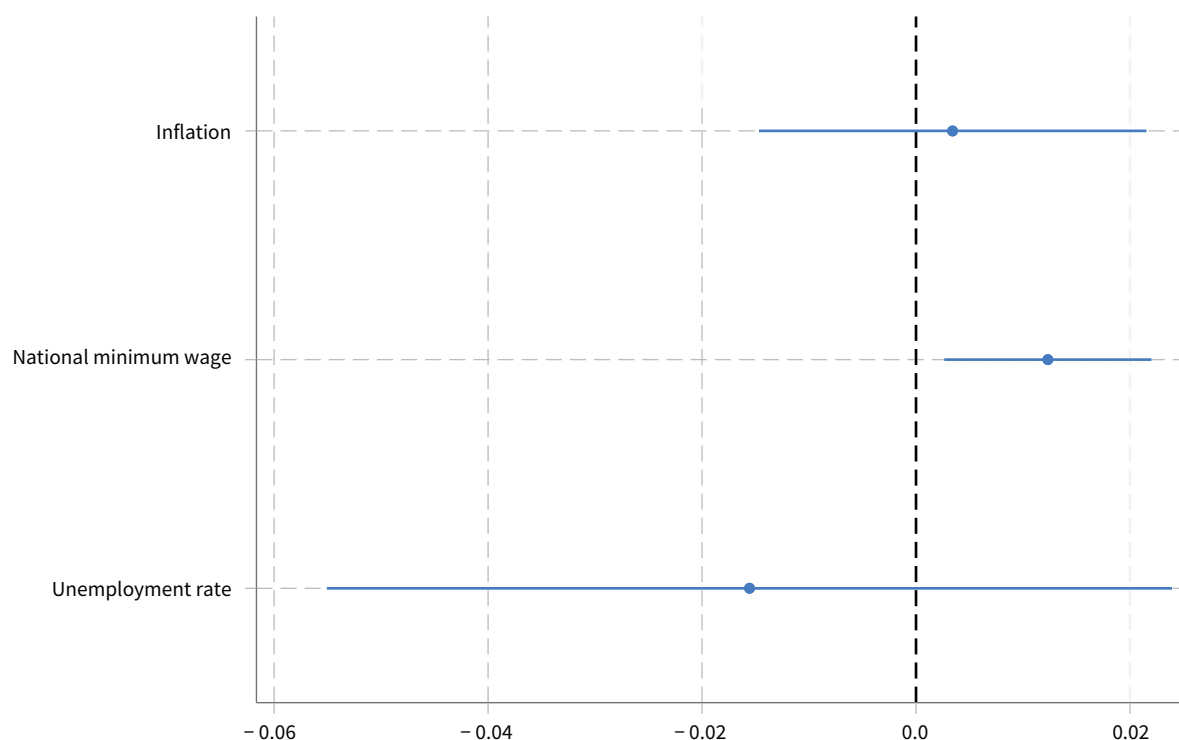
Source: Authors

First equation estimates: probability of a new collective agreement

Which factors affect the probability of a collective agreement being signed? Figure 6 provides a visual summary of the results of the first equation (shown in Table 4). It presents both the point estimates of the coefficients (how a change in an independent variable affects the dependent one) and a measure of uncertainty (a confidence interval). The cumulative variation in national minimum wages since the last agreement increases the probability of a new agreement. However, cumulative inflation and the unemployment rate do not seem to influence this probability, as they are not statistically significantly different from zero. Length-of-time effects (not shown in the figure) are statistically significant, as the probability of signing a wage agreement between one and two years after the previous one or after more than two years are higher than that of having a new agreement in place within 12 months.

While these results are similar to the ones obtained by Fougère et al. (2018) for France, the dummy variable capturing the non-compliance of collectively agreed wage floors with the national minimum wage has a negative effect on the probability of a new agreement, which is exactly the opposite of the effect found by Fougère et al. and is as would have been expected. This difference could be related to the fact that this analysis considers low-paid sectors where workers have less bargaining power than in the whole economy, but the results may also be driven by some countries whose lowest pay rates in collective agreements were not revised for a long time, particularly Slovenia. France's situation is also quite different from those of other countries considered, but in the other direction. In France, changes to national minimum wages are nearly automatically translated into changes in collectively bargained wages. For that reason, the robustness of the results when excluding information from France and Slovenia was established, with no significant difference being found. The results of that analysis are shown in Table A1 in Annex 1. Box 2 outlines an additional consideration.

Figure 6: Effects on the probability of signing a new agreement: estimated coefficients



Notes: The blue dots represent the point estimates of the effect of inflation, the national minimum wage and the unemployment rate on the probability of signing a new collective agreement, while the blue lines represent the confidence intervals. If the confidence line does not cross the zero line, an estimate is statistically significantly different from zero with a 95 % confidence level. Estimates are from a probit model corresponding to the agreement equation with length-of-time and non-compliance dummies, different types of fixed effects (collective agreement, country and month) and a time trend. The sample is composed of all countries with national minimum wages for 2015–2022. Confidence intervals (95 %) were computed using robust standard errors.

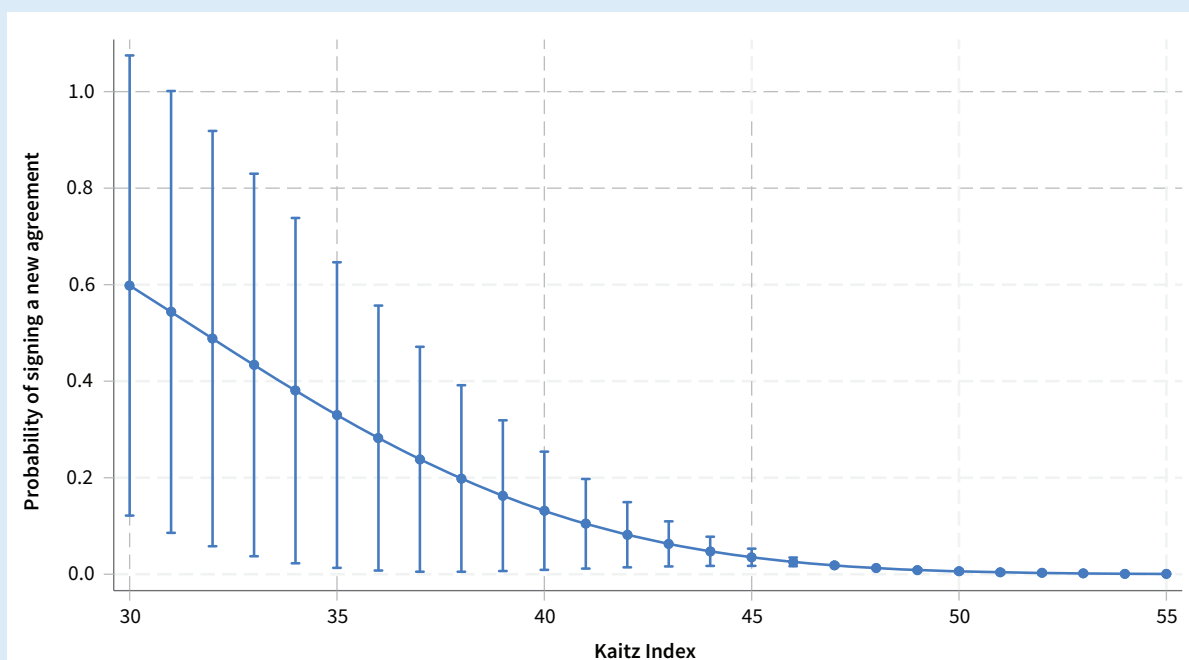
Source: Authors

Box 2: National minimum wage increases and the probability of signing new agreements

One additional aspect that can be explored in this part of the econometric analysis is whether when the national minimum wage increases a lot or starts to play a dominant role in setting wages, it affects the probability of signing a new agreement. To test this hypothesis, the Kaitz Index (the ratio between the minimum wage and the average wage for each country and year) is included as an additional variable in the model for the probability of signing a new agreement. In particular, the Kaitz Index has been added as a quadratic term to check for potential non-linearities.

The marginal effects obtained after probit are shown in Figure 7. The horizontal axis represents potential values of the Kaitz Index, while the vertical one shows the value of the probability of signing a new agreement. The dots represent the expected values of this probability depending on the observed values of the Kaitz Index, while the capped lines represent the uncertainty around these estimates. The results suggest that signing new agreements is less frequent in countries with higher national minimum wages compared with average wages than in countries with lower comparative values.

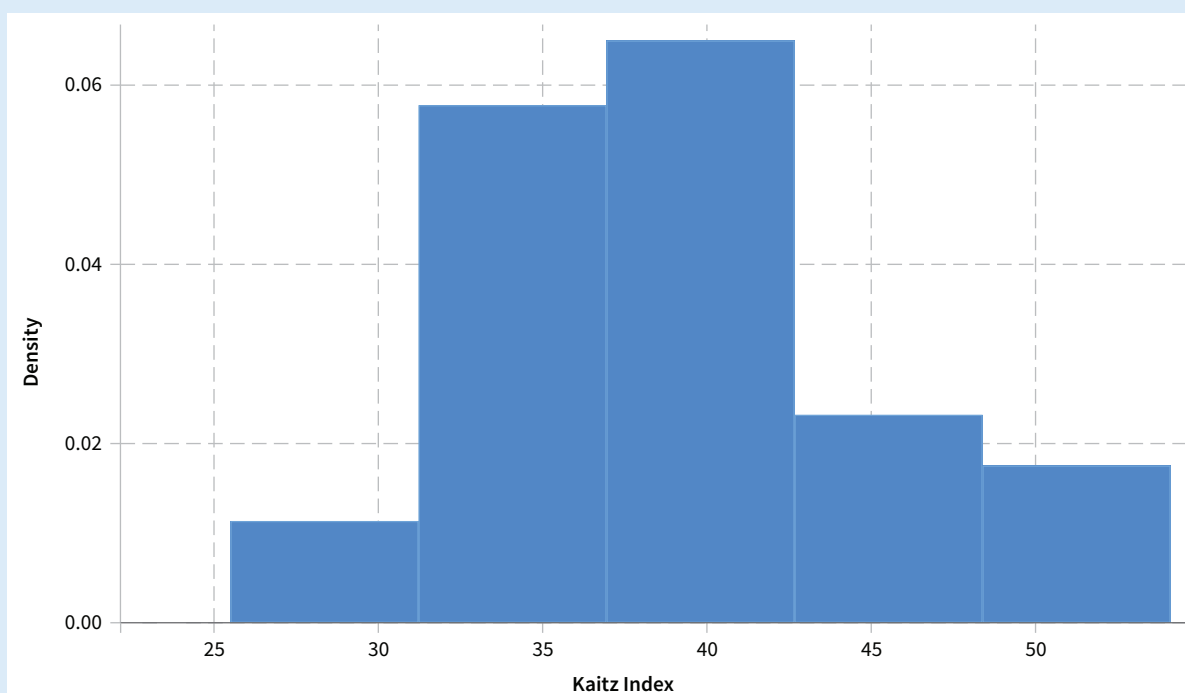
Figure 7: Changes to the probability of signing a new agreement in relation to variations in the Kaitz Index (marginal effects after probit)



Note: The Kaitz Index refers to national minimum wages as a percentage of average wages.

Source: Authors

For the countries analysed during the period considered, the median value of the Kaitz Index is 39 and the third quartile is 43. The histogram in Figure 8 shows the distribution of the Kaitz Index between its minimum and maximum values (25 and 54, respectively).

Figure 8: Distribution of Kaitz Index values for the countries analysed during the period considered

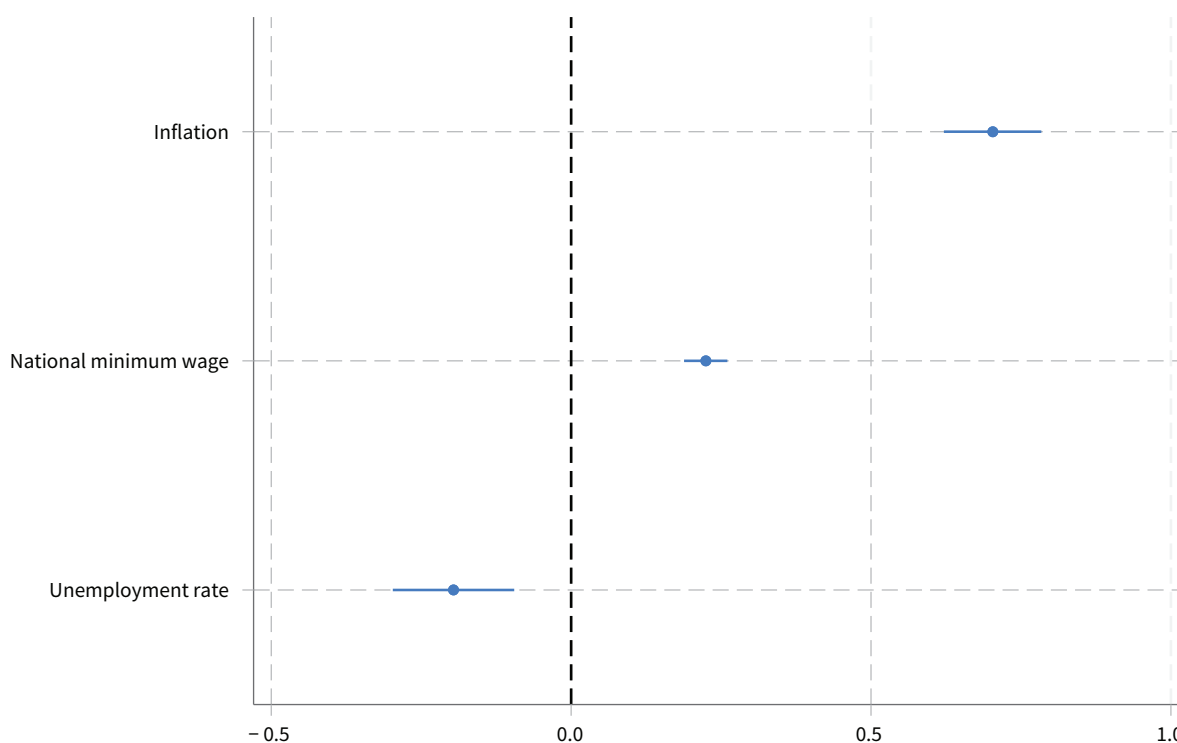
Source: Authors

Second equation estimates: variation in negotiated wages

Turning to the results of the second equation of the econometric analysis (Table 4 and Figure 9), the main determinant of the size of nominal negotiated wage floor adjustments is the cumulative inflation rate since the last agreement, with an elasticity close to 0.7. Once this impact of inflation has been considered, the cumulative variation in national minimum wages in real terms also has a positive and significant effect on the size of negotiated wage floor adjustments, with an elasticity of 0.22. The unemployment rate has a significant but negative effect on the size of wage adjustments, providing clear evidence that negative cyclical conditions limit growth in bargained wages. As before, the results are also very close to the ones obtained by Fougère et al. (2018) for France. It is also worth mentioning that the inverse of the Mills ratio has a significant effect, although rather small, showing the strong time dependence of wage floor adjustments. The effect is positive, indicating that the unobserved factors that increase the likelihood of signing a new agreement are also associated with higher increases in collectively agreed wages.

Robustness check: direction of causality

As previously mentioned, the econometric specification assumes that the direction of causality runs from national minimum wages to collectively bargained wages. However, in Germany, national minimum wages are explicitly updated by looking at past developments in negotiated wages. Meanwhile, in the Netherlands, projected developments in negotiated wages are considered when updating the national minimum wage. For this reason, the robustness of the results when excluding these two countries was established. The results are shown in Table A2 in Annex 1. No significant differences were observed.

Figure 9: Effects of increases in the variables considered on negotiated wages: estimated coefficients

Notes: The blue dots represent the point estimates of the effect of inflation, the national minimum wage and the unemployment rate on collectively agreed wages, while the blue lines represent the confidence intervals. If the confidence line does not cross the zero line, an estimate is statistically significantly different from zero with a 95 % confidence level. Estimates are from a regression model corresponding to the wage floor equation with the inverse of the Mills ratio and different types of fixed effects (collective agreement, country and time). The sample is composed of all countries with national minimum wages for 2015–2022. Confidence intervals (95 %) were computed using robust standard errors.

Source: Authors

Heterogeneity analysis

Are there any differences in the results according to different dimensions, such as subperiods, sectors or the type of interaction regime in a country, as per the conceptual framework? This question is investigated by repeating the estimates within different subsamples and by introducing interaction effects.

Variation by subperiod

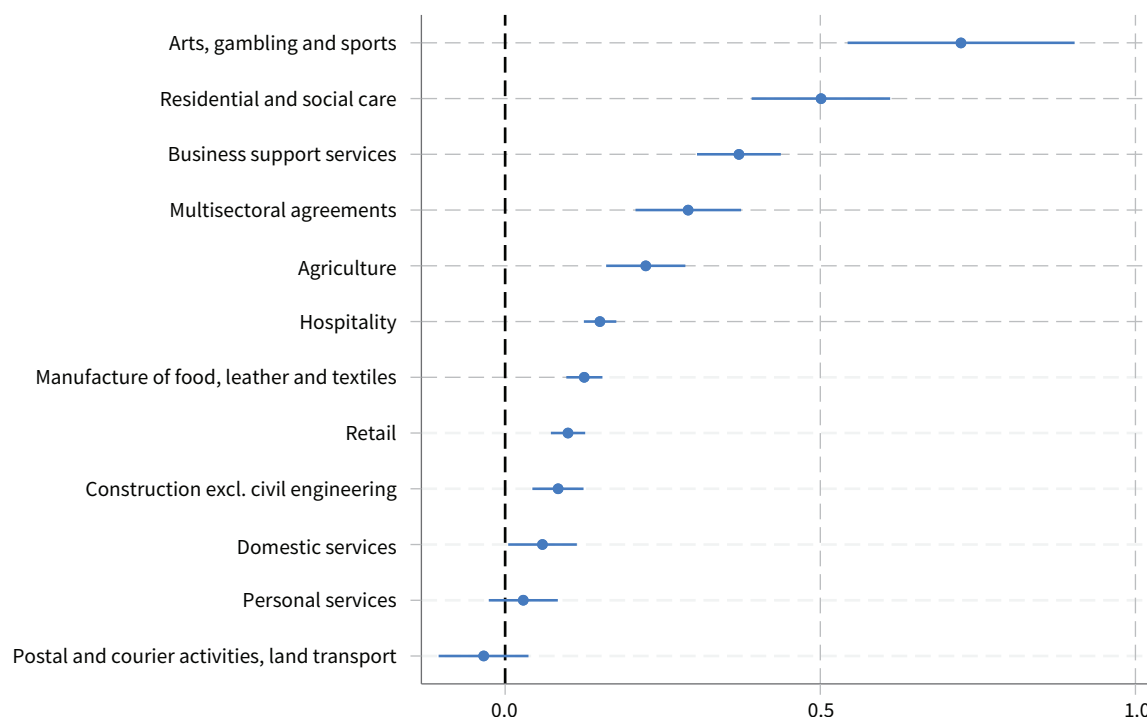
Data quality was lower for the initial years in the dataset created for Eurofound's pilot study (2024b) than for more recent years. Moreover, the COVID-19 pandemic together with the Russian war against Ukraine could have changed the inflation–wage dynamics during the most recent years. For these reasons, separate estimates were calculated for the subperiods 2015–2019 and 2020–2022 (see Table A3 in Annex 1). The comparison of the results makes it clear that the estimates for the whole period seem to be driven by the more robust values obtained when using more recent data.

Variation by sector

The results of exploring potential sectoral heterogeneity in the relations considered are reported in Table A4 in Annex 1. By introducing an interaction between cumulative growth in national minimum wages and sectoral dummies into the two equations, the extent of any differences in the impact of the cumulative growth in the national minimum wage on the probability of signing a new agreement and on collectively agreed wages can be explored. The first equation shows that in agriculture, business support services, construction excluding civil engineering, and retail there is a high probability of signing a new agreement after an increase in the national minimum wage, all other factors remaining the same. The second equation, however, indicates a more generalised influence of national minimum wage variations on collectively agreed wages, as only for the personal services and the postal and courier activities sectors is there no statistical evidence of an association between the two variables.

The value of the estimated coefficient varies substantially across sectors, as shown in Figure 10. Negotiated wages in the arts, gambling and sports, residential and social care, business support services, and agriculture sectors as well as in multisectoral agreements are more responsive to increases in

Figure 10: Sectoral impacts of national minimum wage increases on collectively agreed wages: estimated coefficients



Notes: The blue dots represent the point estimates of the effect of national minimum wage increases on collectively agreed wages for different sectors, while the blue lines represent the confidence intervals. If the confidence line does not cross the zero line, an estimate is statistically significantly different from zero with a 95 % confidence level. Estimates are from a regression model corresponding to the wage floor equation with the inverse of the Mills ratio and different types of fixed effects (collective agreement, country and time). The sample is composed of all countries with statutory minimum wages for 2015–2022. Confidence intervals (95 %) were computed using robust standard errors.

Source: Authors

national minimum wages, while they are significantly less responsive in manufacture of food, leather and textiles; hospitality; domestic services; and construction excluding civil engineering. Although the sample sizes for some sectors are relatively small and concentrated in a few countries, the results are very interesting in terms of achieving a better understanding of the links between national minimum wages and negotiated wages. However, the econometric analysis performed here cannot provide any explanations of the mechanisms behind these sectoral differences. This issue is addressed in the qualitative analysis of two sectors in Chapter 2.

Variation by type of interaction

It may also be the case that the interaction between collective bargaining regimes and the minimum wage affects the relationship considered. A typology for such interaction was described in the introduction, in the section ‘Typology of interaction’. To analyse this possible variation, the report relies on the typology developed by Dingeldey et al. (2021), which is adapted

for econometric/technical reasons to distinguish only three main models.

- **The isolated model** groups the countries where there is weak collective bargaining, often at company level and covering only a small number of companies and workers, while most or a high proportion of workers are covered by just the national minimum wage. The interaction is limited to some sectors. Countries grouped under this model are Bulgaria, Croatia, Czechia, Estonia, Greece, Hungary, Ireland, Latvia, Lithuania, Malta, Poland, Romania and Slovakia.
- **The distant interaction or coexistence model** includes the countries where either the national minimum wage is used as a point of reference to set sector-specific wage levels at a certain distance above it (distant interaction) or where collective agreements set wages well above the national minimum wage, and collectively agreed wages are not directly affected by national minimum wage dynamics (distant coexistence). Countries included under this model are Belgium, Germany, Luxembourg and the Netherlands.

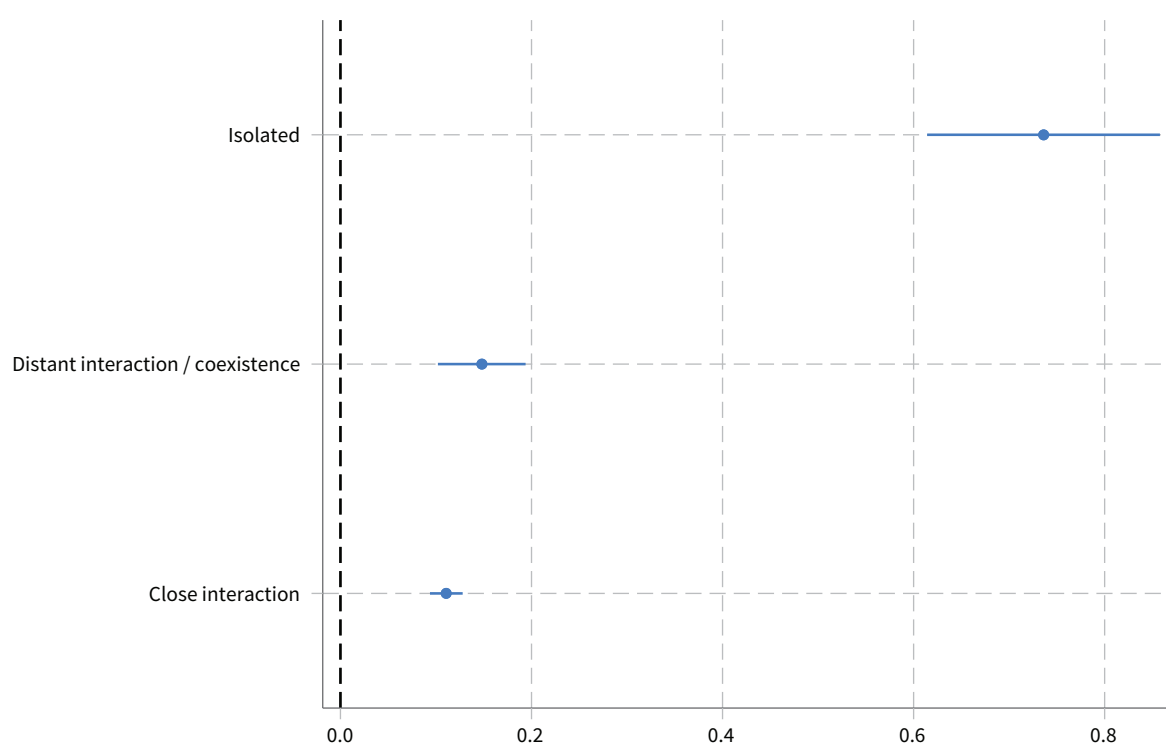
- **The close interaction model** covers countries where the distance between a relatively high national minimum wage and the lowest wage brackets in most sectors is small and there is a tradition of state intervention. Countries included under this model are France, Portugal, Slovenia and Spain ⁽⁸⁾.

Figure 11 and Table A5 in Annex 1 show the results of estimating the effect of cumulative variations in national minimum wages on bargained wages, allowing for differences between three groups of countries with different categories of interaction between national minimum wages and collectively agreed wages.

In the isolated model group, the national minimum wage is the main policy instrument used to influence wages, while in the distant interaction / coexistence

group there are different types of interaction, which vary in intensity depending on the sector considered. As can be seen clearly in Figure 11 and Table A5 in Annex 1, the impact of national minimum wage variations on collectively agreed wages is much more intense in the first group of countries – those with an isolated minimum wage – than in the second or third group of countries. However, there is a positive and statistically significant effect on bargained wages in all groups. This result may seem counterintuitive, since a weaker link would be expected in the isolated model than in the other two. However, this is explained by a composition effect, as the analysis uses negotiated wages. Since collective bargaining coverage is very low, the few sectoral collective agreements in these countries often refer to the minimum wage to set wage increases.

Figure 11: Impacts of national minimum wage increases on collectively agreed wages, by country groups based on interaction model: estimated coefficients



Notes: The blue dots represent the point estimates of the effect of national minimum wage increases on collectively agreed wages by group of countries depending on the interaction between the national minimum wage and the collective bargaining regime, while the blue lines represent the confidence intervals. If the confidence line does not cross the zero line, an estimate is statistically significantly different from zero with a 95 % confidence level. Estimates are from a regression model corresponding to the wage floor equation with the inverse of the Mills ratio and different types of fixed effects (collective agreement, country and time). The sample is composed of all countries with statutory minimum wages for 2015–2022. Confidence intervals (95 %) were computed using robust standard errors.

Source: Authors

⁽⁸⁾ Portugal and Spain have been classified as closer to the distant interaction or coexistence model in the past. However, recent upward trends in national minimum wages in Portugal and Spain make it reasonable to include them under the close interaction model.

2 Impact of national minimum wages on collective bargaining: qualitative analysis

The main objective of the qualitative analysis is to gather information on the mechanisms mediating the impact of national minimum wages on collectively agreed wages. These mechanisms cannot be captured in a straightforward way by quantitative analysis. The characteristics of collective bargaining institutions, including the structure of collective bargaining and its coverage levels, are likely to mediate the impact of national minimum wages on negotiated wages. For instance, in principle, national minimum wage increases will have a bigger impact on average wages and the wage distribution when collective bargaining is more centralised and coverage rates are higher. An in-depth country and sectoral analysis aims to shed light on the processes whereby the social partners negotiate wages in the context of increases in national minimum wages, thus opening the black box of collective bargaining and its interaction with changes in minimum wages.

Methodology

Case selection and comparative approach

The selection of country and sectoral case studies for qualitative analysis was made using various criteria and dimensions. These include the institutional dimensions that provide the framework for negotiating wages: the characteristics of national minimum wages, collective bargaining structures (degree of centralisation at the national level), and coverage levels and extensions of multi-employer collective bargaining.

Other dimensions are related to those contexts favourable to analysing the impact that the minimum wage has on collectively agreed wages for low-paid workers. These include the following contexts:

- where a national minimum wage has been introduced recently;
- where there has been a substantial increase in the national minimum wage;
- where there are large groups of low-paid workers in the economy, often associated with high levels of wage disparities.

Finally, a third group refers to variables that may affect the bargaining process:

- the power resources of the social partners and their strategic positions;

- the norms guiding the bargaining process or the characteristics of the sector, like the unemployment rate, the average skills level of the workforce and labour shortages.

Two analytical dimensions – national and sectoral – are combined in the qualitative case studies:

- the national dimension aids understanding of the role of industrial relations institutions in the interaction between national minimum wages and collectively agreed wages;
- the sectoral dimension helps detect sectoral patterns across countries related to the specific characteristics of the sector that operate in a similar way across institutional contexts.

National dimension

The analysis uses a flexible paired comparative strategy that combines insights from within-cluster comparisons with an individual analysis of countries belonging to different clusters (continental, eastern European and Mediterranean). This strategy enhances the analytical leverage of the qualitative case studies in conjunction with the quantitative analysis carried out in Chapter 1. Paired comparisons between countries belonging to similar socioeconomic models, but with different industrial relations institutions and to which different models of interaction between national minimum wages and collectively agreed wages apply, can provide additional insights on the role of industrial relations institutions in explaining the impact of national minimum wages on collectively agreed wages in low-paid sectors.

More specifically, the most-similar paired comparative approach helps build an understanding of those variables mediating the impact of national minimum wages and collective bargaining. By selecting countries where national minimum wages have suddenly or significantly increased (Romania, Slovenia and Spain), have reached relatively high values in relation to median or average wages (France and Portugal) or were introduced in period t (Germany), the comparative study of changes in collective bargaining within countries and sectors in $t + 1$ will reveal those factors mediating the impact on collective bargaining.

Using this approach, the methodology focused on the following set of paired comparisons for the qualitative analysis:

- paired comparison 1 – Portugal and Spain,
- paired comparison 2 – France and Germany,
- paired comparison 3 – Romania and Slovenia.

At the same time, the comparative analysis of individual countries belonging to different industrial relations models (Eurofound, 2023a) also sheds some light on the role of institutions in shaping interaction between national minimum and collectively agreed wages.

Sectoral dimension

The national paired case comparison is combined with a sectoral one. In each of the countries selected for in-depth qualitative analysis, two sectors are explored. Comparing the same two sectors across the six countries provides additional analytical insights. This comparison has two dimensions.

- **Within-sector comparison.** Comparing the same sectors across the six countries in the in-depth qualitative analysis provides insights on the role of national institutions in explaining differences.
- **Between-sector comparison.** Comparing the two sectors within countries (but also across them) will help detect sectoral patterns not directly attributable to industrial relations institutions.

The low-paid sectors included in the comparison were selected to maximise the analytical value of the comparative analysis. The following two conceptual criteria, which are connected to the research questions and the analytical approach presented in the introduction, were used to decide which sectors to include.

- **Low-wage sector.** The aim was to select two sectors where the negotiated minimums are already close to the national minimum wage and where there are comparatively large shares and numbers of low-paid workers.

- **Power resources of trade unions engaged in negotiating processes.** In accordance with the conceptual approach described in the introduction, the aim was to choose sectors where there are variations in the power resources that trade unions can mobilise when negotiating collective agreements. In particular, the intention was to maximise the variance in terms of two main sources of power resources recognised in the literature (Refslund and Arnholtz, 2022):
 - **structural power**, which includes resource factors derived from the workers' position in the production system (such as labour shortages and skills composition);
 - **associational power**, which includes resource factors associated with the formation of collective worker organisations (such as trade union density).

Combining these two criteria, the following two sectors were selected for the analysis:

- manufacture of food and beverages,
- residential and social care.

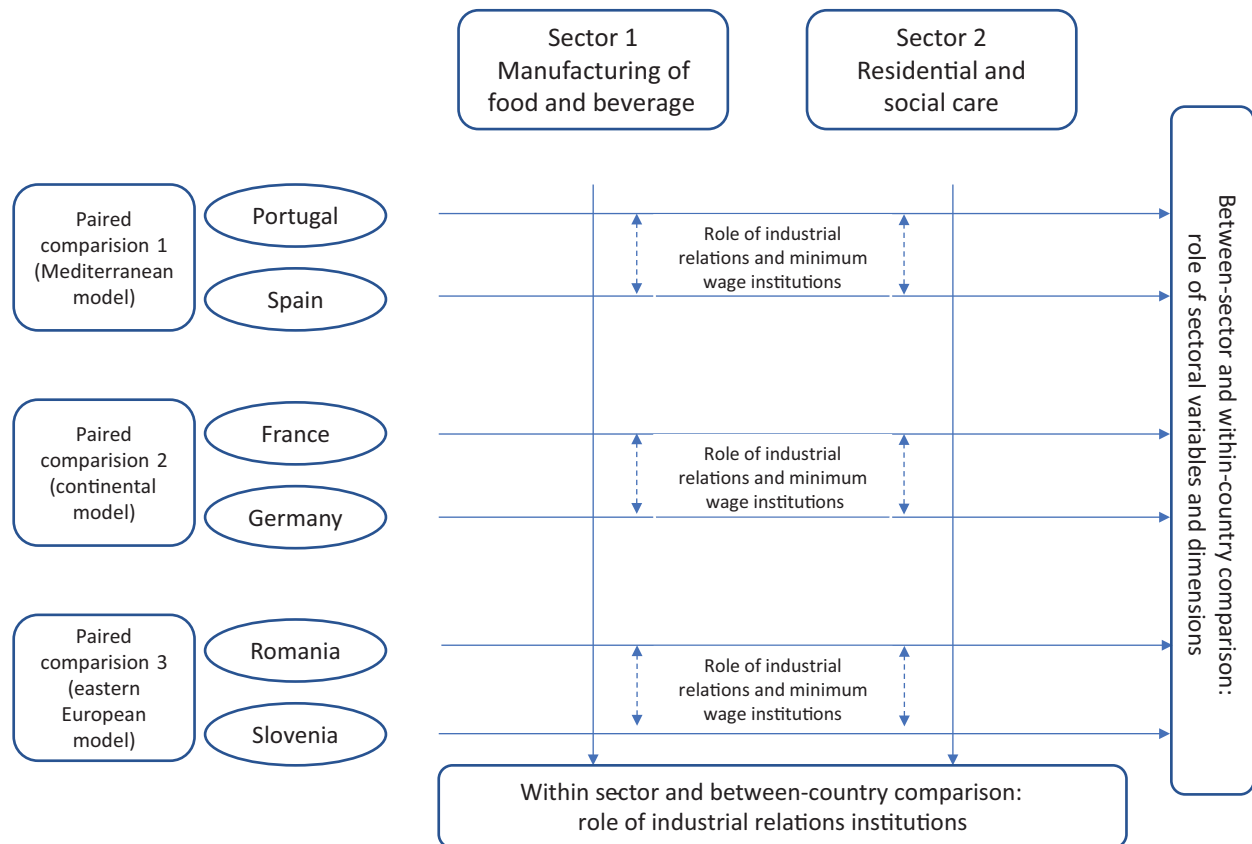
Both sectors provide interesting variability in terms of structural and associational power resources. In the manufacturing sector (including food and beverages), unions have higher membership levels in most countries and hence more associational power resources to achieve their objectives. Moreover, the sector's workers tend to be skilled and have a higher level of structural power.

The residential and social care sector has comparatively lower density rates, particularly in the private sector. In this context, trade unions' capacity to mobilise workers for industrial action has been difficult traditionally, despite some conflicts related to pay and collective bargaining identified in recent years in some countries studied, such as France and Spain ⁽⁹⁾ (Pavlovaite and Sanz de Miguel, 2021). Most Member States have a robust collective bargaining structure in the sector (Eurofound, 2022a). At the same time, unions are facing new challenges linked to the emergence of new private operators, particularly in the subsector for elderly care, where there has been an increase in private investment fostered by demographic ageing trends (Pavlovaite and Sanz de Miguel, 2021).

Figure 12 shows the comparative logic followed, combining the national and sectoral dimensions.

⁽⁹⁾ In France, eight trade unions called for national strike action on 30 January of 2018 in the residential care sector, calling for better pay and career prospects. In Spain, trade unions called for national demonstrations in November 2019 and October 2020. The 2019 demonstration was organised to put pressure on the employer organisation to renew and improve the national sectoral collective agreement. The 2020 demonstration aimed to lobby the government to improve public funding and the remuneration and working conditions of health and social care workers.

Figure 12: Comparative approach to qualitative case study analysis of interaction between national minimum wages and collectively agreed wages in low-paid sectors



Source: Authors

Implementation and analysis of in-depth case studies

The methodology used to implement in-depth case studies and analyse the interaction between national minimum wages and collective bargaining combines different approaches.

First, the research team's country experts conducted semi-structured interviews with three types of interviewee: sectoral social partners, government officials and experts in industrial relations. The interviews conducted involved a half-standardised interview and followed an interview guide that provides general guidelines on the topics to be covered (see Annex 2). A total of 39 semi-structured interviews were conducted (see Table A6 in Annex 2 for the full list of interviews) between April and July 2024.

Second, the country experts analysed the interviews and produced country and sectoral reports following a common template (see Annex 2). The reports also included their desk research findings.

Comparative national-level analysis

This section focuses on the comparative country-level analysis. It provides a contextual description of the minimum wage systems, describes how collective bargaining relates to national minimum wages and then summarises the findings on the impacts of national minimum wage setting on collective wage bargaining.

Minimum wage systems: context and developments

Minimum wage systems comprise the actors and mechanisms through which national minimum wages are set. These systems exhibit remarkable variation across countries along several dimensions, including the variables and indicators considered and the weight attached to them, the use of formulas to update minimum wages, and the actors involved in setting wages and their type of involvement (Eurofound, 2024a). The six Member States included in this analysis exhibit different mechanisms and approaches to national minimum wage setting (Table 5).

Table 5: Summary of national minimum wage systems of the six Member States analysed

Member State	Approach to minimum wage setting	Role of social partners	Bodies involved
France	Formula-based approach	Consulted by expert group and government	Consultation bodies and expert committee
Germany	Hybrid approach	Participate through the Minimum Wage Commission	Minimum Wage Commission
Portugal	Loosely defined criteria	Participate through tripartite institution	General tripartite consultation bodies (Social Concertation Standing Committee)
Romania	No explicit criteria	Participate through tripartite institution	General tripartite consultation bodies (National Tripartite Council)
Slovenia	Formula-based approach	Participate through tripartite institution	General tripartite consultation bodies (Economic and Social Council)
Spain	Loosely defined criteria	Not institutionalised	No permanent bodies or committees

Source: Authors, based on Eurofound (2024a) and experts' reports

Approaches to updating national minimum wages

The first relevant dimension for the analysis of national minimum wage systems is the approach used to update wage levels. According to Eurofound (2024a), several approaches were used to set the national minimum wage rates for 2024. The six countries analysed here use three main approaches. France and Slovenia follow a largely formula-based, automatic approach whereby the rates for the minimum wage are calculated using a standardised formula. In Slovenia, unions have criticised the low frequency of calculating minimum living expenses, the key variable for updating the national minimum wage. Despite year-to-year adjustments to match inflation and guarantee the maintenance of purchasing power, the six-year time frame means that the 120–140 % goal for minimum living costs is not reached in some years. In France, the annual updates made to the national minimum wage (*salaire minimum de croissance*, (SMIC)) are based on a legal formula taking into account the change in the national Consumer Price Index and the increase in the purchasing power of average hourly wages. In addition to the regular annual updates, there is another automatic indexation adjustment procedure when the Consumer Price Index reaches a level corresponding to an increase of at least 2 % compared with the index value when the preceding SMIC was set.

Romania, Portugal and Spain lack explicitly defined criteria or have loosely defined criteria. In Romania, no explicit criteria are used to update national minimum wage rates. Meanwhile, in Portugal and Spain, the Labour Codes note that governments may consider aspects like inflation or productivity but do not establish the weight attached to them or any specific formula for calculating the annual updates made to the national minimum wage.

Finally, the approach in Germany is labelled 'hybrid', as the Minimum Wage Commission makes a recommendation based on the change in collectively

agreed wages and consideration of the overall context in relation to price developments and employment effects.

Role of collective bargaining for national minimum wage setting

An important aspect that has received limited scholarly attention so far is the role of collective bargaining in minimum wage setting. The analysis of the interaction between national minimum wages and collective bargaining has focused on the impact of national minimum wages on negotiated wages. However, this interaction could run both ways and, to make an accurate assessment of this relationship, it is necessary to consider the reverse interaction – that is, whether and how collective bargaining developments also affect decisions on the levels of and updates to national minimum wages. Moreover, understanding this type of interaction is important for policymaking, especially in inflationary contexts, since it can provide those involved in setting national minimum wages with additional tools to help maintain the purchasing power of low-wage groups in relation to average negotiated wages.

There are various mechanisms and intensities when it comes to the role of collective bargaining developments in national minimum wage setting in the six countries analysed (see Table 6). Two types can be distinguished regarding the influence of collective bargaining on minimum wage setting. First, collective bargaining plays an explicit role when the change in collectively agreed wages is a variable considered when setting the national minimum wage. This reverse interaction is most explicit and intense in Germany. The Minimum Wage Commission uses the negotiated wage index as the main criterion when determining the minimum wage level, in addition to considerations related to the effects on competition, employment and employee protection. In France, collective bargaining plays a tacit role in the process of setting the minimum wage, as the

formula used includes half of the annual growth in wages, which, of course, can be affected by negotiated wages. Moreover, in their 2023 report, the group of experts included one recommendation, which was along the lines of the German model:

automatically indexing the SMIC to the average of minimum wage trends in a panel of branches not suffering from insufficient collective bargaining. Such a change, the support for which is consensual within the group of experts, would result in the changes in the SMIC being driven by the outcomes of collective bargaining, instead of partially substituting collective bargaining, as is currently the case.

(Eurofound, 2024a, p. 50)

In the other four countries included in the analysis, collectively agreed wages are not taken into account directly or explicitly in the process of minimum wage setting. This does not mean negotiated wages do not matter at all for setting the national minimum wage. They can influence update decisions through other channels. For instance, the involvement of the social partners in minimum wage setting means that the partners can bring their knowledge of developments in negotiated wages to the process. In Portugal and Slovenia, they are involved through discussions in tripartite institutions, which facilitates a stronger role for collectively agreed wages. Meanwhile, in Spain, the social partners are involved through ad hoc consultations. They can use their knowledge of collective bargaining developments during these consultations or incorporate the mechanisms they use to coordinate collective bargaining into them. For instance, during negotiations for the 2024 increase, employers in Spain defended setting the increase at 3 %. This corresponded to the recommended increase for collectively agreed wages contained in the peak cross-sectoral agreement for employment and

collective bargaining during 2024. Finally, the weakness of collective bargaining in Romania suggests a weaker role for collectively agreed wages in national minimum wage setting.

Impact on collective bargaining: policy and social partners' debates

Policy debates at the national level about the unintended negative effect that the national minimum wage could have on collective bargaining and the expected impact on collective agreements vary significantly across countries. In line with the differences highlighted in the previous section, it could be expected a priori that these issues would play a stronger role in those countries where collectively agreed wages are considered when setting the national minimum wage (Germany) or in those countries where the interaction between minimum wages and collective bargaining is more intense (France). However, policy debates could also be expected to play an important role in countries with weak collective bargaining, since a high national minimum wage could further reduce the incentives to negotiate collective agreements. At the same time, approval of the Minimum Wage Directive makes these debates more relevant to all countries analysed.

The country analyses show that national-level actors have limited concerns about national minimum wages eroding collective bargaining or reducing the autonomy of the social partners. This contrasts with the views of the sectoral social partners interviewed, several of whom complained about a crowding-out effect (see the next section, 'Comparative sectoral analysis'), thus indicating that national minimum wages have a discernible sectoral effect. Moreover, there is no evidence of a tension between the two goals established in the directive: ensuring the adequacy of minimum wages by using, among other things,

Table 6: Role of collective bargaining developments and collectively agreed wages in setting national minimum wages

Member State	Role of collective bargaining	Approach to the role of collective bargaining	Collective bargaining variables considered
France	Tacit, as wage developments considered but not necessarily applied	Formalised through inclusion in a formula	No collective bargaining variables considered
Germany	Direct	Formalised through the Minimum Wage Commission	Two-year collective bargaining index
Portugal	Tacit through the involvement of the social partners	No role	Not considered
Romania	No role	No role	Not considered
Slovenia	Tacit through the involvement of the social partners	No role	Not considered
Spain	Tacit through the involvement of the social partners	No role	Not considered

Source: Authors, based on Eurofound (2024a) and experts' reports

indicative reference values and promoting collective bargaining coverage. The social partners interviewed believe that increasing minimum wages to reach the goal set in the directive will not necessarily hinder the development of collective bargaining, including in terms of increasing coverage.

Because of the way in which the national minimum wage is set and its level, France is the country where the social partners might be most concerned about an erosion of their autonomy. However, there is no evidence of a generalised crowding-out of collective bargaining by the national minimum wage. Instead, the social partners in France see a positive effect, as it forces them to engage in collective bargaining. Views are slightly more negative in the two low-wage sectors covered, where this mechanism encourages unions to demand that collective bargaining be started as soon as possible. However, in their recommendations in 2023, the group of experts that reviewed the functioning of minimum wage setting supported limiting automatic indexation and focusing on collectively agreed wages to avoid the national minimum wage replacing collective bargaining. In Spain, the largest employer organisation, the Spanish Confederation of Business Organisations (CEOE), has flagged a twofold negative impact of the 2023 and 2024 increases in minimum wages on social dialogue. First, it argues that, as employers did not sign the agreement with unions and the government, the government has undermined the role of social dialogue. Second, it is concerned about these increases reducing the space for collective bargaining, especially in low-wage sectors.

With regard to Romania, the government has adopted two strategies to facilitate adaptation to the Minimum Wage Directive. First, it has announced a gradual implementation to allow employers time to adjust their wage policies. Second, special statutory minimum wages were introduced for agricultural and food production employees, besides the special statutory rates already in place for the information technology (IT) and construction sectors.

In Slovenia, where collective agreements related to low-paid workers tend to stipulate basic rates below the national minimum wage (Eurofound, 2024b), employers have defended a different approach to that of the government regarding national minimum wage levels and their relation to collectively agreed wages. The centre-left Golob government, in office since June 2022, would like to introduce the '1 is 1' principle, whereby the lowest basic salary in a collective agreement is equal to the national minimum wage. However, employers aim to keep the national minimum wage roughly at the level of the third occupation class within the pay scale of the agreement so that all of the first three classes are equal to or below the minimum wage. This would leave some flexibility in the bargaining of lower basic salaries, which ultimately determines the value of bonuses. This still implies steep costs for employers, as salaries become higher throughout the distribution. Hence, the idea is to share the burden with the unions by negotiating the adaptation in each collective agreement in relation to the bonuses or the specific ratio between highest and lowest wages. An example would be the collective agreement for the paper-processing industry, where the social partners agreed in 2024 that the first three tariff classes would be equal to the minimum wage, and that the highest salary would be no more than double the lowest salary. They also agreed on reducing a number of bonuses – for example, those for seniority.

Comparative sectoral analysis

This section provides a comparative sectoral analysis across countries, focusing again on the three dimensions applied in the national-level approach.

The two sectors included in the qualitative analysis, residential and social care and manufacture of food and beverages, were selected because, as noted in the Methodology section, they differ within the group of low-paid sectors in terms of, for instance, the power resources of the trade unions and the skills level of the workforce. Thus, analysing the situations in the two sectors helps to shed light on those sector-related factors shaping and mediating the interaction between statutory minimum wages and collective bargaining in different institutional contexts.

In each country, specific subsectors or activities were selected. Table 7 summarises the subsectors and the main characteristics in terms of trade union and employer representation.

Table 7: Agreements and subsectors analysed and social partners operating in the subsectors

Member State	Residential care and social work (NACE Q87 and Q88)	Manufacture of food and beverages (NACE C10 and C11)
France	Collective agreement / subsector analysed. Domestic aid (CA-FR-2099) Trade unions. Three federations are considered representative: the French Democratic Confederation of Labour (CFDT) (Federation of Health and Social Services (Santé Sociaux)); the General Confederation of Labour (CGT) (National Federation of Staff of Social Organisations (CGT orgasociaux)); and CGT – Workers’ Force (CGT-FO) Employer organisations. The umbrella organisation of the Union of Domestic Employers (USB Domicile) covers the four employer organisations: the Adessa A Domicile National Federation; the National Network of Associations of Personal Services (ADMR); the National Federation of Popular Family Assistance Associations – the Trade Union Confederation of Families (FNAAFP/CSF); and the National Union of Domestic Support and Care Services Providers (UNA)	Collective agreement / subsector analysed. Manufacture of processed food products (CA-FR-2505) Trade unions. Four federations are deemed representative: CGT (National Federation of Agri-Food and Forestry (FNAF)); CFDT – Agriculture Agroalimentaire (CFDT – Agri Agro); CGT-FO; and the French Confederation of Management – General Confederation of Executives (CFE-CGC) Employer organisation. Adepale covered 37 019 of a total workforce of 50 000 employees in 2021
Germany	Collective agreement / subsector analysed. Home and residential care (CA-DE-1900) Trade unions. The United Services Trade Union (Ver.di) is the largest trade union in the sector Employer organisations. The Employer Association of Private Social Services Suppliers (BPA) organises mostly small and medium-sized enterprises; the Nursing Employers Association (AGVP) organises mostly large groups and companies; the Workers’ Welfare Association (AWO) represents the interests of non-profit organisations active in the provision of elderly care; the Federal Association of Employers in the Care Sector (BVAP) was founded as a direct response to the sectoral minimum wage in 2009, and represents the interests of various kinds of organisations	Collective agreement / subsector analysed. Meat industry (CA-DE-2390) Trade unions. The Food, Beverages and Catering Union (NGG) Employer organisations. Nine regional employer organisations come under the umbrella organisation of the Food and Catering Employers’ Organisation (ANG) Negotiations of the sectoral minimum wage are carried out by the Social Policy Committee of the Meat Industry (SPA), which is under the responsibility of the employer association that represents the federal states of Lower Saxony, Bremen and Saxony-Anhalt (VDF)
Portugal	Collective agreement / subsector analysed. Social and care activities (CA-PT-2255) Trade unions. General Confederation of the Portuguese Workers (CGTP) branch federations the Portuguese Federation of Commerce, Offices and Services Unions (Fepces) and the National Federation of Workers’ Unions of Public and Social Activities (FNSTFPS); and General Union of Workers (UGT) branch federations the Federation of Industry and Services (Fetese) and the National Education Federation (FNE) Employer organisations. The National Confederation of Solidarity Institutions (CNIS), which represents private institutions of social solidarity; the Network of Misericórdias; Lisbon Holy House of Mercy; and the Union of Portuguese Mutual Societies (UMP)	Collective agreement / subsector analysed. Manufacturing and conservation of fruits and vegetable products (no direct correspondence with a collective agreement in the Eurofound database) Trade unions. The Federation of Agricultural, Food, Beverage, Hospitality and Tourism Unions of Portugal (Fesaht) (affiliated to the CGTP) and the National Union of Workers in Agriculture, Forestry, Fishing, Tourism, Food, Beverage and Related Industry (Setaab) (affiliated to the UGT) Employer organisations. Fragmented involvement. The National Association of Traders and Processors of Food (Ancipa) (affiliated to the Confederation of Portuguese Business (CIP)) is the most representative in the sector. In some subsectors, there are other employer organisations involved
Romania	Collective agreement / subsector analysed. Residential and social care (CA-RO-2381) Trade unions. The Federation of Central and Local Public Administration Employees in Romania (Columna-Scor) (social care and public administration); the Free Union of Health Care Workers (Sanitas) (social care and healthcare), affiliated to the National Confederation of Free Trade Unions of Romania – Brotherhood (CNSLR-Fratia); and the National Trade Union Federation PRO.ASIST (PRO.ASIST) (social care), affiliated to the National Trade Union Confederation (Cartel ALFA) Employer organisations. There is no employer organisation recognised by the government	Collective agreement / subsector analysed. Manufacturing of food and beverage (n/a) Trade unions. The Ceres National Trade Union Federation (member of Cartel ALFA); the SindAlimenta Food Industry National Union Federation (member of Meridian National Trade Union Confederation); and the Agrostar Federation of National Trade Unions from Agriculture, Food and Related Fields and Services (member of National Trade Union Bloc (BNS)) Employer organisation. The Association for the Promotion of Romanian Food (Romalimenta)

Member State	Residential care and social work (NACE Q87 and Q88)	Manufacture of food and beverages (NACE C10 and C11)
Slovenia	Collective agreement / subsector analysed. Social welfare (CA-SI-2021) Trade unions. The Medical and Social Care Union of Slovenia (SZSSS), which is the only trade union signatory to the collective agreement for the public sector (Kolektivna pogodba za javni sektor). The SZSSS is a representative union within the public sector that comprises many other associations with representative status Employer organisations. The Ministry of Solidarity-based Future, which is responsible for the area of long-term care services. Moreover, there is a constructive relationship and communication with the Association of Social Institutions of Slovenia (SSZS)	Collective agreement / subsector analysed. Agriculture and food industry (CA-SI-1273) Trade union. The Trade Union of Agriculture and the Food Industry of Slovenia (KŽI) is the only representative union in agriculture and the food industry in Slovenia Employer organisations. The Chamber of Agricultural and Food Enterprises (ZKŽP); the Section for Agriculture, Food Industry and Forestry of the Association of Employers of Slovenia (ZDS); and the Cooperative Union of Slovenia (ZZS)
Spain	Collective agreement / subsector analysed. Residential elderly care (CA-ES-1324) Trade unions. The Federation of Citizens' Services – Workers' Commissions (FSC-CCOO) and the Federation of Public Service Employees – UGT (FESP-UGT) Employer organisations. The Spanish Business Federation of Assistance for Dependency (FED) and the State Association of Home Care Services Entities (ASADE)	Collective agreement / subsector analysed. Preserves and salted fish and seafood (CA-ES-1209) Trade unions. Currently, the signatory organisations on the trade union side are the UGT – Federation of Industry, Construction and Agriculture (UGT-FICA) and the Galician Inter-union Confederation (CIGA). The CCOO refused to sign the collective agreement, despite being representative in the sector Employer organisation. The Spanish Federation of Associations of Transformation Industries and Marketers of Products of the Fisheries and Aquaculture (Feicopesca)

Notes: The brackets after the collective agreement or subsector analysed give the code of the corresponding collective agreement in the Eurofound database on minimum wages for low-paid workers in collective agreements.

Source: Authors

Residential and social care

Demographic changes in the EU are rapidly increasing the number of people requiring long-term care services, causing the residential and social care sector to expand substantially. However, this quantitative expansion contrasts with the poor working conditions in the sector. As pointed out in several reports and studies (Eurofound, 2020; OECD, 2023), this sector employs mostly women and a large share of immigrant workers. Working conditions are characterised by a prevalence of part-time work, wages below the national averages, shift work and exposure to many psychosocial risk factors.

The residential and social care sector has highly fragmented social partner representation (Sánchez et al., 2021; Eurofound, 2022a). This fragmentation is more intense on the employer side for two reasons. First, there is a large divide between public and private employers due to the role of public care services provision. Second, within these two spheres there is also fragmentation. In the public sector, provision can be managed at the local, regional or national level. In the private sector, differences emerge in relation to the types of organisations providing care services, which include charities, religious entities, non-governmental organisations (NGOs) and private companies (Eurofound, 2022a).

The collective bargaining landscape in the sector mirrors the fragmented representation. In some countries, separate collective agreements are signed in the private and public sectors. Moreover, there is evidence of separate collective agreements being signed depending on the type of provider. Collective bargaining coverage in the private formal sector tends to be high. Nevertheless, based on the predominance of sectoral collective bargaining, compliance remains an issue due to the weakness of employee representation structures in parts of the sector and the large numbers of under-represented workers, including those working informally and unemployed workers (De Tavernier et al., 2023).

The six countries analysed exhibit different configurations in terms of the structure of collective bargaining and collective bargaining coverage (Table 8). Sectoral collective bargaining is predominant in all countries analysed except Romania, where it is absent. However, in Germany and Spain, sectoral collective bargaining takes place at regional level, although in Spain, there is a comprehensive national sectoral collective agreement for the social care sector (*Convenio estatal de servicios de atención para las personas dependientes*), which set up the wage structure (including the wage grid) and wage increases for the entire sector.

Table 8: Characteristics of collective bargaining in the residential and social care sector

Member State	Predominant level of collective bargaining	Collective bargaining coverage in 2024 (or latest year available) (%) ^(a)	Ratio of basic pay for lowest group in collective agreement to national minimum wage ^(b)		Ratio of highest to lowest negotiated minimum rates in collective agreement ^(c)	
			2015	2022	2015	2022
France	Sectoral	75 (estimate by CFDT)	1.07	1.01	2.23	2.23
Germany	Sectoral and regional	100 (public sector) 50 (private providers)	1.50	1.57	2.56	2.52
Portugal	Sectoral	91	1.00	0.97	2.33	1.83
Romania	Company	40 (considering both the public and private sectors)	1.06	1.00	n/a	n/a
Slovenia	Sectoral		0.55	0.48	11.7	12.3
Spain	Sectoral national and sectoral regional	100	1.34	1.00	2.46	2.46

Notes: ^(a) Estimates of collective bargaining coverage refer to the average in the sector and are provided by the social partners. ^(b) Refers to the national minimum wage on 1 January. ^(c) Highest and lowest rates refer to those contained in the collective agreements identified in Table 7.

Source: Authors, based on experts' reports and selected sector-related agreements from the Eurofound database on minimum wages for low-paid workers in collective agreements

Sectoral collective bargaining coverage rates differ across countries and, in some cases, within countries, mainly because of the different coverage rates in the public and private sectors. Portugal and Spain have the highest collective bargaining coverage rates in the private sector. In Portugal, collective bargaining coverage remains very high (91 %) despite declining slightly in recent years, according to Branco (2017). In Spain, estimates claim that all workers are covered by the national sectoral collective agreement for the social care sector.

France and Germany also have comparatively high sectoral collective bargaining coverage rates. However, in Germany, there are significant differences between the public sector and the private sector. The trade union Ver.di estimates full coverage in the public sector, which contrasts with the 50 % coverage rate estimated for the private sector. In France, the residential and social care sector is one of the few sectors where several important sectoral collective agreements have not been extended, such as the national collective agreement for private not-for-profit hospital, care, cure and nursing establishments and the national collective labour agreement for establishments and services for maladjusted and disabled people. As a result, not all employees in the sector are covered by a collective agreement. Nevertheless, collective bargaining coverage is estimated to be comparatively high (around 75 %).

Finally, Romania has the lowest collective bargaining coverage rates (40 % for public and private sectors) under a fully decentralised sectoral collective bargaining system in the private sector.

Regarding the relationship between national minimum wages and the negotiated minimum wage rates contained in collective agreements, Table 8 shows that this ratio declined between 2015 and 2022 in all countries except Germany. This means that, during this seven-year period, national minimum wages increased more than the basic pay rates in the selected sectoral collective agreements of these countries. Spain demonstrates this trend, as basic pay rates in collective agreements were clearly above national minimum wages in 2015 but were equalised in 2022.

National minimum wages and the collective bargaining process

The countries analysed differ regarding the mechanisms through which and the extent to which national minimum wages affect the bargaining process. However, there is limited evidence of major changes in any of the dimensions of the bargaining process considered in the analysis – that is, the durations of collective agreements, the coverage of collective bargaining or the topics negotiated.

Social partners' positions and strategies

The social partners in the residential and social care sector have different views regarding the role of national minimum wages. These differences are observable not only between employer organisations and trade unions, but also within these two groups. Moreover, these differences emerged only recently, in the context of the debates around the Minimum Wage Directive and the increases in statutory minimum wages in the six countries analysed.

The social partners in all countries agree on the importance of wages in a sector characterised by an insufficient workforce and the perceived lack of attractiveness of long-term employment. Accordingly, wages remain a key dimension of working conditions in terms of attracting and retaining workers (De Tavernier et al., 2023). For this reason, there is some ambivalence in relation to the role of the statutory minimum wage. This ambivalence is particularly clear regarding employers, who acknowledge the need to secure higher wages to attract new workers and retain them in the face of labour market shortages (Milos and Bergfeld, 2022). However, in some countries, like Spain, they express concerns about recent increases in the national minimum wage, the impact this is having on firms' margins and the detrimental effect it may have on the role of collective bargaining.

When it comes to trade unions, there is general support for increases in national minimum wages. However, differences are observed within the trade union movement. In Spain, the positions of trade unions and employers regarding the minimum wage only recently entered the debate around collective bargaining in the sector, in the context of the inflation crisis and increases in the statutory minimum wage, especially since 2020. For the trade union FCS-CCOO, the national minimum wage has become a mechanism for securing improvements in negotiated wages that could not be attained through collective bargaining, especially in a context of high inflation. This is because the national minimum wage grew faster than negotiated wages. In Slovenia, the sector-related trade unions also see the national minimum wage as a mechanism through which to solve some of the problems the care sector faces, including labour shortages. They argue that the national minimum wage should become equal to the basic starting salary of the lowest-valued job in the sector to make the sector more attractive.

In France, the trade unions have highlighted the importance of the national minimum wage in the context of inflation, as the automatic increase in the minimum wage keeps employees afloat financially. This is especially the case because collective agreements in the care sector must go through a double process of accreditation and extension before they are applied. This means that, in the absence of an automatically updated national minimum wage, workers would experience severe losses in terms of the purchasing power of their wages.

The only exceptions to this trend are Romania and Portugal. In Portugal, there is division on the union side about the role of national minimum wage increases. The CGTP is against substantial increases since they may further weaken collective bargaining and the role of the social partners in setting working conditions. In Romania, the trade unions have also exhibited some ambivalence. They expressed concerns about the

negative impact that increases in the national minimum wage are having on their capacity to recruit new members. In the private sector, where unionisation is very low and there is hardly any collective bargaining, wage increases have been largely driven by statutory minimum wage developments over the past few years. This may have further reduced the incentives to join unions. At the same time, precisely because of the low levels of collective bargaining coverage, the statutory minimum wage plays a central role. The minimum wage remains the single most important reference for the pay scales in the sector, and the trade unions have welcomed the recent increases due to their limited power, both in associational terms (membership rates) and institutionally.

By contrast, employers, although acknowledging the importance of raising wages to attract workers, look at the minimum wage with concern and believe it will lead to growing tensions in collective bargaining, especially in the private residential and social care sector. In Germany, national minimum wage employers are worried about the increasingly important role of the national minimum wage in determining negotiated wages at all scales. Several reforms have been implemented to secure higher wages in the sector, including referring to the national minimum wage for negotiated minimums in collective agreements. The Law for the Improvement of Wages in the Care Sector (Pflegelöhneverbesserungsgesetz), which came into force in November 2019, created the legal basis to improve wages in the Employee Posting Act (Arbeitnehmer-Entsendegesetz). This act empowers the Care Commission (Pflegekommission) to decide on specific minimum wages for care workers depending on their skills levels. In June 2021, another reform, the German Healthcare Development Act (Gesundheitsversorgungsweiterentwicklungsgesetz), obliged private providers in particular to adhere to the wages negotiated in regional collective bargaining as minimum thresholds, or to pay all employees at least the average wages in the sector.

In Spain, employers share the concerns of their German counterparts. They believe that higher wages as a consequence of national minimum wages are not necessarily bad for the sector, since the increased wages may alleviate some of the problems they face regarding attracting workers. However, they ask for a moderation of the increases and, most importantly, for a guarantee that there is a correspondence between increases in national minimum wages and public prices. Many companies have seen their labour costs increase significantly, while public prices in tender processes have remained stable.

Portuguese employers point to the role of the government, which is putting them under severe stress due to the increases in national minimum wages that have not been matched by similar increases in the

resources employers receive to provide care services. Employers think this mismatch is the driving force behind the low wages in the sector since they are constrained by these transfers.

Changes in bargaining scope and process

The changes observed in the bargaining process in relation to increases in national minimum wages vary across countries depending on the characteristics of their minimum-wage-setting and collective bargaining systems. However, not all countries analysed here reported changes in their bargaining processes.

In France, the most visible impact of national minimum wages on the domestic care sector has been the need to constantly update wage agreements to reflect the increases in national minimum wages. Thus, over the past 10 years, the sectoral social partners have signed eight wage agreements.

In Spain, employers have tried to find an equilibrium between wage levels and other employment conditions – including shift work, working time flexibility, pay supplements and bonuses – in the collective agreement. Employers are aware that they need to make the sector attractive to retain and bring in workers, but they also face significant financial pressures. Therefore, they have tried to improve other, non-wage-related, working conditions in the collective agreement. However, with increases in national minimum wages pushing negotiated wages up, employers admit that this has become harder. Therefore, they expected a poorer collective agreement and growing tensions with the trade unions when negotiating the new agreement. The impact of national minimum wages is not limited to basic pay rates, but also affects other pay components, like bonuses, and conditions negotiated in collective agreements (see the section ‘Autonomy of the social partners and crowding-out’).

In Germany, the shortage of workers has pushed the government to improve working conditions in the sector. This has led to several interventions in the sectoral employment relations system, including the establishment of a sectoral minimum wage through an amendment of the Posted Workers Act in 2023. This allowed employers to include supplements so that wages reach the negotiated amount, excluding complements for night work. All the social partners admit that, in response to the increases in the sectoral minimum wage, some companies adjust by changing their pay structures. For example, there are organisations that include new pay elements – a care supplement, for instance – to reach the amount. Some companies do the opposite, removing certain supplements to minimise the impact of sectoral minimum wage increases.

Trade unions in Romania have reported an increase in illegal payments of workers in the private social care sector. They say that informal compensation methods,

like under-the-table payments or undeclared income, are widely used. The private sector tries to cope with statutory minimum wage increases by paying employees off the books or under-reporting wages to avoid taxes or regulatory obligations. These illegal payments are used to supplement workers’ statutory minimum wages. Employers use the payments to minimise labour costs and to attract employees who would not otherwise agree to work for only the minimum wage.

In Portugal, the employer organisation CNIS advises its affiliates to offer a pay scale with the legal minimum wage as the lower end and, for those that can afford it, to pay a little more than the minimum. In sum, employers take the national minimum wage increase as the going percentage rate for raises across the pay scale, instead of as a starting point on which collective bargaining then improves based on employees’ qualifications, skills, seniority, responsibility and leadership.

Autonomy of social partners and crowding-out

One of the potential impacts of national minimum wages is reducing the space for negotiating collective agreements. In the residential and social care sectors of all countries analysed, there are some signs of reduced autonomy to negotiate as a result of increases in national minimum wages, and, to a lesser extent, of crowding-out. In France, the social partners in general, but employers in particular, voiced concerns about the limited negotiation space left by national minimum wage increases. They mentioned two constraints. First, the total wage bill in the sector must be approved by the public authorities and accredited (see the section ‘Impact of national minimum wages on collectively agreed wages’). Each year, the branches concerned are informed of the increase in the wage bill that the public authorities are willing to accept. If wage negotiations exceed the budget set by the public authorities, the signatories risk the wage agreement not being approved. This reduces the space for autonomous bargaining. Second, the obligation to bring agreed sectoral minimum wages into line with the automatic revaluation of the national minimum wages drives collective bargaining in this sector. This is an important incentive for employers to open wage negotiations. It is also a clear case of reduced autonomy to negotiate collective agreements.

In Portugal, the impact of national minimum wages on collective bargaining is mediated by the Pacts for Solidarity Work that are negotiated between the government and employers, without trade union involvement. The sector’s employers are subsidised by the government through cash outlays assigned per capita end user, according to an extensive catalogue of services. Each pact is negotiated with third-sector institutions, which form the stronger and better-organised section of the Portuguese civil-society

landscape (Branco, 2017). From the overall Pact for Solidarity follow thousands of cooperation agreements signed by the government and each solidarity institution. These agreements require the enactment of increases in collectively agreed minimum wages and the renewal of sectoral collective agreements. However, unions forcefully point out that the government does not inspect or control the implementation of the collective bargaining clauses in the Pacts for Solidarity.

In Spain, both social partners see national minimum wages as a potential obstacle to autonomous wage setting through collective bargaining in a sector with a long tradition of sectoral collective bargaining. However, employers blame the combination of significant national minimum wage increases and high inflation for problems in collective bargaining. This became clear during negotiations for the renewal of the eighth national sectoral collective agreement for the social care sector. The process lasted four years (2019–2023) and was lengthier and more arduous than the negotiations of previous agreements. The main issue at stake concerned the application of the automatic pay revision clause as set out in the collective agreement (Article 8), which established that, in the absence of a new agreement, wages are to be updated in line with the annual inflation rate recorded in the previous year. The trade unions demanded a 6.5 % wage increase in 2022 based on the application of this clause. They argued that, in the previous two years, there had been a salary freeze due to gross domestic product (GDP) growth requirement for the revision of pay rates not having been met, as the increases had been below the 2 % mark each year. This demand was opposed by employer organisations, which asked for more moderate wage increases. The controversy was finally solved by a court ruling that provided for the application of 6.5 % pay increases for 2022 in line with the inflation rate for 2021.

In Germany, both the unions and some employer organisations think that the different regulations are affecting willingness to enter negotiations, as the scope for setting wages through collective bargaining is narrower now. Unlike wages in other sectors, the sectoral minimum wage in the care sector is settled with reference to a recommendation of the bipartite Care Commission. Every two years, the commission recommends an increase in the sectoral minimum wage, which can be accepted or ignored by the Federal Ministry of Labour and Social Affairs. This process forces organisations to pay employees in line with collectively bargained wages, whether or not they are covered by the agreement.

Impact of national minimum wages on collectively agreed wages and their distribution

The impact of national minimum wages on collectively agreed wages depends on several factors, including the

levels of national minimum wages, the way in which the national minimum wages are set and the characteristics of collective bargaining in the sector (see Chapter 1). Moreover, this impact can be shaped by contextual factors, such as high inflation or labour shortages.

In Spain, the impact of increases in national minimum wages has become particularly important since 2022, which saw large increases in national minimum wages and the high point of the cost-of-living crisis. However, there are marked differences across regions. The territorial fragmentation of collective bargaining structures in the residential and social care sector is reflected in different implications of national minimum wages across territories, with a more noticeable impact in less affluent regions. According to one employer organisation, in Extremadura, the national minimum wage is higher than the basic pay rates of some job categories. This obliges the social partners to enter new negotiations with a consolidated pay rise that has not been agreed upon by the parties and acts as a baseline for negotiating further wage increases. The collective agreements include protective clauses to ensure that workers will be paid any difference between their actual wages and the national minimum wage by the end of the year.

In a country like Slovenia, with predominantly public provision of long-term care, the national minimum wage has a more significant impact on public sector workers. In the absence of a general change in the Slovenian Public Sector Salary System Act, which sets pay increases and levels for public sector workers, the periodic negotiations on the adjustment of basic salaries and related bonuses take into account both national minimum wages growth and other factors, such as the indexation of pensions and social transfers and the persistence of labour shortages.

In Germany, there is a sectoral minimum wage in addition to the national minimum wage. The trade unions believe that a sectoral minimum wage is necessary to attract workers, due to the sector's labour shortages. Employer organisations agree that a certain distance from the national minimum wage must be preserved to maintain the care sector's attractiveness. The trade union Ver.di considers the sectoral minimum wage necessary despite the large gap between it and the national minimum wage. Employer organisations have different views. The sectoral minimum wage is controversial, and they question its effectiveness. For example, the BPA and BVAP think that the aim of the sectoral minimum – namely, to secure a minimal standard of living – has been achieved. As an alternative to the sectoral minimum wage, the BVAP supports a collective agreement with general applicability. In 2018, BVAP and Ver.di attempted to declare a negotiated collective agreement for elderly care with general applicability, but this was not accepted by the religious institutions in the sector.

In France, this interaction is stronger. Moreover, this interaction has intensified in the context of the inflation crisis. Since 2021, sharp rises in the national minimum wage due to automatic indexation have had a number of consequences, with sectoral collectively agreed minimum wages being exceeded in many activities. After the national minimum wage is updated, a renewal process begins for sectoral collectively agreed minimum wages, thus reducing the number of non-compliant sectors. However, this process is mediated by the specificities of the sector when it comes to collective bargaining. In domestic services, there is a time lag between the signing of a new wage agreement and the two processes required for this agreement to be implemented. First, there is the accreditation process (*procédure d'agrément*) whereby collective, company or establishment agreements applicable to private not-for-profit social and medico-social establishments and services that are publicly funded must be approved by the competent minister to take effect and be binding. The aim of accreditation is to regulate the public funding allocated to the social services sector. Once approved, the signed agreement becomes applicable and therefore enforceable as a collective standard, but only between the signatories. In order to ensure that the agreement is enforceable against all employers in the sector, the extension procedure (*procédure d'extension*) is required. An extended agreement is binding on all employers and applies to all employees in the occupational area concerned. The risk of non-compliance in this sector is accordingly higher than that in other sectors due to the longer time required for negotiated wages to be updated.

National minimum wages have an impact not only on the levels of the wages negotiated in collective agreements, but also on the negotiated wage distribution. This impact can be neutral to the wage distribution when there is a spillover effect for all negotiated pay categories or can compress the wage distribution when only the lower pay groups experience increases or these groups experience higher increases than higher pay groups.

In France, after the national minimum wage is raised, the social partners are obliged to negotiate wages to ensure that no collectively agreed minimum wage in the sector is lower than the legal minimum wage. The obligation is to raise the first – that is, lowest – collectively agreed minimum wage rate, not to raise the collectively agreed minimum wages across the whole pay scale. The social partners point out that the automatic indexation of the SMIC, especially in the context of high inflation, has compressed the wage scale. According to employers interviewed, this is detrimental to the attractiveness of the sector, since the financial reward for employees to move from one level to another, through seniority or training, comes to only a few extra cents on payslips. Employers view this ‘crushing’ of pay scales as a major problem in the

domestic services sector, which is facing a severe labour shortage. The crush has a deleterious effect on professional careers, since employees in the lower pay groups, which cover the vast majority of the sector’s salaried population, are not rewarded for their efforts or investment in training.

This compression is exacerbated by the social security contributions system, which incentivises employers to maintain a compressed wage structure. There are social security contribution exemptions for wages below 1.6 times the SMIC (Article L241-13 of the Social Security Code). In other words, employers pay lower social contributions on wages below 1.6 times the SMIC. As a result, at this salary level, no employer social security contributions or levies are paid, except for contributions in respect of accidents at work and occupational illnesses for the portion corresponding to the company’s accident rate. Employers in the social services sectors have this in mind when they negotiate not to increase wages to over 1.6 times the SMIC. This compression also has a major impact on gender equality, since female-dominated jobs in the social services sector are much more poorly paid than jobs in more male-dominated sectors. The social partners are well aware of these problems, but only the trade unions have tried to develop policies to prevent pay scales being compressed. Two union confederations involved in collective bargaining in the sector, CGT and FO, are calling for a mechanism to index all minimum wages, in the branch or even all wages, in line with inflation. This position is somewhat contradictory to the autonomy of the social partners, since such a mechanism would inevitably reduce their ability to negotiate pay. However, they claim it would halt the compression of the wage structure.

The social partners in Germany also reported that the pay scale groups are being compressed. It is common for the lowest pay scale group in company collective agreements to be negotiated based on the sectoral minimum wage. However, in these company collective agreements, the pay scale groups are organised based not only on skills level but also job responsibilities. Because of the proximity of the three different pay scale groups in the sectoral minimum wage, the pay scale groups in company collective agreements are becoming compressed.

In Spain, employers and trade unions also claim that there has been a compression effect. Increases in the statutory minimum wage have narrowed the wage differentials between lower-paid occupations earning around the minimum wage. The compression of wage differentials is also observed among workers within the same job category, such as cleaners with different years of service. Employees who earn less than the national minimum wage, based on the applicable basic rate negotiated, receive individual pay supplements to bridge the gap with the national minimum wage.

These pay supplements can be absorbed and compensated for through future pay increases set in collective bargaining. However, the total wage for these employees is currently at the same level as those of employees with seniority benefits, whose overall wage is in line with the national minimum wage. The employers interviewed believe that this compression is creating tensions, and they warn that this may have a negative effect on the capacity to attract and retain workers. They note that companies are facing pressures to apply similar increases to all categories, but they argue that this is now impossible for most firms. The employers interviewed also believe that this compression is creating tensions between groups of workers covered by the collective agreement, as workers have seen how the gap between their wages and those of the lower categories has narrowed. Employers thus argue that, after the initial compression of the wage structure in the sector, one can expect a spillover effect in the following years.

Increases in the national minimum wage in Romania have a limited impact in the private and public sectors. In the private sector, the lack of any form of multi-employer bargaining makes it hard to advance any hypothesis as to the impact on collectively agreed wages. In principle, one could expect wage compression resulting from the direct impact on updated salaries for lower wage categories. In the public sector, the increase in the statutory minimum wage does not influence the structure or the increase in collectively agreed wages because they are fixed by a governmental decision. However, the increase in the statutory minimum wage does influence the unions' approach to the variable part of the wages paid as bonuses and supplements for various conditions. The bonuses that are added to the gross salary are calculated based on the minimum wage level in January 2018 and not based on the latest statutory minimum wage, as the law requires. This, therefore, diminishes the increase in the wages and their

capacity to cover for the lack of adjustment to match the inflation rate. Public sector unions are accordingly putting pressure on the government to update the coefficient used to calculate this variable part.

In Portugal, the social partners agree that the large increases in the national minimum wage have triggered ripple effects in collectively agreed wages. These effects are stronger in the lower half of the wage distribution, thus triggering the compression of the wage scale. The mechanics of wage updating following year-on-year national minimum wage increases demonstrate the reach and limits of ripple effects. There are 18 wage rates in the sector. The 18th wage rate is the highest in the pay scale and simply follows the national minimum wage in terms of increases. Then, wage differentials between the remaining classes are managed by percentual step increases that incorporate and build on the national minimum wage base. That is to say, for example, that the 17th is raised by 5.05 %, the 16th is raised by 5.1 %, and so on, as reported by the trade union representative interviewed. However, the magnitude of the raise is larger for the lowest wage rates and then tapers off, without ever disappearing.

In most of the countries analysed, the social partners in the sector believe that a compression effect is at play (see Table 9). This compression results from the direct impact of an increase in the national minimum wage on the lower occupational categories. The extent to which this compression is accompanied by a spillover effect depends on variables like the occupational structure of the sector, the way in which pay increases are calculated for the different occupational groups, the relative strength of skilled workers in relation to unskilled ones and the problems facing the sector in relation to attracting enough workers. Labour shortages in the care sector could, in principle, have touched off a stronger spillover effect to attract and retain workers, but this impact has been mitigated by the norms and institutions at play in collective bargaining. Finally, in a

Table 9: Impact of increases in the national minimum wage on collectively agreed wages and the autonomy of the social partners in the residential and social care sector

Member State	Impact on the structure of agreed wages: compression versus spillover	Impact on autonomy and crowding-out
France	Compression	Automatic revaluation of the national minimum wage and accreditation system reduce autonomy
Germany	Compression	Government interventions beyond the national minimum wage, but social partners do not express concerns about loss of autonomy
Portugal	Spillover effects reported, but compression predominates	No significant impact observed
Romania	Compression (private sector)	No impact due to the weakness of collective bargaining
Slovenia	Compression	No significant impact observed
Spain	Compression, but with significant regional variation	Reduced autonomy identified by the social partners

Note: Based on the social partners' assessments contained in experts' reports.

Source: Authors, based on experts' reports

service sector where both public and private provision are important, differences are also observed in relation to this.

The perceptions of the social partners regarding the existence of compression do not fully match data on the ratios of maximum to minimum pay levels in the collective agreements selected from the Eurofound database contained in Table 8. The data show that compression occurred only in Portugal and, to a lesser extent, Germany, while in France and Spain the relative distance between the maximum and the minimum was stable over 2015–2022. The discrepancy between the social partners' perceptions and the data on agreements selected from the database could be explained, first of all, by the different periods covered. The social partners may have in mind the more recent period of the inflation crisis, whereas the dataset contains data only up to 2022. Another element that may explain this discrepancy is that the social partners' assessments refer, in most cases, to the whole sector, rather than to a specific subsector.

Impact of national minimum wages on sectoral collective bargaining coverage

There does not seem to be a significant and direct impact of increases in national minimum wages on sector-related collective bargaining coverage rates. However, some indirect effects are noted. In Spain, the trade unions showed how the use of derogation clauses, which had been common in the sector after the 2012 labour market reform, slowed down after the 2022 reform reintroduced the favourability principle. The principle states that company-level agreements cannot set lower salaries (basic pay rates and supplements) than those agreed at sectoral level. However, it preserves the priority of company-level bargaining over multi-employer bargaining for other key aspects of working conditions, such as working hours and professional classification. One employer organisation argued that, 'as companies no longer have the margin to lower wages, they have to address the issue in another way, and they do it by worsening working conditions compared to other employees covered by the same collective agreement' (interview with FED).

National minimum wages are believed to have had a negative effect on collective bargaining coverage in Romania. The expert interviewed reported that the increases in national minimum wages can disincentivise workers in both the public and private social care sector from joining trade unions, since the national minimum wage increases and their spillover effects on medium- and higher-level wages will be interpreted as an outcome of governmental decision, not a result of trade unions' actions and strategies. Thus, the argument follows, the national minimum wage in Romania could have a detrimental impact on collective bargaining coverage in the sector. By contrast, the expert interviewed expects Law No. 367/2022 on social

dialogue, which reinstated sectoral collective bargaining, to have a positive impact.

Impact of national minimum wages on the industrial relations landscape

Based on the qualitative evidence collected for all six countries included in this report, the increases in national minimum wages have not had a significant effect on the social partner landscape in the sector over the past two decades. In most countries, the social partner landscape has been rather stable, on both the employer side and the union side. In countries like Spain where there has been a reconfiguration on the trade union or employer side, this seems not to be related to the increases in national minimum wages. In Spain, the most important change consists of a fragmentation on the union side, with some alternative unions gaining strength in regions like Catalonia. A more fragmented employer landscape is also observed in Germany, with the creation of a new employer organisation in 2009, but without a direct link to the minimum wage.

Manufacture of food and beverages

The food and beverage manufacturing industry is a pivotal sector in the EU, providing substantial employment and contributing significantly to GDP. According to FoodDrinkEurope, the sector represents the largest manufacturing industry in the EU, with over 4.5 million employees as of 2020.

Although there are significant country variations in relation to employment in specific subsectors, some commonalities can be highlighted. First, it is a sector where seasonal and temporary employment is widespread, particularly in subsectors such as fruit and vegetable processing. In Spain, a significant portion of the workforce is employed on a temporary basis. Second, within the general manufacturing sector, food and beverages employs a higher percentage of women than other sectors. Finally, it is a sector where low wages are predominant, especially when compared with other manufacturing activities.

Several recent trends are affecting employment conditions in the EU's food and beverages manufacturing industry. The drive towards sustainability, encapsulated in the European Green Deal, is compelling companies to adopt environmentally friendly practices. This transition is creating new job opportunities in areas such as sustainable production and packaging, while also requiring retraining of the existing workforce.

Compared with the residential and social care sector, social partner representation in the food and beverages manufacturing sector is less fragmented. Representation is slightly higher on the employer side, where employer organisations tend to organise different parts of the sector (Eurofound, 2022b).

Collective bargaining structures and coverage generally follow national patterns (Eurofound, 2023a). Thus, with some exceptions, collective bargaining is fully decentralised only in those countries where there is no tradition of sectoral bargaining – mostly eastern European countries. In these countries, collective bargaining coverage is comparatively low. In contrast, collective bargaining coverage is higher in those countries where collective bargaining is more centralised and there are automatic extension mechanisms (as, for example, in France) and/or high trade union densities (for example, in Denmark or Sweden) (Eurofound, 2022b).

In the six countries analysed, collective bargaining takes place predominantly at sectoral level, with the exception of Romania (Table 10). Regarding collective bargaining coverage, France, Slovenia and Spain record very high levels of collective bargaining coverage due to the impact of automatic (France and Spain) or virtually automatic (Slovenia) extension mechanisms. In Portugal, collective bargaining coverage is high at 83 %, but it has experienced a remarkable decline since 2015, when it had reached almost 98 %. In Germany, collective bargaining coverage in the sector has been estimated at 50 % (Eurofound, 2022b). Romania, by contrast, records a very low coverage rate (5 %) under a fully decentralised collective bargaining system.

When it comes to the national minimum wage levels in relation to the basic pay rates contained in collective agreements, Table 10 shows a similar picture to that observed in the residential and social care sector. All countries for which data were available exhibit a stable or lower ratio in 2022, except for Germany. The decline is particularly intense in Spain, indicating that the national minimum wage outpaced basic pay levels negotiated in collective agreements.

National minimum wages and the collective bargaining process

The countries analysed exhibit different situations regarding the mechanisms through which and the extent to which national minimum wages affect the bargaining process. However, there is limited evidence of major changes in any of the dimensions of the bargaining process considered in the analysis – that is, the durations of collective agreements, the coverage of collective bargaining or the topics negotiated.

Social partners' positions and strategies

As the sector is exposed to external competition, one could expect employers to exhibit greater opposition to national minimum wage increases compared with employers in the residential and social care sector. Moreover, trade unions may be more inclined to adopt a cautious approach when translating increases in national minimum wages into increased negotiated wages in order to avoid job losses. However, there are differences among countries in the employer organisations' positions and strategies regarding national minimum wages. Trade unions' views in relation to national minimum wages also vary somewhat across and within countries because of the different takes on their impact on the unions' capacity to improve working conditions through collective bargaining.

The French social partners in the food manufacturing sector are generally supportive of the SMIC and how it is set because the automatic increase in the minimum wage helps maintain the purchasing power of wages. However, the main employer organisation in the sector, Adepale, which mostly represents large companies, aims to keep the wage bill as low as possible in sectoral collective agreements. This allows the big

Table 10: Characteristics of collective bargaining in the food and beverages manufacturing sector

Member State	Predominant level of collective bargaining	Collective bargaining coverage in 2024 (or last year available) (%) ^(a)	Ratio of basic pay for lowest group in collective agreement to national minimum wage ^(b)		Ratio of highest to lowest negotiated minimum rates in collective agreement ^(c)	
			2015	2022	2015	2022
France	Sectoral	100 %	1.00	1.00	3.78	3.63
Germany	Sectoral	50 %	1.02	1.04	1.92	1.89
Portugal ^(d)	Sectoral	83 %	1.00	1.00	2.17	1.77
Romania	Company	5 %	n/a	n/a	n/a	n/a
Slovenia	Sectoral	100 %	0.58	0.55	2.34	2.35
Spain	Sectoral	100 %	1.04	0.80	2.97	2.81

Notes: ^(a) Estimates of collective bargaining coverage refer to the average in the sector and are provided by the social partners. ^(b) Refers to the national minimum wage on 1 January. ^(c) Highest and lowest rates refer to those contained in the collective agreements referred to in Table 7. ^(d) Highest and lowest rates refer to the collective agreement of manufacturing and conservation of fruits and vegetable products.

Source: Authors, based on expert reports, the Eurofound database on minimum wages for low-paid workers in collective agreements and Eurofound, 2022b

manufacturers in the sector to negotiate slightly higher wages at company level, making them more attractive because the wages on offer are higher than the agreed sectoral minimum. Employers therefore have an interest in keeping the wage scale low enough for employees to appear to be getting the best deal. Conversely, in the butchery sector, which is characterised by a predominance of small and medium-sized enterprises (SMEs) and is also facing labour shortages, employer organisations negotiate higher wages at branch level, knowing that they have to offer better wages than the industry minimum to attract skilled workers.

In Germany, the trade union NGG was one of the early drivers of the adoption of a national minimum wage as a tool to strengthen its position at the bargaining table and to remove unfair competition. The national statutory minimum wage plays a central role in its strategies not only in the meat industry, but in the entire manufacturing of food and beverages sector. The employer organisation VDF believes that a negotiated sectoral minimum wage is a good way to regulate wage minimums, since it guarantees better adaptation to the economic, political and labour-market realities of the sector. Moreover, VDF aims to strengthen sectoral collective bargaining coverage to improve the image of the sector but also to release pressure from price competition. Due to intensive price competition, VDF fears that companies will attempt to widen their profit margins by lowering working conditions, leading to unfair competition in the market.

In Slovenia, national minimum wage hikes have been welcomed by unions, as they effectively shield a good share of the workforce in the agricultural and food industry from poverty. Employers have also shifted their views from opposition to acceptance in the context of growing labour shortages in this sector.

Trade unions in Spain welcome the national minimum wage as a tool to protect workers, especially those with lower wages, from the difficulties they experience when renewing collective agreements in a sector with strong wage-based competition. The union representative from the UGT-FICA referred to various cases in which negotiations for the renewal of sectoral collective agreements in the food and beverages manufacturing sector have come to a standstill due to employer organisations' reluctance to negotiate. Consequently, they emphasise the need for state intervention to establish a minimum wage floor in industries where collective bargaining is not delivering renewed agreements. This is particularly pressing in a context of high inflation since the ultra-activity⁽¹⁰⁾ of collective

agreements implies that wage increases agreed in a low-inflation environment will be prolonged, thus eroding the purchasing power of workers. By contrast, employers report that the increases in the national minimum wage pose a significant challenge to collective bargaining in the sector and see it as interfering with the constitutionally enshrined right to collective bargaining.

While no information was obtained from Portuguese employers, Portuguese trade unions have different understandings of wage developments and of low pay more broadly. The CGTP-affiliated trade union Fesaht frames national minimum wage increases within the context of a weakening of collective bargaining's role in improving living standards and the transition to an individualistic approach to labour market relations. In this context, wage growth through national minimum wage increases should go hand in hand with strong collective bargaining. The CGTP voted against the Minimum Wage Directive as, according to the representative from this trade union interviewed, it does not ensure that collective bargaining, irrespective of its coverage, takes place on equal footing between the social partners. By contrast, the UGT-affiliated trade union Setaab considers the national minimum wage a power resource in negotiations and uses it as a starting point for bargaining for higher wages in the manufacture of food and beverages sector.

The Romanian social partners in the food industry are well aware that low wages in the sector makes jobs unattractive. The social partners from agriculture, the food industry and construction have pushed the government into accepting proactive measures to increase the minimum wage since 2022 and providing facilities such as waivers for the payment of income tax and healthcare contributions. The strategies of trade union leaders in food and beverages manufacturing are mixed. With multinational corporations, the trade unions do not focus on the national minimum wage because in these companies there are only a few employees at this pay level. The trade union representatives interviewed pointed out that the lowest pay rate in multinational companies is about 10 % higher than the national minimum wage. Workers in unionised firms tend to have higher wages on average, with fewer employees being hired on the statutory minimum wage. However, in non-unionised firms, more workers tend to be hired on the national minimum wage. The union's strategy focuses on both adjusting wages to inflation and securing employee benefits, such as private healthcare insurance, better working conditions, holidays bonuses and performance bonuses.

⁽¹⁰⁾ The principle according to which a collective agreement remains applicable beyond its expiration or termination date if a new collective agreement has not been reached.

Changes in bargaining scope and process

A diverse range of impacts on the bargaining process have been detected as a consequence of national minimum wages in the countries analysed. These range from increasing difficulties renewing collective agreements to changes to the duration of collective agreements and to pay components.

An interesting case is Portugal, where the pressure that national minimum wage increases exert on negotiated collectively agreed wages in combination with the regulatory framework for collective bargaining has implications for the duration of collective agreements. More specifically, the CGTP-affiliated union Fesaht does not engage in negotiations of new collective agreements if the negotiations imply a trade-off with other negotiated working conditions, such as extraordinary compensation for overtime work. Setaab, a sectoral federation of the UGT, is more open to concessions on previously achieved rights. Moreover, in some instances, it takes the initiative of calling for the expiry of a previous agreement to unblock negotiations, with the goal of negotiating wages for all occupational groups in the collective agreement to avoid the national minimum wage compressing the wage structure while securing wage differentials. According to Setaab, the national minimum wage gives power to unions in negotiations and is used as a starting point for bargaining for higher wages. Fesaht argues that wage differentials, albeit minimal, are achieved through performance bonuses rather than meaningful and predictable basic wage increases. These bonuses, including food subsidies, are a preferable solution for the employer organisation Ancipa, as they encourage productivity and are tax deductible. On the other hand, seniority-related wage premiums, compensation for overtime work and supplements to social insurance are not acceptable to employers. Although wage concessions would not be a problem for employers, they think that the lack of flexibility shown by the trade union Fesaht in terms of granting anything in return leads to outdated collective agreements and, ultimately, to their expiry. The government representative interviewed points out that the expiry rate of collective agreements has not been accompanied by effective social dialogue capable of finding ways to renew collective agreements.

In Slovenia, the bargaining process has been relatively unaffected by the national minimum wage up until now. However, new rounds of negotiations have begun to redefine the ratios between basic salaries and minimum wages. Although the initial positions of the social partners were not very close, a final solution was within reach at the time of writing this report, with ratification close. However, some aspects have been raised for discussion in relation to wage components. In particular, unions expressed concerns about a loss of transparency. As long as collectively agreed basic

salaries and national minimum wages are misaligned, this may reduce the transparency of workers' salaries, which are basically determined through cumulating bonuses.

In the meat industry in Germany, the 2022 increase in the statutory minimum wage led the employer organisation BPA to block other proposals from trade unions in the 2023–2024 bargaining rounds, including those on an increase in overtime pay and an increase in the minimum leave days.

In France, there were tensions during the renegotiation of minimum wage levels following the SMIC adjustment, and negotiations were interrupted.

A similar dynamic is apparent in Spain. The union representative interviewed emphasised that none of the lower pay rates stipulated in the collective agreement on preserves and salted fish and seafood had ever been lower than the national minimum wage. This assertion, however, contrasts with the lowest basic minimum pay rates encoded in the Eurofound database on minimum wages for low-paid workers in collective agreements (2024a) and is not consistent with the current wage structure set in the sector-level collective agreement. The interviewee nuanced this claim subsequently and emphasised the need to take into account any pay supplements established at company level when assessing whether employees' wages are in line with the national minimum wage. That is, while the basic pay remains below the national minimum wage, adding pay supplements that have been negotiated at company level and not included in the collective agreement should mean that the salary is above the national minimum wage. Moreover, the employer organisation claimed that unions may be unwilling to accept a reduction of these pay supplements in exchange for basic pay increases in lower-paid categories, as seniority-based pay supplements cannot be compensated for or absorbed by increases in basic pay rates.

Autonomy of social partners and crowding-out

The social partners, particularly the employer organisations, in Germany and Spain raised the impact of the national minimum wage on their autonomy in collective bargaining. The French social partners also identified some impact on their autonomy, but to a much lesser extent.

In Spain, a potential crowding-out effect was highlighted by an employer organisation representative. This representative noted how the national minimum wage was never used as a benchmark for setting wages in the sector. Nevertheless, they noted that the recent increases in the national minimum wage have reduced the differentials with the minimum pay rates set in collective agreements and hence the autonomy of the parties to negotiate solutions better tailored to the

sector's productivity and competitiveness. Therefore, the employer organisation the National Association of Canned Fish and Seafood Manufacturers (Anfaco) claimed that, since the government now has 'the power to set pay scales' (as the wage level for each occupational category refers to the lower wage scales in the collective agreement, and thus, to the national minimum wage), the incentives to negotiate collective agreements are significantly weaker.

The employer organisation in the meat industry in Germany was also critical of the impact of the recent unilateral increase in the national minimum wage on the incentives for companies in this sector to apply a collective agreement (interview conducted in June 2024). In 2020, the social partners in Germany agreed on the introduction of a new sectoral minimum wage, which entered into force in May 2020 and ended in November 2024. The sectoral minimum wage is negotiated between the NGG and the employer organisation VDF. However, the government intervened to improve working conditions in Germany and unilaterally increased the national minimum wage to EUR 12.00. This move has been interpreted by employers as counterproductive as it has damaged trust in the decision-making process. Moreover, VDF expressed the fear that, because of this unilateral intervention, the motivation of companies to apply the sectoral collective agreement has diminished. A decline in the application of the sectoral collective agreement had already been observed when the government started to intervene unilaterally in the sector in 2019 and is now repeating in relation to the increase in the statutory minimum wage.

The social partners from France did not express major concerns about the national minimum wage significantly reducing the space for collective bargaining. However, they identified some infringement of their autonomy since, on the one hand, they do not necessarily return to the bargaining table voluntarily and, on the other hand, the level of revaluation of the SMIC obliges them to increase the first coefficients of the sectoral minimum wages. However, the trade unions pointed out that they retain the capacity to decide whether to apply the increase in the SMIC to the other coefficients of the wage scale, and they are free to differentiate the increases according to the job and wage level.

The weakness of collective bargaining in Romania explains why crowding-out has become an entrenched feature of collective bargaining. Increases in the national minimum wage have in most cases been the only way to secure pay improvements for workers. This has influenced the willingness of employees to actively invest time, energy and money in establishing a trade union in non-unionised workplaces, since the increase in the minimum wage is perceived either as a favour provided by the employer or as a political, ideological or

electoral favour provided by the government. Trade unions have failed to capitalise on the successive increases in the statutory minimum wage.

Impact of national minimum wages on collectively agreed wages and their distribution

The information available points to a wage compression effect in most countries, with only limited evidence of spillover (see Table 11). The perceptions of the social partners regarding the existence of compression do not fully match the data on the ratios of maximum to minimum pay levels in the collective agreements selected from the Eurofound database covered in Table 10. The data show that compression happened in all countries except Slovenia and was particularly intense in Portugal and Spain. The discrepancy between the social partners' perceptions and the data on agreements selected from the database could be explained, first of all, by the different periods covered. The social partners may have in mind the more recent period of the inflation crisis, whereas the dataset contains data up to 2022. Another element that may explain this discrepancy is that social partners' assessments refer, in most cases, to the whole sector, rather than to a specific subsector.

In France, despite the social partners having negotiated wage agreements on a regular basis over the last few years, some tensions have arisen between trade unions and employers. In December 2022, the trade union CFDT – Agri Agro denounced the fact that negotiations on collectively agreed minimum wage levels for 2023 'came to a halt' after the employer organisation appeared at the bargaining table with no proposal and with the aim of blocking negotiations. Regarding the structure of collectively agreed wages, a compression of the wage scale in the food manufacturing sector is apparent. However, this compression is not a direct outcome of the increase in the SMIC, but was caused by the incentives for employers to keep wage groups close to the SMIC because of the exemption from social security contributions for low wages. This effect is, however, more visible in SMEs because they face more stringent financial constraints than large companies.

In Portugal, the increase in the national minimum wage is having a limited impact on collectively agreed wages and is leading to wage compression. Despite taking the minimum wage as the floor for collectively agreed wages, the trade union Setaab finds it difficult to secure wage differentials, as most pay scales are being overtaken by the national minimum wage. When the goal of securing wage differentials is not achieved, other pay complements, such as food subsidies, are a solution to reach an agreement. In turn, the CGTP-affiliated trade union Fesaht argues that wage differentials are insignificant, even when considering premiums. For this union, wage compression is not the only consequence of national minimum wage increases; they have also undermined union power. In this sense, wage increases

require ensuring that collective bargaining is made on an equal footing and that what was established by the parties cannot be changed by law. The employer organisation Ancipa thinks that wage growth has been relatively well integrated by companies, although acknowledging the small wage differentials across occupational groups that are not proportional to the base rate. This has led to a compression of the wage scale that, according to the industrial relations expert interviewed, is a by-product of the national minimum wage increase not being linked with other labour market policy instruments for wage revaluation in collective agreements, such as bonuses and complements.

In Slovenia, the new collective agreement signed in this sector established a 30 % increase in the lowest basic salaries in July 2024. This led to a compression of the wage structure since the ratio between the lowest and the highest basic salary ranges from 1:2.35 to around 1:1.8. This means that, while at the lower end of the scale salary increases were noticeably higher, the increases in salaries at the higher end of the scale were lower.

The issue of wage inequalities between occupational groups is a crucial matter in the subsector analysed in Spain. One of the primary reasons given by the CCOO trade union for not signing the collective agreement is the existence of gender wage gaps. The CCOO stated that the over-representation of women in occupational group 5, which has the lowest wage level, should be corrected. By contrast, the UGT union representative stressed that wage differentials between occupational groups 5 and 4 do not discriminate against women but

respond to different job requirements. Nevertheless, the most recent collective agreement (2021–2024) provided an additional 0.3 % annual pay increase for all job categories in production group 5 to reduce wage differences between occupational groups 5 and 4. Although the pay increase for group 5 was greater than for the other groups, this was not an admission of discrimination, but rather a recognition of the lower salaries in this group, according to the UGT representative. Meanwhile, the employer organisation claimed that the impact of increases in the statutory minimum wage on collectively agreed wages was mitigated by alterations to the wage structure that were implemented in the 2017 collective agreement (in force between 2016 and 2020). This change involved the suppression of seniority pay supplements and their replacement with an agreement allowance (*plus de convenio*) that was awarded only in 2016, based on a reference amount of EUR 750 for 20 years of service. The amount of this allowance was proportional to the length of service.

In Germany, the wage distribution in the meat industry has been a contentious topic in the renewal of the collective agreement. The trade union NGG was favourable to maintaining the wage distribution and avoiding compression as a result of the implementation of the sectoral and national minimum wages. Both the NGG and the employer organisation VDF acknowledge that, in most companies with collective agreements, the impact of the increase in the national minimum wage has been a spillover to other pay scale groups at company level, and that compression has been an exception.

Table 11: Impact of increases in the national minimum wage on collectively agreed wages and the autonomy of the social partners in the manufacture of food and beverages sector

Member State	Impact on the structure of collectively agreed wages: compression versus spillover	Impact on autonomy crowding-out
France	Compression, especially in SMEs. Spillover effects observed in large companies	Minor impact
Germany	Spillover effects predominate	Reduced incentives for companies to apply the sectoral collective agreement once the statutory minimum wage overhauled the sectoral minimum wage in 2023 (according to employer organisation)
Portugal	Compression, but spillover effects also observed in some subsectors	No significant impact
Romania	No conclusive evidence due to weak collective bargaining, but compression effect plays a stronger role	Crowding-out has become an entrenched feature of the collective bargaining system
Slovenia	Compression	No impact detected
Spain	Spillover seems to dominate compression	National minimum wage increases reduce the space for negotiating collective agreements (according to employer organisation)

Note: Based on the social partners' assessments contained in experts' reports.

Source: Authors, based on experts' reports

Impact of national minimum wages on collective bargaining coverage

National minimum wages do not seem to have any relevant impact on collective bargaining coverage in the sector in any of the countries analysed.

In Portugal, the approach to wage bargaining in reaction to national minimum wage increases can have an indirect influence on collective bargaining coverage. Setaab, a UGT-affiliated union, supports the expiry of collective agreements to unblock negotiations and achieve wage differentials following minimum wage increases. Given the limited representation of UGT-affiliated unions, Setaab tends to request the extension of collective agreements to the entire sector. However, the CGTP-affiliated Fesaht opposes such extensions of collective agreements to its members because, together with the expiry of agreements following a blockage in negotiations, they lead to a decline in collective bargaining coverage. The main employer organisation in the sector, Ancipa, argues that the decline in coverage might be due to some employer organisations in the sector ceasing to operate. However, it notes the decline is mainly due to Fesaht's unwillingness to agree on compromises in negotiations and to reconsider its opposition to extensions and Setaab not having sufficient representation to carry the sector. An industrial relations expert argues that the fragmentation and competition between unions, the low density and the lack of a tradition of collective action in the more negotiation-oriented union can explain the impact of the minimum wage on wage compression and the decline in collective bargaining coverage.

In Germany, the employer organisation VDF supports the role of collective bargaining in the sector and the need to negotiate a sectoral minimum in relation to a national minimum wage. At the same time, it aims to extend collective bargaining coverage to make the sector more attractive to workers and avoid unfair competition from companies not adhering to the sectoral standards set in collective bargaining.

Impact of national minimum wages on the industrial relations landscape

There is no evidence of major changes in the structure of the social partners' representation in the sector as a consequence of the national minimum wage. This does not mean that there might not be an impact in the medium or long term. For example, in Portugal there is evidence of the statutory minimum wage being used as an additional element to differentiate the positions of the social partners and, in particular, the trade unions. This discursive polarisation could lead to changes in the landscape. In Spain, tensions between the largest unions in the sector, the UGT and the CCOO, have arisen in relation to pay settlements in the collective agreement. However, it is hard to say whether these issues will translate into a reconfiguration of the union landscape.

Part 2:

Impact of national minimum wages on actual wages and the wage distribution

Part 2 reports the results of an analysis of the impact that changes to national minimum wages are estimated to have on actual wages ⁽¹¹⁾. First, in Chapter 3, the results obtained by relating changes to the national minimum wage and changes to a measure of the aggregate actual wages of low-paid workers are presented and discussed. Then, in Chapter 4, individual wage data are used to analyse the causal effect of increases in the national minimum wage on the wages of workers directly benefiting from those increases. In both cases, the analysis is carried out for the 21 Member States with national minimum wages during the study period. Chapter 5 examines in detail the effect of a particular national minimum wage increase on wage dynamics in six Member States (France, Germany, Portugal, Romania, Slovenia and Spain) and the extent to which this increase reduced wage inequality.

⁽¹¹⁾ The 'actual wage' refers to the salary obtained by each worker during a given period. In aggregate terms, it is the representative salary of a certain group of workers. This term is intended to avoid confusion with national or statutory minimum wages and negotiated, collectively agreed or bargained minimum wages.

3 Impact on aggregate actual wages

This chapter explores the relationship between changes in the national minimum wage and changes in the actual wages of low-paid employees. It does so by using an aggregate measure of the wages of such workers for each country and year, constructed from the wages of a representative sample of workers. The chapter investigates the response of low-paid employees' wages to varying degrees of minimum wage changes, as well as the heterogeneity in this response over the period analysed, across country groups and for various types of employees. Finally, it compares the effect of changes in the national minimum wage on the actual wages of low-paid workers with those produced in the median and higher wages.

Data sources

The first evidence on the relationship between national minimum wages and actual wages was derived from information on the wage income of a representative sample of employees in each Member State with national minimum wages in any year in the study period. The source of data on actual wages is EU-SILC, which contains information that covers all sectors of activity and the informal economy. EU-SILC samples from 2007 to 2022 were used to obtain the information needed to calculate the annual changes in actual wages between 2006 and 2021 ⁽¹²⁾.

Regarding the national minimum wage, the data come from the Eurostat minimum wage database. Specifically, the rate, expressed in national currency, in force in January of each year is used to calculate the change from January to the following January in the national minimum wage between 2006 and 2021.

Measurement of changes in low-paid workers' wages

EU-SILC data on the annual gross wage and the number of months worked were used to calculate the monthly wage for each worker, translated into full-time equivalents. As in previous research by Eurofound

(2014, 2023b), the full-time equivalent monthly wage as defined by Brandolini et al. (2010) was adopted as the measure of actual wage. This is calculated by dividing the annual gross wage (including income taxes and social contributions) by the number of months worked full-time plus the number of months in a part-time job scaled down by a country- and gender-specific factor (the ratio of the median hours of work as a part-time employee to the median hours of work as a full-time employee). Finally, as in Eurofound (2023b), the ratio of hours worked in the main job to total hours worked was used to scale down the wage measure to account for employees holding more than one job.

Compared with the alternatives, details of which are provided in Annex 3, the calculation of the wage following Brandolini et al. allows for the use of a greater number of individual observations in estimating the aggregate wages of low-paid employees in each country and year. In any case, the main results are robust to the use of other definitions of wages.

Since earnings are expressed in euro in EU-SILC, the full-time equivalent monthly wages in national currencies for the countries that are not part of monetary union were calculated, using the corresponding annual average exchange rates provided by Eurostat.

Self-employed workers, workers under 20 years of age (for whom the full adult rate of the national minimum wage does not apply in various countries), and those who declared zero or negative values for their annual gross wages were excluded from the samples. Additionally, those employees whose monthly wages were less than 50 % of the monthly national minimum wage of the corresponding country and year were excluded to eliminate the influence of abnormally low individual wages in the calculation of aggregate wages.

Individual wages were used to construct the measure of the annual change in the wages of low-paid workers, which is related to the annual developments in the national minimum wage. Box 3 outlines the empirical strategy used in this part of the study (technical details can be found in Annex 3).

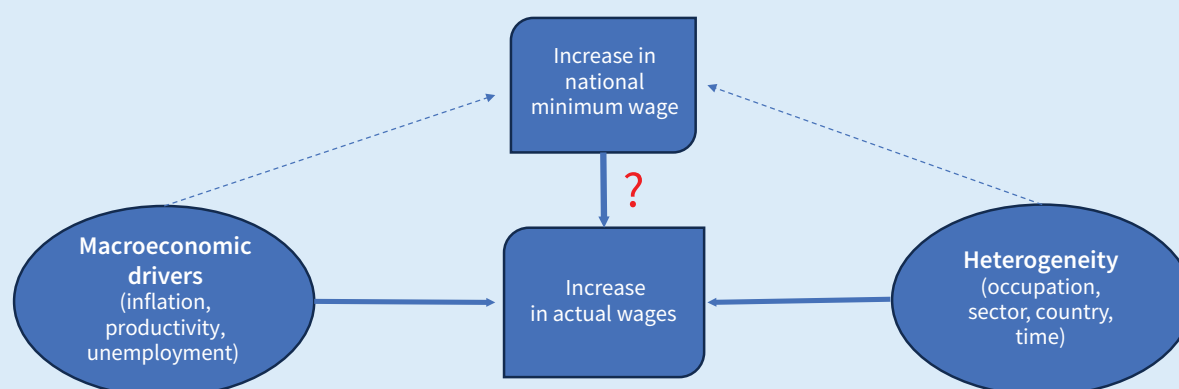
⁽¹²⁾ Wages in the EU-SILC samples are those earned in the year immediately preceding the survey. The study analyses annual changes in actual wages, which is why it requires earnings data from 2006, the year prior to the study period. For this reason, the EU-SILC samples used in the study cover 2007 to 2022, providing data on wages between 2006 and 2021.

Box 3: Empirical strategy for aggregate wages

The analysis comprised two stages, based on the exploitation of the individual and aggregate dimensions of the magnitudes involved.

- First stage.** Data from EU-SILC were used to estimate a country-year aggregate measure of wages for low-paid employees. The measure was computed as the value corresponding to the first quartile of the distribution of the full-time equivalent monthly wage in each country-year. This is the value below which 25 % of employees fall after sorting them according to their wage level ⁽¹³⁾. The change between two consecutive years in the wages of low-paid employees was computed using this measure.
- Second stage.** The change in the wages of low-paid employees was regressed against the annual change in the national minimum wage and a set of controls. Figure 13 shows the corresponding empirical model. It controls for the effect of various macroeconomic factors – namely, inflation, changes in productivity and unemployment ⁽¹⁴⁾. Likewise, the empirical model indirectly controls for unobservable factors that induce wage heterogeneity between occupations, sectors and countries, and over time. Some additional specifications add a measure of negotiated wages and the Kaitz Index.

Figure 13: Sketch of the empirical model



Source: Authors

The empirical model can be made more flexible to obtain an estimate of the effect of national minimum wage developments specific to different subperiods, groups of employees and groups of countries. It can also be adapted to analyse the impact of changes in national minimum wages on changes in the actual wages of employees not in the low-paid category.

Baseline results

Figure 14 provides initial descriptive evidence showing the cumulative growth in 2006–2021 (panel A) and in 2015–2021 (panel B) of the actual and minimum monthly wages for each Member State. The variability

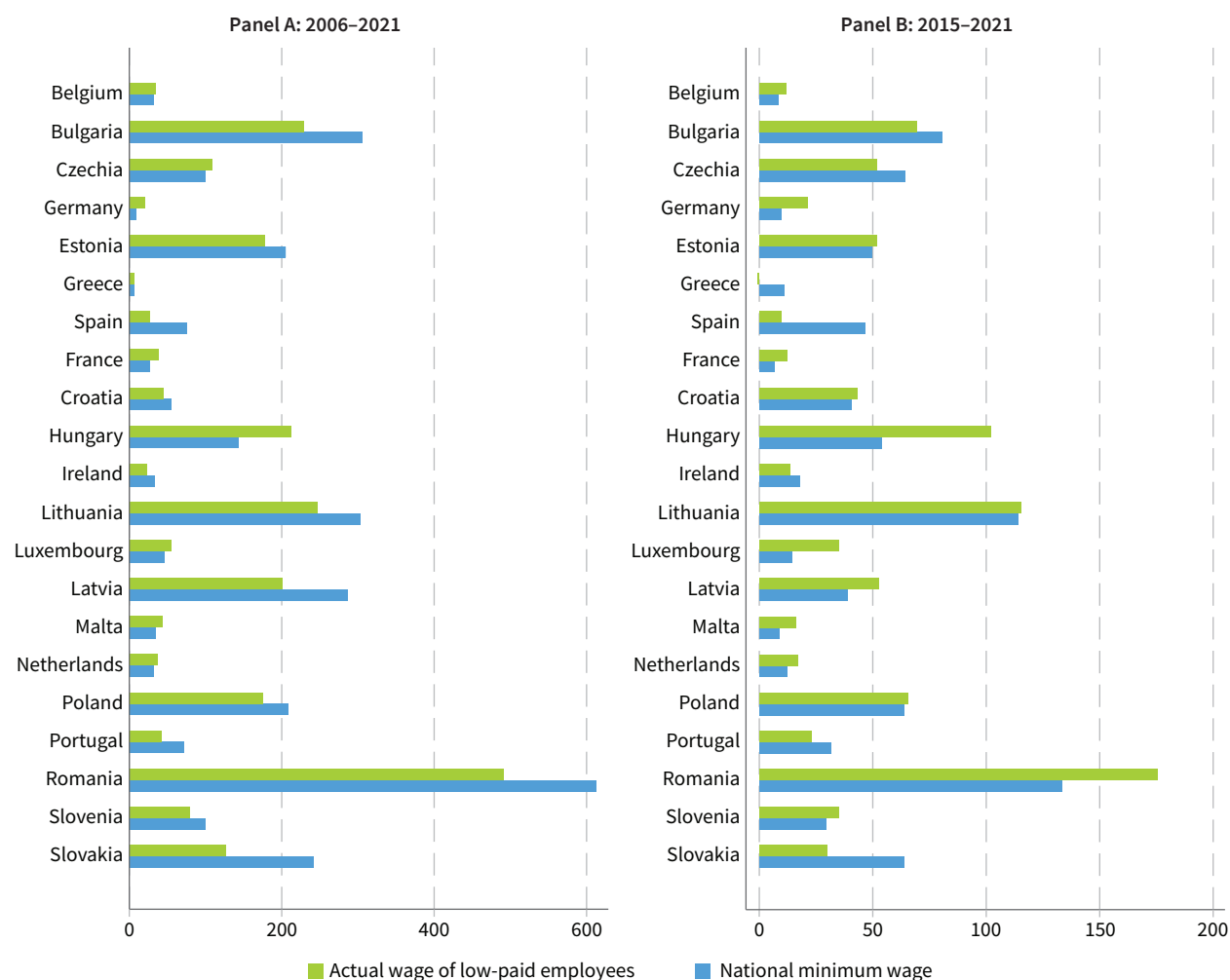
between countries is considerable, and there is a clear association between changes in national minimum wages and the actual wages of low-paid employees, since both magnitudes grew generally to a similar extent. Some differences are also seen in the 2015–2021 subperiod compared with the full period ⁽¹⁵⁾.

⁽¹³⁾ Unfortunately, the sectoral detail of the EU-SILC samples does not enable a definition of a group of low-wage sectors like that used in Part 1.

⁽¹⁴⁾ Eurostat data on the Harmonised Index of Consumer Prices of each country in January of each year were used to compute the measure of annual inflation. Eurostat is also the source of the national unemployment rate and the index of labour productivity per person employed and hour worked.

⁽¹⁵⁾ This chapter presents results for the whole period (2006–2021) and certain subperiods. In the latter case, 2015 has been used as a cut-off year so that a similar subperiod to that in Part 1 can be used.

Figure 14: Cumulative growth in national minimum wages and actual wages of low-paid employees, Member States



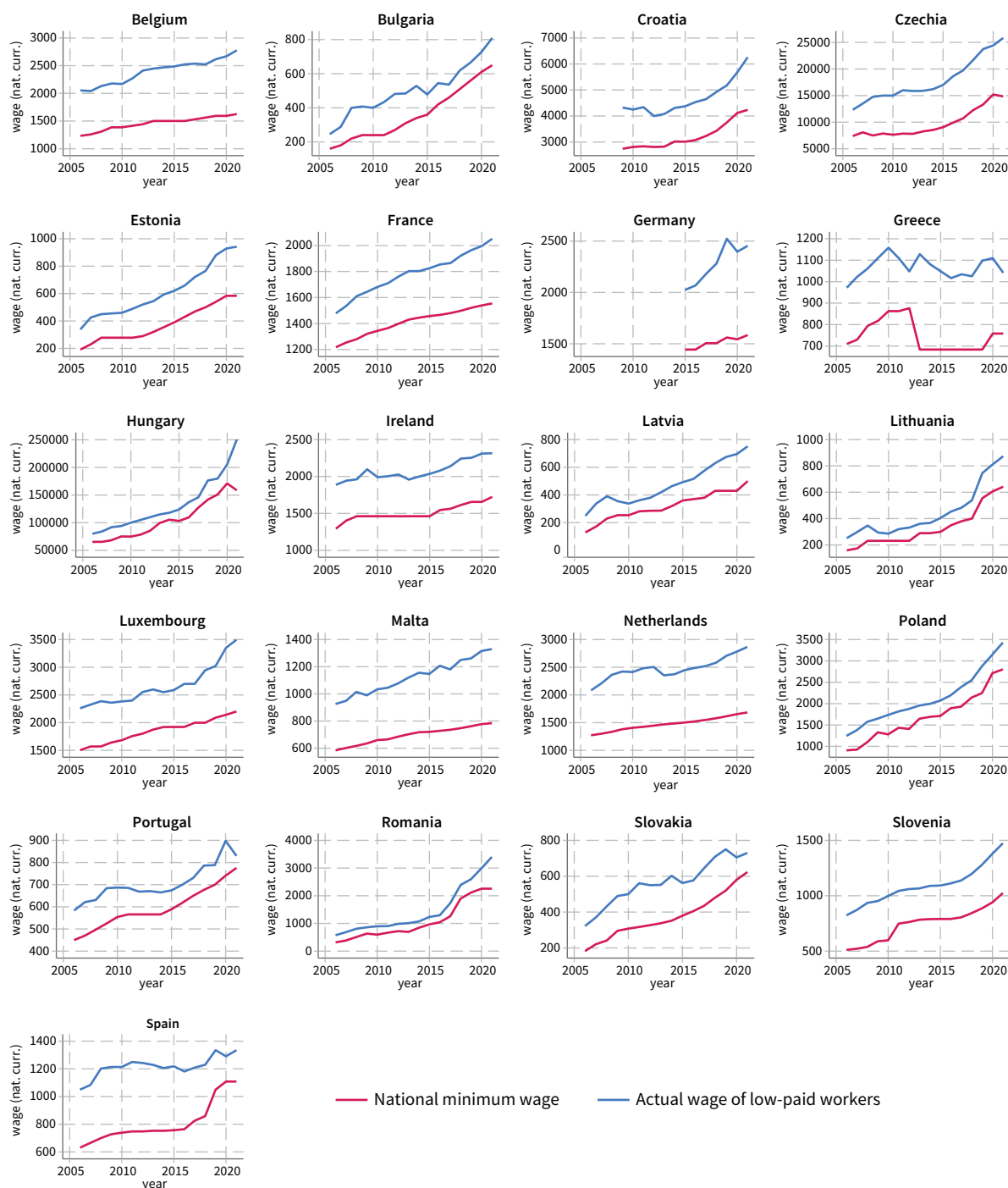
Note: In panel A, growth is over 2015–2021 for Germany and over 2009–2021 for Croatia.

Source: Authors, based on data from EU-SILC and Eurostat's monthly minimum wage dataset

Additional details of changes in the wages of low-paid employees and national minimum wages are depicted in Figure 15. It shows that the measure of the wages of low-paid employees was above the national minimum wage in all years of the study period in all countries.

However, while in some countries the distance between actual and national minimum wages is notable and remains relatively stable over time, the gap is much smaller and varies over time in others.

Figure 15: Change in national minimum wages and actual wages of low-paid employees (monthly wages in national currency), Member States, 2006–2021



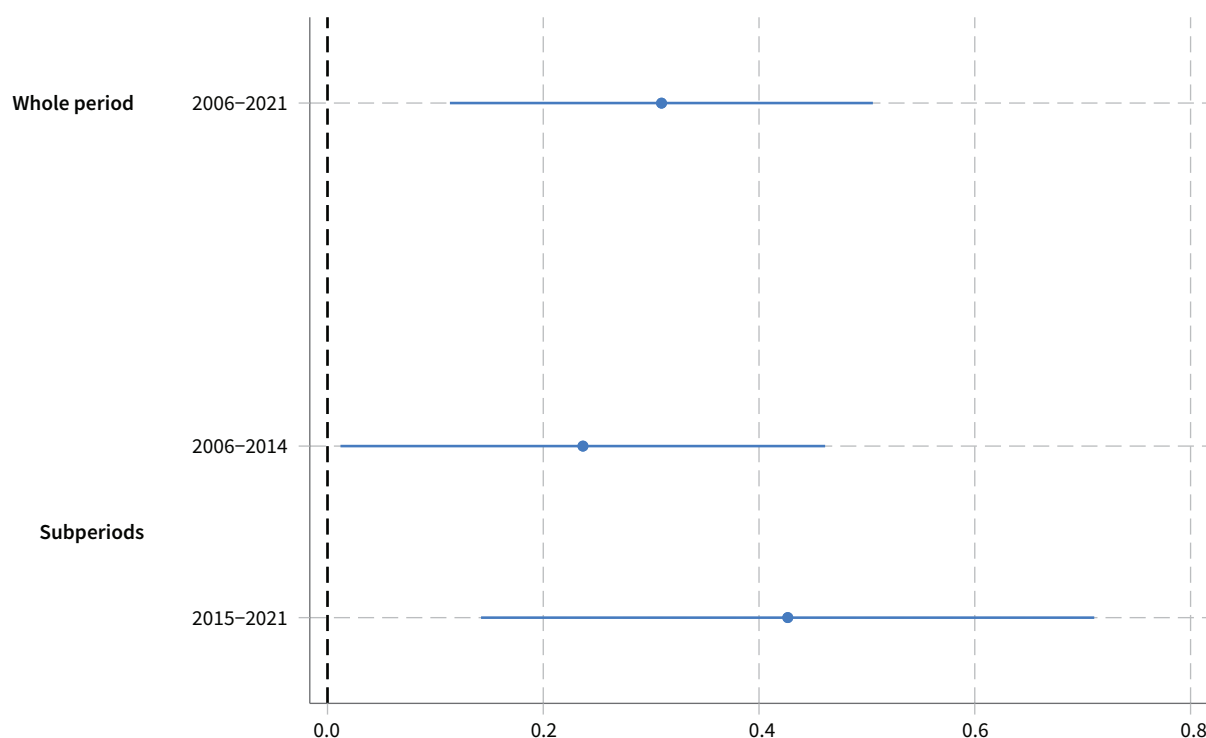
Note: The year is that in which wages were measured.

Source: Authors, based on data from EU-SILC and Eurostat's monthly minimum wage dataset

Next, the effect of changes in national minimum wages on changes in the wages of low-paid employees was estimated based on the empirical model sketched in Box 3 – equation (1) in Annex 3 – and the annual changes over 2006–2021. The result is plotted at the top of Figure 16. The estimate of the effect suggests that, on average, a 1 % increase in the national minimum wage resulted in a 0.31 % increase in the wages of low-paid

employees. That is, following a rise in the national minimum wage, the wage level associated with the lower quartile of the wage distribution experienced a significant and sizeable increase. The estimate of the effect is robust to changes in the sample of countries, the type of specification, the measure of actual wages and the definition of the group of low-paid employees (results are reported in Table A8 in Annex 3).

Figure 16: Effect of changes in national minimum wages on changes in aggregate actual wages



Notes: The blue dots represent the point estimates of the effect of changes in national minimum wages on changes in the actual wages of low-paid employees, while the blue lines represent the confidence intervals. If the confidence line does not cross the zero line, an estimate is statistically significantly different from zero. Estimates are from specifications that include inflation, the unemployment rate, the change in productivity, and country and year fixed effects. The dependent variable in both cases is the change in the lower quartile of the wage distribution. The sample is composed of the 21 countries with national minimum wages in any of the years from 2006 to 2021. Confidence intervals (95 %) were computed using robust, clustered by country, standard errors.

Source: Authors

The effect of changes to national minimum wages on actual nominal wages was also estimated for the 2006–2014 and 2015–2021 subperiods. The results are depicted at the bottom of Figure 16. They indicate that the intensity of the effect was greater in the second subperiod than in the first. Specifically, while an annual increase of 1 % in the national minimum wage was associated with a 0.43 % increase in the actual wage between 2015 and 2021, the effect size was almost half that in the first subperiod⁽¹⁶⁾. One possible explanation for the stronger effect since 2015 is that increases in the national minimum wage in the first subperiod may have narrowed the gap between the wages of low-wage employees and the national minimum wage. Subsequent changes in the minimum wage may thus have intensely affected a larger proportion of employees at the bottom of the wage distribution. An alternative interpretation is related to the announcement of the Minimum Wage Directive. Specifically, the increase in the ratio in the second

subperiod may have been due to changes in actual wages having been taken into account when uprating the national minimum wage, with the aim of approaching the target of 50 % of the average wage or 60 % of the median wage. If so, the estimate of the effect in the second subperiod would have been overestimated since it would have incorporated the impact of changes in actual wages on uprates of the minimum wage (upward bias due to simultaneity). However, it should be noted that this phenomenon would have occurred only in the last few years of the study period. Similar results are obtained by eliminating 2019 onwards from the sample. In any case, this result suggests that the effect of changes in national minimum wages on actual wages may be somewhat more intense than that on wages collectively negotiated for low-wage sectors since 2015 (as estimated in Part 1). However, when interpreting this potential discrepancy, note that the delimitation of the sectors and the group of low-paid employees is not equivalent in the two cases.

⁽¹⁶⁾ Despite the clear difference in the point estimate of the effect between the subperiods, the low precision with which the coefficients were estimated means that a formal test does not rule out the equality of the effect in both subperiods.

A robustness check analysed whether the inclusion of negotiated wages in low-paid sectors as an additional control affects the estimation of the effect of changes in national minimum wages on changes in the actual wages of low-paid employees. In the extreme case, the effect would be negligible if the entire impact of the change in the national minimum wage on the change in the actual wage occurred through changes in negotiated wages. The results do not seem to support this mechanism. After including changes in the mean lowest collectively agreed minimum wages in low-paid sectors for each country and year, the estimate of the effect of the national minimum wage decreases but remains sizeable (see columns 1 and 2 of Table A9 in Annex 3).

Furthermore, the estimate of the specific effect of the lowest collectively agreed wages in low-paid sectors, although positive as expected, is not statistically different from zero. However, the inclusion of the negotiated wage in the specification produces an interesting result. Its effect is not significant when considering all countries. Yet, when distinguishing between groups of countries according to collective bargaining coverage rates (below and above the average coverage rate in the EU), a strong significant effect is observed for countries with high collective bargaining coverage.

This result suggests that negotiated wages have had a significant impact on wage developments for low-paid employees in countries with high collective bargaining coverage. Therefore, increases in the wages of low-paid employees in a context of high collective bargaining coverage would have been influenced by both minimum wage uprates and increases in negotiated wages. Since, as shown in Part 1, increases in the national minimum wage brought about increases in the negotiated wage, uprates of the minimum wage would have had both a direct effect and an indirect effect (through its influence on the negotiated wage as depicted in Figure 3) on the wages of low-paid employees. In contrast, only the direct effect would have played a significant role in the wage improvements for low-paid employees in contexts

of low collective bargaining coverage. Nevertheless, these results must be read with some caution, given that it is possible that the mean negotiated wage used in the analysis from the data described in Part 1 is not representative of the negotiated wages for low-paid employees for some sectors in the corresponding country and year ⁽¹⁷⁾.

Finally, the Kaitz Index was included as an additional control variable to check if the distance between the national minimum wage and the average (or median) wage affects the estimate of the effect of changes in the national minimum wage on actual wages. The results (columns 3 and 4 of Table A9 in Annex 3) clearly show that the inclusion of the Kaitz Index does not have a relevant effect on the change in the wages of low-paid workers when controlling for the other observable factors and the heterogeneity between countries and years. Most importantly, its inclusion does not alter the estimate of the effect of national minimum wage developments.

Effect of national minimum wage increases of different intensities

It may be that actual wages only react or react more intensely when national minimum wages increase substantially. To explore this possibility, thresholds of 5 %, 7.5 %, 10 % and 15 % increases in nominal national minimum wages were defined. These thresholds were used to classify annual changes into five non-overlapping groups of hikes: less than 5 %, 5–7.5 %, 7.5–10 %, 10–15 % and 15 % and above ⁽¹⁸⁾. The effect associated with each of these groups was then estimated. The results are shown in Figure 17.

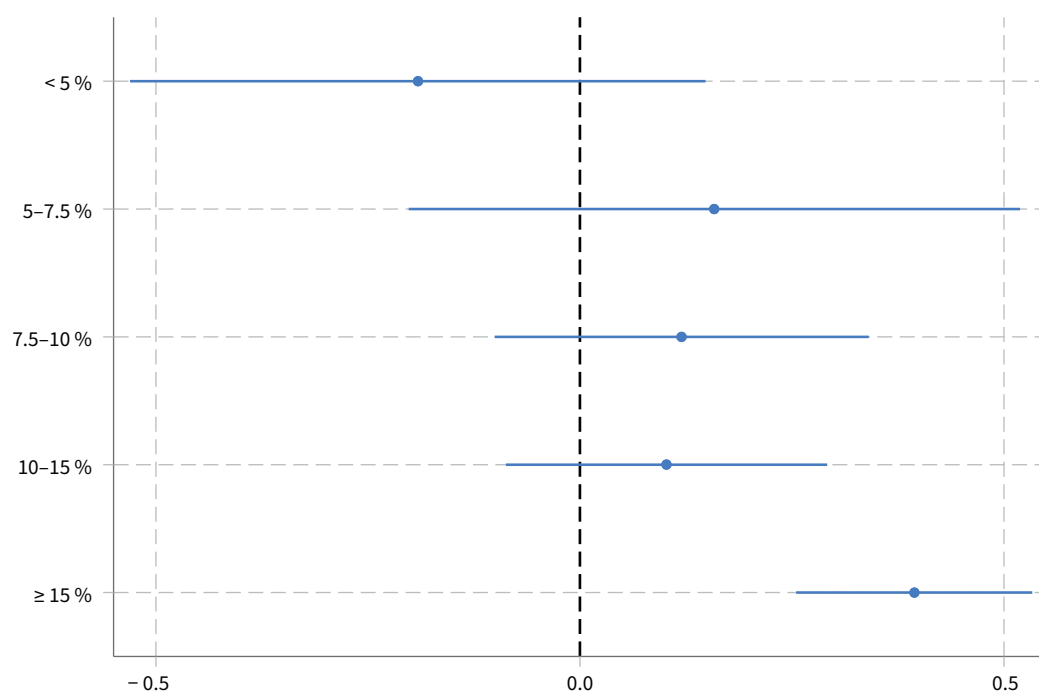
The only statistically significant and sizeable effect is found in the group with annual national minimum wage increases of at least 15 %. This means that, on average for Member States, nominal increases of less than 15 % would not have caused substantial uprates of the wages of low-paid employees ⁽¹⁹⁾. Therefore, the overall effect estimated above is due to large increases in the national minimum wage.

⁽¹⁷⁾ For various countries and years, the data necessary to calculate the mean negotiated wage were not available, so these observations were excluded from the sample.

⁽¹⁸⁾ The groups have been written this way for readability. They represent the following actual thresholds: less than 5 %; 5–7.499%; 7.5–9.99%; 10–14.99%; and 15% and above. These groups are used in the rest of the report.

⁽¹⁹⁾ A statistical test rules out the hypothesis of the equality of the effects associated with the different intervals. The estimated coefficients (and their corresponding standard errors in parentheses) for the hikes of less than 5 %, 5–7.5 %, 7.5–10 %, 10–15 % and 15 % and above are, respectively – 0.191 (0.163), 0.159 (0.173), 0.120 (0.106), 0.102 (0.091) and 0.394 (0.067).

Figure 17: Effect of national minimum wage increases on low-paid wages by intensity of change



Notes: See notes for Figure 16. Intervals are defined based on annual nominal increases in the national minimum wage in the national currency.
Source: Authors

Heterogeneity analysis

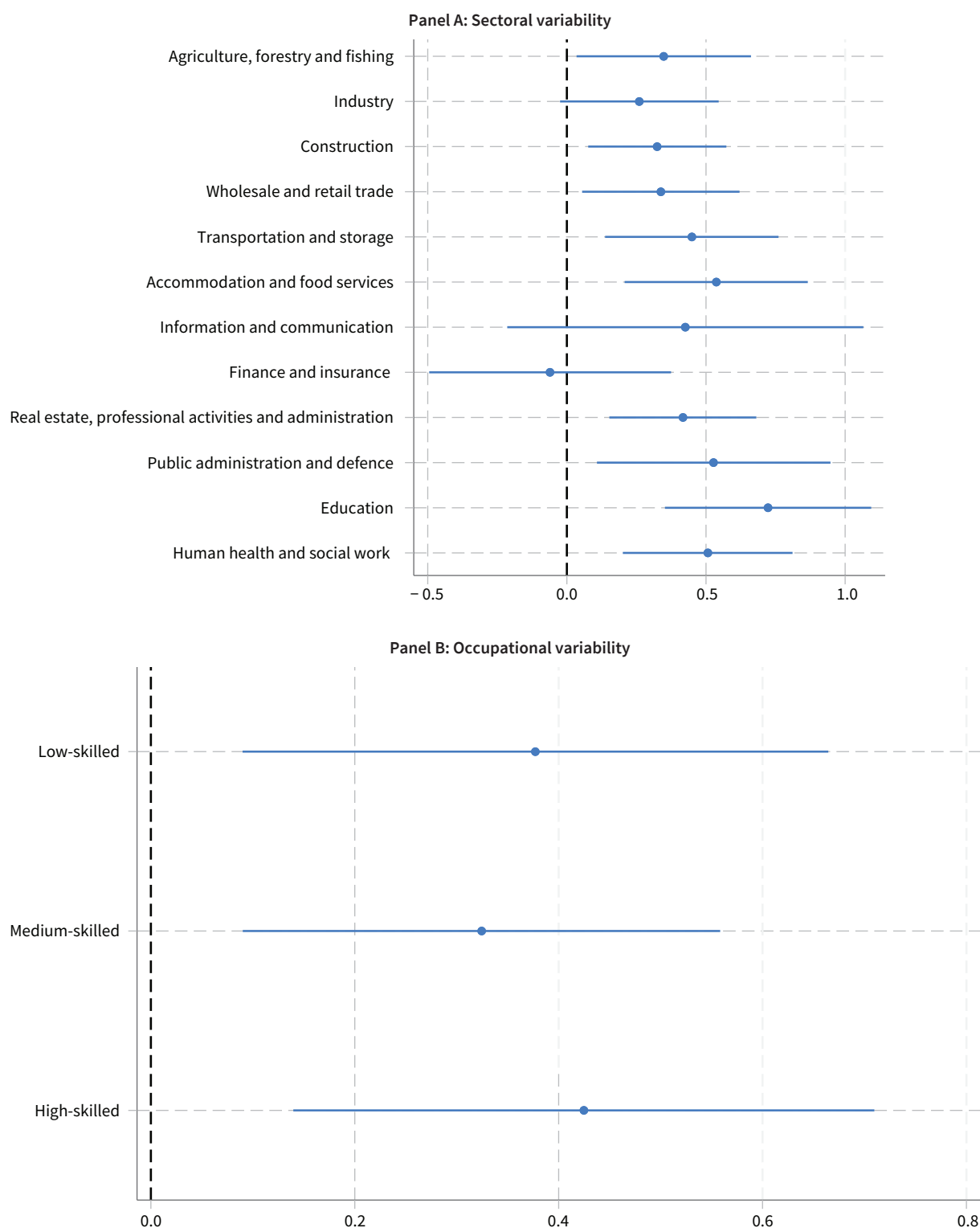
This section reports the estimates of the effect of national minimum wage developments specific to various groups of employees – including different sectors and occupations, women and men, different age groups, and countries. Country groups are categorised both by EU Membership (pre- and post-2004 Member States, excluding the United Kingdom) – referred to EU-14 and EU-13 respectively) and by different models of minimum negotiated wage interactions ⁽²⁰⁾.

The estimated effects in each sector of activity are shown in panel A of Figure 18. It should be noted that the EU-SILC samples contain information on the main activity sector of the employee's firm, but only for an aggregation of the one-digit NACE classification. Overall, 12 sectors are covered over the whole study period. Therefore, panel A of Figure 18 reports the estimated effects for this sectoral disaggregation. It shows some interesting differences in the effect of changes to the national minimum wage. For example, the effect is not statistically different from zero in industry, information and communication and finance and insurance activities. However, the effect is positive and statistically significant in other sectors where it is common to find a large percentage of low-paid employees, such as wholesale and retail trade, accommodation and food services activities and human

health and social work activities. More surprisingly, the effect is also positive and significant in other services sectors, such as real estate, professional, scientific and technical, administrative and support services; public administration and defence, and social security; and education. In any case, sectoral differences in the point estimates of the effect should be interpreted with caution, since a formal test does not rule out the similarity of the effect across sectors.

Regarding differences between occupations (defined using the 2008 International Standard Classification of Occupations (ISCO-08)), panel B of Figure 18 shows that the effect of change in the national minimum wage is transferred to the wages of employees in low-skilled occupations and to those in other occupations. There is no statistically significant difference between the estimated effect for employees in low-skilled (group 9 of the ISCO-08 classification), medium-skilled (groups 4–8) and high-skilled (groups 1–3) occupations. This evidence suggests that the association between developments in the national minimum wage and changes in actual wages is not limited to low-paid employees. As discussed in the introduction, faced with increases in the national minimum wage, employers may feel obliged to increase wages for higher-skilled employees as well to maintain wage differentials – that is, to keep wage structures unchanged.

⁽²⁰⁾ See equation (2) in Annex 3. Due to changes over time in the definition of variables and their values in the EU-SILC samples, the results in this part of the study refer to 2015–2021.

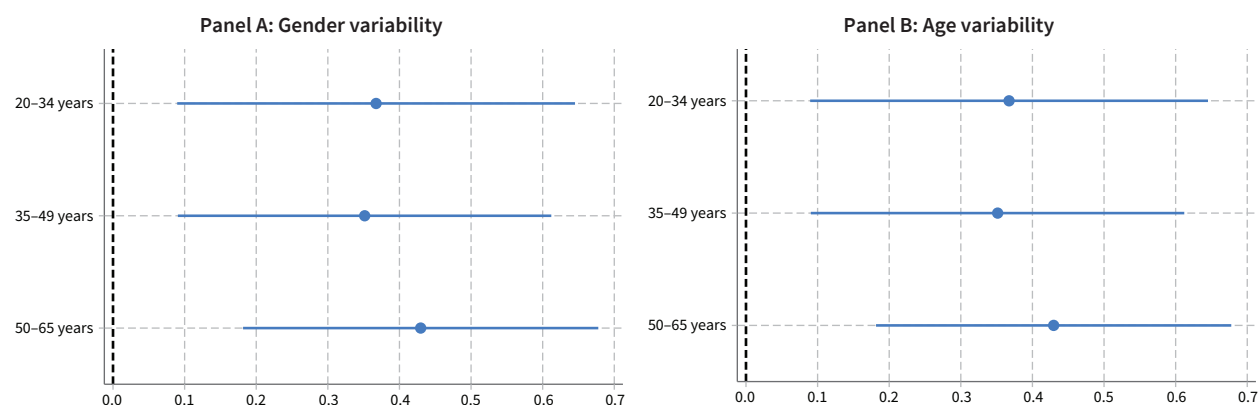
Figure 18: Sectoral and occupational heterogeneity in the effect of national minimum wage changes, 2015–2021

Note: See notes for Figure 16.

Source: Authors

The results obtained from estimating a specific effect according to the gender and age group of employees are summarised in Figure 19. The effect is statistically significant for both women and men and all age groups.

There are no notable differences between the groups in the effect size when split by gender (panel A) or age group (panel B).

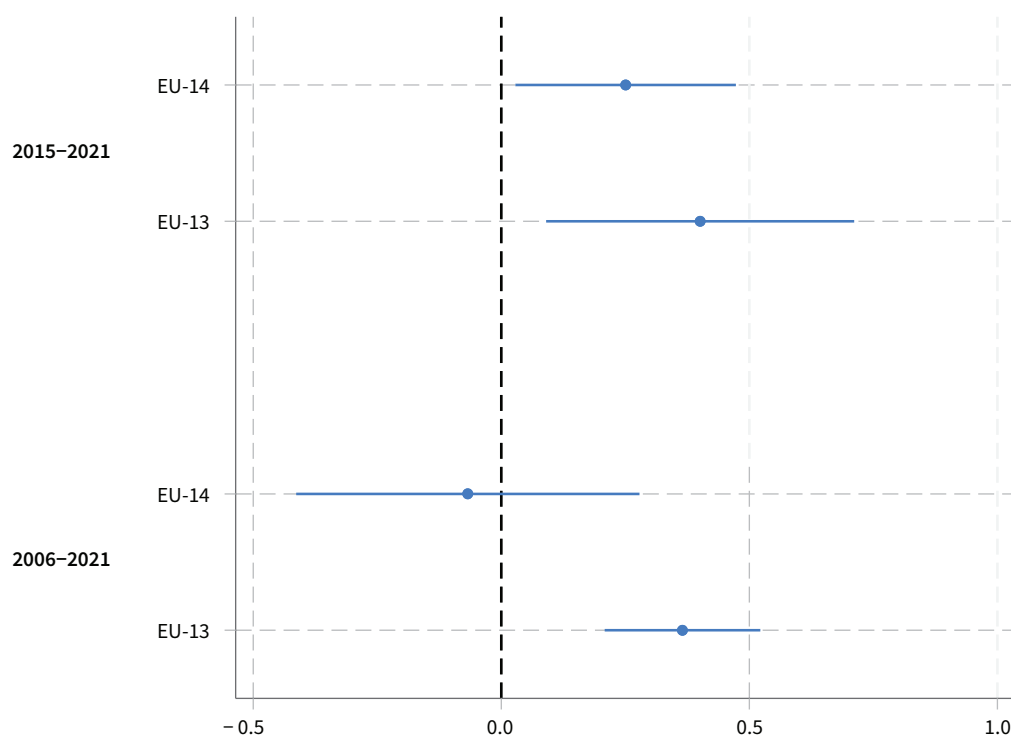
Figure 19: Gender and age heterogeneity in the effect of national minimum wage changes, 2015–2021

Note: See notes for Figure 16.

Source: Authors

The size of the effect of developments in the national minimum wage on the actual wages of low-paid employees is estimated at around 0.3–0.4 % and is, in general, homogeneous regardless of the sector, occupation, gender and age of the employee ⁽²¹⁾. Still, it can be argued that the effect may vary between countries. To explore this possibility, the effects in the EU-14 are differentiated from those in the EU-13.

The estimate of the effects of changes in the national minimum wage on these two groups are plotted in Figure 20. The figure shows the results for the 2015–2021 subperiod and for the entire 2006–2021 period due to important differences in the estimated effect of interest in these periods. Although the point estimate is somewhat higher in the EU-13 than in the EU-14 between 2015 and 2021, it cannot be concluded

Figure 20: Differences between the EU-13 and EU-14 in the effect of national minimum wages

Note: See notes for Figure 16.

Source: Authors

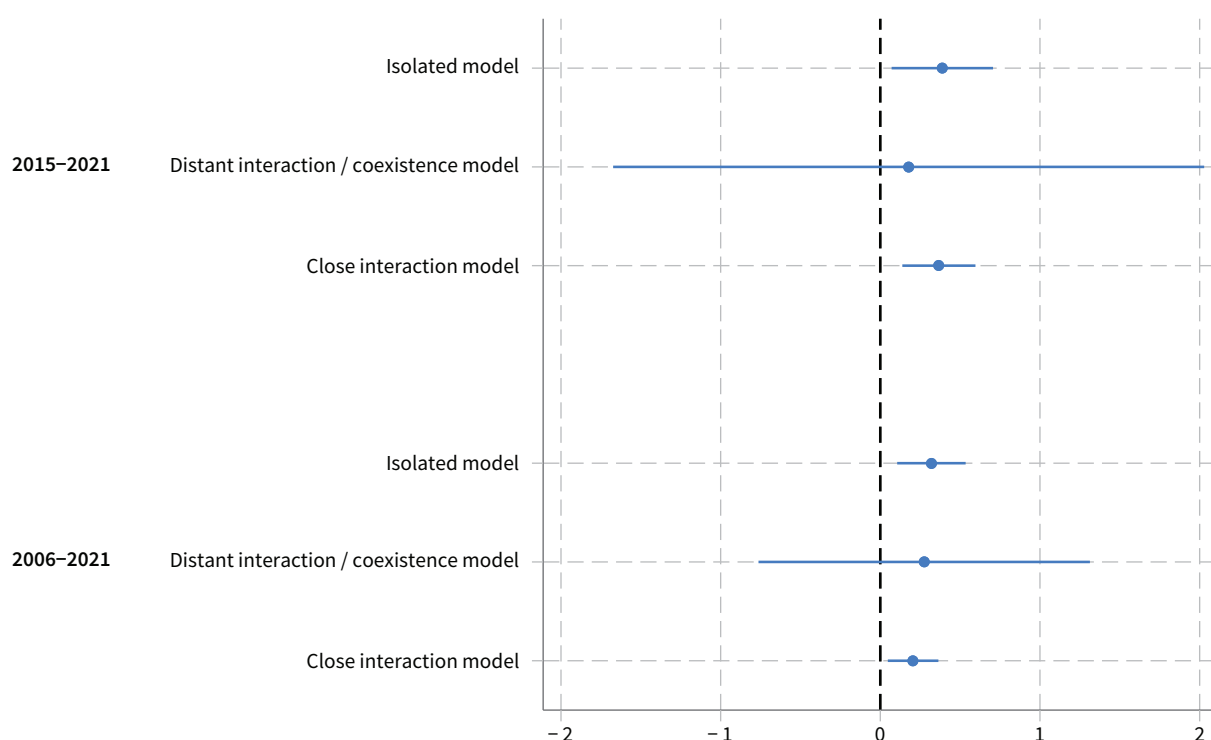
⁽²¹⁾ Note that this does not prevent some of the groups defined based on these characteristics (for example, women or less-educated employees) from benefiting more from increases in the national minimum wage by being overrepresented in low-paid jobs.

that the difference in the effect of changes in national minimum wages was statistically different in the two groups of countries in that subperiod. However, the difference between the groups is much greater and statistically significant between 2006 and 2021. While the effect is positive and clearly significant in the EU-13, it is not statistically different from zero in the EU-14. This suggests that the developments in national minimum wages until 2015 had a greater impact on changes in the actual wages of low-paid workers in the EU-13 than in the EU-14. However, in more recent years, the effect sizes have converged ⁽²²⁾.

Finally, the countries were placed in three groups based on how national minimum wages and collective bargaining interact. The overall conclusion from the results, summarised in Figure 21, is that there are no significant differences in the effect of national minimum wage changes between the three groups of countries, which contrasts markedly with the differences between

the groups in the effect on negotiated wages, as shown in Part 1. Overall, this evidence suggests that, regardless of the mechanisms associated with the type of interaction between the national minimum wage and the negotiated wage, increases in the former are passed on to the current wage with a similar intensity in the three groups of countries. In any case, the effect of national minimum wages on a measure of the actual wages of low-paid employees in all economic sectors is estimated here, while the exploration of the effect on negotiated wages in Part 1 focused on a group of low-paid sectors, defined at a higher level of sectoral granularity. It is thus possible that the differences between the groups of countries split according to their models of interaction between national minimum wages and collective bargaining are important for employees in the specific low-paid sectors considered in the analysis of negotiated wages, but not for low-paid employees of all economic (highly aggregated) sectors.

Figure 21: Differences in the effect of national minimum wages between country groups based on the type of interaction between national minimum wages and negotiated wages



Note: See notes for Figure 16.

Source: Authors

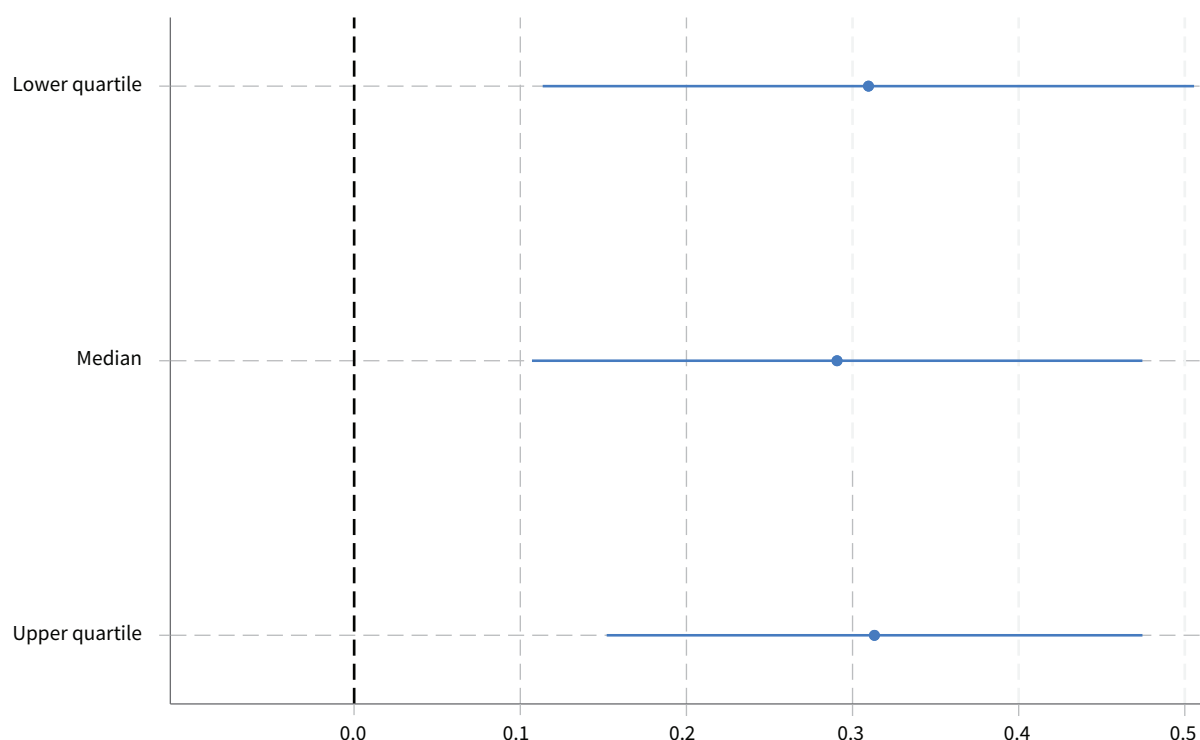
⁽²²⁾ The comparison of the effect for hikes of different intensities between the two groups of countries is consistent with these results and those of the previous section. Briefly, the only relevant effect for both the EU-14 and the EU-13 is that corresponding to nominal increases in the national minimum wage of 15 % and above. Moreover, the effect is greater in the EU-13, although the difference with that in the EU-14 is not statistically significant from 2015.

Effect of national minimum wage changes on median and higher wages

Increases in national minimum wages can push up actual wages for all workers, not just for low-paid employees. That is, there may be spillovers since, faced with an increase in the national minimum wage, employers may feel pressure to increase the wages of all workers, to maintain the skills wage gap and keep the wage structure unchanged. To check if this is the case, the effects of developments in national minimum wages on changes in median wages and at the level corresponding to the upper quartile of the wage distribution were estimated for the entire study period ⁽²³⁾. The median wage (the value separating the higher half from the lower half of employees when arranged in ascending order of wages) and the wage level of the upper quartile (the value under which 75 % of employees fall when arranged in increasing wage order) were used as measures of the actual wages of medium- and high-paid workers.

Figure 22 plots the estimated effect of national minimum wage changes in both cases, along with that reported above for the measure of the wages of low-paid employees (the wage level at the lower quartile). The effect is positive and significant at both the middle (median) and top (upper quartile) of the wage distribution. Interestingly, the pattern of effects depending on the intensity of the hike in the national minimum wage is the same for medium- and high-paid employees as for low-paid employees. That is, a nominal increase of at least 15 % causes substantial uprates of the actual wages of employees not classified as low paid (see Figure A1 in Annex 3). This suggests that increases in national minimum wages during the study period not only translated into wage uprates for low-paid employees but also benefited those with higher wage levels ⁽²⁴⁾. The size of the effect for higher-paid employees is similar to that estimated for low-paid employees, suggesting a general shift in the entire wage distribution towards higher levels, without altering the wage structure substantially (lack of wage compression; see Figure 2) ⁽²⁵⁾.

Figure 22: Effect of national minimum wage changes on median and higher wages



Notes: See notes for Figure 16. Intervals are defined based on annual nominal increases in the national minimum wage in the national currency.
Source: Authors

⁽²³⁾ The same pattern is obtained when estimating the effects since 2015.

⁽²⁴⁾ This is consistent with the effect reported above for medium- and high-skilled employees. This result is robust to using alternative definitions of low-paid and non-low-paid employees. For example, Figure A2 in Annex 3 reports the estimated effect of changes in the national minimum wage on changes in the mean value of each quintile of the actual wage distribution.

⁽²⁵⁾ This conclusion was derived from the analysis of the effect of national minimum wage developments on changes in the aggregate actual wage throughout the entire study period. Furthermore, it was obtained after conditioning by observable macroeconomic factors and by unobservable factors that remain invariant throughout the study period. Therefore, this does not contradict some large national minimum wage uprates increasing the wages of low-paid employees to a much greater extent than those of employees with higher wage levels and causing a compression of the wage distribution in specific cases in some selected countries (as presented later in Chapter 5).

Summary

The analysis using the aggregate measure of wages of low-paid employees confirms the following.

- There is a positive association between developments in the national minimum wage and changes in the wages of this group.
- There are no significant differences in the effect between groups of employees according to their sector of work, occupation, gender or age.
- There do not appear to be differences between the EU-14 and EU-13 (particularly since 2015), nor between countries with different types of interaction between national minimum wages and negotiated wages.
- The relationship does not seem to be limited to low-paid employees, as the effects of uprates of the national minimum wage also pass on to higher wage levels.

However, as indicated at the beginning of this chapter, the estimated effect of national minimum wage developments on the actual wages of low-paid employees must be treated with caution. This is so given that, for example, the setting of the national minimum wage incorporating expected increases in the actual wages of the low-paid employees cannot be ruled out. Including the specification of macroeconomic factors is an attempt to control part of this possibility but probably will not remove it completely. For this reason, the results of a complementary empirical exercise that seeks to advance the identification of the causal effect of national minimum wage developments on actual wages are presented in the next chapter.

4 Impact on individual actual wages

This chapter uses longitudinal data to provide both a descriptive and an econometric analysis of actual wages following changes to the national minimum wage. Longitudinal studies track changes over time and allow for the identification of causal effects, capture dynamic changes in wage levels while controlling for trends and changes in compliance with the national minimum wage, and support the analysis of differential impacts across various worker groups. Overall, longitudinal studies enhance the robustness and validity of research findings by controlling for both observed and unobserved factors. Nevertheless, as the analysis uses a restricted subsample, it is less useful for obtaining a wide perspective over the entire wage distribution.

The chapter explores what changes take place in the lowest wages, earned by workers whose previous pay rates were below the new wage threshold created by the increase in the national minimum wage. It also looks for possible spillover effects in other parts of the wage distribution. The aim is to clarify whether the increase for the lowest earners is actually higher than the growth in the wages of other workers.

The analysis uses the longitudinal version of EU-SILC, with waves covering most of the period studied, from 2008 until 2020 (the longitudinal data includes EU-SILC waves from 2009 to 2021, and the reference period is usually defined as 12 months before the year of the survey). Because the longitudinal data follow workers over time, the salary reported in a current year, referring to the previous year, can be combined with the information on the reported number of hours worked in the previous year. Of course, the assumption is that workers report consistent information over time. To maximise consistency with the previous chapter and recent Eurofound studies (Eurofound, 2014, 2023b), this chapter follows the restrictions proposed by some of the definitions that aim to minimise errors arising from job changes or moving from full-time to part-time work and vice versa. The longitudinal sample of workers includes only workers who (i) did not change job (baseline definition), (ii) had a permanent job and (iii) were employed full-time and for at least 40 hours per week (definition of Goraus-Tańska and Lewandowski (2019); Eurofound, 2023b).

The analysis is limited to countries in which the national minimum wage played a role in the period considered. As in Burauel et al. (2020) and following the previous chapter, this chapter restricts the analysis to employees aged 20–65. Workers whose salaries were less than half of the national minimum wage are excluded in order to

avoid outliers potentially affecting the estimates. Finally, in order to take advantage of the longitudinal dimension of the data, the analysis is restricted to those workers with at least two observed periods. The final sample collects some 90 000 individuals observed for an average of three periods per worker. Table A10 in Annex 4 outlines the loss of information due to missing values and sample restrictions.

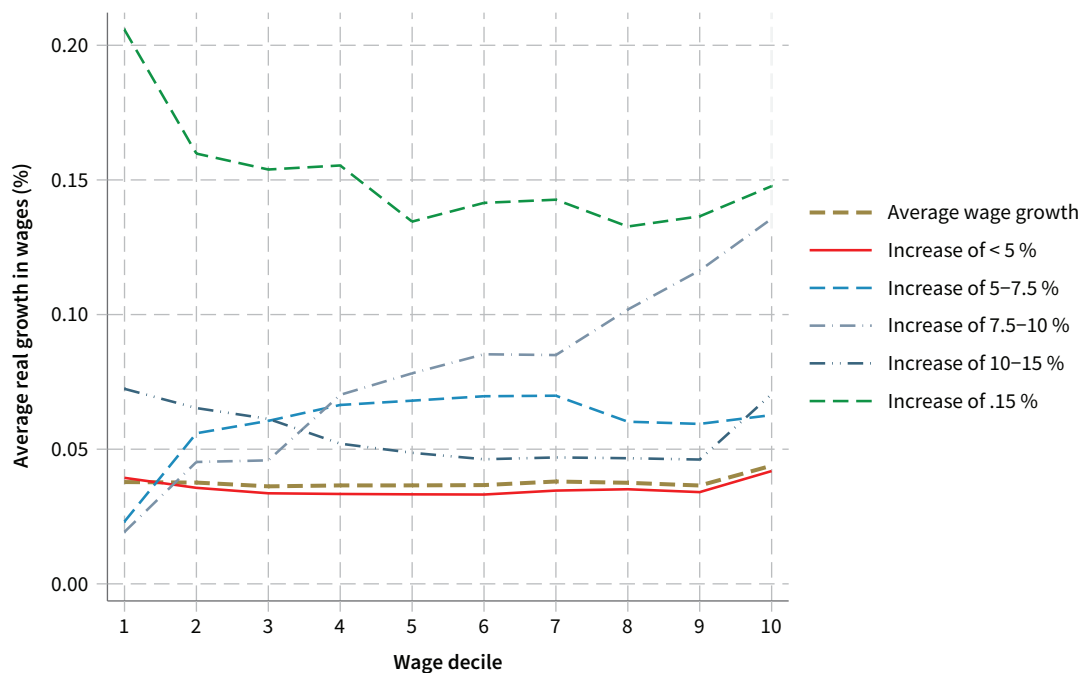
Significant changes to national minimum wages

In order to associate the growth in salaries with the increases in the national minimum wage, changes to the national minimum wage are categorised as non-overlapping groups of hikes: less than 5 %, 5–7.5 %, 7.5–10 %, 10–15 % and 15 % and above. While some countries had no significant change to the national minimum wage over the period considered (France, Luxembourg, Malta and the Netherlands), in other countries the increases were substantial. Bulgaria reported national minimum wage increases of more than 7.5 % in almost all periods. The increase in Germany's national minimum wage in 2015 is classed as being over 15 % in this analysis (since its statutory minimum wage was introduced that year).

Descriptive analysis of changes in individual actual wages

This section describes the growth rate in actual wages and if and how this is associated with changes to the national minimum wage. Figure 23 shows the growth rate in observed wages for different deciles of the wage distribution, computed as the country average of the growth rate in the average decile-specific wages. In such statistics, the deciles can be composed of different pools of workers, as people can belong to different deciles depending on the year. The average wage growth rate by decile shows a flat pattern (the thick dashed brown line), with a slight increase for the higher deciles. When distinguishing by periods in which countries experienced significant growth in national minimum wages, higher increases in wage levels are evident over the entire wage distribution. Importantly, when hikes in national minimum wages are above 15 %, increases in the pay levels of the lower wage deciles are much higher, leading to a compression of the wage distribution.

Figure 23: Growth rate in nominal actual wages by wage decile (year periods by significant increases in national minimum wages)

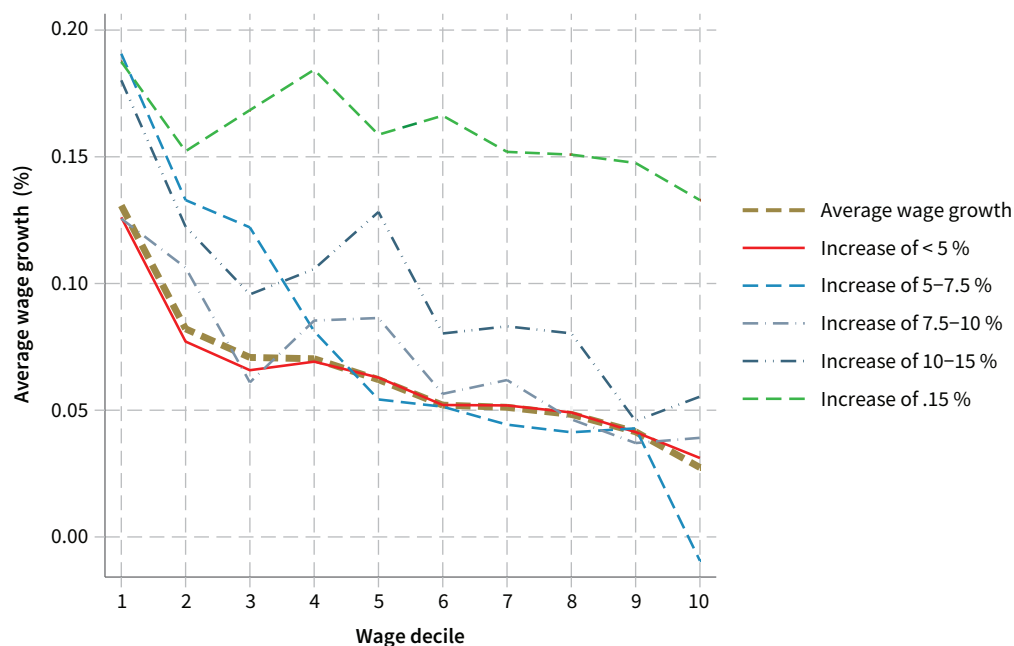


Source: Authors

Figure 24 plots a similar picture, but in this case defining the decile based on the initial observed year of every individual and at the country level. This personalised wage growth rate curve describes the relationship between the average individual wage growth rate and the individual's position in the wage distribution in the

initial period. The figure plots the average growth rate in wages for all periods (the thick dashed brown line) and the growth rate in wages in periods defined by non-overlapping increases in the national minimum wage. One finding is the higher growth rates for the lowest decile. This outcome can be interpreted as lower

Figure 24: Growth rate in observed wages by wage decile (year periods by significant increases in national minimum wages)



Source: Authors

wages being a transitory phenomenon for many workers – for instance, young people entering the labour market. Still, as in the previous figure, in periods with significant increases in the national minimum wage, the wages across the overall distribution increase much more than in periods in which the increase in the national minimum wage is not as high.

Regression analysis: difference in differences

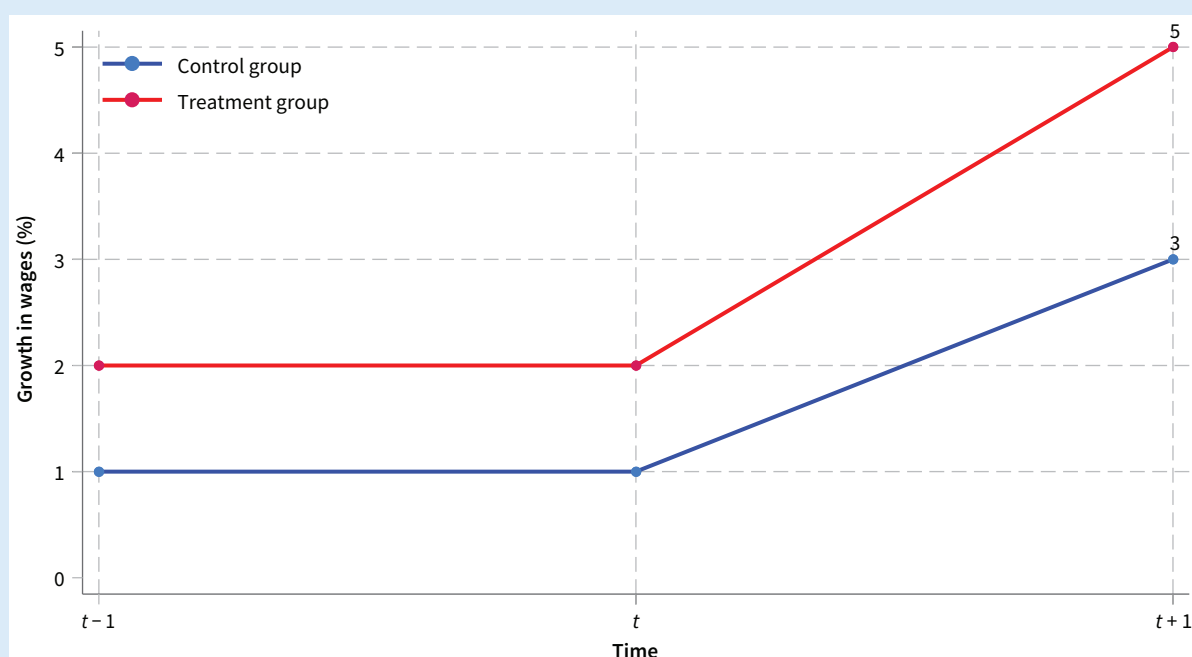
The analysis so far has offered only a partial picture of how changes in the national minimum wage affect actual wages. To gain a clearer, more definitive understanding, this section focuses on the causal

impact of minimum wage increases on the earnings of low-wage workers. By controlling for confounding factors, the analysis examines what happened to the salaries of workers who initially earned below the new national minimum wage (treatment group) compared with the salaries of those who earned slightly above it prior to the increase (control group). Regarding the latter, two comparison groups are used: the first includes workers earning up to 20 % above the new national minimum wage, and the second includes those earning up to 50 % above it (see Table A11 in Annex 4). Wage changes are observed across a range of minimum wage increases – from modest adjustments to those as high as 15 %. The analysis covers both the recent period (2015–2019) and a longer time frame (2009–2019). The identification strategy is summarised in Box 4.

Box 4: Identification strategy for the evidence on individual wages

The strategy follows the literature (Burauel et al., 2020) and uses the econometric specification described in Annex 4. The analysis specifies workers with the lowest wages as the treatment group, and the control group covers workers earning just above the national minimum wage. Figure 25 outlines a situation in which, in times $t - 1$ and t , the growth in the wages of the treatment group was 2 %, while the growth in the wages of the control group was 1 %. Then, there was a change in the national minimum wage and, as a result, the wages of the treatment group at time $t + 1$ increased by 5 %, while those of the control group increased by 3 %. Clearly, the workers in the treatment group experienced further growth in their wages, from the initial 2 % to the actual 5 %. This implies an increase of $5 \% - 2 \% = 3 \%$. In the same period, the control group also experienced an increase in the growth in their wages, from 1 % to 3 %. This implies an increase of $3 \% - 1 \% = 2 \%$.

Figure 25: Difference-in-differences analysis of wage growth following increases in national minimum wages



Source: Authors

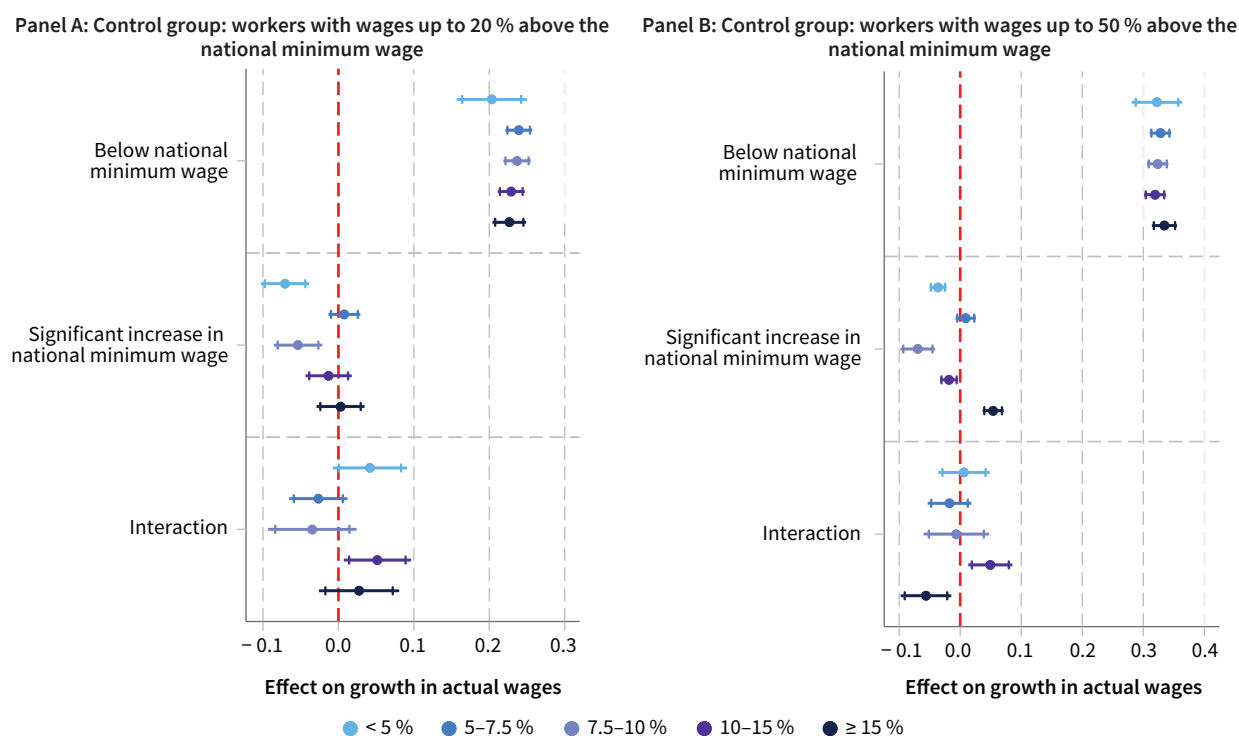
Obviously, workers whose salaries were below the national minimum wage before the change in the national minimum wage (the treatment group) experienced greater increases in their salaries than workers who earned slightly above the new national minimum wage (the control group). An estimate of the extent to which the change in the national minimum wage had a larger impact on the wages of the treatment group than those of the control group can be provided by the marginal growth, which is calculated as $(5\% - 3\%) - (2\% - 1\%) = 2\% - 1\% = 1\%$. This marginal growth of 1 % represents the difference in wage growth between the treatment and control groups attributable to the increase in the national minimum wage.

The regressions aim to capture any differential effect. That is, they aim to capture if, thanks to a significant increase in the national minimum wage, those workers with the lowest wages – those who could benefit most from the growth in the national minimum wage – actually experience a higher increase in their wages than those low-wage workers who earned slightly above the national minimum wage before the significant change.

Figure 26 shows three main outcomes: the wage growth of workers who earned below the minimum wage before it rose (labelled ‘Below national minimum wage’); the wage growth experienced by workers when a significant increase occurred (labelled ‘Significant increase in national minimum wage’); and the interaction term, our primary parameter of interest (labelled ‘Interaction’), which captures the difference in wage growth between the treatment group (those initially below the minimum wage) and the control group (those initially above it).

Panel A shows that, when the group of workers earning up to 20 % above the minimum wage is used as a control, those who initially earned below the minimum wage achieved wage growth about 20–23 % higher than the control group as a result of the national minimum wage hike. When the comparison group expands to those earning up to 50 % above the minimum wage (panel B), the growth differential for the lowest-paid workers increases to about 32–35 %. These findings align with the trends observed earlier (see Figure 22).

Figure 26: Estimate of the effect of significant increases in the nominal national minimum wage, 2015–2019



Note: The dots represent the point estimates of three variables: a dummy corresponding to workers who earned less than the new national minimum wage before the increase (labelled ‘Below national minimum wage’); a dummy for the period in which there was an increase in the national minimum wage, which can be of different magnitudes (labelled ‘Significant increase in national minimum wage’); and the interaction between these two variables (labelled ‘Interaction’), which reports the parameter of interest. The dependent variable is the growth in individual wages. The capped lines on either side of the dot indicating the estimate of this wage growth represent the confidence interval (at the 95 % level, computed using robust standard errors).

Source: Authors

Finally, the parameter associated with the interaction term is positive and significant when the significant increases in the national minimum wage are placed between 10 % and 15 %. When the control group is expanded to consider workers with wages up to 50 % higher than the national minimum wage, the parameter of the interaction becomes negative when the increase in the national minimum wage is over 15 %. However, this effect is largely compensated for by the overall increase in wages when there is a significant increase in the national minimum wage.

Figure A3 in Annex 4 provides further details, breaking down the results by sex (panel A), age (panel B) and skills group (panel C). Differences are minimal, reflecting the consistency of the main findings. Annex 4 also looks at broader country comparisons over 2009–2019 and finds no major distinctions based on how national and negotiated minimum wages interact (Figure A3, panel D). Likewise, differences between the EU-14 and the EU-13 (Figure A3, panel E) are negligible. Overall, the results remain robust and consistent across various worker groups and country contexts.

5 Impact on the wage distribution in selected countries

To complement the analysis of the impact of minimum wage hikes on actual wages, a more detailed analysis is provided for the same six countries covered in the qualitative section in Part 1: France, Germany, Portugal, Romania, Slovenia and Spain. For these case studies, data are provided on not only total wage growth but also wage growth by wage quintile. The wage quintiles split employees into five groups of equal size, each representing 20 % of the total employees, based on their wage levels, from the lowest-paid employees (quintile 1) to the highest-paid employees (quintile 5). This is complemented by data on wage inequality levels, to make the impact of diverging wage growth over the wage distribution clearer ⁽²⁶⁾.

The main objective is to explore the extent to which the minimum wage hikes these countries have implemented over the past few years have affected the wage dynamics across different groups of employees and thus shaped wage inequality. For each country, the minimum wage hike of greatest magnitude over the past two decades was selected for the analysis.

When observing the six examples of statutory minimum wage hikes, two types can be easily distinguished. On the one hand, four statutory minimum wage hikes can be considered out of the ordinary, meaning they were increases of very large magnitudes that stand out when compared with those normally adopted in that country and in other countries. This was the case in Slovenia in 2010 (+ 23 %), Spain in 2019 (+ 22 %) and Germany in 2015 (where the introduction of a new statutory rate meant much higher wage floors for many employees). In these countries, wage data clearly reflect the potential of minimum wage policy interventions to transform labour market dynamics. These bold approaches led to strong wage growth among lower-paid employees and notable declines in wage inequality. A large hike was adopted in Romania in 2018 (+ 31 %) as well, but against a background of generalised wage growth due to social security contributions being shifted from the employer to the employee. This generalised growth was even larger among the highest-paid employees and led to greater wage inequality.

On the other hand, two of the minimum wage hikes analysed can be considered ordinary uprates, despite

being relatively larger than those typically adopted in these countries. This was the case in Portugal in 2020 (+ 6 %) and France in 2009 (+ 3 %). These uprates of the statutory rates did not have the same transformative effect on the labour market and were not as significant a force in driving wage dynamics.

These results are consistent with some of those presented so far in Part 2. It is the very large increases in national minimum wages that have a particularly strong impact on increasing wage levels among lower-paid employees, causing a decline in wage inequality due to a compression of the wage distribution from the lower end.

Slovenia

Context

The magnitude of the minimum wage increase in March 2011 was exceptional when compared with changes in the statutory minimum wage since its introduction in 1995. Despite the deteriorating economic situation, the Law on Minimum Wage adopted on 11 February 2010 was the result of a discussion that had been ongoing for some time between the social partners and the government on a new framework law regulating the setting of minimum wages. The Ministry for Labour set the new rate based on a calculation of the average household minimum living expenses. As a result, the relative level of the new Slovenian rate was among the highest across Member States when considering the ratio of minimum to average gross wages. Nevertheless, for firms facing difficulties, a transitional period until the end of 2011 was introduced.

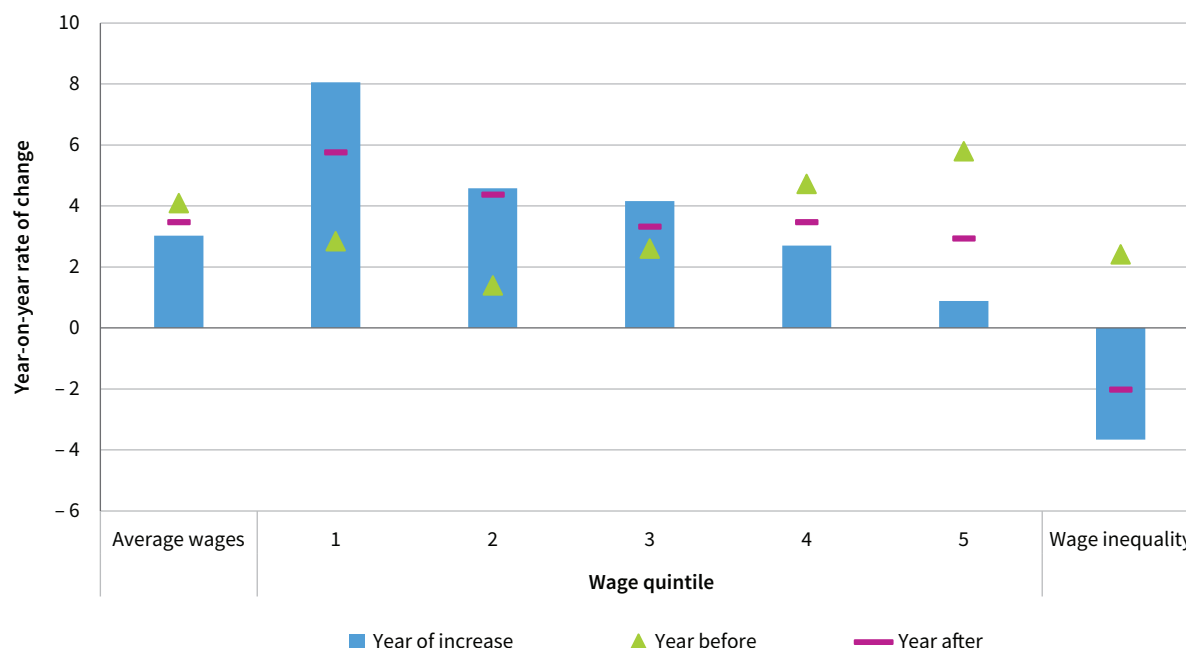
The statutory rate increased by 23 % in March 2010, from EUR 597 to EUR 734. It then increased to EUR 748 in January 2011, totalling a 25 % surge between January 2010 and January 2011.

Impact on the wage distribution

The possible impact of this minimum wage hike on actual wages was assessed by observing the year-on-year change in average wages over the wage distribution in 2010 and comparing it with the trends in the previous year and the following year (Figure 27).

⁽²⁶⁾ The wage variable used in the analysis is the one introduced in Chapter 3: the full-time equivalent monthly wage constructed by using the Brandolini et al (2010) approach (for further details, see Eurofound, 2014, 2023a; see also Annex 3 to this report).

Figure 27: Impact of the minimum wage increase in Slovenia: change in average wages, wages by wage quintile and wage inequality (%)



Note: Data are presented for the year-on-year change in wage levels (total and by wage quintile) during the year of the minimum wage increase, one year before and one year after.

Source: EU-SILC, 2009–2012 editions (referring to wages for 2008–2011)

The data clearly reflect the strong impact of the minimum wage increase. The wage levels of lower-paid employees grew much more than those of the highest earners in 2010, and these patterns of wage growth marked a clear break from previous trends. The wages of the highest-paid employees (quintiles 4 and 5) increased at a higher rate than those of the lowest-paid ones in 2009, despite average wage growth being larger in 2009. However, this was due to wage growth being underestimated in 2010 because the minimum wage hike applied from March 2010 onwards. The changed wage dynamics introduced by the large minimum wage increase in 2010 continued in 2011, although less strongly: wages continued to rise more among lower-paid employees than better-paid employees, but the gap narrowed notably, since wage growth moderated among the former and increased among the latter.

These patterns of wage growth over the wage distribution are reflected in the level of wage inequality, which was clearly affected by the introduction of the minimum wage in 2010. Wage inequality increased in 2009 but declined sharply in 2010 and (albeit more moderately) in 2011.

Impact on employment

The minimum wage increase of March 2010 was decided in the context of the economic crisis, which was already resulting in declining employment: total employment in

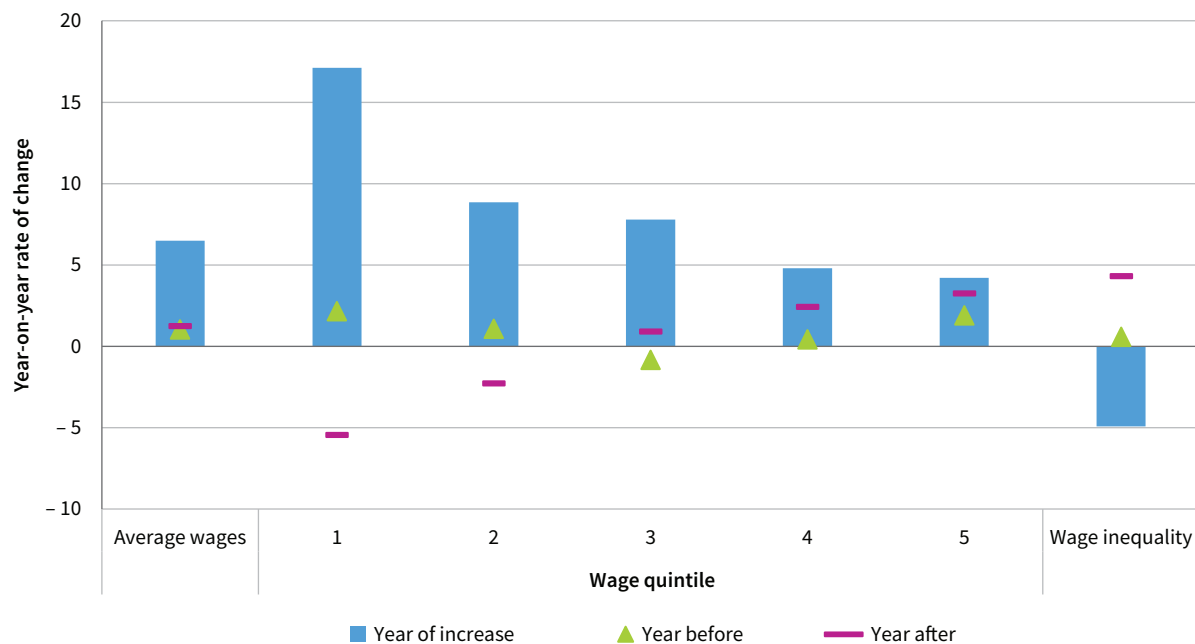
Slovenia had already fallen in 2009 and had not yet recovered to the 2009 level. Microeconomic studies are needed to identify any potential reduction in unemployment that could be attributed exclusively to the minimum wage hike. An employment reduction of 5 150 workers in the short run and 17 170 workers in the long run has been estimated by some, with a more negative impact on the lowest-skilled and younger employees (Brezigar Masten et al., 2010).

Spain

Context

The financial crisis of 2007–2008 and the Great Recession that followed had a very negative impact in Spain, where economic activity began to grow again only in 2015 and recovered to its pre-crisis level as late as 2017. The impact on the labour market was acute, with soaring unemployment and a downward trend in wage levels. Against this background, the statutory minimum wage remained almost stable between 2009 and 2016, increasing from EUR 624 to EUR 655 (in 14 instalments per year). The minimum wage started to rise significantly from 2016 onwards, increasing by almost 75 % between 2016 and 2024, the largest expansion among western European countries. However, it is the 2019 increase set by the new coalition government that stands out.

Figure 28: Impact of the minimum wage hike in Spain: change in average wages, wages by wage quintile and wage inequality (%)



Note: Data are presented for the year-on-year change in wage levels (total and by wage quintile) during the year of the minimum wage increase, one year before and one year after.

Source: EU-SILC data, 2018–2021 editions (referring to wages for 2017–2020)

The statutory rate increased by 22 % from January 2019, from EUR 736 to EUR 900 (or from EUR 858.5 to EUR 1 050 if expressed in 12 monthly instalments instead of 14 instalments per year). This increase was remarkable compared with the increases in 2017 (8 %) and 2018 (4 %).

Impact on the wage distribution

Wage data for 2019 clearly reflect the impact of the minimum wage increase, since the resulting wage dynamics during the year of the big increase are noticeably different from those during both the previous year and the following year (Figure 28). The average wage grew much more strongly in 2019 and, more importantly, this growth was much greater among lower-paid employees. Wage growth was much more moderate in 2018 and 2020, while the wage dynamics over the distribution were either neutral (2018) or worse among lower-paid employees (2020).

Wage inequality fell significantly in Spain in 2019, the largest drop among the EU-27. The impact of the minimum wage hike in this drop is evidenced by the notably different change in wage inequality in 2019 when compared with growing wage inequality levels in 2018 and especially 2020.

Impact on employment

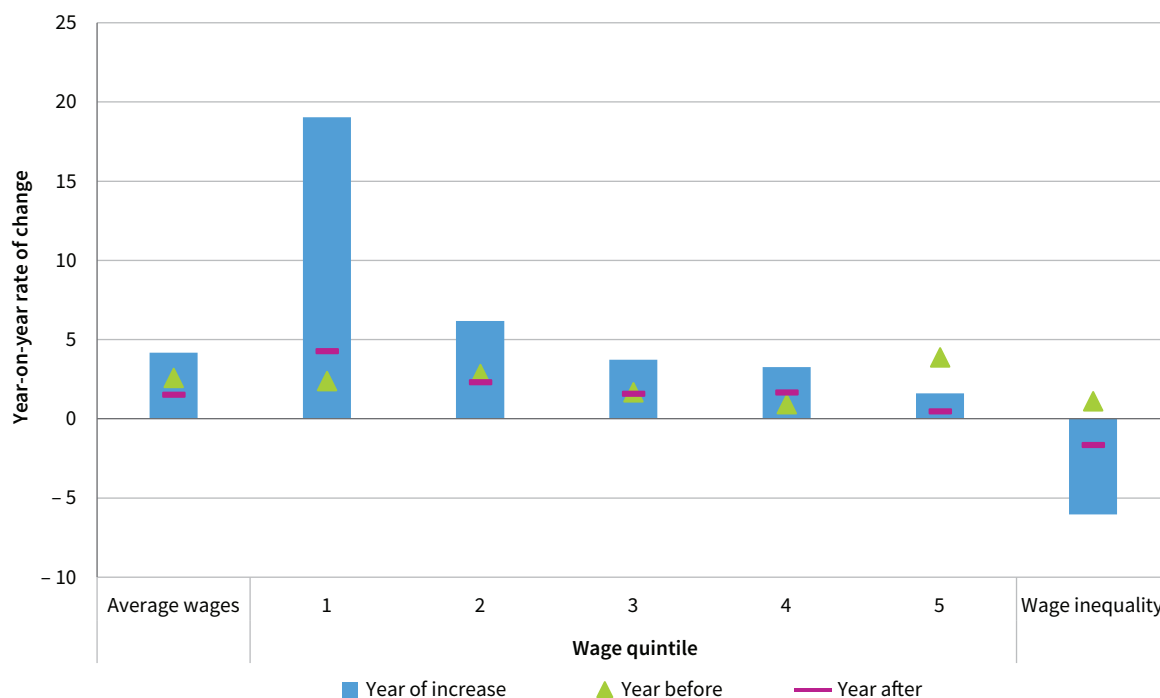
The significant increase in the Spanish minimum wage in 2019 took place against a background of growing employment levels, which had bottomed out in 2013 and recovered thereafter. The change in aggregate employment levels in 2019 – a 3.2 % increase, similar to the one in 2018 – does not suggest a negative effect of the minimum wage hike. More sophisticated econometric analyses either fail to identify significant negative effects of the 2019 minimum wage hike on employment levels (AIReF, 2020; Cárdenas et al., 2022) or identify rather modest ones: 94 000–173 000 fewer employees in net terms according to Barceló et al. (2021) and Fernández-Baldor Laporta (2023) and 28 000 fewer employees in net terms according to De la Rica et al. (2022).

Germany

Context

Following the reunification of Germany, low pay among the workforce emerged as a growing concern. Rapidly declining coverage rates and weaker collective bargaining structures meant that large segments of the workforce were not covered by a collective agreement setting wage floors (Eurofound, 2015). Procedures to create industry-specific minimum wages were established in 2005 to address this issue, but slow progress in reducing the number of employees not covered by wage floors led to growing debates on the need to introduce a statutory minimum wage.

Figure 29: Impact of the new minimum wage in Germany: change in average wages, wages by wage quintile and wage inequality (%)



Note: Data are presented for the year-on-year change in wage levels (total and by wage quintile) during the year of the minimum wage hike, one year before and one year after.

Source: EU-SILC data, 2014–2017 editions (referring to wages for 2013–2016)

The first statutory minimum wage was introduced in Germany from 1 January 2015, set at EUR 8.5 per hour (EUR 1 440 per month). While this was not a statutory rate hike as in the rest of the countries covered here, in practice, the introduction of the statutory minimum wage meant an increase of the wage floor applying to many German workers.

Impact on the wage distribution

The introduction of the statutory rate caused a clear change in wage dynamics in Germany (Figure 29). While wage growth was rather moderate and was higher among the top earners than the bottom earners in 2014, wage growth accelerated in 2015, particularly in the bottom wage quintile, changing more moderately further up the wage distribution. Wage growth moderated in 2016, although it was still higher at the bottom of the wage distribution than at the top.

These wage dynamics and how they changed following the introduction of the statutory rate are clearly reflected by the fall in wage inequality, which had been increasing before the policy intervention. Germany registered the largest relative reduction in wage inequality among the EU-27 in 2015, when the statutory rate was introduced. This wage inequality reduction continued, at a slower pace, in 2016.

Impact on employment

Data on aggregate employment levels and some of the groups of employees who benefited most from the wage increases rule out a significant disemployment effect of the new minimum wage. The total number of employees expanded at a similar rate in 2015 as in the previous year, and increased at a faster rate in 2016. The employment levels of women and young employees continued to expand at a similar pace, while that of less well-educated workers increased more significantly in 2015 and 2016. Nevertheless, econometric analysis has identified some modest negative effects. For example, Bossler and Gerner (2020) estimate that 45 000–68 000 additional jobs could have been created in the absence of the new minimum wage.

Romania

Context

As in almost all countries joining the EU after its enlargement towards the east, Romania's statutory minimum wage has increased strongly. Some of the largest increases took place between 2016 and 2018, with the hike in January 2018 being the most significant. Nevertheless, a parallel transfer of social security contributions from employers to employees took place in 2018, meaning employee contributions increased from 16.5 % to 35 %, while those of employers

decreased to only 2.25 %. This affected all employees in Romania. The large hike in the gross statutory rate was compensation for the transfer of contributions from employers to employees, and the net wage for minimum wage earners grew only modestly as a result.

The most significant increase, which is the main focus of this analysis, took place in January 2018, when the gross statutory rate increased by 31 %, from RON 1 450 to RON 1 900 (or from EUR 312 to EUR 408). Nevertheless, significant increases in the statutory rate had taken place during the previous years as well: the rate had increased by 19 % in May 2016 and by 13 % in February 2017. The hike was much more modest (+ 9.5 %) in January 2019.

Impact on the wage distribution

Wages grew very strongly in 2018, but this was related more to the shift of social security contributions from the employer to the employee than to the minimum wage hike. This explains why gross wages grew markedly across the entire wage distribution, but even more so at the top than among lower earners (Figure 30).

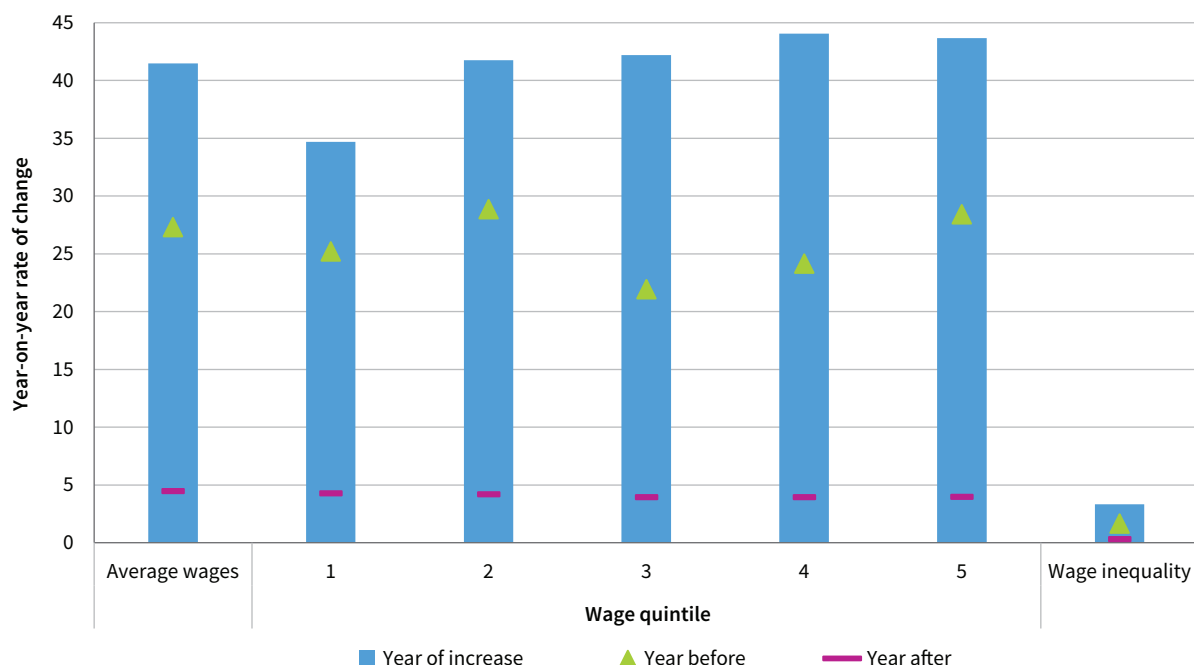
Wages grew more in 2018 than they had one year prior, although the increase had been significant in 2017 as well. In 2017, wages had improved across all groups without a clear distributional trend, which is compatible with both the generally improving pay levels in the country and the generous minimum wage hike in 2017. Wage growth became more contained and was similar across all groups in 2019.

The significant minimum wage increases took place in a context where other factors had a larger impact in terms of driving wage growth over the wage distribution. These factors include generalised pay improvements across the workforce and compensation for employees through higher gross wages due to the transfer of social security contributions from the employer to the employee. This explains why wage inequality levels did not decline as they did in Germany, Slovenia and Spain, and even increased significantly in 2018.

Impact on employment

The strong minimum wage hike in 2018 was largely due to the shift of social security contributions from the employer to the employee, so employment effects were not an issue. The statutory rate increased by 31 % in gross terms, but very modestly in net terms.

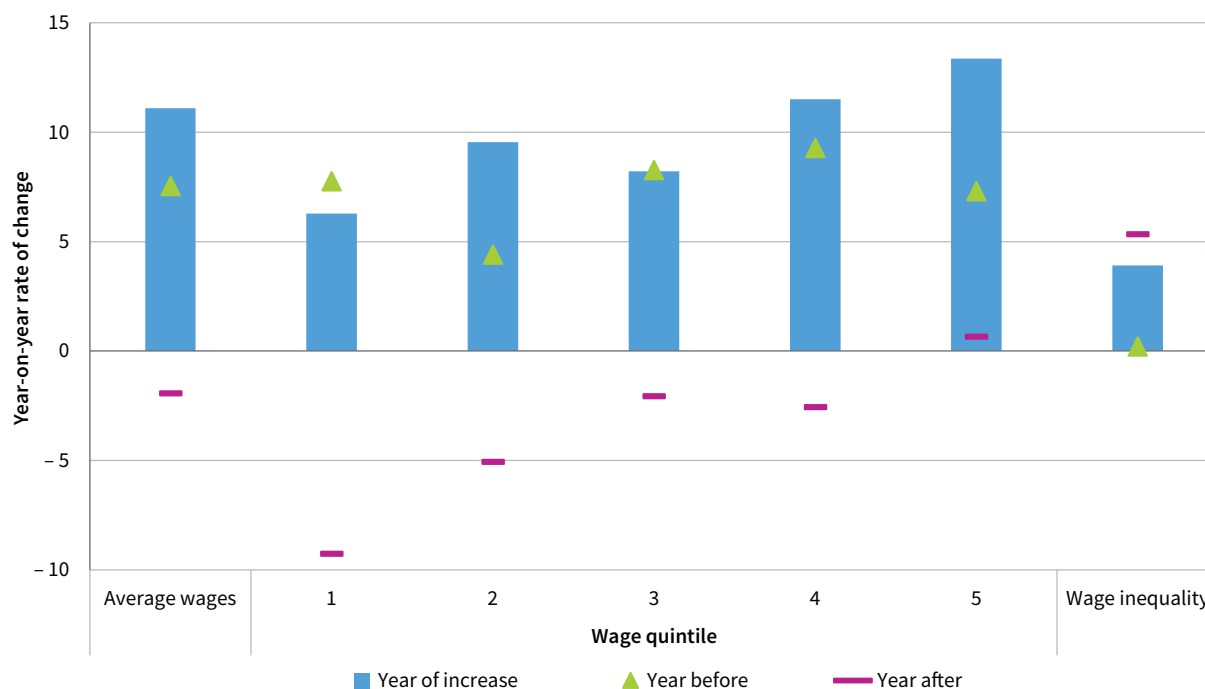
Figure 30: Impact of the minimum wage hike in Romania: change in average wages, wages by wage quintile and wage inequality (%)



Note: Data are presented for the year-on-year change in wage levels (total and by wage quintile) during the year of the minimum wage increase, one year before and one year after.

Source: EU-SILC data, 2017–2020 editions (referring to wages for 2016–2019).

Figure 31: Impact of the minimum wage hike in Portugal: change in average wage, wages by wage quintile and wage inequality (%)



Note: Data are presented for the year-on-year change in wage levels (total and by wage quintile) during the year of the minimum wage increase, one year before and one year after.

Source: EU-SILC data, 2019–2022 editions (referring to wages for 2018–2021)

Portugal

Context

The statutory rate is set at a relatively high level in Portugal compared with other Member States, meaning that Portugal is among those where the ratio of the statutory rate to average and median wages is higher. This may explain why the yearly improvements in the statutory rate tend to be moderate, typically around 3–5 %.

The statutory rate increased by almost 6 % in January 2020, from EUR 600 to EUR 635 (EUR 700 to EUR 741 in 12 monthly instalments per year). This was not an extraordinary increase when compared with those in other countries, but it is relatively large in the Portuguese context.

Impact on the wage distribution

Wages grew more in 2020 than in 2019, but the 2020 hike did not have a significant impact in terms of altering the ongoing wage dynamics: wage growth among the lowest-paid employees was the most contained (more so than one year prior in 2019), and wages increased more at the top of the wage distribution (Figure 31). The wage dynamics became even more negative for lower-paid employees in 2021, the second year of the COVID-19 pandemic.

The irrelevance of the minimum wage hike in driving wage dynamics is clearly reflected by wage inequality trends, which were almost stable in 2019 but increased significantly in 2020 and even more so in 2021.

Impact on employment

Beyond the general discussion of the possible disemployment effects of setting minimum wages at relatively high levels, there is not a specific discussion of the employment effects of the 2020 hike since its magnitude was not extraordinary.

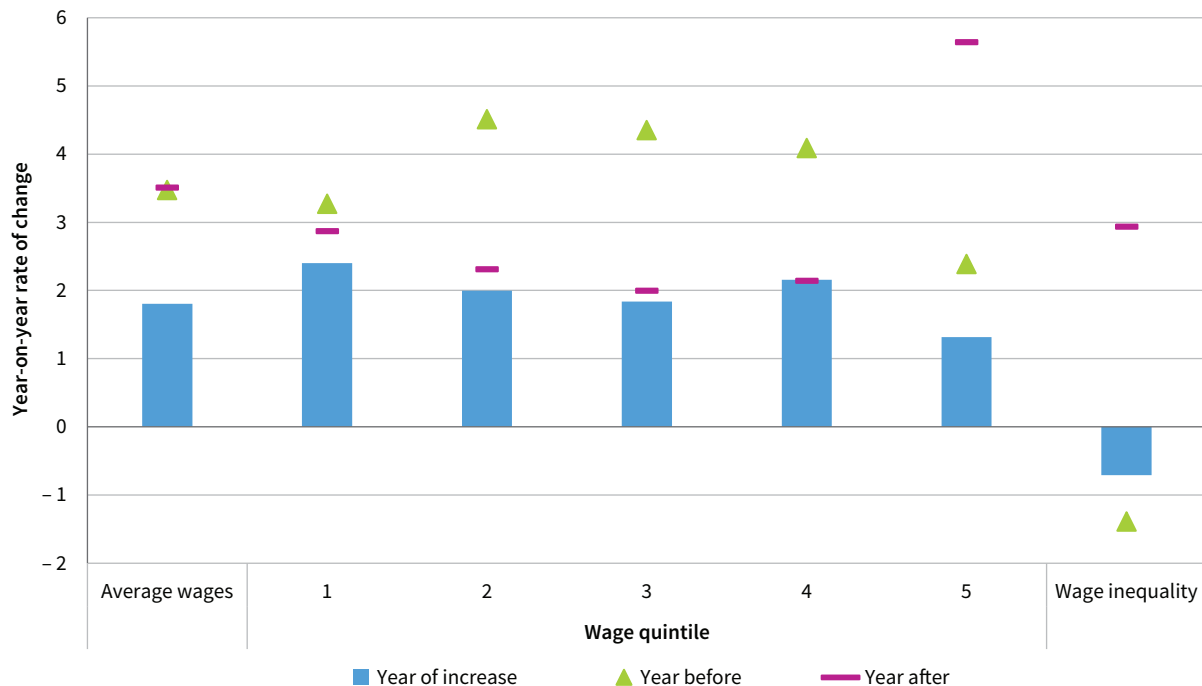
France

Context

The relative level of the French statutory rate is among the highest in the EU, based on the ratio of the statutory rate to average and median wages being higher. This may explain why France implemented a formula several years ago that largely decides the magnitude of statutory wage uprates, which are moderate and typically in the range of 1–3 %.

The French statutory rate increased by more than 3 % from January 2008 to January 2009, from EUR 1 280 to EUR 1 321. This was a moderate yearly increase but larger than those that occurred thereafter; more significant increases have occurred only recently against the background of the cost-of-living crisis.

Figure 32: Impact of the minimum wage hike in France: change in average wages, wages by wage quintile and wage inequality (%)



Note: Data are presented for the year-on-year change in wage levels (total and by wage quintile) during the year of the minimum wage hike, one year before and one year after.

Source: EU-SILC data, 2008–2011 editions (referring to wages for 2007–2010)

Impact on the wage distribution

The 2009 hike does not seem to have had any relevant influence on wages, as changes were very muted and probably affected more by the negative impact of the financial crisis. Total wage growth was lower in 2009 than in 2008, although it was still higher among lower-paid employees than at the top of the wage distribution (Figure 32). Nevertheless, it is quite likely that this wage growth in the bottom quintile was influenced by compositional effects resulting from the lowest-paid employees being affected more by growing unemployment levels in times of economic hardship, which push average wages upwards.

The reduction in wage inequality in 2008 continued in 2009, before being reversed in 2010. Nevertheless, the wage dynamics were very muted and driven more by the effects of the financial crisis than those of the minimum wage hike.

Impact on employment

Beyond the general discussion of the possible disemployment effects of setting minimum wages at relatively high levels (very prominent in France), there is not a specific discussion of the employment effects of this particular hike in 2009 since its magnitude was not extraordinary.

Conclusions

The EU Minimum Wage Directive, passed in October 2022, has two key goals. First, by establishing a framework for setting adequate statutory minimum wages and ensuring workers' access to minimum wage protection, it is expected to lead towards a relative rise in national minimum wages in relation to average or median wages in many Member States. This process had already started prior to its transposition deadline. Second, the directive lays out measures intended to strengthen the role of the social partners in collective wage bargaining, to prevent the unintended effect of statutory minimum wages reducing their role in wage setting – in other words, crowding them out.

This research report has explored the interaction of national minimum wages with actual wages, collectively agreed wages and collective bargaining, with a focus on low-paid sectors, through a combination of quantitative and qualitative research methods. In general, descriptive evidence drawn from past changes to national minimum wages in Member States confirms that there is a positive association between national minimum wage uprates and changes to both actual and negotiated wages in low-paid sectors. However, a close inspection of the data reveals that there are marked differences among countries in terms of negotiated wage growth following changes to national minimum wages. Similar country variability is observed when comparing the growth in actual wages with national minimum wage developments.

Several insights into the effects of national minimum wage uprates have been gained from further exploration of the quantitative and qualitative data. These are summarised below.

- It is quite clear that the level of increases in the national minimum wage since the last agreement is correlated with the probability of signing a new agreement in low-paid sectors. The length of time since the last agreement also has a positive and sizeable effect on the probability of signing a new agreement. In contrast, changes in inflation and unemployment do not seem to affect that probability. The estimates also show that, where the national minimum wage is closer to average wages – that is, when the Kaitz Index value is high –

the signing of a new agreement is less frequent. Although further evidence is needed, these results could suggest that national minimum wage increases have a crowding-out effect on collective bargaining in low-paid sectors.

However, in-depth qualitative analysis of two low-paid sectors and six Member States shows limited evidence of crowding-out effects in collective bargaining processes. Despite concerns raised by the social partners, especially employer organisations, in Germany and Spain about the impact of national minimum wage hikes, no generalised effect was detected. In some countries, and especially in the residential and social care sector, the social partners indicated that the margin to negotiate around pay and other working conditions is reduced because of the increases in the lower pay scales covered in collective agreements. However, only in those countries with very weak collective bargaining institutions and coverage can a knock-on effect of national minimum wage hikes be detected, one that undermines the prospects of strengthening collective bargaining in the near future.

- On average, an additional 1 % in the cumulative variation in the national minimum wage would have increased the negotiated wages of low-paid workers in low-paid sectors by 0.22 %, conditional on the specific macroeconomic circumstances in every country and year and the probability of signing a new agreement. The estimated impact is also positive regarding the actual wages earned by low-paid workers. Their wages would have increased by 0.31 % following a 1 % increase in the national minimum wage. Therefore, the reaction of the actual wages of low-paid workers was somewhat higher than that of negotiated wages in low-paid sectors, although converging in the last few years of the study period. Importantly, most of the effect of national minimum wage developments on negotiated wage uprates seems to be due to the impacts in the last few years analysed (2020–2022). The COVID-19 crisis together with the Russian war against Ukraine may have led to changes in wage-setting dynamics.

- The longitudinal individual-level analysis confirms that meaningful increases in the national minimum wage lead to sizeable wage gains for low-paid workers. These gains are most pronounced when the minimum wage hikes are substantial, confirming that large increases in the national minimum wage have a positive causal impact on the earnings of those at the bottom of the wage scale. The effect on the wages of low-paid workers, when compared with those of workers earning slightly above the national minimum wage, is only significant for sufficiently large increases in the national minimum wage. This finding is consistent with the broader evidence in the analysis of aggregate actual wages, which showed that the largest increases in national minimum wages – those above 15 % – had the strongest effect in terms of lifting the wages of low-paid employees.
 - Notable sectoral differences have been identified in the impact of national minimum wage developments on uprates of collectively agreed wages for low-paid workers in low-paid sectors. Unfortunately, the information available is insufficient to explore the sources and mechanisms behind these differences. In any case, the exploration of the reaction of actual wages has confirmed the sectoral heterogeneity in the impact of national minimum wage developments. The results suggest that the impact on actual wages was stronger in sectors with a large percentage of low-paid employees (for example, wholesale and retail trade, accommodation and food services activities and human health and social work activities). The qualitative analysis provides some insights on the reasons behind these differences in the two low-paid sectors analysed. On the one hand, labour shortages may explain higher increases in negotiated wages in those sectors experiencing recruitment problems. On the other hand, the exposed or sheltered character of the sector in terms of international competition could also explain the propensity of national minimum wage increases to be translated into changes to negotiated wages.
 - The impact of national minimum wage developments on negotiated wage uprates is stronger in countries where collective bargaining is weak and most workers are covered solely by the national minimum wage floor (where the isolated model of national minimum wage interaction with collectively agreed wages applies). In contrast, the impact appears smaller in countries belonging to the distant interaction or coexistence and close interaction types. There are no relevant differences in the impact on the actual wages of low-paid workers between country groups based on the dominant type of national minimum wage interaction.
- The heterogeneity analysis indicates no relevant differences in the effect of national minimum wage uprates on changes in the actual wages of low-paid workers based on gender, age and occupation. On the other hand, the impact of national minimum wage developments on changes in actual wages was estimated to be greater in the Member States that joined the EU with or after the 2004 enlargement, although there are signs of convergence in the impact between the pre- and post-2004 Member States in more recent years.
- Uprates of the national minimum wage during the study period not only translated into actual wage increases for low-paid employees but also benefited higher-wage workers. A tentative explanation is the pressure employers feel to increase the wages of higher-paid employees (who could have greater bargaining power than low-paid employees) when faced with an increase in the national minimum wage, to maintain the skills wage gap and keep the wage structure unchanged. The context of persistent labour shortages, which particularly affect jobs requiring high skills levels and therefore increase the wages of better-paid workers, should not be ignored.

However, the results of the qualitative analysis based on two small low-paid sectors point to compression effect in the negotiated wage distribution following (large) increases in the national minimum wage. This can be interpreted as a short-term adaptation of collective bargaining to the new national minimum wage, while, in the medium term, spillover effects can be expected as collective agreements translate national minimum wage increases into changes to the whole wage distribution. Moreover, spillover effects are more likely to be observed in those sectors or countries experiencing more intense labour shortages. In contrast, compression effects are more likely to be observed in low-productivity, low-wage sectors, since employers in these sectors would reasonably find it difficult to increase the wages of higher-paid workers. However, the extent to which compression persists is shaped by the characteristics of the sector.

- In addition to the national minimum wage, other macroeconomic factors have influenced wage changes for low-paid workers. Briefly, the study has shown that changes in prices accumulated since the signing of the last agreement had a strong positive influence on the size of negotiated wage uprates, while, as expected, the unemployment rate exerted a negative effect on negotiated wage uprates. Although the estimation of these effects must be interpreted with caution due to the characteristics of the empirical model used, the same cannot be said of the effect of these variables on changes to the actual wages of low-paid workers. Neither inflation nor unemployment seems to have a relevant effect after considering the impact of the national minimum wage and other unobservable country and year factors.

The comparison of the impact of increases in the national minimum wage on changes to negotiated and actual wages has created a more complete picture of the effects that increases in national minimum wages can have on the European labour market, especially regarding the wages of low-paid workers in low-paid sectors. However, as a limitation of the study, it should be acknowledged that the comparison of the impact on negotiated and actual wages is hampered by the impossibility of defining similar sets of low-paid workers. While, for negotiated wages, the Eurofound dataset enables the definition of a group of low-paid workers in low-paid sectors, insufficient sectoral granularity in EU-SILC data prevents the identification of a similar group when analysing the impact on actual wages. The availability of better information on the wages earned by low-paid workers would facilitate an improved comparison of the effect of the national minimum wage on negotiated and actual wages.

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All Eurofound publications are available at www.eurofound.europa.eu

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Annexes

Annex 1: Additional details of the methodology and results in Chapter 1

Methodology

In order to analyse the impact of the national minimum wage on collectively agreed wages, the approach developed by Fougère et al. (2018) was followed. These authors propose a type II tobit model whose equations are adapted to the specific analysis in this report as follows.

The **first equation** is for the probability of a new agreement a being in place in industry j in country c at date t :

$$Y_{ajct}^* = \alpha + \beta \Delta_{t-\tau_{ajc},t} \text{CPI}_{ct} + \gamma \Delta_{t-\tau_{ajc},t} \text{SMW}_{ct} + \varphi X_{jct} + \omega \Xi_{ct} + \mu x_{ajct} + \rho \tau_{aj} + \lambda_t + \varepsilon_{jt}$$

where, if $Y_{ajct}^* > 0$ then $Y_{ajct}^* = 1$, and 0 otherwise, with it being 1 if there is a new agreement a , in industry j , in country c , at date t . $\Delta_{t-\tau_{ajc},t}$ is the difference operator (in logs) between the date of the last agreement, $t - \tau_j$ (where τ_j is the elapsed duration since the last agreement in industry j), and date t . This operator is applied to the Consumer Price Index (CPI), the real national minimum wage and other contextual influence factors (X_{jct}), such as the unemployment rate. x_{ajct} is a dummy variable capturing the compliance of wage floors with the nominal national minimum wage, while τ_{aj} is a vector of dummy variables corresponding to the time elapsed between the current and the previous agreement. Finally, λ_t is the time fixed effects.

The **second equation** is for the connection between nominal increases in collectively agreed wages in agreement a for industry j in country c at date t and their determinants:

$$\Delta_{t-\tau_{ajc},t} \text{CAW}_{ajct} = \alpha + \beta \Delta_{t-\tau_{ajc},t} \text{CPI}_{ct} + \gamma \Delta_{t-\tau_{ajc},t} \text{SMW}_{ct} + \varphi X_{jct} + \pi \text{MR}_{ajct} + \sigma_{ajc} + \lambda_t + \varepsilon_{jt}$$

where $\Delta_{t-\tau_{ajc},t} \text{CAW}_{ajct}$ is the nominal change in the collectively agreed wages in industry j in country c between the date of the last agreement, $t - \tau_{ajc}$, and date t . This equation also considers MR_{ajct} , the inverse of the Mills ratio resulting from the first equation, to account for differences in the propensity to reach a new agreement. In particular, as the dependent variable is only observed when a new agreement is signed, it is important to correct for selection bias – that is, the non-random selection of the observations used in the second stage. For this reason, the inverse of the Mills ratio (the ratio of the probability density function to the cumulative distribution function of the standard normal distribution) obtained in the first stage is included as an additional variable in the second equation. It approximates the likelihood that an agreement is signed, given certain characteristics. σ_{ajc} is a vector of agreement, industry and country dummies.

Detailed results

Table 4 in the main text reports the estimated values for the first and second equations of the econometric model using all available information. The second column of the table shows the estimated coefficients of a probit model corresponding to the agreement equation with different types of fixed effects (collective agreement, country and month) together with a time trend. The third column shows the results of estimating the wage floor equation. Different types of fixed effects (collective agreement, country and time) have also been included in the specification for the second equation.

The tables in this annex have a similar structure, and they are related to the heterogeneity analysis and robustness checks mentioned in the main text. In particular, Table A1 does not include information from France and Slovenia in order to check the robustness of the results to the exclusion of these two countries. Table A2 does the same for Germany and the Netherlands. Table A3 provides separate estimates for the subperiods 2015–2019 and 2020–2022, while Table A4 reports the results of exploring the potential sectoral heterogeneity in the relations considered. Last, Table A5 presents the results obtained when classifying countries into three groups based on how national minimum wages and collective bargaining interact.

Table A1: Estimated impact of national minimum wages on negotiated minimum wages, France and Slovenia excluded, 2015–2022

	First equation (probability of a new collective agreement)	Second equation (cumulative variation in negotiated wages)
Cumulative inflation growth	0.000648 (0.00974)	0.783*** (0.0463)
Cumulative variation in national minimum wages	0.0111** (0.00506)	0.216*** (0.0187)
Unemployment rate	– 0.0140 (0.0204)	– 0.192*** (0.0522)
Duration of between 12 and 24 months	1.119*** (0.0699)	
Duration of more than 24 months	1.993*** (0.113)	
Non-compliance with national minimum wages	– 1.083*** (0.104)	
Inverse of the Mills ratio		0.000** (0.000)
Sector/country collective agreement fixed effect	Yes	Yes
Country fixed effect	Yes	Yes
Month fixed effect	Yes	No
Time trend	Yes	No
Time fixed effect	No	Yes
Observations	16 283	16 283
R ²		0.473

Notes: The table covers all countries with statutory minimum wages except France and Slovenia. The second column of the table shows the estimated coefficients (and the robust standard errors in parentheses) of a probit model corresponding to the agreement equation with the probability of signing a new agreement as the dependent variable. The third column shows the estimated coefficients (and the robust standard errors in parentheses) of the wage floor equation with negotiated wages as the dependent variable. *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: Authors

Table A2: Estimated impact of national minimum wages on negotiated minimum wages, Germany and the Netherlands excluded, 2015–2022

	First equation (probability of a new collective agreement)	Second equation (cumulative variation in negotiated wages)
Cumulative inflation growth	0.0192* (0.0111)	0.732*** (0.0583)
Cumulative variation in national minimum wages	0.0201*** (0.00514)	0.215*** (0.0204)
Unemployment rate	– 0.0185 (0.0222)	– 0.172*** (0.0602)
Duration of between 12 and 24 months	1.208*** (0.0743)	
Duration of more than 24 months	1.517*** (0.128)	
Non-compliance with national minimum wages	– 1.393*** (0.103)	
Inverse of the Mills ratio		0.000*** (0.000)
Sector/country collective agreement fixed effect	Yes	Yes
Country fixed effect	Yes	Yes

	First equation (probability of a new collective agreement)	Second equation (cumulative variation in negotiated wages)
Month fixed effect	Yes	No
Time trend	Yes	No
Time fixed effect	No	Yes
Observations	12 170	12 170
R ²		0.471

Notes: The table covers all countries with statutory minimum wages except Germany and the Netherlands. The second column of the table shows the estimated coefficients (and the robust standard errors in parentheses) of a probit model corresponding to the agreement equation with the probability of signing a new agreement as the dependent variable. The third column shows the estimated coefficients (and the robust standard errors in parentheses) of the wage floor equation with negotiated wages as the dependent variable. *** p < 0.01, ** p < 0.05, * p < 0.1.
Source: Authors

Table A3: Estimated impact of national minimum wages on negotiated minimum wages, all countries, 2015–2019 and 2020–2022 subperiods

	2015–2019		2020–2022	
	First equation (probability of a new collective agreement)	Second equation (cumulative variation in negotiated wages)	First equation (probability of a new collective agreement)	Second equation (cumulative variation in negotiated wages)
Cumulative inflation growth	0.00996 (0.0499)	1.230*** (0.0819)	– 0.00205 (0.0149)	0.658*** (0.0565)
Cumulative variation in national minimum wages	0.0671*** (0.0149)	0.0575 (0.0418)	0.0414*** (0.00826)	0.356*** (0.0324)
Unemployment rate	0.186*** (0.0646)	– 0.802*** (0.167)	0.0350 (0.0441)	– 0.541*** (0.0963)
Duration of between 12 and 24 months	1.597*** (0.116)		1.194*** (0.106)	
Duration of more than 24 months	3.525*** (0.242)		2.370*** (0.169)	
Non-compliance with national minimum wages	– 1.871*** (0.197)		– 1.357*** (0.177)	
Inverse of the Mills ratio		– 0.000*** (0.000)		0.000** (0.000)
Sector/country collective agreement fixed effect	Yes	Yes	Yes	Yes
Country fixed effect	Yes	Yes	Yes	Yes
Month fixed effect	Yes	No	Yes	No
Time trend	Yes	No	Yes	No
Time fixed effect	No	Yes	No	Yes
Observations	8 237	8 237	7 846	7 846
R ²		0.339		0.691

Notes: The table covers all countries with statutory minimum wages. The second and fourth columns show the estimated coefficients (and the robust standard errors in parentheses) of a probit model corresponding to the agreement equation with the probability of signing a new agreement as the dependent variable. The third and fifth columns show the estimated coefficients (and the robust standard errors in parentheses) of the wage floor equation with negotiated wages as the dependent variable. *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: Authors

Table A4: Estimated impact of national minimum wages on negotiated minimum wages: sectoral differences in interaction with national minimum wages, all countries, 2015–2022

	First equation (probability of a new collective agreement)	Second equation (cumulative variation in negotiated wages)
Cumulative inflation growth	0.00347 (0.00887)	0.628*** (0.0279)
Cumulative variation in national minimum wages by sector		
Agriculture	0.0336** (0.0145)	0.223*** (0.0321)
Arts, gambling and sports	– 0.0137 (0.0103)	0.723*** (0.0919)
Business support services	0.0430*** (0.0145)	0.371*** (0.0339)
Construction excluding civil engineering	0.0213* (0.0117)	0.0837*** (0.0207)
Domestic services	0.0315 (0.0323)	0.0593** (0.0278)
Hospitality	– 0.00678 (0.0118)	0.151*** (0.0131)
Manufacture of food, leather and textiles	0.00698 (0.0113)	0.126*** (0.0146)
Multisectoral agreements	0.0112 (0.0313)	0.291*** (0.0427)
Personal services	0.0161 (0.0171)	0.0288 (0.0280)
Postal services and courier activities	– 0.00847 (0.0119)	– 0.0343 (0.0364)
Residential and social care	0.00748 (0.0172)	0.501*** (0.0561)
Retail	0.0323** (0.0137)	0.0998*** (0.0139)
Unemployment rate	– 0.0171 (0.0221)	– 0.226*** (0.0509)
Duration of between 12 and 24 months	1.150*** (0.0597)	
Duration of more than 24 months	1.963*** (0.0882)	
Non-compliance with national minimum wages	– 1.252*** (0.0972)	
Inverse of the Mills ratio		– 0.000 (0.000)
Sector/country collective agreement fixed effect	Yes	Yes
Country fixed effect	Yes	Yes
Month fixed effect	Yes	No
Time trend	Yes	No
Time fixed effect	No	Yes
Observations	18 490	18 490
R ²		0.497

Notes: The table covers all countries with statutory minimum wages. The second column of the table shows the estimated coefficients (and the robust standard errors in parentheses) of a probit model corresponding to the agreement equation with the probability of signing a new agreement as the dependent variable. The third column shows the estimated coefficients (and the robust standard errors in parentheses) of the wage floor equation with negotiated wages as the dependent variable. *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: Authors

Table A5: Estimated impact of national minimum wages on negotiated minimum wages: country groups, all countries, 2015–2022

	First equation (probability of a new collective agreement)	Second equation (cumulative variation in negotiated wages)
Cumulative inflation growth	0.00126 (0.00925)	0.622*** (0.0299)
Cumulative variation in national minimum wages – isolated model	0.0479*** (0.0108)	0.736*** (0.0622)
Cumulative variation in national minimum wages – distant interaction or coexistence model	0.00690 (0.0129)	0.148*** (0.0234)
Cumulative variation in national minimum wages – close interaction model	0.00661 (0.00584)	0.111*** (0.00872)
Unemployment rate	– 0.0186 (0.0210)	– 0.124** (0.0540)
Duration of between 12 and 24 months	1.120*** (0.0644)	
Duration of more than 24 months	1.929*** (0.103)	
Non-compliance with national minimum wages	– 1.286*** (0.100)	
Inverse of the Mills ratio		– 0.000*** (0.000)
Sector/country collective agreement fixed effect	Yes	Yes
Country fixed effect	Yes	Yes
Month fixed effect	Yes	No
Time trend	Yes	No
Time fixed effect	No	Yes
Observations	18 490	18 490
R ²		0.504

Notes: The table covers all countries with statutory minimum wages. The second column of the table shows the estimated coefficients (and the robust standard errors in parentheses) of a probit model corresponding to the agreement equation with the probability of signing a new agreement as the dependent variable. The third column shows the estimated coefficients (and the robust standard errors in parentheses) of the wage floor equation with negotiated wages as the dependent variable. *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: Authors

Annex 2: Qualitative research tools for Chapter 2 and list of interviews

Interview guidelines

Expert in industrial relations and collective bargaining (interview conducted at the end of the fieldwork) Please assess the main trends associated with low-paid work and inequalities in your country, and the role played by the MW. <i>(The interviewer should start this question by providing a brief summary of the main data already gathered in the study. Note that this is not the main focus of the interview. We only expect very brief information on this.)</i> Please describe if there are policy or academic debates on the process followed by the government to set up the MW (e.g. changes in the factors considered when proposing/deciding MW increases, role to be played by social dialogue, expected impact on collective agreement). <i>(The interviewer should start this question by providing a brief summary of the most important debates on existing processes. Note that this is not the main focus. We only expect very brief information on this and only in the case that the expert can inform us about unknown recent debates.)</i> Please describe, based on your knowledge, how social partners' bargaining approaches and outcomes in low-paid sectors are influenced by the MW. Please focus on those periods in which there were major changes in the MW. <i>(The interviewer should identify and share with the expert in advance those periods when there were major changes in the MW. The focus of this question should be on those specific periods.)</i> - How do social partners in different (low-paid) sectors approach their wage negotiations in relation to the MW (e.g. looking at past developments, anticipating potential developments, making direct references to the MW in the agreement, stopping negotiations until the MW is set up, making the end date of a wage table and renegotiation contingent on future changes of the MW, stopping negotiations altogether and letting the MW take over)? - Are you aware of any (low-paid) sectors in which major changes of the MW affected collective bargaining coverage or social partners' landscape substantially in the medium and longer terms (e.g. social partners withdrawing from negotiating wages or from negotiating in collective bargaining at all in the sector, social partners negotiating agreements in a sector where there was no collective bargaining previously, emerging new social partner actors)? Please assess the influence that the following factors may have on negotiated wages in low-paid sectors. - The power asymmetries between social partners in general and across sectors and their role in explaining different impacts of the MW on negotiated wages. - Sectoral features (exposure to international competition, etc.). - Segmentation and impact of different inequalities associated with the characteristics of the workforce.
Government official Please assess the main trends associated with low-paid work and inequalities in your country, and the role played by the MW. <i>(The interviewer should start this question by providing a brief summary of the main data already gathered in the study. Note that this is not the main focus of the interview. We only expect very brief information on this.)</i> Please describe if there are policy debates on the process followed by the government to set up the MW (e.g. changes in the factors considered when proposing/deciding MW increases, role to be played by social dialogue). <i>(The interviewer should start this question by providing a brief summary of the most important debates on existing processes. Note that this is not the main focus. We only expect very brief information on this and only in the case that the government representative can inform us about unknown recent debates.)</i> Do actors involved in the process of setting the minimum wage consider and/or anticipate its potential impact on actual or negotiated collective bargaining? Are there policy debates on the detrimental role that the MW could have on collective bargaining and the expected impact on collective agreements in the medium and long terms? Has the government discussed potential measures to support bargaining actors to negotiate collective agreements in low-paid sectors? Please assess the influence that the following factors may have on negotiated wages in low-paid sectors. - The power asymmetries between social partners in general and across sectors and their role in explaining different impacts of the MW on negotiated wages. - Sectoral logics (exposure to international competition, etc.). - Segmentation and impact of different inequalities associated with the characteristics of the workforce.
Sectoral social partners Please assess the main trends associated with low-paid work and inequalities in your sector. <i>(The interviewer should start this question by providing a brief summary of the main data already gathered in the study.)</i> - What are the main reasons for the high incidence of low-paid work in the sector? - Is there a high degree of non-coverage of workers by collective agreements? - Is it difficult to organise the sector? Background information (as far as it is not available through desk research) Please describe recent trends in the most important sectoral organisations (density rates, federation mergers, etc.), in the sectoral social partners' landscape (new actors, etc.) and in the relationship between employer organisations and trade unions (conflicts, etc.). <i>(We are interested in gathering data on the whole social partners' landscape, as far as possible.)</i>

Sectoral social partners

3. Please describe the wage structure of your sectoral collective agreement elements. Please provide details on the main elements that form the payslip. Explain which components are affected by wage increases negotiated in sectoral collective agreements (e.g. variable parts untouched or with lower increases).

Influence of the MW on the bargaining approach

4. Please describe your past and current bargaining approach in relation to the MW as well as past and current bargaining approaches of other social partners (as far as possible). Please focus on those periods in which there were major changes in the MW.
(The interviewer should identify and share with the social partner representative in advance those periods when there were major changes in the MW. The focus of this question should be on those specific periods.)

(Some of the following specific questions can be formulated during the interview.)

- How and to what extent do you look at past or potential future MW developments when proposing or negotiating a wage increase? Are you aware of how other actors in the sector do it?
 - If you try to anticipate increases, which rules or procedures do you follow (considering the impact of the EU directive, informal communication with government officers, economic forecasts, etc.)? Are you aware of how other actors in the sector do it?
 - Do you aim to keep the lowest rates above / in line with the national minimum wage? Are you aware of how other actors in the sector do it?
 - Do you start to compress the pay scale when the national minimum wage has increased a lot (e.g. merge the lowest into the second lowest and redefine groups)? Are you aware of how other actors in the sector do it?
 - Do you stop using some groups in the scales (e.g. empty groups)? Are you aware of how other actors in the sector do it?
 - Do you keep some rates stable, and accept that they are becoming outdated? Are you aware of how other actors in the sector do it?
 - Do you make explicit reference to the level of the national minimum wage in the collective agreement instead of mentioning concrete rates? Are you aware of how other actors in the sector do it?
 - Do you stop including pay rates in the collective agreement completely? Are you aware of how other actors in the sector do it?
 - Do you redefine basic wages in relation to supplements (i.e. remove collectively agreed supplements to finance higher basic negotiated rates)? Are you aware of how other actors in the sector do it?
5. Do relevant/major changes in the MW institutional framework (regulations, etc.) and MW trends have an impact on your traditional bargaining approach and in the traditional bargaining approaches followed by other organisations? Please explain the most relevant innovations in the bargaining approaches and how they were connected to relevant/major changes in the MW.
6. Which other factors beyond the MW have affected your bargaining approach and the bargaining approaches of other sectoral organisations?

Influence of the MW on bargaining outcomes, coverage rate and organisations' associational power

7. How do you assess the influence of the most relevant / major MW trends in the wage increase agreed in collective bargaining? If it has had any influence, which factors would explain this (e.g. has it reduced power asymmetry between social partners)?
8. How do you assess the influence of the most relevant / major MW trends on sectoral collective bargaining coverage rates? If it has had any influence, which factors would explain this?
9. How do you assess the influence of the most relevant / major MW trends on your organisation (density, etc.) and other sectoral organisations?

Note: MW, minimum wage.

Template for case study reports

Introduction (500 words) (this information can be taken from the Eurofound country profiles)

- Extent of low pay in the economy and recent trends.
- The MW regime in the country – characteristics and recent changes.
- Main characteristics of CB in the country.
- Description of the 'substantial' change(s) in the MW / MW policy under investigation (e.g. introduction of the national MW, large increase in the MW in year x, move towards a predefined target).

Sectoral case studies

Sector 1 (2 000 words)

- Introduction and sectoral context:
 - extent of low pay and workers' profile (age, gender, origin, skills level),
 - social partners' landscape;
- Analysis of the way in which the MW affects the bargaining process:
 - positions and strategies of social partners in relation to the MW,
 - changes detected in the bargaining process (duration of agreements, components of pay, etc.),
 - autonomy of social partners versus crowding-out effect of the MW as a consequence of increases in the MW;
- Analysis of the impact of the MW on collectively agreed wages and CB coverage rates:
 - assessment of the impact of the MW on increases in collectively agreed wages,

- assessment of the impact of the MW on the structure of collectively agreed wages,
- assessment of the impact of the MW on CB coverage rates in the sector,
- assessment of the impact of the MW on social partners' landscape in the sector.

Sector 2 (2 000 words)

- Introduction and sectoral context:
 - extent of low pay and workers' profile (age, gender, origin, skills level),
 - social partners' landscape;
- Analysis of the way in which the MW affects the bargaining process:
 - positions and strategies of social partners in relation to the MW,
 - changes detected in the bargaining process (duration of agreements, components of pay, etc.),
 - autonomy of social partners versus crowding-out effect of the MW as a consequence of increases in the MW;
- Analysis of the impact of the MW on collectively agreed wages and CB coverage rates:
 - assessment of the impact of the MW on increases in collectively agreed wages,
 - assessment of the impact of the MW on the structure of collectively agreed wages,
 - assessment of the impact of the MW on CB coverage rates in the sector,
 - assessment of the impact of the MW on social partners' landscape in the sector.

Discussion (1 000 words)

- General discussion of the impact of the MW on collectively agreed wages in low-paid sectors.
- Role of institutions and agency in explaining different outcomes across sectors.
- Capacity of social partners to maintain autonomous wage setting.

Notes: CB, collective bargaining; MW, minimum wage.

Table A6: List of interviews

Member State	Full name	Acronym (and original language name)	Category
France	French Democratic Confederation of Labour – Federation of Health and Social Services	CFDT – Santé Sociaux (Confédération française démocratique du travail – Fédération nationale des Syndicats des Services de Santé et Services sociaux)	Trade union
	French Democratic Confederation of Labour – Agri Agro	CFDT – Agri Agro (Confédération française démocratique du travail – Agriculture Agroalimentaire)	Trade union
	NEXEM	NEXEM	Employer organisation
	National Network of Associations of Personal Services	ADMR (Aide à domicile en milieu rural)	Employer organisation
	Member of the Committee of experts on the minimum wage (2017–2023)		Expert appointed by the government
	Expert in industrial relations and collective bargaining		Expert
Germany	Food, Beverages and Catering Union	NGG (Gewerkschaft Nahrung-Genuss-Gaststätten)	Trade union
	United Services Trade Union	Ver.di (Vereinte Dienstleistungsgewerkschaft)	Trade union
	Nursing Employers Association	AGVP (Arbeitgeberverband Pflege)	Employer organisation
	Meat Industry Association	VDF (Verband der Fleischwirtschaft)	Employer organisation
	Confederation of German Employers' Associations	BPA Arbeitgebersverband (Bundesverband privater Anbieter sozialer Dienste)	Employer organisation
	Minimum Wage Commission	—	Policy officer

Member State	Full name	Acronym (and original language name)	Category
Portugal	National Federation of Workers' Unions of Public and Social Activities	FNSTFPS (Federação Nacional dos Sindicatos dos Trabalhadores em Funções Públicas e Sociais)	Trade union
	National Union of Workers in Agriculture, Forestry, Fishing, Tourism, Food, Beverage and Related Industry	Setaab (Sindicato Da Agricultura, Floresta, Pesca, Turismo, Industria Alimentar, Bebidas e Afins)	Trade union
	Union of Commerce Workers, Offices and Services of Portugal	CESP (Sindicato dos Trabalhadores do Comércio, Escritórios e Serviços de Portugal)	Trade union
	Federation of Agricultural, Food, Beverage, Hospitality and Tourism Unions of Portugal	Fesaht (Federação dos Sindicatos de Agricultura, Alimentação, Bebidas, Hotelaria e Turismo de Portugal)	Trade union
	National Confederation of Solidarity Institutions	CNIS (Confederação Nacional das Instituições de Solidariedade)	Employer organisation
	National Association of Traders and Processors of Food	Ancipa (Associação Nacional de Comerciantes e Industriais de Produtos Alimentares)	Employer organisation
	High-ranking official from the Ministry of Labour, Solidarity and Social Security	—	Government representative
	Expert in industrial relations and collective bargaining	—	Expert
Romania	National Trade Union Federation PRO.ASIST	PRO.ASIST (Federatia Nationala Sindicala PRO.ASIST)	Trade union
	Federation of Central and Local Public Administration Employees in Romania	Columna-Scor (Federația salariaților din administrația publică centrală și locală din România)	Trade union
	Free Union of Health Care Workers	Sanitas (Sindicatul Liber al Cadrelor Medii Sanitare)	Trade union
	Ceres National Trade Union Federation	Ceres	Trade union
	Association for the Promotion of Romanian Food	Romalimenta (Asociația pentru Promovarea Alimentului Romanesc)	Employer organisation
	Labour relations and labour law expert (legal advisor to various national and local trade unions)	—	Expert
	Representative of the Wage Policy Department in the Ministry of Labour and Social Solidarity	—	Government representative
Slovenia	Trade Union of Agriculture and the Food Industry of Slovenia	KŽI (Sindikat kmetijstva in živilske industrije Slovenije)	Trade union
	Association of Free Trade Unions of Slovenia	ZSSS (Zveza svobodnih sindikatov Slovenije)	Trade union
	Medical and Social Care Union of Slovenia	SZSSS (Sindikat zdravstva in socialnega skrbstva Slovenije)	Trade union
	Chamber of Commerce and Industry of Slovenia	GZS (Gospodarska zbornica Slovenije)	Employer organisation
	Ministry of Solidarity-based Future	—	Government representative
	High-ranking representative of the Ministry of Labour	—	Government representative
	University of Ljubljana	—	Expert
Spain	General Union of Workers – Federation of Industry, Construction and Agriculture	UGT-FICA (Unión General de Trabajadores – Federación de Industria, Construcción y Agricultura)	Trade union
	Federation of Citizens' Services – Workers' Commissions	FSC-CCOO (Federación de Servicios a la Ciudadanía – Comisiones Obreras)	Trade union
	National Association of Canned Fish and Seafood Manufacturers	Anfaco (Asociación Nacional de Fabricantes de Conservas de Pescados y Mariscos)	Employer organisation
	Business Federation of Assistance for Dependency	FED (Federación Española de la Dependencia)	Employer organisation
	State Association of Home Care Services Entities	ASADE (Asociación Estatal de Entidades de Servicios de Atención a Domicilio)	Employer organisation

Source: Authors

Annex 3: Additional details of the methodology and results in Chapter 3

Definitions and calculation of the full-time equivalent monthly wage

Table A7 summarises the main characteristics of three wage definitions. All three aim to calculate a measure of the full-time equivalent wage for each employee in the sample. To do this, all three use the EU-SILC variable PY010G (employee cash or near cash gross income). Since the variable is expressed in euro, it is converted into national currencies using the corresponding exchange rates. The key difference in the three definitions lies in the measurement of months worked. Brandolini et al. (2010) suggest combining the number of months worked full-time with the number of months worked part-time. For part-time work, the number of months is adjusted using a country- and gender-specific factor calculated as the ratio of median hours of work in part-time jobs to median hours of work in full-time jobs. In contrast, the wage following Fanfani et al. (the baseline wage in Eurofound, 2023a) considers only employees who were either entirely full-time or entirely part-time for the whole year. Therefore, it uses the number of months worked in just one type of job. Finally, the wage defined by Goraus-Tańska and Lewandowski (2019) considers only employees who were full-time throughout the entire year, so the annual wage is divided by the total number of months in the year (12).

When calculating the wage following Brandolini et al. and Fanfani et al., an adjustment is made to calculate the full-time equivalent monthly wage for those employees with more than one job. Their total monthly wage is adjusted by the ratio of hours worked in the main job to total hours worked. In the Goraus-Tańska and Lewandowski wage definition, this correction is not applied, as employees with more than one job are excluded from the sample. Additionally, the wage following Fanfani et al. is adjusted for employees who work less than 40 hours per week: the monthly wage is scaled up to a working schedule of 40 hours per week.

Another important difference in the three definitions of wages has to do with the workers they exclude from the sample. All three definitions exclude those with null or negative values for monthly wages. Furthermore, to eliminate the influence of abnormally low individual wages on the calculation of the aggregate wage, they exclude those employees whose monthly wages are less than 50 % of the monthly national minimum wage in the corresponding country and year. Likewise, the wages of self-employed people and employees outside the age range of 20–65 years old are not considered. However, while the wage following Brandolini et al. imposes only those restrictions on the sample, the wage following Fanfani et al. also excludes employees who changed job in the previous year and employees who worked both full-time and part-time during the year. The sample is even more restricted when using the wage following Goraus-Tańska and Lewandowski, excluding employees with more than one job and employees working part-time in any month in the previous calendar year. This results in larger country-year samples when using the Brandolini et al. definition than the other definitions.

Table A7: Wage calculation procedures used in the study of the effect of changes in national minimum wages on actual wages

Definition	Measure	Base wage	Months worked	Adjustment	Excluded observations
Brandolini et al.	Full-time equivalent monthly wage, in national currency	Employee cash or near cash income – gross in euro (converted to national currency)	Number of months worked in full-time jobs plus number of months worked in part-time jobs, scaled down by country- and gender-specific ratio of median hours of work in part-time jobs to median hours of work in full-time jobs	When holding more than one job, adjusted by ratio of hours worked in main job to total hours worked	Employees with non-positive annual gross wages, employees with monthly wages of less than 50 % of monthly national minimum wage, self-employed people and employees aged under 20 years old or over 65 years old
Fanfani et al.	Full-time equivalent monthly wage, in national currency	Employee cash or near cash income – gross in euro (converted to national currency)	Number of months worked part-time or number of months worked full-time	When weekly hours worked are less than 40, resulting monthly wage scaled up to a working schedule of 40 hours per week When holding more than one job, adjusted by ratio of hours worked in main job to total hours worked	Employees who changed job in the previous year, employees who worked both full-time and part-time during the year, employees with non-positive annual gross wages, employees with monthly wages of less than 50 % of monthly national minimum wage, self-employed people and employees aged under 20 years old or over 65 years old
Goraus-Tańska and Lewandowski	Full-time equivalent monthly wage, in national currency	Employee cash or near cash income – gross in euro (converted to national currency)	12	—	Employees who work less than 40 hours per week – that is, not working full-time – in any month in the previous calendar year, employees with more than one job, employees with non-positive annual gross wages, employees with monthly wages of less than 50 % of monthly national minimum wage, self-employed people and employees aged under 20 years old or over 65 years old

Notes: The full-time equivalent monthly wage is computed as the ratio of the total earnings defined in the 'Base wage' column to the number of months worked as indicated in the 'Months worked' column, applying, where appropriate, the adjustments indicated in the 'Adjustment' column. It is obtained for all observations not excluded from the sample; exclusions are indicated in the 'Excluded observations' column.

Source: Authors

Empirical model of effect of changes in national minimum wages on changes in aggregate actual wages

The analysis comprised two stages, based on the exploitation of the individual and aggregate dimensions of the magnitudes involved. In the first stage, data from EU-SILC were used to estimate a country-year aggregate measure of wages for low-paid employees. Specifically, the value corresponding to the first quartile of the distribution of the monthly wage in nominal national currency, w_{ct}^{Q1} , was used as the aggregate measure of the actual wages of low-paid employees in country c and year t . The change in the wages of low-paid employees was then computed as the change in the logarithm of w_{ct}^{Q1} between two consecutive years:

$$\Delta w_{ct}^{Q1} = \log(w_{ct}^{Q1}) - \log(w_{ct-1}^{Q1})$$

In the second stage, the change in w_{ct}^{Q1} was regressed against the annual change in the national minimum wage and a set of controls:

$$\Delta w_{ct}^{Q1} = \alpha + \beta \Delta NMW_{ct} + \gamma X_{ct} + \sigma_c + \lambda_t + \varepsilon_{ct} \quad (1)$$

where ΔNMW_{ct} is the annual change in the logarithm of the national minimum wage of country c in year t , X_{ct} is a set of observable determinants of the change in the aggregate wage and ε_{ct} is an error term. The specification includes a measure of inflation (calculated using the average annual change in the Harmonised Index of Consumer Prices of each country), the country's unemployment rate in the previous year and the annual change in the country's labour productivity as observable determinants. As robustness checks, some specifications add a measure of negotiated wages and the Kaitz Index (ratio between the national minimum wage and the average or median wage in each country-year). Eurofound (2024a) shows a positive correlation between the Kaitz Index and non-compliance, so its inclusion can indirectly control for differences in the degree of compliance between countries and over time. These variables are not included as controls in the baseline regressions since they may be bad controls, as they themselves are outcomes of uprates of the national minimum wage and may absorb the effect of uprates on changes in actual wages. The specification also includes a set of year dummy variables (λ_t) that control for country-invariant unobservable factors specific to each year of the study period, and a set of country fixed effects (σ_c). Using differences in actual wages in this way removes unobservable, time-invariant, country-specific heterogeneity. Thus, the inclusion of country fixed effects in the specification accounts for country-specific trends in actual wages.

Controlling for observable and unobservable determinants minimises the risk of bias due to the omission of relevant variables when estimating the effect of interest. Furthermore, it is reasonable to assume that the national minimum wage is a variable measured without error or that any error is of little importance, so a high attenuation bias in the estimation of β cannot be expected ⁽²⁷⁾. More worrying is the existence of reverse causality. In the case of reverse causality, the estimate of β would capture the effect of changes in actual wages on the setting of the national minimum wage. To minimise this possibility, the study used the national minimum wage level at the beginning of each year – specifically, the level of the national minimum wage in January. Since the actual wage corresponds to the wage income throughout the entire year, the specification in equation (1) relates the change in actual wages during the current year to the change in the national minimum wage in the preceding year – specifically the change from January of the previous year to January of the current year. This should mitigate the possible simultaneity of the relationship between the wage types. Still, it cannot exclude the possibility that agents involved in setting the national minimum wage anticipate developments in actual wages ⁽²⁸⁾. In that case, the estimate of β in equation (1) would not only reflect the causal effect of the change in the national minimum wage on actual wages but also be contaminated by the influence of the change in actual wages on setting the new national minimum wage rate.

Equation (1) assumes that the impact of changes in the national minimum wage on changes in actual wages is the same for all employees. However, there could be differences in the effect depending on certain characteristics of employees and their jobs – such as sector of activity, occupation and gender – and on the type of labour institutions

⁽²⁷⁾ Attenuation bias is used here to mean obtaining an estimate of the effect of national minimum wage uprates that is lower than the real effect.

⁽²⁸⁾ The EU Minimum Wage Directive mentions reference values in relation to the Kaitz Index values (50 % of average or 60 % of median wages), so an increasing number of countries have started to look into wage developments when setting their wages (Eurofound, 2024a). Although the directive does not formally have effect for the study period, which ends in 2021, we cannot rule out that in some cases wage developments were considered when setting new national minimum wage levels. For this reason, in one of the robustness checks the Kaitz Index is included as an additional control variable.

most directly involved in the determination of actual and national minimum wages. Therefore, equation (1) is made more flexible to explore the heterogeneity in the effect of changes in the national minimum wage on changes in aggregate nominal gross full-time-equivalent monthly wages of low-paid workers:

$$\Delta w_{ct}^{Q1} = \alpha + \beta_g \Delta NMW_{ct} \times g_{ct} + \gamma X_{ct} + \sigma_c + \lambda_t + \varepsilon_{ct} \quad (2)$$

where g_{ct} is an indicator variable that identifies groups of workers based on a specific characteristic. For example, when estimating the effect on the change in aggregate wages in different sectors, g_{ct} identifies each sector in country c and year t . β_g is the vector of estimated effects of the change in the national minimum wage on wages of low-paid employees in different sectors.

Detailed results

Tables A8 and A9 report the results corresponding to the estimation of the empirical model that relates changes in the national minimum wage to those in aggregate actual wages.

The results in Table A8 deserve some additional comments to those made in the main report. Column 1 of Table A8 summarises the results of the estimation of the baseline specification, following Brandolini et al. Other than the change in the national minimum wage, discussed in the main report, the change in productivity is the only factor that appears to have a statistically significant effect after controlling for unobservable country and year heterogeneity. The results confirm that, in addition to their possible effect through increases in the national minimum wage, improvements in labour productivity have a positive impact on wages in general. In contrast, neither inflation nor the unemployment rate seems to have an independent influence on changes in the actual wages of low-paid employees. In any case, when interpreting this result, it should be considered that the potential effect of inflation and unemployment might be absorbed by the change in the national minimum wage. That is, the results should not be read in the sense that these factors do not have a significant effect on changes in the actual wages of low-paid employees, but rather that their effect, beyond that absorbed in the changes in the national minimum wage, is not sufficiently relevant.

Columns 2–7 of Table A8 report the results of the robustness checks. Specifically, the results shown in columns 2 and 3 confirm that the estimated effect of national minimum wage developments is similar in size and significance when excluding Germany and excluding both Croatia and Germany (for which observations are not available for the entire period) from the sample of countries. It also remains unchanged after including the lag in the change of the actual wage as an additional regressor in column 4. This dynamic specification accounts for persistence in wage changes – that is, the dependence of one year's change on the change observed in the previous year ⁽²⁹⁾. The next checks were that the estimate of the effect does not depend on the definition of the actual wage. Column 5 reports the results using the wage following Fanfani et al., while column 6 does the same with the stricter criteria of Goraus-Tańska and Lewandowski. It can be seen that the estimated effects of the changes in the national minimum wage are practically identical to those reported in column 1 using the wage following Brandolini et al. Finally, column 7 of Table A8 reports the estimates when modifying the definition of the group of low-wage workers. Previous columns use the wage level corresponding to the lower quartile of the wage distribution, while column 8 considers that quartile but only for employees in low-skilled occupations (groups 4–9 of ISCO-08). The estimate of the effect of national minimum wage developments remains unchanged when considering the change in the wages of low-paid employees in low-skilled occupations. Therefore, it can be concluded that the positive and significant effect of changes in the national minimum wage on actual wages of low-paid employees is robust to modifications to the sample, the specification and the definitions of actual wages and the group of low-paid employees.

⁽²⁹⁾ It is well known that the estimation is biased in this type of fixed-effects panel dynamic specification, with the bias decreasing in the time dimension. The relatively large number of time observations suggests that the bias should be moderate in this case.

Table A8: Effect of changes in national minimum wages on changes in aggregate actual wages of low-paid employees, 2006–2021

	1	2	3	4	5	6	7
Sample	All countries	Excluding Germany	Excluding Croatia and Germany	All countries	All countries	All countries	All countries
Definition of actual wages of low-paid workers (unconditional)	Brandolini et al., lower quartile	Brandolini et al., lower quartile	Brandolini et al., lower quartile	Brandolini et al., lower quartile	Fanfani et al., lower quartile	Goraus-Tańska and Lewandowski, lower quartile	Brandolini et al., lower quartile and low-skilled
Change in national minimum wage	0.310*** (0.094)	0.306*** (0.096)	0.300*** (0.097)	0.293** (0.104)	0.311*** (0.085)	0.315*** (0.093)	0.300*** (0.093)
Inflation	– 0.121 (0.352)	– 0.126 (0.353)	– 0.153 (0.364)	– 0.127 (0.434)	– 0.133 (0.349)	– 0.241 (0.338)	– 0.275 (0.401)
Unemployment rate ($t - 1$)	– 0.000 (0.001)	– 0.000 (0.001)	– 0.000 (0.001)	– 0.000 (0.001)	– 0.000 (0.001)	– 0.001 (0.001)	0.000 (0.001)
Change in productivity	0.002* (0.001)	0.002* (0.001)	0.002* (0.001)	0.001 (0.001)	0.002* (0.001)	0.002* (0.001)	0.003*** (0.001)
Change in wage ($t - 1$)				– 0.118 (0.084)			
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	303	297	285	283	303	303	301
Number of countries	21	20	19	21	21	21	21
R ²	0.345	0.345	0.343	0.309	0.354	0.311	0.316

Notes: 'Low-skilled' refers to employees in occupations covered by groups 4–9 of ISCO-08. Robust, clustered by country, standard errors are given in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

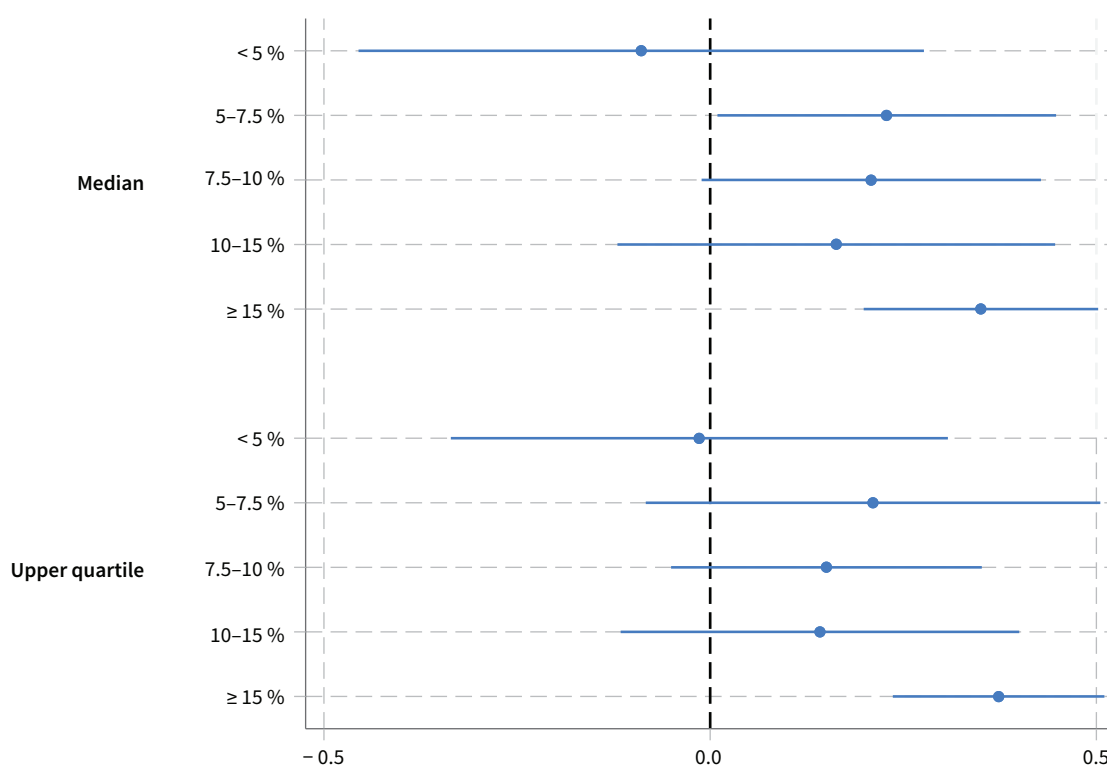
Source: Authors

Table A9: Differences across periods and controlling for negotiated wages and the Kaitz Index, 2015–2021

	1	2	3	4
	Adding NW	Adding NW by CBC	Adding Kaitz Index median	Adding Kaitz Index mean
Change in NMW	0.280** (0.118)	0.262** (0.119)	0.347** (0.146)	0.348** (0.149)
Change in NW	0.246 (0.150)			
Change in NW with low CBC		0.255 (0.150)		
Change in NW with high CBC		1.289*** (0.372)		
Kaitz Index ($t - 1$)			1.289*** (0.372)	– 0.004 (0.003)
Inflation	0.470 (0.979)	0.526 (0.949)	0.416 (0.487)	0.440 (0.491)
Unemployment rate ($t - 1$)	– 0.000 (0.005)	0.000 (0.005)	– 0.002 (0.004)	– 0.002 (0.004)
Change in productivity	0.001 (0.002)	0.001 (0.002)	0.001 (0.001)	0.001 (0.001)
Year fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Observations	91	91	133	133
Number of countries	17	17	20	20
R ²	0.219	0.236	0.312	0.311

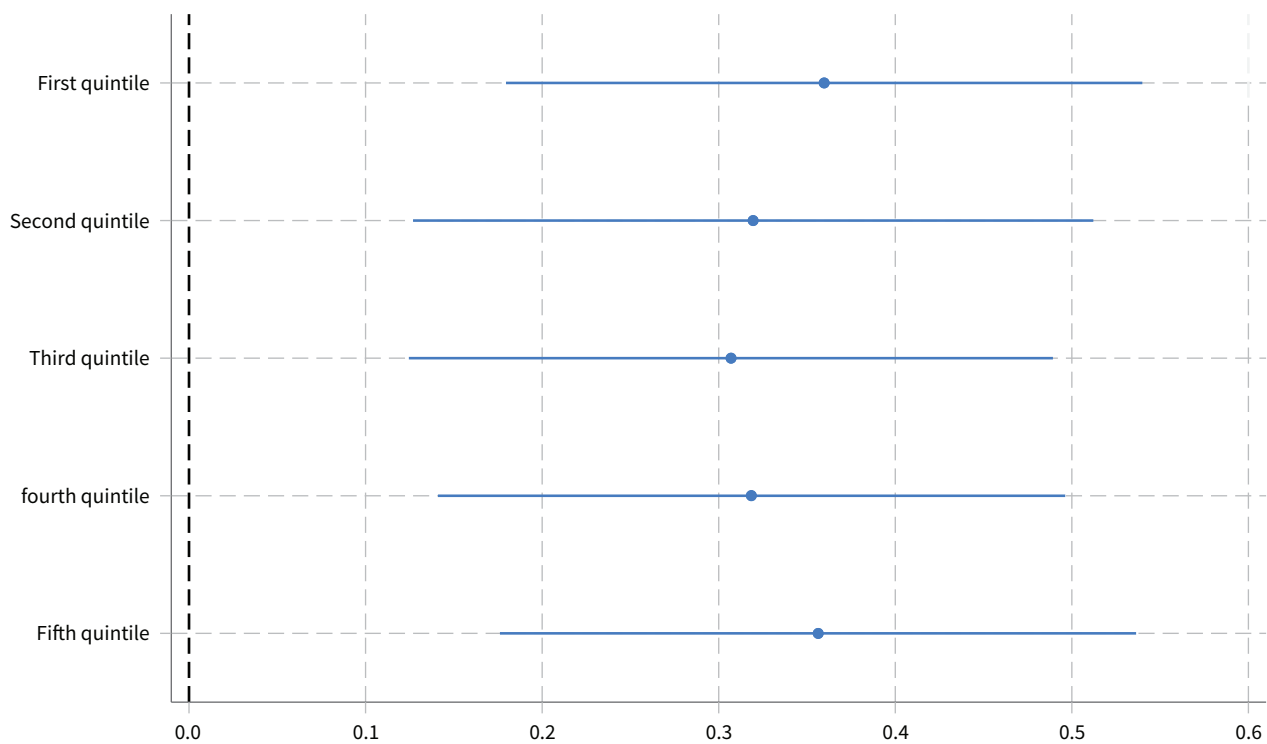
Notes: CBC, collective bargaining coverage; NMW, national minimum wage; NW, negotiated wage. The dependent variable is the annual change in the aggregate actual wages of low-paid workers. Some country-year observations are not included due to missing observations for negotiated wages and the Kaitz Index. Robust, clustered by country, standard errors are given in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
Source: Authors

Figure A1: Effect of national minimum wage changes on non-low-paid employees by intensity of minimum wage hike



Note: See notes for Figures 16, 17 and 22.
Source: Authors

Figure A2: Effect of national minimum wage changes on changes in actual wages by quintile



Notes: See notes for Figure 16. The dependent variable is the annual change in the mean of the corresponding quintile of the actual wage distribution.

Source: Authors

Annex 4: Additional details of the methodology and results in Chapter 4

Methodology

The strategy detailed here aims to analyse the average individual wage growth of the workers affected by a change in the national minimum wage, namely those who earned below the new national minimum wage before the proposed change. These workers were compared against a control group. The control group can be the entire distribution, or, as Burauel et al. (2020) propose, those who are just above the wage floor ⁽³⁰⁾. The differential trend adjusted difference-in-differences strategy is based on the following expression:

$$\left[\overline{(w_{t+1}^T - w_t^T)} - \overline{(w_t^T - w_{t-1}^T)} \right] - \left[\overline{(w_{t+1}^C - w_t^C)} - \overline{(w_t^C - w_{t-1}^C)} \right] \quad (3)$$

Every set of parentheses expresses the group-specific average individual wage growth between the time at which there is a change in the national minimum wage (t) and the subsequent year ($t+1$), or between the previous period ($t-1$) and the occurrence of the change in the national minimum wage (t). This allows for an evaluation of the change in wage change trends. The comparison between the treatment group (T) and the control group (C) enables the evaluation of the impact of the change in the national minimum wage among workers who were previously earning below the new national minimum wage. This method assumes that any change in the growth of changes in the control group would also have taken place in the treatment group if not for the change in the national minimum wage. Thus, if there were a change in the growth of wages from 1 % (before the change in the national minimum wage) to 3 % (after the change in the national minimum wage) in the control group, and these percentages were 2 % and 5 % respectively in the treatment group, a marginal growth of $(5\% - 3\%) - (2\% - 1\%) = 2\% - 1\% = 1\%$ would be assigned to the significant increase in national minimum wages, and consequently the treatment effect of interest. Clearly, this method does not require the parallel trend assumption, just that the business cycle effect applies similarly to the treatment and control groups. However, the method requires that there is no spillover effect – that is, that the control group is not affected by changes in the national minimum wage. Contrary to Burauel et al. (2020), this analysis did not evaluate changes in national minimum wages by looking at two-year differences. Given the limited sample of individuals, the analysis was restricted to changes one year before and after any significant change in national minimum wages. However, as in Burauel et al. (2020), the final empirical model estimated was the following:

$$\Delta w_{it} = \beta_0 + \beta_1 T_{it} + \beta_2 Y_{it} + \beta_3 Y_{it} \times T_{it} + \beta_4 X_{it} + \varepsilon_{it} \quad (4)$$

where:

- Δw_{it} is the wage growth between t and $t+1$;
- T_{it} corresponds to a dummy, taking the value of 1 if the worker earned below the national minimum wage in year t ;
- Y_{it} is a time vector that accounts for whether a significant change in the national minimum wage takes place in a given year;
- X_{it} is a vector of individual characteristics, including age, sex, education, self-reported health status and occupation (a vector of business cycle variables was also included at the country level, covering inflation rates, unemployment and the growth in GDP per capita);
- β_1 represents the average wage growth of workers who earned less than the national minimum wage before the change;
- β_2 captures the average wage change in the year of a significant change in the national minimum wage;
- β_3 captures the wage change, for workers who earned below the national minimum wage, attributable to the change in the national minimum wage.

⁽³⁰⁾ Burauel et al. (2020) analyse the introduction of a national minimum wage in Germany, established at EUR 8.50 per hour. In their paper, the control group is set at EUR 10, a figure that is expanded for robustness up to EUR 11.50. These thresholds give relative differences from the national minimum wage of 17.6 % and 35.3 % respectively.

The parameter of interest, β_3 , is the one associated with the interaction. This estimation makes it possible to determine the differential effect for those whose wages remained below the national minimum wage once it experienced a significant increase. In this way, β_1 shows the average wage growth of those workers who earned below the new national minimum wage before the change. It is expected that this will result in a high estimation, as the new wages probably need to adjust to the new legal conditions.

The estimation was performed using a panel fixed-effects robust estimator, which made it possible to consider individual non-observed specific effects, ameliorating problems associated with omitted relevant variables. The regressions were performed for various ranges of increases in the national minimum wage: less than 5 %, 5–7.5 %, 7.5–10 %, 10–15 % and 15 % and above. Two alternative control groups were also considered: workers with wages 20 % above the national minimum wage and workers with wages 50 % above the national minimum wage. Finally, the regressions were performed for the more recent period of analysis (2015–2019) and for the wider period (2009–2019).

Detailed results

Table A10: Sample restrictions and description of the final sample

Member State	Longitudinal EU-SILC	Full-time employees	Permanent employees	Workers not changing jobs	Age 20–65	Missing: gender and health status	Missing: education	Missing: occupation	Wage 50 % above NMW	Workers with at least three observed periods	Average periods per worker	Maximum periods per worker	Number of workers
Belgium	149 546	33 392	30 137	28 758	28 714	28 711	28 291	27 996	13 914	8 087	3.3	5	2 450
Bulgaria	180 946	52 575	47 458	44 967	44 277	44 271	44 239	44 235	26 249	18 090	3.8	5	4 733
Croatia	167 092	40 021	33 024	32 187	32 081	26 802	26 799	26 473	13 856	8 892	3.0	3	2 964
Czechia	211 614	72 379	64 530	62 457	62 042	43 800	43 800	36 533	19 001	10 480	3.3	4	3 213
Estonia	153 836	53 309	51 729	46 955	45 507	34 406	34 395	34 372	16 089	8 844	3.0	3	2 948
France	283 229	85 523	74 073	68 233	68 083	68 015	67 667	66 884	43 335	34 006	4.6	8	7 383
Germany	74 936	24 587	21 879	20 660	20 043	20 013	20 013	13 356	6 962	2 706	3.0	3	902
Greece	333 243	56 230	42 525	41 260	40 979	40 979	40 978	40 978	22 916	14 373	3.0	3	4 791
Hungary	224 491	68 687	58 860	52 912	52 719	52 630	52 625	52 086	27 704	15 474	3.0	3	5 158
Ireland	95 372	19 075	17 691	16 648	16 468	16 467	16 335	16 264	8 059	3 976	3.1	4	1 290
Latvia	141 616	45 794	42 575	39 463	38 156	38 131	38 044	38 008	19 194	11 268	3.0	3	3 756
Lithuania	131 970	42 003	40 526	38 059	37 052	29 660	29 660	29 658	15 289	9 126	3.0	3	3 042
Luxembourg	114 518	39 369	35 300	32 865	32 774	32 717	32 444	32 435	17 026	11 145	3.1	4	3 633
Malta	115 811	35 048	32 336	29 513	28 491	28 489	28 489	28 468	16 359	10 878	3.0	3	3 626
Netherlands	275 862	52 747	24 058	22 732	22 665	22 658	22 484	22 074	11 898	7 323	3.0	3	2 441
Poland	401 513	89 532	65 722	61 896	61 609	61 596	61 591	61 549	33 643	21 591	3.0	3	7 197
Portugal	186 197	68 671	54 885	53 284	52 740	52 678	52 361	52 359	31 754	23 424	3.0	3	7 808
Romania	200 510	53 227	54 885	50 635	50 495	50 495	50 435	50 435	33 005	26 124	3.0	3	8 708
Slovakia	165 887	60 615	53 968	51 578	51 435	51 250	51 235	49 764	29 717	17 457	3.0	3	5 819
Slovenia	287 386	97 909	47 861	30 853	30 795	30 790	30 787	29 997	16 290	10 395	3.0	3	3 465
Spain	358 799	88 001	66 828	64 816	64 536	64 530	64 229	64 042	35 254	21 831	3.0	3	7 277
Total	4 254 374	1 178 694	957 533	890 731	881 661	839 088	836 901	817 966	457 514	295 490	3.3	8	92 604

Note: NMW, national minimum wage

Table A11: Results of the empirical model of the effect of nominal increases in the national minimum wage on low wages

Panel A: 2015–2019

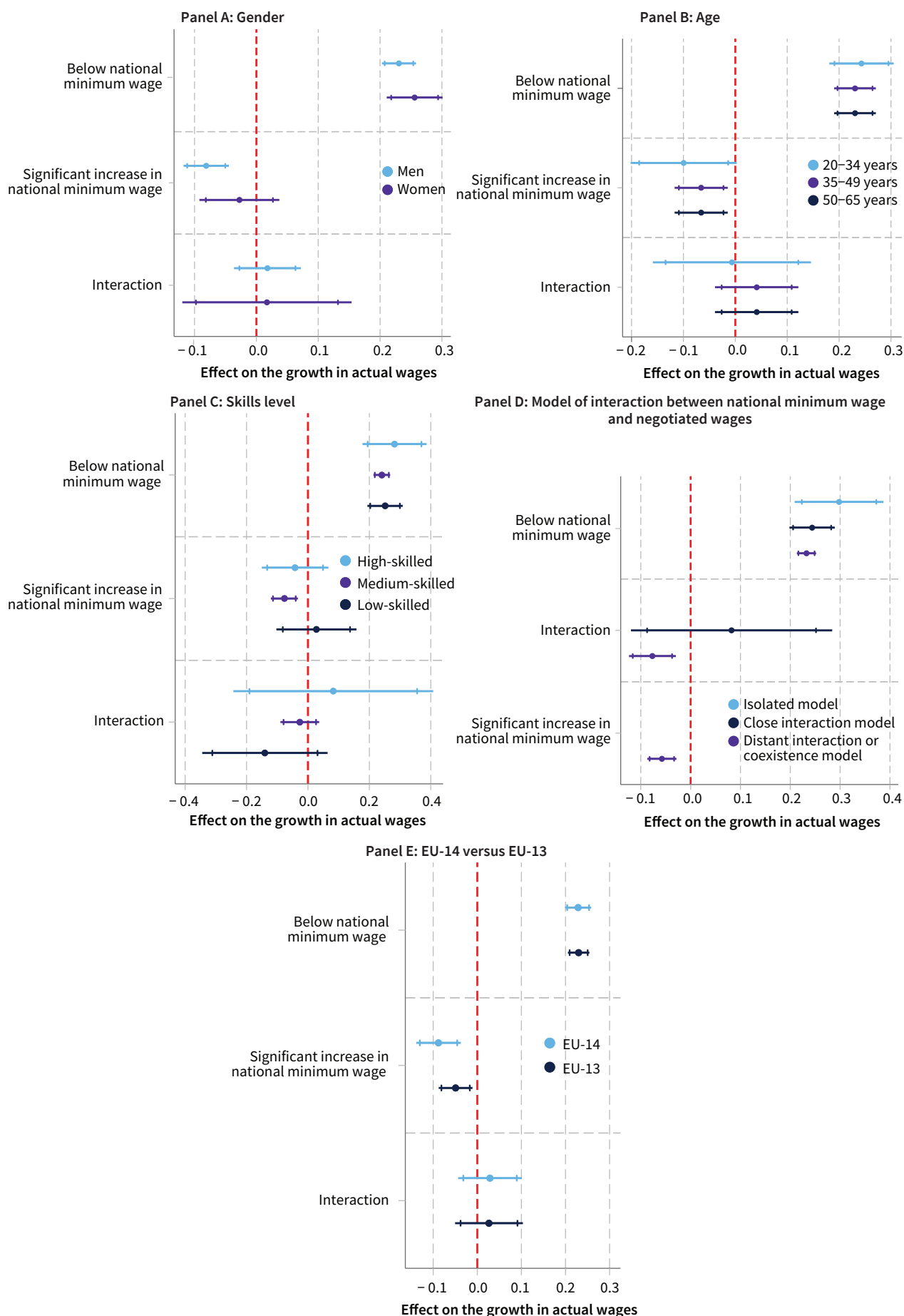
	Control group: workers with salaries up to 20 % higher than the national minimum wage					Control group: workers with salaries up to 50 % higher than the national minimum wage				
Level of significant increase	< 5 %	5–7.5 %	7.5–10 %	10–15 %	≥ 15 %	< 5 %	5–7.5 %	7.5–10 %	10–15 %	≥ 15 %
Below national minimum wage	0.267** 0.059	0.260** 0.012	0.251** 0.013	0.240** 0.012	0.223** 0.016	0.356** 0.053	0.347** 0.011	0.343** 0.011	0.343** 0.011	0.344** 0.015
Significant increase	0.098** 0.035	0.027** 0.011	– 0.051** 0.021	– 0.022 0.019	0.027 0.021	0.046** 0.014	– 0.004 0.007	– 0.055** 0.011	– 0.024** 0.011	0.097 0.012
Interaction	– 0.019 0.059	– 0.061** 0.020	– 0.048 0.036	0.069** 0.033	0.060 0.037	– 0.012 0.053	– 0.026 0.018	– 0.023 0.031	0.065** 0.029	– 0.042 0.030
R ²	0.104	0.104	0.107	0.104	0.107	0.137	0.137	0.139	0.137	0.143
Within R ²	0.104	0.104	0.107	0.104	0.107	0.137	0.137	0.139	0.137	0.143
Total observations	12 996	12 996	12 996	12 996	12 996	27 160	27 160	27 160	27 160	27 160
Individuals	8 691	8 691	8 691	8 691	8 691	16 500	16 500	16 500	16 500	16 500

Panel B: 2009–2019

	Control group: workers with salaries up to 20 % higher than the national minimum wage					Control group: workers with salaries up to 50 % higher than the national minimum wage				
Level of significant increase	< 5 %	5–7.5 %	7.5–10 %	10–15 %	≥ 15 %	< 5 %	5–7.5 %	7.5–10 %	10–15 %	≥ 15 %
Below national minimum wage	0.203** 0.024	0.239** 0.009	0.237** 0.009	0.229** 0.009	0.227** 0.011	0.322** 0.021	0.328** 0.009	0.324** 0.009	0.319** 0.009	0.335** 0.011
Significant increase	– 0.071** 0.016	0.008 0.011	– 0.054** 0.016	– 0.013 0.016	0.003 0.016	– 0.036** 0.007	0.009 0.008	– 0.069** 0.015	– 0.018** 0.008	0.054** 0.009
Interaction	0.042* 0.025	– 0.027 0.020	– 0.035 0.030	0.052** 0.023	0.027 0.027	0.006 0.021	– 0.018 0.018	– 0.006 0.027	0.049** 0.018	– 0.056** 0.021
R ²	0.099	0.097	0.100	0.097	0.097	0.097	0.096	0.099	0.096	0.098
Within R ²	0.099	0.097	0.100	0.097	0.097	0.097	0.096	0.099	0.096	0.098
Total observations	21 265	21 265	21 265	21 265	21 265	48 161	48 161	48 161	48 161	48 161
Individuals	13 575	13 575	13 575	13 575	13 575	27 043	27 043	27 043	27 043	27 043

Notes: The table presents results of a panel fixed-effects estimator taking into consideration the individual controls of age, gender, education, health status and occupation; country-level controls of inflation, unemployment and growth in GDP per capita; and time dummies. ** p < 0.05, * p < 0.1. Robust standard errors are reported in parentheses.

Figure A3: Heterogeneity analysis: estimate of the effect of significant increases (7.5–10 %) in the nominal national minimum wage, 2015–2019



Notes: See the notes for Figure 26. Control group is workers with wages up to 20 % above the national minimum wage.
Source: Authors

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Increases in national minimum wages can have various knock-on effects – they can, for instance, lead to wage rises more generally and can influence the social partners' latitude in collective bargaining. This report examines how changes to national minimum wages affect collectively agreed and actual wages in selected low-paid jobs and sectors. A quantitative analysis uses the Eurofound database on minimum wages for low-paid workers in collective agreements to analyse the impact of national minimum wages on collectively agreed minimum wages. Data from European Union Statistics on Income and Living Conditions are used to analyse the impact of national minimum wages on actual wages.

A qualitative analysis is based on national case studies of the residential and social care and the manufacture of food and beverages sectors in six Member States: France, Germany, Portugal, Romania, Slovenia and Spain. These Member States were selected because they differ in terms of the interaction between national minimum wages and collectively agreed wages. The analysis finds that, generally, there is a positive association between national minimum wage uprates and changes to both actual and negotiated wages in low-paid sectors, although there are differences among the countries.

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.

